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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2020

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to Commission file number 001-38935

ATRECA, INC.

(Exact name of registrant as specified in its charter)

Delaware	**27-3723255**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

450 East Jamie Court
South San Francisco, CA 94080
(Address of principal executive offices)
(Zip Code)

(650)-595-2595
(Registrant's telephone number, including area code)

Unchanged
(Former name, former address and former fiscal year, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A Common Stock	BCEL	The Nasdaq Global Select Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15 (d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically, every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer", "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒.

As of August 11, 2020, the registrant had 29,313,966 shares of Class A common stock, $0.0001 par value per share and 6,715,441 shares of Class B common stock, $0.0001 par value per share, outstanding.

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PART I --- FINANCIAL INFORMATION

Item 1. Condensed Consolidated Financial Statements (Unaudited)

Atreca, Inc.
Condensed Consolidated Balance Sheets
(in thousands, except share and per share data)

	June 30, 2020 (Unaudited)	December 31, 2019 (Note 2)
ASSETS		
Current Assets		
Cash and cash equivalents	$ 100,430	$ 157,954
Investments	43,088	14,663
Prepaid expenses and other current assets	5,112	3,502
Total current assets	148,630	176,119
Property and equipment, net	7,666	5,771
Long-term investments	5,311	10,799
Deposits and other	2,934	3,026
Total assets	$ 164,541	$ 195,715
LIABILITIES AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current Liabilities		
Accounts payable	$ 1,060	$ 2,133
Accrued expenses	4,434	5,395
Other current liabilities	1,859	419
Total current liabilities	7,353	7,947
Capital lease obligations, net of current portion	29	53
Deferred rent	2,887	763
Other non-current liabilities	157	—
Total liabilities	10,426	8,763
Stockholders' equity (deficit)		
Class A common stock, $0.0001 par value, 650,000,000 shares authorized as of both June 30, 2020 and December 31, 2019, respectively; 22,258,542 and 22,035,976 shares issued and outstanding at June 30, 2020 and December 31, 2019, respectively	2	2
Class B common stock, $0.0001 par value, 50,000,000 shares authorized as of both June 30, 2020 and December 31, 2019, respectively; 5,934,191 shares issued and outstanding as of both June 30, 2020 and December 31, 2019, respectively	1	1
Additional paid-in capital	358,401	351,039
Accumulated other comprehensive income	216	16
Accumulated deficit	(204,505)	(164,106)
Total stockholders' equity	154,115	186,952
Total liabilities and stockholders' equity	$ 164,541	$ 195,715

Atreca, Inc.
Condensed Consolidated Statements of Operations
(in thousands, except share and per share data)
(unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Expenses				
Research and development	$ 14,180	$ 15,922	$ 28,390	$ 27,635
General and administrative	6,458	3,537	13,581	6,055
Total expenses	20,638	19,459	41,971	33,690
Interest and other income (expense)				
Other income	403	1,021	634	1,186
Interest income	255	594	940	1,139
Interest expense	(1)	(2)	(2)	(4)
Preferred stock warrant liability revaluation	—	(73)	—	(123)
Loss on disposal of property and equipment	—	(2)	—	(7)
Loss before income tax expense	(19,981)	(17,921)	(40,399)	(31,499)
Income tax expense	—	—	—	(1)
Net loss	$ (19,981)	$ (17,921)	$ (40,399)	$ (31,500)
Net loss per share, basic and diluted	$ (0.71)	$ (3.67)	$ (1.44)	$ (8.97)
Weighted-average shares used in computing net loss per share, basic and diluted	28,144,714	4,888,987	28,082,930	3,512,606

Atreca, Inc.
Condensed Consolidated Statements of Loss and Comprehensive Loss
(in thousands)
(unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Net loss	$ (19,981)	$ (17,921)	$ (40,399)	$ (31,500)
Other comprehensive income (loss);				
Unrealized gain on fair value of investments	37	61	200	89
Unrealized loss on currency translation	—	2	—	1
Comprehensive loss	$ (19,944)	$ (17,858)	$ (40,199)	$ (31,410)

Atreca, Inc.
Condensed Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit)
(in thousands, except share data)
(unaudited)

Three Months Ended June 30, 2019	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount				
Balances at March 31, 2019	17,248,259	$ 209,668	2,123,257	$ —	$ 4,383	$ 23	$ (110,201)	$ (105,795)
Conversion of convertible preferred stock	(17,248,259)	(209,668)	17,248,259	2	209,666	—	—	209,668
Issuance of common stock upon initial public offering, net	—	—	8,452,500	1	130,785	—	—	130,786
Exercise of warrants	—	—	62,936	—	—	—	—	—
Issuance of common stock upon exercise of options	—	—	60,249	—	217	—	—	217
Vesting of early exercised stock options	—	—	—	—	2	—	—	2
Reclassification of redeemable convertible preferred stock warrant liability to additional paid-in capital	—	—	—	—	503	—	—	503
Stock-based compensation	—	—	—	—	1,359	—	—	1,359
Unrealized gain on fair value of investments	—	—	—	—	—	61	—	61
Unrealized currency exchange gain	—	—	—	—	—	2	—	2
Net loss	—	—	—	—	—	—	(17,921)	(17,921)
Balances at June 30, 2019	—	$ —	27,947,201	$ 3	$346,915	$ 86	$ (128,122)	$ 218,882

Three Months Ended June 30, 2020	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balances at March 31, 2020	—	$ —	28,093,595	$ 3	$354,477	$ 179	$ (184,524)	$ 170,135
Issuance of common stock upon exercise of options	—	—	99,138	—	541	—	—	541
Stock-based compensation	—	—	—	—	3,383	—	—	3,383
Unrealized gain on fair value of investments	—	—	—	—	—	37	—	37
Net loss	—	—	—	—	—	—	(19,981)	(19,981)
Balances at June 30, 2020	—	$ —	28,192,733	$ 3	$358,401	$ 216	$ (204,505)	$ 154,115

Atreca, Inc.
Condensed Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit) (continued)
(in thousands, except share data)
(unaudited)

Six Months Ended June 30, 2019	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount				
Balances at December 31, 2018	17,248,259	$ 209,668	2,119,872	$ —	$ 3,593	$ (4)	$ (96,622)	$ (93,033)
Conversion of convertible preferred stock	(17,248,259)	(209,668)	17,248,259	2	209,666	—	—	209,668
Issuance of common stock upon initial public offering, net	—	—	8,452,500	1	130,785	—	—	130,786
Exercise of warrants	—	—	62,936	—	—	—	—	—
Issuance of common stock upon exercise of options	—	—	63,634	—	231	—	—	231
Vesting of early exercised stock options	—	—	—	—	2	—	—	2
Reclassification of redeemable convertible preferred stock warrant liability to additional paid-in capital	—	—	—	—	503	—	—	503
Stock-based compensation	—	—	—	—	2,135	—	—	2,135
Unrealized gain on fair value of investments	—	—	—	—	—	89	—	89
Unrealized currency exchange gain	—	—	—	—	—	1	—	1
Net loss	—	—	—	—	—	—	(31,500)	(31,500)
Balances at June 30, 2019	—	$ —	27,947,201	$ 3	$346,915	$ 86	$ (128,122)	$ 218,882

Six Months Ended June 30, 2020	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balances at December 31, 2019	—	$ —	27,970,167	$ 3	$351,039	$ 16	$ (164,106)	$ 186,952
Issuance of common stock upon exercise of options	—	—	186,010	—	959	—	—	959
Vesting of early exercised stock options	—	—	—	—	4	—	—	4
Stock-based compensation	—	—	—	—	5,866	—	—	5,866
Issuance of common stock under the Employee Stock Purchase Plan	—	—	36,556	—	533	—	—	533
Unrealized gain on fair value of investments	—	—	—	—	—	200	—	200
Net loss	—	—	—	—	—	—	(40,399)	(40,399)
Balances at June 30, 2020	—	$ —	28,192,733	$ 3	$358,401	$ 216	$ (204,505)	$ 154,115

Atreca, Inc.
Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Six Months Ended June 30,	
	2020	2019
Cash Flows from Operating Activities		
Net loss	$ (40,399)	$ (31,500)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,169	792
Loss on disposal of property and equipment	—	7
Stock-based compensation	5,866	2,135
Preferred stock warrant liability revaluation	—	123
Accretion of discount on investments	(144)	—
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(1,744)	160
Accounts payable	(1,106)	1,935
Accrued expenses	(961)	(231)
Other current liabilities	1,382	(136)
Other non-current liabilities	157	—
Deferred rent	2,185	(13)
Net cash used in operating activities	(33,595)	(26,728)
Cash Flows from Investing Activities		
Purchase of property and equipment	(3,031)	(810)
Purchase of investments	(77,319)	(84,613)
Proceeds from maturities of investments	54,726	20,000
Change in deposits	39	66
Net cash used in investing activities	(25,585)	(65,357)
Cash Flows from Financing Activities		
Proceeds from the issuance of common stock under the Employee Stock Purchase Plan	533	—
Proceeds from exercise of stock options	959	248
Proceeds from initial public offering, net	—	133,618
Principal payments on capital lease obligations	(23)	(25)
Payments of initial offering costs	—	(577)
Net cash provided by (used in) financing activities	1,469	133,264
Net change in cash, cash equivalents and restricted cash	(57,711)	41,179
Cash, cash equivalents and restricted cash, beginning of period	159,236	114,504
Cash, cash equivalents and restricted cash, end of period	$ 101,525	$ 155,683

Atreca, Inc.
Condensed Consolidated Statements of Cash Flows (continued)
(in thousands)
(unaudited)

	Six Months Ended June 30,	
	2020	2019
Supplemental Disclosure of Cash Flow Information		
Cash paid for interest	$ 2	$ 3
Cash paid for income taxes	$ —	$ 1
Supplemental Schedule of Non-Cash Investing and Financing Activities		
Costs related to initial public offering included in accounts payable and accrued liabilities	$ —	$ 2,271
Conversion of redeemable convertible preferred stock to common stock	$ —	$ 209,669
Reclassification of redeemable convertible preferred stock warrant liability to additional paid-in capital	$ —	$ 503
Vesting of early exercised common stock options	$ 4	$ 2
Purchases of property and equipment included in accounts payable and accrued liabilities	$ 33	$ —

Notes to Unaudited Interim Condensed Consolidated Financial Statements

1. Business

Nature of Business

Atreca, Inc. (the "Company") was incorporated in the State of Delaware on June 11, 2010 ("inception date"), and is located in South San Francisco, California. In April 2016, the Company formed a wholly owned subsidiary, Atreca Pte. Ltd., in Singapore. Atreca Pte. Ltd., was dissolved in the first quarter of fiscal year 2020. The Company is a biopharmaceutical company utilizing its differentiated platform to discover and develop novel antibody-based immunotherapeutics to treat a range of solid tumor types. The Company's lead product candidate, ATRC-101, is a monoclonal antibody in clinical development with a novel mechanism of action and target derived from an antibody identified using its discovery platform. The Company operates in a single segment. Since inception, the Company has been primarily engaged in research and development, raising capital, building its management team and building its intellectual property portfolio.

2. Summary of Significant Accounting Policies

Basis of Presentation

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and include the accounts of the Company and its wholly owned subsidiaries. All intercompany transactions and accounts have been eliminated. Certain information and note disclosures normally included in the financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to the applicable rules and regulations of the Securities and Exchange Commission ("SEC"). Therefore, these unaudited condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and related footnotes included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019 (the "2019 Form 10-K").

Prior period reclassification

An immaterial reclassification of prior period amounts has been made to conform to the current period presentation.

Principles of Consolidation

The condensed consolidated financial statements include accounts of the Company and its wholly owned subsidiary. All significant intercompany accounts and transactions are eliminated upon consolidation.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities, and reported amounts of income and expenses in the consolidated financial statements and accompanying notes. Actual results could differ from those estimates. Key estimates in the consolidated financial statements include estimated useful lives of property and equipment, impairment of long-lived assets, accrued expenses, valuation of deferred income tax assets, fair value of warrants issued to purchasers of shares of preferred stock and common stock and fair value of options granted under the Company's stock option plan.

Unaudited Interim Condensed Consolidated Financial Statements

The accompanying condensed consolidated financial statements are unaudited. The unaudited interim condensed financial statements have been prepared on the same basis as the annual consolidated financial statements and reflect, in the opinion of management, all adjustments of a normal and recurring nature that are necessary for the fair statement of the Company's financial position as of June 30, 2020 and its results of operations and cash flows for the six months ended June 30, 2020 and 2019. The financial data and the other financial information contained in these notes to the condensed consolidated financial statements related to the three-month and six-month periods are also unaudited. The condensed results of operations for the three months and six months ended June 30, 2020 are not necessarily indicative of the results to be expected for the year ending December 31, 2020 or for any other future annual or interim period. The condensed consolidated balance sheet as of December 31, 2019 included herein was derived from the audited consolidated financial statements as of that date.

Other Income

Other income is comprised of amounts earned from services performed under service agreements. Beginning January 1, 2018, the Company follows the provisions of Accounting Standards Update 2014-09 Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers ("Topic 606").* The guidance provides a unified model to determine how income is recognized.

In determining the appropriate amount of other income to be recognized as it fulfills its obligations under the agreements, the Company performs the following steps: (i) identifies the promised goods or services in the contract; (ii) determines whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract; (iii) measures the transaction price, including the constraint on variable consideration; (iv) allocates the transaction price to the performance obligations based on estimated selling prices; and (v) recognizes other income when (or as) the Company satisfies each performance obligation.

Upon adoption of Topic 606, there was no change to the units of accounting previously identified with respect to existing service agreements under legacy Generally Accepted Accounting Principles ("GAAP"), which are now considered performance obligations under Topic 606, and there was no change to the revenue recognition pattern for the performance obligations. Accordingly, the adoption of the new standard resulted in no cumulative effect change to the Company's opening accumulated deficit balance.

The Company generally allocates the transaction price to distinct performance obligations at their stand-alone selling prices, determined by their estimated costs plus some margin. Performance obligations are generally delivered over time and recognized based upon observable inputs as the related research services are performed, which are recorded as research and development expenses. Amounts due under service agreements are generally billed monthly as services are delivered and do not generally result in contract liabilities or assets. Receivables under service agreements of $53,000 and $237,000 are included in prepaid expenses and other current assets as of June 30, 2020 and December 31, 2019, respectively. In February 2020, the Company entered into an agreement with an external partner for a research project to identify the antigenic targets of select antibodies discovered by the Company with potential utility in oncology. The nonrefundable upfront payment from this agreement was classified as a contract liability and will be recognized as other income over the expected service period of 18 months. Contract liabilities of $1.4 million and $0.2 million related to the agreement are included in other current liabilities and other non-current liabilities, respectively, as of June 30, 2020. There were no contract liabilities included in other current liabilities and non-current liabilities as of December 31, 2019.

Cash, Cash Equivalents and Restricted Cash

Cash and cash equivalents include all cash balances and highly liquid investments purchased with an original maturity of three months or less.

The Company maintained restricted cash of $1.1 million and $1.3 million as of June 30, 2020 and December 31, 2019, respectively. This amount as of June 30, 2020 is included in deposits and other in the accompanying

condensed consolidated balance sheets and is comprised solely of letters of credit required pursuant to leases for Company facilities.

The following table provides a reconciliation of cash and cash equivalents and restricted cash reported within the condensed consolidated balance sheets that sum to the total of the same amounts shown in the condensed consolidated statements of cash flows.

	June 30, 2020	December 31, 2019
Cash and cash equivalents	$ 100,430	$ 157,954
Restricted cash	1,095	1,282
Cash, cash equivalents and restricted cash shown in the condensed consolidated statements of cash flows	$ 101,525	$ 159,236

Investments

The Company considers securities purchased with original maturities greater than three months to be investments. The Company's policy is to protect the value of its investment portfolio and minimize principal risk by earning returns based on current interest rates. The Company's intent is to convert all investments into cash to be used for operations and has classified them as available for sale. For purposes of determining realized gains and losses, the cost of securities sold is based on specific identification. Interest and dividends on securities classified as available-for-sale are included in interest income.

Convertible Preferred Stock Warrants

The Company issued convertible preferred stock warrants, which were exercisable into Series A preferred stock with liquidation preference. The conversion feature was evaluated under ASC Topic 480, *Distinguishing liabilities from equity* and the warrants were determined to be debt instruments and classified prior to its initial public offering (the "IPO") as liabilities on the consolidated balance sheets. The Company recorded these warrant liabilities at fair value and adjusted the carrying value to their estimated fair value at each reporting date with the increases or decreases in the fair value recorded as a gain (loss) on revaluation of the warrant liability in the consolidated statements of operations. Upon the IPO, the 49,997 preferred stock warrants were converted to common stock warrants of Class A shares and the warrant liability of $0.5 million was reclassified to additional paid-in capital as a result of the conversion. The warrants were not subject to further remeasurement for fair value.

Risks and Uncertainties

The Company is subject to a number of risks associated with companies at a similar stage, including dependence on key individuals, competition from similar services and larger companies, volatility of the industry, ability to obtain regulatory clearance, ability to obtain adequate financing to support growth, the ability to attract and retain additional qualified personnel to manage the anticipated growth of the Company and general economic conditions.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentration of credit risk consist of cash and cash equivalents, investments and other receivables. Cash and cash equivalents are held at two financial institutions and were in excess of the Federal Deposit Insurance Corporation insurable limit at June 30, 2020 and December 31, 2019. Additionally, cash and cash equivalents and investments are maintained at brokerage firms for which amounts are insured by the Securities Investor Protection Corporation subject to legal limits. The Company has not experienced any losses on its deposits to date.

The Company does not require collateral or other security for other receivables; however, credit risk is mitigated by the Company's ongoing evaluations of its debtors' credit worthiness.

Research and Development Costs

Research and development costs are expensed as incurred. Research and development costs consist primarily of salaries and benefits, consultant fees, stock-based compensation, certain facility costs, legal costs and other costs associated with preclinical and clinical development.

A substantial portion of the Company's ongoing research and development activities are conducted by third-party service providers in connection with preclinical and clinical development activities and contract manufacturing organizations in connection with the production of materials for clinical trials. At the end of the reporting period, the Company compares payments made to third-party service providers to the estimated progress toward completion of the research or development objectives. Such estimates are subject to change as additional information becomes available. Depending on the timing of payments to the service providers and the progress that the Company estimates has been made as a result of the service provided, the Company may record net prepaid or accrued expense relating to these costs.

Stock-Based Compensation

The Company generally grants stock options to its employees for a fixed number of shares with an exercise price equal to the fair value of the underlying shares at the date of grant. The Company accounts for stock option grants using the fair value method. The fair value of options is calculated using the Black-Scholes option pricing model. Stock-based compensation is recognized as the underlying options vest using the straight-line attribution approach, and forfeitures are recorded as they occur.

Emerging Growth Company Status

The Company is an "emerging growth company," ("EGC") as defined in the Jumpstart Our Business Startups Act, ("JOBS Act"), and may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not EGCs. The Company may take advantage of these exemptions until it is no longer an EGC under Section 107 of the JOBS Act, which provides that an EGC can take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards. The Company has elected to use the extended transition period for complying with new or revised accounting standards, and as a result of this election, the Company's condensed consolidated financial statements may not be comparable to companies that comply with public company Financial Accounting Standards Board ("FASB") standards' effective dates. The Company may take advantage of these exemptions up until the last day of the fiscal year following the fifth anniversary of the IPO or such earlier time that the Company is no longer an EGC.

Recent Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02 and subsequent amendments to the initial guidance under ASU 2017-13, ASU 2018-10, ASU 2018-11, and ASU 2019-01 (collectively, *"Topic 842"*), which modifies the accounting by lessees for all leases with a term greater than 12 months. This standard will require lessees to recognize on the balance sheet the assets and liabilities for the rights and obligations created by those leases. *Topic 842* is effective for the Company as of January 1, 2022. Early adoption is permitted. The Company's most significant lease is its operating lease for its corporate headquarters, and, while the Company has not yet estimated the amounts by which its financial statements will be affected by the adoption of this guidance, it expects that the overall recognition of expense will be similar to current guidance, but that there will be a significant change in the balance sheet due to the recognition of right of use assets and the corresponding lease liabilities.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses* (*"Topic 326"*): Measurement of Credit Losses on Financial Instruments and subsequent amendments to the initial guidance under ASU 2018-19, ASU 2019-04 and ASU 2019-05, which amends the current approach to estimate credit losses on certain financial assets, including trade and other receivables. The amendment replaces the existing incurred loss impairment

model with an expected loss methodology, which will result in more timely recognition of credit losses. For available-for-sale debt securities, credit losses should be recorded through an allowance for credit losses. *Topic 326* is effective for the Company as of January 1, 2023. Early adoption is permitted. The Company is currently evaluating the impact the adoption of this standard will have on its consolidated financial statements and related disclosures.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes - Simplifying the Accounting for Income Taxes ("Topic 740")*: which simplifies the accounting for income taxes, eliminates certain exceptions to the general principles in Topic 740 and clarifies and amends existing guidance to improve consistent application. ASU 2019-12 is effective for the Company as of January 1, 2021, including interim periods within those fiscal years. The Company does not expect the adoption of this guidance will have a material impact on our consolidated financial statements.

3. Fair Value of Financial Instruments

The Company's financial assets and liabilities subject to fair value measurements on a recurring basis and the level of inputs used for such measurements were as follows:

	June 30, 2020			
	Level 1	Level 2	Level 3	Total
Assets				
Money market funds	$ 90,455	$ —	$ —	$ 90,455
Commercial paper	—	4,997	—	4,997
U.S. Agency Bonds	—	3,501	—	3,501
Certificates of deposit	1,934	—	—	1,934
Corporate debt securities	—	10,790	—	10,790
U.S. Treasury securities	27,176	—	—	27,176
	$ 119,565	$ 19,288	$ —	$ 138,853

	December 31, 2019			
	Level 1	Level 2	Level 3	Total
Assets				
Money market funds	$ 152,770	$ —	$ —	$ 152,770
Certificates of deposit	1,950	—	—	1,950
Corporate debt securities	—	3,459	—	3,459
U.S. Treasury securities	20,052	—	—	20,052
Total	$ 174,772	$ 3,459	$ —	$ 178,231

The Company utilized the market approach and Level 1 valuation inputs to value its money market funds and U.S. government treasury securities because published net asset values were readily available. The Company measured the fair value of the commercial paper, corporate debt securities and U.S. agency bonds using Level 2 valuation inputs, which are based on quoted prices and market observable data of similar instruments. As of June 30, 2020 and 2019, gross unrealized gains and unrealized losses for cash equivalents and short-term investments were not material, and the contractual maturity of all marketable securities was less than two years.

4. Cash, Cash Equivalents and Investments

The fair value and the amortized cost of cash, cash equivalents and available-for-sale investments by major security type consist of the following (in thousands):

	As of June 30, 2020			
Cash and cash equivalents and investments	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Cash, cash equivalents and money market funds	$ 100,430	$ —	$ —	$ 100,430
U.S. Treasury securities	27,033	143	—	27,176
Commercial paper	4,997	—	—	4,997
Corporate debt securities	10,735	55	—	10,790
U.S. Agency bonds	3,500	1	—	3,501
Certificates of deposit	1,918	16	—	1,934
Total	148,613	216	—	148,829
Less amounts classified as cash and cash equivalents	(100,430)	—	—	(100,430)
Total available-for-sale investments	$ 48,183	$ 216	$ —	$ 48,399

	As of December 31, 2019			
Cash and cash equivalents and investments	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Cash, cash equivalents and money market funds	$ 157,954	$ —	$ —	$ 157,954
U.S. Treasury securities	20,037	16	—	20,053
Corporate debt securities	3,459	—	—	3,459
Certificates of deposit	1,950	—	—	1,950
Total	183,400	16	—	183,416
Less amounts classified as cash and cash equivalents	(157,954)	—	—	(157,954)
Total available-for-sale investments	$ 25,446	$ 16	$ —	$ 25,462

5. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consist of the following (in thousands):

	June 30, 2020	December 31, 2019
Prepaid insurance	$ 2,822	$ 1,265
Vendor prepayments and deposits	1,322	963
Prepaid rent	721	879
Non-trade receivables	82	242
Interest receivables and other current assets	165	153
Total prepaid expenses and other current assets	$ 5,112	$ 3,502

6. Property and Equipment, net

Property and equipment consists of the following (in thousands):

	June 30, 2020	December 31, 2019
Laboratory equipment	$ 10,862	$ 9,355
Furniture and fixtures	242	225
Computer hardware and software	854	785
Leasehold improvements	667	629
Construction in process	1,528	136
	14,153	11,130
Less accumulated depreciation and amortization	(6,487)	(5,359)
Total property and equipment, net	$ 7,666	$ 5,771

Depreciation expense was $0.6 million and $0.4 million for the three months ended June 30, 2020 and 2019, respectively, and $1.2 million and $0.8 million for the six months ended June 30, 2020 and 2019, respectively.

The net book value of property and equipment under capital leases was $71,000 and $94,000 at June 30, 2020 and December 31, 2019, respectively.

7. Accrued Expenses

Accrued expenses consist of the following (in thousands):

	June 30, 2020	December 31, 2019
Compensation and related benefits	$ 2,619	$ 4,435
Professional fees	510	563
Contract research fees	1,167	214
Other	138	183
Total accrued expenses	$ 4,434	$ 5,395

8. Commitments and Contingencies

Leases

The Company leases its office facilities under non-cancellable operating lease agreements that expire at various dates through July 2033. Under the terms of the leases, the Company is responsible for certain insurance, property taxes and maintenance expenses. The office facilities lease agreements contain scheduled increases over the lease term. The related rent expense is calculated on a straight-line basis with the difference recorded as deferred rent. Rent expense was $1.9 million and $0.9 million for the three months ended June 30, 2020 and 2019, respectively and $3.9 million and $1.3 million for the six months ended June 30, 2020 and 2019, respectively.

The Company leases certain property and equipment under capital leases. In 2017, the Company financed purchases of $226,000 under a capital lease agreement. Outstanding amounts under the capital lease agreements are generally secured by liens on the related property and equipment.

Future minimum lease payments under non-cancelable operating and capital lease agreements consisted of the following at June 30, 2020 (in thousands):

	Capital Leases	Operating Leases
Years ending December 31:		
2020 (remaining 6 months)	$ 25	$ 2,831
2021	51	5,891
2022	4	7,286
2023	—	6,986
2024	—	7,195
Thereafter	—	70,919
Total minimum lease payments	80	$ 101,108
Less: amount representing interest	(3)	
Present value of capital lease obligation	77	
Less: current portion	(48)	
Non-current portion	$ 29	

Litigation

The Company is not aware of any asserted or unasserted claims against it where it believes that an unfavorable resolution would have an adverse material impact on the operations or financial position of the Company.

9. Capital Stock

Class A and Class B Common Stock

On June 2, 2019 the board of directors of the Company authorized the issuance of 650,000,000 shares of Class A common stock, $0.0001 par value per share, 50,000,000 shares of Class B common stock, $0.0001 par value per share and 300,000,000 shares of preferred stock, $0.0001 par value per share, upon the filing of the Company's Amended and Restated Certificate of Incorporation in connection with the reverse stock split. Each holder of Class A common stock will be entitled to one vote and each holder of Class B common stock is not entitled to vote except as may be required by law and shall not be entitled to vote on the election of directors at any time.

Common Stock Warrant

In connection with the issuance of Series A in August 2015, the Company issued a warrant to purchase an aggregate of 62,936 shares of common stock at $0.0001 per share. The warrant was immediately exercisable and expires, if not exercised, in August 2025. At issuance, the fair value of the warrant was determined to be $41,509, which was recorded as a Series A preferred stock issuance cost and additional paid-in capital.

10. Equity Incentive Plans

2019 Equity Incentive Plan

The Company's board of directors adopted and our stockholders approved our 2019 Equity Incentive Plan, (the "2019 Plan"), on June 2, 2019, and June 7, 2019, respectively. The 2019 Plan became effective on June 19, 2019, and no further grants will be made under the Company's 2010 Equity Incentive Plan. The purpose of the 2019 Plan, through the grant of stock awards including stock options and other stock-based awards, including restricted stock units ("RSUs"), is to help us secure and retain the services of eligible award recipients, provide incentives for such persons to exert maximum efforts for our success and that of our affiliates, and provide a means by which the eligible recipients may benefit from increases in the value of our Class A common stock. Under the 2019 Plan, 6,141,842 shares of the Company's Class A common stock have been reserved for issuance to employees, directors and consultants.

Additionally, the number of shares of our Class A common stock reserved for issuance under our 2019 Plan will automatically increase on January 1 of each year, beginning on January 1, 2020 and continuing through and including January 1, 2029, by 4% of the total number of shares of our capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by our board of directors.

Stock option activity under the Plan is as follow:

	Options Outstanding			
	Number of Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (years)	Aggregate Intrinsic Value (in thousands)
Balances, December 31, 2019	3,742,144	$ 9.58	8.6	$ 22,910
Granted	1,306,500	21.68		
Exercised	(186,010)	5.16		
Cancelled	(27,984)	13.93		
Balances, June 30, 2020	4,834,650	$ 12.99	8.5	$ 41,034
Vested and expected to vest at June 30, 2020	4,834,650	$ 12.99	8.5	$ 41,034
Exerciseable at June 30, 2020	2,100,737	$ 8.13	7.7	$ 27,704
Vested at June 30, 2020	1,640,392	$ 8.97	7.7	$ 20,277

The weighted-average grant date fair value of options granted to employees and non-employees in the six months ended June 30, 2020 and 2019 was $13.61 and $10.37, respectively. The fair value of each option is estimated on the date of grant using the Black-Scholes option pricing model, assuming no expected dividends and the following weighted average assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Expected life (in years)	5.78	6.02	5.86	6.02
Volatility	85.5 %	80.8 %	85.2 %	80.8 %
Risk-free interest rate	1.06 %	2.12 %	1.12 %	2.22 %

Expected volatility is based on volatilities of public companies operating in the Company's industry. The expected life of the options is estimated using the simplified method detailed in SEC Staff Accounting Bulletin No. 107. The simplified method calculates the expected term as the mid-point between the weighted-average time to vesting and the contractual maturity. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant. The Company has elected to account for forfeitures as they occur, rather than estimate expected forfeitures.

2019 Employee Stock Purchase Plan

The Company's board of directors adopted the 2019 Employee Stock Purchase Plan, ("ESPP"), on June 2, 2019, and the Company's stockholders approved the ESPP on June 7, 2019. The ESPP became effective on June 19, 2019. The Company's board of directors authorized 283,333 shares of Class A common stock to be reserved for future issuance under the ESPP. The number of shares of our Class A common stock reserved for issuance will automatically increase on January 1 of each calendar year, from January 1, 2020 through January 1, 2029, by the lesser of (1) 1% of the total number of shares of our Class A common stock outstanding on December 31 of the preceding calendar year, and (2) 416,666 shares; provided, that prior to the date of any such increase, the Company's board of directors may determine that such increase will be less than the amount set forth in clauses (1) and (2). During the three months and six months ended June 30, 2020, the expense related to the ESPP was $168,000 and $331,000, respectively. The fair value of each ESPP is estimated on the date of grant using the Black-Scholes option pricing model, assuming no expected dividends and the following range of assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020*	2019	2020	2019
Expected life (in years)	—	0.2 - 2.0	0.5 - 2.0	0.2 - 2.0
Volatility	— %	74.6 - 101.6 %	91.4 - 106.8 %	74.6 - 101.6 %
Risk-free interest rate	— %	1.82 - 2.15 %	0.86 - 1.11 %	1.82 - 2.15 %

**No valuation performed during the three months ended June 30, as there was no new purchase period or modifications of existing ESPP grants.*

The Company recognized $3.4 million and $1.4 million of stock-based compensation expense related to the 2019 Plan and ESPP for the three months ended June 30, 2020 and 2019, respectively. The Company recognized $5.9 million and $2.1 million of stock-based compensation expense related to the 2019 Plan and ESPP for the six months ended June 30, 2020 and 2019, respectively. The compensation expense is allocated on a departmental basis, based on the classification of the option holder as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Research and development	$ 1,804	$ 754	$ 2,862	$ 1,171
General and administrative	1,580	605	3,004	964
	$ 3,384	$ 1,359	$ 5,866	$ 2,135

No income tax benefits have been recognized in the statements of operations for stock-based compensation arrangements and no stock-based compensation costs have been capitalized as property and equipment as of June 30, 2020.

Unrecognized compensation expense as of June 30, 2020 totaled $31.9 million related to non-vested stock options with a remaining weighted-average requisite service period of 3.0 years.

11. 401(k) Plan

The Company has a 401(k) plan that qualifies as a deferred compensation arrangement under Section 401 of the Code. Eligible employees may elect to defer a portion of their pretax earnings subject to certain statutory limits. The Company has not made any matching contributions to date.

12. Net Loss Per Share

The following outstanding potentially dilutive common shares were excluded from the computation of diluted net loss per share attributable to common stockholders for the periods presented because the impact of including them would have been antidilutive:

	Six Months Ended June 30,	
	2020	2019
Common stock options	4,834,650	3,580,741
Convertible preferred stock warrants	49,997	49,997
Early exercised stock options	—	3,655
	4,884,647	3,634,393

13. Income Taxes

On March 27, 2020, the Coronavirus Aid, Relief and Economic Security (“CARES”) Act was enacted and signed into law. GAAP requires recognition of the tax effects of new legislation during the reporting period that includes

the enactment date. The CARES Act, includes changes to the tax provisions that benefits business entities, and makes certain technical corrections to the 2017 Tax Cuts and Jobs Act. The tax relief measures for businesses include a five-year net operating loss carryback, suspension of annual deduction limitation of 80% of taxable income from net operating losses generated in a tax year beginning after December 31, 2017, changes in the deductibility of interest, acceleration of alternative minimum tax credit refunds, payroll tax relief, and a technical correction to allow accelerated deductions for qualified improvement property. The CARES Act also provides other non-tax benefits to assist those impacted by the pandemic. The Company has evaluated the impact of the CARES Act and determined there was no material impact to the income tax provision for the quarter.

14. Related Party Transactions

The Company recorded other income of $186,000 and $319,000 for the three months ended June 30, 2020 and 2019, respectively, and $316,000 and $484,000 for the six months ended June 30, 2020 and 2019, respectively, under service contracts with a stockholder. The Company had a receivable from the stockholder at June 30, 2020 and December 31, 2019 of $0 and $121,000, respectively.

The Company recorded expense of $301,000 and $351,000 during the three months ended June 30, 2020 and 2019, respectively, and $734,000 and $732,000 for the six months ended June 30, 2020 and 2019, respectively, related to intellectual property and other legal services performed by a related party. The Company owed $126,000 and $69,000 to the related party at June 30, 2020 and December 31, 2019, respectively.

The Company recorded expense of $0.5 million and $1.6 million during the three months ended June 30, 2020 and 2019, respectively, and $1.0 million and $2.0 million for the six months ended June 30, 2020 and 2019, respectively, related to legal services performed by a related party. The Company owed $351,000 and $186,000 to the related party at June 30, 2020 and December 31, 2019, respectively.

The Company recorded research and development expense of $62,000 and $106,000 during the three months ended June 30, 2020 and 2019, respectively, and $127,000 and $213,000 for the six months ended June 30, 2020 and 2019, respectively, under consulting agreements with two members of the Company’s board of directors. On August 22, 2019, one of the two members provided the Company with notice of his resignation from the Company’s Board of Directors. The Company owed $12,000 and $73,000 to the members of the Company’s board of directors at June 30, 2020 and December 31, 2019, respectively.

15. Subsequent Events

The Company has evaluated subsequent events that may require adjustments to or disclosure in the unaudited interim condensed consolidated financial statements through August 12, 2020, the date on which the unaudited interim condensed consolidated financial statements were available to be issued.

In July 2020, the Company entered into a Collaboration and License Agreement with Xencor, Inc. (the “Agreement”), to research, develop and commercialize novel CD3 bispecific antibodies as potential therapeutics in oncology. Under the Agreement, the Company and Xencor, Inc. will engage in a three-year research program in which the Company will provide antibodies against novel tumor targets through its discovery platform from which Xencor, Inc. will engineer XmAb bispecific antibodies that also bind to the CD3 receptor on T cells. Up to two joint programs are eligible to be mutually selected for further development and commercialization, with each partner sharing 50 percent of costs and profits. Each company has the option to lead development, regulatory and commercialization activities for one of the joint programs. In addition, the agreement allows each partner the option to pursue up to two programs independently, with a mid-to high-single digit percent royalty payable on net sales to the other partner.

On July 20, 2020, the Company issued and sold 7,031,250 shares of the Company’s Class A common stock, par value $0.0001 per share (“Class A Common Stock”) and 781,250 shares of the Company’s Class B common stock, par value $0.0001 per share (“Class B Common Stock,” collectively with Class A Common Stock, the “Common Stock”) in

its follow-on offering of its Common Stock. The price to the public in this offering is $16.00 per share, and the underwriters of the offering have agreed to purchase the shares from the Company pursuant to the underwriting agreement at a price of $15.04 per share. The gross proceeds to the Company from this offering are expected to be approximately $125.0 million, or $143.75 million if the Underwriters exercise in full their option to purchase additional shares of Class A Common Stock, before deducting underwriting discounts and commissions and other estimated offering expenses payable by the Company. In addition, the offering expenses were approximately $564,000.

On August 12, 2020, the Company entered into a sales agreement with Cowen and Company, LLC (“Cowen”) to issue and sell shares of the Company’s Class A common stock of up to $100.0 million in gross proceeds, from time to time during the term of the sales agreement, through an “at-the-market” equity offering program under which Cowen will act as the Company’s agent and/or principal (“ATM Facility). The ATM Facility provides that Cowen will be entitled to compensation for its services in an amount of 3.00% of the gross proceeds of any shares sold under the ATM Facility. The Company has no obligation to sell any shares under the ATM Facility and may at any time suspend solicitation and offers under the sales agreement subject to customary notice provisions. As of August 12, 2020, the Company has not sold any shares under the ATM Facility.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis of our financial condition and results of operations together with (1) our unaudited condensed consolidated financial statements and related notes appearing in Part I, Item I of this Quarterly Report on Form 10-Q and (2) the audited consolidated financial statements and the related notes and the discussion under the heading "Management's Discussion and Analysis of Financial Condition and Results of Operations" for the fiscal year ended December 31, 2019 included in our Annual Report on Form 10-K for the year ended December 31, 2019, filed with the Securities and Exchange Commission, or SEC, on March 11, 2020, or 2019 Form 10-K.

Special Note Regarding Forward-Looking Statements

The following discussion and this Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, Section 27A of the Securities Act and within the meaning of the Private Securities Litigation Reform Act of 1995. You can identify forward-looking statements by the use of the words "believe," "expect," "anticipate," "intend," "estimate," "project," "will," "should," "may," "plan," "assume" and other expressions that predict or indicate future events and trends and which do not relate to historical matters. You should not rely on forward-looking statements because they involve known and unknown risks, uncertainties and other factors, some of which are beyond our control. These risks, uncertainties and other factors may cause our actual results, performance or achievements to be materially different from our anticipated future results, performance or achievements expressed or implied by the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section titled "Risk Factors," set forth in Part II, Item 1A of this Quarterly Report on Form 10-Q. In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this Quarterly Report on Form 10-Q, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate we have conducted exhaustive inquiry into, or review of, all potentially available relevant information. We anticipate that subsequent events and developments will cause our views to change. New risks emerge from time to time, and it is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. While we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Quarterly Report on Form 10-Q and are cautioned not to place undue reliance on such forward-looking statements.

Overview

We are a clinical-stage biopharmaceutical company utilizing our differentiated platform to discover and develop novel antibody-based immunotherapeutics to treat a range of solid tumor types. While more traditional oncology drug discovery approaches attempt to generate antibodies against known targets, our approach relies on the human immune system to direct us to unique antibody-target pairs from patients experiencing a clinically meaningful, active immune response against their tumors. These unique antibody-target pairs represent a potentially novel and previously unexplored landscape of immuno-oncology targets. We believe the fact that our approach has the potential to deliver novel, previously unexplored immuno-oncology targets provides us with a significant competitive advantage over traditional approaches which focus on known targets that many companies are aware of and can pursue. We have utilized our drug discovery approach to identify over 1,800 distinct human antibodies that bind preferentially to tumor tissue from patients who are not the source of the antibody. Our lead product candidate, ATRC-101, is a monoclonal antibody with a novel mechanism of action and target derived from an antibody identified using our discovery platform. ATRC-101 reacts in vitro with a majority of human ovarian, non-small cell lung, colorectal and breast cancer samples from multiple patients. It has demonstrated robust anti-tumor activity as a single agent in multiple preclinical models, including one model in which PD-1 checkpoint inhibitors typically display limited activity. We have initiated a Phase 1b clinical trial in patients with select solid tumors in which the first patient was dosed in February 2020. Our efforts beyond ATRC-101 are focused on expanding our clinical pipeline by advancing additional product candidates using our

large library of "hit" antibodies that bind preferentially to tumor tissue across patients. To that end, via internal efforts and partnerships, we are both continuing to develop our platform and combining the novel antibodies that are generated by our platform with antibody "weaponization" technologies.

Since commencing operations in 2010, we have devoted substantially all of our resources to research and development, raising capital, building our management team and building our intellectual property portfolio. We do not have any products approved for marketing or sale and have not generated any revenue from product sales. We have funded our operations to date primarily from the sale of convertible preferred stock. We have also received more than $15 million in payments to date under our service agreement with the Bill & Melinda Gates Foundation.

We have incurred significant operating losses since our inception. Our ability to generate product revenue sufficient to achieve or sustain profitability will depend on the successful development, regulatory approval and eventual commercialization of one or more of our current or future product candidates. Our net losses were $20.0 million and $17.9 million for the three months ended June 30, 2020 and 2019, respectively, and $40.4 million and $31.5 million for the six months ended June 30, 2020 and 2019, respectively. As of June 30, 2020, we had an accumulated deficit of $204.5 million. We anticipate that a substantial portion of our capital resources and efforts in the foreseeable future will be focused on discovering, completing the necessary development, obtaining regulatory approval for and preparing for potential commercialization of product candidates. As of June 30, 2020, we had cash, cash equivalents and investments of $148.8 million.

We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. Our net losses may fluctuate significantly from period to period, depending on the timing of our planned preclinical studies and clinical trials and expenditures on other research and development activities. We expect our expenses will increase substantially over time as we:

- complete clinical trials for ATRC 101 and initiate preclinical studies on any additional product candidates that we may pursue in the future;
- continue research and development to expand our growing library of more than 1,800 antibodies and develop potential future product candidates from that collection;
- continue to invest in advancing our differentiated discovery platform, and the underlying technologies;
- seek marketing approvals for product candidates that successfully complete clinical trials;
- maintain, protect and expand our portfolio of intellectual property rights, including patents, trade secrets and know-how;
- implement additional operational, financial and management systems; and
- attract, hire and retain additional administrative, clinical, regulatory and research personnel.

Furthermore, as a result of the closing of our initial public offering, or IPO, in June 2019, we expect to incur increasing costs associated with operating as a public company, including significant legal, accounting, insurance, investor relations and other expenses that we have not incurred historically as a private company.

Impact of COVID-19

On March 11, 2020, COVID-19, a disease caused by a novel strain of the coronavirus, was characterized as a pandemic by the World Health Organization. Since December 2019, COVID-19 has spread rapidly, with a high concentration of cases in the United States where we operate. The rapid spread has resulted in authorities implementing numerous measures to contain the virus, such as travel bans and restrictions, quarantines, social distancing requirements, shelter-in-place orders and business shutdowns. As the COVID-19 pandemic unfolded globally, we transitioned to a fully remote working environment. As a result, our laboratories and office locations were closed for more than two months and have only recently been partially re-opened for a small number of critical lab-based personnel to resume limited operations.

Changes in our operations included temporary closures of lab activity, delays from third-party service providers, and slower enrollment in our clinical studies during the second quarter of fiscal 2020. The financial results for the three months and six months ended June 30, 2020 reflect a decrease in overall operating expenses as a result of these

impacted activities. We are continuing to monitor the impact of the COVID-19 pandemic on our business. As of June 30, 2020, we have not identified any significant disruption or impairment of our assets due to the COVID-19 pandemic.

On March 27, 2020, the U.S. government enacted the Coronavirus Aid, Relief, and Economic Security Act, or CARES Act, which provides emergency assistance for individuals, families, and businesses affected by COVID-19. One such measure is the employer retention payroll tax credit, under which, eligible employers may claim a credit against applicable employment taxes. The maximum credit may be worth up to $5,000 per eligible employee. We assessed our eligibility under the provision and recognized a payroll tax credit of $598,000 in the quarter ended June 30, 2020. We expect eligible credits in future quarters to be negligible.

Financial Operations Overview

Revenue

We have no products approved for marketing or commercial sale and have never generated any revenue from product sales.

Operating Expenses

Research and Development

Research and development expenses represent costs incurred in performing research, development and manufacturing activities in support of our own product development efforts, including intellectual property legal expenses, salaries, employee benefits and stock-based compensation for personnel contributing to research and development activities, laboratory supplies, outsourced research and development expenses, professional services and allocated facilities-related costs. We expect our research and development expenses to increase in the foreseeable future as we continue to invest in our differentiated discovery platform to expand our pipeline of product candidates, advance our product candidates into and through preclinical studies and clinical trials and pursue regulatory approval of our product candidates.

General and Administrative

Our general and administrative expenses consist primarily of personnel costs, allocated facilities costs and other expenses for outside professional services, including legal, human resource, audit and accounting services. We expect to incur additional general and administrative expenses as we continue to support the growth of our business and incur the costs of compliance associated with being a public company.

Interest and Other Income (Expense)

Other income (expense) includes other income which represents amounts received from partners for research and discovery services, interest income earned on our cash, cash equivalents and investments, interest expense, revaluation expense resulting from the liability recorded for certain preferred stock warrants and gains or losses on the periodic disposals of property and equipment.

Results of Operations

Comparison of the three months ended June 30, 2020 and 2019

The following table summarizes our results of operations during the respective periods:

	Three Months Ended June 30,		Change	
	2020	2019	$	%
	(in thousands)			
Operating expenses:				
Research and development	$ 14,180	$ 15,922	$ (1,742)	(11)%
General and administrative	6,458	3,537	2,921	83 %
Total operating expenses	20,638	19,459	1,179	6 %
Operating Loss	(20,638)	(19,459)	(1,179)	6 %
Other income (expense), net:				
Other income	403	1,021	(618)	(61)%
Interest income	255	594	(339)	*
Interest expense	(1)	(2)	1	*
Preferred stock warrant liability revaluation	—	(73)	73	*
Loss on disposal of property and equipment	—	(2)	2	*
Total other income, net	657	1,538	(881)	(57)%
Income tax expense	—	—	—	*
Net Loss	$ (19,981)	$ (17,921)	$ (2,060)	11 %

* Not meaningful

Research and Development

The following table summarizes our research and development expenses incurred during the respective periods:

	Three Months Ended June 30,	
	2020	2019
	(in thousands)	
Personnel related (including stock-based compensation)	$ 6,328	$ 4,798
Product and other contract services	2,555	6,834
Laboratory supplies and equipment	1,691	1,453
Consulting, legal and other services	1,162	1,106
Facility related	1,953	1,106
Other	491	625
Total research and development expenses	$14,180	$15,922

Research and development expenses decreased by $1.7 million, or 11%, during the three months ended June 30, 2020 compared to the same period in 2019. The decrease was primarily attributable to a decrease in product and other contract services by $4.3 million as a result of lower ATRC-101 manufacturing costs and delayed third-party research and development activities due to COVID-19, partially offset by an increase in clinical trial activities. The decrease was partially offset by higher personnel-related expenses of $1.5 million as a result of additional employee headcount, a $0.8 million increase in facility expenses due to expansion of lab facilities and activities in an additional location.

General and Administrative

The following table summarizes our general and administrative expenses incurred during the respective periods:

	Three Months Ended June 30,	
	2020	2019
	(in thousands)	
Personnel related (including stock-based compensation)	$ 3,607	$ 2,141
Consulting, legal and other services	935	481
Facility related	688	220
Other	1,228	695
Total general and administrative expenses	$ 6,458	$ 3,537

General and administrative expenses increased by $2.9 million, or 83%, during the three months ended June 30, 2020 compared to the same period in 2019. The increase consists of a $1.5 million increase in personnel-related expenses, including stock-based compensation, as a result of additional employee headcount, a $0.5 million increase in other expenses related to software subscriptions and employee relations, $0.5 million increase in consulting, legal and other services costs primarily due to increasing legal costs for corporate governance and business development and a $0.5 million increase in facility related expense primarily attributable to our new office facilities.

Other Income

Other income is comprised of amounts earned from research and discovery services provided to partners under service agreements. Other income decreased by $0.6 million during the three months ended June 30, 2020 compared to the same period in 2019 due largely to a decrease in the level of services being provided to external partners as a result of the service completion for Bristol Myers Squibb Company.

Interest Income

Interest income decreased to $0.3 million during the three months ended June 30, 2020 as compared to $0.6 million during the three months ended June 30, 2019 due to decreased interest earned on our cash, cash equivalents and investment balances as we retained a higher cash and cash equivalents balance as a result of COVID-19 uncertainties.

Interest Expense

Interest expense during the three months ended June 30, 2020 and 2019 pertained to the interest portion of payments made on capital leases under which we acquired certain property and equipment.

Preferred Stock Warrant Liability Revaluation

Preferred stock warrant liability revaluation recognizes changes in the fair value of the preferred stock warrants. Upon the closing of the IPO, the warrants to purchase 49,997 shares of our preferred stock were converted to warrants to purchase 49,997 shares of our Class A common stock. We recognized no expense during the three months ended June 30, 2020, compared to the $73,000 remeasurement expense recognized during the same period in 2019, as these warrants were reclassified to equity and not subject to remeasurement in the current period.

Comparison of the six months ended June 30, 2020 and 2019

The following table summarizes our results of operations during the respective periods:

	Six Months Ended June 30,		Change	
	2020	2019	$	%
	(in thousands)			
Operating expenses:				
Research and development	$ 28,390	$ 27,635	$ 755	3 %
General and administrative	13,581	6,055	7,526	124 %
Total operating expenses	41,971	33,690	8,281	25 %
Operating Loss	(41,971)	(33,690)	(8,281)	25 %
Other income (expense), net:				
Other income	634	1,186	(552)	(47)%
Interest income	940	1,139	(199)	(17)%
Interest expense	(2)	(4)	2	*
Preferred stock warrant liability revaluation	—	(123)	123	*
Loss on disposal of property and equipment	—	(7)	7	*
Total other income, net	1,572	2,191	(619)	(28)%
Income tax expense	—	(1)	1	*
Net Loss	$ (40,399)	$ (31,500)	$ (8,899)	28 %

* Not meaningful

Research and Development

The following table summarizes our research and development expenses incurred during the respective periods:

	Six Months Ended June 30,	
	2020	2019
	(in thousands)	
Personnel related (including stock-based compensation)	$ 12,610	$ 9,372
Product and other contract services	5,159	10,017
Laboratory supplies and equipment	3,495	2,978
Consulting, legal and other services	1,876	2,381
Facility related	4,135	2,120
Other	1,115	767
Total research and development expenses	$ 28,390	$ 27,635

Research and development expenses increased by $0.8 million, or 3%, during the six months ended June 30, 2020 compared to the same period in 2019. The increase was primarily attributable to higher personnel-related expenses of $3.2 million as a result of additional employee headcount, a $2.0 million increase in facility expenses due to expansion of lab facilities and activities in an additional location, a $0.5 million increase in laboratory supplies and equipment expenses attributable to increased research headcount, offset by a $4.9 million decrease in product and other contract services as a result of lower ATRC-101 manufacturing costs, partially offset by an increase in clinical trial activities.

General and Administrative

The following table summarizes our general and administrative expenses incurred during the respective periods:

	Six Months Ended June 30,	
	2020	2019
	(in thousands)	
Personnel related (including stock-based compensation)	$ 7,125	$ 3,690
Consulting, legal and other services	2,424	806
Facility related	1,400	345
Other	2,632	1,214
Total general and administrative expenses	$13,581	$ 6,055

General and administrative expenses increased by $7.5 million, or 124%, during the six months ended June 30, 2020 compared to the same period in 2019. The increase consists of a $3.4 million increase in personnel-related expenses, including stock-based compensation, as a result of additional employee headcount and a $1.6 million increase in consulting, legal and other services costs primarily due to increasing legal costs for corporate governance and business development, a $1.4 million increase in other expenses related to software subscriptions and employee relations, and a $1.1 million increase in facility related expense primarily attributable to our new office facilities.

Other Income

Other income is comprised of amounts earned from research and discovery services provided to partners under service agreements. Other income decreased by $0.6 million during the six months ended June 30, 2020 compared to the same period in 2019 due largely to a decrease in the level of services being provided to external partners as a result of the service completion for Bristol Myers Squibb Company.

Interest Income

Interest income decreased to $0.9 million during the six months ended June 30, 2020 as compared to $1.1 million during the six months ended June 30, 2019 due to decreased interest earned on our cash, cash equivalents and investment balances as we retained a higher cash and cash equivalents balance as a result of COVID-19 uncertainties.

Interest Expense

Interest expense during the six months ended June 30, 2020 and 2019 pertained to the interest portion of payments made on capital leases under which we acquired certain property and equipment.

Preferred Stock Warrant Liability Revaluation

Preferred stock warrant liability revaluation recognizes changes in the fair value of the preferred stock warrants. Upon the closing of the IPO, the warrants to purchase 49,997 shares of our preferred stock were converted to warrants to purchase 49,997 shares of our Class A common stock. We recognized no expense during the six months ended June 30, 2020, compared to the $123,000 remeasurement expense recognized during the same period in 2019, as these warrants were reclassified to equity and not subject to remeasurement in the current period.

Liquidity and Capital Resources; Plan of Operations

Liquidity and Capital Resource

As of June 30, 2020, we had cash, cash equivalents and investments totaling $148.8 million. Our cash and cash equivalents primarily consist of bank deposits and money market funds. Our investments consist of U.S. government treasury and agency securities, commercial paper and corporate debt securities.

Due to our significant research and development expenditures, we have generated significant operating losses since inception. We have funded our operations primarily through the sale of convertible preferred stock. We have also received more than $15 million under our agreement with the Bill & Melinda Gates Foundation to date. In September 2018, we issued and sold 8,941,325 shares of Series C1 convertible preferred stock and Series C2 convertible preferred stock for gross proceeds of approximately $125.0 million.

In June 2019, we completed our IPO, of 6,452,500 shares of our Class A common stock and 2,000,000 shares of our Class B common stock at an offering price of $17.00 per share, including 1,102,500 shares pursuant to the underwriters' option to purchase additional shares of the Company's Class A common stock. We received net proceeds of $130.8 million in our IPO, after deducting underwriting discounts and commissions of $10.1 million and offering expenses of $2.8 million. As of June 30, 2020, we had an accumulated deficit of $204.5 million.

Our management evaluates whether there are relevant conditions and events that in the aggregate raise substantial doubt about our ability to continue as a going concern and to meet its obligations as they become due within one year from the date that the financial statements are issued. We believe our existing cash and cash equivalents and short-term investments will be sufficient to fund our operating and capital needs for at least the next 12 months.

We are subject to risks and uncertainties common to early-stage companies in the biotechnology industry, including, but not limited to, development by competitors of new technological innovations, dependence on key personnel, protection of proprietary technology, compliance with government regulations and the ability to secure additional capital to fund operations. Identification and development of product candidates will require significant additional research and development efforts, including extensive preclinical and clinical testing and regulatory approval prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel and infrastructure and extensive compliance-reporting capabilities. Even if our drug development efforts are successful, it is uncertain when, if ever, we will realize significant revenue from product sales.

Cash Flows

The following table summarizes our cash flows for the periods indicated:

	Six Months Ended June 30,	
	2020	2019
	(in thousands)	
Cash used in operating activities	$(33,595)	$ (26,728)
Cash used in investing activities	(25,585)	(65,357)
Cash provided by financing activities	1,469	133,264
Net increase (decrease) in cash and cash equivalents and restricted cash	$(57,711)	$ 41,179

Cash Flows from Operating Activities

For the six months ended June 30, 2020, cash used in operating activities was $33.6 million, which consisted of a net loss of $40.4 million and a net change of $0.1 million in our net operating assets and liabilities, partially offset by $6.9 million in non-cash charges. The non-cash charges consisted of depreciation and amortization of $1.2 million and stock-based compensation of $5.9 million. The change in operating assets and liabilities was primarily due to a $1.7

million increase in prepaid expenses and other current assets attributable to amortization of prepaid insurance expenses, a $1.1 million decrease in account payable due to the timing of payments related to annual service bills, and a $1.0 million decrease resulting from the payment of accrued bonus expenses and decreased preclinical activities, partially offset by increases in other current and non-current liabilities of $1.4 million and $0.2 million, respectively, resulting from an increase contract liabilities balance from our new arrangement with an external partner, and a $2.2 million increase in deferred rent primarily due to increases in lease incentive obligation.

For the six months ended June 30, 2019, cash used in operating activities was $26.7 million, which consisted of a net loss of $31.5 million, partially offset by $3.1 million in non-cash charges and a net change of $1.7 million in our net operating assets and liabilities. The non-cash charges consisted of depreciation and amortization of $0.8 million and stock-based compensation of $2.1 million. The change in operating assets and liabilities was primarily due to an increase in accounts payable of $1.9 resulting from IPO-related expense payable.

Cash Flows from Investing Activities

For the six months ended June 30, 2020, cash used in investing activities of $25.6 million was primarily related to $77.3 million in purchases of investments, partially offset by $54.7 million provided by proceeds from maturities of investments. For the six months ended June 30, 2019, cash used in investing activities of $65.4 million was primarily related to $84.6 million in net purchases of investments, partially offset by $20.0 million provided by proceeds from maturities of investments.

Cash Flows from Financing Activities

For the six months ended June 30, 2020, cash provided by financing activities was $1.5 million, which primarily related to $0.5 million and $1.0 million proceeds from our 2019 Employee Stock Purchase Plan ESPP program and employee stock option exercises, respectively.

For the six months ended June 30, 2019, cash provided by financing activities was $133.3 million, which primarily related to $133.6 million proceeds from the IPO, net of underwriting discounts and commissions, partially offset by $0.6 million payments of IPO costs.

Contractual Obligations and Other Commitments

The following table summarizes our contractual obligations as of June 30, 2020:

	Payments Due by Period				
	Less than 1 Year	1 to 3 Years	3 to 5 Years	More than 5 Years	Total
			(in thousands)		
Contractual obligations:					
Operating lease obligations	$ 5,712	$ 13,742	$ 14,391	$ 67,263	$ 101,108
Capital lease obligations	51	29	—	—	80
Total contractual obligations	$ 5,763	$ 13,771	$ 14,391	$ 67,263	$ 101,188

The operating lease obligations noted above represent operating lease obligations related to our currently occupied premises in South San Francisco, California and premises in San Carlos, California, which we are obligated to occupy in the future. These leases expire at various dates through the second half of 2033.

In July 2019, we entered into a lease agreement, or the San Carlos Lease, for the lease of approximately 99,557 rentable square feet of office space located in San Carlos, California, which is intended to serve as our permanent headquarters, office and laboratory space following the completion of construction and certain tenant improvements. The term of the San Carlos Lease will commence on the date that the landlord delivers the premises to us for construction of certain tenant improvements, which is estimated to be November 2020, and will end on the date that is 144 months from the first day of the first full month after rent commences. Base rent for the San Carlos Lease is

$557,519 per month, with annual increases of 3%. We are obligated to provide a security deposit of $1.1 million in the form of a letter of credit.

In July 2019, concurrently with the execution and delivery of the San Carlos Lease, we also entered into a lease agreement, or the Temporary Lease, for the lease of approximately 74,788 rentable square feet of office space located in South San Francisco, California, which is intended to serve as our temporary headquarters, office and laboratory space while our permanent headquarters is under construction. The Temporary Lease commenced in August 2019, and is expected to end 90 days following the substantial completion of certain tenant improvements and construction on the space covered by the San Carlos Lease. Base rent for the Temporary Lease is $280,455 per month, with annual increases of 3%.

The capital lease obligations noted above represent certain property and equipment we acquired under capital leases. In 2017, we financed purchases of $226,000 in equipment under a capital lease agreement. Outstanding amounts under the capital lease agreements are generally secured by liens on the related property and equipment.

In addition, we enter into contracts in the normal course of business with contract research organizations for preclinical and clinical studies as well as with contract development manufacturing organizations for the manufacture of materials for those studies. These agreements generally provide for termination at the request of either party with less than one-year notice and are, therefore, cancelable contracts and not reflected in the table above.

Off-Balance Sheet Arrangements

Since inception, we have not engaged in any off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

Critical Accounting Policies and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with generally accepted accounting principles, or GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, as well as the reported revenue generated, and reported expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

There have been no material changes in our critical accounting policies from those disclosed in our 2019 Form 10-K, under the heading Management's Discussion and Analysis of Financial Condition and Results of Operations.

Emerging Growth Company Status

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies.

We elected to use this extended transition period for complying with new or revised accounting standards, including but not limited to the new lease accounting standard, that have different effective dates for public and private companies until the earlier of the date that we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, our financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates. We early adopted Accounting Standards Update 2014-09, Revenue from Contracts with Customers (Accounting Standards Codification Topic 606), and Accounting Standards Update 2018-07, Improvements to Nonemployee Share-Based Payment Accounting (Accounting Standards Codification Topic 718), as the JOBS Act does

not preclude an emerging growth company from early adopting a new or revised accounting standard earlier than the time that such standard applies to private companies. We expect to use the extended transition period for any other new or revised accounting standards during the period in which we remain an emerging growth company.

We will remain an emerging growth company until the earliest of (i) December 31, 2024, (ii) the last day of our first fiscal year in which we have total annual gross revenues of at least $1.07 billion, (iii) the date on which we are deemed to be a "large accelerated filer" under the rules of the Securities and Exchange Commission, which means the market value of our voting and non-voting common equity that is held by non-affiliates is equal to or exceeds $700.0 million as of the prior June 30th and (iv) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

Recent Accounting Pronouncements

See Note 2, *Summary of Significant Accounting Policies*, in our Notes to Condensed Consolidated Financial Statements (Unaudited) included in Part I, Item 1 of this Quarterly Report on Form 10-Q for a discussion of recent accounting pronouncements.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We have operations both within the United States and internationally, and we are exposed to market risk in the ordinary course of business.

Interest Rate Risk

The primary objectives of our investment activities are to ensure liquidity and to preserve capital. We are exposed to market risks in the ordinary course of our business. These risks include interest rate sensitivities. We held cash, cash equivalents and investments of $148.8 million and $183.4 million as of June 30, 2020 and December 31, 2019, respectively. We generally hold our cash in interest-bearing money market accounts. Historical fluctuations in interest rates have not been significant for us. Due to the short-term maturities of our cash equivalents and the low risk profile of our investments, an immediate 100 basis point change in interest rates would not have a material effect on the fair market value of our cash equivalents or investments.

Foreign Currency

The U.S. dollar is our functional currency and the functional currency of our subsidiary is Singapore dollars. For consolidation purposes, assets and liabilities of our subsidiary are translated into U.S. dollars at exchange rates in effect at the balance sheet date. Revenue and expenses are translated at average exchange rates in effect during the period. Gains and losses from transactions denominated in foreign currency are included in the accumulated other comprehensive loss component of stockholders' equity (deficit). Translation adjustments are not included in earnings unless they are realized through a sale or upon a complete or substantially complete liquidation of our net investment in its foreign operations.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management is responsible for establishing and maintaining adequate "internal control over financial reporting," as such term is defined under Rule 13a-15(f) of the Exchange Act. We maintain internal control over financial reporting designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. Internal control over financial reporting includes maintaining records that in reasonable detail accurately and fairly reflect our transactions; providing

reasonable assurance that transactions are recorded as necessary for preparation of our financial statements; providing reasonable assurance that receipts and expenditures of our assets are made in accordance with management's authorization; and providing reasonable assurance that unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements would be prevented or detected on a timely basis.

We maintain "disclosure controls and procedures," as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Exchange Act that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to our management, including our principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2020. Based on the evaluation of our disclosure controls and procedures as of June 30, 2020, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Remediation of Previously Identified Material Weaknesses

Our management previously identified and disclosed a material weakness in our internal control over financial reporting at June 24, 2019 which related to a lack of application-based controls inherent in our enterprise resource planning ("ERP") system used for maintaining our financial books and records.

As of December 31, 2019, our management sufficiently completed its remediation of this material weakness by taking the following actions:

- We have implemented a new ERP system that is our system of record for our financial books and records from January 1, 2019 forward. This new ERP system has strong application-based controls inherent in its design that provide a much stronger internal control infrastructure for financial reporting and for our internal control procedures.
- We strengthened the segregation of duties by hiring additional personnel and implementing workflows to appropriately segregate the incompatible duties of custody of assets, approvals and authorizations, and recording of transactions;
- We designed additional controls around identification, documentation and application of technical accounting guidance with particular emphasis on events outside the ordinary course of business. These controls include the implementation of additional supervision and review activities by qualified personnel, the preparation of formal accounting memoranda to support our conclusions on technical accounting matters, and the development and use of checklists and research tools to assist in compliance with GAAP with regard to complex accounting issues.
- We developed and implemented policies and procedures related to security access, including security access reviews of our key financial systems' users to ensure the appropriateness of their roles and security access levels.
- We performed testing related to the functioning of these controls and continue to monitor these controls and make enhancements as needed.

We have completed the documentation and review of the corrective actions described above and our management has concluded that the design and operation of our closing and financial reporting processes is effective and therefore that this previously identified material weakness has been fully remediated as of December 31, 2019.

Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the period covered by this Quarterly

Report on Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our Chief Executive Officer and Chief Financial Officer, believes that our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving their objectives and are effective at the reasonable assurance level. However, our management does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. These inherent limitations include the realities that judgments in decision making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by management override of the controls. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we may become involved in litigation relating to claims arising from the ordinary course of business. Our management believes that there are currently no claims or actions pending against us, the ultimate disposition of which would have a material adverse effect on our results of operations, financial condition or cash flows.

Item 1A. Risk Factors

Our operations and financial results are subject to various risks and uncertainties including those described below. You should consider and read carefully all of the risks and uncertainties described below, in addition to other information contained in this Quarterly Report on Form 10-Q, including our consolidated financial statements and related notes, our "Management's Discussion and Analysis of Financial Condition and Results of Operations," as well as our other public filings. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties that we are unaware of, or that we currently believe are not material, may also become important factors that adversely affect our business. If any of the following risks or additional risks and uncertainties not presently known to us, that we currently believe to be immaterial, or others not specified below materialize, our business, financial condition, results of operations and prospects could be materially and adversely affected. In that case, the trading price of our Class A common stock could decline, and you may lose all or part of your original investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations and the market price of our common stock. This Quarterly Report on Form 10-Q also contains forward-looking statements and estimates that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of specific factors, including the risks and uncertainties described below. The risks relating to our business set forth in our 2019 Form 10-K, are set forth below and are unchanged substantively as of June 30, 2020, except for those risks designated by an asterisk (*).

Risks Related to Our Business

We are a clinical-stage biopharmaceutical company with a history of losses. We expect to continue to incur significant losses for the foreseeable future and may never achieve or maintain profitability, which could result in a decline in the market value of our Class A common stock.*

We are a clinical-stage biopharmaceutical company with a history of losses. Since our inception, we have devoted substantially all of our resources to research and development, raising capital, building our management team and building our intellectual property portfolio, and we have incurred significant operating losses. As of June 30, 2020, and December 31, 2019, we had accumulated deficits of $204.5 million and $164.1 million, respectively. For the three months ended June 30, 2020 and 2019, our net losses were $20.0 million and $17.9 million, respectively. For the six months ended June 30, 2020 and 2019, our net losses were $40.4 million and $31.5 million, respectively. Substantially all of our losses have resulted from expenses incurred in connection with our research and development programs and from general and administrative costs associated with our operations. To date, we have not generated any revenue from product sales, and we have not sought or obtained regulatory approval for any product candidate. Furthermore, we do not expect to generate any revenue from product sales for the foreseeable future, and we expect to continue to incur significant operating losses for the foreseeable future due to the cost of research and development, preclinical studies and clinical trials and the regulatory approval process for our current and potential future product candidates.

We expect our net losses to increase substantially as we enter into clinical development of our lead product candidate, ATRC-101. However, the amount of our future losses is uncertain. Our ability to achieve or sustain profitability, if ever, will depend on, among other things, successfully developing product candidates, obtaining regulatory approvals to market and commercialize product candidates, manufacturing any approved products on commercially reasonable terms, entering into potential future partnerships, establishing a sales and marketing organization or suitable third-party alternatives for any approved product and raising sufficient funds to finance business activities. If we, or our potential future partners, are unable to commercialize one or more of our product candidates, or if sales revenue from any product candidate that receives approval is insufficient, we will not achieve or sustain profitability, which could have a material and adverse effect on our business, financial condition, results of operations and prospects. Any predictions you make about our future success or viability may not be as accurate as they could be if we had a history of successfully developing and commercializing pharmaceutical products.

ATRC-101 is in clinical trials. It may fail in development or suffer delays that materially and adversely affect its commercial viability.*

In February 2020, we initiated a Phase 1b clinical trial for ATRC-101 in patients with solid tumors. We have no products on the market or that have gained regulatory approval. Other than ATRC-101, we currently have no product candidates and none of our potential future product candidates have ever been tested in humans. Our ability to achieve and sustain profitability depends on obtaining regulatory approvals for and successfully commercializing product candidates, either alone or with partners.

Before obtaining regulatory approval for the commercial distribution of product candidates, we or a partner must conduct extensive preclinical studies, followed by clinical trials to demonstrate the safety and efficacy of our product candidates in humans. We cannot be certain of the timely completion or outcome of our preclinical studies and cannot predict if the FDA or other regulatory authorities will accept our proposed clinical programs or if the outcome of our preclinical studies will ultimately support the further development of our preclinical programs. As a result, we cannot be sure that we will be able to submit INDs or similar applications for our preclinical programs on the timelines we expect, if at all, and we cannot be sure that submission of INDs or similar applications will result in the FDA or other regulatory authorities allowing clinical trials to begin.

In addition, on March 11, 2020, a disease caused by the novel strain of the coronavirus, or COVID-19, was characterized as a pandemic by the World Health Organization, and in response to COVID-19 the FDA announced its intention to postpone most foreign inspections of manufacturing facilities and products, and regulatory authorities outside the United States may adopt similar restrictions or other policy measures in response to COVID-19. If a prolonged government shutdown occurs, or if global health concerns continue to prevent the FDA or other regulatory

authorities from conducting their regular inspections, reviews, or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have an adverse effect on the timing and progress of our current or future clinical trials and our business.

ATRC-101 is in early clinical development, and we are subject to the risks of failure inherent in the development of product candidates based on novel approaches, targets and mechanisms of action. Accordingly, you should consider our prospects in light of the costs, uncertainties, delays and difficulties frequently encountered by clinical stage biopharmaceutical companies such as ours.

We may not have the financial resources to continue development of, or to enter into new collaborations for, ATRC-101 or any potential future product candidates. This may be exacerbated if we experience any issues that delay or prevent regulatory approval of, or our ability to commercialize, a product candidate, such as:

- negative or inconclusive results from our clinical trials or the clinical trials of others for product candidates similar to ours, leading to a decision or requirement to conduct additional preclinical studies or clinical trials or abandon a program;
- product-related side effects experienced by participants in our clinical trials or by individuals using drugs or therapeutic antibodies similar to ours;
- delays in submitting IND applications or comparable foreign applications, or delays or failure in obtaining the necessary approvals from regulators to commence a clinical trial, or a suspension or termination of a clinical trial once commenced;
- conditions imposed by the FDA, or other regulatory authorities regarding the scope or design of our clinical trials;
- delays in enrolling research subjects in clinical trials;
- high drop-out rates of research subjects;
- inadequate supply or quality of product candidate components or materials or other supplies necessary for the conduct of our clinical trials;
- greater-than-anticipated clinical trial costs;
- poor effectiveness of our product candidates during clinical trials;
- unfavorable FDA or other regulatory agency inspection and review of a clinical trial or manufacture site;
- failure of our third-party contractors or investigators to comply with regulatory requirements or otherwise meet their contractual obligations in a timely manner, or at all;
- delays and changes in regulatory requirements, policies and guidelines; or
- the FDA or other regulatory agencies interpreting our data differently than we do.

As a result of COVID-19, we have experienced, and may experience in the future, disruptions or delays in our clinical trial for ATRC-101. These disruptions or delays may affect, among other things, enrolling patients, initiating sites, recruiting clinical site investigators and site personnel, achieving patient compliance with clinical trial protocols if COVID-19 containment measures or other limitations or restrictions impede patient movement or interrupt healthcare services, monitoring clinical trial sites due to travel restrictions related to COVID-19, and collecting sufficient clinical data. For example, we have experienced delays in initiating sites and achieving patient compliance with study-related procedures. We are working closely with our current and potential clinical trial sites to mitigate any disruptions or delays. COVID-19 is likely to impact our ability to initiate additional clinical trial sites quickly, but at this time we cannot predict the full extent of this impact, or any other potential impact of COVID-19, on our clinical trial for ATRC-101.

Further, we and our potential future partners may never receive approval to market and commercialize any product candidate. Even if we or a potential future partner obtains regulatory approval, the approval may be for targets, disease indications or patient populations that are not as broad as we intended or desired or may require labeling that includes significant use or distribution restrictions or safety warnings. We or a potential future partner may be subject to post-marketing testing requirements to maintain regulatory approval.

ATRC-101 may not demonstrate the combination of safety and efficacy necessary to become approvable or commercially viable.

We may ultimately discover that ATRC-101 does not possess certain properties that we currently believe are helpful for therapeutic effectiveness and safety. For example, although ATRC-101 has exhibited encouraging results in animal studies, including anti-tumor activity and safety, it may not demonstrate the same properties in humans and may interact with human biological systems in unforeseen, ineffective or harmful ways. As a result, we may never succeed in developing a marketable product based on ATRC-101. If ATRC-101 or any of our potential future product candidates prove to be ineffective, unsafe or commercially unviable, our entire pipeline could have little, if any, value, which could require us to change our focus and approach to antibody discovery and development, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

COVID-19 could adversely impact our business and our operations, including at our laboratories and office locations, which were closed for more than two months and recently reopened only for lab-based personnel and certain essential personnel, and at our clinical trial sites, as well as the business and operations of our manufacturers, CROs or other third parties with whom we conduct business.*

COVID-19 could adversely impact our business and operations, and the business and operations of our manufacturers, CROs and other third parties with whom we conduct our business. COVID-19 has resulted in authorities implementing numerous measures to contain the virus. These containment measures include travel bans and restrictions, quarantines, social distancing requirements, shelter-in-place orders and business shutdowns. In compliance with these containment measures, we transitioned to a fully remote working environment and our laboratories and office locations were closed for more than two months. We recently reopened our laboratories and office locations and a majority of our lab-based personnel and certain essential personnel have returned to work at these locations. However, all other personnel are still working remotely. We do not know if and when we may have to close our laboratories and office locations again, or when these locations will reopen for all personnel. COVID-19 could adversely impact our business, including:

- disruptions or delays in our preclinical studies or our clinical trial for ATRC-101, including enrolling patients, initiating sites, recruiting clinical site investigators and site personnel, achieving patient compliance with clinical trial protocols if containment measures or other limitations or restrictions impede patient movement or interrupt healthcare services, monitoring clinical trial sites due to travel restrictions related to COVID-19, and collecting sufficient clinical data;
- disruptions or delays in our manufacturing activities, including our supply of preclinical, clinical, and commercial materials from existing third-party manufacturers and our ability to engage new third-party manufacturers;
- disruptions or delays in our efforts to use and expand our discovery platform, both internally and externally with third parties, including decreased productivity of our lab-based personnel due to restrictions related to COVID-19 at our laboratory and office locations and delays in receiving necessary supplies and other materials;
- delays in activities of the FDA or other regulatory authorities related to our clinical trial for ATRC-101 or any future clinical trials;
- diversion of healthcare resources away from the conduct of clinical trials, including the diversion of hospitals serving as our clinical trial sites and hospital staff supporting the conduct of clinical trials;
- changes in laws or regulations as a result of COVID-19 that may require us to change the ways in which our clinical trial is conducted and incur unexpected costs, or require us to discontinue the clinical trial;
- interruption in global commercial transportation and shipping that may affect the transport of clinical trial materials;
- delays in necessary interactions with local regulators, ethics committees and other agencies and contractors due to limitations in employee resources or forced furlough of government personnel;
- delays and decreased productivity as a result of the majority of our personnel working remotely;
- the potential closure of our laboratories and offices again due to future COVID-19 outbreaks where our laboratories and offices are located;

- disruptions, delays and decreased productivity in the event that any of our personnel contract COVID-19, including as a result of the reopening of our laboratories and office locations and the return of certain personnel to these locations, which could necessitate quarantining and contact tracing efforts;
- disruptions or delays in using and expanding our discovery platform; and
- delays or difficulties in our ability to access capital.

Currently, patient screening continues in our clinical trial for ATRC-101. However, COVID-19 is likely to impact our ability to initiate additional clinical trial sites quickly, which may result in enrollment delays.

In addition, the spread of COVID-19, which has caused a broad impact globally, may materially impact us economically. While the potential economic impact brought by, and the duration of, COVID-19 may be difficult to assess or predict, the pandemic could result in significant disruption of global financial markets, reducing our ability to access capital, which could in the future negatively affect our liquidity, or could result in a recession or market correction, which could materially affect our business and the value of our common stock.

COVID-19 continues to evolve rapidly. The potential impacts of COVID-19, on us and third parties with whom we conduct business, including on our clinical studies and our clinical trial for ATRC-101 and related timelines, as well as our preclinical activities, will depend on future developments that are highly uncertain and cannot be predicted with confidence, such as the ultimate geographic spread of the disease, the duration of the outbreak, containment measures and other limitations and restrictions, business disruptions and the effectiveness of actions taken in the United States and other countries to contain and treat the disease. Accordingly, we do not yet know the full extent of the potential impacts on our business, our clinical and regulatory activities, healthcare systems or the global economy as a whole. However, these impacts could adversely affect our business, financial condition, results of operations and growth prospects, which could also have the effect of heightening many of the other risks and uncertainties described in this ‘‘Risk Factors’’ section.

Failure to successfully validate, develop and obtain regulatory approval for companion diagnostics for our product candidates could harm our drug development strategy and operational results.

As one of the elements of our clinical development approach, we may seek to develop lab-based tests to screen and identify subsets of patients who are more likely to benefit from our product candidates, more commonly referred to as companion diagnostics. To achieve this, we may seek to develop and commercialize such companion diagnostics ourselves or through third-party collaborators. Companion diagnostics are generally developed in conjunction with clinical programs for the associated product and can be helpful in enrolling patients in clinical studies who are more likely to respond to the specific therapeutic being developed. The approval of a companion diagnostic as part of the product label could limit the use of the product candidate to those patients who are more likely to benefit from our product candidate.

Companion diagnostics are subject to regulation by the FDA and other regulatory authorities as medical devices and require separate clearance or approval prior to their commercialization. To date, the FDA has required premarket approval of all companion diagnostics for oncology therapies. We and our third-party collaborators may encounter difficulties in developing and obtaining approval for these companion diagnostics. Any delay or failure by us or third-party collaborators to develop or obtain regulatory approval of a companion diagnostic could delay or prevent approval of our related product candidates. The time and cost associated with developing a companion diagnostic may not prove to have been necessary in order to successfully market the product.

We may not be successful in our efforts to use and expand our discovery platform to build a pipeline of product candidates.*

A key element of our strategy is to use and expand our discovery platform to build a pipeline of product candidates and progress these product candidates through clinical development for the treatment of various diseases. Although our research and development efforts to date have resulted in our discovery and preclinical development of ATRC-101, ATRC-101 may not be safe or effective as a cancer treatment, and we may not be able to develop any other

product candidates. In addition, as a result of COVID-19, we expect disruptions and delays in our efforts, both internally and externally with third parties, to use and expand our discovery platform.

Our discovery platform is evolving and may not reach a state at which building a pipeline of product candidates is possible. Even if we are successful in building our pipeline of product candidates, the potential product candidates that we identify may not be suitable for clinical development or generate acceptable clinical data, including as a result of being shown to have unacceptable toxicity or other characteristics that indicate that they are unlikely to be products that will receive marketing approval from the FDA or other regulatory authorities or achieve market acceptance. If we do not successfully develop and commercialize product candidates, we will not be able to generate product revenue in the future.

Our approach to developing and identifying our antibodies using our discovery platform is novel and unproven and may not result in marketable products.

We plan to develop a pipeline of product candidates using our discovery platform. We believe that we may be able to overcome certain key limitations of the current oncology drug discovery paradigm by focusing on an active human anti-tumor immune response that develops over time. However, our scientific research that forms the basis of our efforts to discover product candidates based on our discovery platform is ongoing. Further, the scientific evidence to support the feasibility of developing therapeutic antibodies based on our platform has not been established. We may not be correct in our beliefs about the differentiated nature of our platform to competing technologies, and our platform may not prove to be superior. If our discovery platform is not able to develop approved antibody constructs that are effective at the necessary speed or scale, it could have a material and adverse effect on our business, financial condition, results of operations and prospects.

The market may not be receptive to our current or potential future product candidates, and we may not generate any revenue from the sale or licensing of our product candidates.

Even if regulatory approval is obtained for a product candidate, including ATRC-101, we may not generate or sustain revenue from sales of the product. Market acceptance of our current and potential future product candidates will depend on, among other factors:

- the timing of our receipt of any marketing and commercialization approvals;
- the terms of any approvals and the countries in which approvals are obtained;
- the safety and efficacy of our product candidates;
- the prevalence and severity of any adverse side effects associated with our product candidates;
- limitations or warnings contained in any labeling approved by the FDA or other regulatory authority;
- relative convenience and ease of administration of our product candidates;
- the success of our physician education programs;
- the availability of coverage and adequate government and third-party payor reimbursement;
- the pricing of our products, particularly as compared to alternative treatments; and
- availability of alternative effective treatments for the disease indications our product candidates are intended to treat and the relative risks, benefits and costs of those treatments.

If any product candidate we commercialize fails to achieve market acceptance, it could have a material and adverse effect on our business, financial condition, results of operations and prospects.

If there are undesirable side effects caused by ATRC-101 or any potential future product candidate in clinical trials or after receiving marketing approval, our ability to market and derive revenue from the product candidate could be compromised.

Undesirable side effects caused by ATRC-101 or any potential future product candidate could cause regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other regulatory authorities. It is likely that there will be side effects associated with the use of ATRC-101 or any potential future product candidate. Results of our clinical trials could reveal a high and

unacceptable severity and prevalence of these side effects. In such an event, our trials could be suspended or terminated and the FDA or other regulatory authorities could order us to cease further development of or deny approval of a product candidate for any or all targeted indications. Such side effects could also affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may materially and adversely affect our business and financial condition and impair our ability to generate revenues.

Further, clinical trials by their nature utilize a sample of the potential patient population. With a limited number of patients and limited duration of exposure, rare and severe side effects of a product candidate may only be uncovered when a significantly larger number of patients are exposed to the product candidate or when patients are exposed for a longer period of time.

In the event that any of our current or potential future product candidates receive regulatory approval and we or others identify undesirable side effects caused by one of these products, any of the following adverse events could occur, which could result in the loss of significant revenue to us and materially and adversely affect our results of operations and business:

- regulatory authorities may withdraw their approval of the product or seize the product;
- we may be required to recall the product or change the way the product is administered to patients;
- additional restrictions may be imposed on the marketing of the particular product or the manufacturing processes for the product or any component thereof;
- we may be subject to fines, injunctions or the imposition of civil or criminal penalties;
- regulatory authorities may require the addition of labeling statements, such as a ‘‘black box’’ warning or a contraindication;
- we may be required to create a Medication Guide outlining the risks of such side effects for distribution to patients;
- we could be sued and held liable for harm caused to patients;
- the product may become less competitive; and
- our reputation may suffer.

We will need substantial additional funds to advance development of product candidates and our discovery platform, and we cannot guarantee that we will have sufficient funds available in the future to develop and commercialize our current or potential future product candidates.*

The development of biopharmaceutical product candidates is capital-intensive. If ATRC-101 or potential future product candidates advance through preclinical studies and clinical trials, we will need substantial additional funds to expand our development, regulatory, manufacturing, marketing and sales capabilities. We have used substantial funds to develop our discovery platform and ATRC-101 and will require significant funds to continue to develop our discovery platform and conduct further research and development, including preclinical studies and clinical trials of ATRC-101 and additional potential future product candidates, to seek regulatory approvals for ATRC-101 and potential future product candidates and to manufacture and market products, if any, that are approved for commercial sale. In addition, we expect to incur additional costs associated with operating as a public company.

As of June 30, 2020, we had $148.8 million in cash, cash equivalents, and investments. Based on our current operating plan, we believe that our cash and cash equivalents as of June 30, 2020 will be sufficient to fund our operations through the end of 2021. Our future capital requirements and the period for which we expect our existing resources to support our operations may vary significantly from what we expect. Our monthly spending levels vary based on new and ongoing research and development and other corporate activities. Because the length of time and activities associated with successful research and development of product candidates is highly uncertain, we are unable to estimate the actual funds we will require for development and any approved marketing and commercialization activities. The timing and amount of our operating expenditures will depend largely on:

- the timing and progress of preclinical and clinical development activities;
- the timing and progress of our development of our discovery platform;

- the price and pricing structure that we are able to obtain from our third-party contract manufacturers to manufacture our preclinical study and clinical trial materials and supplies;
- the number and scope of preclinical and clinical programs we decide to pursue;
- our ability to maintain our current licenses and research and development programs and to establish new collaborations;
- the progress of the development efforts of parties with whom we may in the future enter into collaboration and research and development agreements;
- the costs involved in obtaining, maintaining, enforcing and defending patents and other intellectual property rights;
- the cost and timing of regulatory approvals; and
- our efforts to enhance operational systems, secure sufficient laboratory space and hire additional personnel, including personnel to support development of our product candidates and satisfy our obligations as a public company.

To date, we have primarily financed our operations through the sale of equity securities and payments and other income received under discovery services agreements not related to our primary business. We may seek to raise any necessary additional capital through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. We cannot assure you that we will be successful in acquiring additional funding at levels sufficient to fund our operations or on terms favorable to us. As a result of COVID-19, there could be a significant disruption of global financial markets, reducing our ability to raise capital. If we are unable to obtain adequate financing when needed, we may have to delay, reduce the scope of or suspend one or more of our preclinical studies, clinical trials, research and development programs or commercialization efforts. Because of the numerous risks and uncertainties associated with the development and commercialization of our current and potential future product candidates and the extent to which we may enter into collaborations with third parties to participate in their development and commercialization, we are unable to estimate the amounts of increased capital outlays and operating expenditures associated with our current and anticipated preclinical studies and clinical trials. To the extent that we raise additional capital through collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our current and potential future product candidates, future revenue streams or research programs or to grant licenses on terms that may not be favorable to us. If we do raise additional capital through public or private equity or convertible debt offerings, the ownership interest of our existing stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect our stockholders' rights. If we raise additional capital through debt financing, we may be subject to covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends.

We do not expect to realize revenue from product sales or royalties from licensed products in the foreseeable future, if at all, and unless and until our current and potential future product candidates are clinically tested, approved for commercialization and successfully marketed.

We may expend our limited resources to pursue a particular product candidate and fail to capitalize on product candidates that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we intend to focus our efforts on specific research and development programs, including clinical development of ATRC-101. As a result, we may forgo or delay pursuit of other opportunities, including with potential future product candidates that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable product candidates. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through partnership, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

We have obtained rights to use human samples in furtherance of our research and development of our current and potential future product candidates. However, if we fail to obtain appropriate consent or exceed the scope of the permission to use these samples, we may become liable for monetary damages for, obligated to pay continuing royalties for or required to cease usage of the samples.

We begin our discovery process by gathering samples from patients. While we attempt to ensure that we, our study site partners or other providers have obtained these samples with informed consent and all necessary permissions, there is a risk that one or more patients or their representatives may assert that we have either failed to obtain informed consent or exceeded the scope of permission to use the patient's sample. We cannot guarantee that we would succeed in establishing that we had informed consent or appropriate permission, if a patient or patient representative contested the matter. In such circumstances, we could be required to pay monetary damages, to pay a continuing royalty on any products created or invented by analyzing the patient's sample or even to cease using the sample and any and all materials derived from or created through analysis of the sample, any of which could result in a change to our business plan and materially harm our business, financial condition, results of operations and prospects.

We have entered into, and may in the future enter into, strategic transactions for the research, development and commercialization of certain of our current and potential future product candidates. If any of these transactions are not successful, then we may not be able to capitalize on the market potential of such product candidates. Further, we may not be able to enter into future transactions on acceptable terms, if at all, which could adversely affect our ability to develop and commercialize current and potential future product candidates, impact our cash position, increase our expense, and present significant distractions to our management.*

From time to time, we have entered into, and may enter into in the future, strategic transactions, such as collaborations, acquisitions of companies, asset purchases, joint ventures and out- or in-licensing of product candidates or technologies. For example, in July 2020, we entered into a collaboration and license agreement with Xencor, Inc. Our ability to generate revenue from any of our strategic transactions will depend on our partners' abilities to successfully perform the functions assigned to them in these transactions. We cannot predict the success of any of our strategic transactions.

We also intend to evaluate and, if strategically attractive, seek to enter into additional collaborations in the future, including with biotechnology or biopharmaceutical companies or hospitals. The competition for partners is intense, and the negotiation process is time-consuming and complex. If we are not able to enter into strategic transactions, we may not have access to required liquidity or expertise to further develop our potential future product candidates or our discovery platform.

Any existing or potential future collaboration or other strategic transaction may require us to incur non-recurring or other charges, increase our near- and long-term expenditures and pose significant integration or implementation challenges or disrupt our management or business. We may acquire additional technologies and assets, form strategic alliances or create joint ventures with third parties that we believe will complement or augment our existing business, but we may not be able to realize the benefit of such acquisitions or collaborations. In addition, any new collaboration that we enter into may be on terms that are not optimal for us.

Our existing and future strategic transactions would entail numerous operational and financial risks, including:

- exposure to unknown liabilities;
- disruption of our business and diversion of our management's time and attention in order to manage a collaboration or develop acquired products, product candidates or technologies;
- incurrence of substantial debt or dilutive issuances of equity securities to pay transaction consideration or costs;
- higher-than-expected collaboration, acquisition or integration costs, write-downs of assets or goodwill or impairment charges, increased amortization expenses;
- collaborators have significant discretion in determining the efforts and resources they apply to these collaborations, and may not pursue development of any product candidates we may develop or may elect

not to continue development programs based on preclinical study results, changes in the collaborator's strategic focus or other factors that may be beyond our control;
- collaborators could independently develop, or develop with third parties, products that may compete directly or indirectly with our product candidates if the collaborators believe that the competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours;
- product candidates discovered in collaboration with us may be viewed by our collaborators as competitive with their own product candidates or products, which may cause collaborators to cease to devote resources to the development or commercialization of our product candidates;
- difficulty and cost in facilitating the collaboration or combining the operations and personnel of any acquired business;
- disputes may arise between a collaborator and us, including with respect to the ownership of any intellectual property developed pursuant to our collaborations, that cause the delay or termination of the research, development or commercialization of a product candidate, or that result in costly litigation or arbitration that diverts management's attention and resources;
- impairment of relationships with key suppliers, manufacturers or customers of any acquired business due to changes in management and ownership; and
- the inability to retain key employees of any acquired business.

Accordingly, although there can be no assurance that we will undertake or successfully complete any strategic transactions of the nature described above, any collaborations that we are currently engaged in or transactions we may complete in the future may be subject to the foregoing or other risks and our business could be materially harmed by such transactions. Conversely, any failure to enter any collaboration or other strategic transaction that would be beneficial to us could delay the development and potential commercialization of our product candidates and have a negative impact on the competitiveness of any product candidate that reaches market.

In addition, to the extent that any of our existing or future partners were to terminate a collaboration agreement, we may be forced to independently develop our current and future product candidates, including funding preclinical studies or clinical trials, assuming marketing and distribution costs and maintaining, enforcing and defending intellectual property rights, or, in certain instances, abandon product candidates altogether, any of which could result in a change to our business plan and materially harm our business, financial condition, results of operations and prospects.

If third parties on which we intend to rely to conduct certain preclinical studies, or any future clinical trials, do not perform as contractually required, fail to satisfy regulatory or legal requirements or miss expected deadlines, our development program could be delayed with material and adverse impacts on our business and financial condition.*

We intend to rely on third-party clinical investigators, contract research organizations, or CROs, clinical data management organizations and consultants to conduct, supervise and monitor certain preclinical studies and any clinical trials. Because we intend to rely on these third parties and will not have the ability to conduct certain preclinical studies or clinical trials independently, we will have less control over the timing, quality and other aspects of such preclinical studies and clinical trials than we would have had we conducted them on our own. These investigators, CROs and consultants will not be our employees and we will have limited control over the amount of time and resources that they dedicate to our programs. These third parties may have contractual relationships with other entities, some of which may be our competitors, which may draw time and resources from our programs. The third parties with which we may contract might not be diligent, careful or timely in conducting our preclinical studies or clinical trials, resulting in the preclinical studies or clinical trials being delayed or unsuccessful. If we cannot contract with acceptable third parties on commercially reasonable terms, or at all, or if these third parties do not carry out their contractual duties, satisfy legal and regulatory requirements for the conduct of preclinical studies or clinical trials or meet expected deadlines, our clinical development programs could be delayed and otherwise adversely affected. In all events, we will be responsible for ensuring that each of our preclinical studies and clinical trials are conducted in accordance with the general investigational plan and protocols for the trial. The FDA may require preclinical studies to be conducted in accordance with good laboratory practices and clinical trials to be conducted in accordance with good clinical practices, including for designing, conducting, recording and reporting the results of preclinical studies and clinical trials to ensure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of clinical trial participants

are protected. Our reliance on third parties that we do not control will not relieve us of these responsibilities and requirements. Any adverse development or delay in our clinical trials could have a material and adverse impact on our commercial prospects and may impair our ability to generate revenue.

We are working closely with our third-party clinical investigators, clinical CROs, clinical data management organizations and clinical consultants, preclinical CROs and other vendors of preclinical materials and services to mitigate potential disruptions and delays in our clinical trial for ATRC-101 and our preclinical studies due to COVID-19. However, COVID-19 may lead to significant disruptions or material delays in our preclinical studies and our clinical trial, which would adversely impact our business, financial condition, results of operations and commercial prospects.

Clinical trials are expensive, time-consuming and difficult to design and implement.

Human clinical trials are expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. Because our current and potential future product candidates are based on new technologies and discovery approaches, we expect that they will require extensive research and development and have substantial manufacturing and processing costs. In addition, costs to treat patients and to treat potential side effects that may result from our product candidates may be significant. Accordingly, our clinical trial costs are likely to be high and could have a material and adverse effect on our business, financial condition, results of operations and prospects.

If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.*

We may not be able to initiate or continue clinical trials for our current or potential future product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or other regulatory authorities. In particular, we initiated a Phase 1b clinical trial for ATRC-101 in patients with a limited number of tumor types. We cannot predict how difficult it will be to enroll patients for trials in these indications. We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons. The enrollment of patients depends on many factors, including:

- the severity of the disease under investigation;
- the patient eligibility criteria defined in the clinical trial protocol;
- the size of the patient population required for analysis of the trial's primary endpoints;
- the proximity and availability of clinical trial sites for prospective patients;
- the patient referral practices of physicians;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions as to the potential advantages of the product candidate being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating;
- our ability to obtain and maintain patient consents; and
- the risk that patients enrolled in clinical trials will drop out of the trials before completion.

We have experienced delays in initiating sites and achieving patient compliance with study-related procedures in our clinical trial for ATRC-101 due to COVID-19. We are working closely with our current and potential clinical trial sites to mitigate any potential disruptions and delays. However, COVID-19 is likely to impact our ability to initiate additional clinical trial sites quickly, and may lead to significant disruptions or material delays in our ability to enroll patients, which could adversely impact the cost, timing, or outcome of our clinical trial for ATRC-101 and our ability to advance the development of ATRC-101.

In addition, our future clinical trials will compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates, and this competition will reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Since the number of qualified clinical investigators is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials at such clinical trial sites. Additionally, because some of our

clinical trials will be in patients with advanced solid tumors, the patients are typically in the late stages of the disease and may experience disease progression or adverse events independent from our product candidates, making them unevaluable for purposes of the trial and requiring additional enrollment. Delays in patient enrollment may result in increased costs or may affect the timing or outcome of the planned clinical trials, which could prevent completion of these trials and adversely affect our ability to advance the development of our product candidates.

We may not be able to conduct, or contract others to conduct, animal testing in the future, which could harm our research and development activities.

Certain laws and regulations relating to drug development require us to test our product candidates on animals before initiating clinical trials involving humans. Animal testing activities have been the subject of controversy and adverse publicity. Animal rights groups and other organizations and individuals have attempted to stop animal testing activities by pressing for legislation and regulation in these areas and by disrupting these activities through protests and other means. To the extent the activities of these groups are successful, our research and development activities may be interrupted or delayed.

Because we may rely on third parties for manufacturing and supply of our product candidates, some of which are or may be sole source vendors, for preclinical and clinical development materials and commercial supplies, our supply may become limited or interrupted or may not be of satisfactory quantity or quality.*

We currently rely on third-party contract manufacturers for our preclinical and future clinical trial product materials and supplies. We do not produce any meaningful quantity of our product candidates for preclinical and clinical development, and we do not currently own manufacturing facilities for producing such supplies. Furthermore, some of our manufacturers represent our sole source of supplies of preclinical and future clinical development materials, including our source for the manufacture of ATRC-101. We cannot assure you that our preclinical or future clinical development product supplies and commercial supplies will not be limited or interrupted, especially with respect to our sole source third-party manufacturing and supply partners, or will be of satisfactory quality or continue to be available at acceptable prices. In particular, any replacement of our manufacturers could require significant effort and expertise because there may be a limited number of qualified replacements. For our current and future sole source third-party manufacturing and supply partners, we may be unable to negotiate binding agreements with them or find replacement manufacturers to support our preclinical and future clinical activities at commercially reasonable terms in the event that their services to us becomes interrupted for any reason. We do not currently have arrangements in place for a redundant or second-source supply for our sole source vendors in the event they cease to provide their products or services to us or do not timely provide sufficient quantities to us. Establishing additional or replacement sole source vendors, if required, may not be accomplished quickly. Any delays, whether due to COVID-19 or otherwise, resulting from manufacturing or supply interruptions associated with our reliance on third-party manufacturing and supply partners, including those that are sole source, could impede, delay, limit or prevent our drug development efforts, which could harm our business, result of operations, financial condition and prospects.

We are working closely with our third-party manufacturers to mitigate potential disruptions or delays to the supply of our preclinical, clinical, and commercial materials due to COVID-19. However, COVID-19 may lead to significant disruptions or material delays in our ability to receive these materials, and our ability to engage new third-party manufacturers, which could adversely impact our business, financial condition and results of operations.

The manufacturing process for a product candidate is subject to FDA and other regulatory authority review. Suppliers and manufacturers must meet applicable manufacturing requirements and undergo rigorous facility and process validation tests required by regulatory authorities in order to comply with regulatory standards, such as current Good Manufacturing Practices, or cGMP. In the event that any of our manufacturers fails to comply with such requirements or to perform its obligations to us in relation to quality, timing or otherwise, or if our supply of components or other materials becomes limited or interrupted for other reasons, we may be forced to manufacture the materials ourselves, for which we currently do not have the capabilities or resources, or enter into an agreement with another third party, which we may not be able to do on reasonable terms, or at all. In some cases, the technical skills or technology required to manufacture our current and future product candidates may be unique or proprietary to the original manufacturer and we may have difficulty transferring such skills or technology to another third party and a feasible

alternative may not exist. These factors would increase our reliance on such manufacturer or require us to obtain a license from such manufacturer in order to have another third party manufacture our product candidates. If we are required to change manufacturers for any reason, we will be required to verify that the new manufacturer maintains facilities and procedures that comply with quality standards and with all applicable regulations and guidelines. The delays associated with the verification of a new manufacturer could negatively affect our ability to develop product candidates in a timely manner or within budget.

We also expect to rely on third-party manufacturers if we receive regulatory approval for any product candidate. We have existing, and may enter into future, manufacturing arrangements with third parties. We will depend on these third parties to perform their obligations in a timely manner consistent with contractual and regulatory requirements, including those related to quality control and assurance. If we are unable to obtain or maintain third-party manufacturing for any product candidate, or to do so on commercially reasonable terms, we may not be able to develop and commercialize our product candidates successfully. Our or a third party's failure to execute on our manufacturing requirements and comply with cGMP could adversely affect our business in a number of ways, including:

- an inability to initiate or continue clinical trials of product candidates under development;
- delay in submitting regulatory applications, or receiving regulatory approvals, for product candidates;
- loss of the cooperation of a potential future partner;
- subjecting third-party manufacturing facilities or our potential future manufacturing facilities to additional inspections by regulatory authorities;
- requirements to cease distribution or to recall batches of product candidates; and
- in the event of approval to market and commercialize a product candidate, an inability to meet commercial demands for our products.

Our third-party manufacturers may be unable to successfully scale manufacturing of ATRC-101 or potential future product candidates in sufficient quality and quantity, which would delay or prevent us from developing product candidates and commercializing approved products, if any.

In order to conduct clinical trials for ATRC-101 as well as any potential future product candidates, we will need to manufacture large quantities of these product candidates. We may continue to and currently expect to use third parties for our manufacturing needs. Our manufacturing partners may be unable to successfully increase the manufacturing capacity for any current or potential future product candidate in a timely or cost-effective manner, or at all. In addition, quality issues may arise during scale-up activities. If our manufacturing partners are unable to successfully scale the manufacture of any current or potential future product candidate in sufficient quality and quantity, the development, testing and clinical trials of that product candidate may be delayed or infeasible, and regulatory approval or commercial launch of any potential resulting product may be delayed or not obtained, which could significantly harm our business.

If the market opportunities for our current and potential future product candidates, including ATRC-101, are smaller than we believe they are, our future product revenues may be adversely affected and our business may suffer.

Our understanding of the number of people who suffer from certain types of cancers and tumors that may be able to be treated with antibodies that have been and may in the future be identified by our discovery platform, including ATRC-101, is based on estimates. These estimates may prove to be incorrect, and new studies may reduce the estimated incidence or prevalence of these diseases. The number of patients in the United States or elsewhere may turn out to be lower than expected, may not be otherwise amenable to treatment with our current or potential future product candidates or patients may become increasingly difficult to identify and access, all of which would adversely affect our business prospects and financial condition. In particular, the treatable population for ATRC-101 may further be reduced if our estimates of addressable populations are erroneous or sub-populations of patients do not derive benefit from ATRC-101.

Further, there are several factors that could contribute to making the actual number of patients who receive our current or potential future product candidates less than the potentially addressable market. These include the lack of widespread availability of, and limited reimbursement for, new therapies in many underdeveloped markets.

We face competition from entities that have developed or may develop product candidates for the treatment of the diseases that we may target, including companies developing novel treatments and technology platforms. If these companies develop technologies or product candidates more rapidly than we do, or if their technologies or product candidates are more effective, our ability to develop and successfully commercialize product candidates may be adversely affected.

The development and commercialization of drugs and therapeutic biologics is highly competitive. We compete with a variety of large pharmaceutical companies, multinational biopharmaceutical companies, other biopharmaceutical companies and specialized biotechnology companies, as well as technology being developed at universities and other research institutions. Our competitors are often larger and better funded than we are. Our competitors have developed, are developing or will develop product candidates and processes competitive with ours. Competitive therapeutic treatments include those that have already been approved and accepted by the medical community and any new treatments that are currently in development or that enter the market. We believe that a significant number of products are currently under development, and may become commercially available in the future, for the treatment of conditions for which we may try to develop product candidates. There is intense and rapidly evolving competition in the biotechnology, biopharmaceutical and antibody and immuno-oncology fields. We believe that while our discovery platform, its associated intellectual property, the characteristics of ATRC-101 and potential future product candidates and our scientific and technical know-how together give us a competitive advantage in this space, competition from many sources remains.

We are aware of a number of companies that are developing antibodies for the treatment of cancer. Many of these companies are well-capitalized and, in contrast to us, have significant clinical experience, and may include our future partners. In addition, these companies compete with us in recruiting scientific and managerial talent. Our success will partially depend on our ability to obtain, maintain, enforce and defend patents and other intellectual property rights with respect to antibodies that are safer and more effective than competing products. Our commercial opportunity and success will be reduced or eliminated if competing products that are safer, more effective, or less expensive than the antibodies we develop are or become available.

We expect to compete with antibody, biologics and other therapeutic platforms and development companies, including, but not limited to, companies such as Adaptive Biotechnologies Corporation, AIMM Therapeutics B.V., Neurimmune Holding AG, OncoResponse, Inc., and Vir Biotechnology, Inc. In addition, we expect to compete with large, multinational pharmaceutical companies that discover, develop and commercialize antibodies and other therapeutics for use in treating cancer such as AstraZeneca plc, Bristol-Myers Squibb Company, Genentech, Inc. and Merck & Co., Inc. If ATRC-101 or potential future product candidates are eventually approved, they will compete with a range of treatments that are either in development or currently marketed. For example, we expect that ATRC-101 and our potential future product candidates may compete against traditional cancer therapies, such as chemotherapy, as well as cell-based treatments for cancer, such as CAR-T therapies.

Many of our competitors have significantly greater financial, technical, manufacturing, marketing, sales and supply resources or experience than we do. If we successfully obtain approval for any product candidate, we will face competition based on many different factors, including the safety and effectiveness of our products, the ease with which our products can be administered, the timing and scope of regulatory approvals for these products, the availability and cost of manufacturing, marketing and sales capabilities, price, reimbursement coverage and patent position. Competing products could present superior treatment alternatives, including by being more effective, safer, less expensive or marketed and sold more effectively than any products we may develop. Competitive products may make any product we develop obsolete or noncompetitive before we recover the expense of developing and commercializing such product. Such competitors could also recruit our employees, which could negatively impact our level of expertise and our ability to execute our business plan.

Any inability to attract and retain qualified key management, technical personnel and employees would impair our ability to implement our business plan.*

Our success largely depends on the continued service of key management, advisors and other specialized personnel, including John A. Orwin, our president and chief executive officer, and Tito A. Serafini, our chief strategy

officer and founder. We have a written employment agreement with each of Mr. Orwin and Dr. Serafini. The loss of one or more members of our executive team, management team or other key employees or advisors could delay our research and development programs and have a material and adverse effect on our business, financial condition, results of operations and prospects.

The relationships that our key managers have cultivated within our industry make us particularly dependent upon their continued employment with us. We are dependent on the continued service of our technical personnel because of the highly technical nature of our product candidates and technologies and the specialized nature of the regulatory approval process. Because our management team and key employees are not obligated to provide us with continued service, they could terminate their employment with us at any time without penalty. Our future success will depend in large part on our continued ability to attract and retain other highly qualified scientific, technical and management personnel, as well as personnel with expertise in clinical testing, manufacturing, governmental regulation and commercialization. We face competition for personnel from other companies, universities, public and private research institutions, government entities and other organizations.

As of June 30, 2020, we had 118 full-time employees. Our focus on the development of ATRC-101 and potential future product candidates will require adequate staffing. We may need to hire and retain new employees to execute our future clinical development and manufacturing plans. We cannot provide assurance that we will be able to hire or retain adequate staffing levels to develop our current and potential future product candidates or run our operations or to accomplish all of our objectives.

We may experience difficulties in managing our growth and expanding our operations.

We have limited experience in product development. As our current and potential future product candidates enter and advance through preclinical studies and any clinical trials, we will need to expand our development, regulatory and manufacturing capabilities or contract with other organizations to provide these capabilities for us. We may also experience difficulties in the discovery and development of new potential future product candidates using our discovery platform if we are unable to meet demand as we grow our operations. In the future, we also expect to have to manage additional relationships with collaborators, suppliers and other organizations. Our ability to manage our operations and future growth will require us to continue to improve our operational, financial and management controls, reporting systems and procedures and secure adequate facilities for our operational needs. We may not be able to implement improvements to our management information and control systems in an efficient or timely manner and may discover deficiencies in existing systems and controls.

If any of our product candidates is approved for marketing and commercialization in the future and we are unable to develop sales, marketing and distribution capabilities on our own or enter into agreements with third parties to perform these functions on acceptable terms, we will be unable to successfully commercialize any such future products.

We currently have no sales, marketing or distribution capabilities or experience. We will need to develop internal sales, marketing and distribution capabilities to commercialize each current and potential future product candidate that gains FDA approval, which would be expensive and time-consuming, or enter into partnerships with third parties to perform these services. If we decide to market any approved products directly, we will need to commit significant financial and managerial resources to develop a marketing and sales force with technical expertise and supporting distribution, administration and compliance capabilities. If we rely on third parties with such capabilities to market any approved products or decide to co-promote products with partners, we will need to establish and maintain marketing and distribution arrangements with third parties, and there can be no assurance that we will be able to enter into such arrangements on acceptable terms or at all. In entering into third-party marketing or distribution arrangements, any revenue we receive will depend upon the efforts of the third parties and we cannot assure you that such third parties will establish adequate sales and distribution capabilities or be successful in gaining market acceptance for any approved product. If we are not successful in commercializing any product approved in the future, either on our own or through third parties, our business and results of operations could be materially and adversely affected.

Our future growth may depend, in part, on our ability to operate in foreign markets, where we would be subject to additional regulatory burdens and other risks and uncertainties.

Our future growth may depend, in part, on our ability to develop and commercialize product candidates in foreign markets for which we may rely on partnership with third parties. We will not be permitted to market or promote any product candidate before we receive regulatory approval from the applicable regulatory authority in a foreign market, and we may never receive such regulatory approval for any product candidate. To obtain separate regulatory approval in foreign countries, we generally must comply with numerous and varying regulatory requirements of such countries regarding safety and efficacy and governing, among other things, clinical trials and commercial sales, pricing and distribution of a product candidate, and we cannot predict success in these jurisdictions. If we obtain approval of any of our current or potential future product candidates and ultimately commercialize any such product candidate in foreign markets, we would be subject to risks and uncertainties, including the burden of complying with complex and changing foreign regulatory, tax, accounting and legal requirements and the reduced protection of intellectual property rights in some foreign countries.

Price controls imposed in foreign markets may adversely affect our future profitability.

In some countries, particularly member states of the European Union, the pricing of prescription drugs is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after receipt of marketing approval for a product. In addition, there can be considerable pressure exerted by governments and other stakeholders on prices and reimbursement levels, including as part of cost-containment measures. Political, economic and regulatory developments, in the United States or internationally, may further complicate pricing negotiations, and pricing negotiations may continue after reimbursement has been obtained. Reference pricing used by various European Union member states and parallel distribution, or arbitrage between low-priced and high-priced member states, can further reduce prices. In some countries, we or future partners may be required to conduct clinical trials or other studies that compare the cost-effectiveness of a product candidate to other available therapies in order to obtain or maintain reimbursement or pricing approval. Publication of discounts by third-party payors or authorities may lead to further pressure on the prices or reimbursement levels within the country of publication and other countries. If reimbursement of any current or potential future product candidate that is approved for marketing in the future is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business and results of operations or prospects could be materially and adversely affected and our ability to commercialize such product candidate could be materially impaired.

Our business entails a significant risk of product liability, and our inability to obtain sufficient insurance coverage could have a material and adverse effect on our business, financial condition, results of operations and prospects.

As we move into conducting clinical trials of ATRC-101 or potential future product candidates, we will be exposed to significant product liability risks inherent in the development, testing, manufacturing and marketing of antibody treatments. Product liability claims could delay or prevent completion of our development programs. If we succeed in marketing products, such claims could result in an FDA investigation of the safety and effectiveness of our products, our manufacturing processes and facilities or our marketing programs and potentially a recall of our products or more serious enforcement action, limitations on the approved indications for which they may be used or suspension or withdrawal of approvals. Regardless of the merits or eventual outcome, liability claims may also result in decreased demand for our products, injury to our reputation, costs to defend the related litigation, a diversion of management’s time and our resources, substantial monetary awards to trial participants or patients and a decline in our stock price. Any insurance we have or may obtain may not provide sufficient coverage against potential liabilities. Furthermore, clinical trial and product liability insurance is becoming increasingly expensive. As a result, our partners or we may be unable to obtain sufficient insurance at a reasonable cost to protect us against losses caused by product liability claims that could have a material and adverse effect on our business, financial condition, results of operations and prospects.

Our employees, principal investigators, consultants and commercial partners may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

We are exposed to the risk of fraud or other misconduct by our employees, principal investigators, consultants and commercial partners. Misconduct by employees could include intentional failures to comply with FDA regulations, provide accurate information to the FDA, comply with manufacturing standards we may establish, comply with federal and state healthcare fraud and abuse laws and regulations, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Such misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. For example, individuals conducting the non-interventional clinical studies that we sponsor through which we obtain antibodies for development into potential antibody-based therapeutics may violate applicable laws and regulations regarding patients' personal data. It is not always possible to identify and deter misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a material and adverse effect on our business and financial condition, including the imposition of significant criminal, civil, and administrative fines or other sanctions, such as monetary penalties, damages, fines, disgorgement, imprisonment, exclusion from participation in government-funded healthcare programs, such as Medicare and Medicaid, integrity obligations, reputational harm and the curtailment or restructuring of our operations.

Failure to comply with health and data protection laws and regulations could lead to government enforcement actions (which could include civil or criminal penalties), private litigation or adverse publicity and could negatively affect our operating results and business.

We and our current and potential collaborators may be subject to federal, state and foreign data protection laws and regulations (*i.e.*, laws and regulations that address privacy and data security). In the United States, numerous federal and state laws and regulations, including federal health information privacy laws (*e.g.*, the Health Insurance Portability and Accountability Act, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH), state data breach notification laws, state health information privacy laws and federal and state consumer protection laws (*e.g.*, Section 5 of the Federal Trade Commission Act), that govern the collection, use, disclosure and protection of health-related and other personal information could apply to our operations or the operations of our collaborators. In addition, we may obtain health information from third parties (including research institutions from which we obtain clinical trial data) that are subject to privacy and security requirements under the HIPAA, as amended by HITECH, or other privacy and data security laws. Depending on the facts and circumstances, we could be subject to criminal penalties if we knowingly obtain, use, or disclose individually identifiable health information maintained by a HIPAA-covered entity in a manner that is not authorized or permitted by HIPAA.

International data protection laws, including Regulation 2016/679, known as the General Data Protection Regulation (GDPR) may also apply to health-related and other personal information obtained outside of the United States. The GDPR went into effect on May 25, 2018. The GDPR introduced new data protection requirements in the European Union, as well as potential fines for noncompliant companies of up to the greater of e20 million or 4% of annual global revenue. The regulation imposes numerous new requirements for the collection, use and disclosure of personal information, including more stringent requirements relating to consent and the information that must be shared with data subjects about how their personal information is used, the obligation to notify regulators and affected individuals of personal data breaches, extensive new internal privacy governance obligations and obligations to honor expanded rights of individuals in relation to their personal information (*e.g.*, the right to access, correct and delete their data). In addition, the GDPR includes restrictions on cross-border data transfers. The GDPR will increase our responsibility and liability in relation to personal data that we process where such processing is subject to the GDPR, and we may be required to put in place additional mechanisms to ensure compliance with the GDPR, including as implemented by individual countries. Further, the United Kingdom's vote in favor of exiting the EU, often referred to as

Brexit, has created uncertainty with regard to data protection regulation in the United Kingdom. In particular, it is unclear how data transfers to and from the United Kingdom will be regulated.

In addition, California recently enacted the California Consumer Privacy Act (CCPA), which creates new individual privacy rights for California consumers (as defined in the law) and places increased privacy and security obligations on entities handling personal data of consumers or households. The CCPA will require covered companies to provide new disclosure to consumers about such companies' data collection, use and sharing practices, provide such consumers new ways to opt-out of certain sales or transfers of personal information, and provide consumers with additional causes of action. The CCPA goes into effect on January 1, 2020, and the California Attorney General may bring enforcement actions for violations beginning July 1, 2020. The CCPA was amended on September 23, 2018, and it remains unclear what, if any, further modifications will be made to this legislation or how it will be interpreted. As currently written, the CCPA may impact our business activities and exemplifies the vulnerability of our business to the evolving regulatory environment related to personal data and protected health information.

Compliance with U.S. and international data protection laws and regulations could require us to take on more onerous obligations in our contracts, restrict our ability to collect, use and disclose data, or in some cases, impact our ability to operate in certain jurisdictions. Failure to comply with U.S. and international data protection laws and regulations could result in government enforcement actions (which could include civil or criminal penalties), private litigation or adverse publicity and could negatively affect our operating results and business. Moreover, clinical trial subjects about whom we or our potential collaborators obtain information, as well as the providers who share this information with us, may contractually limit our ability to use and disclose the information. Claims that we have violated individuals' privacy rights, failed to comply with data protection laws, or breached our contractual obligations, even if we are not found liable, could be expensive and time consuming to defend and could result in adverse publicity that could harm our business.

If we experience security or data privacy breaches or other unauthorized or improper access to, use of, or destruction of our proprietary or confidential data, employee data or personal data, we may face costs, significant liabilities, harm to our brand and business disruption.

In connection with our discovery platform and efforts, we may collect and use a variety of personal data, such as name, mailing address, email addresses, phone number and clinical trial information. Although we have extensive measures in place to prevent the sharing and loss of patient data in our sample collection process associated with our discovery platform, any failure to prevent or mitigate security breaches or improper access to, use of, or disclosure of our clinical data or patients' personal data could result in significant liability under state (*e.g.*, state breach notification laws), federal (*e.g.*, HIPAA, as amended by HITECH), and international law (*e.g.*, the GDPR). Any failure to prevent or mitigate security breaches or improper access to, use of, or disclosure of our clinical data or patients' personal data may cause a material adverse impact to our reputation, affect our ability to conduct new studies and potentially disrupt our business. We may also rely on third-party service providers to host or otherwise process some of our data and that of users, and any failure by such third party to prevent or mitigate security breaches or improper access to or disclosure of such information could have similarly adverse consequences for us. If we are unable to prevent or mitigate the impact of such security or data privacy breaches, we could be exposed to litigation and governmental investigations, which could lead to a potential disruption to our business.

We depend on sophisticated information technology systems to operate our business and a cyber-attack or other breach of these systems could have a material adverse effect on our business.

We rely on information technology systems that we or our third-party vendors operate to process, transmit and store electronic information in our day-to-day operations. The size and complexity of our information technology systems makes them vulnerable to a cyber-attack, malicious intrusion, breakdown, destruction, loss of data privacy or other significant disruption. A successful attack could result in the theft or destruction of intellectual property, data, or other misappropriation of assets, or otherwise compromise our confidential or proprietary information and disrupt our operations. Cyber-attacks are becoming more sophisticated and frequent. We have invested in our systems and the protection and recoverability of our data to reduce the risk of an intrusion or interruption, and we monitor and test our systems on an ongoing basis for any current or potential threats. There can be no assurance that these measures and

efforts will prevent future interruptions or breakdowns. If we or our third-party vendors fail to maintain or protect our information technology systems and data integrity effectively or fail to anticipate, plan for or manage significant disruptions to these systems, we or our third-party vendors could have difficulty preventing, detecting and controlling such cyber-attacks and any such attacks could result in losses described above as well as disputes with physicians, patients and our partners, regulatory sanctions or penalties, increases in operating expenses, expenses or lost revenues or other adverse consequences, any of which could have a material adverse effect on our business, results of operations, financial condition, prospects and cash flows.

Our information technology systems could face serious disruptions that could adversely affect our business.

Our information technology and other internal infrastructure systems, including corporate firewalls, servers, leased lines and connection to the internet, face the risk of systemic failure that could disrupt our operations. A significant disruption in the availability of our information technology and other internal infrastructure systems could cause interruptions and delays in our research and development work.

If we do not comply with laws regulating the protection of the environment and health and human safety, our business could be adversely affected.

Our research, development and manufacturing involves the use of hazardous materials and various chemicals. We maintain quantities of various flammable and toxic chemicals in our facilities that are required for our research, development and manufacturing activities. We are subject to federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of these hazardous materials. We believe our procedures for storing, handling and disposing of these materials in our facilities comply with the relevant guidelines of the state of California and the Occupational Safety and Health Administration of the U.S. Department of Labor. Although we believe that our safety procedures for handling and disposing of these materials comply with the standards mandated by applicable regulations, the risk of accidental contamination or injury from these materials cannot be eliminated. If an accident occurs, we could be held liable for resulting damages, which could be substantial. We are also subject to numerous environmental, health and workplace safety laws and regulations, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of animals and biohazardous materials. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of these materials, this insurance may not provide adequate coverage against potential liabilities. Although we have some environmental liability insurance covering certain of our facilities, we may not maintain adequate insurance for all environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological or hazardous materials. Additional federal, state and local laws and regulations affecting our operations may be adopted in the future. We may incur substantial costs to comply with, and substantial fines or penalties if we violate, any of these laws or regulations.

Our current operations are concentrated in one location, and we or the third parties upon whom we depend may be adversely affected by natural or other disasters and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Our current operations are concentrated in the San Francisco Bay Area. Any unplanned event, such as flood, fire, explosion, extreme weather condition, medical epidemics, power shortage, telecommunication failure or other natural or manmade accidents or incidents that result in us being unable to fully utilize our facilities or the manufacturing facilities of our third-party contract manufacturers, or lose our repository of blood-based and other valuable laboratory samples, may have a material and adverse effect on our ability to operate our business, particularly on a daily basis, and have significant negative consequences on our financial and operating conditions. Loss of access to these facilities may result in increased costs, delays in the development of our product candidates or interruption of our business operations. Natural disasters such as earthquakes or wildfires, both of which are prevalent in Northern California, floods or tsunamis could further disrupt our operations, and have a material negative impact on our business, financial condition, results of operations and prospects. If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters, that damaged critical infrastructure, such as our research facilities or the manufacturing facilities of our third-party contract manufacturers, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible, for us to continue our business for a substantial period of time. The disaster

recovery and business continuity plans we have in place may prove inadequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on our business. As part of our risk management policy, we maintain insurance coverage at levels that we believe are appropriate for our business. However, in the event of an accident or incident at these facilities, we cannot assure you that the amounts of insurance will be sufficient to satisfy any damages and losses. If our facilities, or the manufacturing facilities of our third-party contract manufacturers, are unable to operate because of an accident or incident or for any other reason, even for a short period of time, any or all of our research and development programs may be harmed. Any business interruption may have a material and adverse effect on our business and financial condition.

Risks Related to Our Intellectual Property

If we are unable to obtain or protect intellectual property rights related to our technology and current or future product candidates, or if our intellectual property rights are inadequate, we may not be able to compete effectively.

Our success depends in part on our ability to obtain and maintain protection for our owned and in-licensed intellectual property rights and proprietary technology. We rely on patents and other forms of intellectual property rights, including in-licenses of intellectual property rights and biologic materials of others, to protect our current or future discovery platform, product candidates, methods used to manufacture our current or future product candidates, and methods for treating patients using our current or future product candidates.

We in-license exclusive rights, including patents and patent applications relating to our discovery platform, from the Board of Trustees of the Leland Stanford Junior University, or Stanford University. Patent applications for this in-licensed technology are still pending before the U.S. Patent and Trademark Office and other national patent offices. There is no guarantee that such patent applications will issue as patents, nor any guarantee that issued patents will provide adequate protection for the in-licensed technology or any meaningful competitive advantage.

We also own several patents and applications on our own technology relating to our discovery platform. There is no guarantee that any patents covering this technology will issue from the patent applications we own, or, if they do, that the issued claims will provide adequate protection for our discovery platform or any meaningful competitive advantage.

We own pending nonprovisional patent applications in connection with ATRC-101 and related antibody variants. However, there is no guarantee that any current or future patent applications will result in the issuance of patents that will effectively protect ATRC-101 or other product candidates or will effectively prevent others from commercializing competitive products.

We may also file provisional patent applications in the United Stated related to our product candidates. A provisional patent application is not eligible to become an issued patent until, among other things, we file a non-provisional patent application within 12 months of the filing date of the provisional patent application. If we do not timely file non-provisional patent applications for our potential future provisional patent applications, we may lose our priority date with respect to our provisional patent applications and any patent protection on the inventions disclosed in our provisional patent applications.

The patent prosecution process is expensive, complex and time-consuming. Patent license negotiations also can be complex and protracted, with uncertain results. We may not be able to file, prosecute, maintain, enforce or license all necessary or desirable patents and patent applications at a reasonable cost or in a timely manner. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. The patent applications that we own or in-license may fail to result in issued patents, and, even if they do issue as patents, such patents may not cover our current or future technologies or product candidates in the United States or in other countries or provide sufficient protection from competitors. In addition, the coverage claimed in a patent application can be significantly reduced before the patent is issued and its scope can be reinterpreted after issuance. Accordingly, we also rely on our ability to preserve our trade secrets, to prevent third parties from infringing,

misappropriating or violating our proprietary rights and to operate without infringing, misappropriating, or violating the proprietary rights of others.

Further, although we make reasonable efforts to ensure patentability of our inventions, we cannot guarantee that all of the potentially relevant prior art relating to our owned or in-licensed patents and patent applications has been found. For example, publications of discoveries in scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, and in some cases not at all. Additionally, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our discovery platform, our product candidates, or the use of our technologies. We thus cannot know with certainty whether we or our licensors were the first to make the inventions claimed in our owned or in-licensed patents or pending applications, or that we or our licensors were the first to file for patent protection of such inventions. There is no assurance that all potentially relevant prior art relating to our owned or in-licensed patents and patent applications has been found. For this reason, and because there is no guarantee that any prior art search is absolutely correct and comprehensive, we may be unaware of prior art that could be used to invalidate an issued patent or to prevent our owned or in-licensed pending patent applications from issuing as patents. Invalidation of any of our patent rights, including in-licensed patent rights, could materially harm our business.

Moreover, the patent positions of biopharmaceutical companies are generally uncertain because they may involve complex legal and factual considerations that have, in recent years, been the subject of legal development and change. As a result, the issuance, scope, validity, enforceability and commercial value of our pending patent rights is uncertain. The standards applied by the United States Patent and Trademark Office, or USPTO, and foreign patent offices in granting patents are not always certain and moreover, are not always applied uniformly or predictably. For example, there is no uniform worldwide policy regarding patentable subject matter or the scope of claims allowable in patents. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our owned or in-licensed patents or narrow the scope of our patent protection.

Even if patents do successfully issue and even if such patents cover our current or any future technologies or product candidates, third parties may challenge their validity, enforceability or scope, which may result in such patents being narrowed, invalidated, or held unenforceable. Any successful challenge to these patents or any other patents owned by or licensed to us could deprive us of rights necessary for the successful commercialization of any current or future technologies or product candidates that we may develop. Likewise, if patent applications we own or have in-licensed with respect to our development programs and current or future technologies or product candidates fail to issue, if their breadth or strength is threatened, or if they fail to provide meaningful exclusivity, other companies could be dissuaded from collaborating with us to develop current or future technologies or product candidates. Lack of valid and enforceable patent protection could threaten our ability to commercialize current or future products and could prevent us from maintaining exclusivity with respect to the invention or feature claimed in the patent applications. Any failure to obtain or any loss of patent protection could have a material adverse impact on our business and ability to achieve profitability. We may be unable to prevent competitors from entering the market with a product that is similar to or the same as ATRC-101 or future product candidates.

The filing of a patent application or the issuance of a patent is not conclusive as to its ownership, inventorship, scope, patentability, validity or enforceability. Issued patents and patent applications may be challenged in the courts and in the patent office in the United States and abroad. For example, our applications or applications filed by our licensors may be challenged through third-party submissions, opposition or derivation proceedings. By further example, our issued patents or the issued patents we in-license may be challenged through reexamination, *inter partes* review or post-grant review proceedings before the patent office, or in declaratory judgment actions or counterclaims. An adverse determination in any such submission, proceeding or litigation could prevent the issuance of, reduce the scope of, invalidate or render unenforceable our owned or in-licensed patent rights; limit our ability to stop others from using or commercializing similar or identical platforms and products; allow third parties to compete directly with us without payment to us; or result in our inability to manufacture or commercialize products without infringing third-party patent rights. In addition, if the breadth or strength of protection provided by our owned or in-licensed patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future platforms or product candidates. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

Moreover, some of our owned and in-licensed patents and patent applications are or may in the future be co-owned with third parties. If we are unable to obtain an exclusive license to any such third party co-owners' interest in such patents or patent application, such co-owners may be able to license their rights to other third-parties, including our competitors, and our competitors could market competing products and technology. We may need the cooperation of any such co-owners of our patents to enforce such patents against third parties, and such cooperation may not be provided to us. Any of the foregoing could have a material adverse effect on our competitive position, business prospects and financial conditions.

Our in-licensed patent rights may be subject to a reservation of rights by one or more third parties. For example, we in-license certain patent rights from Stanford University, which co-owns rights with a governmental entity. As a result, the U.S. government may have certain rights, including so-called march-in rights, to such patent rights and any products or technology developed from such patent rights. When new technologies are developed with U.S. government funding, the U.S. government generally obtains certain rights in any resulting patents, including a nonexclusive license authorizing the U.S. government to use the invention for non-commercial purposes. These rights may permit the U.S. government to disclose our confidential information to third parties and to exercise march-in rights to use or to allow third parties to use our licensed technology. The U.S. government can exercise its march-in rights if it determines that action is necessary because we fail to achieve the practical application of government-funded technology, because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations, or to give preference to U.S. industry. In addition, our rights in such inventions may be subject to certain requirements to manufacture products embodying such inventions in the United States. Any exercise by the U.S. government of such rights could harm our competitive position, business, financial condition, results of operations and prospects.

If we fail to comply with our obligations under any license, collaboration or other intellectual property-related agreements, we may be required to pay damages and could lose intellectual property rights that may be necessary for developing, commercializing and protecting our current or future technologies or product candidates or we could lose certain rights to grant sublicenses.

We are heavily reliant upon in-licenses to certain patent rights and proprietary technology from third parties that are important or necessary to our discovery platform and development of product candidates. For example, we rely on an intellectual property license from Stanford University for our discovery platform.

Our current license agreements impose, and any future license agreements we enter into are likely to impose, various development, commercialization, funding, milestone, royalty, diligence, sublicensing, insurance, patent prosecution and enforcement or other obligations on us. If we breach any of these obligations, or use the intellectual property licensed to us in an unauthorized manner, we may be required to pay damages and the licensor may have the right to terminate the license. License termination could result in our inability to develop, manufacture and sell products that are covered by the licensed technology or could enable a competitor to gain access to the licensed technology. In certain circumstances, our licensed patent rights are subject to our reimbursing our licensors for their patent prosecution and maintenance costs. For example, our license agreement with Stanford University requires us to bear the costs of filing and maintaining patent applications.

Furthermore, we may not have the right to control the preparation, filing, prosecution, maintenance, enforcement and defense of patents and patent applications that we license from third parties. For example, pursuant to our license agreement with Stanford University, while we direct and are responsible for the preparation, filing, prosecution and maintenance, and, in certain circumstances, enforcement and defense of the patents and patent applications, all of these actions are subject to Stanford University's final approval. Given Stanford University's right of final approval, we therefore cannot be certain that these patents and patent applications will be prepared, filed, prosecuted, maintained, enforced and defended in a manner consistent with the best interests of our business. If our licensors and future licensors fail to prosecute, maintain, enforce and defend patents we may license, or lose rights to licensed patents or patent applications, our license rights may be reduced or eliminated. In such circumstances, our right to develop and commercialize any of our products or product candidates that is the subject of such licensed rights could be materially adversely affected.

Moreover, our licensors may own or control intellectual property that has not been licensed to us and, as a result, we may be subject to claims, regardless of their merit, that we are infringing, misappropriating or otherwise violating the licensor's intellectual property rights. In addition, while we cannot currently determine the amount of the royalty obligations we would be required to pay on sales of future products if infringement or misappropriation were found, those amounts could be significant. The amount of our future royalty obligations will depend on the technology and intellectual property we use in products that we successfully develop and commercialize, if any. Therefore, even if we successfully develop and commercialize products, we may be unable to achieve or maintain profitability.

In addition, the agreements under which we currently license intellectual property or technology from third parties are complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse impact on our business and ability to achieve profitability. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize any affected product candidates, which could have a material adverse effect on our business and financial conditions.

Patent terms may not be able to protect our competitive position for an adequate period of time with respect to our current or future technologies or product candidates.

Patents have a limited lifespan. In the United States, the standard patent term is typically 20 years after filing. Various extensions may be available. Even so, the life of a patent and the protection it affords are limited. As a result, our owned and in-licensed patent portfolio provides us with limited rights that may not last for a sufficient period of time to exclude others from commercializing products similar or identical to ours. For example, given the large amount of time required for the research, development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized.

Extensions of patent term are available, but there is no guarantee that we would succeed in obtaining any particular extension—and no guarantee any such extension would confer patent term for a sufficient period of time to exclude others from commercializing products similar or identical to ours. In the United States, the Drug Price Competition and Patent Term Restoration Act of 1984 permits a patent term extension of up to five years beyond the normal expiration of the patent, which is limited to the approved indication (or any additional indications approved during the period of extension). A patent term extension cannot extend the remaining term of a patent beyond 14 years from the date of product approval; only one patent may be extended; and extension is available for only those claims covering the approved drug, a method for using it, or a method for manufacturing it. The applicable authorities, including the FDA and the USPTO in the United States, and any equivalent regulatory authority in other countries, may not agree with our assessment of whether such extensions are available, and may refuse to grant extensions to our patents, or may grant more limited extensions than we request. An extension may not be granted or may be limited where there is, for example, a failure to exercise due diligence during the testing phase or regulatory review process, failure to apply within applicable deadlines, failure to apply before expiration of relevant patents, or some other failure to satisfy applicable requirements. If this occurs, our competitors may be able to launch their products earlier by taking advantage of our investment in development and clinical trials along with our clinical and preclinical data. This could have a material adverse effect on our business and ability to achieve profitability.

Changes in U.S. patent law or the patent law of other countries or jurisdictions could diminish the value of patents in general, thereby impairing our ability to protect our current or any future technologies or product candidates.

Changes in either the patent laws or interpretation of the patent laws in the United States or elsewhere could increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. The United States has enacted and implemented wide-ranging patent reform legislation. On September 16, 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law, which could increase the uncertainties and costs surrounding the prosecution of our owned or in-licensed patent applications and the enforcement or defense of our owned or in-licensed issued patents. The Leahy-Smith Act includes a number of

significant changes to U.S. patent law. These include provisions that affect the way patent applications are prosecuted, redefine prior art, may affect patent litigation and switch the U.S. patent system from a ‘‘first-to-invent’’ system to a ‘‘first-to-file’’ system. Under a first-to-file system, assuming the other requirements for patentability are met, the first inventor to file a patent application generally will be entitled to the patent on an invention regardless of whether another inventor had made the invention earlier. These provisions also allow third-party submission of prior art to the USPTO during patent prosecution and set forth additional procedures to challenge the validity of a patent by the USPTO administered post grant proceedings, including derivation, reexamination, *inter partes* review, post-grant review and interference proceedings. The USPTO developed additional regulations and procedures to govern administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and, in particular, the first-to-file provisions, became effective on March 16, 2013. Accordingly, it is not clear what, if any, impact the Leahy-Smith Act will have on the operation of our business. The Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our owned or in-licensed patent applications and the enforcement or defense of our issued owned or in-licensed patents, all of which could have a material adverse impact on our business prospects and financial condition.

As referenced above, for example, courts in the U.S. continue to refine the heavily fact-and-circumstance-dependent jurisprudence defining the scope of patent protection available for therapeutic antibodies, narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. This creates uncertainty about our ability to obtain patents in the future and the value of such patents. We cannot provide assurance that future developments in U.S. Congress, the federal courts and the USPTO will not adversely impact our owned or in-licensed patents or patent applications. The laws and regulations governing patents could change in unpredictable ways that could weaken our and our licensors’ ability to obtain new patents or to enforce our existing owned or in-licensed patents and patents that we might obtain or in-license in the future. Similarly, changes in patent law and regulations in other countries or jurisdictions or changes in the governmental bodies that enforce them or changes in how the relevant governmental authority enforces patent laws or regulations may have a material adverse effect on our and our licensors’ ability to obtain new patents or to protect and enforce our owned or in-licensed patents or patents that we may obtain or in-license in the future.

Other companies or organizations may challenge our or our licensors’ patent rights or may assert patent rights that prevent us from developing and commercializing our current or future products.

As the field of antibody-based immunotherapeutics matures, patent applications are being processed by national patent offices around the world. There is uncertainty about which patents will issue, and, if they do, there is uncertainty as to when, to whom, and with what claims. In addition, third parties may attempt to invalidate our or our licensors’ intellectual property rights. Even if such rights are not directly challenged, disputes could lead to the weakening of our or our licensors’ intellectual property rights. Our defense against any attempt by third parties to circumvent or invalidate our intellectual property rights could be costly to us, could require significant time and attention of our management, and could have a material and adverse impact on our profitability, financial condition and prospects or ability to successfully compete.

There are many issued and pending patents that claim aspects of our current or potential future product candidates and modifications that we may need to apply to our current or potential future product candidates. There are also many issued patents that claim antibodies or portions of antibodies that may be relevant for products we wish to develop.

Further, we cannot guarantee that we are aware of all of patents and patent applications potentially relevant to our technology or products. We may not be aware of potentially relevant third-party patents or applications for several reasons. For example, U.S. applications filed before November 29, 2000, and certain U.S. applications filed after that date that will not be filed outside the U.S. remain confidential until patents issue. Patent applications in the United States and elsewhere are published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Therefore, patent applications covering our product candidates or platform technologies could have been filed by others without our knowledge. Additionally, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our platform, our product candidates or the use of our technologies.

Thus, it is possible that one or more third parties will hold patent rights to which we will need a license, which may not be available on reasonable terms or at all. If such third parties refuse to grant us a license to such patent rights on reasonable terms or at all, we may be required to expend significant time and resources to redesign our technology, product candidates or the methods for manufacturing our product candidates, or to develop or license replacement technology, all of which may not be commercially or technically feasible. In such case, we may not be able to market such technology or product candidates and may not be able to perform research and development or other activities covered by these patents. This could have a material adverse effect on our ability to commercialize our product candidates and our business and financial condition.

We may not be able to protect our intellectual property rights throughout the world, which could negatively impact our business.

Filing, prosecuting and defending patents on current or future technologies or product candidates in all countries throughout the world would be prohibitively expensive. Competitors or other third parties may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export infringing products to territories where we have patent protection or licenses but enforcement is not as strong as that in the United States. These products may compete with our products, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Additionally, the laws of some foreign jurisdictions do not protect intellectual property rights to the same extent as the laws in the United States. Many companies have encountered significant difficulties in protecting and defending such rights in such jurisdictions. The legal systems of certain countries, including certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biotechnology, which could make it difficult for us to stop the infringement of our owned and in-licensed patents or the marketing of competing products in violation of our intellectual property and proprietary rights generally. Proceedings to enforce our owned or in-licensed intellectual property and proprietary rights in foreign jurisdictions could result in substantial costs and could divert our efforts and attention from other aspects of our business. Such proceedings could also put our owned or in-licensed patents at risk of being invalidated or interpreted narrowly, could put our owned or in-licensed patent applications at risk of not issuing, and could provoke third parties to assert claims against us or our licensors. We or our licensors may not prevail in any lawsuits or other adversarial proceedings that we or our licensors initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our and our licensors' efforts to enforce such intellectual property and proprietary rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or in-license.

Further, many countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, many countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of its patents. If we or any of our licensors are forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position in the relevant jurisdiction may be impaired and our business prospects may be materially adversely affected.

Third parties may initiate legal proceedings alleging that we are infringing, misappropriating or violating their intellectual property rights, the outcome of which would be uncertain and could have a material adverse impact on the success of our business.

Our commercial success depends, in part, upon our ability or the ability of our potential future collaborators to develop, manufacture, market and sell our current or any future product candidates and to use our proprietary technologies without infringing, misappropriating or violating the proprietary and intellectual property rights of third parties. The biotechnology and pharmaceutical industries are characterized by extensive and complex litigation regarding patents and other intellectual property rights.

We or our licensors, or any future strategic partners, may be party to, or be threatened with, adversarial proceedings or litigation regarding intellectual property rights with respect to our current or any potential future product candidates and technologies, including derivation, reexamination, *inter parte*s review, post-grant review or interference

proceedings before the USPTO and similar proceedings in jurisdictions outside of the United States such as opposition proceedings. In some instances, we may be required to indemnify our licensors for the costs associated with any such adversarial proceedings or litigation. For example, we are obligated under our license agreement with Stanford University to indemnify, hold harmless and defend Stanford University for damages from any claim of any kind arising out of or related to the license agreement with Stanford University. Third parties may assert infringement claims against us, our licensors or our strategic partners based on existing patents or patents that may be granted in the future, regardless of their merit. There is a risk that third parties may choose to engage in litigation or other adversarial proceedings with us, our licensors or our strategic partners to enforce or otherwise assert their patent rights. Even if we believe such claims are without merit, a court of competent jurisdiction could hold that these third-party patents are valid, enforceable and infringed, which could have a material adverse impact on our ability to utilize our discovery platform or to commercialize our current or any future product candidates. In order to successfully challenge the validity of any such U.S. patent in federal court, we would need to overcome a presumption of validity by presenting clear and convincing evidence of invalidity. There is no assurance that a court of competent jurisdiction, even if presented with evidence we believe to be clear and convincing, would invalidate the claims of any such U.S. patent.

Further, we cannot guarantee that we will be able to successfully settle or otherwise resolve such adversarial proceedings or litigation. If we are unable to successfully settle future claims on terms acceptable to us, we may be required to engage in or to continue costly, unpredictable and time-consuming litigation and may be prevented from or experience substantial delays in marketing our product candidates. If we, or our licensors, or any future strategic partners are found to infringe, misappropriate or violate a third-party patent or other intellectual property rights, we could be required to pay damages, including treble damages and attorney's fees, if we are found to have willfully infringed. In addition, we, or our licensors, or any future strategic partners may choose to seek, or be required to seek, a license from a third party, which may not be available on commercially reasonable terms, if at all. Even if a license can be obtained on commercially reasonable terms, the rights may be non-exclusive, which could give our competitors access to the same technology or intellectual property rights licensed to us, and we could be required to make substantial licensing and royalty payments. We also could be forced, including by court order, to cease utilizing, developing, manufacturing and commercializing our discovery platform or product candidates deemed to be infringing. We may be forced to redesign current or future technologies or products. Any of the foregoing could have a material adverse effect on our ability to generate revenue or achieve profitability and possibly prevent us from generating revenue sufficient to sustain our operations.

In addition, we or our licensors may find it necessary to pursue claims or to initiate lawsuits to protect or enforce our owned or in-licensed patent or other intellectual property rights. The cost to us in defending or initiating any litigation or other proceeding relating to our owned or in-licensed patent or other intellectual property rights, even if resolved in our favor, could be substantial, and any litigation or other proceeding would divert our management's attention. Such litigation or proceedings could materially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. Some of our competitors may be able to more effectively to sustain the costs of complex patent litigation because they have substantially greater resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could delay our research and development efforts and materially limit our ability to continue our operations. Furthermore, because of the substantial amount of discovery required in connection with certain such proceedings, there is a risk that some of our confidential information could be compromised by disclosure. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, such announcements could have a material adverse effect on the price of our Class A common stock.

If we or our licensors were to initiate legal proceedings against a third party to enforce a patent covering one of our product candidates or our technology, the defendant could counterclaim that such patent is invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, claiming patent-ineligible subject matter, lack of novelty, indefiniteness, lack of written description, non-enablement, anticipation or obviousness. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO or made a misleading statement during prosecution. The outcome of such invalidity and unenforceability claims is unpredictable. With respect to the

validity question, for example, we cannot be certain that there is no invalidating prior art of which we or our licensors and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we could lose at least part, and perhaps all, of the patent protection for one or more of our product candidates or certain aspects of our platform technology. Such a loss of patent protection could have a material adverse effect on our business, financial condition, results of operations and prospects. Patents and other intellectual property rights also will not protect our product candidates and technologies if competitors or third parties design around such product candidates and technologies without legally infringing, misappropriating or violating our owned or in-licensed patents or other intellectual property rights.

Intellectual property rights of third parties could adversely affect our ability to commercialize our current or future technologies or product candidates, and we might be required to litigate or obtain licenses from third parties to develop or market our current or future technologies or product candidates, which may not be available on commercially reasonable terms or at all.

Because the antibody landscape is still evolving, it is difficult to conclusively assess our freedom to operate without infringing, misappropriating or violating third-party rights. There are numerous companies that have pending patent applications and issued patents broadly covering antibodies generally or covering antibodies directed against the same targets as, or targets similar to, those we are pursuing. Our competitive position may materially suffer if patents issued to third parties or other third-party intellectual property rights cover our current or future technologies product candidates or elements thereof or our manufacture or uses relevant to our development plans. In such cases, we may not be in a position to develop or commercialize current or future technologies, product candidates unless we successfully pursue litigation to nullify or invalidate the third-party intellectual property right concerned, or enter into a license agreement with the intellectual property right holder, if available on commercially reasonable terms. There may be issued patents of which we are not aware, held by third parties that, if found to be valid and enforceable, could be alleged to be infringed by our current or future technologies or product candidates. There also may be pending patent applications of which we are not aware that may result in issued patents, which could be alleged to be infringed by our current or future technologies or product candidates. If such an infringement claim should successfully be brought, we may be required to pay substantial damages or be forced to abandon our current or future technologies or product candidates or to seek a license from any patent holders. No assurances can be given that a license will be available on commercially reasonable terms, if at all.

Third party intellectual property right holders may also actively bring infringement, misappropriation or violation or other claims alleging violations of intellectual property rights against us. We cannot guarantee that we will be able to successfully settle or otherwise resolve such claims. If we are unable to successfully settle future claims on terms acceptable to us, we may be required to engage in or to continue costly, unpredictable and time-consuming litigation and may be prevented from or experience substantial delays in marketing our product candidates. If we fail in any such dispute, in addition to being forced to pay damages, we may be temporarily or permanently prohibited from commercializing any of our current or future technologies or product candidates that are held to be infringing, misappropriating or otherwise violating third-party intellectual property rights. We might, if possible, also be forced to redesign current or future technologies or product candidates so that we no longer infringe, misappropriate or violate the third-party intellectual property rights. Any of these events, even if we were ultimately to prevail, could require us to divert substantial financial and management resources that we would otherwise be able to devote to our business, which could have a material adverse effect on our financial condition and results of operations.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

As referenced above, in addition to seeking patent protection for certain aspects of our current or future technologies and product candidates, we also consider trade secrets, including confidential and unpatented know-how, important to the maintenance of our competitive position. However, trade secrets and know-how can be difficult to protect. We protect and plan to protect trade secrets and confidential and unpatented know-how, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to such knowledge, such as our employees, corporate collaborators, outside scientific collaborators, CROs, contract manufacturers, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and

consultants under which they are obligated to maintain confidentiality and to assign their inventions to us. Despite these efforts, we may not obtain these agreements in all circumstances. Moreover, individuals with whom we have such agreements may not comply with their terms. Any of these parties may breach such agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for any such breaches. We may also become involved in inventorship disputes relating to inventions and patents developed by our employees or consultants under such agreements. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret, or securing title to an employee- or consultant-developed invention if a dispute arises, is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts in the United States and certain foreign jurisdictions disfavor or are unwilling to protect trade secrets. Further, if any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent that competitor from using the technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, our competitive position would be materially and adversely harmed.

We may be subject to claims that we or our employees or consultants have wrongfully used or disclosed alleged trade secrets or other proprietary information of our employees' or consultants' former employers or their clients.

Many of our employees or consultants and our licensors' employees or consultants were previously employed at universities or biotechnology or biopharmaceutical companies, including our competitors or potential competitors. We may be subject to claims that one or more of these employees or consultants or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of former employers. Litigation or arbitration may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel or may be enjoined from using such intellectual property. Any such proceedings and possible aftermath would likely divert significant resources from our core business, including distracting our technical and management personnel from their normal responsibilities. A loss of key research personnel or their work product could limit our ability to commercialize, or prevent us from commercializing, our current or future technologies or product candidates, which could materially harm our business. Even if we are successful in defending against any such claims, litigation or arbitration could result in substantial costs and could be a distraction to management.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by government patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees, renewal fees, annuity fees and various other government fees on patents or applications will be due to be paid to the USPTO and various government patent agencies outside of the United States over the lifetime of our owned and in-licensed patents or applications and any patent rights we may own or in-license in the future. The USPTO and various non-U.S. government patent agencies require compliance with several procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply with these requirements, and we are also dependent on our licensors to take the necessary action to comply with these requirements with respect to our in-licensed intellectual property. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. There are situations, however, in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, potential competitors might be able to enter the market with similar or identical products or platforms, which could have a material adverse effect on our business prospects and financial condition.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

Our trademarks or trade names may be challenged, infringed, circumvented, declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names or may be forced to stop using these names, which we use for name recognition by potential partners or customers in our markets of interest. If we are unable to establish name recognition based on our trademarks and trade names, we may not be able to compete effectively and our business may be materially adversely affected.

Intellectual property rights do not necessarily address all potential threats to our business.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and may not adequately protect our business. The following examples are illustrative:

- others may be able to make compounds or formulations that are similar to our product candidates, but that are not covered by the claims of any patents that we own, license or control;
- we or any strategic partners might not have been the first to make the inventions covered by the issued patents or pending patent applications that we own, license or control;
- we or our licensors might not have been the first to file patent applications covering certain of our owned and in-licensed inventions;
- others may independently develop the same, similar, or alternative technologies without infringing, misappropriating or violating our owned or in-licensed intellectual property rights;
- it is possible that our owned or in-licensed pending patent applications will not lead to issued patents;
- issued patents that we own, in-license, or control may not provide us with any competitive advantages, or may be narrowed or held invalid or unenforceable, including as a result of legal challenges;
- our competitors might conduct research and development activities in the United States and other countries that provide a safe harbor from patent infringement claims for certain research and development activities, as well as in countries where we do not have patent rights, and may then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may choose not to file a patent in order to maintain certain trade secrets or know-how, and a third party may subsequently file a patent covering such trade secrets or know-how; and
- the patents of others may have an adverse effect on our business.

Should any of these events occur, they could have a material adverse impact on our business and financial condition.

Risks Related to Government Regulation

Clinical development includes a lengthy and expensive process with an uncertain outcome, and results of earlier studies and trials may not be predictive of future trial results.

Our only product candidate, ATRC-101, is in early clinical development and its risk of failure is high. It is impossible to predict when or if ATRC-101 or any potential future product candidates will prove effective and safe in humans or will receive regulatory approval. Before obtaining marketing approval from regulatory authorities for the sale of any product candidate, we must complete preclinical studies and then conduct extensive clinical trials to demonstrate the safety and efficacy of that product candidate in humans. Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the development process. The results of preclinical studies and early clinical trials of any of our current or potential future product candidates may not be predictive of the results of later-stage clinical trials. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials. A number of companies in the pharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or safety profiles, notwithstanding promising results in earlier trials.

We may experience delays in completing our preclinical studies and initiating or completing clinical trials of ATRC-101 or potential future product candidates. We do not know whether planned preclinical studies and clinical trials will be completed on schedule or at all, or whether planned clinical trials will begin on time, need to be redesigned, enroll patients on time or be completed on schedule, if at all. Our development programs may be delayed for a variety of reasons, including delays related to:

- the FDA or other regulatory authorities requiring us to submit additional data or imposing other requirements before permitting us to initiate a clinical trial;
- obtaining regulatory approval to commence a clinical trial;

- reaching agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical trial sites;
- obtaining institutional review board, or IRB, approval at each clinical trial site;
- recruiting suitable patients to participate in a clinical trial;
- having patients complete a clinical trial or return for post-treatment follow-up;
- clinical trial sites deviating from trial protocol or dropping out of a trial;
- adding new clinical trial sites; or
- manufacturing sufficient quantities of our product candidates for use in clinical trials.

Furthermore, we expect to rely on our CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials and, while we expect to enter into agreements governing their committed activities, we have limited influence over their actual performance.

We could encounter delays if prescribing physicians encounter unresolved ethical issues associated with enrolling patients in clinical trials of our current or potential future product candidates in lieu of prescribing existing treatments that have established safety and efficacy profiles. Further, a clinical trial may be suspended or terminated by us, our partners, the IRBs of the institutions in which such trials are being conducted, the Data Safety Monitoring Board for such trial or by the FDA or other regulatory authorities due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a drug or therapeutic biologic, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial. If we experience delays in the completion of, or termination of, any clinical trial of any of our current or potential future product candidates, the commercial prospects of such product candidate will be harmed, and our ability to generate product revenue from such product candidates will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow our product development and approval process and jeopardize our ability to commence product sales and generate revenue. Any of these occurrences may materially and adversely affect our business, financial condition, results of operations and prospects. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our current or potential future product candidates.

We may be unable to obtain U.S. or foreign regulatory approval and, as a result, be unable to commercialize ATRC-101 or potential future product candidates.

ATRC-101 and any potential future product candidates are subject to extensive governmental regulations relating to, among other things, research, testing, development, manufacturing, safety, efficacy, approval, recordkeeping, reporting, labeling, storage, packaging, advertising and promotion, pricing, marketing and distribution of drugs and therapeutic biologics. Rigorous preclinical testing and clinical trials and an extensive regulatory approval process are required to be successfully completed in the U.S. and in many foreign jurisdictions before a new drug or therapeutic biologic can be marketed. Satisfaction of these and other regulatory requirements is costly, time-consuming, uncertain and subject to unanticipated delays. It is possible that none of the product candidates we may develop will obtain the regulatory approvals necessary for us or our potential future partners to begin selling them.

We have very limited experience in conducting and managing the clinical trials necessary to obtain regulatory approvals, including approval by the FDA. The time required to obtain FDA and other approvals is unpredictable but typically takes many years following the commencement of clinical trials, depending upon the type, complexity and novelty of the product candidate. The standards that the FDA and its foreign counterparts use when regulating us require judgment and can change, which makes it difficult to predict with certainty how they will be applied. Any analysis we perform of data from preclinical and clinical activities is subject to confirmation and interpretation by regulatory authorities, which could delay, limit or prevent regulatory approval. We may also encounter unexpected delays or increased costs due to new government regulations, for example, from future legislation or administrative action, or from changes in FDA policy during the period of product development, clinical trials and FDA regulatory review. It is

impossible to predict whether legislative changes will be enacted, or whether FDA or foreign regulations, guidance or interpretations will be changed, or what the impact of such changes, if any, may be.

Because ATRC-101 or potential future product candidates we are developing may work through mechanisms of action or work against targets with which the FDA has limited early experience, the FDA and its foreign counterparts have not yet established any definitive policies, practices or guidelines in relation to these product candidates. While we believe these product candidates are regulated as therapeutic biologics that are subject to requirements for review and approval of a Biologics License Application, or BLA, by the FDA, the lack of policies, practices or guidelines may hinder or slow review by the FDA of any regulatory filings that we may submit. Moreover, the FDA may respond to these submissions by defining requirements we may not have anticipated. Such responses could lead to significant delays in the clinical development of these product candidates, including ATRC-101. In addition, because there may be approved treatments for some of the diseases for which we may seek approval, in order to receive regulatory approval, we may need to demonstrate through clinical trials that the current or potential future product candidates we develop to treat these diseases, if any, are not only safe and effective, but safer or more effective than existing products.

Any delay or failure in obtaining required approvals could have a material and adverse effect on our ability to generate revenue from the particular product candidate for which we are seeking approval. Further, we and our potential future partners may never receive approval to market and commercialize any product candidate. Even if we or a potential future partner obtains regulatory approval, the approval may be for targets, disease indications or patient populations that are not as broad as we intended or desired or may require labeling that includes significant use or distribution restrictions or safety warnings. We or a potential future partner may be subject to post-marketing testing requirements to maintain regulatory approval. If ATRC-101 or any of our potential future product candidates prove to be ineffective, unsafe or commercially unviable, we may have to re-engineer ATRC-101 or our potential future product candidates, and our entire pipeline could have little, if any, value, which could require us to change our focus and approach to antibody discovery and development, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

We are also subject to numerous foreign regulatory requirements governing, among other things, the conduct of clinical trials, manufacturing and marketing authorization, pricing and third-party reimbursement. The foreign regulatory approval process varies among countries and may include all of the risks associated with FDA approval described above as well as risks attributable to the satisfaction of local regulations in foreign jurisdictions. Moreover, the time required to obtain approval may differ from that required to obtain FDA approval. Approval by the FDA does not ensure approval by regulatory authorities outside the United States and vice versa.

Even if we receive regulatory approval for any of our current or potential future product candidates, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense. Additionally, our current or potential future product candidates, if approved, could be subject to labeling and other restrictions and market withdrawal and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our products.

Any regulatory approvals that we or potential future partners obtain for ATRC-101 or any potential future product candidate may also be subject to limitations on the approved indicated uses for which a product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including ‘‘Phase 4’’ clinical trials, and surveillance to monitor the safety and efficacy of such product candidate. In addition, if the FDA or other regulatory authority approves ATRC-101 or any potential future product candidate, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, import, export, advertising, promotion and recordkeeping for such product will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMP and good clinical practices for any clinical trials that we conduct post-approval. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on the marketing or manufacturing of the product, withdrawal of the product from the market or voluntary or mandatory product recalls;
- fines, warning letters or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or our strategic partners;
- suspension or revocation of product license approvals;
- product seizure or detention or refusal to permit the import or export of products; and
- injunctions or the imposition of civil or criminal penalties.

The FDA's policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability, which would adversely affect our business.

We may attempt to secure approval from the FDA through the use of accelerated registration pathways. If unable to obtain approval under an accelerated pathway, we may be required to conduct additional preclinical studies or clinical trials which could increase the expense of obtaining, reduce the likelihood of obtaining or delay the timing of obtaining, necessary marketing approvals. Even if we receive accelerated approval from the FDA, if our confirmatory trials do not verify clinical benefit, or if we do not comply with rigorous post-marketing requirements, the FDA may seek to withdraw accelerated approval.

We may seek an accelerated approval development pathway for our product candidates, including ATRC-101. Under the accelerated approval provisions of the Federal Food, Drug, and Cosmetic Act, or the FDCA, and the FDA's implementing regulations, the FDA may grant accelerated approval to a product designed to treat a serious or life-threatening condition that provides meaningful therapeutic advantage over available therapies and demonstrates an effect on a surrogate endpoint or intermediate clinical endpoint that is reasonably likely to predict clinical benefit. The FDA considers a clinical benefit to be a positive therapeutic effect that is clinically meaningful in the context of a given disease. For the purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign or other measure that is thought to predict clinical benefit but is not itself a measure of clinical benefit. An intermediate clinical endpoint is a clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit. The accelerated approval development pathway may be used in cases in which the advantage of a new drug over available therapy may not be a direct therapeutic advantage, but is a clinically important improvement from a patient and public health perspective. If granted, accelerated approval is contingent on the sponsor's agreement to conduct, in a diligent manner, additional post-approval confirmatory studies to verify and describe the drug's clinical profile or risks and benefits for accelerated approval. The FDA may require that any such confirmatory study be initiated or substantially underway prior to the submission of an application for accelerated approval. If such post-approval studies fail to confirm the drug's clinical profile or risks and benefits, the FDA may withdraw its approval of the drug.

If we choose to pursue accelerated approval, we intend to seek feedback from the FDA or will otherwise evaluate our ability to seek and receive such accelerated approval. There can be no assurance that, after our evaluation of the feedback from the FDA or other factors, we will decide to pursue or submit a BLA for accelerated approval or any other form of expedited development, review or approval. Furthermore, if we submit an application for accelerated approval, there can be no assurance that such application will be accepted or that approval will be granted on a timely basis, or at all. The FDA also could require us to conduct further studies or trials prior to considering our application or granting approval of any type. We might not be able to fulfill the FDA's requirements in a timely manner, which would cause delays, or approval might not be granted because our submission is deemed incomplete by the FDA.

Even if we receive accelerated approval from the FDA, we will be subject to rigorous post-marketing requirements, including the completion of confirmatory post-market clinical trials to verify the clinical benefit of the product, and submission to the FDA of all promotional materials prior to their dissemination. The FDA could seek to withdraw accelerated approval for multiple reasons, including if we fail to conduct any required post-market study with

due diligence; a post-market study does not confirm the predicted clinical benefit; other evidence shows that the product is not safe or effective under the conditions of use; or we disseminate promotional materials that are found by the FDA to be false and misleading.

A failure to obtain accelerated approval or any other form of expedited development, review or approval for a product candidate that we may choose to develop would result in a longer time period prior to commercializing such product candidate, could increase the cost of development of such product candidate and could harm our competitive position in the marketplace.

Healthcare legislative reform measures may have a material adverse effect on our business and results of operations.

In the United States, there have been and continue to be a number of legislative initiatives to contain healthcare costs. For example, in March 2010, the Patient Protection and Affordable Care Act, or the ACA, was enacted, which substantially changed the way healthcare is financed by both governmental and private insurers, and significantly impacted the U.S. pharmaceutical industry. Among the provisions of the ACA, of greatest importance to the pharmaceutical and biotechnology industry are the following:

- an annual, nondeductible fee on any entity that manufactures or imports certain specified branded prescription drugs and biologic agents apportioned among these entities according to their market share in some government healthcare programs;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13% of the average manufacturer price for most branded and generic drugs, respectively, and capped the total rebate amount for innovator drugs at 100% of the Average Manufacturer Price (AMP);
- a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for certain drugs and biologics that are inhaled, infused, instilled, implanted or injected;
- extension of manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for individuals with income at or below 133% of the federal poverty level, thereby potentially increasing manufacturers' Medicaid rebate liability;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% (and 70% as of January 1, 2019) point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- expansion of the entities eligible for discounts under the Public Health program;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;
- establishment of a Center for Medicare Innovation at CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending; and
- implementation of the federal physician payment transparency requirements, sometimes referred to as the ''Physician Payments Sunshine Act''.

Some of the provisions of the ACA have yet to be fully implemented, and there have been legal and political challenges to certain aspects of the ACA. Since January 2017, President Trump has signed two executive orders and other directives designed to delay, circumvent, or loosen certain requirements mandated by the ACA. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, or the Tax Act, includes a provision that repealed, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year, that is commonly referred to as the ''individual mandate.'' Additionally, on January 22, 2018, President Trump signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain ACA-mandated fees, including the so-called ''Cadillac'' tax on certain high

cost employer-sponsored insurance plans, the annual fee imposed on certain health insurance providers based on market share, and the medical device excise tax on non-exempt medical devices. Further, the Bipartisan Budget Act of 2018 (BBA), among other things, amended the ACA, effective January 1, 2019, to close the coverage gap in most Medicare drug plans, commonly referred to as the ‘‘donut hole.’’ In July 2018, CMS published a final rule permitting further collections and payments to and from certain ACA qualified health plans and health insurance issuers under the ACA risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas ruled that the individual mandate is an inseverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. While the Texas U.S. District Court Judge, as well as the Trump Administration and CMS have stated that the ruling will have no immediate effect, it is unclear how this decision, subsequent appeals, and other efforts to repeal and replace the ACA will impact the ACA and our business.

In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted. On August 2, 2011, the Budget Control Act of 2011 among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation’s automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect on April 1, 2013 and, due to subsequent legislative amendments to the statute, will remain in effect through 2027 unless additional Congressional action is taken. On January 2, 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers. Additionally, there has been heightened governmental scrutiny recently over the manner in which manufacturers set prices for their marketed products. For example, there have been several recent Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drug products. At the federal level, the Trump administration’s budget proposal for fiscal year 2019 contains further drug price control measures that could be enacted during the 2019 budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid, and to eliminate cost sharing for generic drugs for low-income patients. Further, the Trump administration released a ‘‘Blueprint’’ to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. In addition, on January 31, 2019, the HHS Office of Inspector General, proposed modifications to the federal Anti-Kickback Statute discount safe harbor for the purpose of reducing the cost of drug products to consumers which, among other things, if finalized, will affect discounts paid by manufacturers to Medicare Part D plans, Medicaid managed care organizations and pharmacy benefit managers working with these organizations. Although a number of these, and other potential, proposals will require additional authorization to become effective, Congress and the executive branch have each indicated that it will continue to seek new legislative or administrative measures to control drug costs. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures and, in some cases, designed to encourage importation from other countries and bulk purchasing. These new laws and initiatives may result in additional reductions in Medicare and other healthcare funding, which could have a material adverse effect on our future customers and accordingly, our financial operations.

We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures.

If we or potential future partners, manufacturers or service providers fail to comply with healthcare laws and regulations, we or they could be subject to enforcement actions, which could affect our ability to develop, market and sell our products and may harm our reputation.

Healthcare providers, physicians and third-party payors, among others, will play a primary role in the prescription and recommendation of any product candidates for which we obtain marketing approval. Our current and future arrangements with third-party payors, providers and customers, among others, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our product candidates for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations, include the following:

- the federal Anti-Kickback Statute, which prohibits, among other things, a person or entity from knowingly and willfully soliciting, offering, paying, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, lease order, arranging for or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, by a federal healthcare program, such as Medicare or Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, a violation of the Anti-Kickback Statute can form the basis for a violation of the federal False Claims Act (discussed below);
- federal civil and criminal false claims laws and civil monetary penalties laws, including the federal False Claims Act, which provides for civil whistleblower or qui tam actions, that impose penalties against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government. In addition, the government may assert that a claim including items and services resulting from a referral made in violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act;
- HIPAA, which imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items or services. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- HIPAA, as amended by HITECH, and its implementing regulations, including the Final Omnibus Rule published in January 2013, which impose obligations on certain covered entity healthcare providers, health plans, and healthcare clearinghouses as well as their business associates that perform certain services involving the use or disclosure of individually identifiable health information, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information, and require notification to affected individuals and regulatory authorities of certain breaches of security of individually identifiable health information;
- the federal false statements statute, which prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or payment for healthcare benefits, items or services;
- the federal transparency requirements known as the federal Physician Payments Sunshine Act, created as part of ACA, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program to report annually to CMS information related to payments and other transfers of value made by that entity to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members; and
- analogous local, state and foreign laws and regulations, such as state anti-kickback and false claims laws that may apply to healthcare items or services reimbursed by third party payors, including private insurers; local, state and foreign transparency laws that require manufacturers to report information related to payments and transfers of value to other healthcare providers and healthcare entities, marketing expenditures, or drug pricing; state laws that require pharmaceutical companies to register certain employees engaged in marketing activities in the location and comply with the pharmaceutical industry's

voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Ensuring that our future business arrangements with third parties comply with applicable healthcare laws and regulations could involve substantial costs. If our operations are found to be in violation of any such requirements, we may be subject to penalties, including criminal and significant civil monetary penalties, damages, fines, individual imprisonment, disgorgement, contractual damages, reputational harm, exclusion from participation in government healthcare programs, integrity obligations, injunctions, recall or seizure of products, total or partial suspension of production, denial or withdrawal of pre-marketing product approvals, private qui tam actions brought by individual whistleblowers in the name of the government, refusal to allow us to enter into supply contracts, including government contracts, additional reporting requirements and oversight if subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Although effective compliance programs can mitigate the risk of investigation and prosecution for violations of these laws, these risks cannot be entirely eliminated. Any action against us for an alleged or suspected violation could cause us to incur significant legal expenses and could divert our management's attention from the operation of our business, even if our defense is successful. In addition, achieving and sustaining compliance with applicable laws and regulations may be costly to us in terms of money, time and resources.

If we fail to comply with U.S. and foreign regulatory requirements, regulatory authorities could limit or withdraw any marketing or commercialization approvals we may receive and subject us to other penalties that could materially harm our business.

Even if we receive marketing and commercialization approval of a product candidate, we will be subject to continuing regulatory requirements, including in relation to adverse patient experiences with the product and clinical results that are reported after a product is made commercially available, both in the United States and any foreign jurisdiction in which we seek regulatory approval. The FDA has significant post-market authority, including the authority to require labeling changes based on new safety information and to require post-market studies or clinical trials to evaluate safety risks related to the use of a product or to require withdrawal of the product from the market. The FDA also has the authority to require a Risk Evaluation and Mitigation Strategy, or a REMS, after approval, which may impose further requirements or restrictions on the distribution or use of an approved drug or therapeutic biologic. The manufacturer and manufacturing facilities we use to make a future product, if any, will also be subject to periodic review and inspection by the FDA and other regulatory agencies, including for continued compliance with cGMP requirements. The discovery of any new or previously unknown problems with our third-party manufacturers, manufacturing processes or facilities may result in restrictions on the product, manufacturer or facility, including withdrawal of the product from the market. We intend to rely on third-party manufacturers, and we will not have control over compliance with applicable rules and regulations by such manufacturers. Any product promotion and advertising will also be subject to regulatory requirements and continuing regulatory review. If we or our existing or future partners, manufacturers or service providers fail to comply with applicable continuing regulatory requirements in the U.S. or foreign jurisdictions in which we seek to market our products, we or they may be subject to, among other things, fines, warning letters, holds on clinical trials, delay of approval or refusal by the FDA to approve pending applications or supplements to approved applications, suspension or withdrawal of regulatory approval, product recalls and seizures, administrative detention of products, refusal to permit the import or export of products, operating restrictions, injunction, civil penalties and criminal prosecution.

Even if we are able to commercialize any product candidate, such product candidate may become subject to unfavorable pricing regulations or third-party coverage and reimbursement policies, which would harm our business.

Our ability to commercialize any products successfully will depend, in part, on the extent to which coverage and adequate reimbursement for these products and related treatments will be available from third-party payors, such as government authorities, private health insurers and health maintenance organizations. Patients who are prescribed medications for the treatment of their conditions generally rely on third-party payors to reimburse all or part of the costs

associated with their prescription drugs. Coverage and adequate reimbursement from government healthcare programs, such as Medicare and Medicaid, and private health insurers are critical to new product acceptance. Patients are unlikely to use our future products, if any, unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost.

Cost-containment is a priority in the U.S. healthcare industry and elsewhere. As a result, government authorities and other third party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. Third-party payors also may request additional clinical evidence beyond the data required to obtain marketing approval, requiring a company to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of its product. Commercial third-party payors often rely upon Medicare coverage policy and payment limitations in setting their reimbursement rates, but also have their own methods and approval process apart from Medicare determinations. Therefore, coverage and reimbursement for pharmaceutical products in the U.S. can differ significantly from payor to payor. We cannot be sure that coverage and adequate reimbursement will be available for any product that we commercialize and, if reimbursement is available, that the level of reimbursement will be adequate. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If coverage and reimbursement are not available or are available only at limited levels, we may not be able to successfully commercialize any product candidate for which we obtain marketing approval.

Additionally, the regulations that govern regulatory approvals, pricing and reimbursement for new drugs and therapeutic biologics vary widely from country to country. Some countries require approval of the sale price of a drug or therapeutic biologic before it can be marketed. In many countries, the pricing review period begins after marketing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain regulatory approval for a product in a particular country, but then be subject to price regulations that delay our commercial launch of the product, possibly for lengthy time periods, and negatively impact the revenues we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if our product candidates obtain regulatory approval.

We are subject to U.S. and foreign anti-corruption and anti-money laundering laws with respect to our operations and non-compliance with such laws can subject us to criminal or civil liability and harm our business.

We are subject to the U.S. Foreign Corrupt Practices Act of 1977, as amended, or the FCPA, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act, and possibly other state and national anti-bribery and anti-money laundering laws in countries in which we conduct activities. Anti-corruption laws are interpreted broadly and prohibit companies and their employees, agents, third-party intermediaries, joint venture partners and collaborators from authorizing, promising, offering or providing, directly or indirectly, improper payments or benefits to recipients in the public or private sector. We interact with officials and employees of government agencies and government-affiliated hospitals, universities and other organizations. In addition, we may engage third-party intermediaries to promote our clinical research activities abroad or to obtain necessary permits, licenses and other regulatory approvals. We can be held liable for the corrupt or other illegal activities of these third party intermediaries, our employees, representatives, contractors, partners and agents, even if we do not explicitly authorize or have actual knowledge of such activities.

Our Code of Business Conduct and Ethics mandates compliance with the FCPA and other anti-corruption laws applicable to our business throughout the world. However, we cannot assure you that our employees and third-party intermediaries will comply with this code or such anti-corruption laws. Noncompliance with anti-corruption and anti-money laundering laws could subject us to whistleblower complaints, investigations, sanctions, settlements, prosecution, other enforcement actions, disgorgement of profits, significant fines, damages, other civil and criminal penalties or injunctions, suspension or debarment from contracting with certain persons, the loss of export privileges, reputational harm, adverse media coverage and other collateral consequences. If any subpoenas, investigations or other enforcement actions are launched, or governmental or other sanctions are imposed, or if we do not prevail in any possible civil or criminal litigation, our business, results of operations and financial condition could be materially harmed. In addition,

responding to any action will likely result in a materially significant diversion of management's attention and resources and significant defense and compliance costs and other professional fees. In certain cases, enforcement authorities may even cause us to appoint an independent compliance monitor which can result in added costs and administrative burdens.

Comprehensive tax reform bills could adversely affect our business and financial condition.

On December 20, 2017, the U.S. Congress passed the Tax Act, enacting comprehensive tax legislation that includes significant changes to the taxation of business entities. These changes include, among others: a permanent reduction to the corporate income tax rate; a partial limitation on the deductibility of business interest expense; a shift of the U.S. taxation of multinational corporations from a tax on worldwide income to a territorial system (along with certain rules designed to prevent erosion of the U.S. income tax base); and a one-time tax on accumulated offshore earnings held in cash and illiquid assets, with the latter taxed at a lower rate.

Notwithstanding the reduction in the corporate income tax rate, the overall impact of this tax reform remains uncertain, and our business and financial condition could be adversely affected. This Quarterly Report on Form 10-Q does not provide an in-depth discussion of any such tax legislation or the manner in which it might affect purchasers of our Class A common stock. We urge our stockholders to consult with their legal and tax advisors with respect to any such legislation and the potential tax consequences of investing in our Class A common stock.

Risks Related to Our Class A Common Stock

Our quarterly operating results may fluctuate significantly or may fall below the expectations of investors or securities analysts, each of which may cause our stock price to fluctuate or decline.

We expect our operating results to be subject to quarterly fluctuations. Our net loss and other operating results will be affected by numerous factors, including:

- variations in the level of expense related to the ongoing development of our product candidates or future development programs;
- results of clinical trials, or the addition or termination of clinical trials or funding support by us or potential future partners;
- our execution of any collaboration, licensing or similar arrangements, and the timing of payments we may make or receive under potential future arrangements or the termination or modification of any such potential future arrangements;
- any intellectual property infringement, misappropriation or violation lawsuit or opposition, interference or cancellation proceeding in which we may become involved;
- additions and departures of key personnel;
- strategic decisions by us or our competitors, such as acquisitions, divestitures, spin-offs, joint ventures, strategic investments or changes in business strategy;
- if any of our product candidates receives regulatory approval, the terms of such approval and market acceptance and demand for such product candidates;
- regulatory developments affecting our product candidates or those of our competitors; and
- changes in general market and economic conditions.

If our quarterly operating results fall below the expectations of investors or securities analysts, the price of our Class A common stock could decline substantially. Furthermore, any quarterly fluctuations in our operating results may, in turn, cause the price of our stock to fluctuate substantially. We believe that quarterly comparisons of our financial results are not necessarily meaningful and should not be relied upon as an indication of our future performance.

Our stock price may be volatile and purchasers of our Class A common stock could incur substantial losses.

Our stock price is likely to be volatile. As a result of this volatility, investors may not be able to sell their Class A common stock at or above the initial public offering price. The market price for our Class A common stock may

be influenced by many factors, including the other risks described in this section of the Quarterly Report on Form 10-Q titled ‘‘Risk Factors’’ and the following:

- our ability to advance ATRC-101 or potential future product candidates through preclinical studies and clinical trials;
- results of preclinical studies and clinical trials of ATRC-101 or potential future product candidates, or those of our competitors or potential future partners;
- regulatory or legal developments in the United States and other countries, especially changes in laws or regulations applicable to our products;
- the success of competitive products or technologies;
- introductions and announcements of new products by us, our future commercialization partners, or our competitors, and the timing of these introductions or announcements;
- actions taken by regulatory agencies with respect to our products, clinical trials, manufacturing process or sales and marketing terms;
- actual or anticipated variations in our financial results or those of companies that are perceived to be similar to us;
- the success of our efforts to acquire or in-license additional technologies, products or product candidates;
- developments concerning any future collaborations, including, but not limited to, those with our sources of manufacturing supply and our commercialization partners;
- market conditions in the pharmaceutical and biotechnology sectors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- developments or disputes concerning patents or other proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our products;
- our ability or inability to raise additional capital and the terms on which we raise it;
- the recruitment or departure of key personnel;
- changes in the structure of healthcare payment systems;
- actual or anticipated changes in earnings estimates or changes in stock market analyst recommendations regarding our Class A common stock, other comparable companies or our industry generally;
- our failure or the failure of our competitors to meet analysts’ projections or guidance that we or our competitors may give to the market;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- announcement and expectation of additional financing efforts;
- speculation in the press or investment community;
- trading volume of our Class A common stock;
- sales of our Class A common stock by us or our stockholders;
- the concentrated ownership of our Class A common stock;
- changes in accounting principles;
- terrorist acts, acts of war or periods of widespread civil unrest;
- natural disasters and other calamities; and
- general economic, industry and market conditions.

In addition, the stock markets in general, and the markets for pharmaceutical, biopharmaceutical and biotechnology stocks in particular, have experienced extreme volatility that has been often unrelated to the operating performance of the issuer. These broad market and industry factors may seriously harm the market price of our Class A common stock, regardless of our operating performance.

The future issuance of equity or of debt securities that are convertible into equity would dilute our share capital.

We may choose to raise additional capital in the future, depending on market conditions, strategic considerations and operational requirements. To the extent that additional capital is raised through the issuance of shares or other securities convertible into shares, our stockholders will be diluted. Future issuances of our Class A common stock or other equity securities, or the perception that such sales may occur, could adversely affect the trading price of our Class A common stock and impair our ability to raise capital through future offerings of shares or equity securities.

No prediction can be made as to the effect, if any, that future sales of Class A common stock or the availability of Class A common stock for future sales will have on the trading price of our Class A common stock.

The dual class structure of our common stock and the option of the holder of shares of our Class B common stock to convert into shares of our Class A common stock may limit your ability to influence corporate matters.

Our Class A common stock has one vote per share, while our Class B common stock is non-voting. Nonetheless, each share of our Class B common stock may be converted at any time into one share of Class A common stock at the option of its holder, subject to the limitations provided for in our amended and restated certificate of incorporation. Consequently, if holders of Class B common stock exercise their option to make this conversion, this will have the effect of increasing the relative voting power of those prior holders of our Class B common stock, and correspondingly decrease the voting power of the current holders of our Class A common stock, which may limit your ability to influence corporate matters. Because our Class B common stock is generally non-voting, stockholders who own more than 10% of our common stock overall but 10% or less of our Class A common stock will not be required to report changes in their ownership from transactions in our Class B common stock pursuant to Section 16(a) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and would not be subject to the short-swing profit provisions of Section 16(b) of the Exchange Act. In addition, acquisitions of Class B common stock would not be subject to notification pursuant to the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended.

An active trading market for our Class A common stock may not develop.

In June 2019, we completed the initial public offering of our Class A common stock. Although our Class A common stock trades on The Nasdaq Global Select Market, an active trading market for our shares may never develop or be sustained. If an active market for our Class A common stock does not develop, it may be difficult for stockholders to sell our shares without depressing the market price for the shares or at all.

Our management has flexibility in allocating the net proceeds from our initial public offering, and you may not agree with how we use these proceeds, and these proceeds may not be invested successfully.

We intend to use the net proceeds from our initial public offering to fund preclinical and clinical development activities, further development of our discovery platform, discover new product candidates, hire additional personnel, make capital expenditures, pay costs of operating as a public company and fund other general purposes. We may also use a portion of the net proceeds from our initial public offering to in-license, acquire or invest in complementary businesses, technologies, products or assets. However, we have no current commitments or obligations to do so. Therefore, our management will have flexibility in allocating the net proceeds from our initial public offering. Accordingly, you will be relying on the judgment of our management with regard to the allocation of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being allocated appropriately. It is possible that the proceeds will be invested in a way that does not yield a favorable, or any, return for our company.

If securities or industry analysts do not publish research or reports about our company, or if they issue an adverse or misleading opinion regarding our stock, our stock price and trading volume could decline.

The trading market for our Class A common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. We do not currently have and may never obtain research coverage by securities and industry analysts. If no or few securities or industry analysts commence coverage of our company, the trading price for our Class A common stock would be negatively impacted. In the event we obtain securities or industry analyst coverage, if any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property rights or our Class A common stock performance, or if our target studies and operating results fail to meet the expectations of the analysts, our stock price would likely decline. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.*

Based on the beneficial ownership of our capital stock as of June 30, 2020, our executive officers and directors, together with holders of 5% or more of our capital stock and their respective affiliates, beneficially owned approximately 75.6% of our Class A common stock and Class B common stock. As a result, these stockholders, if acting together, will continue to have significant influence over the outcome of corporate actions requiring stockholder approval, including the election of directors, any merger, consolidation or sale of all or substantially all of our assets and any other significant corporate transaction. In addition, pursuant to a nominating agreement between us and Baker Brothers Life Sciences L.P. and 667, L.P., or together, Baker Brothers, following the closing of our initial public offering and so long as Baker Brothers together with its affiliates beneficially owns at least 3,333,333 shares of our common stock, we will have the obligation to support the nomination of, and to cause our board of directors to include in the slate of nominees recommended to our stockholders for election, two individuals designated by Baker Brothers, each a Baker Designee, subject to customary conditions and exceptions, as well as the obligation to invite two board of directors observer designees of Baker Brothers to attend all meetings of our board of directors and all meetings of the committees of our board of directors as a nonvoting observer, if there is no Baker Designee on our board of directors, subject to customary conditions and exceptions. Baker Brothers and its affiliates may therefore have influence over management and control over matters requiring stockholder approval, including the annual election of directors and significant corporate transactions, such as a merger or other sale of our company or its assets, following the closing of our initial public offering and for the foreseeable future.

The interests of these stockholders may not be the same as, and may even conflict with, your interests. For example, these stockholders could delay or prevent a change of control of our company, even if such a change of control would benefit our other stockholders, which could deprive our stockholders of an opportunity to receive a premium for their Class A common stock as part of a sale of our company or our assets and might affect the prevailing market price of our Class A common stock. The significant concentration of stock ownership may adversely affect the trading price of our Class A common stock due to investors' perception that conflicts of interest may exist or arise.

Sales of a substantial number of shares of our Class A common stock or Class B common stock by our existing stockholders in the public market could cause our stock price to fall.

If our existing stockholders sell, or indicate an intention to sell, substantial amounts of our Class A common stock in the public market after the lock-up and other legal restrictions on resale in connection with our initial public offering lapse, the trading price of our Class A common stock could decline. These lock-up agreements expired in December 2019, which was 180 days from the date of the June 2019 Prospectus filed in connection with our initial public offering. In addition, shares of Class A common stock that are either subject to outstanding options or reserved for future issuance under our 2019 Equity Incentive Plan, or our 2019 Plan, will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, the lock-up agreements and Rule 144 and Rule 701 under the Securities Act of 1933, as amended, or the Securities Act. If these additional shares of Class A common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our Class A common stock could decline.

The holders of 17,248,259 shares of our Class A common stock (including Class A common stock issuable upon conversion of Class B common stock) at December 31, 2019 are entitled to rights with respect to the registration of their shares under the Securities Act. Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares held by affiliates, as defined in Rule 144 under the Securities Act. Any sales of securities by these stockholders could have a material adverse effect on the trading price of our Class A common stock.

Future sales and issuances of our Class A common stock or Class B common stock or rights to purchase Class A common stock or Class B common stock, including pursuant to our 2019 Plan, could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.

We expect that significant additional capital may be needed in the future to continue our planned operations, including further development of our discovery platform, preparing IND filings, conducting clinical trials, commercialization efforts, expanded research and development activities and costs associated with operating a public company. To raise capital, we may sell Class A common stock or Class B common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner we determine from time to time. If we sell Class A common stock or Class B common stock, convertible securities or other equity securities, investors may be materially diluted by subsequent sales. Such sales may also result in material dilution to our existing stockholders, and new investors could gain rights, preferences and privileges senior to the holders of our Class A common stock.

Pursuant to our 2019 Plan, our management is authorized to grant stock options to our employees, directors and consultants. Initially, the aggregate number of shares of our Class A common stock that may be issued pursuant to stock awards under our 2019 Plan is 6,141,842 shares. Additionally, the number of shares of our Class A common stock reserved for issuance under our 2019 Plan will automatically increase on January 1 of each year, beginning on January 1, 2020 and continuing through and including January 1, 2029, by 4% of the total number of shares of our capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by our board of directors. Unless our board of directors elects not to increase the number of shares available for future grant each year, our stockholders may experience additional dilution, which could cause our stock price to fall.

We are an "emerging growth company" and our election of reduced reporting requirements applicable to emerging growth companies may make our Class A common stock less attractive to investors.

We are an ''emerging growth company'' as defined in the Jumpstart Our Business Startups Act, or JOBS Act. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, or Section 404, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We could be an emerging growth company for up to five years following the completion of our initial public offering, although circumstances could cause us to lose that status earlier, including if we are deemed to be a ''large accelerated filer,'' which occurs when the market value of our Class A common stock that is held by non-affiliates exceeds $700 million as of the prior June 30, or if we have total annual gross revenue of $1.07 billion or more during any fiscal year before that time, in which cases we would no longer be an emerging growth company as of the following December 31, or if we issue more than $1.0 billion in non-convertible debt during any three-year period before that time, in which case we would no longer be an emerging growth company immediately. Even after we no longer qualify as an emerging growth company, we could still qualify as a ''smaller reporting company,'' which would allow us to take advantage of many of the same exemptions from disclosure requirements including not being required to comply with the auditor attestation requirements of Section 404 and reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. We cannot predict if investors will find our Class A common stock less attractive because we may rely on these exemptions. If some investors find our Class A common stock less attractive as a result, there may be a less active trading market for our Class A common stock and our share price may be more volatile.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have elected to avail ourselves of an exemption that allows us to delay adopting new or revised accounting standards until such time as those standards apply to private companies. As a result, we will not be subject to the same new or revised accounting standards as other public companies that comply with the public company effective dates, including but not limited to the new lease accounting standard. We may also elect to take advantage of other reduced reporting requirements in future filings. As a result of these elections, the information that we provide to our stockholders may be different than you might receive from other

public reporting companies. However, if we later decide to opt out of the extended period for adopting new accounting standards, we would need to disclose such decision and it would be irrevocable.

We will incur increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives and corporate governance practices.

As a public company, and particularly after we are no longer an emerging growth company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. The Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of the Nasdaq Stock Market and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, which in turn could make it more difficult for us to attract and retain qualified members of our board of directors. However, these rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Our ability to use net operating losses, or NOLs, to offset future taxable income may be subject to certain limitations.

In general, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Code, a corporation that undergoes an ‘‘ownership change’’ is subject to limitations on its ability to utilize its pre-change NOL or tax credits to offset future taxable income. Our existing NOLs or credits may be subject to substantial limitations arising from previous ownership changes, and if we undergo an ownership change our ability to utilize NOLs or credits could be further limited by Section 382 of the Code. In addition, future changes in our stock ownership, many of which are outside of our control, could result in an ownership change under Section 382 of the Code. Our NOLs or credits may also be impaired under state law. Accordingly, we may not be able to utilize a material portion of our NOLs or credits. Furthermore, our ability to utilize our NOLs or credits is conditioned upon our attaining profitability and generating U.S. federal and state taxable income. As described above under ‘‘—Risks Related to Business,’’ we have incurred significant net losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future; thus, we do not know whether or when we will generate the U.S. federal or state taxable income necessary to utilize our NOLs or credits.

We previously identified a material weakness in our internal control over financial reporting, which we believe has now been remediated. Any future failure to establish and maintain effective internal control over financial reporting could result in material misstatements in our financial statements and cause investors to lose confidence in our reported financial information, which in turn could cause the trading price of our securities to decline.

We previously identified a material weakness in our internal control over financial reporting related to a lack of application-based controls inherent in our enterprise resource planning, or ERP, system used for maintaining our financial books and records. As a result of such weakness, our management concluded that our disclosure controls and procedures and internal control over financial reporting were not effective as of December 31, 2018 and December 31, 2017.

As of December 31, 2019, management sufficiently completed its remediation of this material weakness by taking the following actions:

- We have implemented a new ERP system that is our system of record for our financial books and records from January 1, 2019 forward. This new ERP system has strong application-based controls inherent in its design that provide a stronger internal control infrastructure for financial reporting and for our internal control procedures.

- We strengthened the segregation of duties by hiring additional personnel and implementing workflows to appropriately segregate the incompatible duties of custody of assets, approvals and authorizations, and recording of transactions;
- We designed additional controls around identification, documentation and application of technical accounting guidance with particular emphasis on events outside the ordinary course of business. These controls include the implementation of additional supervision and review activities by qualified personnel, the preparation of formal accounting memoranda to support our conclusions on technical accounting matters, and the development and use of checklists and research tools to assist in compliance with GAAP with regard to complex accounting issues.
- We developed and implemented policies and procedures related to security access, including security access reviews of our key financial systems' users to ensure the appropriateness of their roles and security access levels.
- We performed testing related to the functioning of these controls and continue to monitor these controls and make enhancements as needed.

We have completed the documentation and review of the corrective actions described above and our management has concluded that the design and operation of our closing and financial reporting processes is effective and the previously identified material weakness has been remediated as of December 31, 2019.

Although we have remediated this material weakness in our internal control over financial reporting, any failure to improve our disclosure controls and procedures or internal control over financial reporting to address any identified weaknesses in the future, if they were to occur, could prevent us from maintaining accurate accounting records and discovering material accounting errors. Any of these results could adversely affect our business and the value of our common stock.

Because we do not anticipate paying any cash dividends on our capital stock in the foreseeable future, capital appreciation, if any, will be your sole source of gain.

We have never declared or paid cash dividends on our capital stock. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. As a result, capital appreciation, if any, of our Class A common stock will be your sole source of gain for the foreseeable future.

We may incur significant costs from class action litigation due to our expected stock volatility.

Our stock price may fluctuate for many reasons, including as a result of public announcements regarding the progress of our development efforts for our discovery platform and our product candidates, the development efforts of future partners or competitors, the addition or departure of our key personnel, variations in our quarterly operating results and changes in market valuations of biopharmaceutical and biotechnology companies. This risk is especially relevant to us because biopharmaceutical and biotechnology companies have experienced significant stock price volatility in recent years. When the market price of a stock has been volatile as our stock price may be, holders of that stock have occasionally brought securities class action litigation against the company that issued the stock. If any of our stockholders were to bring a lawsuit of this type against us, even if the lawsuit is without merit, we could incur substantial costs defending the lawsuit. The lawsuit could also divert the time and attention of our management.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of our company, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our amended and restated certificate of incorporation and our amended and restated bylaws may delay or prevent an acquisition of our company or a change in our management. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Because our board of directors is responsible for appointing the members of our management team, these provisions could in turn affect any attempt by our stockholders to replace current members of our management team. These provisions include:

- a prohibition on actions by our stockholders by written consent;
- a requirement that special meetings of stockholders, which our company is not obligated to call more than once per calendar year, be called only by the chairman of our board of directors, our chief executive officer, or our board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors;
- advance notice requirements for election to our board of directors and for proposing matters that can be acted upon at stockholder meetings;
- division of our board of directors into three classes, serving staggered terms of three years each; and
- the authority of the board of directors to issue preferred stock with such terms as the board of directors may determine.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, as amended, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner. These provisions would apply even if the proposed merger or acquisition could be considered beneficial by some stockholders.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware and, to the extent enforceable, the federal district courts of the United States of America will be the exclusive forums for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.*

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law:

- any derivative action or proceeding brought on our behalf;
- any action asserting a breach of fiduciary duty;
- any action asserting a claim against us or our directors, officers, or employees arising under the Delaware General Corporation Law, our amended and restated certificate of incorporation, or our amended and restated bylaws; and
- any action asserting a claim against us that is governed by the internal-affairs doctrine.

This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction. Furthermore, Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated certificate of incorporation further provides that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions. In such instance, we would expect to vigorously assert the validity and enforceability of the exclusive forum provisions of our amended and restated certificate of incorporation. This may require significant additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition, and there can be no assurance that the provisions will be enforced by a court in those other jurisdictions.

These exclusive-forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers, or other employees, which may discourage lawsuits against us and our directors, officers, and other employees. If any other court of competent jurisdiction were to find either exclusive-forum provision in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur further significant additional costs associated with resolving the dispute in other jurisdictions, all of which could seriously harm our business.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

(a) Recent Sales of Unregistered Equity Securities

None.

(b) Use of Proceeds

None.

(c) Issuer Purchases of Equity Securities

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not Applicable

Item 5. Other Information

On August 11, 2020, we entered into a Sales Agreement, or the Sales Agreement, with Cowen and Company, LLC, or Cowen. The Sales Agreement provides that, upon the terms and subject to the conditions set forth therein, we may issue and sell through Cowen, acting as our sales agent and/or principal, shares of our Class A common stock having an aggregate offering price of up to $100,000,000, which we refer to as the ATM Shares. We have no obligation to sell any ATM Shares under the Sales Agreement. The issuance and sale of the ATM Shares, if any, is subject to the continued effectiveness of the Company's shelf registration statement on Form S-3, File No. 333-239652, initially filed with the SEC on July 2, 2020 and declared effective by the SEC on July 10, 2020. We make no assurance as to the continued effectiveness of this shelf registration statement.

Pursuant to the Sales Agreement, each time we wish to issue and sell Shares under the Sales Agreement, which we refer to as a Placement, we will notify Cowen with a placement notice containing the parameters within which we desire to sell the ATM Shares, which shall at a minimum include the number of ATM Shares to be issued, the time period during which sales are requested to be made, any limitation on the number or dollar amount of ATM Shares that may be sold in any one day and any minimum price below which sales may not be made.

Upon delivery of a placement notice by us, and unless the sale of the ATM Shares described therein has been declined, suspended or otherwise terminated in accordance with the terms of the Sales Agreement, Cowen, as agent, will use its commercially reasonable efforts consistent with its normal trading and sales practices to sell on behalf of us such ATM Shares up to the amount specified, and otherwise in accordance with the terms of such placement notice.

Pursuant to the Sales Agreement, Cowen may sell the Shares by any method permitted by law deemed to be an "at the market offering" under Rule 415 of the Securities Act. The Sales Agreement provides that Cowen will be entitled to compensation for its services in an amount equal to up to 3.0% of gross proceeds from each Placement. Under the terms of the Sales Agreement, the Company may also sell ATM Shares to Cowen acting as principal for Cowen's own account at prices agreed upon at the time of sale.

The Sales Agreement may be terminated by Cowen or us at any time upon notice to the other party, or by Cowen at any time in certain circumstances, including but not limited to the occurrence of a material adverse change to us.

The foregoing description of the Sales Agreement is qualified in its entirety by reference to the Sales Agreement, a copy of which is attached hereto as Exhibit 10.2 and incorporated herein by reference.

Item 6. Exhibits

The exhibits listed on the accompanying Exhibit Index are filed or incorporated by reference (as stated therein) as part of this Quarterly Report on From 10-Q.

Number	Exhibit Title	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation of the Registrant.	8-K	001-38935	3.1	06/26/19	
3.2	Amended and Restated Bylaws of the Registrant.	8-K	001-38935	3.2	06/26/19	
4.1	Amended and Restated Investors' Rights Agreement, dated as of September 5, 2018, by and among the Registrant and certain of its stockholders.	S-1/A	333-231770	4.1	06/10/19	
4.2	Form of Warrant to Purchase Shares of Series A Preferred Stock, dated as of August 21, 2015, by and between the Registrant and Warrant holders of the Registrant.	S-1/A	333-231770	4.2	06/10/19	
4.3	Form of Class A Common Stock Certificate of the Registrant.	8-K	001-38935	4.1	06/26/19	
4.4	Form of Class B Common Stock Certificate of the Registrant.	8-K	001-38935	4.2	06/26/19	
5.1	Opinion of Cooley LLP					X
10.1+	Collaboration and License Agreement by and between Xencor, Inc. and the Registrants, dated July 2, 2020					X
10.2	Class A Common Stock Sales Agreement between the Registrant and Cowen and Company, LLC, dated August 12, 2020					X
23.1	Consent of Cooley LLP (included in Exhibit 5.1)					X
31.1	Certification of Chief Executive Officer, as required by Rule 13a-14(a) or Rule 15d-14(a).					X
31.2	Certification of Chief Financial Officer, as required by Rule 13a-14(a) or Rule 15d-14(a).					X
32.1*	Certification of Principal Executive Officer and Principal Financial Officer, as required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. Section 1350).					X
101.INS	XBRL Instance Document.					X
101.SCH	XBRL Taxonomy Extension Schema Document.					X

101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.	X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.	X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.	X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.	X

# Indicates management contract or compensatory plan.

* The certifications attached as Exhibit 32.1 accompany this Quarterly Report on Form 10-Q pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed “filed” by the Registrant for purposes of Section 18 of the Securities Exchange Act of 1934, as amended.

+ Portions of this exhibit (indicated by this asterisk) have been omitted as the Registrant has determined that (i) the omitted information is not material and (ii) the omitted information would likely cause competitive harm if publicly disclosed.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ATRECA, INC.

Date:	August 12, 2020	By:	/s/ JOHN A. ORWIN John A. Orwin President and Chief Executive Officer (Principal Executive Officer)
Date:	August 12, 2020	By:	/s/ HERBERT CROSS Herbert Cross Chief Financial Officer (Principal Financial and Accounting Officer)

Cooley

Michael E. Tenta
+1 650 843 5636
mtenta@cooley.com

August 12, 2020

Atreca, Inc.
450 East Jamie Court
South San Francisco, 94080

Ladies and Gentlemen:

You have requested our opinion, as counsel to Atreca, Inc., a Delaware corporation (the "***Company***"), with respect to certain matters in connection with the offering by the Company of up to $100,000,000 of the Company's Class A common stock, par value $0.0001 (the "***Shares***"), pursuant to a Registration Statement on Form S-3 (No. 333-239652) (the "***Registration Statement***"), filed with the Securities and Exchange Commission (the "***Commission***") under the Securities Act of 1933, as amended (the "***Act***"), the prospectus included in the Registration Statement (the "***Base Prospectus***"), and the prospectus supplement dated August 12, 2020, filed with the Commission pursuant to Rule 424(b) under the Act (together with the Base Prospectus, the "***Prospectus***") The Shares are to be sold by the Company in accordance with a Common Stock Sales Agreement, dated August 12, 2020, between the Company and Cowen and Company, LLC (the "***Agreement***"), as described in the Prospectus.

In connection with this opinion, we have examined and relied upon the Registration Statement and the Prospectus, the Agreement, the Company's Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws, as each as currently in effect, and originals or copies certified to our satisfaction of such records, documents, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. In rendering this opinion, we have assumed the genuineness of all signatures; the authenticity of all documents submitted to us as originals; the conformity to originals of all documents submitted to us as copies; the accuracy, completeness and authenticity of certificates of public officials; and the due authorization, execution and delivery of all documents by all persons other than the Company where authorization, execution and delivery are prerequisites to the effectiveness thereof. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not independently verified such matters.

We have assumed (i) that each sale of Shares will be duly authorized by the Board of Directors of the Company, a duly authorized committee thereof or a person or body pursuant to an authorization granted in accordance with Section 152 of the General Corporation Law of the State of Delaware (the "***DGCL***"), (ii) that no more than 100,000,000 Shares will be sold under the Agreement and (iii) that the price at which the Shares are sold will equal or exceed the par value of the Shares. We express no opinion to the extent that future issuances of securities of the Company and/or anti-dilution adjustments to outstanding securities of the Company cause the number of shares of the Company's common stock outstanding or issuable upon conversion or exercise of outstanding securities of the Company to exceed the number of Shares then issuable under the Agreement.

Our opinion herein is expressed solely with respect to the DGCL. Our opinion is based on these laws as in effect on the date hereof. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued against payment therefor in accordance with the Agreement, the Registration Statement and the Prospectus, will be validly issued, fully paid and non-assessable.

We consent to the reference to our firm under the caption "**Legal Matters**" in the Prospectus and to the filing of this opinion as an exhibit to the Company's Current Report on Form 8-K to be filed with the Commission for incorporation by reference into the Registration Statement.

Very truly yours,

COOLEY LLP

By: /s/ Michael E. Tenta
Michael E. Tenta

Exhibit 10.1

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [*], HAS BEEN OMITTED BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO ATRECA, INC. IF PUBLICLY DISCLOSED.

Execution Version

COLLABORATION AND LICENSE AGREEMENT

by and between

XENCOR, INC.

and

ATRECA, INC.

Dated as of July 2, 2020

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LIST OF EXHIBITS AND SCHEDULES

COLLABORATION AND LICENSE AGREEMENT

This **COLLABORATION AND LICENSE AGREEMENT** (this "**Agreement**") is entered into and made effective as of July 2, 2020 (the "**Effective Date**") by and between Atreca, Inc. a Delaware corporation having an address at 500 Saginaw Drive, Redwood City, California 94063 ("**Atreca**") and Xencor, Inc., a Delaware corporation having an address at 111 W Lemon Avenue, Monrovia, California 91016 ("**Xencor**"). Atreca and Xencor are each referred to herein by name or as a "**Party**", or, collectively, as the "**Parties**".

RECITALS

WHEREAS, Xencor has developed the Xencor Platform Technology, and possesses expertise in engineering multi-specific Antibodies and incorporating amino acid sequences into a biologic to enable the biologic to bind to one or more CD3 Targets;

WHEREAS, Atreca has developed the Atreca Platform Technology, and possesses expertise in generating or prioritizing antibodies or improvements to the polypeptide portion thereof, including its Immune Repertoire Capture technology;

WHEREAS, the Parties intend to conduct a discovery program using the Xencor Platform Technology and Atreca Platform Technology to generate and characterize Collaboration Bispecific Antibodies and Collaboration Targets for Development and Commercialization; and

WHEREAS, the Parties desire to grant to one another the applicable licenses to undertake the Research Program and other Programs.

NOW, THEREFORE, in consideration of the foregoing and the mutual agreements set forth below, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE 1
DEFINITIONS

Unless specifically set forth to the contrary herein, the following terms shall have the respective meanings set forth below:

1.1 "**Accounting Standards**" means, with respect to a Party and its Affiliates, either (a) International Financial Reporting Standards ("**IFRS**") or (b) United States generally accepted accounting principles ("**GAAP**"), in either case ((a) or (b)) that are used at the applicable time, and as consistently applied, by such Party or any of its Affiliates.

1.2 "**Active Ingredient**" means any substance (whether chemical or biologic) or mixture of substances intended to be used in the manufacture of a drug (medicinal) product that, when used in the production of such drug, becomes an active ingredient of the drug product, and which such substance or mixture of substances is intended to furnish pharmacological activity or other direct effect in the treatment, prophylaxis or diagnosis of all human and non-human indications, including without limitation, all oncology indications.

1.3 "**Affiliate**" means any Person which, directly or indirectly through one or more intermediaries, controls, is controlled by or is under common control with a Party, for so long as such Person controls, is controlled by or is under common control with a Party, and regardless of whether such Affiliate is or becomes an Affiliate on or after the Effective Date. For purposes of this definition, the term "control" (including, with correlative meanings, the terms "controlled by" and "under common control with") as used with respect to a Person means (a) direct or indirect ownership of fifty percent (50%) or more of the voting securities or other voting interest of any Person (including attribution from related parties), or (b) the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through ownership of voting securities, by contract, as a general partner, as a manager, or otherwise.

1.4 "**Antibody**" means a protein comprising an Fc region and at least one Fv Region.

1.5 "**Antibody Selection Criteria**" means the selection criteria agreed upon by the Parties in writing for selecting Antibodies for inclusion in the Atreca Antibody Collection, as set forth in the Research Plan.

1.6 "**Applicable Law**" or "**Applicable Laws**" means all applicable laws, statutes, rules, regulations, orders, judgments or ordinances having the effect of law of any national, multinational, federal, state, provincial, county, city or other political subdivision, including, to the extent applicable, GCP, GLP and GMP, as well as all applicable data protection and privacy laws, rules and regulations, including, to the extent applicable, the United States Department of Health and Human Services privacy rules under the Health Insurance Portability and Accountability Act of 1996 ("**HIPAA**") and the Health Information Technology for Economic and Clinical Health Act and the EU General Data Protection Regulation (2016/679). For the avoidance of doubt, any specific references to any Applicable Law or any portion thereof, shall be deemed to include all then-current amendments thereto or any replacement or successor law, statute, standard, ordinance, code, rule, regulation, resolution, order, writ, judgment, injunction, decree, stipulation, ruling, or determination thereto.

1.7 "**Atreca Antibody**" means a full-length antibody protein, or fragment or modified version thereof, comprising [*].

1.8 "**Atreca Antibody Collection**" means the group of Atreca Antibodies selected by Atreca under this Agreement during the Research Term, based upon the Antibody Selection Criteria, to be made available for use in the creation of Collaboration Bispecific Antibodies under the Research Program, as described in Section 4.1.

1.9 "**Atreca Background IP**" means all Atreca Background Know-How and Atreca Background Patents.

1.10 "**Atreca Background Know-How**" means any and all Know-How that is Controlled by Atreca or its Affiliates on the Effective Date or that arises independently outside of this Agreement during the Term that is (a) necessary to research, develop, make, have made, import, use, offer to sell, sell or otherwise exploit any Atreca Antibody, Collaboration Bispecific

Antibody, Program Bispecific Antibody, Program Product, Collaboration Target (to the extent Available), or Atreca Platform Technology (to the extent used in the Research Program or incorporated into a Collaboration Bispecific Antibody), or (b) otherwise introduced into or used in the performance under this Agreement by or on behalf of Atreca or its Affiliates; but expressly excluding any Atreca Collaboration Know-How and Joint Collaboration Know-How.

1.11 "**Atreca Background Patents**" means all Patents that are Controlled by Atreca or its Affiliates on the Effective Date or during the Term that solely Covers Atreca Background Know-How (but not any Collaboration Know-How).

1.12 "**Atreca Collaboration Antibody**" means an Atreca Antibody included in the Atreca Antibody Collection.

1.13 "**Atreca IP**" means the Atreca Background IP and Atreca's right, title and interest in and to Collaboration IP.

1.14 "**Atreca Patent**" means Atreca Background Patents and Atreca Collaboration Patents.

1.15 "**Atreca Platform Technology**" means Atreca's proprietary technologies, processes and methods of [*], and [*], including Atreca's [*].

1.16 "**Available**" means, with respect to a Party and a Collaboration Target, at the time of identification of such Collaboration Target, that (a) such Party has not entered into an agreement with a Third Party (i) granting rights to such Third Party to develop, manufacture or commercialize Antibodies or products or compounds that comprise or incorporate Antibodies directed to such Collaboration Target, including under any Excluded Third Party Agreement, or (ii) that would be breached by proceeding with such Collaboration Target under this Agreement, (b) such Party has not received a notice from a Third Party electing to include such Collaboration Target under an Excluded Third Party Agreement, and (c) such Party does not have an existing Internal Program directed to such Collaboration Target.

1.17 "**Background IP**" means, individually or collectively, the Xencor Background IP and/or Atreca Background IP.

1.18 "**Baseline Quarter Net Sales**" means, on a country-by-country and Program Product-by-Program Product basis, the average cumulative Net Sales of such Program Product in such country during the [*] that immediately precede the Calendar Quarter during which a Biosimilar Product with respect to such Program Product is first commercially sold in such country. For example, if a Biosimilar Product with respect to a given Program Product is commercially sold in the U.S. for the first time on [*], then the Baseline Quarter Net Sales with respect to such Program Product in the U.S. are the cumulative Net Sales of such Program Product in the U.S. during the [*].

1.19 "[*]" means [*].

1.20 "**Biosimilar Product**" means, with respect to a Unilateral Product and on a country-by-country basis, a product that (a) is marketed for sale in such country by a Third Party (not licensed, supplied or otherwise permitted by a Party or its Affiliates or Sublicensees), (b) is approved based on a showing that it is highly similar to the corresponding Unilateral Bispecific Antibody as an active pharmaceutical ingredient in such country with no clinically meaningful differences in terms of purity, safety and efficacy, and (c) is approved as a "Biosimilar Biologic Product" under Title VII, Subtitle A Biologics Price Competition and Innovation Act of 2009, 42 U.S.C. § 262, Section 351 of the PHSA, or, outside the United States, in accordance with European Directive 2001/83/EC on the Community Code for medicinal products (Article 10(4) and Section 4, Part II of Annex I) and European Regulation EEC/2309/93 establishing the community procedures for the authorization and evaluation of medicinal products, each as amended, and together with all associated guidance, and any counterparts thereof or equivalent process inside or outside of the United States or EU to the foregoing.

1.21 "**Business Day**" means a day other than a Saturday, Sunday, or bank or other public holiday in California.

1.22 "**Calendar Quarter**" means the period beginning on the Effective Date and ending on the last day of the calendar quarter in which the Effective Date falls, and thereafter each successive period of three (3) consecutive calendar months ending on the last day of March, June, September, or December, respectively; provided that the final Calendar Quarter shall end on the last day of the Term.

1.23 "**Calendar Year**" means the period beginning on the Effective Date and ending on December 31 of the calendar year in which the Effective Date falls, and thereafter each successive period of twelve (12) consecutive calendar months beginning on January 1 and ending on December 31; provided that the final Calendar Year shall end on the last day of the Term.

1.24 "**CD3 Engager Technology**" means technology relating to [*] that are primarily designed to [*].

1.25 "**CD3 Target**" means a [*] including any of the following [*].

1.26 "**Change of Control**" in respect of a Person (an "**Acquired Person**") shall be deemed to have occurred upon any of the following occurring after the Effective Date: (a) any Person or group of Persons that is not an Affiliate of such Acquired Person becomes the beneficial owner (directly or indirectly) of fifty percent (50%) or more of the voting shares of the Acquired Person; (b) such Acquired Person consolidates with or merges into or with another Person that is not an Affiliate of such Acquired Person pursuant to a transaction in which fifty percent (50%) or more of the voting shares of the acquiring or resulting entity outstanding immediately after such consolidation or merger is not held by the holders of the outstanding voting shares of such

Acquired Person immediately preceding such consolidation or merger; or (c) the Acquired Person sells or transfers to another Person that is not an Affiliate of such Acquired Person all or substantially all of its assets.

1.27 "**Clinical Trial**" means a human clinical study conducted on sufficient numbers of human subjects that is designed to (a) establish that a pharmaceutical product is reasonably safe for continued testing, (b) investigate the safety and efficacy of the pharmaceutical product for its intended use, and to define warnings, precautions and adverse reactions that may be associated with the pharmaceutical product in the dosage range to be prescribed, or (c) support Regulatory Approval of such pharmaceutical product or label expansion of such pharmaceutical product. Without limiting the foregoing, Clinical Trial includes any Phase 1 Clinical Trial, Phase 2 Clinical Trial, Phase 3 Clinical Trial, or Pivotal Study.

1.28 "**Collaboration Bispecific Antibody**" means an Antibody comprising [*] from Atreca Collaboration Antibodies [*] in combination with Xencor's CD3 Engager Technology.

1.29 "**Collaboration IP**" means, collectively:

(a) "**Collaboration Know-How**" which means any and all Know-How that is created, conceived, discovered, generated, invented, made or reduced to practice, in each case by or on behalf of a Party or any of its Affiliates, solely or jointly with the other Party and/or a Third Party, pursuant to the conduct of activities under the Interim MTA or this Agreement.

(b) "**Collaboration Patents**" which means any Patents Controlled by a Party or its Affiliates that Cover any Collaboration Know-How.

1.30 "**Collaboration Target**" means the Target, other than a CD3 Target, to which a Collaboration Bispecific Antibody, Program Bispecific Antibody, or Program Product, as applicable, binds to.

1.31 "**Combination Product**" means any product that comprises a Program Product sold in conjunction with another Active Ingredient that is not a Program Product, where such product is either (a) priced and sold in a single package containing such multiple products, or (b) packaged separately but sold together for a single price.

1.32 "**Commercialization**" means any and all activities directed to the commercialization of a product, including commercial manufacturing (including Manufacturing) and commercial supply of a product, marketing, detailing, promotion, market research, distributing, order processing, handling returns and recalls, booking sales, customer service, administering and commercially selling such product, importing, exporting and transporting such product for commercial sale, and seeking of pricing and reimbursement of a product (if applicable), whether before or after Regulatory Approval has been obtained (including making, having made, using, importing, selling and offering for sale such product), as well as all regulatory compliance with respect to the foregoing. For clarity, "Commercialization" does not include any Clinical Trial commenced after Regulatory Approval. When used as a verb, "**Commercialize**" means to engage in Commercialization.

1.33 "**Commercially Reasonable Efforts**" means, with respect to a Party and an obligation to conduct a particular activity pertaining to the research, Development or Commercialization obligations hereunder, that level of efforts and resources reasonably required to carry out such obligation consistent with the efforts commonly used by [*] with respect to a biopharmaceutical product which is of similar market potential and at a similar stage in its Development or product life. To the extent that [*].

1.34 "[*]" means [*].

1.35 "**Confidential Information**" means, with respect to a Party, all confidential or proprietary information and materials, including Know-How, marketing plans, strategies, and customer lists, in each case, that are disclosed by or on behalf of such Party to the other Party pursuant to this Agreement, regardless of whether any of the foregoing are marked "confidential" or "proprietary" or communicated to the other Party by or on behalf of the Disclosing Party in oral, written, visual, graphic or electronic form.

1.36 "**Control**", "**Controls**" or "**Controlled**" means, with respect to any intellectual property (including Patents and Know-How) or Confidential Information, the ability of a Party or its Affiliates, as applicable, (whether through ownership or license (other than a license granted in this Agreement)) to grant to the other Party the licenses or sublicenses as provided herein, or to otherwise disclose such intellectual property or Confidential Information to the other Party, without violating the terms of any then-existing agreement with any Third Party at the time such Party or its Affiliates, as applicable, would be required hereunder to grant the other Party such license or sublicenses as provided herein or to otherwise disclose such intellectual property or Confidential Information to the other Party.

1.37 "**Cover**" means, with respect to a product and a Patent, that, in the absence of a (sub)license under, or ownership of, such Patent, the making, using, importing, offering for sale, selling or exporting of such product with respect to a given country would infringe, or contribute to or induce the infringement of, a Valid Claim of such Patent (whether such Patent is a composition of matter, method of use or process Patent) or with respect to a patent application, any claim of such patent application as if it were contained in an issued patent. Cognates of the word "**Cover**" shall have correlative meanings.

1.38 "**Development**" means (a) research activities (including drug discovery, identification or synthesis) with respect to a product, including derivatization and other modification of a product or any component thereof, and (b) preclinical and clinical drug development activities, and other development activities, with respect to a product, including test method development and stability testing, toxicology, formulation, process development, qualification and validation, manufacture scale-up, development-stage manufacturing (including Manufacturing), quality assurance/quality control, clinical trials (including Clinical Trials and other studies commenced after Regulatory Approval), statistical analysis and report writing, the preparation and submission of INDs and MAAs, regulatory affairs with respect to the foregoing and all other activities necessary or useful or otherwise requested or required by a Regulatory Authority or as a condition or in support of obtaining, maintaining or expanding a Regulatory Approval. When used as a verb, "**Develop**" means to engage in Development.

1.39 "**Dollars**" or "**$**" means the legal tender of the United States.

1.40 "**EEA**" means all countries officially recognized as member states of the European Economic Area at any particular time.

1.41 "**EU**" means all countries officially recognized as member states of the European Union at any particular time, including the United Kingdom regardless of whether it ceases to remain within the European Union.

1.42 "**EU Major Market**" means France, Germany, Italy, Spain, and the United Kingdom.

1.43 "**Evaluated Bispecific Antibody**" means a Collaboration Bispecific Antibody which has been determined by the JRC to have achieved the Evaluation Criteria, as described in Section 4.1.3.

1.44 "**Evaluation Criteria**" means the criteria established and agreed upon by the JRC and set forth in the Research Plan for determining if a Collaboration Bispecific Antibody under a Research Program has sufficient developmental potential and qualities for further optimization and Development, as such criteria may be amended from time to time by the JRC by mutual written consent of the Parties.

1.45 "**Excluded Target**" means a Collaboration Target that is not Available.

1.46 "**Excluded Third Party Agreement**" means, on a Collaboration Target-by-Collaboration Target basis, a written agreement between a Party and a Third Party that (a) is entered into [*], and (b) grants to such Third Party [*].

1.47 "**Executive Officers**" means Xencor's [*] and Atreca's [*].

1.48 "**Field**" means the use of therapeutics in the treatment, prophylaxis or diagnosis of all human and non-human indications, including without limitation, all oncology indications.

1.49 "**First Commercial Sale**" means, on a Unilateral Product-by-Unilateral Product and country-by-country basis, the first sale of such Unilateral Product by the Unilateral Party or any of its Affiliates to a Third Party for use or consumption in such country after Regulatory Approval has been granted with respect to such Unilateral Product in such country; provided, that "First Commercial Sale" shall not include any sale (a) by the Unilateral Party to an Affiliate or Sublicensee, or (b) sale, disposal or use of a Unilateral Product for marketing, regulatory, development or charitable purposes, such as Clinical Trials, pre-clinical trials, compassionate use, named patient use, or indigent patient programs, without consideration.

1.50 "**FTE**" means the number of full-time-equivalent person-years (each consisting of a total of [*]) of scientific, technical, regulatory, marketing or managerial work by each Party's personnel on or directly related to the applicable activity conducted hereunder.

1.51 "**FTE Cost**" means the amount obtained by multiplying (a) the number of FTEs by (b) [*], increased or decreased annually by the percentage increase or decrease in the CPI as of December 31 of the then most recently ended Calendar Year over the level of the CPI on December 31, 2019 (*i.e.*, the first such increase or decrease would occur on January 1, 2021).

1.52 "**Fv Region**" means an antigen binding domain of an Antibody containing a variable heavy region and a variable light region. For clarity, Fv Regions can be scFv domains or be contained within Fab domains, each on a different polypeptide sequence.

1.53 "**Good Clinical Practices**" or "**GCP**" means the applicable then-current ethical and scientific quality standards for designing, conducting, recording, and reporting trials that involve the participation of human subjects as are required by applicable Regulatory Authorities or Applicable Law in the relevant jurisdiction, including (a) in the United States, Good Clinical Practices established through FDA guidances, and (b) outside the United States, Guidelines for Good Clinical Practice – ICH Harmonized Tripartite Guideline (ICH E6).

1.54 "**Good Laboratory Practices**" or "**GLP**" means the applicable then-current good laboratory practice standards as are required by applicable Regulatory Authorities or Applicable Law in the relevant jurisdiction, including (a) in the United States, those promulgated or endorsed by the FDA in U.S. 21 C.F.R. Part 58, and (b) outside of the United States, the equivalent thereof as promulgated or endorsed by the applicable Regulatory Authorities.

1.55 "**Good Manufacturing Practices**" or "**GMP**" means all applicable standards relating to manufacturing practices for fine chemicals, intermediates, bulk products or finished pharmaceutical products, as are required by applicable Regulatory Authorities or Applicable Law in the relevant jurisdiction, including, as applicable, (a) all applicable requirements detailed in the FDA's current Good Manufacturing Practices regulations, U.S. 21 C.F.R. Parts 210 and 211, (b)

all applicable requirements detailed in the EMA's "The Rules Governing Medicinal Products in the European Community, Volume IV, Good Manufacturing Practice for Medicinal Products", and (c) all equivalent Applicable Laws promulgated by any Governmental Authority having jurisdiction over the manufacture of the applicable compound or pharmaceutical product, as applicable.

1.56 "**Governmental Authority**" means any (a) federal, state, local, municipal, foreign or other government, (b) governmental or quasi-governmental authority of any nature (including any governmental division, subdivision, department, agency, bureau, branch, office, commission, council, board, instrumentality, officer, official, representative, organization, unit, body or entity and any court or other tribunal), (c) multinational governmental organization or body or (d) entity or body exercising, or entitled to exercise, any executive, legislative, judicial, administrative, regulatory, police, military or taxing authority or power of any nature.

1.57 "**IND**" means an investigational new drug application (including any amendment or supplement thereto) submitted to the FDA pursuant to U.S. 21 C.F.R. Part 312, including any amendments thereto. References herein to IND shall include, to the extent applicable, any comparable filing(s) outside the U.S. for the investigation of any product in humans in any other country or group of countries (such as a Clinical Trial Application in the EU).

1.58 "**Infringement Action**" means, with respect to the Infringement of any Patent, any action, suit or proceeding with respect to such Infringement, including defending against counterclaims or associated challenges against validity, patentability or enforceability of such Patent.

1.59 "**Interim MTA**" means that certain Mutual Materials Transfer Agreement by and between the Parties [*].

1.60 "**Internal Program**" means, with respect to a Target and a Party, a research and development program pursuant to which such Party has created or tested an Fv Region that binds such Target and for which such Party has, at a minimum, performed in vitro activity testing on such Antibody comprising such Fv Region.

1.61 "**Joint Bispecific Antibody**" means, with respect to a Joint Program, an Evaluated Bispecific Antibody and optimized or modified versions thereof, including an Optimized Bispecific Antibody and/or Joint Clinical Candidate.

1.62 "**Joint Clinical Candidate**" means, with respect to a given Joint Program, an Optimized Bispecific Antibody that satisfies the Joint Clinical Candidate Criteria, as described in Section 5.2.2.

1.63 "**Joint Clinical Candidate Criteria**" means the criteria to be agreed upon by the JSC under a Joint Program for determining if Optimized Bispecific Antibodies under such Joint Program have sufficient potential and qualities (a) to be used for IND-enabling studies, and (b) to advance for further Development, as such criteria may be amended from time to time by the JSC.

1.64 "**Joint Commercialization Costs**" has the meaning set forth in Exhibit A.

1.65 "**Joint Development Costs**" means all costs incurred by a Party with respect to optimization and/or Development of a Joint Product in accordance with the Joint Optimization Plan and Joint Development Plan, including:

(a) Direct out-of-pocket costs paid to Third Parties that are specifically attributable to the Development of the Joint Product including but not limited to:

[*]; and

(b) FTE Costs of a Party's internal scientific, medical, technical, regulatory or managerial personnel necessary to conduct, manage and oversee Development activities.

1.66 "**Joint Product**" means any product comprising a Joint Bispecific Antibody.

1.67 "**Joint Program Opt-Out Trigger**" means, on a Joint Program-by-Joint Program basis, [*].

1.68 "[*]" means [*] set forth in Schedule 1.68.

1.69 "**Know-How**" means all proprietary (a) information, techniques, technology, practices, trade secrets, inventions, methods (including methods of use or administration or dosing), knowledge, data, results, software and algorithms, including pharmacological, toxicological and clinical test data and results, compositions of matter, chemical structures and formulations, sequences, processes, formulae, techniques, research data, reports, standard operating procedures, batch records, manufacturing data, analytical and quality control data, analytical methods (including applicable reference standards), assays and research tools, in each case, whether patentable or not; and (b) tangible manifestations thereof, including any and all of the foregoing relating to Materials.

1.70 "**Manufacture**" means all activities related to the manufacturing of a product or any component or ingredient thereof, including test method development and stability testing, formulation, process development, manufacturing scale-up whether before or after Regulatory Approval, manufacturing any product in bulk or finished form for Development or Commercialization (as applicable), including filling and finishing, packaging, labeling, shipping and holding, in-process and finished product testing, release of a product or any component or ingredient thereof, quality assurance and quality control activities related to manufacturing and release of a product, and regulatory activities related to any of the foregoing.

1.71 "**Marketing Authorization Application**" or "**MAA**" means a marketing authorization application, biologics license application (BLA) or similar application, as applicable, and all amendments and supplements thereto, submitted to the FDA, or any equivalent filing in a country or regulatory jurisdiction other than the U.S. with the applicable Regulatory Authority, to obtain marketing approval for a product, in a country or in a group of countries, including pricing or reimbursement approvals solely to the extent legally required.

1.72 "**Net Sales**" means, with respect to a Program Product, the gross amount invoiced for sales of a Program Product by a Selling Party to Third Parties, less the following deductions from such gross amounts to the extent attributable to such Program Product and to the extent actually incurred, allowed, accrued or specifically allocated:

[*];

[*];

all as determined in accordance with IFRS on a basis consistent with the Selling Party's annual audited financial statements.

Net Sales shall not include sales to Affiliates or contractors engaged by the Selling Party to Develop, Manufacture, or Commercialize the Program Product, solely to the extent that such Affiliate or contractor purchasing the Program Product resells such Program Product to a Third Party. However, subsequent sales of Program Product by such Affiliates, Sublicensees or contractors of the Selling Party to a Third Party shall be included in the Net Sales when sold in the market for end-user use.

Further, any use, supply or provision of Program Product by a Selling Party at no cost (i) in connection with patient assistance programs, (ii) for charitable or promotional purposes, (iii) for preclinical, clinical, regulatory or governmental purposes, or compassionate use or other similar programs, or (iv) for tests or studies reasonably necessary to comply with any Applicable Law, regulation or request by a Regulatory Authority shall not be included in Net Sales of Program Product. Sale or transfer of Program Products between a Party and its Affiliate shall not result in any Net Sales, in which case Net Sales shall be based only on any subsequent sales or dispositions to a Third Party; provided that such a Party and its Affiliates are not an end user.

In no event shall any particular amount identified above be deducted more than once in calculating Net Sales (i.e., no "double counting" of reductions).

In the event that Program Product is sold as part of a financial bundle with other products or included in financial package deals to customers, and in such case, the price of Program Product relevant for the calculation of Net Sales will be [*].

For Net Sales of a Combination Product, the Net Sales applicable to such Combination Product in a country will be determined by multiplying the total Net Sales of such combined product by the fraction A/(A+B), where [*]

[*]. If A or B cannot be determined because values for such Program Product or such other products with which such Program Product is combined are not available separately in a particular country, then the Parties shall discuss an appropriate allocation for the fair market value of such Program Product and such other products with which such Program Product is combined to mutually determine Net Sales for the relevant transactions [*].

1.73 "**Opt-In Term**" means, with respect to a given Evaluated Bispecific Antibody, the period beginning on the date on which [*] of the achievement of the Evaluation Criteria by such Evaluated Bispecific Antibody and ending [*] thereafter.

1.74 "**Out-License**" means a grant to a Third Party of a license and/or sublicense (as the case may be) to Develop and/or Commercialize Evaluated Bispecific Antibodies, Program Bispecific Antibodies and Program Products, as applicable, in the Field, either in the Territory or in select countries.

1.75 "**Out-License Agreement**" means a written agreement between a Third Party and Xencor or Atreca, as applicable, that includes an Out-License of applicable rights of the Parties.

1.76 "**Patents**" means any and all (a) issued patents, (b) pending patent applications, including all provisional applications, substitutions, continuations, continuations-in-part, divisionals and renewals, and all patents granted thereon, (c) patents-of-addition, reissues, and reexaminations, including patent term adjustments, patent term extensions, supplementary protection certificates or the equivalent thereof, (d) inventor's certificates, (e) other forms of government-issued rights substantially similar to any of the foregoing, and (f) United States and foreign counterparts of any of the foregoing.

1.77 "**Person**" means any individual, partnership, joint venture, limited liability company, corporation, firm, trust, association, unincorporated organization, governmental authority or agency, or any other entity not specifically listed herein.

1.78 "**Personal Data**" means any information relating to an identified or identifiable individual or otherwise as defined under Applicable Laws.

1.79 "**Phase 1 Clinical Trial**" means a Clinical Trial which provides for the first introduction into humans of a product, conducted in normal volunteers or patients to generate information on product safety, tolerability, pharmacological activity or pharmacokinetics, as more fully defined in 21 C.F.R. § 312.21(a) or comparable regulations in any country or jurisdiction outside the U.S., and any amended or successor regulations.

1.80 "**Phase 2 Clinical Trial**" means a Clinical Trial for which a primary endpoint is a preliminary determination of efficacy in patients with the disease being studied, as more fully defined in 21 C.F.R. § 312.21(b) or comparable regulations in any country or jurisdiction outside the U.S., and any amended or successor regulations.

1.81 "**Phase 3 Clinical Trial**" means a Clinical Trial that is performed after preliminary evidence suggesting effectiveness of a product has been obtained, and is intended to demonstrate or confirm the therapeutic benefit of such product and to gather the additional information about effectiveness and safety that is needed to evaluate the overall benefit-risk relationship of such product and to provide support for filing for Regulatory Approval and for such product's labeling and summary of product characteristics, as more fully defined in 21 C.F.R. § 312.21(c) or comparable regulations in any country or jurisdiction outside the U.S., and any amended or successor regulations.

1.82 "**Pivotal Study**" means a Clinical Trial that is a registration trial sufficient for submitting an application for Regulatory Approval for such product in the United States or the European Union, as evidenced by (a) an agreement with or statement from the FDA or the EMA on a Special Protocol Assessment or equivalent, or (b) other guidance or minutes issued by the FDA or EMA, for such registration trial.

1.83 "**Program**" means, individually or collectively, a Joint Program and/or a Unilateral Program, in each case, whether or not Out-Licensed.

1.84 "**Program Bispecific Antibody**" means, individually or collectively, a Joint Bispecific Antibody and/or Unilateral Bispecific Antibody.

1.85 "**Program Product**" means, individually or collectively, a Joint Product and/or Unilateral Product.

1.86 "**Prosecution and Maintenance**" or "**Prosecute and Maintain**" means, with respect to a Patent, the preparation, filing, prosecution and maintenance of such Patent, as well as re-examinations, reissues and appeals with respect to such Patent, together with the initiation or defense of interferences, oppositions, *inter partes* review, re-examinations, derivations, post-grant proceedings and other similar proceedings (or other defense proceedings with respect to such Patent, but excluding the defense of challenges to such Patent as a counterclaim in an infringement proceeding) with respect to the particular Patent, and any appeals therefrom. For clarification, "Prosecution and Maintenance" or "Prosecute and Maintain" shall not include any other enforcement actions taken with respect to a Patent.

1.87 "**Publication**" means, with regard to public, external, or Third Party disclosure that pertains to a Collaboration Target, Collaboration Bispecific Antibody, Program Bispecific Antibody, or Program Product or the use of a Collaboration Target, Collaboration Bispecific Antibody, Program Bispecific Antibody, or Program Product, any (a) publication in a journal or periodical, (b) abstract to be presented to any audience, (c) presentation at any conference, including slides and texts of oral or other public presentations, or (d) other oral, written or electronic disclosure.

1.88 "**Recoveries**" has the meaning set forth in Exhibit A.

1.89 "**Regulatory Approval**" means all approvals, licenses and authorizations of the applicable Regulatory Authority necessary for the marketing and sale of a product for a particular indication in a country or region (including separate pricing or reimbursement approvals, even if

not legally required to sell product in a country), and including the approvals by the applicable Regulatory Authority of any expansion or modification of the label for such indication.

1.90 "**Regulatory Authority**" means any national or supranational Governmental Authority, including the U.S. Food and Drug Administration (and any successor entity thereto) (the "**FDA**") in the U.S., the European Medicines Agency (and any successor entity thereto) (the "**EMA**") in the EU and the Ministry of Health, Labour and Welfare of Japan, or the Pharmaceuticals and Medical Devices Agency of Japan (or any successor to either of them) as the case may be in Japan, or any health regulatory authority in any country or region that is a counterpart to the foregoing agencies, in each case, that holds responsibility for regulating the Development and Commercialization of, and the granting of Regulatory Approval for, medical product, as applicable, in such country or region.

1.91 "**Regulatory Exclusivity**" means any exclusive marketing rights or data exclusivity rights conferred by any Regulatory Authority with respect to a Unilateral Product in a country or jurisdiction in the Territory, other than a Patent (potentially including new clinical data exclusivity, orphan drug exclusivity, pediatric exclusivity, or rights similar thereto in other countries or jurisdictions), in each case, that confers exclusive rights to the Unilateral Party or its Affiliates, as applicable to market such Unilateral Product in such country or jurisdiction.

1.92 "**Regulatory Materials**" means the regulatory registrations, applications, authorizations and approvals (including approvals of MAAs, supplements and amendments, pre- and post-approvals, pricing and reimbursement approvals, and labeling approvals), Regulatory Approvals and other submissions made to or with any Regulatory Authority for research, development (including the conduct of clinical trials), manufacture, or commercialization of a product in a regulatory jurisdiction, together with all related correspondence to or from any Regulatory Authority and all documents referenced in the complete regulatory chronology for each MAA, including all Drug Master Files (DMFs) (if any), INDs and supplemental biologics license applications (sBLAs) and foreign equivalents of any of the foregoing.

1.93 "**Research Budget**" means the budget for the Parties to undertake the Research Plan.

1.94 "**Research Plan**" means the plan of research set forth in Schedule 1.94, including the Research Budget, as such plan may be amended from time to time by the JRC.

1.95 "**Royalty Term**" means, on a Unilateral Product-by-Unilateral Product and country-by-country basis, the period of time commencing on the First Commercial Sale of such Unilateral Product in such country of sale and expiring upon the latest of (a) the first date on which there is no Valid Claim of a Patent within any of the Xencor Background Patents, Atreca Background Patents, or Collaboration Patents, in each case, that Covers such Unilateral Product in such country of sale, (b) the last to expire Regulatory Exclusivity period for such Unilateral Product in such country, and (c) the ten (10)-year anniversary of the date of First Commercial Sale of such Unilateral Product in such country of sale.

1.96 "**Selling Party**" means, (a) with respect to a Joint Program, the Lead Party or its Affiliates, and (b) with respect to a Unilateral Program, the Unilateral Party or its Affiliates, but in each case of (a) and (b), specifically excluding Sublicensees and distributors.

1.97 "[*]" means [*].

1.98 "**Sublicense Income**" means and includes all consideration that a Party receives from a Sublicensee for an Out-License of any rights hereunder relating to the applicable Program, including [*]. To the extent a Party receives any non-cash consideration, including equity, under or in connection with such Out-License which would be considered "Sublicense Income", then the fair market value of such non-cash consideration shall be as reasonably determined by the Parties and shall be treated as "Sublicense Income". Notwithstanding the foregoing, Sublicense Income specifically excludes: [*].

1.99 "**Sublicensee**" means a Third Party that is granted a license or sublicense to Commercialize (and optionally, Develop) any Program Product pursuant to an Out-License.

1.100 "**Target**" means a specific [*] that is bound by [*].

1.101 "**Territory**" means worldwide.

1.102 "**Third Party**" means any Person other than Xencor or Atreca that is not an Affiliate of Xencor or Atreca.

1.103 "**Third Party Claim**" means any and all suits, claims, actions, proceedings or demands brought by a Third Party against a Party (or the Xencor Indemnitees, Atreca Indemnitees, or Other Party Indemnitees, as applicable).

1.104 "**Third Party Damages**" means all losses, costs, taxes (including penalties and interest), claims, damages, judgments, liabilities and expenses payable to a Third Party by a Party (or the Xencor Indemnitees, Atreca Indemnitees, or Other Party Indemnitees, as applicable) under a Third Party Claim (including reasonable attorneys' fees and other reasonable out-of-pocket costs of litigation in connection therewith).

1.105 "**Unilateral Bispecific Antibody**" means, with respect to a Unilateral Program, an Evaluated Bispecific Antibody and/or optimized or modified versions thereof, including an Optimized Bispecific Antibody.

1.106 "**Unilateral Party**" means a Party that (a) with respect to an Evaluated Bispecific Antibody, has exercised its Opt-In Right without the other Party having exercised its Opt-In Right within the Opt-In Term, (b) is a Converted Party as described in Section 5.2.9(d), or (c) is a Selected Party as described in Section 5.2.1(b).

1.107 "**Unilateral Product**" means a product comprising a Unilateral Bispecific Antibody.

1.108 "**United States**" or "**U.S.**" means the United States of America and all of its territories and possessions.

1.109 "**Upstream Licenses**" means, with respect to Atreca, [*], and with respect to Xencor, [*].

1.110 "**Upstream Licensors**" means the counterparties of the Upstream Licenses.

1.111 "**Valid Claim**" means (a) a claim of any issued and unexpired Patent that has not specifically been held unpatentable, invalid or unenforceable by a final decision of a court or Governmental Authority of competent jurisdiction, which decision can no longer be appealed or was not appealed within the time allowed; or (b) a claim of a pending Patent application that (i) has been pending for [*] after the earliest filing date from which such claim takes priority and (ii) not been cancelled, withdrawn, abandoned or finally rejected by an administrative agency action from which no appeal can be taken, provided that such claim shall constitute a Valid Claim if and when a Patent issues from such Patent application.

1.112 "**Violation**" means that a Party or any of its officers or directors or any other personnel (or other permitted agents of such Party performing activities hereunder including any of a Party's Affiliates, Third Party contractors and their respective officers and directors) has been: (a) convicted of any of the felonies identified among the exclusion authorities listed on the U.S. Department of Health and Human Services, Office of Inspector General (OIG) website, including 42 U.S.C. § 1320a-7(a) (http://oig.hhs.gov/exclusions/authorities.asp); (b) identified in the OIG List of Excluded Individuals/Entities (LEIE) database (http://exclusions.oig.hhs.gov/) or otherwise excluded from contracting with the federal government (see the System for Award Management (formerly known as the Excluded Parties Listing System) at http://sam.gov/portal/public/SAM/); or (c) listed by any U.S. federal agency as being suspended, debarred, excluded or otherwise ineligible to participate in federal procurement or non-procurement programs, including under 21 U.S.C. § 335a (http://www.fda.gov/ora/compliance_ref/debar/) (each of (a), (b) and (c) collectively, the "**Exclusions Lists**").

1.113 "**Xencor Background IP**" means all Xencor Background Know-How and Xencor Background Patents.

1.114 "**Xencor Background Know-How**" means any and all Know-How that is Controlled by Xencor or its Affiliates on the Effective Date or that arises independently outside of

this Agreement during the Term that is (a) necessary to research, develop, make, have made, import, use, offer to sell, sell or otherwise exploit any Collaboration Bispecific Antibody, Program Bispecific Antibody, Program Product, Collaboration Target (to the extent Available), or Xencor Platform Technology (to the extent used in the Research Program or incorporated into a Collaboration Bispecific Antibody), or (b) otherwise introduced into or used in the performance under this Agreement by or on behalf of Xencor or its Affiliates; but expressly excluding any Xencor Collaboration Know-How and Joint Collaboration Know-How. Notwithstanding the foregoing, for clarity in all cases, Xencor Background Know-How [*].

1.115 "**Xencor Background Patents**" means all Patents that are Controlled by Xencor or its Affiliates on the Effective Date or during the Term that solely Covers Xencor Background Know-How (but not any Collaboration Know-How).

1.116 "**Xencor IP**" means the Xencor Background IP and Xencor's right, title and interest in and to Collaboration IP.

1.117 "**Xencor Patent**" means Xencor Background Patents and Xencor Collaboration Patents.

1.118 "**Xencor Platform Technology**" means Xencor's proprietary technologies, processes and methods related to [*].

1.119 Additional Definitions. Each of the following terms has the meaning described in the corresponding section of this Agreement indicated below:

Definition:	**Section:**
Acquired Competing Product	7.6
Acquired Person	1.26
Alliance Manager	3.1.2
[*]	5.2.9(b)
[*]	6.2
Atreca Collaboration IP	10.4.3(b)
Atreca Collaboration Know-How	10.4.3(b)
Atreca Collaboration Patents	10.4.3(b)
Atreca Indemnitees	13.1
Back-Up Bispecific Antibody	5.5
Bankrupt Party	10.3
[*]	5.2.9(b)
Collaboration	2.1
Competing Party	8.4
Competing Product	8.4
Converted Milestone Payment	8.2.1(a)

Definition:	**Section:**
Converted Party	5.2.9(d)
Converted Unilateral Program	5.1.2(d)
Cost of Goods	Exhibit A
Declined Program	5.1.2(c)
Disclosing Party	11.1
Dispute Claim	15.10.1
Distribution Costs	Exhibit A
Dropped Program	5.6
Dropped Target	6.1
Electronic Delivery	15.14
EU Data Protection Laws	12.5.4
Evaluation Data	4.1.3
Executing Party	5.4.6
Final Antibody Set Due Date	4.1.5
Final Atreca Antibody Set	4.1.5
Finance Working Group	3.6.1
Force Majeure	15.3
GDPR	12.5.4
Indemnitee	13.4
Indemnitor	13.4
Infringement	10.7.1
Initial Atreca Antibody Set	4.1.1
[*]	5.2.9(b)
Insolvency Event	14.3
IP Committee	3.7.1
JCC	3.5.1
JDC	3.4.1
Joint Collaboration IP	10.4.3(c)
Joint Collaboration Know-How	10.4.3(c)
Joint Collaboration Patents	10.4.3(c)
Joint Commercialization Costs	Exhibit A
Joint Commercialization Plan	5.2.4
Joint Commercialization Budget	5.2.4
Joint Development Budget	5.2.3
Joint Development Plan	5.2.3
Joint Development Reconciliation Payment	5.2.8(a)(i)
Joint Development Reconciliation Report	5.2.8(a)(i)
Joint Optimization Budget	5.2.2
Joint Optimization Plan	5.2.2
Joint Program	5.1.2(a)
Joint Program Cost	5.2.6
JSC	3.2.1
JRC	3.3.1
Lead Party	5.2.1(c)
Manufacturing Costs	Exhibit A

Definition:	**Section:**
Marketing Costs	Exhibit A
Materials	4.8.1
Net Profits/Losses	Exhibit A
Officials	12.5.2
Optimized Bispecific Antibody	5.1.1
Opt-In Right	5.1.1
Opt-Out Right	5.2.9(a)
Original Unilateral Program	5.1.2(b)
Other Operating Income/Expense	Exhibit A
Other Party Indemnitees	13.3
P&L Reconciliation Payment	8.1
Party Development Cost Report	5.2.8(a)(i)
Payee Party	9.2.2
Paying Party	9.2.2
Payment	12.5.2
Pharmacovigilance Expenses	Exhibit A
[*]	5.2.9(a)
[*]	5.2.9(a)
Pre-Clinical Development Data	4.9
[*]	5.2.9(a)
Prior CDA	11.9
Product Recall Expenses	Exhibit A
Profit & Loss Share	8.1
Receiving Party	11.1
Recording Party	Exhibit A
Recoveries	Exhibit A
Regulatory Expenses	Exhibit A
Rejected Atreca Antibody	7.2
Rejected Bispecific Antibody	5.6
Report	Exhibit A
Research Cost Report	4.5.3
Research Program	2.1
Research Reconciliation Payment	4.5.3
Research Reconciliation Report	4.5.3
Research Term	4.2
Responsible Party	13.3
Sales Costs	Exhibit A
SEC	11.3.1(a)
Securities Regulators	11.5
[*]	15.4(a)
Selected Party	5.2.1(b)
[*]	5.2.9(b)
Subcommittee	3.1.1(b)
Subsequent Antibody Set Due Date	4.1.4
Subsequent Atreca Antibody Set	4.1.4

Definition:	**Section:**
Term	14.1
[*]	5.2.9(a)
Third Party Patent	8.2.2(d)(i)
Unilateral Program	5.3.1(a)
USPTO	10.6.2
Xencor Collaboration IP	10.4.3(a)
Xencor Collaboration Know-How	10.4.3(a)
Xencor Collaboration Patents	10.4.3(a)
Xencor First Request	4.1.4
Xencor Second Request	4.1.5
Xencor Indemnitees	13.2
[*]	9.2.2

ARTICLE 2
COLLABORATION

2.1 Collaboration Overview. Pursuant to this Agreement and in particular as further provided in ARTICLE 4 and ARTICLE 5, the Parties agree to conduct the certain research and development activities in collaboration with the other with the goal of ultimately Developing and Commercializing one or more multi-specific Antibodies and/or multi-specific Antibody products, either together, unilaterally, or with a Third Party licensee (all such activities under this Agreement, the "**Collaboration**"). Under the initial phase of the Collaboration, the Parties will conduct a research program directed to the generation and evaluation of Collaboration Bispecific Antibodies as detailed in the Research Plan (all such activities under the Research Plan, the "**Research Program**"). Under the Research Program, the Parties will collaborate, with each Party applying its own proprietary technologies, to generate Collaboration Bispecific Antibodies and evaluate such constructs against the Evaluation Criteria, which constructs, if determined by the JRC to have achieved the Evaluation Criteria, shall thereafter be considered to be an Evaluated Bispecific Antibody. The Parties may elect to opt-in to further optimize such Evaluated Bispecific Antibodies to generated Optimized Bispecific Antibodies, and Develop and/or Commercialize products (i.e., Program Products) utilizing such Optimized Bispecific Antibodies. Such optimization, Development, and/or Commercialization may be conducted (a) by both Parties under up to two (2) Joint Programs as further described in Section 5.2, (b) by each Party under up to two (2) Original Unilateral Programs per Party ([*]) as further described in Section 5.3, or (c) by a Third Party under an Out-Licensed Program as further described in Section 5.4. Further, a Joint Program may be converted to a Converted Unilateral Program upon exercise of an Opt-Out Right by a single Party as described in Section 5.2.9, and a Unilateral Program and/or a Joint Program may become Out-Licensed as described in Section 5.4.

ARTICLE 3
GOVERNANCE

3.1 Generally.

3.1.1 Committees.

(a) Establishment. Pursuant to this ARTICLE 3, the Parties will establish a JSC within the timeframes set forth in Section 3.2.1. The JSC shall have decision-making authority with respect to the matters within its purview to the extent expressly and as more specifically provided herein.

(b) Subcommittees. From time to time, the JSC may establish subcommittees to oversee particular projects or activities, as the JSC deems necessary or advisable (each, a "**Subcommittee**"); provided that the JSC may not grant any responsibilities to a Subcommittee that are beyond the scope of the responsibilities of the JSC as set forth herein. Each Subcommittee shall consist of such number of members as the JSC determines is appropriate from time to time, unless otherwise expressly provided herein. Such members shall be individuals with expertise and responsibilities in the relevant areas. For clarity, a given individual representative of a Party may act as a member of the JSC and any given Subcommittee (including multiple Subcommittees) simultaneously. Such Subcommittees shall operate under the same principles as are set forth in this ARTICLE 3 for the committee forming such Subcommittee. As of the Effective Date, the JSC hereby establishes the JRC as a Subcommittee.

3.1.2 Alliance Managers. Promptly after the Effective Date, each Party shall appoint an individual to act as alliance manager for such Party, which may be one of the representatives of such Party on the JSC (each, an "**Alliance Manager**"). The Alliance Managers shall be the primary point of contact for the Parties regarding the activities contemplated by this Agreement and shall facilitate all such activities hereunder. The Alliance Managers shall attend all meetings of the JSC and shall be responsible for assisting the JSC in performing its oversight responsibilities. The name and contact information for each Party's Alliance Manager, as well as any replacement(s) chosen by such Party, in its sole discretion, from time to time, shall be promptly provided to the other Party in accordance with Section 15.2.

3.2 Joint Steering Committee.

3.2.1 Establishment; Meetings. Promptly after the Effective Date, the Parties shall establish a joint steering committee (the "**JSC**") as more fully described in this Section 3.2. The JSC shall have review, oversight and decision-making responsibilities for those activities performed under the Collaboration to the extent expressly and as more specifically provided in Section 3.2.3. Each Party agrees to keep the JSC informed of its progress and activities hereunder with respect to the Collaboration. The first scheduled meeting of the JSC shall be held no later than [*] after establishment of the JSC unless otherwise agreed by the Parties. After the first scheduled meeting of the JSC until the JSC is disbanded, the JSC shall meet in person or by teleconference at least [*], or more or less frequently as the Parties mutually deem appropriate, on such dates and at such places and times as provided herein or as the Parties may agree, provided the JSC shall meet at least [*] in person. The

JSC shall disband upon the expiration or termination of this Agreement in its entirety. Meetings that are held in person shall alternate between first meeting at [*] and next at [*] and then back at [*], and so on. Each Party will bear all expenses it incurs in regard to participating in all meetings of the JSC, including all travel and living expenses, and such expenses shall not be considered a Joint Program Cost.

3.2.2 Membership. The JSC shall be comprised of two (2) representatives (or such other number of representatives as the Parties may mutually agree) from each of Xencor and Atreca. Each representative of a Party shall have sufficient seniority and expertise to participate on the JSC as determined in such Party's reasonable judgment. Each Party may replace any or all of its representatives on the JSC at any time upon written notice to the other Party in accordance with Section 15.2. Each Party may, subject to the other Party's prior approval, invite non-member representatives of such Party and any Third Party to attend meetings of the JSC as non-voting participants; provided that (a) any such representative or Third Party is bound by obligations of confidentiality, non-disclosure and non-use consistent with those set forth in ARTICLE 11 and is obligated to assign inventions to the relevant Party as necessary to effect the intent of Section 10.4 prior to attending such meeting, (b) such non-member representative or Third Party shall not have any voting or decision-making authority on the JSC, and (c) with respect to any Third Party, such Third Party shall be approved by the other Party in writing (such approval not to be unreasonably withheld) prior to attendance at such meeting.

3.2.3 Responsibilities. Except as otherwise set forth in this Section 3.2, the JSC may perform the following functions, subject to the final decision-making authority as set forth in Section 3.2.4:

(a) oversee, review, monitor progress of, and guide the strategic direction of the Collaboration, including the Research Program and the Programs in accordance with this Agreement;

(b) serve as a forum for exchanging information and facilitating discussions regarding the conduct of the Collaboration, including by facilitating discussions between the Parties regarding the identification and evaluation of Collaboration Bispecific Antibodies and Collaboration Targets;

(c) [*];

(d) prioritize the Research Program with respect to particular Collaboration Bispecific Antibodies and determine which Party's capabilities and infrastructure should be utilized in such Research Program;

(e) designate a Back-Up Bispecific Antibody for inclusion in the same Program as an Optimized Bispecific Antibody;

(f) determine the Joint Clinical Candidate Criteria and any amendments to the Joint Clinical Candidate Criteria;

(g) review and discuss Evaluated Bispecific Antibodies, including with respect to a Joint Program, if any Optimized Bispecific Antibody satisfies the Joint Clinical Candidate Criteria;

(h) approve and designate Optimized Bispecific Antibodies nominated by the JDC for each Joint Program as a Joint Clinical Candidate;

(i) for each Joint Bispecific Antibody and/or Joint Product, review and approve the Joint Development Plan and Joint Development Budget, and any modifications thereto resulting in expenditures over [*] of the then-existing and approved Joint Development Plan and Joint Development Budget, as well as any new Clinical Trials or indications proposed for such Joint Bispecific Antibody or Joint Product;

(j) serve as a forum for each Party to communicate at certain points in time its decisions regarding continuation of its participation in the joint Development of each Joint Bispecific Antibody and/or Joint Product;

(k) discuss and attempt to resolve any disputes in any Subcommittees, including the issues escalated to the JSC by the JRC, JDC, or JCC; and

(l) perform such other responsibilities as may be mutually agreed to by the Parties from time to time.

For purposes of clarity, the JSC shall not have any authority beyond the specific matters set forth in this Section 3.2.3 or otherwise expressly set forth in this Agreement, and in particular shall not have any power to amend, modify, interpret or waive the terms of this Agreement, or to alter, diminish, expand, determine or waive compliance by a Party with a Party's obligations under this Agreement.

3.2.4 Decisions. Except as otherwise set forth in this Agreement, all decisions of the JSC shall be made by consensus, with each Party having one (1) vote. If the JSC cannot agree on a matter for which the JSC has decision-making authority within [*] after it has met and attempted to reach such decision, then either Party may, by written notice to the other, have such issue referred to the Executive Officers for resolution. The Parties' respective Executive Officers shall meet within [*] after such matter is referred to them, and shall negotiate in good faith to resolve the matter. If the Executive Officers are unable to resolve the matter within [*], or such longer time frame that the Executive Officers may otherwise agree upon, after the matter is referred to them in accordance with this Section 3.2.4, then, except as otherwise set forth in this Agreement, (a) if the dispute relates to [*], then [*] if the dispute cannot be resolved within [*], unless the dispute relates to [*], in which case Atreca shall have the right to [*], and Xencor shall have the right to [*], (b) if the dispute relates to a Joint Program, the Lead Party will have final decision making authority, (c) if the dispute relates to a Unilateral Program, the

Unilateral Party will have the final decision making authority, and (d) if the dispute relates to [*] under a Joint Program, the Lead Party will have the final decision making authority; provided that the Party having final decision making authority shall (i) exercise its final decision making authority in good faith, and (ii) consider in good faith the positions of the other Party in making such final decision. Notwithstanding the foregoing, neither Party shall have the right to exercise its final decision-making authority to: (A) determine that it has fulfilled any obligations under this Agreement, or that the other Party has breached any obligation under this Agreement; (B) determine that milestone events or other events have or have not occurred; (C) make a decision that is stated to require the mutual agreement or mutual consent of the Parties (or that is subject to the determination of the other Party as set forth herein); or (D) modify a Party's rights or obligations under this Agreement, or otherwise amend, modify, interpret or waive the terms of this Agreement; and any of the foregoing decisions or determinations shall require mutual agreement of the Parties. Any final decision made by the applicable Party in the course of exercising its final decision-making authority must be consistent with the terms of this Agreement and within the scope of authority delegated to the JSC under this Agreement.

3.2.5 Minutes. The Parties shall alternate on preparing and circulating minutes of each meeting of the JSC, with Xencor being responsible for preparing and circulating such minutes for the first meeting, Atreca being responsible for preparing and circulating such minutes for the second meeting, and so on. Such minutes shall set forth, *inter alia*, an overview of the discussions at the meeting and a list of any actions, decisions or determinations approved by the JSC. A draft of such minutes shall be circulated by the Party preparing such minutes to all members of the JSC within [*] after the applicable meeting. Such minutes shall be effective only after such minutes have been approved by both Parties in writing. Definitive minutes of all JSC meetings shall be finalized no later than [*], or more or less frequently as the Parties mutually deem appropriate, on such dates and at such places and times as provided herein or as the Parties may agree, provided that the JRC shall meet [*] in person or by teleconference, and shall consider in good faith whether any meetings should be held in person. The JRC shall disband upon the earlier of expiration of the Research Term, or termination of this Agreement in its entirety. Each Party will bear all expenses it incurs in regard to participating in all meetings of the JRC, including all travel and living expenses incurred in connection therewith, and such expenses shall not be Joint Development Costs.

3.3.3 Membership. The JRC shall be comprised of two (2) representatives (or such other number of representatives as the Parties may mutually agree) from each of Xencor and Atreca. Each Party may replace any or all of its representatives on the JRC at any time upon written notice to the other Party in accordance with Section 15.2. Each representative of a Party shall have

sufficient seniority and expertise to participate on the JRC as determined in such Party's reasonable judgment. Each Party may, subject to the other Party's prior approval, invite Third Parties or non-member representatives of such Party to attend meetings of the JRC as non-voting participants; provided that (a) any such representative or Third Party is bound by obligations of confidentiality, non-disclosure and non-use consistent with those set forth in ARTICLE 11 and is obligated to assign inventions to the relevant Party as necessary to effect the intent of Section 10.4 prior to attending such meeting, (b) such non-member representative or Third Party shall not have any voting or decision-making authority on the JRC and (c) with respect to any Third Party, such Third Party shall be approved by the other Party in writing (such approval not to be unreasonably withheld) prior to attendance at such meeting.

3.3.4 Responsibilities. The JRC shall perform the following functions:

(a) review results of all studies and activities conducted under the Research Plan and serve as a forum for exchanging information and facilitating discussions regarding the Research Plan;

(b) evaluate Collaboration Bispecific Antibodies and determine whether it has achieved the Evaluation Criteria to merit further Development;

(c) serve as a forum for each Party in determining whether to exercise its Opt-In Right with respect to an Evaluated Bispecific Antibody;

(d) review and approve any amendments to the Research Plan, including the Research Budget;

(e) review costs incurred relative to the Research Budget;

(f) to the extent [*], implement strategies for [*]; and

(g) perform such other responsibilities as may be mutually agreed by the Parties from time to time.

3.3.5 Decisions. Except as otherwise set forth in this Agreement, all decisions of the JRC shall be made by consensus, with each Party having one (1) vote. If the JRC cannot agree on a matter for which the JRC has decision-making authority within [*] after it has attempted to reach such decision in good faith, then either Party may, by written notice to the other, have such issue referred to the JSC.

3.4 Joint Development Committee.

3.4.1 Establishment. Promptly after commencement of the first Joint Program, the Parties shall establish a joint Development Subcommittee (the "**JDC**") as more fully described in this Section 3.4. The JDC shall oversee and review progress of Development of a Joint Bispecific Antibody and/or Joint Product under the applicable Joint Program. For clarity, a single

JDC shall be established under this Agreement, and such JDC may oversee Development of Joint Bispecific Antibodies and/or Joint Products under two (2) different Joint Programs.

3.4.2 Meetings. Upon its formation, the JDC shall meet in person or by teleconference [*], or more or less frequently as the Parties mutually deem appropriate, on such dates and at such places and times as provided herein or as the Parties may agree, provided that the JDC shall meet [*] in person. The JDC shall disband upon the expiration or termination of this Agreement in its entirety. Each Party will bear all expenses it incurs in regard to participating in all meetings of the JDC, including all travel and living expenses in connection therewith.

3.4.3 Membership. The JDC shall be comprised of two (2) representatives (or such other number of representatives as the Parties may mutually agree) from each of Xencor and Atreca. Each Party may replace any or all of its representatives on the JDC at any time upon written notice to the other Party in accordance with Section 15.2. Each representative of a Party shall have sufficient seniority and expertise to participate on the JDC as determined in such Party's reasonable judgment. Each Party may, subject to the other Party's prior approval, invite Third Parties or non-member representatives of such Party to attend meetings of the JDC as non-voting participants; provided that (a) any such representative or Third Party is bound by obligations of confidentiality, non-disclosure and non-use consistent with those set forth in ARTICLE 11 and is obligated to assign inventions to the relevant Party as necessary to effect the intent of Section 10.4 prior to attending such meeting, (b) such non-member representative or Third Party shall not have any voting or decision-making authority on the JDC, and (c) with respect to any Third Party, such Third Party shall be approved by the other Party in writing (such approval not to be unreasonably withheld) prior to attendance at such meeting.

3.4.4 Responsibilities. The JDC shall perform the following functions with respect to each Joint Program:

(a) oversee and coordinate Development activities of both Parties;

(b) develop a Joint Optimization Plan and Joint Optimization Budget for the Evaluated Bispecific Antibody, including those activities and associated costs required to generate an Optimized Bispecific Antibody suitable for IND-enabling studies;

(c) approve the Joint Optimization Plan and oversee and evaluate the work thereunder (including, if applicable, through a Subcommittee);

(d) together with the JRC, establish Joint Clinical Candidate Criteria and evaluate the applicable Optimized Bispecific Antibody against such criteria and recommend any such Optimized Bispecific Antibody achieving the Joint Clinical Candidate Criteria to the JSC for approval as a Joint Clinical Candidate;

(e) once a Joint Clinical Candidate is designated by the JSC, develop, review and recommend for approval by the JSC the Joint Development Plan and Joint Development Budget, and any material amendments thereto;

(f) allocate activities under the Joint Development Plan to the appropriate Party;

(g) oversee the joint clinical Development of all Joint Clinical Candidates within a Joint Program, including reviewing the progress against the Joint Development Plan;

(h) together with the JRC, discuss potential initial and subsequent indications for Development of Joint Products; and

(i) perform such other responsibilities as may be mutually agreed to by the Parties from time to time.

3.4.5 Decisions. Except as otherwise set forth in this Agreement, all decisions of the JDC shall be made by consensus, with each Party having one (1) vote. If the JDC cannot agree on a matter for which the JDC has decision-making authority within [*] after it has attempted to reach such decision in good faith, then either Party may, by written notice to the other, have such issue referred to the JSC; provided that the Lead Party will have the right to make day-to-day decisions on the operational aspects of the Development activities under the Joint Development Plan, and the final say with respect to any proposed amendments to the Joint Development Plan.

3.5 Joint Commercialization Committee.

3.5.1 Establishment. No later than [*] prior to anticipated filing of an MAA for the first Joint Product, the Parties shall establish a joint Commercialization Subcommittee (the "**JCC**") as more fully described in this Section 3.5. The JCC shall oversee and review progress of Commercialization of Joint Product(s). For clarity, a single JCC shall be established under this Agreement, and such JCC shall oversee Commercialization of Joint Products under all Joint Programs.

3.5.2 Meetings. Upon its formation, JCC shall meet in person or by teleconference [*], or more or less frequently as the Parties mutually deem appropriate, on such dates and at such places and times as provided herein or as the Parties may agree, provided that the JCC shall meet [*] in person. The JCC shall disband upon the expiration or termination of this Agreement in its entirety. Each Party will bear all expenses it incurs in regard to participating in all meetings of the JCC, including all travel and living expenses in connection therewith, and such expenses shall not be Joint Commercialization Costs or Joint Development Costs.

3.5.3 Membership. The JCC shall be comprised of two (2) representatives (or such other number of representatives as the Parties may mutually agree) from each of Xencor and Atreca. Each Party may replace any or all of its representatives on the JCC at any time upon written notice to the other Party in accordance with Section 15.2. Each representative of a Party shall have sufficient seniority and expertise to participate on the JCC as determined in such Party's reasonable judgment. Each Party may, subject to the other Party's prior approval, invite Third Parties or non-member representatives of such Party to attend meetings of the JCC as non-voting participants; provided that (a) any such representative or Third Party is bound by obligations of confidentiality,

non-disclosure and non-use consistent with those set forth in ARTICLE 11 and is obligated to assign inventions to the relevant Party as necessary to effect the intent of Section 10.4 prior to attending such meeting, (b) such non-member representative or Third Party shall not have any voting or decision-making authority on the JCC and (c) with respect to any Third Party, such Third Party shall be approved by the other Party in writing (such approval not to be unreasonably withheld) prior to attendance at such meeting.

3.5.4 Responsibilities. The JCC shall perform the following functions with respect to each Joint Program:

(a) oversee and coordinate Commercialization activities of both Parties;

(b) develop, review, and recommend for approval by the JSC the Joint Commercialization Plan and Joint Commercialization Budget, including any amendments thereto;

(c) oversee implementation of the Joint Commercialization Plan;

(d) coordinate with the JDC to determine Joint Product label, branding and Commercialization strategies;

(e) review financial forecasts to manage spend within the approved Joint Commercialization Budget;

(f) review and discuss the Commercialization activities of the Parties, including pre-launch and post-launch activities and oversee any co-promotion activities by the Parties, including allocation of details;

(g) review strategies for obtaining, maintaining, defending and enforcing Joint Product trademarks; and

(h) perform such other responsibilities as may be mutually agreed to by the Parties from time to time.

3.5.5 Decisions. Except as otherwise set forth in this Agreement, all decisions of the JCC shall be made by consensus, with each Party having one (1) vote. If the JCC cannot agree on a matter for which the JCC has decision-making authority within [*] after it has attempted to reach such decision in good faith, then either Party may, by written notice to the other, have such issue referred to the JSC.

3.6 Finance Working Group.

3.6.1 Establishment. Promptly after the Effective Date, the Parties shall establish a finance working Subcommittee (the "**Finance Working Group**") as more fully described in this Section 3.6. The Finance Working Group shall provide support to JSC and all other Subcommittees with respect to accounting and financial matters relating to the activities under this Agreement.

3.6.2 Meetings. The Finance Working Group shall meet in person or by teleconference as the Parties mutually deem appropriate (but in any event no less frequent than

[*]), on such dates and at such places and times as the Parties may agree, provided that the Finance Working Group shall consider in good faith whether any meetings should be held in person. The Finance Working Group shall disband upon the termination of this Agreement in its entirety. Each Party will bear all expenses it incurs in regard to participating in all meetings of the Finance Working Group, including all travel and living expenses in connection therewith, and such expenses shall not be Joint Commercialization Costs or Joint Development Costs.

3.6.3 Membership. The Finance Working Group shall be comprised of one (1) representative (or such other number of representatives as the Parties may mutually agree) from each of Xencor and Atreca. Each Party may replace any or all of its representatives on the Finance Working Group at any time upon written notice to the other Party in accordance with Section 15.2. Each representative of a Party shall have sufficient seniority and expertise to participate on the Finance Working Group as determined in such Party's reasonable judgment. Each Party may, subject to the other Party's prior approval, invite Third Parties or non-member representatives of such Party to attend meetings of the Finance Working Group as non-voting participants; provided that (a) any such representative or Third Party is bound by obligations of confidentiality, non-disclosure and non-use consistent with those set forth in ARTICLE 11 and is obligated to assign inventions to the relevant Party as necessary to effect the intent of Section 10.4 prior to attending such meeting, and (b) with respect to any Third Party, such Third Party shall be approved by the other Party in writing (such approval not to be unreasonably withheld) prior to attendance at such meeting.

3.6.4 Responsibilities. The Finance Working Group shall perform the following functions with respect to activities under this Agreement:

(a) work with the JSC and other Subcommittees to assist in financial, forecasting, budgeting and planning matters as required, including (i) assisting in the preparation, for approval by the JSC, of such reports on financial matters as are requested by the JSC for the implementation of the financial aspects of the activities under this Agreement, (ii) overseeing the preparation by the Parties of the Joint Optimization Budget, Joint Development Budget, and Joint Commercialization Budget for submission to the Parties for review and approval, and reviewing costs incurred relative to such budgets, (iii) assisting in the preparation of other budgets and annual and long-term plans for the Parties' approval, (iv) as requested by a Party, coordinating the preparation of Calendar Quarterly updates to annual budgets, (v) assisting the JCC in developing the long-range forecast for commercial supply of the Joint Products, (vi) supporting the development of the revenue forecast model or methodology and (vii) supporting development and review of the Joint Product revenue forecasts at each official submission and update;

(b) recommend, for approval by the JSC, procedures, formats and timelines consistent with this Agreement for reporting financial data and assist in resolving differences that relate to the financial terms of this Agreement;

(c) recommend any changes to or additional items to be included within out-of-pocket costs, FTE Costs, Joint Development Costs, Distribution Costs, Sales Costs, Manufacturing Costs, Marketing Costs, and Joint Commercialization Costs accounted for under this Agreement;

(d) review calculations of the amount of any payments to be made by the Parties (or their Affiliates) hereunder, review the reconciliation of payments and provide guidance regarding the most appropriate and tax effective methods of cost sharing and determination and distribution of the Net Profit/Losses to a Party or its Affiliates consistent with this Agreement;

(e) on an annual basis, review the FTE rates and discuss and approve (if applicable) any modifications thereof;

(f) coordinate audits of data where appropriate and required or allowed by this Agreement;

(g) coordinate with the JSC and other Subcommittees as appropriate and applicable;

(h) perform such other duties as are expressly assigned to the Finance Working Group in this Agreement; and

(i) perform such other responsibilities as may be mutually agreed to by the Parties from time to time.

3.6.5 Decisions. Except as otherwise expressly set forth in this Agreement, the Finance Working Group will be an advisory committee for the Collaboration and to the Parties and will make recommendations by consensus. The Finance Working Group will not have any decision-making power; provided that, the Parties will work together in good faith to enable the Finance Working Group to perform its designated responsibilities.

3.7 IP Committee.

3.7.1 Establishment. Promptly after the Effective Date, the Parties shall establish a joint intellectual property advisory Subcommittee (the "**IP Committee**") as more fully described in this Section 3.7.

3.7.2 Meetings. The IP Committee shall meet in person or telephonically as the Parties mutually deem appropriate, on such dates and at such places and times as provided herein or as the Parties may agree, provided that the IP Committee shall meet no more often than [*]. The IP Committee shall disband upon the termination of this Agreement in its entirety. Each Party will bear all expenses it incurs in regard to participating in all meetings of the IP Committee, including all travel and living expenses in connection therewith, and such expenses shall not be Joint Commercialization Costs or Joint Development Costs.

3.7.3 Membership. The IP Committee shall be comprised of at least one (1) representative (or such other number of representatives as the Parties may mutually agree) from each of Xencor and Atreca. Each Party may replace any or all of its representatives on the IP Committee at any time upon written notice to the other Party in accordance with Section 15.2. Each representative of a Party shall have sufficient seniority and expertise to participate on the IP Committee as determined in such Party's reasonable judgment. Each Party may, subject to the other Party's prior approval, invite Third Parties or non-member representatives of such Party to

attend meetings of the IP Committee as non-voting participants; provided that (a) any such representative or Third Party is bound by obligations of confidentiality, non-disclosure and non-use consistent with those set forth in ARTICLE 11 and is obligated to assign inventions to the relevant Party as necessary to effect the intent of Section 10.4 prior to attending such meeting, and (b) with respect to any Third Party, such Third Party shall be approved by the other Party in writing (such approval not to be unreasonably withheld) prior to attendance at such meeting.

3.7.4 Responsibilities. The IP Committee shall provide input regarding the following:

(a) strategies for Prosecuting and Maintaining Patents within Atreca Collaboration IP, Xencor Collaboration IP, and Joint Collaboration IP;

(b) whether a Joint Collaboration Patent solely relates to a given Program, and accordingly, whether such Joint Collaboration Patent should be Prosecuted and Maintained by a Responsible Party in accordance with Section 10.6.2; and

(c) perform such other responsibilities as may be mutually agreed by the Parties from time to time.

3.7.5 Decisions. Except as otherwise expressly set forth in this Agreement, the IP Committee will be an advisory committee for the Collaboration and to the Parties and will make recommendations by consensus. The IP Committee will not have any decision-making power; provided that, the Parties will work together in good faith to file Collaboration Patents in the Territory that Covers Collaboration Bispecific Antibodies, Program Bispecific Antibodies, Program Products, Collaboration Targets, or the research, development, making, having made, import, use, offering to sell, selling or other exploitation of any of the foregoing.

ARTICLE 4
RESEARCH PROGRAM

4.1 Research Program Overview.

4.1.1 Initial Atreca Antibody Set. Pursuant to the Interim MTA, Atreca has selected a group of Atreca Antibodies (i.e. the Atreca Antibody Collection) based upon the Antibody Selection Criteria, and prioritized the Atreca Antibody Collection to identify an initial set of [*] Atreca Collaboration Antibodies (the "**Initial Atreca Antibody Set**"), and provided to Xencor such Initial Atreca Antibody Set in order for Xencor to begin to generate Collaboration Bispecific Antibodies as set forth in Section 4.1.2.

4.1.2 Collaboration Bispecific Antibody Generation. Upon Xencor's receipt of any Atreca Collaboration Antibodies, Xencor shall apply the Xencor Platform Technology to the Atreca Collaboration Antibodies and use Commercially Reasonable Efforts to generate Collaboration Bispecific Antibodies. Xencor shall use Commercially Reasonable Efforts prioritize, and then characterize such Collaboration Bispecific Antibodies [*] in a series of assays, including, [*], pursuant to and as further set forth in the Research Plan. Atreca will conduct activities related to the identification

and characterization of Target and Target biology for those same Collaboration Bispecific Antibodies promptly upon the initiation of [*] by Xencor. For clarity, with respect to the Initial Atreca Antibody Set, the Parties acknowledge and agree that some of the activities contemplated in this Section 4.1.2 have already been conducted, as of the Effective Date, under the Interim MTA.

4.1.3 Evaluation. With respect to any Collaboration Bispecific Antibody that is (a) generated from any Atreca Collaboration Antibody pursuant to Section 4.1.2, and (b) selected by the Parties for further evaluation, the Parties shall jointly, through the JRC, (i) review relevant information and data, including data relating to (A) Xencor's prioritization and characterization activities relating thereto, and (B) Atreca's Target identification and characterization activities relating to Collaboration Targets thereof, each as set forth in the Research Plan (collectively, "**Evaluation Data**"), and (ii) compare such Evaluation Data against the Evaluation Criteria to determine whether such Evaluation Criteria has been achieved therefor. Collaboration Bispecific Antibodies that have been determined by the JRC to have (1) achieved the Evaluation Criteria at any stage in the Research Program will be deemed an Evaluated Bispecific Antibody and subject to Section 5.1.1, or (2) not achieved the Evaluation Criteria at any stage in the Research Program will be deemed a Rejected Bispecific Antibody and subject to Section 7.1.

4.1.4 Subsequent Atreca Antibody Set. Following Xencor's [*] pursuant to Section 4.1.2 for at least [*] Collaboration Bispecific Antibodies generated from the Initial Atreca Antibody Set pursuant to assays [*], upon Xencor's request ("**Xencor First Request**"), Atreca shall select, prioritize and identify an additional set of [*] Atreca Collaboration Antibodies based upon the Antibody Selection Criteria (the "**Subsequent Atreca Antibody Set**"). Atreca shall deliver to Xencor such Subsequent Atreca Antibody Set, which may be [*]; provided, that Atreca shall [*] Atreca Collaboration Antibodies in such Subsequent Atreca Antibody Set within [*] after such Xencor First Request ("**Subsequent Antibody Set Due Date**"). The suitability of Atreca Antibodies for delivery to Xencor as part of the Subsequent Atreca Antibody Set and the further conduct of the characterization, Target identification and evaluation activities set forth in Section 4.1.2 and Section 4.1.3, as applicable, shall be [*]. Unless otherwise agreed by the Parties, at the time Atreca delivers to Xencor the first Atreca Collaboration Antibody from the Subsequent Atreca Antibody Set, [*].

4.1.5 Final Atreca Antibody Set. Following Xencor's [*] pursuant to Section 4.1.2 for at least [*] Collaboration Bispecific Antibodies generated from the Subsequent Atreca Antibody Set pursuant to assays [*], upon Xencor's request ("**Xencor Second Request**"), Atreca shall select, prioritize and identify an additional set of [*] Atreca Collaboration Antibodies based upon the Antibody Selection Criteria (the "**Final Atreca Antibody Set**"). Atreca shall deliver to

Xencor such Final Atreca Antibody Set, which may be provided in one or more "batches" or "groups", with such grouping of Atreca Antibodies at Atreca's discretion following consultation within the JRC; provided, that Atreca shall deliver to Xencor all [*] Atreca Collaboration Antibodies in such Final Atreca Antibody Set within [*] after such Xencor Second Request ("**Final Antibody Set Due Date**"). The suitability of Atreca Antibodies for delivery to Xencor as part of the Final Atreca Antibody Set and the further conduct of the characterization, Target identification and evaluation activities set forth in Section 4.1.2 and Section 4.1.3, as applicable, shall be [*]. Unless otherwise agreed by the Parties, at the time Atreca delivers to Xencor the first Atreca Collaboration Antibody from the Final Atreca Antibody Set, [*].

4.1.6 [*] Atreca Antibodies Limit. Following the JRC's evaluation of all Collaboration Bispecific Antibodies generated from the Final Atreca Antibody Set pursuant to Section 4.1.3, [*]. For clarity, following Atreca's delivery to Xencor of a total of [*] Atreca Collaboration Antibodies in the Initial Atreca Antibody Set, the Subsequent Atreca Antibody Set and the Final Atreca Antibody Set, Atreca shall have no obligation to deliver to Xencor any further Atreca Antibodies.

4.2 Research Term. The Parties shall conduct the Research Program during the period beginning on the Effective Date and ending on the three (3) year anniversary thereof ("**Research Term**"). If any Collaboration Bispecific Antibody generated by Xencor prior to the end of the Research Term is not determined by the JRC to be a Rejected Bispecific Antibody or an Evaluated Bispecific Antibody by the end of the Research Term, the Research Term shall be extended an additional [*] solely with respect to such Collaboration Bispecific Antibody; provided that, [*]. For clarity, during such extension period, the Parties agree to not generate any new Collaboration Bispecific Antibodies, or conduct any activities with respect to the Research Program, other than as expressly provided in this Section 4.2.

4.3 Diligence. Xencor and Atreca shall jointly (serially or concurrently) conduct the Research Program in good scientific manner and in compliance in all material respects with all requirements of Applicable Laws, and the terms of this Agreement and the Research Plan, using Commercially Reasonable Efforts to carry out the activities assigned to such Party under the Research Plan.

4.4 Research Budget. The Finance Working Group shall prepare an initial Research Budget promptly after the Effective Date for the JRC's written approval. Such initial Research

Budget approved by the JRC shall be attached to the initial Research Plan as an amendment thereto, and will cover the budget for the Research Program from the Effective Date to [*], and the JRC, with the assistance of the Finance Working Group, will be responsible for developing subsequent Research Budgets for each subsequent Calendar Year and submit the Research Budgets for the review and approval of the JSC. The Research Budget may be amended from time to time during the Research Term by the JRC, subject to review and written approval by the JSC.

4.5 Research Costs; Reconciliation.

4.5.1 FTE Costs. The Parties acknowledge and agree that FTE Costs incurred in connection with the Research Program are intended to be incurred on an approximately equal basis between the Parties. However, the Parties shall have no obligation to reconcile the FTE Costs, no true-up payment shall be required with respect to FTE Costs, and each Party shall be responsible for its own FTE Costs; provided, however that the Parties shall endeavor in good faith such that each Party incurs FTE Costs on an approximately equal basis each Calendar Year.

4.5.2 External Out-of-Pocket Costs. The Parties acknowledge and agree that external out-of-pocket costs incurred in conducting activities under the Research Plan in accordance with the Research Budget shall be borne on an equal basis between the Parties. Such out-of-pocket costs shall be initially borne by the Party incurring such costs; provided that the Parties shall reconcile such out-of-pocket costs, and make payments in accordance with Sections 4.5.3 and 4.5.4 to achieve an equal allocation for such out-of-pocket costs.

4.5.3 Reporting Research Costs. Within [*] after the end of each Calendar Quarter (or more or less frequently as the Parties mutually deem appropriate) during the Research Term, each Party shall submit to the other Party a true and accurate report providing in reasonable detail external out-of-pocket costs incurred by such Party in connection with the Research Program (such report, the "**Research Cost Report**"). The Finance Working Group shall prepare a reconciliation report for the out-of-pocket costs for the preceding Calendar Quarter (the "**Research Reconciliation Report**") within [*] after receipt of the Research Cost Report from each Party. The Research Reconciliation Report shall set forth, in reasonable detail a statement of any amount owed by one Party to the other Party ("**Research Reconciliation Payment**") for the Parties to achieve an equal allocation of external out-of-pocket costs for the preceding Calendar Quarter. All reports under this Section 4.5.3 shall be considered Confidential Information of both Parties.

4.5.4 Research Reconciliation Payment. Within [*] after delivery by the Finance Working Group of the Research Reconciliation Report, the Party owing payment shall pay the Research Reconciliation Payment to the other Party; provided, however, that if within [*] of receipt of the Research Reconciliation Report, a Party's financial representative informs the other Party's financial representative that it disputes the amount of all or a portion of the Research Reconciliation Payment, the financial representatives of the Parties shall meet and attempt in good faith to resolve such dispute; provided, however, that the Party owing the Research Reconciliation Payment shall pay such portion of the Research Reconciliation Payment that is not in dispute. To the extent the dispute is not resolved by such financial representatives, such matter shall be presented to the JSC for resolution; provided that if

such dispute is not resolved by the JSC, the Parties shall resolve the dispute in accordance with Section 15.10.

4.6 Records. Each Party shall maintain complete, current and accurate records of all activities, conducted by or on behalf of such Party under the Research Program, as well as all data and other information resulting from such activities, and shall retain the same for a period of no less than [*] from their creation (or such longer period of time as may be required by Applicable Law). Such records shall fully and properly reflect all work done and results achieved in the performance of such activities in good scientific manner and appropriate for regulatory and patent purposes, and shall be prepared and maintained in accordance with Applicable Law, including, as applicable, GCP, GLP and GMP record keeping requirements where applicable. Upon reasonable prior notice to the other Party, each Party shall have the right to review and copy such records as reasonably requested by such other Party.

4.7 Abandonment of Target Identification Efforts. It is understood that despite Atreca's use of Commercially Reasonable Efforts in conducting the Research Program, the Target for a given Collaboration Bispecific Antibody of interest may not be sufficiently well identified within an allotted time period, as evaluated and determined by the JRC, as to merit further work. [*]. In such case where Atreca [*] to abandon its Target identification activities], (a) [*], provided that [*], and [*], in the event that [*] with respect to such given Collaboration Bispecific Antibody, and (b) Atreca shall [*] any materials and work-product in Atreca's Control and possession that are necessary or reasonably useful (in Atreca's reasonable opinion) [*]; provided that (i) Atreca shall not be required to, and unless requested by Xencor, shall not [*], (ii) Atreca shall not be required to [*], (iii) any such materials and work-product shall remain solely owned by Atreca, (iv) if any such materials or work-product constitute Atreca's Confidential Information, Xencor shall be subject to confidentiality obligations with respect thereto pursuant to the terms and conditions set forth in ARTICLE 11, and (v) upon [*] such materials and work-product and, upon Atreca's request, [*]. For clarity, a Target identified [*] shall automatically be deemed

a Collaboration Target following its identification and be subject to the provisions of this Agreement thereafter.

4.8 Material Transfer.

4.8.1 Transfer. Either Party may provide to the other Party certain tangible biological materials and/or chemical compounds Controlled by the supplying Party (collectively, "**Materials**") for use by the other Party in furtherance of the Collaboration. Except as otherwise expressly provided in this Agreement, all Materials delivered by a Party to the other Party (a) will remain the sole property of the supplying Party, and (b) must be used solely for the purpose of furthering the Collaboration and to perform under this Agreement, and for no other purpose, and in accordance with the terms and conditions in this Agreement. Except as expressly permitted in this Agreement, the Party receiving the Materials must not transfer, distribute or release the Materials to any Third Party without the supplying Party's prior written consent. The Party receiving the Materials may provide access to such Materials by authorized Third Party subcontractors who require such access in order to conduct activities on behalf of a Party under the Research Plan, provided that such Third Party subcontractors are bound by written agreements consistent with Section 15.5. The Party receiving Materials acknowledges and agrees that such Materials must not be used for testing in or treatment of humans or in contact with any cells or other materials to be given to humans, and must not be commingled with any other material from any other source, other than as expressly provided in the Research Plan. Each Party receiving Materials of the supplying Party agrees that it shall use and handle the Materials, and conduct its activities under this Agreement, in each case, in compliance with all Applicable Laws, including, but not limited to, those relating to the handling, research, testing, production, storage, transportation, export, packaging, labeling, disposal or other authorized use of the Materials. Each Party agrees that it will not attempt to reverse engineer, deconstruct, design around or in any way determine the sequence, structure or composition of the other Party's Materials, and except as specified in the Research Plan, generate analogs, derivatives or formulations based on such Materials or analyze or modify the structure of such Materials. Each Party will maintain reasonable security measures with respect to the other Party's Materials no less strict than those it maintains to protect its own valuable tangible property against loss, theft or destruction. Nothing in this Agreement shall limit a Party to use its own Materials or provide its own Materials to any other person or entity, for any reason, subject to ARTICLE 7.

4.8.2 Return of Materials. Upon the expiration or termination of this Agreement, at the option of a Party supplying any Materials to the other Party, the receiving Party shall promptly (a) return such Materials to the supplying Party, or (b) destroy such Materials and deliver a written certification of destruction to the supplying Party.

4.8.3 Disclaimer. EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, ALL MATERIALS PROVIDED ARE PROVIDED "AS IS" AND NEITHER PARTY MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE. NO OFFICER, EMPLOYEE, AGENT OR REPRESENTATIVE OF A PARTY HAS ANY AUTHORITY TO BIND SUCH PARTY TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY CONCERNING SUCH PARTY'S MATERIALS.

4.8.4 Interim MTA. The Parties acknowledge and agree that Interim MTA is hereby terminated; provided that, "Atreca Materials" as used in the Interim MTA shall be deemed to be Atreca's Materials hereunder, "Xencor Materials" as used in the Interim MTA shall be deemed to be Xencor's Materials hereunder, and in each case, as of the effective date of the Interim MTA, subject to the terms and conditions of this Agreement, and in particular this Section 4.8 and Section 11.9. In the event of any inconsistency or conflict between this Agreement and the Interim MTA, the terms of this Agreement shall govern.

4.9 Ownership of Pre-Clinical Development Data. All pre-clinical data and other pre-clinical results generated by or resulting from or in connection with the conduct of the Research Program (collectively, the "**Pre-Clinical Development Data**") shall initially be jointly owned by the Parties (and each Party shall require that all of its Affiliates and subcontractors assign any of such Affiliates' and subcontractors' right, title and interest in and to such Pre-Clinical Development Data to such Party) and shall be deemed to be the Confidential Information of both Parties (i.e., neither Party may use or disclose the Pre-Clinical Development Data except as provided in this Agreement or otherwise agreed to by the other Party). Following (a) a Party's exercise of an Opt-In Right that results in an Original Unilateral Program pursuant to Section 5.1.2(b) or (b) a Party's exercise of an Opt-Out Right that results in a Converted Unilateral Program pursuant to Section 5.2.9(d), the non-Unilateral Party shall, and hereby does assign applicable Pre-Clinical Development Data to the Unilateral Party, and such Pre-Clinical Development Data shall be deemed to be the Confidential Information of such Unilateral Party; provided that, the Unilateral Party hereby grants to the non-Unilateral Party a non-exclusive, worldwide, fully paid-up, royalty-free right and license, with the right to grant sublicenses (through multiple tiers), under such Pre-Clinical Development Data for all purposes other than to research, develop (including Develop), make (including Manufacture), have made (including have Manufactured), use, offer for sale, sell, import, Commercialize and otherwise exploit the applicable Unilateral Bispecific Antibody and Unilateral Product in the Field in the Territory.

ARTICLE 5
DEVELOPMENT AND COMMERCIALIZATION

5.1 Program Overview.

5.1.1 Opt-In Right. For each Evaluated Bispecific Antibody, each Party shall have the right to conduct further Development ("**Opt-In Right**"), including generating an optimized version of such Evaluated Bispecific Antibody suitable for IND-enabling studies (each, an "**Optimized Bispecific Antibody**"). A Party may exercise its Opt-In Right for an Evaluated Bispecific Antibody at any time during the Opt-In Term by giving written notice to the other Party.

5.1.2 Election of Programs.

(a) If both Parties elect to exercise their respective Opt-In Right for an Evaluated Bispecific Antibody, then subject to Section 5.2.1(b), the Parties will have the joint right to conduct Development of such Evaluated Bispecific Antibody in accordance with Section 5.2, including generating an Optimized Bispecific Antibody suitable for IND-enabling studies based on criteria determined by the JDC (each, a "**Joint Program**").

(b) If only one Party elects to exercise its Opt-In Right for an Evaluated Bispecific Antibody, and the other Party waives or declines its Opt-In Right, or fails to exercise its Opt-In Right during the Opt-In Term, then subject to Section 5.3.1(b), such Party exercising its Opt-In Right will have the sole right to conduct Development of such Evaluated Bispecific Antibody in accordance with Section 5.3 (each, an "**Original Unilateral Program**", which is also a Unilateral Program).

(c) If neither Party exercises its Opt-In Right for an Evaluated Bispecific Antibody, or fails to exercise its Opt-In Right during the Opt-In Term (each a "**Declined Program**"), the Parties will determine through the JSC whether to (i) Out-License such Evaluated Bispecific Antibody in accordance with Section 5.4, or (ii) abandon such Evaluated Bispecific Antibody which will thereafter be deemed a Rejected Bispecific Antibody as described in Section 5.6.

(d) With respect to each of the two (2) Joint Programs permitted under this Agreement, if a Party elects to exercise its Opt-Out Right in accordance with Section 5.2.9, such Joint Program shall become either (i) a Unilateral Program in accordance with Section 5.3 should the other Party elect to continue Development and not also exercise its Opt-Out Right (each, a "**Converted Unilateral Program**"), or (ii) a Dropped Program as described in Section 5.6 should the other Party also elect to exercise its Opt-Out Right.

5.1.3 Out-Licensing or Abandonment of Programs. With respect to each of the two (2) Joint Programs permitted under this Agreement, or any Unilateral Program (whether an Original Unilateral Program or Converted Unilateral Program), the Parties may determine whether to (a) Out-License the Program Bispecific Antibody and/or Program Product from such Programs, which Out-License shall be conducted in accordance with Section 5.4, or (b) abandon such Program Bispecific Antibody and/or Program Product from such Programs, which Program Bispecific Antibody and Program Product will thereafter be deemed a Rejected Bispecific Antibody, and such Program will thereafter be deemed a Dropped Program as described in Section 5.6.

5.2 Joint Program.

5.2.1 Generally.

(a) Objectives. If both Parties exercise their respective Opt-In Right with respect to an Evaluated Bispecific Antibody, the Parties shall jointly conduct optimization of such Evaluated Bispecific Antibody under the supervision and direction of the JDC, with the goal of further Developing and Commercializing Joint Products in the Field in the Territory.

(b) Two Joint Programs Limit. The Parties acknowledge and agree that, subject to Section 5.2.2, no more than two (2) Joint Programs may ever be established during the Term. For clarity, even if one or both Joint Programs convert to a Converted Unilateral Program, become Out-Licensed, or become Dropped Programs, neither Party shall have the right to initiate a third or any other Joint Program. However, after two (2) Joint Programs have been established, if both Parties desire to conduct further Development with respect to a subsequent Evaluated Bispecific Antibody designated by the JRC, then each Party shall alternate having the right to

conduct optimization and further Development, Manufacture and Commercialization of such Evaluated Bispecific Antibody under an Original Unilateral Program, with Xencor having the first such right, and Atreca having the second such right (in each case, the "**Selected Party**").

(c) Lead Party. With respect to a Joint Program, a lead Party ("**Lead Party**") shall lead, and be primarily responsible for (i) optimization of Evaluated Bispecific Antibodies to generate an Optimized Bispecific Antibody in accordance with the Joint Optimization Plan, (ii) upon approval of an Optimized Bispecific Antibody by the JSC as a Joint Clinical Candidate, further Development (including preclinical and clinical development) of Joint Clinical Candidates and Joint Products in accordance with the Joint Development Plan, and (iii) Commercialization of Joint Products in accordance with the Joint Commercialization Plan. The Parties shall each have the right to lead a single Joint Program during the Term, and Atreca shall be the Lead Party for the first Joint Program and Xencor shall be the Lead Party for the second Joint Program. For clarity, designation of a Party as being a Lead Party shall not affect any financial considerations or a Party's share of any revenues arising from the Joint Program, which shall be shared equally in accordance with Section 8.1.

(d) Non-Lead Party. The non-Lead Party shall provide reasonable assistance to the Lead Party in relation to optimization, Development and/or Commercialization of the applicable Joint Bispecific Antibody and Joint Product to the extent agreed upon in good faith by the non-Lead Party in the Joint Optimization Plan, Joint Development Plan, and Joint Commercialization Plan. In addition, the non-Lead Party shall in good faith consider, and use Commercially Reasonable Efforts to provide assistance as otherwise reasonably requested by the Lead Party, including [*]. The costs incurred by such non-Lead Party in connection with performing any such activities shall be Joint Development Costs and subject to Section 5.2.8(a).

5.2.2 Optimization. Following both Parties' exercise of their respective Opt-In Right with respect to an Evaluated Bispecific Antibody, the Parties shall promptly agree upon an optimization plan (the "**Joint Optimization Plan**") and associated budget for the Evaluated Bispecific Antibody (the "**Joint Optimization Budget**"); provided that, if the Parties are [*] after both Parties have exercised their respective Opt-In Right with respect to an Evaluated Bispecific Antibody, or such longer period as the Parties may mutually agree, either Party may, [*]. If neither Party [*] time period, then subject to the two (2) Original Unilateral Program limit ([*]) the [*], and the [*]. For clarity, [*]), and the non-Lead Party has not, the non-Lead Party shall [*]. Pursuant to the foregoing, (a) if one Party (but not the other Party) [*],

then such Evaluated Bispecific Antibody shall be [*]) as set forth in Section 5.3.1(b)), or (b) if both Parties [*] such Evaluated Bispecific Antibody shall be the subject of a Declined Program and subject to the terms and conditions of Section 5.1.2(c). For clarity, if either Party [*], such Evaluated Bispecific Antibody will not be the subject of a Joint Program or count towards the two (2) Joint Program limit under Section 5.2.1(b). If the Parties agree upon an initial Joint Optimization Plan and initial Joint Optimization Budget, and continue with the Joint Program, the Parties, through the JSC, shall mutually amend and update the Joint Optimization Plan and Joint Optimization Budget from time-to-time, but no less frequently than [*]; provided, however, to the extent that the Parties are unable to agree upon such amendment, the Lead Party shall have final decision-making authority with respect to such amendment. Each Party shall use Commercially Reasonable Efforts to conduct its respective activities set forth in the Joint Optimization Plan in accordance with the Joint Optimization Budget, under the leadership of the Lead Party. The JDC will evaluate all relevant data and determine whether each Optimized Bispecific Antibody meets the Joint Clinical Candidate Criteria, and if so determined, recommend to the JSC that it approves of such Optimized Bispecific Antibody as a Joint Clinical Candidate.

5.2.3 Development. Following the JSC's approval of an Optimized Bispecific Antibody as a Joint Clinical Candidate, the Parties shall promptly agree upon a preclinical and clinical development plan ("**Joint Development Plan**") and associated budget ("**Joint Development Budget**"); provided that, to the extent that the Parties are unable to agree upon a Joint Development Plan and Joint Development Budget within [*] of the Joint Clinical Candidate being designated by the JSC, or such longer period as the Parties may mutually agree, the Lead Party shall have final decision-making authority with respect to the Joint Development Plan and Joint Development Budget. The Parties, through the JSC, shall mutually amend and update the Joint Development Plan and Joint Development Budget from time-to-time, but no less frequently than [*]; provided, however, to the extent that the Parties are unable to agree upon such amendment, the Lead Party shall have final decision-making authority with respect to such amendment. Each Party agrees to use Commercially Reasonable Efforts to conduct its respective activities set forth in the Joint Development Plan in accordance with the Joint Development Budget, and to otherwise Develop and seek Regulatory Approval for Joint Clinical Candidates and Joint Products in the Field in the Territory, under the leadership of the Lead Party.

5.2.4 Commercialization. If the Joint Program does not become Out-Licensed as provided in Section 5.4.3, the Lead Party shall Commercialize the Joint Product in applicable Territories in accordance with an agreed upon commercialization plan (the "**Joint Commercialization Plan**") and associated budget ("**Joint Commercialization Budget**") for such countries. No later than [*] prior to anticipated filing of an MAA for the first Joint Product under such Joint Program, the Lead Party shall prepare such Joint Commercialization Plan and Joint Commercialization Budget for review and approval by the JSC. The Parties acknowledge and agree that a single Joint Commercialization Plan (and corresponding Joint Commercialization Budget) may cover Commercialization of multiple indications for a given Joint Product. The Parties, through the JSC, shall mutually amend and update the Joint

Commercialization Plan and Joint Commercialization Budget from time-to-time, but no less frequently than [*]; provided, however, to the extent that the Parties are unable to agree upon such amendment, the Lead Party shall have final decision-making authority with respect to such amendment. If a Joint Product obtains Regulatory Approval for more than one indication, Commercialization shall nonetheless be conducted under a single Joint Commercialization Plan and Joint Commercialization Budget, and be led by a single Lead Party. Each Party agrees to use Commercially Reasonable Efforts to conduct its respective activities set forth in the Joint Commercialization Plan in accordance with the Joint Commercialization Budget, under the leadership of the Lead Party.

5.2.5 Limitation. Notwithstanding anything to the contrary herein, in exercising its final decision making authority with respect to the initial draft of, or amendment to the (a) Joint Optimization Plan and Joint Optimization Budget, (b) Joint Development Plan and Joint Development Budget, and/or (c) Joint Commercialization Plan and Joint Commercialization Budget, the Lead Party shall have no right to impose additional obligations on the non-Lead Party that are not agreed upon by the non-Lead Party; provided further, that the non-Lead Party shall consider, in good faith, reasonable requests for assistance by the Lead Party.

5.2.6 Manufacture and Supply. The Parties, through the JSC, shall determine a strategy with respect to the Manufacture and supply of Joint Bispecific Antibody or Joint Product, which may entail Manufacturing of such Joint Bispecific Antibody and Joint Product by the Lead Party, the non-Lead Party, or a Third Party; provided that the Lead Party shall have the final decision making authority with respect to such Manufacture. If the Parties seek a Third Party for Manufacture of the Joint Bispecific Antibody or Joint Product, the Lead Party for the applicable Joint Program shall negotiate with, and contract with such Third Party. For clarity, any costs or expenses associated with the Manufacture of Joint Bispecific Antibody and/or Joint Product, whether such Manufacture is by the Lead Party, other Party, or Third Party, shall be [*].

5.2.7 Records and Reports. Each Party shall maintain records, in sufficient detail and in good scientific manner appropriate for patent and regulatory purposes, which shall fully and properly reflect work done and results achieved in the performance of the Joint Program by such Party. The Parties will share information about the performance of the Joint Program through the JSC. Without limiting the foregoing, the Lead Party shall provide regular updates to the non-Lead Party through the JSC, at least [*], regarding the optimization and Development activities conducted pursuant to this Section 5.2. Such updates shall include written progress reports and written notices of any material developments, or material data and information generated, at a level of detail reasonably sufficient for the non-Lead Party to determine the Lead Party's compliance with its diligence obligations. In addition, the Lead Party shall provide the non-Lead Party such other data and information in the Lead Party's Control regarding such optimization and Development activities as the non-Lead Party may reasonably request. Such reporting obligations of the Lead Party pursuant to this Section 5.2 shall continue until Regulatory Approval for the applicable Joint Product in the U.S. or EU Major Market, and thereafter, upon occurrence of any material developments or generation of material data and information, or as reasonably requested by the non-Lead Party.

5.2.8 Joint Program Costs.

(a) Joint Development Costs; Reconciliation. The Parties acknowledge and agree that Joint Development Costs incurred in conducting activities under (i) the Joint Optimization Plan pursuant to the Joint Optimization Budget and (ii) the Joint Development Plan pursuant to the Joint Development Budget shall be shared on an equal basis between the Parties, unless and until (1) a Party has exercised its Opt-Out Right in accordance with Section 5.2.9, (2) such Joint Program is terminated in its entirety as mutually agreed to by the Parties, or (3) rights relating to such Joint Program is Out-Licensed to a Third Party in accordance with Section 5.4.3. Such Joint Development Costs shall initially be borne by the Party incurring such costs; provided that the Parties shall reconcile such Joint Development Costs, and make payments in accordance with Sections 5.2.8(a)(i) and 5.2.8(a)(ii) to achieve an equal allocation for each Calendar Quarter; provided, further that neither Party shall be liable to the other Party for Joint Development Costs incurred by such other Party in an amount in excess of [*] of the then-approved Joint Optimization Budget and/or Joint Development Budget, in each case, without approval of the JSC; provided, further, that in any event, if a Party will, or expects to incur Joint Development Costs in excess of the then-approved Joint Optimization Budget and/or Joint Development Budget, such Party shall promptly notify the other Party and the Parties will discuss in good faith such budget overage and amending the applicable Joint Optimization Budget and/or Joint Development Budget.

(i) Reporting Joint Development Costs. Within [*] after the end of each Calendar Quarter, each Party shall submit to the other Party a true and accurate report providing in reasonable detail all Joint Development Costs, to the extent applicable, incurred by such Party (each such report, a "**Party Development Cost Report**"), including a calculation showing as separate line items each component of Joint Development Costs. Within [*] after receipt of the non-Lead Party Development Cost Report, the Lead Party shall, using the Party Development Cost Report from the non-Lead Party, prepare a reconciliation report for the Joint Development Costs for such Calendar Quarter (the "**Joint Development Reconciliation Report**"). The Joint Development Reconciliation Report shall set forth, in reasonable detail: (1) a statement of all Joint Development Costs incurred by the Lead Party, the non-Lead Party, and the total expenses to be shared by the Parties, as applicable; and (2) a statement of any amount ("**Joint Development Reconciliation Payment**") owed by one Party to the other Party. All reports under this Section 5.2.8(a)(i) shall be considered Confidential Information of both Parties.

(ii) Joint Development Reconciliation Payment. Within [*] after delivery by the Lead Party of a Joint Development Reconciliation Report to the non-Lead Party, the Lead Party or the non-Lead Party, as the case may be, shall pay the Joint Development Reconciliation Payment to the applicable Party; provided, however, that if within [*] of receipt of the Joint Development Reconciliation Report by the non-Lead Party, a Party's financial representative informs the other Party's financial representative that it disputes the amount of all or a portion of the Joint Development Reconciliation Payment, the financial representatives of the Parties shall meet and attempt in good faith to resolve such dispute; provided, however, that the Party owing the Joint Development Reconciliation Payment shall pay such portion of the Joint Development Reconciliation Payment that is not in dispute. To the extent the dispute is not resolved by such financial representatives, such matter shall be [*]

for resolution; provided that [*].

(b) Profit and Loss Share for Joint Programs. The Parties acknowledge and agree that Joint Commercialization Costs incurred in conducting activities under the Joint Commercialization Plan pursuant to the Joint Commercialization Budget shall be shared in accordance with the Profit & Loss Share, unless and until (i) a Party has exercised its Opt-Out right in accordance with Section 5.2.9, (ii) such Joint Program is terminated in its entirety as mutually determined by the Parties, or (iii) rights relating to such Joint Program is Out-Licensed to a Third Party in accordance with Section 5.4.3. In general, Joint Commercialization Costs shall be borne by the Party incurring such costs; provided that the Parties shall reconcile such Joint Commercialization Costs in accordance with Exhibit A; provided, further that neither Party shall be liable to the other Party for Joint Commercialization Costs incurred by such other Party in an amount in excess of [*] of the then-approved Joint Commercialization Budget, without further approval of the JSC as to the increase in the Joint Commercialization Budget; provided, further, that in any event, if a Party will, or expects to incur Joint Commercialization Costs in excess of the then-approved Joint Commercialization Budget, such Party shall promptly notify the other Party and the Parties will discuss in good faith such budget overage and amending the Joint Commercialization Budget.

5.2.9 Opt-Out.

(a) Opt-Out Right. Each Party shall have the right to opt-out from a Joint Program ("**Opt-Out Right**") and terminate its obligations under the Joint Program, including its obligations to jointly fund the Joint Program, by providing written notice to the other Party at the following points in the Joint Program, and not at any other time, except as provided in Section 5.2.9(b): (i) after [*] but prior to [*] (the "[*]"); (ii) after [*], but prior to [*](the "[*]"); or (iii) after [*], but prior to [*] (the "[*]", and collectively with the [*] and the [*], the "**Joint Program Opt-Out Points**").

(b) Other Joint Program Opt-Out Triggers. Without limiting Section 5.2.9(a), (y) the non-Lead Party shall have the right to exercise an Opt-Out Right as a result of any Joint Program Opt-Out Trigger, as follows: (i) if the Parties [*] (the [*]), (ii) if [*] ("[*]"), and (iii) if [*], as applicable ("[*]"), and (z) either Party shall have the right to exercise an Opt-Out Right as a result of a [*] upon [*]

[*] ([*]). If the a Party wishes to exercise an Opt-Out Right based on a Joint Program Opt-Out Trigger, then (A) such Party shall give written notice to the other Party within [*] following the occurrence of such [*], as applicable, (B) upon delivery of such notice, the Joint Program will be subject to the terms and conditions of Section 5.2.9(d), and (C) for the purposes of determining (1) the milestone payments and royalty payments payable by the other Party under Section 8.2.1 and Section 8.2.2(b), respectively, and (2) any Sublicense Income payments due under an Out-Licensed Converted Unilateral Program under Section 8.3.3, such Party exercising its Opt-Out Right will be deemed to have exercised its Opt-Out Right (I) with respect to a [*], at the subsequent Joint Program Opt-Out Point to occur following the applicable Joint Program Opt-Out Trigger, and (II) with respect to an [*], at the Joint Program Opt-Out Point that had most recently occurred prior to the [*]. For clarity and by way of example only, if the non-Lead Party exercises an Opt-Out Right based on a [*] following the [*], then the non-Lead Party will [*].

(c) Funding Obligation. The Party exercising its Opt-Out Right to terminate its obligations under a Joint Program shall [*] after exercising its Opt-Out Right; provided, however that a non-Lead Party exercising its Opt-Out Right shall only be responsible for [*] by the JSC or an applicable Subcommittee, without the Lead Party having [*]. For clarity, on a Joint Program-by-Joint Program basis, if a Party does not exercise its Opt-Out Right at one of the three (3) Joint Program Opt-Out Points specified above in Section 5.2.9(a), or through a Joint Program Opt-Out Trigger specified above in Section 5.2.9(b), such Party will be obligated to continue to jointly fund all Joint Program Costs, unless and until it exercises its Opt-Out Right at a subsequent then-available Joint Program Opt-Out Point or Joint Program Opt-Out Trigger for such Joint Program.

(d) Opt-Out Consequences. Upon exercise of an Opt-Out Right by a Party, the other Party must provide written notice to such Party of its intent to either: (i) conduct the Joint Program at issue unilaterally (such other Party, the "**Converted Party**"), with the prior Joint Program being deemed to be a Converted Unilateral Program, or (ii) also cease the conduct and funding of such Joint Program, in which case the Parties may (A) seek to Out-License such Program in accordance with Section 5.4.3(b), or (B) abandon such Program, which Program Bispecific Antibody and Program Product will thereafter be deemed a Rejected Bispecific Antibody, and such Program will thereafter be deemed a Dropped Program as described in Section 5.6. In the event that a Party exercises its Opt-Out Right under a Joint Program and the other Party elects to conduct the Program at issue unilaterally as a Converted Unilateral Program, except as

otherwise expressly provided in this Agreement, (1) the Party having first exercised its Opt-Out Right shall have no rights or obligations of a Party under a Joint Program, and shall instead be deemed to have all rights and obligations of the non-Unilateral Party under a Converted Unilateral Program, and (2) the other Party shall be deemed to be a Unilateral Party and shall have no rights or obligations of a Party under a Joint Program, and shall instead be deemed to have all rights and obligations of the Unilateral Party under a Converted Unilateral Program.

5.2.10 Regulatory Matters. The Lead Party shall have the right to (a) seek, prepare, file, maintain and hold title to all Regulatory Materials for the applicable Joint Bispecific Antibody and Joint Product (in its own name), and shall have the final say with respect to safety matters for which it is legally liable, and (b) communicate and otherwise interact with Regulatory Authorities with respect to such Joint Bispecific Antibody and Joint Product, including with respect to any Regulatory Materials in connection therewith; provided that the Lead Party shall consider any comments made by the other Party in good faith; provided further that, any decisions regarding safety matters relating solely to (i) any Atreca Antibody in a Joint Bispecific Antibody or Joint Product shall require Atreca's written consent, such consent not to be unreasonably withheld, and (ii) Xencor Platform Technology in a Joint Bispecific Antibody or Joint Product shall require Xencor's written consent, such consent not to be unreasonably withheld. Without limiting the foregoing, if Atreca is the Lead Party, Xencor will make available all applicable safety information relating to the specific Xencor Platform Technology incorporated into such Joint Bispecific Antibody and/or Joint Product to the extent Controlled by Xencor, and if Xencor is the Lead Party, Atreca will make available all applicable safety information relating to the specific Atreca Antibody incorporated into such Joint Bispecific Antibody and/or Joint Product to the extent Controlled by Atreca.

5.3 Unilateral Program.

5.3.1 Generally.

(a) Objectives. If (i) one Party, but not the other Party, exercises its Opt-In Right with respect to an Evaluated Bispecific Antibody during the Opt-In Term as provided in Section 5.1.2(b), (ii) one Party exercises its Opt-Out Right with respect to a Joint Program but the other Party agrees to conduct such Program unilaterally as provided in Section 5.2.9(d), or (iii) two (2) Joint Programs are ongoing, or previously have been established (whether or not subsequently converted, terminated, or Out-Licensed), and both Parties exercise their Opt-In Rights with respect to an Evaluated Bispecific Antibody as provided in Section 5.2.1(b), the Unilateral Party shall have the sole right and obligation to conduct optimization of such Evaluated Bispecific Antibody, with the goal of further Developing and Commercializing Unilateral Products in the Field in the Territory, itself or with or through its Affiliates, Sublicensees or other Third Parties (each, a "**Unilateral Program**").

(b) Four Original Unilateral Programs Limit. The Parties acknowledge and agree that, [*], no more than two (2) Original Unilateral Programs may ever be established for each Party during the Term, for a total of four (4) Original Unilateral Programs. For clarity, with respect to a Party, (i) even if one or both Original Unilateral Programs become Out-Licensed, or become Dropped Programs, such Party shall not have the right to initiate a third or any other Original Unilateral Program, and (ii) the conduct of any Converted Unilateral Program

shall be in addition to, and not limit, the two (2) Original Unilateral Program limitation ([*]).

(c) Unilateral Party. The Unilateral Party shall have sole decision-making authority with respect to the optimization of the Evaluated Bispecific Antibody, and further Development and Commercialization of any resulting Unilateral Bispecific Antibody or Unilateral Product within a Unilateral Program. Without limiting the foregoing, the Unilateral Party, itself or through its Affiliates, Sublicensees or other Third Parties, will use Commercially Reasonable Efforts to (i) optimize Evaluated Bispecific Antibodies under the Unilateral Program, and Develop and seek Regulatory Approval for Unilateral Products in the Field in [*], and (ii) following receipt of Regulatory Approval of such Unilateral Products in applicable Territories, Commercialize such Unilateral Products in such Territories for which Regulatory Approvals have been obtained.

(d) Non-Unilateral Party. The non-Unilateral Party shall provide reasonable assistance to the Unilateral Party, at the request and cost of the Unilateral Party, in relation to the optimization, Development and/or Commercialization of applicable Unilateral Bispecific Antibodies and/or Unilateral Products, including by performing applicable technology transfer, and, with respect to a Converted Unilateral Program, by transitioning its portion of the Program, Manufacturing the applicable Program Bispecific Antibody and/or Program Product for a reasonable transition period, and transferring applicable Regulatory Materials.

5.3.2 Termination of a Unilateral Program. Without limiting Section 5.4.4, the Unilateral Party shall have the right, in its sole discretion, and at any time, to terminate its Unilateral Program upon providing written notice to the non-Unilateral Party; provided that, (a) if the Unilateral Party is [*]; and (b) the non-Unilateral Party have the right to convert any terminated Original Unilateral Program to its own Original Unilateral Program by providing written notice thereof to the Unilateral Program within [*] thereafter, following which (i) the non-Unilateral Party shall be deemed the Unilateral Party of such Unilateral Program, subject to the terms and conditions of this Section 5.3, Section 8.2.2(a) and Section 10.1.3, provided that such Original Unilateral Program shall continue to count towards the two (2) Original Unilateral Program limit ([*]) of the original Unilateral Party, and (ii) the original Unilateral Party shall promptly transfer all Know-How Controlled by such original Unilateral Party that is necessary for the Development, Manufacture and Commercialization of the applicable Unilateral Bispecific Antibody and Unilateral Product.

5.3.3 Manufacture and Supply. For each Unilateral Program, the Unilateral Party, itself or through its Affiliates, Sublicensees or other Third Parties, shall have the sole right and responsibility for the Manufacture of any Unilateral Bispecific Antibody and/or Unilateral Product.

5.3.4 Records and Reports. The Unilateral Party shall maintain records, in sufficient detail and in good scientific manner appropriate for patent and regulatory purposes, which shall fully and properly reflect work done and results achieved in the performance of the Unilateral Program by such Party. The Unilateral Party shall provide regular updates to the other

Party through the JSC, at least [*], regarding any material optimization and Development activities conducted pursuant to this Section 5.3. Such updates shall include written reports at a level of detail reasonably required for the other Party to determine, in good faith, the Unilateral Party's compliance with its diligence obligations. Such reporting obligations of the Unilateral Party pursuant to this Section 5.3 shall continue, on a Unilateral Program-by-Unilateral Program basis until Regulatory Approval for the applicable Unilateral Product in the U.S. or EU Major Market.

5.3.5 Unilateral Program Costs. Any optimization, Development, Manufacturing, and/or Commercialization of the applicable Unilateral Bispecific Antibody and Unilateral Product under a Unilateral Program shall be at the Unilateral Party's sole cost and expense.

5.3.6 Regulatory Matters. The Unilateral Party shall (a) seek, prepare, file, maintain and hold title to all Regulatory Materials for any Unilateral Bispecific Antibody or Unilateral Product (in its own name), and shall have the final say with respect to safety matters for which it is legally liable, and (b) communicate and otherwise interact with Regulatory Authorities with respect to the Unilateral Bispecific Antibody or Unilateral Product, including with respect to any Regulatory Materials in connection therewith; provided that the Unilateral Party shall consider any comments made by the other Party in good faith; provided further that, any decisions regarding safety matters relating solely to (i) any Atreca Antibody in a Unilateral Bispecific Antibody or Unilateral Product shall require Atreca's written consent, not to be unreasonably withheld, and (ii) Xencor Platform Technology in a Unilateral Bispecific Antibody or Unilateral Product shall require Xencor's written consent, not to be unreasonably withheld. Without limiting the foregoing, if Atreca is the Unilateral Party, Xencor will make available all applicable safety information relating to the specific Xencor Platform Technology incorporated into such Unilateral Bispecific Antibody and/or Unilateral Product to the extent Controlled by Xencor, and if Xencor is the Unilateral Party, Atreca will make available all applicable safety information relating to the specific Atreca Antibody incorporated into such Unilateral Bispecific Antibody or Unilateral Product to the extent Controlled by Atreca.

5.3.7 Pharmacovigilance. At the written request of the Unilateral Party, within [*] after such request, the Unilateral Party and the other Party will enter into a pharmacovigilance agreement in order to, among other things, coordinate safety matters and share safety information with respect to Unilateral Bispecific Antibodies and Unilateral Products.

5.4 Out-Licensed Program.

5.4.1 Generally. The Parties may Out-License their rights (a) relating to an Evaluated Bispecific Antibody if neither Party has exercised its Opt-In Right within the Opt-In Term, as further described in Section 5.4.2, (b) relating to a Joint Program, at the election of the Lead Party, as further described in Section 5.4.3, and (c) relating to a Unilateral Program, at the election of the Unilateral Party, as further described in Section 5.4.4. For clarity, for a given Evaluated Bispecific Antibody or a Program (e.g., Program Bispecific Antibody and Program Product), the Parties shall have the right to Out-License their rights on a country-by-country basis, and payments for such countries where the Parties' rights have been Out-Licensed shall be

governed by Section 8.3 while countries where the Parties' rights have not been Out-Licensed shall be governed by Section 8.1 or Section 8.2, as applicable.

5.4.2 Out-Licensing a Declined Program. For each Declined Program, the Parties, through the JSC, will decide whether to Out-License Commercialization rights (and optionally, Development rights) relating to such Evaluated Bispecific Antibody; provided that if the Parties cannot agree to Out-License their rights relating to such Evaluated Bispecific Antibody, such Evaluated Bispecific Antibody shall then be deemed to be a Rejected Bispecific Antibody, and such Declined Program will thereafter be deemed a Dropped Program as described in Section 5.6. If the Parties agree to Out-License their rights relating to such Evaluated Bispecific Antibody, a mutually agreed upon Party will have the right to seek out, negotiate, and execute with Third Parties, on behalf of itself and the other Party, the terms and conditions of an Out-License Agreement for such Evaluated Bispecific Antibody, subject to written consent of the other Party, such consent not to be unreasonably withheld; provided, that if a *bona fide* term sheet relating to such Out-License Agreement is not agreed upon with a Third Party within [*] after the end of the applicable Opt-In Term, the other Party will have the right to take over and lead such efforts to seek out and negotiate a term sheet relating to such Out-License Agreement for the next [*]; provided further, that if no such *bona fide* term sheet is agreed upon with a Third Party within [*] months after the end of such Opt-In Term, the Evaluated Bispecific Antibody under such Declined Program shall be deemed to be a Rejected Bispecific Antibody, and such Declined Program will thereafter be deemed a Dropped Program as described in Section 5.6.

5.4.3 Out-Licensing a Joint Program.

(a) Voluntary Out-License. For each Joint Program, either Party may recommend to the other Party, at any time, Out-Licensing Commercialization rights (and optionally, Development rights) relating to the applicable Joint Bispecific Antibody and Joint Product in the Field, either in the Territory or in select countries, to a Third Party; provided, that the Lead Party shall have the [*] right to decide whether to pursue such an Out-Licensing approach. In the event that the Lead Party decides to pursue an Out-Licensing approach, such Lead Party shall have the right to seek out, negotiate, and execute with Third Parties, on behalf of itself and the non-Lead Party, the terms and conditions of an Out-License Agreement for applicable Joint Bispecific Antibodies and Joint Products under a given Joint Program in the Field, either in the Territory or in select countries, subject to written consent of the non-Lead Party, such consent not to be unreasonably withheld.

(b) Out-Licensing an Opted-Out Program. If a Party exercises its Opt-Out Right under a Joint Program, and the other Party also ceases the conduct and funding of such Joint Program in accordance with Section 5.2.9(d), the Parties may, upon mutual agreement, seek to Out-License to a Third Party the Parties' rights relating to the applicable Joint Bispecific Antibody and Joint Product under such Joint Program in the Field in the Territory (whether in the entire Territory or in select countries therein). In such circumstances, the Party [*] shall have the right to seek out, negotiate, and execute with Third Parties, on behalf of itself and the other Party, the terms and conditions of an Out-License Agreement for such Joint Bispecific Antibody and Joint Product in the Field, either in the Territory or in select countries, subject to written consent of the other Party, such consent not to be

unreasonably withheld; provided that if a *bona fide* term sheet relating to such Out-License Agreement is not agreed upon with a Third Party within [*] after both Parties have decided to cease the conduct and funding of such Joint Program, the Joint Bispecific Antibody and Joint Product under such Joint Program shall be deemed to be a Rejected Bispecific Antibody, and such Joint Program will thereafter be deemed a Dropped Program as described in Section 5.6.

5.4.4 Out-Licensing a Unilateral Program. For each Unilateral Program, the Unilateral Party shall have the right, in its sole discretion, and at any time (but subject to giving prior written notice to the other Party), to seek out, negotiate, and execute with Third Parties, on behalf of itself and the other Party, the terms and conditions of an Out-License Agreement of Commercialization rights (and optionally, Development rights) relating to the applicable Unilateral Bispecific Antibody and Unilateral Product in the Field, either in the Territory or in select countries, subject to written consent of the other Party, such consent not to be unreasonably withheld. If the Unilateral Party seeks such an Out-License Agreement, it shall keep the other Party informed of its progress, developments and activities relating thereto, including by providing copies of term sheets and draft and final agreements.

5.4.5 Diligence. The applicable Party seeking to Out-License Commercialization rights (and optionally, Development rights) under this Section 5.4 shall use Commercially Reasonable Efforts to Out-License such rights.

5.4.6 Responsibility. The Party executing an Out-License Agreement ("**Executing Party**") with the Sublicensee hereby agrees to remain fully liable under this Agreement to the other Party for the performance or non-performance of such Sublicensee under all obligations of such Party under this Agreement. The Executing Party shall use Commercially Reasonable Efforts to enforce all such Out-License Agreements against Sublicensees, ensuring Sublicensees' performance in accordance with the corresponding terms of this Agreement and the relevant Out-License Agreement. No such Out-License Agreement shall relieve the Executing Party of its obligations hereunder to exercise Commercially Reasonable Efforts in Developing or Commercializing applicable Program Products.

5.5 Back-Up Bispecific Antibody. For each Joint Program and Unilateral Program, once an Optimized Bispecific Antibody is identified, the JSC, by unanimous written consent (and without final decision making authority of any single Party), may designate one or more related Collaboration Bispecific Antibodies that is a derivative form or modification of such Optimized Bispecific Antibody for inclusion in the same Program as such Optimized Bispecific Antibody (each, a "**Back-Up Bispecific Antibody**"). For the purposes of this Agreement, such Back-Up Bispecific Antibody and its corresponding Optimized Bispecific Antibody shall be considered to be the one and the same, and the term "Optimized Bispecific Antibody" shall be deemed to include any corresponding Back-Up Bispecific Antibodies.

5.6 Dropped Program. If (a) both Parties mutually agree to terminate a Joint Program in its entirety, (b) the Parties do not succeed in Out-Licensing an Evaluated Bispecific Antibody or a Joint Program in accordance with Section 5.4.2 or Section 5.4.3(b), including within the specified timelines, or (c) the Unilateral Party determines to terminate its Unilateral Program in its entirety (each, a "**Dropped Program**"), then the Evaluated Bispecific Antibody or Program Bispecific Antibody that was the subject of the applicable Program shall be deemed to be a

"**Rejected Bispecific Antibody**" and be subject to Section 7.1, and each of the Parties shall promptly cease its conduct of activities under such Program.

5.7 Tax Matters. Notwithstanding anything to the contrary in this Agreement, including the use of the terms "option" or "opt-in" or "opt-out" (or any derivations thereof), the Parties hereby agree and acknowledge that none of the Opt-In Rights or Opt-Out Rights will be treated as options for US federal (or applicable state or local) income tax purposes, and the Parties agree not to take any position inconsistent with the foregoing without the prior written consent of the other Party unless required by a final "determination" as defined in Section 1313 of the United States Internal Revenue Code of 1986, as amended.

ARTICLE 6
COLLABORATION TARGETS

6.1 Excluded Targets. During the Research Term, Atreca, [*], shall use Commercially Reasonable Efforts to determine the identity of a Collaboration Target; provided that, in the event that the Collaboration Target is not identified during the Research Term, subject to Section 4.7, Atreca, [*] shall use Commercially Reasonable Efforts to identify the Collaboration Target thereafter. [*] identifying the Collaboration Target, upon having reasonably determined the identity of such Collaboration Target, shall immediately notify the identity of the Collaboration Target to [*], and each Party shall determine whether such Collaboration Target is Available. In the event that a Party determines in good faith that such Collaboration Target is an Excluded Target, such Party shall promptly (but no later than [*] after such determination) notify the other Party, without providing additional details (subject to Section 6.2), and (a) if such Excluded Target is [*], and (i) if the Parties have not determined whether to exercise their respective Opt-In Rights for an Evaluated Bispecific Antibody directed to [*], each Party may elect to [*], (ii) if the [*] is the subject of a Joint Program, [*] in such Joint Program, subject to Section 5.2.9(b), or (iii) if the [*] is the subject of a Unilateral Program, the Unilateral Party may elect to [*] in such Unilateral Program, in each case of (i), (ii) and (iii) upon notifying the other Party of such election within [*] of receipt a notice of such Collaboration Target being [*] pursuant to Section 6.2, and proceed with the Development and Commercialization of such Collaboration Target as the subject of a Joint Program or a Unilateral Program, as applicable, and (b) (i) if such Excluded Target is [*], or (ii) if such Excluded Target is [*] in a Joint Program or a Unilateral Program (as applicable) in accordance with clause (a) above (such Excluded Target, a "**Dropped Target**"), such Dropped Target shall no longer be deemed to be a Collaboration Target for the purposes of this Agreement, the Collaboration Bispecific Antibody(ies) or Program Bispecific Antibody(ies) that bind to such Dropped Target shall thereafter be deemed to be a Rejected Bispecific Antibody(ies), and the applicable Joint Program and Unilateral Program shall be deemed a Dropped Program; provided that, any Joint Program and Unilateral Program that becomes a Dropped Program pursuant to clause (b) above shall not count towards the two (2) Joint Program limit under Section 5.2.1(b) or the two (2) Original Unilateral Program limit for the Unilateral Party as set forth in Section 5.3.1(b), as applicable. For clarity, neither Party shall be granted any licenses under the other Party's Background IP or Collaboration

IP hereunder with respect to any (A) Collaboration Target that is deemed to be a Dropped Target, or (B) any Collaboration Bispecific Antibody, Program Bispecific Antibody, or Program Product binding to such Dropped Target. Further, if a Collaboration Target that is identified as the subject of a Joint Program or one of Xencor's Unilateral Programs is determined to be an Excluded Target [*], then [*].

6.2 Inquiry Regarding Availability. If a Party questions the other Party on why a Collaboration Target is not Available, such other Party shall promptly provide reasonable evidence of such Collaboration Target not being Available, which evidence may be provided to an outside counsel or outside consultant engaged by such other Party who is reasonably acceptable to the inquiring Party (and who will enter an appropriate confidentiality agreement with the inquiring Party prior to receipt of such evidence) to confirm such status, with such outside counsel or consultant permitted to disclose to the inquiring Party only whether or not it agrees with the such other Party's determination as to Availability. Notwithstanding the foregoing, where a Party has designated a Collaboration Target as not Available solely due to an Excluded Third Party Agreement under which such Collaboration Target has been committed [*], or [*] under certain circumstances or scenarios, including, for example, [*] under such Excluded Third Party Agreements (such Collaboration Target, an "[*]"), within [*] following notification of the identity of such Collaboration Target pursuant to Section 6.1, and the designation of such Collaboration Target by a Party as not Available, the Party that is the party to such Excluded Third Party Agreement shall notify the other Party of such fact. In the event of a dispute with regard to Availability, such dispute shall be resolved [*].

ARTICLE 7
EXCLUSIVITY; COVENANTS

7.1 Rejected Bispecific Antibodies. Subject to Section 7.2, during the Term, neither Party nor their respective Affiliates shall, anywhere in the world: (a) alone or with or through or for any Third Party, Develop, Manufacture or Commercialize any Rejected Bispecific Antibody; (b) grant a license, sublicense or other rights to any Third Party to conduct any of the activities in the foregoing clause (a); or (c) transfer, assign, convey or otherwise sell any Rejected Bispecific Antibody.

7.2 Reversion of Rejected Atreca Antibodies. Notwithstanding Section 7.1 and Section 7.4, (a) any Atreca Collaboration Antibody that is not included in a Collaboration Bispecific Antibody that the JRC has determined to be a Rejected Bispecific Antibody or an Evaluated Bispecific Antibody pursuant to Section 4.1.3 by (i) the applicable time period set forth in Section 4.1.4, Section 4.1.5 or Section 4.1.6, or (ii) the expiration of the Research Term (subject to any

extensions thereto under Section 4.2), and (b) any Atreca Collaboration Antibody included in any Rejected Bispecific Antibody (each, a "**Rejected Atreca Antibody**") shall revert to, and be the sole property of, Atreca, for its future use in any format or modality; provided that (A) Atreca shall have no right or license with respect to Xencor IP or Xencor Platform Technology in respect of such Rejected Atreca Antibody, and (B) Atreca shall [*] any such Rejected Atreca Antibody [*] for [*], provided that [*].

7.3 Atreca Antibody Target and Sequence. Any identity of the Collaboration Targets that are Available Targets, whether determined by Xencor or Atreca, will be deemed to be Confidential Information of Atreca. To the extent that, in the conduct of the Research Program, any sequence information for Atreca Antibodies is disclosed to Xencor, such information will also be deemed to be Confidential Information of Atreca. Atreca shall provide to Xencor any such information (including identity of Collaboration Targets and/or sequence information related to Atreca Antibodies) as may be reasonably useful or necessary for Xencor to (a) exercise its rights under this Agreement, and (b) comply with agreements with Third Parties, and (c) comply with law and/or with obligations to Regulatory Authorities.

7.4 Antibody Exclusivity. Subject to Section 7.2, during the Term, other than in the Parties' performance pursuant to this Agreement, neither Party nor their Affiliates shall, anywhere in the world: (a) alone or with or through or for any Third Party, Develop, Manufacture or Commercialize any Antibody-based products [*]; (b) grant a license, sublicense or other rights to any Third Party to conduct any of the activities in the foregoing clause (a); or (c) transfer, assign, convey or otherwise sell any such Antibody-based product for use in the conduct of any of the activities in the foregoing clause (a); provided that, with respect to any Atreca Collaboration Antibody that is deemed a Rejected Atreca Antibody pursuant to Section 7.2, [*], provided that [*]. For clarity, the foregoing restrictions shall not apply as to any Excluded Targets (or products binding such Excluded Targets).

7.5 Target Exclusivity.

7.5.1 Available Targets under a Joint Program or a Converted Unilateral Program. Subject to Section 7.5.4, with respect to Available Targets that are the subject of a Joint Program (whether or not subsequently Out-Licensed) or a Converted Unilateral Program (whether or not subsequently Out-Licensed), during the Term, other than in the Parties' performance pursuant to this Agreement, neither Party nor their Affiliates shall, anywhere in the world: (a) alone or with or through or for any Third Party, Develop, Manufacture or Commercialize any

Antibody-based products [*]; or (b) following the Effective Date, (i) enter into any agreement with a Third Party (or amend the terms of any Excluded Third Party Agreement) to grant a license, sublicense or other rights to such Third Party to conduct any of the activities in the foregoing clause (a), or (ii) transfer, assign, convey or otherwise sell any such Antibody-based product directed against any such Available Targets. Without limiting the foregoing, with respect to any Available Target of (A) a Joint Program or Converted Unilateral Program that becomes a Dropped Program, or (B) an Out-Licensed Joint Program or Out-Licensed Converted Unilateral Program that becomes terminated, the foregoing restrictions in clauses (a)-(b) above shall apply to the Development, Manufacture or Commercialization of any Antibody-based products [*] until [*], provided that [*].

7.5.2 Available Targets under an Original Unilateral Program or an Out-Licensed Declined Program. Subject to Section 7.5.4, with respect to Available Targets that are the subject of a Party's Original Unilateral Program (whether or not subsequently Out-Licensed) or an Out-Licensed Declined Program, during the Term, other than in the Parties' performance pursuant to this Agreement, neither Party nor their Affiliates shall, anywhere in the world: (a) alone or with or through or for any Third Party, Develop, Manufacture or Commercialize any Antibody-based products [*]; or (b) following the Effective Date, (i) enter into any agreement with a Third Party (or amend the terms of any Excluded Third Party Agreement) to grant a license, sublicense or other rights to any Third Party to conduct any of the activities in the foregoing clause (a), or (ii) transfer, assign, convey or otherwise sell any such Antibody-based product for use in the conduct of any of the activities in the foregoing clause (a). Without limiting the foregoing, with respect to any Available Target of (A) an Original Unilateral Program that becomes a Dropped Program, or (B) an Out-Licensed Original Unilateral Program or Out-Licensed Declined Program that gets terminated, the foregoing restrictions in clauses (a) and (b) above shall apply to the Development, Manufacture or Commercialization of any Antibody-based products [*] until [*], provided that [*].

7.5.3 Excluded Targets and Available Targets under a Dropped Program. Neither Party nor their Affiliates shall have any exclusivity obligations with respect to (a) Excluded Targets, and (b) subject to Section 7.5.1 and Section 7.5.2, Available Targets under a Dropped Program.

7.5.4 [*]. Notwithstanding Section 7.5.1 and Section 7.5.2, if a Party or its Affiliates [*]

[*] to Develop or Commercialize any Antibody-based product [*], then: (i) [*], then [*], provided that such Party [*]; and (ii) the other Party may [*].

7.6 Exceptions for Change of Control. Notwithstanding the provisions of Sections 7.1 through 7.5 (inclusive), if either Party undergoes a Change of Control with a Third Party who owns or has rights to an Antibody-based product that is in ongoing clinical development or being commercialized by such Third Party as of the date of the Change of Control that would cause such Party to be in breach of Sections 7.1 through 7.5 (inclusive) (an "**Acquired Competing Product**"), then such Party shall not be in breach of the provisions of Sections 7.1 through 7.5 (inclusive) as a result of the Commercialization or Development of any such Acquired Competing Product during the Term; provided that (a) such activities are conducted independently of the activities of this Agreement (including maintaining separate lab notebooks) and without use of the other Party's intellectual property (i.e., Atreca IP or Xencor IP, as applicable), (b) no Confidential Information of the other Party is provided to or shared with any personnel working on the Acquired Competing Product, and (c) such Party undergoing such Change of Control puts in place firewalls and other protections reasonably acceptable to the other Party that are reasonably designed to ensure that the foregoing clauses (a) and (b) are complied with.

ARTICLE 8
FINANCIAL TERMS

8.1 Net Profits/Losses Under a Joint Program. The Parties will share in Net Profits/Losses with respect to Joint Products as follows: Atreca will bear (and be entitled to) fifty percent (50%), and Xencor will bear (and be entitled to) fifty percent (50%). With respect to a Joint Product, Xencor and Atreca shall each receive (in the case of profits) or pay (in the case of losses), as applicable, fifty percent (50%) of Net Profit/Losses with respect to such Joint Product (the "**Profit & Loss Share**"), to be calculated and paid in accordance with the reconciliation and payment provisions of Exhibit A ("**P&L Reconciliation Payment**"). Procedures for reporting of actual results on a [*] basis, review and discussion of potential discrepancies, reconciliation on a [*] basis, reasonable forecasting, and other finance and accounting matters, are set forth in Exhibit A, and to the extent not set forth in Exhibit A, will be established by the JCC.

8.2 Payments Under a Unilateral Program.

8.2.1 Milestone Payments Under a Converted Unilateral Program.

(a) Converted Milestone Payments. For each Converted Unilateral Program, the Unilateral Party will notify the other Party within [*] following the first achievement by the Unilateral Party under this Agreement after the Effective Date of each milestone event described below with respect to the first Unilateral Product to achieve such milestone event under a given Converted Unilateral Program, and the Unilateral Party shall thereafter pay the applicable amounts set forth below associated with the applicable milestone event in accordance with Section 8.2.1(b) (each, a "**Converted Milestone Payment**"):

No.	**Milestone Event**	**Milestone Payment: Opt-Out Right Exercised (or deemed to be exercised under Section 5.2.9(b)) at [*]**	**Milestone Payment: Opt-Out Right Exercised (or deemed to be exercised under Section 5.2.9(b)) at [*]**	**Milestone Payment: Opt-Out Right Exercised (or deemed to be exercised under Section 5.2.9(b)) at [*]**
1	[*]	[*]	[*]	[*]
2	[*]	[*]	[*]	[*]
3	[*]	[*]	[*]	[*]

For each Converted Unilateral Program, each of the foregoing milestones in this Section 8.2.1 shall be payable a maximum of one (1) time as set forth in the foregoing table regardless of the number of Unilateral Products achieving the applicable milestone event (i.e., a maximum of three (3) Converted Milestone Payments may be made pursuant to this Section 8.2.1 for a given Converted Unilateral Program), and no Converted Milestone Payment shall be due hereunder for subsequent or repeated achievement of such milestone event under a single Converted Unilateral Program (even if subsequently achieved by a different Unilateral Product within the same Converted Unilateral Program). For the avoidance of doubt, (i) the maximum amount payable by

a Unilateral Party pursuant to this Section 8.2.1 for a given Converted Unilateral Program is: (A) [*] if the Opt-Out Right was exercised (or deemed to be exercised under Section 5.2.9(b)) at the [*], (B) [*] if the Opt-Out Right was exercised (or deemed to be exercised under Section 5.2.9(b)) at the [*], and (C) Ninety-Five Million Dollars ($95,000,000) if the Opt-Out Right was exercised (or deemed to be exercised under Section 5.2.9(b)) at the [*], in each case of (A)-(C), assuming that each of the milestone events in this Section 8.2.1 were achieved, and (ii) a same Converted Milestone Payment may be payable by one Party to the other Party for a maximum number of two (2) times if a milestone event was met under different Converted Unilateral Programs (i.e., a same milestone event was achieved by different Unilateral Products in different Converted Unilateral Programs).

For each Converted Unilateral Program, if milestone 2 is achieved before the Converted Milestone Payment for milestone 1 has been paid to the non-Unilateral Party, then the Unilateral Party shall pay to the non-Unilateral Party the Converted Milestone Payment for milestone 1 concurrently with the Converted Milestone Payment for milestone 2. If milestone 3 is achieved before the Converted Milestone Payment for milestone 2 has been paid to the non-Unilateral Party, then the Unilateral Party shall pay to the non-Unilateral Party the Converted Milestone Payment for milestone 2 concurrently with the Converted Milestone Payment for milestone 3, as applicable.

(b) Invoice and Payment of Converted Milestone Payments. Following receipt of notification by the Unilateral Party to the other Party that the Unilateral Party has achieved the applicable milestone event triggering a Converted Milestone Payment hereunder, the non-Unilateral Party shall invoice the Unilateral Party for the applicable Converted Milestone Payment, and the Unilateral Party shall pay such Converted Milestone Payment within [*] days after receipt of the invoice therefor.

8.2.2 Royalty Payments Under a Unilateral Program.

(a) Royalty Payments under an Original Unilateral Program. For each Original Unilateral Program, on a Unilateral Product-by-Unilateral Product and country-by-country basis during the Royalty Term applicable to such Unilateral Product and such country, the Unilateral Party shall pay to the other Party the following royalties on Net Sales of Unilateral Products in the event that the Unilateral Party or its Affiliates Commercializes the Unilateral Product in such country, subject to Section 8.2.2(d):

Aggregate Annual Net Sales	Royalty Rate
[*]	[*]
[*]	[*]
[*]	[*]

For example purposes only, if aggregate annual Net Sales of a Unilateral Product in a Calendar Year during the Royalty Term equal [*], then the non-Unilateral Party would receive

total royalties for such Unilateral Product in such Calendar Year equal to [*], calculated as follows: [*].

(b) Royalty Payments Under a Converted Unilateral Program. For each Converted Unilateral Program, on a Unilateral Product-by-Unilateral Product and country-by-country basis during the Royalty Term applicable to such Unilateral Product and such country, the Unilateral Party shall pay to other Party the following royalties on Net Sales of Unilateral Products in the event that the Unilateral Party or its Affiliates Commercializes the Unilateral Product in such country, subject to Section 8.2.2(d):

Aggregate Annual Net Sales	**Royalty Rate: Opt-Out Right Exercised (or deemed to be exercised under Section 5.2.9(b)) at [*]**	**Royalty Rate: Opt-Out Right Exercised (or deemed to be exercised under Section 5.2.9(b)) at [*]**	**Royalty Rate: Opt-Out Right Exercised (or deemed to be exercised under Section 5.2.9(b)) at [*]**
[*]	[*]	[*]	[*]
[*]	[*]	[*]	[*]
[*]	[*]	[*]	[*]
[*]	[*]	[*]	[*]

For example purposes only, if aggregate annual Net Sales during the Royalty Term equal [*], and the Opt-Out Right has been exercised (or deemed to be exercised under Section 5.2.9(b)) by the non-Unilateral Party at the [*], then the non-Unilateral Party would receive total royalties for that year equal to [*], calculated as follows: [*].

(c) Royalty Term. The Unilateral Party's royalty obligations to the other Party under this Section 8.2.2 shall apply on a Unilateral Product-by-Unilateral Product and country-by-country basis only during the applicable Royalty Term for such Unilateral Product in such country. Following expiration of the applicable Royalty Term for a given Unilateral Product in a given country, as applicable, no further royalties will be payable in respect of sales of such Unilateral Product in such country and thereafter the license granted to the Unilateral Party hereunder with respect to such Unilateral Product in such country will automatically become fully paid-up, perpetual, irrevocable and royalty-free.

(d) Reductions.

(i) Third Party Payments. Subject to Section 8.2.2(d)(iii), the Unilateral Party shall have the right (but not the obligation), at its own expense, to obtain any licenses from any Third Parties (that are not Sublicensees of the Unilateral Party) with respect to a Unilateral Product in such country under any issued Patents that [*] a Unilateral Product with respect to a given Unilateral Product in a particular country (each such Patent, a "**Third Party Patent**"). If the Unilateral Party obtains such a license to a Third Party Patent, the Unilateral Party shall be entitled to credit [*] of the royalties paid to such Third Party during a Calendar Quarter against the royalty payment otherwise payable by the Unilateral Party to the other Party pursuant to this Section 8.2.2 with respect to such Unilateral Product and such country in such Calendar Quarter. Notwithstanding the foregoing, a Party shall have no right to reduce payments due to the other Party under this Agreement by [*].

(ii) Biosimilar Competition. Subject to Section 8.2.2(d)(iii), on a Unilateral Product-by-Unilateral Product and country-by-country basis, if, at any time during the Royalty Term with respect to such Unilateral Product and such country, there is one or more Biosimilar Product(s) with respect to such Unilateral Product being sold for [*], then thereafter for the remainder of the Royalty Term for such Unilateral Product and such country, the royalty rate for such Unilateral Product shall be reduced, after giving effect to any reduction applicable to such Unilateral Product in such country pursuant to Section 8.2.2(d)(i), on a Calendar Quarter-by-Calendar Quarter basis, as follows:

(1) if the cumulative Net Sales of such Unilateral Product in such country during such Calendar Quarter are equal to or less than [*], but are greater than [*], of the Baseline Quarter Net Sales, then the royalty rate will be reduced for such Calendar Quarter by [*]; and

(2) if the cumulative Net Sales of such Unilateral Product in such country during such Calendar Quarter are less than [*] of the Baseline Quarter Net Sales of the Baseline Quarter Net Sales, then the royalty rate for such Calendar Quarter will be reduced by [*].

provided, that, for clarity, on a Unilateral Product-by-Unilateral Product and country-by-country basis, there will be no royalty rate reduction with respect to a given Unilateral Product and country pursuant to this Section 8.2.2(d) with respect to the initial [*] period during which Biosimilar Product entry with respect to such Unilateral Product and such country is being established.

(iii) Compulsory Licenses. If a compulsory license is granted to a Third Party with respect to a Unilateral Product in any country in the Territory with a royalty rate lower than the royalty rate provided by Sections 8.2.2(a) and 8.2.2(b) (as adjusted pursuant to Section 8.2.2(d)), then the royalty rate to be paid by the Unilateral Party on Net Sales in such country under Section 8.2.2(a) and 8.2.2(b) shall be [*].

(iv) Royalty Floor. Notwithstanding the foregoing, during any [*] in the Royalty Term for a Unilateral Product in a country, the operation of Section 8.2.2(d)(i) and Section 8.2.2(d)(ii), individually or in combination, shall not reduce by more than [*] of the royalties that would otherwise have been due to the non-Unilateral Party under Section 8.2.2(a) or Section 8.2.2(b) with respect to Net Sales of such Unilateral Product in such country during such Calendar Quarter.

(e) Payment of Royalties. The Unilateral Party shall: (i) within [*] following the end of each Calendar Quarter in which a royalty payment pursuant to Section 8.2 accrues, provide to the other Party a report specifying for such [*] (1) the number of Unilateral Products sold that are subject to such royalty, (2) the Net Sales that are subject to such royalty, (3) the applicable royalty rate under this Agreement, (4) the royalty calculation and royalties payable in U.S. Dollars, and (5) [*] pursuant to Section 8.2.2(d); and (ii) within [*] following delivery of the royalty report pursuant to Section 8.2.2(e)(i), make the royalty payments owed to the non-Unilateral Party hereunder in accordance with such royalty report in arrears.

8.3 Payments Under Out-Licensed Programs.

8.3.1 Out-Licensed Joint Program. With respect to a Joint Program that has been Out-Licensed, the Lead Party shall pay to the other Party [*] of all Sublicense Income the Lead Party or its Affiliates receive from such Third Party, for so long as such Sublicense Income is received from such Third Party. For clarity, no payments under Section 8.1 shall be due with respect to a Joint Program that has been Out-Licensed.

8.3.2 Out-Licensed Original Unilateral Program. With respect to an Original Unilateral Program that has been Out-Licensed, the Unilateral Party shall pay to the non-Unilateral Party [*], in each of (a) and (b) that the Unilateral Party or its Affiliates receive from such Third Party, for so long as such Sublicense Income is received from such Third Party. For clarity, no payments under Section 8.2 shall be due with respect to an Original Unilateral Program that has been Out-Licensed.

8.3.3 Out-Licensed Converted Unilateral Program. With respect to a Converted Unilateral Program that has been Out-Licensed, the Unilateral Party shall pay to the non-Unilateral Party the following percentages of all Sublicense Income the Unilateral Party or its Affiliates receive from a Third Party:

Stage Of Licensed Product At Time Of Sublicense	Percentage Of Sublicense Income
[*]	[*]
[*]	[*]

Stage Of Licensed Product At Time Of Sublicense	Percentage Of Sublicense Income
[*]	[*]

Such Sublicense Income shall be payable for so long as such Sublicense Income is received from such Third Party. For clarity, no payments under Section 8.2 shall be due with respect to a Converted Unilateral Program that has been Out-Licensed.

8.3.4 Out-Licensed Declined Program. With respect to a Declined Program that has been Out-Licensed, the Party that enters into the applicable Out-License Agreement shall pay to the other Party [*] of all Sublicense Income such Party or its Affiliates receive from such Third Party, for so long as such Sublicense Income is received from such Third Party.

8.3.5 Invoice and Payment. A Party that enters into an Out-License Agreement shall: (a) within [*] following date on which a Sublicense Income payment pursuant to this Section 8.3 accrues (or [*] following the end of the applicable Calendar Quarter in the case of royalty or other sales-related payments included in Sublicense Income), provide to the other Party a report specifying for such Calendar Quarter the source and nature of the Sublicense Income, the gross amount of Sublicense Income received, any applicable fees, credits or deductions permitted pursuant to this Agreement, and the net amount of Sublicense Income payable to the other Party; and (b) within [*] following delivery of the Sublicense Income report pursuant to Section 8.3.5(a), make the applicable Sublicense Income payments owed to such other Party hereunder in accordance with such Sublicense Income report in arrears.

8.4 [*], if (a) at any time during the Term, a Party or its Affiliates is [*], and (b) at such time, [*], then [*]

[*] provided that, [*]

provided that, [*]. For clarity, [*]

ARTICLE 9
ADDITIONAL PAYMENT PROVISIONS; RECORDS; AUDITS

9.1 Manner and Place of Payment. When conversion of payments from any currency other than U.S. Dollars is required, such conversion shall be at an exchange rate equal to the rates of exchange for the currency of the country from which such payments are payable as published by *The Wall Street Journal*, Western U.S. Edition, on the [*] in which the applicable sales were made in such country. All payments hereunder shall be payable in U.S. Dollars. All payments owed under this Agreement shall be made by wire transfer in immediately available funds to a bank and account designated in writing by the non-Lead Party or the non-Unilateral Party, as applicable, unless otherwise specified in writing by such non-Lead Party or non-Unilateral Party.

9.2 Taxes; Withholding.

9.2.1 Generally. Except as set otherwise set forth herein, each Party will pay any and all income taxes levied on account of all payments it receives under this Agreement except as otherwise provided in this Section 9.2.

9.2.2 Tax Withholding. Each Party shall be entitled to deduct and withhold from any amounts payable under this Agreement such taxes as are required to be deducted or withheld therefrom under any provision of Applicable Law. The Party that is required to make such withholding (the "**Paying Party**") will (a) deduct those taxes from such payment, (b) timely remit the taxes to the proper taxing authority, and (c) send evidence of the obligation together with proof of tax payment to the other Party (the "**Payee Party**") on a timely basis following that tax payment. Notwithstanding the foregoing, the Parties acknowledge and agree that (i) as of the date of this Agreement and under Applicable Laws, no withholding tax will be applicable to payments made by one Party to the other Party pursuant to this Agreement and (ii) [*]

[*], then notwithstanding anything to the contrary herein, [*]. Notwithstanding anything to the contrary in this Agreement, a Party shall timely pay and be responsible for (and shall indemnify the other Party for) any transfer, documentary, sales use, stamp, registration, value added or other similar tax that is imposed with respect to the transactions, payments or the related transfer of rights or other property pursuant to the terms of this Agreement. Each Party agrees to reasonably cooperate with the other Party in claiming refunds or exemptions from such deductions or withholdings under any relevant agreement or treaty which is in effect to ensure that any amounts required to be withheld pursuant to this Section 9.2.2 are reduced in amount to the fullest extent permitted by Applicable Law. Any payments due to a Party pursuant to this Section 9.2.2 shall promptly be paid by the other Party upon request from such Party.

9.3 Other Programs. For the avoidance of doubt, a Program Product hereunder will only be eligible for P&L Reconciliation Payments, milestone payments, royalty payments, and Sublicense Income based payments under its respective Program, and shall not be eligible for, or counted towards P&L Reconciliation Payments, milestone or royalty payments under any other Program (i.e., a given Program Product will be eligible for, and counted towards, P&L Reconciliation Payments, milestone payments, royalty payments, and Sublicense Income based payments only under one Program).

9.4 Records and Audits for Development Costs and Other Payments.

9.4.1 Records. With respect to milestone payments, royalty payments, and Sublicense Income based payments to be made under ARTICLE 8, the Paying Party agrees to keep and shall procure that its Affiliates and Sublicensees keep, for at least [*] from the end of the Calendar Year to which they pertain (or such longer period as otherwise required by Applicable Law), complete and accurate records of sales by such Paying Party or its Affiliates (including sales by Sublicensees), as the case may be, of each Program Product, in sufficient detail to allow the accuracy of such payments made hereunder to be confirmed.

9.4.2 Review. During the Term, at the request of the Payee Party, which shall not be made more frequently than [*], upon at least [*] prior written notice from, and at the expense of, such Payee Party, the Paying Party shall permit an independent, nationally-recognized certified public accountant selected by the Payee Party and reasonably acceptable to the Paying Party to inspect (during regular business hours) the relevant records required to be maintained by the Paying Party under Section 9.4.1; provided that such audit right, unless otherwise required by Applicable Law, shall not apply to records beyond [*] from the end of the Calendar Year to which they pertain. In every case, any such accountant must have previously entered into a confidentiality agreement with both Parties having confidentiality obligations and non-use obligations no less restrictive than those set forth in ARTICLE 11 and limiting the disclosure and use of such information by such accountant to

authorized representatives of the Parties and the purposes germane to Section 9.4.1. Results of any such review shall be binding on both Parties absent manifest error. Such accountant shall report to the Payee Party only whether the particular amount being audited was accurate, and if not, the amount of any discrepancy, and such accountant shall not report any other information to the Payee Party. The Payee Party shall treat the results of any such accountant's review of the Paying Party's records as Confidential Information of such Paying Party. If any review reveals a deficiency or overpayment in the calculation or payment of milestone payments, royalty payments, and/or Sublicense Income based payments by the Paying Party, then (a) the applicable Party shall promptly pay (or refund, as applicable) the other Party the amount of such deficiency or overpayment, as applicable, and (b) in the case of a deficiency, if such deficiency is by more than [*] of the aggregate amounts owed by the Paying Party, the Paying Party shall, within [*] after receipt of an invoice therefor, pay the reasonable out-of-pocket costs and expenses incurred by the Payee Party for such independent accountant in connection with the review.

9.5 Late Payments. In the event that any payment due under this Agreement is not sent to the Payee Party when due in accordance with the applicable provisions of Exhibit A, Section 8.2.1(b), Section 8.2.2(e) or Section 8.3.5, the payment shall accrue interest from the date due at [*] provided, however, that in no event shall such rate exceed the maximum legal annual interest rate. The payment of such interest shall not limit the Payee Party from exercising any other rights it may have as a consequence of the lateness of any payment.

ARTICLE 10
LICENSES; INTELLECTUAL PROPERTY

10.1 Licenses and Grants to Xencor and Atreca.

10.1.1 Research License. Each Party hereby grants to the other Party, during the Research Term, a non-exclusive, worldwide, fully paid-up, royalty-free right and license, with the right to grant sublicenses (through multiple tiers) solely in accordance with the terms and conditions set forth in Section 10.1.5, under such Party's Background IP and Collaboration IP for the other Party to conduct its activities under the Research Program. Following (a) completion of all activities under the Research Program, (b) the expiration or termination of the Research Program in its entirety, or (c) expiration or termination of this Agreement in its entirety, all rights and licenses granted under this Section 10.1.1 with respect to the Research Program shall terminate.

10.1.2 Joint Program License.

(a) License Grant to Lead Party. On a Joint Program-by-Joint Program basis, the non-Lead Party hereby grants to the Lead Party a non-exclusive, worldwide, payment-bearing right and license, with the right to grant sublicenses (through multiple tiers) solely in accordance with the terms and conditions set forth in Section 10.1.5, under such non-Lead Party's Background IP and Collaboration IP for the Lead Party to research, develop (including Develop), make (including Manufacture), have made (including have Manufactured), use, offer for sale, sell,

import, Commercialize and otherwise exploit the applicable Joint Bispecific Antibody and Joint Product within such Joint Program in the Field in the Territory.

(b) License Grant to non-Lead Party. On a Joint Program-by-Joint Program basis, the Lead Party hereby grants to the non-Lead Party a non-exclusive, worldwide, payment-bearing right and license, with the right to grant sublicenses (through multiple tiers) solely in accordance with the terms and conditions set forth in Section 10.1.5, under such Lead Party's Background IP and Collaboration IP for the non-Lead Party to research, develop (including Develop), make (including Manufacture), have made (including have Manufactured), use, offer for sale, sell, import, Commercialize or otherwise exploit the applicable Joint Bispecific Antibody and Joint Product within such Joint Program in the Field in the Territory solely to the extent necessary to perform its obligations under this Agreement, including pursuant to Section 5.2.1(d).

(c) Termination of License. Following (i) termination of the Joint Program, including by a Party exercising its Opt-Out Right, or (ii) expiration or termination of this Agreement in its entirety, all rights and licenses granted under this Section 10.1.2 with respect to such Joint Program shall terminate; provided that, any such rights and licenses granted under this Section 10.1.2 shall survive to the extent necessary for a Party to exercise its rights or perform its obligations under this Agreement.

10.1.3 Unilateral Program License.

(a) License Grant to the Unilateral Party. On a Unilateral Program-by-Unilateral Program basis, the non-Unilateral Party hereby grants to the Unilateral Party an exclusive worldwide, payment bearing right and license, with the right to grant sublicenses (through multiple tiers) solely in accordance with the terms and conditions set forth in Section 10.1.5, under such non-Unilateral Party's Background IP and Collaboration IP for the Unilateral Party to research, develop (including Develop), make (including Manufacture), have made (including have Manufactured), use, offer for sale, sell, import, Commercialize and otherwise exploit the applicable Unilateral Bispecific Antibody and Unilateral Product within such Unilateral Program in the Field in the Territory; provided that, such non-Unilateral Party shall retain the right under and with respect to its Background IP and Collaboration IP to the extent necessary to perform its obligations under this Agreement.

(b) Termination of License. Following (i) termination of the Unilateral Program, or (ii) expiration or termination of this Agreement in its entirety, all rights and licenses granted under this Section 10.1.3 with respect to such Unilateral Program shall terminate; provided that, any such rights and licenses granted under this Section 10.1.3 shall survive to the extent necessary for a Party to exercise its rights or perform its obligations under this Agreement.

10.1.4 Out-Licensed Programs. Where a Joint Program, Unilateral Program or Declined Program is Out-Licensed to a Third Party, then in connection with mutually agreeing on the general terms on which such Joint Program, Unilateral Program or Declined Program is able to be Out-Licensed, the Parties will agree on the scope of the licenses that will be granted in connection therewith, including any limitations with respect to Target exclusivity that are necessary in connection with such Out-License.

10.1.5 Sublicense Rights. Each Party shall have the right to grant sublicense(s) under the license rights granted to it pursuant to Section 10.1.1, Section 10.1.2 or Section 10.1.3 to its Affiliates or any Third Party; provided that (a) any such sublicenses shall be in writing and shall be subject to and consistent with the terms and conditions of this Agreement applicable to sublicensees, and (b) Xencor's rights to grant any sublicenses under any Atreca Background IP that is Controlled by Atreca pursuant to the [*] shall be solely limited to using such Atreca Background IP to research, develop (including Develop), make (including Manufacture), have made (including have Manufactured), use, offer for sale, sell, import, Commercialize and otherwise exploit any Atreca Antibody produced or created through the use of such Atreca Background IP. The Party granting the sublicense shall be responsible for ensuring the compliance of its sublicensees with all obligations owed to the other Party under this Agreement.

10.2 Retained Rights; No Implied Licenses. For clarity, each Party retains all rights under Know-How and Patents Controlled by such Party not expressly granted to the other Party pursuant to this Agreement. Except as explicitly set forth in this Agreement, neither Party shall be deemed by estoppel or implication to have granted to the other Party any license or other right to any intellectual property of such Party.

10.3 Insolvency. All licenses and rights to licenses granted under or pursuant to this Agreement by Xencor or Atreca are and shall otherwise be deemed to be licenses of rights to "intellectual property" (including for purposes of Section 365(n) of Title 11 of the United States Bankruptcy Code and other similar laws in any other jurisdiction). The Parties agree that each Party, as a licensee of certain rights under this Agreement, shall retain and may fully exercise all of its rights and elections under any applicable insolvency statute, and that upon commencement of an Insolvency Event by or against a Party (the "**Bankrupt Party**"), the other Party shall be entitled to a complete duplicate of (or complete access to, as appropriate), any such intellectual property and all embodiments of such intellectual property licensed to such other Party. Such intellectual property and all embodiments thereof shall be promptly delivered to such other Party (a) upon any such commencement of a bankruptcy proceeding (or other Insolvency Event) upon written request therefor by such other Party, unless the Bankrupt Party elects to continue to perform all of its obligations under this Agreement or (b) if not delivered under the foregoing clause (a), upon the rejection of this Agreement by or on behalf of the Bankrupt Party, then upon written request therefor by such other Party. The provisions of this Section 10.3 shall be (i) without prejudice to any rights a Party may have arising under any applicable insolvency statute or other Applicable Law and (ii) effective only to the extent permitted by Applicable Law.

10.4 Ownership.

10.4.1 Ownership of Background IP. Other than as expressly provided herein, Xencor will retain all right, title and interest in and to all Xencor Background Know-How and Xencor Background Patents, and Atreca will retain all right, title and interest in and to Atreca Background Know-How and Atreca Background Patents.

10.4.2 Inventorship. Notwithstanding the provisions of Section 15.9, inventorship of Know-How and Patents shall be determined by application of U.S. patent law pertaining to

inventorship, and, except as provided for in Section 10.4.3, ownership of Know-How and Patents shall be determined by inventorship.

10.4.3 Ownership of Collaboration IP.

(a) Xencor Collaboration IP. As between the Parties, Xencor will solely own all right, title and interest in and to all (i) Collaboration Know-How solely related to the Xencor Platform Technology ("**Xencor Collaboration Know-How**") and (ii) Collaboration Patents Covering such Xencor Collaboration Know-How ("**Xencor Collaboration Patents**", and together with the Xencor Collaboration Know-How, the "**Xencor Collaboration IP**"), and Atreca shall, and hereby unconditionally and irrevocably does, assign to Xencor, all interest to any such Xencor Collaboration IP. Xencor shall ensure that the Xencor Collaboration IP is and remains during the Term Controlled by Xencor such that Xencor has the full rights to grant the rights and licenses to the Xencor Collaboration IP to Atreca hereunder.

(b) Atreca Collaboration IP. As between the Parties, Atreca will solely own all right, title and interest in and to all (i) Collaboration Know-How solely related to the Atreca Platform Technology ("**Atreca Collaboration Know-How**") and (ii) Collaboration Patents Covering such Atreca Collaboration Know-How ("**Atreca Collaboration Patents**", and together with the Atreca Collaboration Know-How, the "**Atreca Collaboration IP**"), and Xencor shall, and hereby unconditionally and irrevocably does, assign to Atreca, all interest to any such Atreca Collaboration IP. Atreca shall ensure that the Atreca Collaboration IP is and remains during the Term Controlled by Atreca such that Atreca has the full rights to grant the rights and licenses to the Atreca Collaboration IP to Atreca hereunder.

(c) Joint Collaboration IP. Subject to the foregoing Sections 10.4.3(a) and 10.4.3(b), Atreca and Xencor shall jointly own all right, title, and interest in and to all Collaboration IP that is not either Atreca Collaboration IP or Xencor Collaboration IP ("**Joint Collaboration IP**", and Collaboration Patents that are neither Atreca Collaboration Patent nor Xencor Collaboration Patent, the "**Joint Collaboration Patents**", and Collaboration Know-How that are neither Atreca Collaboration Know-How nor Xencor Collaboration Know-How, the "**Joint Collaboration Know-How**"). Each Party shall assign, and hereby unconditionally and irrevocably does assign, to the other Party, a joint, equal and undivided one-half interest in and to any such Joint Collaboration IP. For clarity, Collaboration IP directed to both the Atreca Antibody and CD3 Target shall be deemed to be a Joint Collaboration IP.

10.4.4 Further Actions. Each Party shall cause its and its Affiliates' employees, consultants, sublicensees, agents and contractors to assign to such Party such Person's right, title and interest in and to any and all Collaboration IP, and intellectual property rights therein, as is necessary to effect the intent of this Section 10.4.

10.5 Prosecution and Maintenance of Xencor Patents and Atreca Patents. Xencor shall have the sole right, at its expense, to control the Prosecution and Maintenance of Xencor Patents, and Atreca shall have the sole right, at its expense, to control the Prosecution and Maintenance of Atreca Patents; provided, in each case, that the Parties shall give due consideration to input given by the IP Committee solely with respect to Xencor Collaboration Patents and Atreca Collaboration Patents.

10.6 Prosecution and Maintenance of Joint Collaboration Patents.

10.6.1 Coordination. Each Party shall undertake Prosecution and Maintenance of Joint Collaboration Patents in accordance with this Section 10.6, subject to discussion by the Parties and giving due consideration to input given by the IP Committee. Furthermore, with respect to the Prosecution and Maintenance of each such Patent, each Party agrees to: (a) keep the other Party reasonably informed with respect to such activities; (b) consult with the other Party regarding such matters, including the final abandonment of any such Patent claims; (c) provide relevant information to the other Party as such other Party reasonably requests; and (d) reasonably consider the other Party's comments. For clarity, the Parties understand that some Collaboration Patents may require coordination of Patent filings, including timing and coordination of genus and species filings as appropriate, to preserve and maximize intellectual property rights, prolong exclusivities and minimize the creation of prior art against such Patent filings of either Party. If a Party controls Prosecution and Maintenance of a Patent pursuant to this Section 10.6, and the other Party in good faith reasonably believes that Xencor Platform Technology (in the case of Xencor) or Atreca Platform Technology (in the case of Atreca), would be adversely affected by such controlling Party's Prosecution and Maintenance activities, the Parties shall use reasonable best efforts to work together to develop a mutually agreeable solution. If the Parties are unable to agree on such solution within a reasonable period of time, the issue will be escalated to the chief patent counsels of each of Xencor and Atreca, as applicable, for resolution. If the chief patent counsels cannot reach a mutually agreeable solution, then [*]. Except as otherwise set forth in this Section 10.6, each Party shall have the sole right, at its expense, to control the Prosecution and Maintenance of any Patents that such Party Controls.

10.6.2 Joint Collaboration Patents. With respect to any Joint Collaboration Patent that (a) the IP Committee provides input that such Joint Collaboration Patent relates solely to a given Program and (b) the JSC in good faith agrees unanimously with such input, the Responsible Party for such Program shall thereafter have the right to undertake the Prosecution and Maintenance of such Joint Collaboration Patent. With respect to any Joint Collaboration Patent that (i) covers any Joint Collaboration Know-How that is created, conceived, discovered, generated, invented, made or reduced to practice as a result of the performance of a Research Program (prior to either Party exercising or declining its Opt-In Rights for an Evaluated Bispecific Antibody thereunder pursuant to Section 5.1.1), or (ii) the JSC does not in good faith unanimously agree that such Joint Collaboration Patent relates solely to a given Program, the IP Committee shall determine in good faith which Party shall control the Prosecution and Maintenance of such Joint Collaboration Patent; provided that, in the event of a disagreement between the Parties' representatives on the IP Committee, such dispute shall be [*]. Any expenses incurred in connection with the Prosecution and Maintenance of a Joint Collaboration Patent shall be (A) [*] if incurred by a Party under the Research Program in connection with such Prosecution and Maintenance in the [*], (B) [*] if incurred by such Party under the Research Program in connection with such Prosecution and Maintenance [*], (C) [*] if incurred by a Lead Party under a Joint Program in

connection with such Prosecution and Maintenance [*], (D) [*] if incurred by such Lead Party under a Joint Program in connection with such Prosecution and Maintenance [*], and (E) [*] if incurred by such Unilateral Party under a Unilateral Program. Notwithstanding the foregoing, (A) Xencor will not (1) file a terminal disclaimer with the United States Patent and Trademark Office ("**USPTO**") that includes an Atreca Patent or (2) make any statements to the USPTO to disqualify an Atreca Patent as prior art under U.S.C. § 102(c) without first obtaining the written consent of Atreca; and (B) Atreca will not (1) file a terminal disclaimer with the USPTO that includes a Xencor Patent or (2) make any statements to the USPTO to disqualify a Xencor Patent as prior art under U.S.C. § 102(c) without first obtaining the written consent of Xencor. The Party having the right to Prosecute and Maintain a Joint Collaboration Patent shall (x) diligently Prosecute and Maintain such Joint Collaboration Patent [*], and (y) if the other Party is sharing in the costs of Prosecution and Maintenance of such Joint Collaboration Patent, on a country-by-country basis, consult with the other Party as to the Prosecution and Maintenance of the Joint Collaboration Patents reasonably prior to any deadline or action with the applicable patent office and shall furnish to such other Party copies of all relevant documents reasonably in advance of such consultation; provided, that if such Party having such right determines not to continue the Prosecution and Maintenance of any Joint Collaboration Patents, then the such Party shall provide reasonable prior written notice to the other Party of such determination (which notice shall, in any event, be given no later than [*] prior to the next deadline for any action that may be taken with respect to such Joint Collaboration Patent with the applicable patent office), and such other Party shall thereafter have the right to undertake the Prosecution and Maintenance of any such Joint Collaboration Patents at its own expense.

10.6.3 Cooperation of the Parties. Each Party shall cooperate with the other Party in connection with all activities relating to the Prosecution and Maintenance of the Joint Collaboration Patents undertaken by such other Party pursuant to this Section 10.6, including: (a) making available in a timely manner any documents or information such other Party reasonably requests to facilitate such other Party's Prosecution and Maintenance of the Joint Collaboration Patents pursuant to this Section 10.6; and (b) if and as appropriate, signing (or causing to have signed) all documents relating to the Prosecution and Maintenance of any Joint Collaboration Patents by such other Party.

10.7 Infringement or Misappropriation by Third Parties.

10.7.1 Notice. In the event that Xencor or Atreca becomes aware of actual or threatened infringement or misappropriation of any (a) Xencor Background IP or Atreca Background IP by a Third Party conducting the manufacture, sale, use, offer for sale or import of any product [*] hereunder, or (b) Xencor Collaboration IP, Atreca Collaboration IP, or Joint Collaboration IP by a Third Party, including by the filing of any certification pursuant to the Biologics Price Competition and Innovation Act of 2009 (or any amendment or successor statute thereto) or any equivalent thereof (any of the foregoing, an "**Infringement**"), that Party shall promptly notify the other Party in writing.

10.7.2 Joint Collaboration Patent. The Party having the right to Prosecute and Maintain a Joint Collaboration Patent shall have the first right, but not the obligation, to initiate and control any Infringement Action with respect to such Joint Collaboration Patent at its own expense and by counsel of its own choice, and the other Party shall have the right, at its own expense, to be represented in any such Infringement Action by counsel of its own choice. If such Party fails to prepare or bring any such Infringement Action by [*] before the time limit, if any, set forth in the appropriate laws and regulations for the filing of such actions, then the other Party shall have the right to bring and control any such Infringement Action at its own expense and by counsel of its own choice, and the first Party shall have the right, at its own expense, to be represented in any such Infringement Action by counsel of its own choice.

10.7.3 Xencor Patents. Xencor shall have the sole right to initiate any infringement proceedings or take other appropriate actions against an infringement of any Xencor Patent, or to defend against any challenge of a Xencor Patent.

10.7.4 Atreca Patents. Atreca shall have the sole right to initiate any infringement proceedings or take other appropriate actions against an infringement of any Atreca Patent, or to defend against any challenge of any Atreca Patent.

10.7.5 Allocation of Recoveries. Except as otherwise agreed to by the Parties as part of a cost-sharing arrangement, any recovery realized as a result of any proceeding or other action related to any Infringement pursuant to this Section 10.7, after reimbursement of any litigation expenses of Xencor and Atreca, shall be retained by the Party that brought and controlled such litigation for purposes of this Agreement; provided that (a) any recovery realized by the Parties as a result of such litigation that is awarded [*], shall be [*], and (b) any recovery [*], shall be [*].

10.7.6 Cooperation. In the event a Party brings an infringement proceeding or other action in accordance with this Section 10.7, the other Party shall reasonably cooperate with the Party bringing the proceeding, including, if legally required to bring such action, being named as a Party. The Parties shall keep one another informed of the status of their respective activities regarding any Infringement Action undertaken with respect to a Xencor Patent, Atreca Patent, or Joint Collaboration Patent, pursuant to this Section 10.7 or settlement thereof, and the Parties shall assist one another and cooperate in any such action at the other's reasonable request. The Party enforcing and/or defending a Xencor Patent, Atreca Patent, or Joint Collaboration Patent may enter into any settlement, consent judgment, or other voluntary final disposition of any action contemplated by this Section 10.7 without the other Party's prior consent; provided, that (a) the other Party receives a general release of any claims against it in such proceeding and is promptly provided thereafter a copy of such settlement, consent judgment or other voluntary disposition and (b) such settlement does not (i) have an adverse impact on (A) the rights granted by a Party to the other Party hereunder or (B) if Atreca is the settling Party, any Xencor Patents, or if Xencor is the settling Party, any Atreca Patents, or (ii) result in a payment or other liability by the other Party to

a Third Party. Any other settlement, consent judgment or voluntary final disposition of any proceeding under this Section 10.7 by the Party enforcing a Xencor Patent, Atreca Patent, or Joint Collaboration Patent shall require the prior written consent of the other Party, which consent such other Party shall not unreasonably withhold.

10.8 Defense and Settlement of Third Party Claims. Each Party shall promptly notify the other Party in writing of (a) any allegation by a Third Party that the activity of either of the Parties pursuant to this Agreement infringes or may infringe the intellectual property rights of such Third Party or (b) any declaratory judgment action that is brought naming either Party as a defendant and alleging invalidity of any of the Atreca Patents, Xencor Patents or Joint Collaboration Patents. Xencor shall have the sole right to control any defense of any such claim involving alleged infringement of Third Party rights by Xencor's activities at its own expense and by counsel of its own choice, and Atreca shall have the right, at its own expense, to be represented in any such action by counsel of its own choice. Atreca shall have the sole right to control any defense of any such claim involving alleged infringement of Third Party rights by Atreca's activities at its own expense and by counsel of its own choice, and Xencor shall have the right, at its own expense, to be represented in any such action by counsel of its own choice. Neither Party shall have the right to settle any patent infringement litigation under this Section 10.8 in a manner that admits the invalidity or unenforceability of the other Party's Patents or a Joint Collaboration Patent or imposes on the other Party restrictions or obligations or other liabilities, without the written consent of such other Party, which consent shall not be unreasonably withheld.

10.9 Patent Extension. The IP Committee shall determine which Patent claiming, covering, or that is directed to a given Unilateral Product and/or Joint Product should be extended, and thereafter the Parties shall cooperate in obtaining patent term restorations, supplemental protection certificates and/or their equivalents, and other forms of patent term extensions for such given Unilateral Product and/or Joint Product with respect to any applicable Xencor Patent, Atreca Patent, or Joint Collaboration Patent in any country or region where applicable. In the event of a disagreement between the Parties' representatives on the IP Committee, (a) Atreca will have the final decision making authority as to Atreca Patents, (b) Xencor will have the final decision making authority as to Xencor Patents, and (c) if a Joint Collaboration Patent solely relates to a Program Product, the Responsible Party of the applicable Program shall have final decision making authority with respect thereto.

10.10 Trademarks. With respect to a Unilateral Program, the Unilateral Party shall own all right, title and interest in and to any trademarks adopted by the Unilateral Party for use with a Unilateral Product, and shall be responsible for the registration, filing, maintenance and enforcement thereof. With respect to a Joint Program, the Lead Party shall own all right, title and interest in and to any trademarks adopted by the Parties for use with a Joint Product, and shall be responsible for the registration, filing, maintenance and enforcement thereof.

10.11 Upstream Licenses.

10.11.1 [*]. The Parties hereby acknowledge and agree that, to the extent that any rights granted to Xencor under this Agreement are Controlled by Atreca pursuant to the [*], (a) such rights are subject to the terms and conditions of the [*], and (b) Xencor agrees to comply with such terms and conditions.

10.11.2 [*]. The Parties hereby acknowledge and agree that, to the extent that any rights granted to Atreca under this Agreement are Controlled by Xencor pursuant to [*], (a) such rights are subject to the terms and conditions of the [*], and (b) Atreca agrees to comply with such terms and conditions.

10.11.3 Covenants. Each Party that is a party to the Upstream License shall (a) remain in compliance in all material respects with such Upstream License, (b) not terminate, amend, waive or otherwise modify (or consent to any of the foregoing) its rights under any Upstream License in any manner that would materially adversely affect the rights or licenses granted to the other Party hereunder or increases or generates any new payment obligation under such Upstream License that would apply to such other Party, without such other Party's express written consent, and (c) provide the other Party with any notice of breach, default or termination from any licensor under the applicable Upstream License immediately after such Party receives such notification. Notwithstanding anything to the contrary herein, each Party that is a party to the Upstream License shall [*] under this Agreement.

ARTICLE 11
CONFIDENTIALITY

11.1 Nondisclosure. Each Party agrees that a Party (the "**Receiving Party**") receiving Confidential Information of the other Party (the "**Disclosing Party**") pursuant to this Agreement shall (a) maintain in confidence such Confidential Information using not less than the efforts such Receiving Party uses to maintain in confidence its own proprietary information of similar kind and value, but in no event less than a reasonable degree of efforts, (b) not disclose such Confidential Information to any Third Party without the prior written consent of the Disclosing Party, except for disclosures expressly permitted pursuant to this ARTICLE 11, and (c) not use such Confidential Information for any purpose except those permitted by this Agreement. The obligations of confidentiality, non-disclosure and non-use under this Section 11.1 shall be in full force and effect during the Term and for a period of [*] thereafter. The Receiving Party will return all copies of or destroy (and certify such destruction in writing) the Confidential Information of the Disclosing Party disclosed or transferred to it by the other Party pursuant to this Agreement, within [*] after the termination or expiration of this Agreement or upon the other Party's reasonable request; provided, however, that a Party may retain (i) Confidential Information of the other Party to exercise rights and licenses which expressly survive such termination or expiration pursuant to this Agreement, and (ii) one (1) copy of all other Confidential Information in archives solely for the purpose of establishing the contents thereof.

11.2 Exceptions.

11.2.1 General. The obligations in Section 11.1 shall not apply with respect to any portion of the Confidential Information of the Disclosing Party that the Receiving Party can show by competent written proof:

(a) was known to the Receiving Party or any of its Affiliates, without any obligation to keep it confidential or any restriction on its use, prior to disclosure by the Disclosing Party;

(b) is subsequently disclosed to the Receiving Party or any of its Affiliates by a Third Party lawfully in possession thereof and without any obligation to keep it confidential or any restriction on its use;

(c) is published by a Third Party or otherwise becomes publicly available or enters the public domain, either before or after it is disclosed to the Receiving Party, without any breach by the Receiving Party of its obligations hereunder;

(d) is published by a Party in accordance with Section 11.6 without any breach by such Party of its obligations hereunder; or

(e) is independently developed by or for the Receiving Party or its Affiliates without reference to or reliance upon the Disclosing Party's Confidential Information.

Any combination of features or disclosures shall not be deemed to fall within the foregoing exclusions merely because individual features are published or available to the general public or in the rightful possession of the Receiving Party unless the combination itself and principle of operation are published or available to the general public or in the rightful possession of the Receiving Party.

11.3 Authorized Disclosure.

11.3.1 Disclosure. Notwithstanding Section 11.1, the Receiving Party may disclose Confidential Information belonging to the Disclosing Party in the following instances:

(a) subject to Section 11.5, to comply with Applicable Law (including the rules and regulations of the U.S. Securities and Exchange Commission ("**SEC**") or any national securities exchange) or with judicial process (including prosecution or defense of litigation), if, in the reasonable opinion of the Receiving Party's counsel, such disclosure is necessary for such compliance or for such judicial process (including prosecution or defense of litigation), provided that, where reasonably possible and subject to Section 11.5, the Receiving Party shall (i) notify the Disclosing Party of the Receiving Party's intent to make any such disclosure sufficiently prior to making such disclosure so as to allow the Disclosing Party adequate time to take whatever action it may deem appropriate to protect the confidentiality of the information, (ii) provide reasonable assistance to the Disclosing Party with respect thereto, (iii) use reasonable measures to ensure confidential treatment of such information (iv) shall only disclose such Confidential Information of the Disclosing Party as is necessary for the purposes of this Section 11.3.1(a);

(b) to governmental or other regulatory agencies in order to obtain Patents in accordance with this Agreement, but such disclosure shall only be to the extent reasonably necessary to obtain such Patents, and provided that reasonable steps are taken to ensure confidential treatment of such Confidential Information (if available);

(c) to any of its officers, employees, consultants, agents or Affiliates including, (i) in the case of either Party, to any actual or potential collaborators, licensees or sublicensees with respect to its activities or as otherwise permitted under this Agreement, (ii) in the case of either Party, to such Party's subcontractors (for purpose of such subcontractor performing obligations of such Party under this Agreement) as it deems necessary or advisable in the course of conducting activities in accordance with this Agreement in order to carry out its responsibilities or exercise its rights under this Agreement, and (iii) in the case of either Party, to such Party's actual or potential *bona fide* acquirers or institutional, non-strategic investors; provided that each such disclosee is bound by written confidentiality obligations and non-use obligations no less restrictive than those set forth in this ARTICLE 11 to maintain the confidentiality thereof and not to use such Confidential Information except as expressly permitted by this Agreement; provided, however, that, in each of the above situations in this Section 11.3.1(c), the Receiving Party shall remain responsible for any failure by any Person who receives Confidential Information from such Receiving Party pursuant to this Section 11.3.1(c) to treat such Confidential Information as required under this ARTICLE 11; and

(d) disclosure, solely on a "need to know basis", to its advisors (including attorneys and accountants) in connection with activities hereunder; provided that, prior to any such disclosure, each disclosee must be bound by written obligations of confidentiality, non-disclosure and non-use no less restrictive than the obligations set forth in this ARTICLE 11 (provided, however, that in the case of legal advisors, no written agreement shall be required), which for the avoidance of doubt, will not permit use of such Confidential Information for any purpose except those expressly permitted by this Agreement; provided, however, that, in each of the above situations in this Section 11.3.1(d), the Receiving Party shall remain responsible for any failure by any Person who receives Confidential Information from such Receiving Party pursuant to this Section 11.3.1(d) to treat such Confidential Information as required under this ARTICLE 11.

11.3.2 Terms of Disclosure. If and whenever any Confidential Information is disclosed in accordance with this Section 11.3, such disclosure shall not cause any such information to cease to be Confidential Information except to the extent that such disclosure results in a public disclosure of such information (other than by breach of this Agreement).

11.4 Terms of this Agreement. The Parties agree that this Agreement and the terms hereof shall be deemed to be Confidential Information of both Xencor and Atreca, and each Party agrees not to disclose any of them without the prior written consent of the other Party, except that each Party may disclose any of them in accordance with the provisions of Section 11.3 or Section 11.5, as applicable.

11.5 Securities Filings; Disclosure under Applicable Law. Each Party acknowledges and agrees that the other Party may submit this Agreement to (or file this Agreement with) the SEC or any national securities exchange in any jurisdiction (collectively, the "**Securities Regulators**") or to other Persons as may be required by Applicable Law. If a Party does submit this Agreement to (or file this Agreement with) any Securities Regulators or other Persons as may be required by Applicable Law, such Party shall consult with the other Party (a) to the preparation and submission of a confidential treatment request for this Agreement and (b) to mutually agree on the redactions to this Agreement to be submitted for confidential treatment request, such agreement not to be

unreasonably withheld. If a Party is required by Applicable Law or any Securities Regulator to make a disclosure of the terms of this Agreement in a filing or other submission as required by Applicable Law or Securities Regulator, then such Party will have the right to make such disclosure at the time and in the manner reasonably determined by its counsel to be required by Applicable Law or Securities Regulator if (i) such Party has provided copies of the disclosure to the other Party reasonably in advance of such filing or other disclosure under the circumstances, (ii) such Party has promptly notified the other Party in writing of such requirement and any respective timing constraints, (iii) such Party has given the other Party a reasonable time under the circumstances from the date of notice by such Party of the required disclosure to comment upon and request confidential treatment for such disclosure, and (iv) (A) the other Party has not responded within such reasonable time period, or (B) if the other Party provides comments within the respective time periods (but in any case no less than [*] prior to the applicable deadline for submitting such disclosure), such Party in good faith considers incorporating such comments and any redactions to this Agreement proposed by the other Party to be submitted for confidential treatment request. For clarity, following a request from any Securities Regulator to change the redactions requested by a Party, such Party will not be required pursuant to the provisions of this Section 11.5 to again request the redactions rejected by the applicable Securities Regulator, provided that such Party shall provide the other Party with a notice of the required change and a copy of the revised redactions.

11.6 Publicity; Public Disclosures. A joint press release substantially in the form attached hereto as Schedule 11.6 shall be issued by the Parties on or following the Effective Date. It is understood that each Party may desire or be required to issue subsequent press releases or other public statements relating to this Agreement or activities hereunder, and each Party agrees not to issue any press release or other public statement disclosing information relating to this Agreement or the transactions contemplated hereby or the terms hereof without the prior written consent of such Party, not to be unreasonably withheld; provided, that, no such consent shall be required with respect to the publication of materials or information that have been previously disclosed, so long as the content of such publication remains accurate at the time of disclosure. The Parties agree to consult with each other reasonably and in good faith with respect to the text and timing of such press release or public statement; provided, however, that the issuing Party will provide the reviewing Party with a copy of the proposed press release or public statement within a reasonable time prior to issuance thereof and the Parties will consult and work in good faith to prepare a mutually acceptable press release. In addition, following the initial press release announcing this Agreement, either Party shall be free to disclose, without the other Party's prior written consent, the existence of this Agreement, the identity of the other Party and those terms of the Agreement which have already been publicly disclosed in accordance herewith.

11.7 Publications.

11.7.1 Publication. Either Party shall have the right to make a Publication in accordance with the procedure set forth in Section 11.7.2; provided that, subject to such procedure, (a) each Party shall have the right to publish research results under the Research Program, and (b) the Responsible Party shall have the first right to publish results arising under its respective Joint Program or Unilateral Program.

11.7.2 Procedure. The publishing Party shall provide the non-publishing Party with an advance copy of the proposed Publication at least [*] ([*]) prior to the date of the submission for such Publication or the date of presentation of such Publication, whichever is earlier, of any such submitted materials. The non-publishing Party shall review such submitted materials and respond to the submitting Party within [*] for any Publication in which to recommend any changes it reasonably believes are necessary to preserve any patentable invention or protect any Confidential Information belonging in whole or in part to the non-publishing Party. If the non-publishing Party informs the publishing Party that such Publication, in the non-publishing Party's reasonable judgment, could be expected to (a) have a material adverse effect on any patentable invention owned by or licensed, in whole or in part, to the non-publishing Party, or (b) include any Confidential Information of the non-publishing Party, the publishing Party shall delay or prevent such Publication as follows: (i) with respect to a patentable invention, such Publication shall be delayed sufficiently long (not to exceed [*]) to permit the timely preparation and filing of a patent application; and (ii) with respect to Know-How which is Confidential Information of such non-publishing Party, such Know-How shall be deleted from the Publication upon the reasonable request of the non-publishing Party. In the event, the non-publishing Party does not respond within the period specified above, the publishing Party will be free to make such proposed Publication or presentation. Notwithstanding the foregoing, in the event the Parties are unable to agree on whether to release a Publication or the content contained in a Publication, then (A) Xencor shall have final decision-making authority for all Publications regarding Xencor Platform Technology, and (B) Atreca shall have final decision-making authority for all Publications regarding Atreca Platform Technology.

11.7.3 Subsequent Disclosure. Once a Publication has been approved by the non-publishing Party pursuant to Section 11.7.2 and published, then either Party may make subsequent public disclosure of the contents of such Publication without the further approval of the other Party; provided that, (a) such content is not presented (i) with any new data or information or conclusions or (ii) in a form or manner that materially alters the subject matter therein, and (b) the Party making such post-publication disclosure shall provide to the other Party a copy of such subsequent post-publication disclosure.

11.8 Use of Names. Except as otherwise expressly set forth herein, no Party (or its respective Affiliates) shall use the name, trademark, trade name or logo of the other Party or its Affiliates, or its or their respective employee(s), in any publicity, promotion, news release or other public disclosure relating to this Agreement or its subject matter, without the prior written permission of the other Party; provided that such permission shall not be required for any use thereof that is required by Applicable Law or Securities Regulators, including the rules of any securities exchange or market on which a Party's (or its Affiliate's) securities are listed or traded.

11.9 Relationship to Existing Agreements. This Agreement supersedes that certain Mutual Confidentiality Agreement entered into between Xencor and Atreca, effective as of January 4, 2019 (the "**Prior CDA**"); provided that all "Confidential Information" disclosed by the "Disclosing Party" under the Prior CDA or the Interim MTA shall be deemed Confidential Information of the Disclosing Party hereunder and shall be subject to the terms and conditions of this Agreement, and the "Recipient" thereunder shall be bound by and obligated to comply with such terms and conditions as if they were the Receiving Party hereunder. The foregoing shall not be interpreted as a waiver of any remedies available to the "Disclosing Party" under the Prior CDA

or the Interim MTA as a result of any breach, prior to the Effective Date, by the "Recipient", of its obligations pursuant to the Prior CDA or the Interim MTA. In the event of any inconsistency or conflict between this Agreement and the Prior CDA or the Interim MTA, the terms of this Agreement shall govern.

ARTICLE 12
REPRESENTATIONS AND WARRANTIES; COVENANTS

12.1 Representations and Warranties of Both Parties. Each Party hereby represents and warrants to the other Party, as of the Effective Date, that:

(a) such Party is duly organized, validly existing and in good standing under the Applicable Law of the jurisdiction of its formation and has full corporate power and authority to enter into this Agreement, and to carry out the provisions hereof;

(b) such Party has taken all necessary corporate action on its part to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder;

(c) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, binding obligation, enforceable against it in accordance with its terms, except to the extent that enforcement of the rights and remedies created hereby is subject to (i) bankruptcy, insolvency, reorganization, moratorium and other similar laws of general application affecting the rights and remedies of creditors, or (ii) laws governing specific performance, injunctive relief and other equitable remedies;

(d) the execution, delivery and performance of this Agreement by such Party does not breach or conflict with any agreement or any provision thereof, or any instrument or understanding, oral or written, to which such Party (or any of its Affiliates) is a party or by which such Party (or any of its Affiliates) is bound, or violate any Applicable Law of any Governmental Authority having jurisdiction over such Party (or any of its Affiliates);

(e) no government authorization, consent, approval, license, exemption of or filing or registration with any court or governmental department, commission, board, bureau, agency or instrumentality, domestic or foreign, under any Applicable Law currently in effect, is or will be necessary for, or in connection with, the transaction contemplated by this Agreement, or for the performance by it of its obligations under this Agreement; and

(f) it has obtained all necessary authorizations, consents and approvals of any Third Party that is required to be obtained by it as of the Effective Date (i) for or in connection with the transaction contemplated by this Agreement, or (ii) for the performance by it of its obligations under this Agreement.

12.2 Representations, Warranties, and Covenants of Atreca. Atreca represents and warrants to Xencor that, as of the Effective Date, and as applicable, covenants, to its knowledge, that:

(a) Atreca is the sole and exclusive owner of, or Controls, the Atreca IP licensed by Atreca to Xencor under this Agreement.

(b) [*], there is no agreement between Atreca or its Affiliates with any Third Party pursuant to which Atreca or its Affiliates (i) has in-licensed any Atreca Background IP or (ii) owes or would owe any material obligation due to activities undertaken under this Agreement;

(c) No written notice of default or termination has been received or given under the [*], and there is no act or omission by Atreca that would provide a right to terminate the [*];

(d) To Atreca's knowledge, Atreca has the rights necessary to (i) conduct its portion of the Research Program and the Programs, (ii) grant the licenses to Xencor under Atreca IP that Atreca purports to grant, and (iii) assign the rights according to ARTICLE 10 above, and has taken, or will take prior to commencement of the relevant activity, all appropriate measures under all Applicable Laws to assign such rights, in each case ((i), (ii) and (iii)), pursuant to this Agreement.

(e) [*].

(f) [*]. Solely for the purposes for this Agreement, any agreement between Atreca and any Third Party granting rights to any Target shall be deemed to have an effective date as of the date that the corresponding agreement is actually signed by Atreca and such Third Party and not any earlier effective date of such agreement agreed to by Atreca and such Third Party.

(g) To Atreca's knowledge, Atreca has not granted, and will not during the Term grant, any right to any Third Party under or with respect to the Atreca IP that would conflict with the rights granted to Xencor hereunder.

(h) Each person who has or has had any rights in or to any Atreca IP existing as of the Effective Date has executed an agreement assigning its entire right, title and interest in and to such Atreca IP to Atreca.

(i) To Atreca's knowledge, neither Atreca, nor any of its Affiliates, have previously assigned, transferred, conveyed or otherwise encumbered, and shall not assign, transfer, convey or otherwise encumber during the Term, its right, title or interest in or to any of the Atreca IP in a manner that would prevent (i) Xencor from performing its obligations in accordance with this Agreement, or assigning and granting the rights to Xencor as set forth in ARTICLE 10; or (ii) Xencor or its Affiliates, subcontractors and Sublicensees from researching, Developing, Manufacturing or Commercializing Program Products or from otherwise exploiting the rights and licenses granted or assigned by Atreca hereunder, in each of (i) and (ii), under the applicable Atreca IP and pursuant to the rights granted under this Agreement.

(j) To Atreca's knowledge, there are no claims, judgments or settlements against or pending, or amounts with respect thereto, owed by Atreca or any of its Affiliates, with

respect to the Atreca IP licensed by Atreca to Xencor under this Agreement and, to Atreca's knowledge, Atreca has not received written notice threatening any such claims, judgments or settlements.

(k) During the Term, Atreca shall ensure that all laboratories, rooms and equipment and the conduct of all activities to be carried out by or on behalf of Atreca in connection with its obligations under this Agreement comply with Applicable Laws.

(l) The Atreca Patents (i) are, to Atreca's knowledge, in the case of issued Patents, valid and enforceable, (ii) are being diligently prosecuted in the applicable patent offices in the Territory in accordance with Atreca's reasonable Prosecution and Maintenance strategy for such Atreca Patents, and in accordance with Applicable Law, and (iii) have been filed and maintained properly and correctly and all applicable fees have been paid on or before the due date (including all applicable extensions) for such payments.

(m) No Third Party has initiated any court proceedings or, to Atreca's knowledge, threatened to initiate any court proceedings, against Atreca or its Affiliates asserting the invalidity or unenforceability of any Atreca Patents (including, by way of example, through the institution of interference, nullity, opposition, *inter partes* or post-grant review or similar invalidity proceedings before the United States Patent and Trademark Office or any analogous foreign Regulatory Authority).

(n) All employees, officers, and consultants of Atreca and its Affiliates have executed agreements or have existing obligations under Applicable Law obligating the individual to maintain as confidential Atreca's Confidential Information as well as confidential information of other parties (including of Xencor and its Affiliates) that such individual may receive in the conduct of activities under this Agreement, to the extent required to support Atreca's obligations under this Agreement, and Atreca and its Affiliates have taken all reasonable precautions to preserve the confidentiality of Atreca Background Know-How that is not claimed in a published Atreca Patent or that was not publicly disclosed prior to the Effective Date.

(o) [*], neither Atreca nor its Affiliates have entered into a funding relationship with a Governmental Authority that would result in rights to any Collaboration Bispecific Antibody, Program Bispecific Antibody, or Program Product residing in the US Government, National Institutes of Health, National Institute for Drug Abuse or other agency, and the licenses granted hereunder are not subject to overriding obligations to the US Government as set forth in Public Law 96 517 (35 U.S.C. §§ 200-204), as amended, or any similar obligations under the laws of any other country.

12.3 Representations, Warranties, and Covenants of Xencor. Xencor represents and warrants to Atreca that, as of the Effective Date, and as applicable, covenants, to its knowledge, that:

(a) Xencor is the sole and exclusive owner of, or Controls, the Xencor IP licensed by Xencor to Atreca under this Agreement.

(b) [*], there is no agreement between Xencor or its Affiliates with any Third Party pursuant to which Xencor or its Affiliates (i) has in-

licensed any Xencor Background IP or (ii) owes or would owe any material obligation due to activities undertaken under this Agreement;

(c) No written notice of default or termination has been received or given under the [*], and there is no act or omission by Xencor that would provide a right to terminate the [*];

(d) To Xencor's knowledge, Xencor has the rights necessary to (i) conduct its portion of the Research Program and the Programs, (ii) grant the licenses to Atreca under Xencor IP that Xencor purports to grant, and (iii) assign the rights according to ARTICLE 10, and has taken, or will take prior to commencement of the relevant activity, all appropriate measures under all Applicable Laws to assign such rights, in each case ((i), (ii) and (iii)), pursuant to this Agreement.

(e) To Xencor's knowledge, Xencor has not granted, and will not during the Term grant, any right to any Third Party under or with respect to the Xencor IP that would conflict with the rights granted to Atreca hereunder.

(f) Each person who has or has had any rights in or to any Xencor IP existing as of the Effective Date has executed an agreement assigning its entire right, title and interest in and to such Xencor IP to Xencor.

(g) To Xencor's knowledge, neither Xencor, nor any of its Affiliates, have previously assigned, transferred, conveyed or otherwise encumbered, and shall not assign, transfer, convey or otherwise encumber during the Term, its right, title or interest in or to any of the Xencor IP in a manner that would prevent (i) Atreca from performing its obligations in accordance with this Agreement, or assigning and granting the rights to Atreca as set forth in ARTICLE 10; or (ii) Atreca or its Affiliates, subcontractors and Sublicensees from researching, Developing, Manufacturing or Commercializing Program Products or from otherwise exploiting the rights and licenses granted or assigned by Xencor hereunder, in each of (i) and (ii), under the applicable Xencor IP and pursuant to the rights granted under this Agreement.

(h) To Xencor's knowledge, there are no claims, judgments or settlements against or pending, or amounts with respect thereto, owed by Xencor or any of its Affiliates, with respect to the Xencor IP licensed by Xencor to Atreca under this Agreement and, to Xencor's knowledge, Xencor has not received written notice threatening any such claims, judgments or settlements.

(i) During the Term, Xencor shall ensure that all laboratories, rooms and equipment and the conduct of all activities to be carried out by or on behalf of Xencor in connection with its obligations under this Agreement comply with Applicable Laws.

(j) The Xencor Patents (i) are, to Xencor's knowledge, in the case of issued Patents, valid and enforceable, (ii) are being diligently prosecuted in the applicable patent offices in the Territory in accordance with Xencor's reasonable Prosecution and Maintenance strategy for such Xencor Patents, and in accordance with Applicable Law, and (iii) have been filed and maintained properly and correctly and all applicable fees have been paid on or before the due date (including all applicable extensions) for such payments.

(k) No Third Party has initiated any court proceedings or, to Xencor's knowledge, threatened to initiate any court proceedings, against Xencor or its Affiliates asserting the invalidity or unenforceability of any Xencor Patents (including, by way of example, through the institution of interference, nullity, opposition, *inter partes* or post-grant review or similar invalidity proceedings before the United States Patent and Trademark Office or any analogous foreign Regulatory Authority).

(l) All employees, officers, and consultants of Xencor and its Affiliates have executed agreements or have existing obligations under Applicable Law obligating the individual to maintain as confidential Xencor's Confidential Information as well as confidential information of other parties (including of Atreca and its Affiliates) that such individual may receive in the conduct of activities under this Agreement, to the extent required to support Xencor's obligations under this Agreement, and Xencor and its Affiliates have taken all reasonable precautions to preserve the confidentiality of Xencor Background Know-How that is not claimed in a published Xencor Patent or that was not publicly disclosed prior to the Effective Date.

(m) Neither Xencor nor its Affiliates have entered into a funding relationship with a Governmental Authority that would result in rights to any Collaboration Bispecific Antibody, Program Bispecific Antibody, or Program Product residing in the US Government, National Institutes of Health, National Institute for Drug Abuse or other agency, and the licenses granted hereunder are not subject to overriding obligations to the US Government as set forth in Public Law 96 517 (35 U.S.C. §§ 200-204), as amended, or any similar obligations under the laws of any other country.

12.4 Disclaimer. EXCEPT AS OTHERWISE EXPRESSLY PROVIDED IN THIS AGREEMENT, NEITHER PARTY MAKES ANY REPRESENTATIONS OR EXTENDS ANY WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED (AND EACH PARTY HEREBY EXPRESSLY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES NOT EXPRESSLY PROVIDED IN THIS AGREEMENT), INCLUDING WITH RESPECT TO ANY PATENTS OR KNOW-HOW, OR MATERIALS, INCLUDING WARRANTIES OF VALIDITY OR ENFORCEABILITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR USE OR PURPOSE, PERFORMANCE, AND NONINFRINGEMENT OF ANY THIRD PARTY PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS.

12.5 Covenants of both Parties.

12.5.1 Compliance with Applicable Laws. Each Party shall ensure that activities conducted by or on behalf of itself or its Affiliates pursuant to this Agreement are conducted in compliance with all Applicable Laws (including, to the extent applicable, GCP, GLP and GMP), and good business ethics.

12.5.2 Governments and International Public Organizations. Each Party will not make any payment (and such Party shall ensure that its Affiliates and subcontractors do not make any payment), either directly or indirectly, of money or other assets, including any compensation such Party derives from this Agreement (hereinafter collectively referred to as a "**Payment**"), to government or political party officials, officials of international public organizations, candidates for public office, or representatives of other businesses or persons acting on behalf of any of the

foregoing (hereinafter collectively referred to as "**Officials**") where such Payment would constitute a violation of any Applicable Law. In addition, regardless of legality, each Party will not make any Payment (and will ensure that its Affiliates and subcontractors make no payment), either directly or indirectly to Officials if such Payment is for the purpose of influencing decisions or actions with respect to the subject matter of this Agreement or any other aspect of such Party's business.

12.5.3 Exclusions Lists. Each Party will not use (and will cause its Affiliates and subcontractors not to use) in the performance of the Collaboration any Person (including any employee, officer, director or Third Party contractor) who is (or has been) on the Exclusions List, or who is (or has been) in Violation, in the performance of any activities hereunder. Each Party certifies to the other Party that, as of the Effective Date, such Party has screened itself, and its officers and directors (and its Affiliates or subcontractors, and their respective officers and directors) against the Exclusions Lists and that it has informed the other Party in writing whether such Party, or any of its officers or directors (or any of its Affiliates or subcontractors or any of their respective officers and directors) has been in Violation. After the execution of this Agreement, each Party will notify the other Party in writing immediately if any such Violation occurs or comes to its attention.

12.5.4 Personal Data. Each Party shall ensure that all Personal Data, if any, is processed in accordance with Applicable Laws, including the fair and lawful collection and processing of such Personal Data, the disclosure of such Personal Data to the other Party in accordance with this Agreement and the transfer of such Personal Data (including any transfer from inside the EEA and/or UK or Switzerland to outside the EEA), including any applicable European law or regulation (such as the EU General Data Protection Regulation (2016/679) ("**GDPR**")) relating to the protection of Personal Data and all laws implementing and/or supplementing the GDPR (collectively, "**EU Data Protection Laws**") and HIPAA. Each Party shall promptly notify the other Party if it becomes aware that any data, including Personal Data, provided to such other Party is inaccurate or has been unlawfully obtained or processed or, where consent to process Personal Data has been provided, consent is withdrawn or the providing Party becomes aware that consent may not be reliable or any other processing ground is no longer applicable. Each Party further covenants that any data or information that it provides to the other Party will be anonymized, or if anonymization is not reasonably possible, then de-identified, with respect to any identified or identifiable natural person, as those terms are defined or interpreted pursuant to EU Data Protection Laws and/or HIPAA (as applicable). Each Party further represents and warrants that it has the full right to provide any such Personal Data or Protected Health Information (as such term is defined under the EU Data Protection Laws or HIPAA, as applicable), to the other Party to use as is permitted in accordance with this Agreement.

ARTICLE 13
INDEMNIFICATION; INSURANCE

13.1 Indemnification by Xencor. Xencor shall indemnify, defend and hold harmless Atreca and its Affiliates, and its and their respective directors, officers, employees, agents, successors and assigns (collectively, the "**Atreca Indemnitees**"), from and against any and all Third Party Damages to the extent arising out of or relating to, directly or indirectly, any Third Party Claim to the extent based upon:

(a) the gross negligence or willful misconduct of Xencor or its Affiliates or its or their respective directors, officers, employees or agents, in connection with Xencor's performance of its obligations under this Agreement; or

(b) any breach by Xencor of any of its representations, warranties, covenants, agreements or obligations under this Agreement;

in each case (a) and (b), provided, however, that such indemnity shall not apply to the extent Atreca has an indemnification obligation pursuant to Section 13.2 or Section 13.3 for such Third Party Damages.

13.2 Indemnification by Atreca. Atreca shall indemnify, defend and hold harmless Xencor, its Affiliates and its and their respective directors, officers, employees, agents, successors and assigns (collectively, the "**Xencor Indemnitees**"), from and against any and all Third Party Damages to the extent arising out of or relating to, directly or indirectly, any Third Party Claim to the extent based upon:

(a) the gross negligence or willful misconduct of Atreca or its Affiliates or its or their respective directors, officers, employees or agents, in connection with Atreca's performance of its obligations under this Agreement; or

(b) any breach by Atreca of any of its representations, warranties, covenants, agreements or obligations under this Agreement;

in each case (a) and (b), provided, however, that such indemnity shall not apply to the extent Xencor has an indemnification obligation pursuant to Section 13.1 or Section 13.3 for such Third Party Damages.

13.3 Indemnification by the Responsible Party. On a Program-by-Program basis, the Unilateral Party and Lead Party with respect to such Program, as applicable (each, the "**Responsible Party**"), shall indemnify, defend and hold harmless the other Party and its Affiliates, and its and their respective directors, officers, employees, agents, successors and assigns (collectively, the "**Other Party Indemnitees**"), from and against any and all Third Party Damages to the extent arising out of or relating to, directly or indirectly, any Third Party Claim to the extent based upon the research, development (including Development), make (including Manufacture), use, offer for sale, sale, importation, Commercialization and other exploitation of the applicable Program Bispecific Antibodies and Program Products in the Field in the Territory by or on behalf of the Responsible Party or its Affiliates or Sublicensees (other than the other Party or its Affiliates or Sublicensees) during the Term, provided, however, that such indemnity shall not apply to the extent that the other Party has an indemnification obligation pursuant to Section 13.1 or Section 13.2 for such Third Party Damages.

13.4 Procedure. If a Party is seeking indemnification under Section 13.1, Section 13.2, or Section 13.3, as applicable (the "**Indemnitee**"), it shall inform the other Party (the "**Indemnitor**") of the claim giving rise to the obligation to indemnify pursuant to Section 13.1, Section 13.2, or Section 13.3, as applicable, as soon as reasonably practicable after receiving notice of the claim; provided, however, that any delay or failure to provide such notice shall not constitute a waiver or release of, or otherwise limit, the Indemnitee's rights to indemnification under Section

13.1, Section 13.2, or Section 13.3, as applicable, except to the extent that such delay or failure materially prejudices the Indemnitor's ability to defend against the relevant claims. The Indemnitor shall have the right to assume the defense of any such claim for which the Indemnitee is seeking indemnification pursuant to Section 13.1, Section 13.2, or Section 13.3, as applicable. The Indemnitee shall cooperate with the Indemnitor and the Indemnitor's insurer as the Indemnitor may reasonably request, and at the Indemnitor's cost and expense. The Indemnitee shall have the right to participate, at its own expense and with counsel of its choice, in the defense of any claim or suit that has been assumed by the Indemnitor. The Indemnitor shall not settle any claim without the prior written consent of the Indemnitee, not to be unreasonably withheld; provided, however, that the Indemnitor shall not be required to obtain such consent if the settlement (a) involves only the payment of money and will not result in the Indemnitee becoming subject to injunctive or other similar type of relief, (b) does not require an admission by the Indemnitee and (c) does not adversely affect the rights or licenses granted to the Indemnitee under this Agreement. The Indemnitee shall not settle or compromise any such claim without the prior written consent of the Indemnitor, which it may provide in its sole discretion. If the Parties cannot agree as to the application of Section 13.1, Section 13.2, or Section 13.3, as applicable, to any claim, pending resolution of the Dispute Claim pursuant to Section 15.10, the Parties may conduct separate defenses of such claims, with each Party retaining the right to claim indemnification from the other Party in accordance with Section 13.1, Section 13.2, or Section 13.3, as applicable, upon resolution of the underlying claim. In each case, the Indemnitee shall reasonably cooperate with the Indemnitor, and shall make available to the Indemnitor all pertinent information under the Control of the Indemnitee, which information shall be subject to ARTICLE 11.

13.5 Insurance. During the Term and for a period of [*] thereafter, each Party shall maintain, at its cost, a program of insurance or self-insurance against liability and other risks associated with its activities and obligations under this Agreement, and its indemnification obligations hereunder, in such amounts, subject to such deductibles and on such terms as are customary for such Party for the activities to be conducted by it under this Agreement. It is understood that such insurance shall not be construed to create a limit on either Party's liability with respect to its indemnification obligations under this ARTICLE 13, or otherwise.

13.6 LIMITATION OF LIABILITY. NEITHER XENCOR NOR ATRECA, NOR ANY OF THEIR RESPECTIVE AFFILIATES, WILL BE LIABLE TO THE OTHER PARTY OR ITS AFFILIATES UNDER OR IN CONNECTION WITH THIS AGREEMENT FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING LOST PROFITS OR LOST REVENUES), WHETHER LIABILITY IS ASSERTED IN CONTRACT, TORT (INCLUDING NEGLIGENCE AND STRICT PRODUCT LIABILITY), INDEMNITY, CONTRIBUTION OR OTHERWISE, AND IRRESPECTIVE OF WHETHER THAT PARTY OR ANY REPRESENTATIVE OF THAT PARTY HAS BEEN ADVISED OF, OR OTHERWISE MIGHT HAVE ANTICIPATED THE POSSIBILITY OF, ANY SUCH LOSS OR DAMAGE. NOTWITHSTANDING THE FOREGOING, NOTHING IN THIS SECTION 13.6 IS INTENDED TO OR SHALL LIMIT OR RESTRICT THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF ANY PARTY UNDER SECTION 13.1 OR SECTION 13.2 FOR ANY THIRD PARTY DAMAGES OR THE LIABILITY OF ANY PARTY FOR BREACH OF ANY OF ITS OBLIGATIONS UNDER [*] ARTICLE 11, OR FOR ITS GROSS NEGLIGENCE OR WILLFUL MISCONDUCT.

ARTICLE 14
TERM AND TERMINATION

14.1 Term; Expiration. This Agreement shall become effective on the Effective Date and, unless earlier terminated in accordance with this ARTICLE 14, shall remain in effect until the later of (a) the first anniversary of the end of the Research Term and (b) the date on which all Joint Programs and all Unilateral Programs (including Out-Licensed Programs) are either terminated or the payment obligations with respect to which have expired (the "**Term**").

14.2 Termination for Breach. This Agreement may be terminated by a Party (a) in its entirety for the material breach by the other Party of this Agreement with respect to the Research Program, or (b) on a Program-by-Program basis for the material breach by the other Party of this Agreement with respect to such Program; provided that, in each case, (i) the breaching Party has not cured such breach within [*] after the date of written notice to the breaching Party of such breach, which notice shall describe such breach in reasonable detail and shall state the non-breaching Party's intention to terminate this Agreement in its entirety, or with respect to a given Program, pursuant to this Section 14.2, and (ii) if the breaching Party disputes in good faith that it has materially breached this Agreement or that it has failed to timely cure such material breach, the dispute shall be resolved [*]. For the avoidance of doubt, termination of any particular Program(s) pursuant to this Section 14.2 shall not terminate (A) this Agreement with respect to any other Program(s), or (B) the Research Program.

14.3 Termination for Bankruptcy. If either Party makes a general assignment for the benefit of its creditors, appoints or suffers appointment of an examiner or of a receiver or trustee over all or substantially all of its property, passes a resolution for its winding up or files a petition under any bankruptcy or insolvency act or law or has any such petition filed against it which is not dismissed, discharged, bonded or stayed within [*] after the filing thereof (each, an "**Insolvency Event**"), the other Party may terminate this Agreement in its entirety effective immediately upon written notice to such Party, provided that, in connection therewith, the provisions of Section 10.3 shall apply.

14.4 Effects of Termination. In the event of termination of this Agreement in its entirety or in part with respect to any one or more Programs for any reason:

14.4.1 except as expressly set forth in this Agreement, all rights and licenses granted herein with respect to all terminated Programs shall terminate; and

14.4.2 each Party shall return or destroy all Confidential Information of the other Party with respect to the terminated Programs to the extent required by ARTICLE 11;

14.4.3 notwithstanding the foregoing provisions of this Section 14.4, the licenses granted to the Lead Party or Unilateral Party hereunder shall survive at such Lead Party's or Unilateral Party's option in order for such Lead Party or Unilateral Party (and its Affiliates, Sublicensees and distributors) to (a) finish or otherwise wind-down any ongoing Clinical Trials with respect to any applicable Program Product in accordance with accepted pharmaceutical industry norms and ethical practices, and/or (b) sell any Program Product thereof remaining in the

Lead Party's or Unilateral Party's inventory as of the effective date of termination; provided that the Lead Party or Unilateral Party shall pay applicable payments on Net Sales of such Program Product(s) (in the form of royalties or share of Net Profits/Losses) as and to the extent the Lead Party or Unilateral Party would otherwise be required to pay such payments as set forth in this Agreement.

14.5 [*].

14.6 Surviving Provisions.

14.6.1 Accrued Rights; Remedies. Termination or expiration of this Agreement (in its entirety or with respect to a given Program, as applicable) for any reason shall be without prejudice to any rights that shall have accrued to the benefit of any Party prior to such termination or expiration, and any and all damages or remedies (whether in law or in equity) arising from any breach hereunder, each of which shall survive termination or expiration of this Agreement (in its entirety or with respect to a given Program, as applicable). Such termination or expiration shall not relieve any Party from obligations which are expressly indicated to survive termination or expiration of this Agreement (in its entirety or with respect to a given Program, as applicable). Except as otherwise expressly set forth in this Agreement, the termination provisions of this ARTICLE 14 are in addition to any other relief and remedies available to either Party under this Agreement and at Applicable Law.

14.6.2 Survival. Without limiting the provisions of Section 14.6.1, the rights and obligations of the Parties set forth in the following Sections and Articles of this Agreement shall survive the expiration or termination of this Agreement (in its entirety or with respect to a given Program, as applicable), in addition to those other terms and conditions that are expressly stated to survive termination or expiration of this Agreement: Sections 4.5.4 (with respect to any amounts

owed as of the effective date of termination), 4.6, 4.8.2, 4.8.3, 4.9, 5.2.8 (with respect to any amounts owed as of the effective date of termination), 5.7, 7.2 (solely in the circumstances set forth therein), 7.4 (solely in the circumstances set forth therein), 7.5 (solely in the circumstances set forth therein), 7.6 (solely in the circumstances set forth therein), 10.2, 10.3, 10.4.1, 10.4.4, 12.4, 14.4, 14.6, and Articles 1 (to the extent applicable to any other surviving provisions), 8 (solely with respect to any amounts paid or accrued prior to the effective date of termination), 9 (with respect to any amounts paid or payable prior to the effective date of termination), 11, 13 and 15 (excluding Section 15.3).

ARTICLE 15
MISCELLANEOUS

15.1 Severability. If any one (1) or more of the provisions of this Agreement is held to be invalid or unenforceable by any court of competent jurisdiction from which no appeal can be or is taken, such provision shall be considered severed from this Agreement and shall not serve to invalidate any remaining provisions hereof. The Parties shall make a good faith effort to replace any such severed provision with a valid and enforceable one such that the objectives contemplated by the Parties when entering this Agreement may be realized.

15.2 Notices. Any notice to be given under this Agreement must be in writing and delivered either in person, by (a) air mail (postage prepaid) requiring return receipt, (b) overnight courier, or (c) email, to the Party to be notified at its address(es) given below, or at any address such Party may designate by prior written notice to the other Party in accordance with this Section 15.2. Notice shall be deemed sufficiently given for all purposes upon the earliest of: (i) the date of actual receipt; (ii) if air mailed, [*] after the date of postmark; (iii) if delivered by overnight courier, the next day the overnight courier regularly makes deliveries; or (iv) if emailed, the date of confirmation of receipt if during the recipient's normal business hours, otherwise, the next day.

If to Atreca, notices must be addressed to:
Atreca, Inc.
450 E. Jamie Ct.
South San Francisco, CA 94080
Attention: [*]
Email: [*]

with a copy (which shall not constitute notice) to:
Cooley LLP
3175 Hanover Street
Palo Alto, CA 94304
Attention: Kate Hillier
Email: khillier@cooley.com

If to Xencor, notices must be addressed to:
Xencor, Inc.
111 West Lemon Avenue
Monrovia, CA 91016
Attention: [*]
Email: [*]

with a copy (which shall not constitute notice) to:
Xencor, Inc.
111 West Lemon Avenue
Monrovia, CA 91016
Attention: [*]
Email: [*]

15.3 Force Majeure. A Party shall not be liable for delay or failure in the performance of any of its obligations hereunder if such delay or failure is due to a cause beyond the reasonable control of such Party, including acts of God, fires, earthquakes, acts of war, terrorism, or civil unrest, or hurricane or other inclement weather ("**Force Majeure**"); provided, however, that the affected Party promptly notifies the other Party, and further provided that the affected Party shall use its Commercially Reasonable Efforts to avoid or remove such causes of non-performance and to mitigate the effect of such occurrence, and shall continue performance in accordance with the terms of this Agreement whenever such causes are removed. When such circumstances arise, the Parties shall negotiate in good faith any modifications of the terms of this Agreement that may be necessary or appropriate in order to arrive at an equitable solution.

15.4 Assignment. Except as expressly provided hereunder, neither this Agreement nor any rights or obligations hereunder may be assigned or otherwise transferred by either Party without the prior written consent of the other Party (which consent shall not be unreasonably withheld); provided, however, that either Party may assign or otherwise transfer this Agreement and its rights and obligations hereunder without the other Party's consent:

(a) in connection with the Change of Control of such Party relating to the subject matter of this Agreement to a Third Party, whether by merger, consolidation, divesture, restructure, sale of stock, sale of assets or otherwise, provided that [*], including to ensure that: [*]; or

(b) to an Affiliate, provided that the assigning Party shall remain liable and responsible to the non-assigning Party hereto for the performance and observance of all such duties and obligations by such Affiliate.

The rights and obligations of the Parties under this Agreement shall be binding upon and inure to the benefit of the successors and permitted assigns of the Parties specified above, and the name of a Party appearing herein will be deemed to include the name of such Party's successors and permitted assigns to the extent necessary to carry out the intent of this Section 15.4. Any assignment not in accordance with this Agreement shall be void

15.5 Acquisition by a Party. In the event of the acquisition by a Party of all or substantially all of the business of a Third Party, whether by merger, consolidation, divesture, restructure, sale of stock, sale of assets or otherwise, and as of the date of such acquisition, such Third Party has, or the acquired assets contain a program or product that existed prior to such acquisition that would otherwise violate ARTICLE 7 (an "**Acquired Program**"), then such Party shall not be deemed to be in violation of ARTICLE 7 if, within [*] following the closing of such acquisition, such Party [*]; provided further, that for so long as the acquiring Party or its Affiliates retain such Acquired Program, the Acquired Program is [*].

15.6 Subcontracting. Each Party may engage the services of any Third Party subcontractor to perform its activities under this Agreement without the other Party's prior written consent. Without limiting the foregoing, a subcontracting Party shall remain at all times responsible for the performance of its activities under this Agreement, and each Third Party subcontractor proposed to be engaged by a Party must meet the qualifications typically required by such Party for the performance of work similar in scope and complexity to the subcontracted activity. The subcontracting Party will (a) be responsible for ensuring compliance by any such subcontractor with the terms of this Agreement applicable to the subcontracted activities, as if such subcontractor were a party to this Agreement bound by the covenants made by such subcontracting Party hereunder; and (b) contractually require each such subcontractor to (i) be bound by confidentiality obligations that are substantially consistent with the obligations of confidentiality and non-use contained in this Agreement, (ii) prior to the time such subcontractor(s) initiates work, assign ownership of inventions made in the course activities under this Agreement to such Party in accordance with Section 10.4.4, and (iii) conduct the relevant activities under this Agreement in accordance with such Party's commitments hereunder. The activities of any such subcontractor will be deemed to be the activities of such subcontracting Party under this Agreement.

15.7 Change of Control. Each Party shall give the other Party written notice within [*] after the first public announcement or disclosure of any Change of Control of such Party; provided that any such Change of Control shall not affect any rights or obligations of such Party under this Agreement, other than as expressly provided herein.

15.8 Waivers and Modifications. The failure of any Party to insist on the performance of any obligation hereunder shall not be deemed to be a waiver of such obligation. Waiver of any breach of any provision hereof shall not be deemed to be a waiver of any other breach of such provision or any other provision on such occasion or any succeeding occasion. No waiver, modification, release, or amendment of any obligation under or provision of this Agreement shall be valid or effective unless in writing and signed by the Parties.

15.9 Choice of Law. This Agreement shall be governed by, enforced and construed in accordance with the laws of the State of New York and the patent laws of the United States without reference to any rules of conflict of laws or renvoi and excluding the United Nations Convention on Contracts for the International Sales of Goods; provided, however, that with respect to matters involving the validity or infringement of intellectual property rights in a given country, such matter

may be brought in the applicable country and the Applicable Laws of the applicable country shall apply (subject to Section 10.4.2).

15.10 Dispute Resolution.

15.10.1 Disputes. Upon the written request of either Party to the other Party, any claim, dispute, or controversy arising out of, relating to, or in connection with this Agreement, including the formation, applicability, breach, termination, enforceability, interpretation or validity thereof (other than any dispute the resolution of which is within the express authority of the JSC), (each, a "**Dispute Claim**"), shall be referred to the Executive Officer of Xencor and the Executive Officer of Atreca, for resolution. In the event the two individuals referred to in the preceding sentence are unable to resolve such dispute within [*] after the initial written request, then, upon the written demand of either Party, the Dispute Claim shall be finally resolved through arbitration, as provided in Section 15.10.2.

15.10.2 Arbitration.

(a) If the Parties are unable to resolve such Dispute Claim through the negotiations within [*] as described in Section 15.10.1, then, except in the case of a dispute, controversy or claim that concerns [*], the Dispute Claim shall be settled by arbitration administered by the American Arbitration Association in accordance with its Commercial Arbitration Rules as then in effect, except as modified herein. Any disputes concerning the propriety of the commencement of arbitration or the scope or applicability of this agreement to arbitrate shall be finally settled by the arbitral tribunal. The arbitral tribunal shall be comprised of three (3) independent and neutral experienced arbitrators, one (1) chosen by Xencor, one (1) chosen by Atreca and the third chosen by the foregoing two (2) arbitrators. Each Party shall select its arbitrator within [*] of one Party notifying the other Party that it is exercising its rights under this Section 15.10.2, and the two (2) arbitrators shall select the third arbitrator within [*] of their selection. The seat, or legal place of arbitration shall be San Francisco, California.

(b) The language of the arbitration shall be English. The Parties acknowledge that this Agreement evidences a transaction involving interstate commerce. Notwithstanding the provision in Section 15.9 with respect to applicable substantive law, any arbitration conducted pursuant to the terms of this Agreement shall be governed by the Federal Arbitration Act (9 U.S.C. §§ 1-16).

(c) Based on the materials submitted, the arbitrators shall determine whether any discovery process is necessary, and, if it is, the parameters of such process with the intent of resolving the arbitration as expeditiously as possible (e.g., limiting the number of depositions and the time discovery is permitted to take). The Parties and arbitrators shall employ procedures designed to resolve the conflict by arbitration within [*] of the dispute being referred for arbitration.

(d) The arbitrators shall have no authority to award punitive or any other type of damages not measured by a Party's compensatory damages and the arbitrators shall have

no authority to grant any award or remedy other than such awards or remedies that are available under the Applicable Law. Except to the extent necessary to prepare for or conduct the arbitration, to challenge, confirm or enforce an arbitral award, as may be required in connection with a court application for interim relief in aid of arbitration, or as may be required by law, neither a Party nor any arbitrator may disclose the existence, content, or results of an arbitration without the prior written consent of both Xencor and Atreca. In no event shall arbitration be initiated after the date when commencement of a legal or equitable proceeding based on the dispute, controversy or claim would have been barred by the applicable New York statute of limitations.

(e) Each Party shall bear its own attorneys' fees, costs and disbursements arising out of the arbitration, and shall pay an equal share of the fees and costs of the arbitrators; provided, however, that the arbitrators shall be authorized to determine whether a Party is the prevailing Party, and if so, to award to that prevailing Party reimbursement for its reasonable attorneys' fees, costs and disbursements (including, for example, expert witness fees and expenses, photocopy charges, travel expenses, etc.) and the fees and costs of the arbitrators. Each Party agrees to fully perform and satisfy any arbitration award made against it within [*] after confirmation of the award by a court of competent jurisdiction. Judgment on the award may be entered in any court of competent jurisdiction.

15.11 Relationship of the Parties. The Parties' relationship, as established by this Agreement, is solely that of independent contractors. This Agreement does not create any partnership, joint venture or similar business relationship between the Parties. Neither Party is a legal representative of the other Party, and neither Party can assume or create any obligation, representation, warranty or guarantee, express or implied, on behalf of the other Party for any purpose whatsoever. For clarity, the Parties acknowledge and agree that their activities hereunder will not create a partnership for tax purposes. The Parties (and any successor, assignee, transferee, or Affiliate of a Party) shall not treat or report the relationship between the Parties arising under this Agreement as a partnership for United States tax purposes, without the prior written consent of the other Party unless required by a final "determination" as defined in Section 1313 of the United States Internal Revenue Code of 1986, as amended.

15.12 No Third Party Beneficiaries. There are no express or implied Third Party beneficiaries hereunder. The provisions of this Agreement are for the exclusive benefit of the Parties, and no other person or entity shall have any right or claim against any Party by reason of these provisions or be entitled to enforce any of these provisions against any Party.

15.13 Entire Agreement. This Agreement, together with the attached Schedules, contains the entire agreement by the Parties with respect to the subject matter hereof and supersedes any prior express or implied agreements, understandings and representations, either oral or written, which may have related to the subject matter hereof in any way, including the Prior CDA and the Interim MTA, and any and all term sheets relating to the transactions contemplated by this Agreement and exchanged between the Parties prior to the Effective Date.

15.14 Counterparts. This Agreement may be executed in counterparts with the same effect as if both Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together, and shall constitute one and the same instrument. Any such counterpart, to the extent delivered by means of a fax machine or by .pdf, .tif, .gif, .jpeg or similar

attachment to electronic mail (any such delivery, an "**Electronic Delivery**") shall be treated in all manner and respects as an original executed counterpart and shall be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person. No Party hereto shall raise the use of Electronic Delivery to deliver a signature or the fact that any signature or agreement or instrument was transmitted or communicated through the use of Electronic Delivery as a defense to the formation of a contract, and each Party forever waives any such defense, except to the extent that such defense relates to lack of authenticity.

15.15 Equitable Relief; Cumulative Remedies. The Parties shall be entitled to seek equitable relief, including injunction and specific performance, as a remedy for any breach of this Agreement. Such remedies shall not be deemed to be the exclusive remedies for a breach of this Agreement but shall be in addition to all other remedies available at law or equity. No remedy referred to in this Agreement is intended to be exclusive, but each shall be cumulative and in addition to any other remedy referred to in this Agreement or otherwise available under Applicable Law.

15.16 Interpretation.

15.16.1 Generally. This Agreement has been diligently reviewed by and negotiated by and among the Parties, and in such negotiations each of the Parties has been represented by competent (in house or external) counsel, and the final agreement contained herein, including the language whereby it has been expressed, represents the joint efforts of the Parties and their counsel. Accordingly, in interpreting this Agreement or any provision hereof, no presumption shall apply against any Party as being responsible for the wording or drafting of this Agreement or any such provision, and ambiguities, if any, in this Agreement shall not be construed against any Party, irrespective of which Party may be deemed to have authored the ambiguous provision.

15.16.2 Definitions; Interpretation. The definitions of the terms herein shall apply equally to the singular and plural forms of the terms defined and where a word or phrase is defined herein, each of its other grammatical forms shall have a corresponding meaning. Whenever the context may require, any pronoun shall include the corresponding masculine, feminine, and neuter forms. The word "will" shall be construed to have the same meaning and effect as the word "shall". The word "any" shall mean "any and all" unless otherwise clearly indicated by context. The words "including", "includes", "include", "for example" and "e.g." and words of similar import will be deemed to be followed by the words "without limitation." The word "or" is disjunctive but not necessarily exclusive. The words "hereof", "herein" and "herewith" and words of similar import shall, unless otherwise stated, be construed to refer to this Agreement as a whole and not to any particular provision of this Agreement. Unless the context requires otherwise or otherwise specifically provided, (a) all references herein to Articles, Sections, or Schedules shall be construed to refer to Articles, Sections, and Schedules of this Agreement and (b) reference in any Section to any subclauses are references to such subclauses of such Section.

15.16.3 Subsequent Events. Unless the context requires otherwise, (a) any definition of or reference to any agreement, instrument, or other document herein shall be construed as referring to such agreement, instrument, or other document as from time to time amended, supplemented, or otherwise modified (subject to any restrictions on such amendments,

supplements, or modifications set forth herein), (b) any reference to any Applicable Law herein shall be construed as referring to such Applicable Law as from time to time enacted, repealed, or amended, and (c) any reference herein to any Person shall be construed to include the Person's successors and assigns (subject to Section 15.4).

15.16.4 Headings. Headings, captions and the table of contents are for convenience only and are not to be used in the interpretation of this Agreement.

15.16.5 Prior Drafts. No prior draft of this Agreement nor any course of performance or course of dealing shall be used in the interpretation or construction of this Agreement.

15.16.6 Independent Significance. Although the same or similar subject matters may be addressed in different provisions of this Agreement, the Parties intend that, except as reasonably apparent on the face of this Agreement or as expressly provided in this Agreement, each such provision shall be read separately, be given independent significance and not be construed as limiting any other provision of this Agreement (whether or not more general or more specific in scope, substance or content).

15.17 Further Assurances. Each Party shall execute, acknowledge and deliver such further instruments, and do all such other ministerial, administrative or similar acts, as may be reasonably necessary or appropriate in order to carry out the expressly stated purposes and the clear intent of this Agreement.

[Signature Page Follows]

IN WITNESS WHEREOF, and intending to be legally bound hereby, the Parties have caused this COLLABORATION AND LICENSE AGREEMENT to be executed by their respective duly authorized officers as of the Effective Date.

XENCOR, INC.	**ATRECA, INC.**
By: /s/ Bassil Dahiyat	By: /s/ John A. Orwin
Name: Bassil Dahiyat	Name: John A. Orwin
Title: President and CEO	Title: President and CEO

EXHIBIT A

Profit & Loss Share

[*]

Schedule 1.68

[*]

[*]

Schedule 1.94

Research Plan

[*]

Schedule 11.6

Joint Press Release

Atreca and Xencor Enter Strategic Collaboration to Discover, Develop and Commercialize Novel T Cell Engaging Bispecific Antibodies

SOUTH SAN FRANCISCO, Calif. and MONROVIA, Calif. – July 8, 2020 -- Atreca, Inc. (Atreca) (NASDAQ: BCEL), a clinical-stage biotechnology company focused on developing novel therapeutics generated through a unique discovery platform based on interrogation of the active human immune response, and Xencor, Inc. (NASDAQ: XNCR), a clinical-stage biopharmaceutical company developing engineered monoclonal antibodies for the treatment of cancer and autoimmune diseases, today announced that the companies have entered into a collaboration and license agreement to research, develop and commercialize T cell-engaging bispecific antibodies as potential therapeutics in oncology.

Bispecific antibodies that direct T cells to tumor cells, by simultaneously binding CD3 on T cells and a target on tumor cells, have the potential to drive tumor cell killing. This collaboration will leverage Xencor's XmAb® engineering platform to design and manufacture CD3 bispecific antibodies and Atreca's ability to generate novel antibody-target pairs through its discovery platform, including its Immune Repertoire Capture® (IRC™) technology.

Under the terms of the agreement, the companies will engage in a three-year discovery program. Atreca will provide antibodies against novel tumor targets from which Xencor will engineer XmAb bispecific antibodies that also bind to the CD3 receptor on T cells. Up to two joint programs will be mutually selected for further development and commercialization, with each partner sharing 50 percent of costs and profits. Each company will lead development, regulatory and commercialization activities for one of the joint programs. In addition, the agreement allows for each partner to pursue up to two programs independently, with a mid-to high-single digit percent royalty payable on net sales. Atreca and Xencor began working together in 2019 under a material transfer agreement to accelerate this new collaboration agreement.

“We are proud to be partnering with Xencor, a leader in the engineering and development of antibody therapeutics,” said John A. Orwin, Chief Executive Officer of Atreca. “We

believe this collaboration leverages two approaches with the potential to be highly complementary and underscores the value of novel antibody-target pairs in the development of cancer therapeutics. We are encouraged by the work already completed under our initial agreement and look forward to a productive partnership, as well as the prospect of adding T cell-engaging bispecific product candidates to our clinical pipeline."

"Xencor is building a broad portfolio of drug candidates based on our XmAb technologies, which enable us to create therapeutic antibodies and other proteins with enhanced properties and new mechanisms of action," said Bassil Dahiyat, Ph.D., president and chief executive officer at Xencor. "Atreca's unique discovery platform complements our protein engineering capabilities and bispecific platform by providing novel, tumor-selective antibodies and targets to engage with cytotoxic T cell killing. This collaboration offers both Xencor and Atreca with several opportunities to advance novel first-in-class CD3 bispecific antibodies for the potential treatment of patients with cancer."

About XmAb® Bispecific Fc Technology and CD3 Bispecific Antibodies
XmAb® bispecific Fc domains enable the rapid design and simplified development of bispecific antibodies, and other protein structures, that can bind two or more different targets simultaneously using an engineered heterodimer Fc domain. CD3 bispecific antibodies contain an anti-tumor associated antigen binding domain and a second binding domain targeted to CD3, an activating receptor on T cells, with the goal to recruit or activate T cells against the antigen target. Xencor has developed a mixed valency format, the XmAb 2+1 bispecific antibody, with two domains that bind a tumor target, which preferentially may bind and kill tumor cells with high target expression while potentially sparing low-expression normal tissues.

About Atreca, Inc.
Atreca is a biopharmaceutical company developing novel antibody-based immunotherapeutics generated by its differentiated discovery platform. Atreca's platform allows access to an unexplored landscape in oncology through the identification of unique antibody-target pairs generated by the human immune system during an active immune response against tumors. These antibodies provide the basis for first-in-class therapeutic candidates, such as our lead product candidate ATRC-101. A Phase 1b study evaluating ATRC-101 in multiple solid tumor cancers is currently enrolling patients. For more information on Atreca, please visit www.atreca.com.

About Xencor, Inc.
Xencor is a clinical-stage biopharmaceutical company developing engineered monoclonal antibodies for the treatment of cancer and autoimmune diseases. Currently, 17 candidates engineered with Xencor's XmAb® technology are in clinical development internally and with partners. Xencor's XmAb antibody engineering technology enables small changes to the structure of monoclonal antibodies resulting in new mechanisms of therapeutic action. For more information, please visit www.xencor.com.

Atreca Forward-Looking Statements
This release contains forward-looking statements regarding our strategy and future plans, including statements regarding the potential to add T-cell engaging bispecific product

candidates to our clinical pipeline, the development of ATRC-101 and our clinical and regulatory plans, and the timing thereof. These forward-looking statements include, but are not limited to, statements about our plans, objectives, representations and contentions and are not historical facts and typically are identified by use of terms such as “will”, “believe,” “potential,” “prospect,” and similar words, although some forward-looking statements are expressed differently. Our actual results may differ materially from those indicated in these forward-looking statements due to risks and uncertainties related to the initiation, timing, progress and results of our research and development programs, preclinical studies, any clinical trials and Investigational New Drug application and other regulatory submissions, and other matters that are described in our most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission (SEC) and available on the SEC’s website at www.sec.gov, including the risk factors set forth therein. Investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this release, and we undertake no obligation to update any forward-looking statement in this press release, except as required by law.

Xencor Forward-Looking Statements
Statements contained in this press release regarding matters that are not historical facts are forward-looking statements within the meaning of applicable securities laws, including, but not limited to, the quotations from Xencor's president and chief executive officer and any expectations relating to future product candidates and Xencor's research and development programs. Such statements involve known and unknown risks, uncertainties and other factors that may cause actual results, performance or achievements and the timing of events to be materially different from those implied by such statements, and therefore these statements should not be read as guarantees of future performance or results. Such risks include, without limitation, the risks associated with the process of discovering, developing, manufacturing and commercializing drugs that are safe and effective for use as human therapeutics and other risks described in Xencor's public securities filings. For a discussion of these and other factors, please refer to Xencor's annual report on Form 10-K for the year ended December 31, 2019 as well as Xencor's subsequent filings with the Securities and Exchange Commission. All forward-looking statements are based on Xencor's current information and belief as well as assumptions made by Xencor. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. This caution is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. All forward-looking statements are qualified in their entirety by this cautionary statement and Xencor undertakes no obligation to revise or update this press release to reflect events or circumstances after the date hereof, except as required by law.

Atreca Contacts

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info@atreca.com

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619-849-6005
jason@canalecomm.com

Schedule [*]

[*]

[*]

Exhibit 10.2

ATRECA, INC.

$100,000,000

CLASS A COMMON STOCK

SALES AGREEMENT

August 12, 2020

Cowen and Company, LLC
599 Lexington Avenue
New York, NY 10022

Ladies and Gentlemen:

Atreca, Inc., a Delaware corporation (the "**Company**"), confirms its agreement (this "**Agreement**") with Cowen and Company, LLC ("**Cowen**"), as follows:

1. Issuance and Sale of Shares. The Company agrees that, from time to time during the term of this Agreement, on the terms and subject to the conditions set forth herein and any Terms Agreement (as defined below), it may issue and sell to or through Cowen, acting as agent and/or principal, shares (the "**Shares**") of the Company's Class A common stock, par value $0.0001 per share (the "**Common Stock**"), having an aggregate offering price of up to $100,000,000 (the "**Maximum Amount**"). Notwithstanding anything to the contrary contained herein, the parties hereto agree that compliance with the limitation set forth in this Section 1 on the number or dollar amount of shares of Common Stock issued and sold under this Agreement and any Terms Agreement shall be the sole responsibility of the Company, and Cowen shall have no obligation in connection with such compliance. The issuance and sale of Common Stock through Cowen will be effected pursuant to the Registration Statement (as defined below) filed, or to be filed, by the Company and after such Registration Statement has been declared effective by the Securities and Exchange Commission (the "**Commission**"), although nothing in this Agreement shall be construed as requiring the Company to use the Registration Statement (as defined below) to issue the Common Stock.

The Company shall file, in accordance with the provisions of the Securities Act of 1933, as amended, and the rules and regulations thereunder (collectively, the "**Securities Act**"), with the Commission a registration statement on Form S-3 (File No. 333-239652), including a base prospectus, relating to certain securities, including the Common Stock, to be issued from time to time by the Company, and which incorporates by reference documents that the Company has filed or will file in accordance with the provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder (collectively, the "**Exchange Act**"). The Company has prepared a prospectus supplement specifically relating to the Shares (the "**ATM Prospectus**") to the base prospectus included as part of such registration statement, and shall, if necessary, prepare a prospectus supplement specifically relating to the Shares (the "**Prospectus Supplement**") to the base prospectus included as part of such registration statement. The

Company shall furnish to Cowen, for use by Cowen, copies of the prospectus included as part of such registration statement, as supplemented by the Prospectus Supplement, if any, relating to the Shares. Except where the context otherwise requires, such registration statement, and any post-effective amendment thereto, as amended when it became effective, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus (as defined below) subsequently filed with the Commission pursuant to Rule 424(b) under the Securities Act or deemed to be a part of such registration statement pursuant to Rule 430B or 462(b) of the Securities Act, or any subsequent registration statement on Form S-3 filed pursuant to Rule 415(a)(6) under the Securities Act by the Company to cover any Shares, is herein called the "**Registration Statement**." The base prospectus, including all documents incorporated therein by reference, included in the Registration Statement, as it may be supplemented by the ATM Prospectus and the Prospectus Supplement, if any, in the form in which such prospectus, ATM Prospectus and/or Prospectus Supplement have most recently been filed by the Company with the Commission pursuant to Rule 424(b) under the Securities Act, together with any "issuer free writing prospectus," as defined in Rule 433 of the Securities Act regulations ("**Rule 433**"), relating to the Shares that (i) is consented to by Cowen (including any free writing prospectus prepared by the Company solely for use in connection with the offering contemplated by a particular Terms Agreement), hereinafter referred to as a "**Permitted Free Writing Prospectus**," (ii) is required to be filed with the Commission by the Company or (iii) is exempt from filing pursuant to Rule 433(d)(5)(i), in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company's records pursuant to Rule 433(g), is herein called the "**Prospectus**." Any reference herein to the Registration Statement, the Prospectus or any amendment or supplement thereto shall be deemed to refer to and include the documents incorporated by reference therein, and any reference herein to the terms "amend," "amendment" or "supplement" with respect to the Registration Statement or the Prospectus shall be deemed to refer to and include the filing after the execution hereof of any document with the Commission deemed to be incorporated by reference therein. For purposes of this Agreement, all references to the Registration Statement, the Prospectus or to any amendment or supplement thereto shall be deemed to include any copy filed with the Commission pursuant to the Electronic Data Gathering Analysis and Retrieval System ("**EDGAR**").

2. Agency and Principal Transactions. (a) Each time that the Company wishes to issue and sell the Shares hereunder through Cowen, acting as agent (each, an "**Agency Transaction**"), it will notify Cowen by email notice (or other method mutually agreed to in writing by the parties) (a "**Placement Notice**") containing the parameters in accordance with which it desires the Shares to be sold, which shall at a minimum include the number of Shares to be issued, the time period during which sales are requested to be made, any limitation on the number or dollar amount of Shares that may be sold in any one Trading Day (as defined in Section 3) and any minimum price below which sales may not be made, a form of which containing such minimum sales parameters necessary is attached hereto as **Schedule 1**. The Placement Notice shall originate from any of the individuals from the Company set forth on **Schedule 2** (with a copy to each of the other individuals from the Company listed on such schedule), and shall be addressed to each of the individuals from Cowen set forth on **Schedule 2**, as such **Schedule 2** may be amended from time to time. The Placement Notice shall be effective

upon receipt by Cowen unless and until (i) in accordance with the notice requirements set forth in Section 4, Cowen declines to accept the terms contained therein for any reason, in its sole discretion, (ii) the entire amount of the Shares have been sold, (iii) in accordance with the notice requirements set forth in Section 4, the Company suspends or terminates the Placement Notice, (iv) the Company issues a subsequent Placement Notice with parameters superseding those on the earlier dated Placement Notice, or (v) this Agreement has been terminated under the provisions of **Section 11**. The amount of any discount, commission or other compensation to be paid by the Company to Cowen in connection with the sale of the Shares shall be calculated in accordance with the terms set forth in **Schedule 3.** It is expressly acknowledged and agreed that neither the Company nor Cowen will have any obligation whatsoever with respect to an Agency Transaction or any Shares unless and until the Company delivers a Placement Notice to Cowen and Cowen does not decline such Placement Notice pursuant to the terms set forth above, and then only upon the terms specified therein and herein. In the event of a conflict between the terms of this Agreement and the terms of a Placement Notice, the terms of the Placement Notice will control.

(b) The Company may also offer to sell the Shares directly to Cowen, as principal, in which event such parties shall enter into a separate agreement (each, a "**Terms Agreement**") in substantially the form of **Exhibit 2(b)** hereto (with such changes thereto as may be agreed upon by the Company and Cowen), relating to such sale in accordance with Section 3(b) hereof (each such transaction being referred to as a "**Principal Transaction**").

3. Sale of Shares by Cowen. (a) Subject to the terms and conditions herein set forth, upon the Company's delivery of a Placement Notice with respect to an Agency Transaction, and unless the sale of the Shares described therein has been declined, suspended, or otherwise terminated in accordance with the terms of this Agreement, Cowen, for the period specified in the Placement Notice, will use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of The Nasdaq Stock Market, Inc. ("**Nasdaq**") to sell such Shares up to the amount specified, and otherwise in accordance with the terms of such Placement Notice. Cowen will provide written confirmation to the Company (including by email correspondence to each of the individuals of the Company set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) no later than the opening of the Trading Day (as defined below) immediately following the Trading Day on which it has made sales of Shares hereunder setting forth the number of Shares sold on such day, the volume-weighted average price of the Shares sold, and the Net Proceeds (as defined below) payable to the Company. In the event the Company engages Cowen for a sale of Shares in an Agency Transaction that would constitute a "block" within the meaning of Rule 10b-18(a)(5) under the Exchange Act (a "**Block Sale**"), the Company will provide Cowen, at Cowen's request and upon reasonable advance notice to the Company, on or prior to the Settlement Date (as defined below), the opinions of counsel, accountant's letter and officers' certificates set forth in Section 8 hereof, each dated the Settlement Date, and such other documents and information as Cowen shall reasonably request. Cowen may sell Shares by any method permitted by law deemed to be an "at the market" offering as defined in Rule 415 of the Securities Act. The Company acknowledges and agrees that (i) there can be no assurance that

Cowen will be successful in selling Shares, and (ii) Cowen will incur no liability or obligation to the Company or any other person or entity if it does not sell Shares for any reason other than a failure by Cowen to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such Shares as required under this Section 3. For the purposes hereof, "**Trading Day**" means any day on which the Company's Common Stock is purchased and sold on the principal market on which the Common Stock is listed or quoted.

(b) (i) If the Company wishes to issue and sell the Shares to Cowen pursuant to this Agreement in a Principal Transaction, it will notify Cowen of the proposed terms of the Principal Transaction. If Cowen, acting as principal, wishes to accept such proposed terms (which it may decline to do for any reason in its sole discretion) or, following discussions with the Company, wishes to accept amended terms, the Company and Cowen shall enter into a Terms Agreement setting forth the terms of such Principal Transaction.

(ii) The terms set forth in a Terms Agreement shall not be binding on the Company or Cowen unless and until the Company and Cowen have each executed and delivered such Terms Agreement accepting all of the terms of such Terms Agreement. In the event of a conflict between the terms of this Agreement and the terms of a Terms Agreement, the terms of such Terms Agreement shall control.

(iii) Each sale of the Shares to Cowen in a Principal Transaction shall be made in accordance with the terms of this Agreement and a Terms Agreement, which shall provide for the sale of such Shares to, and the purchase thereof by, Cowen. A Terms Agreement may also specify certain provisions relating to the reoffering of such Shares by Cowen. The commitment of Cowen to purchase the Shares pursuant to any Terms Agreement shall be deemed to have been made on the basis of the representations, warranties and agreements of the Company contained, and shall be subject to the terms and conditions set forth, in this Agreement and such Terms Agreement. Any such Terms Agreement shall specify the number of the Shares to be purchased by Cowen pursuant thereto, the price to be paid to the Company for such Shares, any provisions relating to rights of, and default by, Cowen in the reoffering of the Shares, and the time, date (each such time and date being referred to herein as a "**Principal Settlement Date**") and place of delivery of and payment for such Shares.

(c) Notwithstanding any other provision of this Agreement, the Company shall not offer, sell or deliver, or request the offer or sale, of any Shares pursuant to this Agreement (whether in an Agency Transaction or a Principal Transaction) and, by notice to Cowen given by telephone (confirmed promptly by email), shall cancel any instructions for the offer or sale of any Shares, and Cowen shall not be obligated to offer or sell any Shares, (i) during any period in which the Company is, or could be deemed to be, in possession of material non-public information, or (ii) at any time from and including the date on which the Company shall issue a press release containing, or shall otherwise publicly announce, its earnings, revenues or other results of operations (an "**Earnings Announcement**") through and including the time that the Company files a Quarterly Report on Form 10-Q or an Annual Report on Form 10-K that includes consolidated financial statements as of and for the same period or periods, as the case may be, covered by such Earnings Announcement.

4. Suspension of Sales.

(a) The Company or Cowen may, upon notice to the other party in writing (including by email correspondence to each of the individuals of the other party set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) or by telephone (confirmed immediately by verifiable facsimile transmission or email correspondence to each of the individuals of the other party set forth on **Schedule 2**), suspend any sale of Shares; *provided, however*, that such suspension shall not affect or impair either party's obligations with respect to any Shares sold hereunder prior to the receipt of such notice. While a suspension is in effect, any obligation under Sections 7(m), 7(n) and 7(o) with respect to delivery of certificates, opinion, or comfort letters to Cowen, shall be waived. Each of the parties agrees that no such notice under this Section 4 shall be effective against the other unless it is made to one of the individuals named on **Schedule 2** hereto, as such schedule may be amended from time to time.

(b) If either Cowen or the Company has reason to believe that the exemptive provisions set forth in Rule 101(c)(1) of Regulation M under the Exchange Act are not satisfied with respect to the Common Stock, it shall promptly notify the other party, and Cowen or the Company may, at its sole discretion, suspend sales of the Shares under this Agreement.

(c) The Registration Statement was declared effective on July 10, 2020. Notwithstanding any other provision of this Agreement, during any period in which the Registration Statement is no longer effective under the Securities Act, the Company shall promptly notify Cowen, the Company shall not request the sale of any Shares, and Cowen shall not be obligated to sell or offer to sell any Shares.

5. Settlement.

(a) Settlement of Shares. Unless otherwise specified in the applicable Placement Notice, settlement for sales of Shares in an Agency Transaction will occur on the second (2nd) Trading Day (or such earlier day as is industry practice for regular-way trading) following the date on which such sales are made (each, an "**Agency Settlement Date**" and the first such Agency Settlement Date, the "**First Delivery Date**"; and any Agency Settlement Date and Principal Settlement Date shall be referred to as a "**Settlement Date**"). The amount of proceeds to be delivered to the Company on a Settlement Date against receipt of the Shares sold (the "**Net Proceeds**") will be equal to the aggregate sales price received by Cowen at which such Shares were sold, after deduction for (i) Cowen's commission, discount or other compensation for such sales payable by the Company pursuant to Section 2 hereof or pursuant to any applicable Terms Agreement, (ii) any other amounts due and payable by the Company to Cowen hereunder pursuant to Section 7(g) (Expenses) hereof, and (iii) any transaction fees imposed by any governmental or self-regulatory organization in respect of such sales.

(b) Delivery of Shares. On or before each Settlement Date, the Company will, or will cause its transfer agent to, electronically transfer the Shares being sold by crediting Cowen's or its designee's account (provided Cowen shall have given the Company written notice of such

designee prior to the Settlement Date) at The Depository Trust Company through its Deposit and Withdrawal at Custodian System or by such other means of delivery as may be mutually agreed upon by the parties hereto which in all cases shall be freely tradeable, transferable, registered shares in good deliverable form. On each Settlement Date, Cowen will deliver the related Net Proceeds in same day funds to an account designated by the Company on, or prior to, the Settlement Date. The Company agrees that if the Company, or its transfer agent (if applicable), defaults in its obligation to deliver duly authorized Shares on a Settlement Date (except if such default was caused by Cowen), the Company agrees that in addition to and in no way limiting the rights and obligations set forth in Section 9(a) (Indemnification and Contribution) hereto, it will (i) hold Cowen harmless against any loss, claim, damage, or expense (including reasonable and documented legal fees and expenses), as incurred, arising out of or in connection with such default by the Company and (ii) pay to Cowen (without duplication) any commission, discount, or other compensation to which it would otherwise have been entitled absent such default.

6. Representations and Warranties of the Company. The Company represents and warrants to, and agrees with, Cowen that, unless such representation or warranty specifies a different time, as of (i) the date of this Agreement, (ii) each date on which the Company executes and delivers a Terms Agreement, (iii) each Time of Sale (defined below), (iv) each Settlement Date, and (v) each Bring-Down Date (as defined below) (each such date included in (i) through (v) above, a "**Representation Date**"):

(a) Compliance with Registration Requirements. The Registration Statement and any Rule 462(b) Registration Statement have been declared effective by the Commission under the Securities Act. The Company has complied to the Commission's satisfaction with all requests of the Commission for additional or supplemental information in connection therewith. No stop order suspending the effectiveness of the Registration Statement or any Rule 462(b) Registration Statement is in effect and no proceedings for such purpose have been instituted or are pending or, to the best knowledge of the Company, contemplated or threatened by the Commission. The Company meets the requirements for use of Form S-3 under the Securities Act. The sale of the Shares hereunder meets the requirements of General Instruction I.B.1 of Form S-3.

(b) No Misstatement or Omission. The Prospectus when filed complied and, as amended or supplemented, if applicable, will comply in all material respects with the Securities Act. Each of the Registration Statement, any Rule 462(b) Registration Statement, the Prospectus and any post-effective amendments or supplements thereto, at the time it became effective or its date, as applicable, complied and as of each of Representation Date complied and will comply in all material respects with the Securities Act and did not and, as of each Representation Date did not and will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. The Prospectus, as amended or supplemented, as of its date, did not and, as of each Representation Date, will not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The representations and warranties set forth in the two immediately preceding sentences do not apply to statements in or omissions from the Registration Statement, any Rule 462(b) Registration Statement, or any post-effective amendment thereto, or the Prospectus, or any amendments or supplements thereto, made in

reliance upon and in conformity with information relating to Agent's Information (as defined below). There are no contracts or other documents required to be described in the Prospectus or to be filed as exhibits to the Registration Statement which have not been described or filed as required. As used herein, "**Time of Sale**" means (i) with respect to each offering of Shares pursuant to this Agreement, the time of Cowen's initial entry into contracts with purchasers for the sale of such Shares and (ii) with respect to each offering of Shares pursuant to any relevant Terms Agreement, the time of sale of such Shares to Cowen. "**Agent's Information**" means, solely the following information in the Prospectus: the fifth paragraph and the last sentence of the eighth paragraph under the caption "Plan of Distribution" in the Prospectus.

(c) Offering Materials Furnished to Cowen. The Company has delivered to Cowen one complete copy of the Registration Statement and a copy of each consent and certificate of experts filed as a part thereof, and conformed copies of the Registration Statement (without exhibits) and the Prospectus, as amended or supplemented, in such quantities and at such places as Cowen has reasonably requested. The Registration Statement, the Prospectus and any Permitted Free Writing Prospectus (to the extent any such Permitted Free Writing Prospectus was required to be filed with the Commission) delivered to Cowen for use in connection with the public offering of the Shares contemplated herein or by any Terms Agreement have been and will be identical to the versions of such documents transmitted to the Commission for filing via EDGAR, except to the extent permitted by Regulation S-T.

(d) Emerging Growth Company. As of the date of this Agreement, the Company is an "emerging growth company," as defined in Section 2(a) of the Securities Act. The Company agrees to notify Cowen promptly upon the Company ceasing to be an emerging growth company.

(e) Not an Ineligible Issuer. The Company currently is not an "ineligible issuer," as defined in Rule 405 under the Securities Act. The Company agrees to notify Cowen promptly upon the Company becoming an "ineligible issuer."

(f) Distribution of Offering Material By the Company. The Company has not distributed and will not distribute, prior to the completion of Cowen's distribution of the Shares, any offering material in connection with the offering and sale of the Shares other than the Prospectus or the Registration Statement.

(g) The Sales Agreement; Terms Agreement. This Agreement has been duly authorized, executed and delivered by, and is a valid and binding agreement of, the Company, enforceable in accordance with its terms, except as rights to indemnification hereunder may be limited by applicable law and except as the enforcement hereof may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws relating to or affecting the rights and remedies of creditors or by general equitable principles. Any Terms Agreement will have been duly authorized, executed and delivered by the Company and, assuming due authorization, execution and delivery by the other parties thereto, will be a legal, valid and binding agreement of the Company enforceable in accordance with its terms, except as may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally, and by general equitable principles.

(h) Authorization of the Common Stock. The Shares, when issued and delivered, will be duly authorized for issuance and sale pursuant to this Agreement and any Terms Agreement and, when issued and delivered by the Company against payment therefor pursuant to this Agreement, will conform to the descriptions thereof in the Registration Statement and the Prospectus and will be duly authorized, validly issued, fully paid and nonassessable, free and clear of any pledge, lien, encumbrance, security interest or other claim, and the issuance and sale of the Shares by the Company is not subject to preemptive or other similar rights arising by

operation of law, under the organizational documents of the Company or under any agreement to which the Company or any Subsidiary (as defined below) is a party or otherwise.

(i) Ownership of Subsidiaries. All of the outstanding shares of capital stock (if any) of each subsidiary (if any) of the Company (each a "**Subsidiary**") are, except to the extent set forth in the Prospectus, owned by the Company directly or indirectly through one or more wholly-owned Subsidiaries, free and clear of any claim, lien, encumbrance, security interest, restriction upon voting or transfer or any other claim of any third party.

(j) No Applicable Registration or Other Similar Rights. There are no persons with registration or other similar rights to have any equity or debt securities registered for sale under the Registration Statement or included in the offering contemplated by this Agreement or any Terms Agreement, except for such rights as have been duly waived.

(k) No Material Adverse Change. Except as otherwise disclosed in the Prospectus, neither the Company nor any of its Subsidiaries has sustained, since the date of the latest audited financial statements included in the Prospectus, (i) any material loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or action, order or decree of any court or governmental or regulatory authority, otherwise than as set forth or contemplated in the Prospectus; (ii) any material change in the capital stock (other than the issuance of shares of Common Stock upon exercise of stock options and warrants described as outstanding under, and the grant of options and awards under, existing equity incentive plans described in the Registration Statement and the Prospectus) or long-term debt of the Company or any of its Subsidiaries, or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock; or (iii) any material adverse changes, or any development involving a prospective material adverse change, in or affecting the business, properties, assets, general affairs, management, financial position, prospects, stockholders' equity or results of operations of the Company and its Subsidiaries taken as a whole, otherwise than as set forth or contemplated in the Prospectus (any such change, a "**Material Adverse Change**").

(l) Independent Accountants. OUM & Co. LLP, who has expressed its opinion with respect to the financial statements (which term as used in this Agreement includes the related notes thereto) and supporting schedules filed with the Commission or incorporated by reference as a part of the Registration Statement and included in the Prospectus, is an independent registered public accounting firm as required by the Securities Act and the Exchange Act.

(m) Preparation of the Financial Statements. The financial statements, together with the related notes, filed with the Commission as a part of or incorporated by reference in the

Registration Statement and included or incorporated by reference in the Prospectus present fairly the consolidated financial position of the Company and its Subsidiaries as of and at the dates indicated and the results of their operations and cash flows for the periods specified. Such financial statements and related notes have been prepared in accordance with the generally accepted accounting principles as applied in the United States applied on a consistent basis throughout the periods involved, except as may be expressly set forth in the related notes thereto and provided that unaudited interim financial statements, which are subject to normal year-end adjustments, may not contain certain footnotes, as permitted by the rules of the Commission. The financial statements, together with the related notes, incorporated by reference in the Registration Statement and the Prospectus comply in all material respects with Regulation S-X. No other financial statements or supporting schedules or exhibits are required by Regulation S-X to be included in or incorporated in the Registration Statement. The summary and selected financial data included or incorporated in the Prospectus fairly present in all material respects the information shown therein at the respective dates and for the respective periods specified and are derived from the consolidated financial statements included or incorporated by reference in the Registration Statement.

(n) XBRL. The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement fairly presents the information called for in all material respects and has been prepared in accordance with the Commission's rules and guidelines applicable thereto.

(o) Organization and Good Standing of the Company and its Subsidiaries. The Company and each of its Subsidiaries have been duly organized and are validly existing as corporations or other legal entities in good standing (or the foreign equivalent thereof) under the laws of their respective jurisdictions of organization. The Company and each of its Subsidiaries are duly qualified to do business and are in good standing as foreign corporations or other legal entities in each jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such qualification and have all power and authority (corporate or other) necessary to own or hold their respective properties and to conduct the businesses in which they are engaged, except where the failure to so qualify or have such power or authority would not (i) reasonably be likely to have a material adverse effect on the business, properties, management, financial position, stockholders' equity, results of operations or prospects of the Company and its Subsidiaries taken as a whole, or (ii) impair in any material respect the ability of the Company to issue and sell the Shares under this Agreement and any Terms Agreement (any such effect as described in clauses (i) or (ii), a "**Material Adverse Effect**"). The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the Subsidiaries listed in Exhibit 21.1 to the Company's Annual Report on Form 10-K for the most recently ended fiscal year.

(p) Capital Stock Matters. The Common Stock conforms in all material respects to the description thereof contained in the Prospectus. All of the issued and outstanding shares of Common Stock have been duly authorized and validly issued, are fully paid and nonassessable and have been issued in compliance with federal and state securities laws. None of the outstanding shares of Common Stock were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There

are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company or any of its Subsidiaries other than those accurately described in all material respects in the Prospectus. The description of the Company's stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, set forth in the Prospectus accurately and fairly presents in all material respects the information required to be shown with respect to such plans, arrangements, options and rights.

(q) Non-Contravention of Existing Instruments; No Further Authorizations or Approvals Required. The execution, delivery and performance of this Agreement and any Terms Agreement by the Company, the issuance and sale of the Shares by the Company and the consummation of the transactions contemplated hereby and thereby will not (with or without notice or lapse of time or both) (i) conflict with or result in a breach or violation of any of the terms or provisions of, constitute a default or a Debt Repayment Triggering Event (as defined below) under, or result in the creation or imposition of any lien, encumbrance, security interest, claim or charge upon any property or assets of the Company or any Subsidiary pursuant to, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its Subsidiaries is a party or by which the Company or any of its Subsidiaries is bound or to which any of the property or assets of the Company or any of its Subsidiaries is subject, (ii) result in any violation of the provisions of the charter or by-laws (or analogous governing instruments, as applicable) of the Company or any of its Subsidiaries or (iii) result in the violation of any law, statute, rule, regulation, judgment, order or decree of any court or governmental or regulatory agency or body, domestic or foreign, having jurisdiction over the Company or any of its Subsidiaries or any of their properties or assets except, in the case of clauses (i) and (iii) above, for any such conflict, breach, violation or default that would not, individually or in the aggregate, have a Material Adverse Effect. A "**Debt Repayment Triggering Event**" means any event or condition that gives, or with the giving of notice or lapse of time would give the holder of any note, debenture or other evidence of indebtedness (or any person acting on such holder's behalf) the right to require the repurchase, redemption or repayment of all or a portion of such indebtedness by the Company of any of its Subsidiaries.

(r) No Consents Required. Except for the registration of the Shares under the Securities Act, and applicable state securities laws, and such consents, approvals, authorizations, orders and registrations or qualifications as may be required by the Financial Industry Regulatory Authority ("**FINRA**") and The Nasdaq Global Market in connection with the purchase and sale of the Shares hereunder and the listing of the Shares on The Nasdaq Global Market, no consent, approval, authorization or order of, or filing, qualification or registration (each an "**Authorization**") with, any court, governmental or regulatory agency or body, foreign or domestic, which has not been made, obtained or taken and is not in full force and effect, is required for the execution, delivery and performance of this Agreement and any Terms Agreement by the Company, the issuance and sale of the Shares or the consummation of the transactions contemplated hereby and thereby; and no event has occurred that allows or results in, or after notice or lapse of time or both would allow or result in, revocation, suspension, termination or invalidation of any such Authorization or any other impairment of the rights of the holder or maker of any such Authorization.

(s) No Material Actions or Proceedings. Except as set forth in the Prospectus, there is no legal or governmental proceeding to which the Company or any of its Subsidiaries is a party or of which any property or assets of the Company or any of its Subsidiaries is the subject, including any proceeding before the United States Food and Drug Administration of the U.S. Department of Health and Human Services ("**FDA**") or comparable federal, state, local or foreign governmental bodies (it being understood that the interaction between the Company and the FDA and such comparable governmental bodies relating to the development and product approval process shall not be deemed proceedings for purposes of this representation), which is required to be described in the Registration Statement or the Prospectus and is not described therein, or which, singularly or in the aggregate, if determined adversely to the Company or any of its Subsidiaries, could reasonably be expected to have a Material Adverse Effect; and no such proceedings are threatened or, to the Company's knowledge after reasonable investigation and due diligence inquiry ("**Knowledge**"), contemplated by governmental or regulatory authorities or threatened by others. The Company is in compliance with all applicable federal, state, local and foreign laws, regulations, orders and decrees governing its business as prescribed by the FDA, or any other federal, state or foreign agencies or bodies engaged in the regulation of pharmaceuticals or biohazardous substances or materials, except where noncompliance would not, singularly or in the aggregate, have a Material Adverse Effect. All studies, tests, and preclinical and clinical studies conducted by or on behalf of the Company to support approval for commercialization of the Company's product candidates have been conducted by the Company, or to the Company's Knowledge by third parties, in compliance with all applicable federal, state or foreign laws, rules, orders and regulations, except for such failure or failures to be in compliance as could not reasonably be expected to have, singularly or in the aggregate, a Material Adverse Effect. Neither the Company nor any of its Subsidiaries is a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental or regulatory authority. Additionally, neither the Company, any of its Subsidiaries nor any of their respective employees, officers, directors, or agents has been excluded, suspended or debarred from participation in any U.S. federal health care program or human clinical research or, to the Knowledge of the Company, is subject to a governmental inquiry, investigation, proceeding, or other similar action that could reasonably be expected to result in debarment, suspension, or exclusion.

(t) No Violation or Default. Neither the Company nor any of its Subsidiaries is (i) in violation of its charter or by-laws (or analogous governing instrument, as applicable), (ii) in default in any respect, and no event has occurred which, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant or condition contained in any indenture, mortgage, deed of trust, loan agreement, lease or other agreement or instrument to which it is a party or by which it is bound or to which any of its property or assets is subject or (iii) in violation of any law, ordinance, governmental rule, regulation or court order, decree or judgment to which it or its property or assets may be subject (including, without limitation, those administered by the FDA or by any foreign, federal, state or local governmental or regulatory authority performing functions similar to those performed by the FDA) except, in the case of clauses (ii) and (iii) above, for any such violation or default that would not, singularly or in the aggregate, have a Material Adverse Effect.

(u) Licenses or Permits. The Company and each of its Subsidiaries possess all licenses, certificates, authorizations and permits issued by, and have made all declarations and filings with, the appropriate local, state, federal or foreign governmental or regulatory agencies or bodies (including, without limitation, those administered by the FDA or by any foreign, federal, state or local governmental or regulatory authority performing functions similar to those performed by the FDA) that are necessary for the ownership or lease of their respective properties or the conduct of their respective businesses as described in the Prospectus (collectively, the "**Governmental Permits**") except where any failures to possess or make the same would not, singularly or in the aggregate, reasonably be expected to have a Material Adverse Effect. The Company and its Subsidiaries are in compliance with all such Governmental Permits, except where any noncompliance would not have a Material Adverse Effect; all such Governmental Permits are valid and in full force and effect, except where the validity or failure to be in full force and effect would not reasonably be expected to, singularly or in the aggregate, have a Material Adverse Effect. Neither the Company nor any Subsidiary has received notification of any revocation, modification, suspension, termination or invalidation (or proceedings related thereto) of any such Governmental Permit and the Company has no reason to believe that any such Governmental Permit will not be renewed.

(v) Regulatory Matters. The studies, tests and preclinical or clinical trials conducted by or on behalf of the Company that are described in the Prospectus (the "**Company Studies and Trials**") were and, if still pending, are being, conducted in all material respects in accordance with experimental protocols, procedures and controls pursuant to, where applicable, accepted professional scientific standards; the descriptions of the results of the Company Studies and Trials contained in the Prospectus are accurate in all material respects; the Company has no Knowledge of any other studies or trials not described in the Prospectus, the results of which are inconsistent with or call into question the results described or referred to in the Prospectus; and the Company has not received any notices or correspondence from the FDA or any foreign, state or local governmental body exercising comparable authority requiring the termination, suspension or material modification of any Company Studies and Trials that would reasonably be expected to have a Material Adverse Effect and, to the Company's Knowledge, there are no reasonable grounds for the same. The Company has obtained (or caused to be obtained) informed consent by or on behalf of each human subject who participated in the Company Studies and Trials. In using or disclosing patient information received by the Company in connection with the Company Studies and Trials, the Company has complied in all material respects with all applicable laws and regulatory rules or requirements, including, without limitation, the Health Insurance Portability and Accountability Act of 1996 and the rules and regulations thereunder. To the Company's Knowledge, none of the Company Studies and Trials involved any investigator who has been disqualified as a clinical investigator or has been found by the FDA to have engaged in scientific misconduct. To the Company's Knowledge, the manufacturing facilities and operations of its suppliers are operated in compliance in all material respects with all applicable statutes, rules, regulations and policies of the FDA and comparable regulatory agencies outside of the United States to which the Company is subject.

(w) Privacy Laws. The Company and its Subsidiaries are, and take all necessary actions to be, in material compliance with all internal and external privacy policies, industry standards, all applicable statutes, judgments, orders, rules, regulations of any court or arbitrator or other

governmental or regulatory entity, any other legal obligations, and applicable data privacy and security laws and regulations, including, without limitation, the Health Insurance Portability and Accountability Act ("**HIPAA**"), as amended by the Health Information Technology for Economic and Clinical Health Act (the "**HITECH Act**") (42 U.S.C. Section 17921 et seq.); the California Consumer Privacy Act ("**CCPA**"); the European Union General Data Protection Regulation ("**GDPR**") (EU 2016/679) (collectively, "**Privacy Laws**") and any other applicable contractual obligation, in each case relating to the collection, use, transfer, import, export, storage, protection, disposal and disclosure by the Company or any of its Subsidiaries of personal, personally identifiable, household, sensitive, confidential or regulated data ("**Data Security Obligations**"). To ensure compliance with the Data Security Obligations, the Company and its Subsidiaries have in place, comply with, and take appropriate steps reasonably designed to ensure compliance in all material respects with their policies and procedures relating to data privacy and security and the collection, storage, use, disclosure, handling and analysis of Personal Data (the "**Policies**"). "**Personal Data**" means (i) a natural persons' name, street address, telephone number, email address, photograph, social security number, bank information, or customer or account number; (ii) any information which would qualify as "personally identifying information" under the Federal Trade Commission Act, as amended; (iii) Protected Health Information as defined by HIPAA; (iv) "personal data" as defined by GDPR; and (v) any other piece of information that allows the identification of such natural person, or his or her family, or permits the collection or analysis of any data related to an identified person's health or sexual orientation. To the Knowledge of the Company, the execution, delivery and performance of this Agreement, any Terms Agreement or any other agreement referred to in this Agreement will not result in a breach of any Privacy Laws or Policies. Neither the Company nor any of its Subsidiaries (i) has received notice of any actual or potential liability under or relating to, or actual or potential violation of, any of the Privacy Laws, and has no knowledge of any event or condition that would reasonably be expected to result in any such notice; (ii) is currently conducting or paying for, in whole or in part, any investigation, remediation or other corrective action pursuant to any Privacy Law; (iii) is a party to any order, decree, or agreement that imposed any obligation or liability under any Privacy Law or (iv) is a party to any action, suit or proceeding by or before any court or governmental agency, authority or body pending or threatened alleging non-compliance with any Data Security Obligation.

(x) Tax Law Compliance. The Company and its Subsidiaries each (i) have timely filed all necessary federal, state, local and foreign tax returns, and all such returns were true, complete and correct in all material respects, (ii) have paid all federal, state, local and foreign taxes, for which it is liable, including, without limitation, all sales and use taxes and all taxes which the Company or any of its Subsidiaries is obligated to withhold from amounts owing to employees, creditors and third parties, and (iii) do not have any tax deficiency or claims outstanding or assessed or, to its Knowledge, proposed against any of them, except those, in each of the cases described in clauses (i), (ii) and (iii) above, that would not reasonably be expected to, singularly or in the aggregate, have a Material Adverse Effect.

(y) Company Not an "Investment Company". The Company has been advised of the rules and requirements under the Investment Company Act of 1940, as amended (the "**Investment Company Act**"). The Company is not, and after receipt of payment for the

Common Stock will not be, an "investment company" within the meaning of Investment Company Act.

(z) Insurance. The Company and each of its Subsidiaries carry, or are covered by, insurance in such amounts and covering such risks as the Company reasonably believes is adequate for the conduct of their respective businesses and the value of their respective properties. Neither the Company nor any of its Subsidiaries has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not have a Material Adverse Effect. Neither the Company nor any of its Subsidiaries has received written notice from any insurer, agent of such insurer or the broker of the Company or any of its Subsidiaries that any material capital improvements or any other material expenditures (other than premium payments) are required or necessary to be made in order to continue such insurance.

(aa) No Price Stabilization or Manipulation. The Company has not taken and will not take, directly or indirectly, any action designed to or that would be reasonably expected to cause or result in stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares.

(bb) Exchange Act Compliance. The documents incorporated or deemed to be incorporated by reference in the Prospectus, at the time they were or hereafter are filed with the Commission, complied and will comply in all material respects with the requirements of the Exchange Act, and, when read together with the other information in the Prospectus, at the Settlement Dates, will not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(cc) No Unlawful Contributions or Other Payments. Neither the Company nor any of its Subsidiaries nor, to the Company's knowledge, any director, officer, employee, agent, affiliate or other person acting on behalf of the Company or any Subsidiary has (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) made any direct or indirect unlawful payment to any foreign or domestic government officials or employees, political parties or campaigns, political party officials, or candidates for political office from corporate funds; (iii) violated or is in violation of any provision of the U.S. Foreign Corrupt Practices Act of 1977, as amended, or any applicable anti-corruption laws, rules, or regulations of any other jurisdiction in which the Company or any Subsidiary conducts business; or (iv) made any other unlawful bribe, rebate, payoff, influence payment, kickback or other unlawful payment to any person.

(dd) Compliance with Money Laundering Laws. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with all applicable financial recordkeeping and reporting requirements, including those of the U.S. Bank Secrecy Act, as amended by Title III of the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 (USA PATRIOT Act), and the

applicable anti-money laundering statutes of jurisdictions where the Company and its Subsidiaries conduct business, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the "**Anti-Money Laundering Laws**"), and no action, suit or proceeding by or before any court or governmental agency, authority, body or any arbitrator involving the Company or any of its Subsidiaries with respect to Anti-Money Laundering Laws is pending, or to the knowledge of the Company, threatened.

(ee) Compliance with OFAC.

(A) Neither the Company nor any of its Subsidiaries, nor any director, officer or employee thereof, nor to the Company's knowledge, any agent, affiliate, representative, or other person acting on behalf of the Company or any of its Subsidiaries, is an individual or entity ("**Person**") that is, or is owned or controlled by a Person that is: (i) the subject of any sanctions administered or enforced by the U.S. Department of Treasury's Office of Foreign Assets Control, the United Nations Security Council, the European Union, Her Majesty's Treasury, or other relevant sanctions authority (collectively, "**Sanctions**"), nor (ii) located, organized, or resident in a country or territory that is the subject of a U.S. government embargo (including, without limitation, Cuba, Iran, North Korea, Syria and the Crimea).

(B) The Company will not, directly or indirectly, use the Net Proceeds, or lend, contribute or otherwise make available such Net Proceeds to any Subsidiary, joint venture partner or other Person: (i) to fund or facilitate any activities or business of or with any Person that, at the time of such funding or facilitation, is the subject of Sanctions, or in any country or territory that, at the time of such funding or facilitation, is the subject of a U.S. government embargo; or (ii) in any other manner that will result in a violation of Sanctions by any Person (including Cowen).

(C) For the past five (5) years, the Company and its Subsidiaries have not knowingly engaged in, are not now knowingly engaged in, and will not engage in, any direct or indirect dealings or transactions with any Person that at the time of the dealing or transaction is or was the subject of Sanctions or any country or territory that, at the time of the dealing or transaction is or was the subject of a U.S. government embargo.

(ff) Accounting Controls. The Company and each of its Subsidiaries maintains a system of "internal control over financial reporting" (as such term is defined in Rule 13a-15(f) of the General Rules and Regulations under the Exchange Act (the "**Exchange Act Rules**")) that complies with the requirements of the Exchange Act and has been designed by their respective principal executive and principal financial officers, or under their supervision, to provide reasonable assurances that (i) transactions are executed in accordance with management's general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with U.S. GAAP and to maintain accountability

for assets; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences. To the Knowledge of the Company, the Company's internal control over financial reporting is effective. Except as described in the Prospectus, since the end of the Company's most recent audited fiscal year, there has been (A) no material weakness in the Company's internal control over financial reporting (whether or not remediated) and (B) no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

(gg) Disclosure Controls. The Company and its Subsidiaries maintain disclosure controls and procedures (as such term is defined in Rule 13a-15(e) of the Exchange Act Rules) that comply with the requirements of the Exchange Act; such disclosure controls and procedures have been reasonably designed to ensure that information required to be disclosed by the Company and its Subsidiaries in reports that they file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company's management to allow timely decisions regarding disclosures. The Company and its Subsidiaries have conducted evaluations of the effectiveness of their disclosure controls as required by Rule 13a-15 of the Exchange Act.

(hh) No Undisclosed Relationships. No relationship, direct or indirect, exists between or among the Company or any of its Subsidiaries on the one hand, and the directors, officers, stockholders (or analogous interest holders), customers or suppliers of the Company or any of its affiliates on the other hand, which is required to be described in the Prospectus and which is not so described.

(ii) Compliance with Environmental Laws. The Company and its Subsidiaries are in compliance in all material respects with all foreign, federal, state and local rules, laws and regulations relating to the use, treatment, storage and disposal of hazardous or toxic substances or waste and protection of health and safety or the environment which are applicable to their businesses ("**Environmental Laws**"). There has been no storage, generation, transportation, handling, treatment, disposal, discharge, emission, or other release of any kind of toxic or other wastes or other hazardous substances by, due to, or caused by the Company or any of its Subsidiaries (or, to the Company's Knowledge, any other entity for whose acts or omissions the Company or any of its Subsidiaries is or may otherwise be liable) upon any of the property now or previously owned or leased by the Company or any of its Subsidiaries, or upon any other property, in violation of any law, statute, ordinance, rule, regulation, order, judgment, decree or permit or which would, under any law, statute, ordinance, rule (including rule of common law), regulation, order, judgment, decree or permit, give rise to any liability that could reasonably be expected to have a Material Adverse Effect; and there has been no disposal, discharge, emission or other release of any kind onto such property or into the environment surrounding such property of any toxic or other wastes or other hazardous substances with respect to which the Company or any of its Subsidiaries has knowledge.

(jj) Intellectual Property. The Company and its Subsidiaries own or possess the valid right to use all valid and enforceable patents, patent applications, trademarks, trademark registrations, service marks, service mark registrations, Internet domain name registrations, copyrights, copyright registrations, licenses, inventions, software, works of authorships, trade names, databases, formulae, know how, and other intellectual property (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems, or procedures) (collectively, "**Intellectual Property Rights**") necessary to conduct their respective businesses as currently conducted, and as proposed to be conducted and described in the Prospectus. The Company and its Subsidiaries, collectively, own all right, title and interest in and to the Intellectual Property Rights described as owned by them in the Prospectus. The Company and its Subsidiaries have not received any opinion from their legal counsel concluding that any activities of their respective businesses infringe, misappropriate, or otherwise violate, valid and enforceable Intellectual Property Rights of any other person, and have not received written notice of any challenge, which to the Company's Knowledge, is still pending, by any other person to the rights of the Company and its Subsidiaries with respect to any Intellectual Property Rights owned or used by the Company or its Subsidiaries. The Intellectual Property Rights owned by or, to the Company's Knowledge, licensed to Company and its Subsidiaries has not been adjudged invalid or unenforceable by a court of competent jurisdiction or applicable government agency, in whole or in part. To the Company's Knowledge, the Company and its Subsidiaries' respective businesses have not given, and do not and will not give, rise to any infringement of, any misappropriation of, or other violation of, any valid and enforceable Intellectual Property Rights of any other person. All agreements for the development, license or use of the Intellectual Property Rights described in the Prospectus are valid, binding upon, and enforceable by or against the parties thereto in accordance to its terms. The Company has complied in all material respects with, and is not in breach nor has received any asserted or threatened claim of breach of any such agreement, and the Company has no knowledge of any breach or anticipated breach by any other person to any such agreement. No claim has been made against the Company alleging the infringement by the Company of any patent, trademark, service mark, trade name, copyright, trade secret, license in or other intellectual property right or franchise right of any person. The Company has taken all reasonable steps to protect, maintain and safeguard its Intellectual Property Rights, including the execution of appropriate nondisclosure and confidentiality agreements. The employment or engagement by the Company of each current and former employee and contractor, and their activities thereunder, has not and does not violate any prior or current employment agreement of such employee or contractor except where violations would not, singularly or in the aggregate, have a Material Adverse Effect. Each such employee and contractor has signed an invention assignment agreement giving the Company and its Subsidiaries sole and exclusive rights to any Intellectual Property Rights developed by such person in connection with his or her employment or engagement, as applicable, with the Company or its Subsidiaries, except where such agreements were not signed would not, singularly or in the aggregate, have a Material Adverse Effect. No government funding, facilities or resources of a university, college, other educational institution or research center or funding from third parties was used in the development of any Intellectual Property Rights that are owned or purported to be owned by the Company or any of its Subsidiaries and no governmental agency or body, university, college, other educational institution or research center has any claim or right in or to any such Intellectual Property Rights, other than as

described in the Company's most recent Annual Report on Form 10-K. The consummation of the transactions contemplated by this Agreement and any Terms Agreement will not result in the loss or impairment of or payment of any additional amounts with respect to, nor require the consent of any other person in respect of, the Company's right to own, use, or hold for use any of the Intellectual Property Rights as owned, used or held for use in the conduct of the business as currently conducted. With respect to the use of the software in the Company's business as it is currently conducted, the Company has not experienced any material defects in such software, including any material error or omission in the processing of any transactions other than defects which have been corrected, and to the Company's Knowledge, no such software contains any device or feature designed to disrupt, disable, or otherwise impair the functioning of any software or is subject to the terms of any "open source" or other similar license that provides for the source code of the software to be publicly distributed or dedicated to the public

(kk) IT Systems. (i)(x) There has been no security breach or attack or other compromise of or relating to any of the Company's and its Subsidiaries' information technology and computer systems, networks, hardware, software, data (including confidential information, trade secrets or other data of the Company or any of its Subsidiaries or their respective customers, employees, suppliers, vendors, patient data, data from preclinical studies and any third party data maintained by or on behalf of them), equipment or technology ("**IT Systems and Data**"), and (y) the Company and its Subsidiaries have not been notified of, and have no knowledge of any event or condition that would reasonably be expected to result in any security breach, attack or compromise to their IT Systems and Data, (ii) the Company and its Subsidiaries have complied, and are presently in compliance with, all applicable laws, statutes or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority and all industry guidelines, standards, internal policies, contractual obligations relating to the privacy and security of IT Systems and Data and to the protection of such IT Systems and Data from unauthorized use, access, misappropriation or modification and (iii) the Company and its Subsidiaries have used reasonable efforts to establish and maintain, and have established, maintained, implemented, and complied with, reasonable information technology, information security, cyber security and data protection controls, policies and procedures, including oversight, access controls, encryption, technological and physical safeguards and business continuity/disaster recovery and security plans that are designed to protect against and prevent breach, destruction, loss, unauthorized distribution, use, access, disablement, misappropriation or modification, or other compromise or misuse of or relating to the IT Systems and Data.

(ll) Title to Real and Personal Property. The Company and each of its Subsidiaries have good and marketable title in and (in the case of real property) to, or have valid and marketable rights to lease or otherwise use, all items of real or personal property which are material to the business of the Company and its Subsidiaries taken as a whole, in each case free and clear of all liens, encumbrances, security interests, claims and defects that (i) do not, singularly or in the aggregate, materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company or any of its Subsidiaries or (ii) could not reasonably be expected, singularly or in the aggregate, to have a Material Adverse Effect.

(mm) No Labor Dispute. There is (A) no significant unfair labor practice complaint pending against the Company, or any of its Subsidiaries, nor to the Company's Knowledge, threatened against it or any of its Subsidiaries, before the National Labor Relations Board, any state or local labor relation board or any foreign labor relations board, and no significant grievance or significant arbitration proceeding arising out of or under any collective bargaining agreement is so pending against the Company or any of its Subsidiaries, or, to the Company's Knowledge, threatened against it and (B) no labor disturbance by or dispute with, employees of the Company or any of its Subsidiaries exists or, to the Company's Knowledge, is contemplated or threatened, and the Company is not aware of any existing or imminent labor disturbance by the employees of any of its or its Subsidiaries' principal suppliers, manufacturers, customers or contractors, that could reasonably be expected, singularly or in the aggregate, to have a Material Adverse Effect. The Company is not aware that any key employee or significant group of employees of the Company or any Subsidiary plans to terminate employment with the Company or any such Subsidiary.

(nn) Compliance with ERISA. No "prohibited transaction" (as defined in Section 406 of the Employee Retirement Income Security Act of 1974, as amended, including the regulations and published interpretations thereunder ("**ERISA**"), or Section 4975 of the Internal Revenue Code of 1986, as amended from time to time (the "**Code**")) or "accumulated funding deficiency" (as defined in Section 302 of ERISA) or any of the events set forth in Section 4043(b) of ERISA (other than events with respect to which the thirty (30)-day notice requirement under Section 4043 of ERISA has been waived) has occurred or could reasonably be expected to occur with respect to any employee benefit plan of the Company or any of its Subsidiaries which could, singularly or in the aggregate, reasonably be expected to have a Material Adverse Effect. Each employee benefit plan of the Company or any of its Subsidiaries is in compliance in all material respects with applicable law, including ERISA and the Code. The Company and its Subsidiaries have not incurred and could not reasonably be expected to incur material liability under Title IV of ERISA with respect to the termination of, or withdrawal from, any pension plan (as defined in ERISA). Each pension plan for which the Company or any of its Subsidiaries would have any liability that is intended to be qualified under Section 401(a) of the Code is so qualified, and to the Company's Knowledge, nothing has occurred, whether by action or by failure to act, which could, singularly or in the aggregate, reasonably be expected to cause the loss of such qualification.

(oo) Sarbanes-Oxley Act. There is and has been no failure on the part of the Company or, to the Company's Knowledge, any of the Company's officers or directors, in their capacities as such, to comply with any provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith (the "**Sarbanes-Oxley Act**"), including Section 402 related to loans and Sections 302 and 906 related to certifications.

(pp) Statistical and Market Data. The statistical and market related data included in the Registration Statement and the Prospectus are based on or derived from sources that the Company believes to be reliable and accurate, and such data agree with the sources from which they are derived.

(qq) No Restrictions on Subsidiaries. Except as described in the Prospectus, no Subsidiary of the Company is currently prohibited, directly or indirectly, under any agreement or other instrument to which it is a party or is subject, from paying any dividends to the Company, from making any other distribution on such Subsidiary's capital stock, from repaying to the Company any loans or advances to such Subsidiary from the Company or from transferring any of such Subsidiary's properties or assets to the Company or any other Subsidiary of the Company.

(rr) Forward-Looking Statements. No forward-looking statement (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) contained in or incorporated by reference in the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(ss) Listing. The Company is subject to and in compliance in all material respects with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act. The Common Stock is registered pursuant to Section 12(b) or Section 12(g) of the Exchange Act and is listed on Nasdaq, and the Company has taken no action designed to, or reasonably likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from Nasdaq, nor has the Company received any notification that the Commission or Nasdaq is contemplating terminating such registration or listing. All of the Shares that have been or may be sold under this Agreement and any Terms Agreement have been approved for listing on the Nasdaq, subject to official notice of issuance; the Company has taken all necessary actions to ensure that, upon and at all times after the Nasdaq shall have approved the Shares for listing, it will be in compliance with all applicable corporate governance requirements set forth in the Nasdaq's listing rules that are then in effect.

(tt) Brokers. Except for Cowen, there is no broker, finder or other party that is entitled to receive from the Company any brokerage or finder's fee or other fee or commission as a result of any transactions contemplated by this Agreement or by any Terms Agreement.

(uu) Related Party Transactions. There are no business relationships or related-party transactions involving the Company or any Subsidiary or any other person required to be described in the Prospectus which have not been described as required.

(vv) No Reliance. The Company has not relied upon Cowen or legal counsel for Cowen for any legal, tax or accounting advice in connection with the offering and sale of the Shares.

Any certificate signed by an officer of the Company and delivered to Cowen or to counsel for Cowen pursuant to or in connection with this Agreement or any Terms Agreement shall be deemed to be a representation and warranty by the Company to Cowen as to the matters set forth therein.

The Company acknowledges that Cowen and, for purposes of the opinions to be delivered pursuant to Section 7 hereof, counsel to the Company and counsel to Cowen, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

7. Covenants of the Company. The Company covenants and agrees with Cowen that:

(a) Registration Statement Amendments. After the date of this Agreement and during any period in which a Prospectus relating to any Shares is required to be delivered by Cowen under the Securities Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), (i) the Company will notify Cowen promptly of the time when any subsequent amendment to the Registration Statement, other than documents incorporated by reference, has been filed with the Commission and/or has become effective or any subsequent supplement to the Prospectus has been filed and of any request by the Commission for any amendment or supplement to the Registration Statement or Prospectus or for additional information, (ii) the Company will prepare and file with the Commission, promptly upon Cowen's request, any amendments or supplements to the Registration Statement or Prospectus that, in Cowen's reasonable opinion, may be necessary or advisable in connection with the distribution of the Shares by Cowen (*provided, however*, that the failure of Cowen to make such request shall not relieve the Company of any obligation or liability hereunder, or affect Cowen's right to rely on the representations and warranties made by the Company in this Agreement or any Terms Agreement); (iii) the Company will not file any amendment or supplement to the Registration Statement or Prospectus, other than documents incorporated by reference, relating to the Shares or a security convertible into the Shares unless a copy thereof has been submitted to Cowen within a reasonable period of time before the filing and Cowen has not reasonably objected thereto (*provided, however*, that the failure of Cowen to make such objection shall not relieve the Company of any obligation or liability hereunder, or affect Cowen's right to rely on the representations and warranties made by the Company in this Agreement or any Terms Agreement) and the Company will furnish to Cowen at the time of filing thereof a copy of any document that upon filing is deemed to be incorporated by reference into the Registration Statement or Prospectus, except for those documents available via EDGAR; (iv) the Company will cause each amendment or supplement to the Prospectus, other than documents incorporated by reference, to be filed with the Commission as required pursuant to the applicable paragraph of Rule 424(b) of the Securities Act, and (v) prior to the termination of this Agreement, the Company will notify Cowen if at any time the Registration Statement shall no longer be effective as a result of the passage of time pursuant to Rule 415 under the Securities Act or otherwise. Prior to the initial sale of any Shares, the Company shall file a final Prospectus Supplement pursuant to Rule 424(b) relating to the Shares.

(b) Notice of Commission Stop Orders. The Company will advise Cowen, promptly after it receives notice or obtains knowledge thereof, of the issuance or threatened issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement, of the suspension of the qualification of the Shares for offering or sale in any jurisdiction, or of the initiation or threatening of any proceeding for any such purpose; and it will promptly use its commercially reasonable efforts to prevent the issuance of any stop order or to obtain its withdrawal if such a stop order should be issued.

(c) Delivery of Prospectus; Subsequent Changes. During any period in which a Prospectus relating to the Shares is required to be delivered by Cowen under the Securities Act with respect to a pending sale of the Shares, (including in circumstances where such requirement

may be satisfied pursuant to Rule 172 under the Securities Act), the Company will comply with all requirements imposed upon it by the Securities Act, as from time to time in force, and to file on or before their respective due dates all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Sections 13(a), 13(c), 14, 15(d) or any other provision of or under the Exchange Act. If during such period any event occurs as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend or supplement the Registration Statement or Prospectus to comply with the Securities Act, the Company will promptly notify Cowen to suspend the offering of Shares during such period and the Company will promptly amend or supplement the Registration Statement or Prospectus (at the expense of the Company) so as to correct such statement or omission or effect such compliance.

(d) Listing of Shares. During any period in which the Prospectus relating to the Shares is required to be delivered by Cowen under the Securities Act with respect to a pending sale of the Shares (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company will use its commercially reasonable efforts to cause the Shares to be listed on Nasdaq and to qualify the Shares for sale under the securities laws of such jurisdictions as Cowen reasonably designates and to continue such qualifications in effect so long as required for the distribution of the Shares; *provided, however,* that the Company shall not be required in connection therewith to qualify as a foreign corporation or dealer in securities or file a general consent to service of process in any jurisdiction.

(e) Delivery of Registration Statement and Prospectus. The Company will furnish to Cowen and its counsel (at the expense of the Company) copies of the Registration Statement, the Prospectus (including all documents incorporated by reference therein) and all amendments and supplements to the Registration Statement or Prospectus that are filed with the Commission during any period in which a Prospectus relating to the Shares is required to be delivered under the Securities Act (including all documents filed with the Commission during such period that are deemed to be incorporated by reference therein), in each case as soon as reasonably practicable and in such quantities as Cowen may from time to time reasonably request and, at Cowen's request, will also furnish copies of the Prospectus to each exchange or market on which sales of the Shares may be made; *provided, however,* that the Company shall not be required to furnish any document (other than the Prospectus) to Cowen to the extent such document is available on EDGAR.

(f) Earnings Statement. The Company will make generally available to its security holders as soon as practicable, but in any event not later than 15 months after the end of the Company's current fiscal quarter, an earnings statement covering a 12-month period that satisfies the provisions of Section 11(a) and Rule 158 of the Securities Act.

(g) Expenses. The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated, in accordance with the provisions of Section 11 hereunder, will pay the following expenses all incident to the performance of its obligations hereunder, including, but not limited to, expenses relating to (i) the preparation, printing and

filing of the Registration Statement and each amendment and supplement thereto, of each Prospectus and of each amendment and supplement thereto, (ii) the preparation, issuance and delivery of the Shares, (iii) the qualification of the Shares under securities laws in accordance with the provisions of Section 7(d) of this Agreement, including filing fees (provided, however, that any fees or disbursements of counsel for Cowen in connection therewith shall be paid by Cowen except as set forth in (vii) below), (iv) the printing and delivery to Cowen of copies of the Prospectus and any amendments or supplements thereto, and of this Agreement and any Terms Agreement, (v) the fees and expenses incurred in connection with the listing or qualification of the Shares for trading on Nasdaq, (vi) the filing fees and expenses, if any, of the Commission, (vii) the filing fees and associated legal expenses of Cowen's outside counsel for filings with the FINRA Corporate Financing Department, such legal expense reimbursement not to exceed $15,000 and, (viii) the reasonable fees and disbursements of Cowen's counsel in an amount not to exceed $50,000.

(h) Use of Proceeds. The Company will use the Net Proceeds as described in the Prospectus in the section entitled "Use of Proceeds."

(i) Notice of Other Sales. During the pendency of any Placement Notice given hereunder, and for 5 trading days following the termination of any Placement Notice given hereunder, the Company shall provide Cowen notice as promptly as reasonably possible before it offers to sell, contracts to sell, sells, grants any option to sell or otherwise disposes of any shares of Common Stock (other than Shares offered pursuant to the provisions of this Agreement or any Terms Agreement) or securities convertible into or exchangeable for Common Stock, warrants or any rights to purchase or acquire Common Stock; *provided*, that such notice shall not be required in connection with the (i) issuance, grant or sale of Common Stock, options to purchase shares of Common Stock or Common Stock issuable upon the exercise of options or other equity awards pursuant to any stock option, stock bonus or other stock plan or arrangement described in the Prospectus, (ii) the issuance of securities in connection with an acquisition, merger or sale or purchase of assets, (iii) the issuance or sale of Common Stock pursuant to any dividend reinvestment plan that the Company may adopt from time to time provided the implementation of such is disclosed to Cowen in advance, or (iv) any shares of common stock issuable upon the exchange, conversion or redemption of securities or the exercise of warrants, options or other rights in effect or outstanding.

(j) Change of Circumstances. The Company will, at any time during a fiscal quarter in which the Company intends to tender a Placement Notice or sell Shares hereunder or pursuant to a Terms Agreement, advise Cowen promptly after it shall have received notice or obtained knowledge thereof, of any information or fact that would alter or affect in any material respect any opinion, certificate, letter or other document provided to Cowen pursuant to this Agreement or any Terms Agreement.

(k) Due Diligence Cooperation. The Company will cooperate with any reasonable due diligence review conducted by Cowen or its agents in connection with the transactions contemplated hereby or by any Terms Agreement, including, without limitation, providing information and making available documents and senior corporate officers, during regular business hours and at the Company's principal offices, as Cowen may reasonably request.

(l) Required Filings Relating to Sale of Shares. The Company agrees that on such dates as the Securities Act shall require, the Company will (i) file a prospectus supplement with the Commission under the applicable paragraph of Rule 424(b) under the Securities Act (each and every filing under Rule 424(b), a "**Filing Date**"), and (ii) deliver such number of copies of each such prospectus supplement to each exchange or market on which such sales were effected as may be required by the rules or regulations of such exchange or market. The Company shall disclose in its quarterly reports on Form 10-Q and in its annual report on Form 10-K, the number of the Shares sold through Cowen under this Agreement and any Terms Agreement, and the gross proceeds and Net Proceeds to the Company from the sale of the Shares and the compensation paid by the Company with respect to sales of the Shares pursuant to this Agreement during the relevant quarter or, in the case of an Annual Report on Form 10-K, during the fiscal year covered by such Annual Report and the fourth quarter of such fiscal year.

(m) Bring-Down Dates; Certificate. On or prior to the First Delivery Date and each time (i) the Company files the Prospectus relating to the Shares or amends or supplements the Registration Statement or the Prospectus relating to the Shares (other than a prospectus supplement filed in accordance with Section 7(l) of this Agreement) by means of a post-effective amendment, sticker, or supplement but not by means of incorporation of document(s) by reference to the Registration Statement or the Prospectus relating to the Shares; (ii) the Company files an annual report on Form 10-K under the Exchange Act; (iii) the Company files its quarterly reports on Form 10-Q under the Exchange Act; or (iv) the Company files a report on Form 8-K containing amended financial information (other than an earnings release) under the Exchange Act (each date of filing of one or more of the documents referred to in clauses (i) through (iv) shall be a **"Bring-Down Date"**); the Company shall furnish Cowen with a certificate, in the form attached hereto as Exhibit 7(m) within two (2) Trading Days of any Bring-Down Date if requested by Cowen. The requirement to provide a certificate under this Section 7(m) shall be waived for any Bring-Down Date occurring at a time at which no Agency Transaction is pending, which waiver shall continue until the earlier to occur of the date the Company delivers a Placement Notice hereunder (which for such calendar quarter shall be considered a Bring-Down Date) and the next occurring Bring-Down Date; *provided*, *however*, that such waiver shall not apply for any Bring-Down Date on which the Company files its annual report on Form 10-K. Notwithstanding the foregoing, if the Company subsequently decides to sell Shares in an Agency Transaction following a Bring-Down Date when the Company relied on such waiver and did not provide Cowen with a certificate under this Section 7(m), then before the Company delivers the Placement Notice or Cowen sells any Shares pursuant to such Agency Transaction, the Company shall provide Cowen with a certificate, in the form attached hereto as Exhibit 7(m), dated the date of the Placement Notice. With respect to any Principal Transaction pursuant to a Terms Agreement, the certificate in the form attached hereto as Exhibit 7(m) shall be delivered at the Principal Settlement Date.

(n) Legal Opinion. On or prior to the First Delivery Date and within two (2) Trading Days of each Bring-Down Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(m) for which no waiver is applicable, the Company shall cause to be furnished to Cowen a written opinion and negative assurance letter of Cooley LLP ("**Company Counsel**"), or other counsel satisfactory to Cowen, in form and substance reasonably satisfactory to Cowen and its counsel, dated the date that the opinion is

required to be delivered, modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented; *provided*, *however*, that in lieu of such opinions for subsequent Bring-Down Dates, counsel may furnish Cowen with a letter (a "**Reliance Letter**") to the effect that Cowen may rely on a prior opinion delivered under this Section 7(n) to the same extent as if it were dated the date of such letter (except that statements in such prior opinion shall be deemed to relate to the Registration Statement and the Prospectus as amended or supplemented at such Bring-Down Date); and *provided further*, that Company Counsel will not be required to deliver a written opinion with respect to a Bring-Down Date pursuant to clause (iii) in Section 7(m) hereof. With respect to any Principal Transaction pursuant to a Terms Agreement, the Company shall cause to be furnished to Cowen on the Principal Settlement Date a written opinion of Company Counsel, or other counsel satisfactory to Cowen, in form and substance reasonably satisfactory to Cowen and its counsel, dated the Principal Settlement Date, substantially similar to the form attached hereto as Exhibit 7(n)(i).

(o) Comfort Letter. On or prior to the First Delivery Date and within two (2) Trading Days of each Bring-Down Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(m) for which no waiver is applicable, the Company shall cause its independent accountants to furnish Cowen letters (the **"Comfort Letters"**), dated the date the Comfort Letter is delivered, in form and substance reasonably satisfactory to Cowen, (i) confirming that they are an independent registered public accounting firm within the meaning of the Securities Act and the PCAOB, (ii) stating, as of such date, the conclusions and findings of such firm with respect to the financial information and other matters ordinarily covered by accountants' "comfort letters" to Cowen in connection with registered public offerings (the first such letter, the **"Initial Comfort Letter"**) and (iii) updating the Initial Comfort Letter with any information that would have been included in the Initial Comfort Letter had it been given on such date and modified as necessary to relate to the Registration Statement and the Prospectus, as amended and supplemented to the date of such letter. With respect to any Principal Transaction pursuant to a Terms Agreement, the Company shall cause its independent accountants to furnish Cowen, in form and substance reasonably satisfactory to Cowen, Comfort Letters at the Time of Sale, dated the date of such Time of Sale, and on the Principal Settlement Date, dated the Principal Settlement Date.

(p) Market Activities. The Company will not, directly or indirectly, (i) take any action designed to cause or result in, or that constitutes or might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares or (ii) sell, bid for, or purchase the Common Stock to be issued and sold pursuant to this Agreement or any Terms Agreement, or pay anyone any compensation for soliciting purchases of the Shares other than Cowen; provided, however, that the Company may bid for and purchase shares of its common stock in accordance with Rule 10b-18 under the Exchange Act.

(q) Insurance. The Company and its Subsidiaries shall maintain, or cause to be maintained, insurance in such amounts and covering such risks as is reasonable and customary for the business for which it is engaged.

(r) Compliance with Laws. The Company and each of its Subsidiaries shall maintain, or cause to be maintained, all material environmental permits, licenses and other authorizations required by federal, state and local law in order to conduct their businesses as described in the Prospectus, and the Company and each of its Subsidiaries shall conduct their businesses, or cause their businesses to be conducted, in substantial compliance with such permits, licenses and authorizations and with applicable environmental laws, except where the failure to maintain or be in compliance with such permits, licenses and authorizations could not reasonably be expected to have a Material Adverse Effect.

(s) Investment Company Act. The Company will conduct its affairs in such a manner so as to reasonably ensure that neither it nor its Subsidiaries will be or become, at any time prior to the termination of this Agreement, an "investment company," as such term is defined in the Investment Company Act, assuming no change in the Commission's current interpretation as to entities that are not considered an investment company.

(t) Securities Act and Exchange Act. The Company will use its best efforts to comply with all requirements imposed upon it by the Securities Act and the Exchange Act as from time to time in force, so far as necessary to permit the continuance of sales of, or dealings in, the Shares as contemplated by the provisions hereof and the Prospectus.

(u) No Offer to Sell. Other than a Permitted Free Writing Prospectus, neither Cowen nor the Company (including its agents and representatives, other than Cowen in its capacity as such) will make, use, prepare, authorize, approve or refer to any written communication (as defined in Rule 405 under the Securities Act), required to be filed with the Commission, that constitutes an offer to sell or solicitation of an offer to buy Common Stock hereunder.

(v) Sarbanes-Oxley Act. The Company and its Subsidiaries will use their best efforts to comply with all effective applicable provisions of the Sarbanes-Oxley Act.

(w) Affirmation. Each Placement Notice delivered by the Company to Cowen and each execution and delivery by the Company of a Terms Agreement shall be deemed to be (i) an affirmation that the representations, warranties and agreements of the Company herein contained and contained in any certificate delivered to Cowen pursuant hereto are true and correct at the time of delivery of such Placement Notice or the date of such Terms Agreement, as the case may be, and (ii) an undertaking that such representations, warranties and agreements will be true and correct on any applicable Time of Sale and Settlement Date, as though made at and as of each such time (it being understood that such representations, warranties and agreements shall relate to the Registration Statement and the Prospectus as amended and supplemented to the time of such Placement Notice acceptance or Terms Agreement, as the case may be).

(x) Renewal. If immediately prior to the third anniversary (the "**Renewal Deadline**") of the initial effective date of the Registration Statement, the aggregate gross sales price of Shares sold by the Company is less than the Maximum Amount and this Agreement has not expired or been terminated, the Company may, in its sole discretion, prior to the Renewal Deadline, file, if it has not already done so and is eligible to do so, a new shelf registration statement relating to the Shares, in a form reasonably satisfactory to Cowen, and, if not

automatically effective, will use its best efforts to cause such registration statement to be declared effective within 60 days after the Renewal Deadline. The Company will take all other action necessary or appropriate to permit the issuance and sale of the Shares to continue as contemplated in the expired registration statement relating to the Shares. References herein to the Registration Statement shall include such new shelf registration statement.

8. Conditions to Cowen's Obligations. The obligations of Cowen hereunder with respect to a Placement Notice or pursuant to any Terms Agreement will be subject to the continuing accuracy and completeness of the representations and warranties made by the Company herein, to the due performance by the Company of its obligations hereunder and thereunder, to the completion by Cowen of a due diligence review satisfactory to Cowen in its reasonable judgment, and to the continuing satisfaction (or waiver by Cowen in its sole discretion) of the following additional conditions:

(a) Registration Statement Effective. The Registration Statement shall be effective and shall be available for (i) all sales of Shares issued pursuant to all prior Placement Notices or any Terms Agreements and (ii) the sale of all Shares contemplated to be issued pursuant to any Placement Notice or any Terms Agreement.

(b) No Material Notices. None of the following events shall have occurred and be continuing: (i) receipt by the Company or any of its Subsidiaries of any request for additional information from the Commission or any other federal or state governmental authority during the period of effectiveness of the Registration Statement, the response to which would require any post-effective amendments or supplements to the Registration Statement or the Prospectus; (ii) the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of the Registration Statement or the initiation of any proceedings for that purpose; (iii) receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose; or (iv) the occurrence of any event that makes any material statement made in the Registration Statement or the Prospectus or any material document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires the making of any changes in the Registration Statement, related Prospectus or such documents so that, in the case of the Registration Statement, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading and, that in the case of the Prospectus, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(c) No Misstatement or Material Omission. Cowen shall not have advised the Company that the Registration Statement or Prospectus, or any amendment or supplement thereto, contains an untrue statement of fact that in Cowen's reasonable opinion, in consultation with outside counsel, is material, or omits to state a fact that in Cowen's opinion is material and is required to be stated therein or is necessary to make the statements therein not misleading.

(d) Material Changes. Except as contemplated in the Prospectus, or disclosed in the Company's reports filed with the Commission, there shall not have been any material adverse change, on a consolidated basis, in the authorized capital stock of the Company or any Material Adverse Effect or any development that could reasonably be expected to have a Material Adverse Effect, or any downgrading in or withdrawal of the rating assigned to any of the Company's securities (other than asset backed securities) by any rating organization or a public announcement by any rating organization that it has under surveillance or review its rating of any of the Company's securities (other than asset backed securities), the effect of which, in the case of any such action by a rating organization described above, in the reasonable judgment of Cowen (without relieving the Company of any obligation or liability it may otherwise have), is so material as to make it impracticable or inadvisable to proceed with the offering of the Shares on the terms and in the manner contemplated in the Prospectus.

(e) Company Counsel Legal Opinion. Cowen shall have received the opinion and negative assurance letter of Company Counsel required to be delivered pursuant to Section 7(n) on or before the date on which such delivery of such opinion is required pursuant to Section 7(n).

(f) Cowen Counsel Legal Opinion. Cowen shall have received from Davis Polk & Wardwell, LLP, counsel for Cowen, such opinion and negative assurance letter, on or before the date on which the delivery of the Company Counsel legal opinion is required pursuant to Section 7(n), with respect to such matters as Cowen may reasonably require, and the Company shall have furnished to such counsel such documents as they request for enabling them to pass upon such matters.

(g) Comfort Letter. Cowen shall have received the Comfort Letter required to be delivered pursuant to Section 7(o) on or before the date on which such delivery of such Comfort Letter is required pursuant to Section 7(o).

(h) Representation Certificate. Cowen shall have received the certificate required to be delivered pursuant to Section 7(m) on or before the date on which delivery of such certificate is required pursuant to Section 7(m).

(i) Secretary's Certificate. On or prior to the First Delivery Date and at each Principal Settlement Date, Cowen shall have received a certificate, signed on behalf of the Company by its corporate secretary, in form and substance satisfactory to Cowen and its counsel.

(j) No Suspension. Trading in the Common Stock shall not have been suspended on Nasdaq.

(k) Other Materials. On each date on which the Company is required to deliver a certificate pursuant to Section 7(m), the Company shall have furnished to Cowen such appropriate further information, certificates and documents as Cowen may have reasonably requested. All such opinions, certificates, letters and other documents shall have been in compliance with the provisions hereof. The Company will furnish Cowen with such conformed copies of such opinions, certificates, letters and other documents as Cowen shall have reasonably requested.

(l) Securities Act Filings Made. All filings with the Commission required by Rule 424 under the Securities Act to have been filed prior to the issuance of any Placement Notice hereunder or prior to any Principal Settlement Date shall have been made within the applicable time period prescribed for such filing by Rule 424. The Company shall file a prospectus supplement or a supplement to a prospectus supplement in connection with any Principal Transaction pursuant to a Terms Agreement within the applicable time period prescribed for such filing by Rule 424.

(m) Approval for Listing. The Shares shall either have been (i) approved for listing on Nasdaq, subject only to notice of issuance, or (ii) the Company shall have filed an application for listing of the Shares on Nasdaq at, or prior to, the issuance of any Placement Notice.

(n) No Termination Event. There shall not have occurred any event that would permit Cowen to terminate this Agreement pursuant to Section 11(a).

9. Indemnification and Contribution.

(a) Company Indemnification. The Company agrees to indemnify and hold harmless Cowen, the directors, officers, partners, employees and agents of Cowen and each person, if any, who (i) controls Cowen within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, or (ii) is controlled by or is under common control with Cowen from and against any and all losses, claims, liabilities, expenses and damages (including, but not limited to, any and all reasonable and documented investigative, legal and other expenses incurred in connection with, and any and all amounts paid in settlement (in accordance with Section 9(c)) of, any action, suit or proceeding between any of the indemnified parties and any indemnifying parties or between any indemnified party and any third party, or otherwise, or any claim asserted), as and when incurred, to which Cowen, or any such person, may become subject under the Securities Act, the Exchange Act or other federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, liabilities, expenses or damages arise out of or are based, directly or indirectly, on (x) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement or the Prospectus or any amendment or supplement to the Registration Statement or the Prospectus or in any free writing prospectus or in any application or other document executed by or on behalf of the Company or based on written information furnished by or on behalf of the Company filed in any jurisdiction in order to qualify the Common Stock under the securities laws thereof or filed with the Commission, (y) the omission or alleged omission to state in any such document a material fact required to be stated in it or necessary to make the statements in it not misleading or (z) any breach by any of the indemnifying parties of any of their respective representations, warranties and agreements contained in this Agreement or any Terms Agreement; *provided, however*, that this indemnity agreement shall not apply to the extent that such loss, claim, liability, expense or damage arises from the sale of the Shares pursuant to this Agreement or any Terms Agreement and is caused directly or indirectly by an untrue statement or omission, or alleged untrue statements or omission, made in reliance upon and in conformity with solely Agent's Information. This indemnity agreement will be in addition to any liability that the Company might otherwise have.

(b) Cowen Indemnification. Cowen agrees to indemnify and hold harmless the Company and its directors and each officer of the Company that signed the Registration Statement, and each person, if any, who (i) controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act or (ii) is controlled by or is under common control with the Company against any and all loss, liability, claim, damage and expense described in the indemnity contained in Section 9(a), as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions, made in the Registration Statement (or any amendments thereto) or the Prospectus (or any amendment or supplement thereto) in reliance upon and in conformity with the Agent's Information.

(c) Procedure. Any party that proposes to assert the right to be indemnified under this Section 9 will, promptly after receipt of notice of commencement of any action against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section 9, notify each such indemnifying party of the commencement of such action, enclosing a copy of all papers served, but the omission so to notify such indemnifying party will not relieve the indemnifying party from (i) any liability that it might have to any indemnified party otherwise than under this Section 9 and (ii) any liability that it may have to any indemnified party under the foregoing provision of this Section 9 unless, and only to the extent that, such omission results in the forfeiture of substantive rights or defenses by the indemnifying party. If any such action is brought against any indemnified party and it notifies the indemnifying party of its commencement, the indemnifying party will be entitled to participate in and, to the extent that it elects by delivering written notice to the indemnified party promptly after receiving notice of the commencement of the action from the indemnified party, jointly with any other indemnifying party similarly notified, to assume the defense of the action, with counsel reasonably satisfactory to the indemnified party, and after notice from the indemnifying party to the indemnified party of its election to assume the defense, the indemnifying party will not be liable to the indemnified party for any legal or other expenses except as provided below and except for the reasonable and documented costs of investigation subsequently incurred by the indemnified party in connection with the defense. The indemnified party will have the right to employ its own counsel in any such action, but the reasonable and documented fees, expenses and other charges of such counsel will be at the expense of such indemnified party unless (1) the employment of counsel by the indemnified party has been authorized in writing by the indemnifying party, (2) the indemnified party has reasonably concluded (based on advice of counsel) that there may be legal defenses available to it or other indemnified parties that are different from or in addition to those available to the indemnifying party, (3) a conflict or potential conflict exists (based on advice of counsel to the indemnified party) between the indemnified party and the indemnifying party (in which case the indemnifying party will not have the right to direct the defense of such action on behalf of the indemnified party) or (4) the indemnifying party has not in fact employed counsel to assume the defense of such action within a reasonable and documented time after receiving notice of the commencement of the action, in each of which cases the reasonable fees, disbursements and other charges of counsel will be at the expense of the indemnifying party or parties. It is understood that the indemnifying party or parties shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the reasonable fees, disbursements and other charges of more than one separate firm admitted to practice in such jurisdiction at any one time for all such indemnified

party or parties. All such fees, disbursements and other charges will be reimbursed by the indemnifying party promptly as they are incurred. An indemnifying party will not, in any event, be liable for any settlement of any action or claim effected without its written consent. No indemnifying party shall, without the prior written consent of each indemnified party, settle or compromise or consent to the entry of any judgment in any pending or threatened claim, action or proceeding relating to the matters contemplated by this Section 9 (whether or not any indemnified party is a party thereto), unless such settlement, compromise or consent includes an unconditional release of each indemnified party from all liability arising or that may arise out of such claim, action or proceeding.

(d) Contribution. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in the foregoing paragraphs of this Section 9 is applicable in accordance with its terms but for any reason is held to be unavailable from the Company or Cowen, the Company and Cowen will contribute to the total losses, claims, liabilities, expenses and damages (including any investigative, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted, but after deducting any contribution received by the Company from persons other than Cowen, such as persons who control the Company within the meaning of the Securities Act, officers of the Company who signed the Registration Statement and directors of the Company, who also may be liable for contribution) to which the Company and Cowen may be subject in such proportion as shall be appropriate to reflect the relative benefits received by the Company on the one hand and Cowen on the other. The relative benefits received by the Company on the one hand and Cowen on the other hand shall be deemed to be in the same proportion as the total Net Proceeds from the sale of the Shares (before deducting expenses) received by the Company bear to the total compensation received by Cowen from the sale of Shares on behalf of the Company. If, but only if, the allocation provided by the foregoing sentence is not permitted by applicable law, the allocation of contribution shall be made in such proportion as is appropriate to reflect not only the relative benefits referred to in the foregoing sentence but also the relative fault of the Company, on the one hand, and Cowen, on the other, with respect to the statements or omission that resulted in such loss, claim, liability, expense or damage, or action in respect thereof, as well as any other relevant equitable considerations with respect to such offering. Such relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or Cowen, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and Cowen agree that it would not be just and equitable if contributions pursuant to this Section 9(d) were to be determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, liability, expense, or damage, or action in respect thereof, referred to above in this Section 9(d) shall be deemed to include, for the purpose of this Section 9(d), any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim to the extent consistent with Section 9(c) hereof. Notwithstanding the foregoing provisions of this Section 9(d), Cowen shall not be required to contribute any amount in excess of the commissions received by it under this Agreement and no

person found guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 9(d), any person who controls a party to this Agreement or any Terms Agreement within the meaning of the Securities Act, and any officers, directors, partners, employees or agents of Cowen, will have the same rights to contribution as that party, and each officer of the Company who signed the Registration Statement will have the same rights to contribution as the Company, subject in each case to the provisions hereof. Any party entitled to contribution, promptly after receipt of notice of commencement of any action against such party in respect of which a claim for contribution may be made under this Section 9(d), will notify any such party or parties from whom contribution may be sought, but the omission to so notify will not relieve that party or parties from whom contribution may be sought from any other obligation it or they may have under this Section 9(d) except to the extent that the failure to so notify such other party materially prejudiced the substantive rights or defenses of the party from whom contribution is sought. Except for a settlement entered into pursuant to the last sentence of Section 9(c) hereof, no party will be liable for contribution with respect to any action or claim settled without its written consent if such consent is required pursuant to Section 9(c) hereof.

10. Representations and Agreements to Survive Delivery. The indemnity and contribution agreements contained in Section 9 of this Agreement and all representations and warranties of the Company herein or in certificates delivered pursuant hereto shall survive, as of their respective dates, regardless of (i) any investigation made by or on behalf of Cowen, any controlling persons, or the Company (or any of their respective officers, directors or controlling persons), (ii) delivery and acceptance of the Shares and payment therefor or (iii) any termination of this Agreement.

11. Termination.

(a) Cowen shall have the right by giving notice as hereinafter specified at any time to terminate this Agreement if (i) any Material Adverse Effect, or any development that could reasonably be expected to have a Material Adverse Effect has occurred that, in the reasonable judgment of Cowen, may materially impair the ability of Cowen to sell the Shares hereunder, (ii) the Company shall have failed, refused or been unable to perform any agreement on its part to be performed hereunder; *provided*, *however*, in the case of any failure of the Company to deliver (or cause another person to deliver) any certification, opinion, or letter required under Sections 7(m), 7(n), or 7(o), Cowen's right to terminate shall not arise unless such failure to deliver (or cause to be delivered) continues for more than thirty (30) days from the date such delivery was required (other than when an Agency Transaction is pending); (iii) any other condition of Cowen's obligations hereunder is not fulfilled, or (iv) any suspension or limitation of trading in the Shares or in securities generally on Nasdaq shall have occurred. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g) (Expenses), Section 9 (Indemnification and Contribution), Section 10 (Representations and Agreements to Survive Delivery), Section 16 (Applicable Law; Consent to Jurisdiction) and Section 17 (Waiver of Jury Trial) hereof shall remain in full force and effect notwithstanding such termination. If Cowen elects to terminate this Agreement as provided in this Section 11(a), Cowen shall provide the required notice as specified in Section 12 (Notices).

(b) In the case of any purchase by Cowen pursuant to a Terms Agreement, the obligations of Cowen pursuant to such Terms Agreement shall be subject to termination by Cowen at any time prior to or at the Principal Settlement Date if (A) since the time of execution of the Terms Agreement or the respective dates as of which information is given in the Registration Statement or the Prospectus, (i) there has been any Material Adverse Effect or material change in the senior management of the Company, whether or not arising in the ordinary course of business; or (ii) there has occurred any outbreak or escalation of hostilities or other national or international calamity or crisis or change in economic, political or other conditions, the effect of which on the United States or international financial markets is such as to make it, in Cowen's judgment, impracticable to market the Shares or enforce contracts for the sale of the Shares; or (iii) if trading in any securities of the Company has been suspended by the Commission or by the Nasdaq, or if trading generally on the Nasdaq over-the-counter market or the New York Stock Exchange has been suspended (including an automatic halt in trading pursuant to market-decline triggers, other than those in which solely program trading is temporarily halted), or limitations on prices for trading (other than limitations on hours or numbers of days of trading) have been fixed, or maximum ranges for prices for securities have been required, by such exchange or FINRA or the over-the-counter market or by order of the Commission or any other governmental authority; or (iv) if there has been any downgrade in the rating of any of the Company's debt securities or preferred stock by any "nationally recognized statistical rating organization" (as defined under Section 3(a)(62) of the Exchange Act); or (v) any federal, state, local or foreign statute, regulation, rule or order of any court or other governmental authority has been enacted, published, decreed or otherwise promulgated which, in the opinion of Cowen, would reasonably be expected to result in a Material Adverse Change; or (vi) any action has been taken by any federal, state, local or foreign government or agency in respect of its monetary or fiscal affairs which, in the opinion of Cowen, would reasonably be expected to have a material adverse effect on the securities markets in the United States. If Cowen elects to terminate its obligations pursuant to this Section 11(b), the Company shall be notified promptly in writing.

(c) The Company shall have the right, by giving ten (10) days' notice as hereinafter specified to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(d) Cowen shall have the right, by giving ten (10) days' notice as hereinafter specified to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(e) Unless earlier terminated pursuant to this Section 11, this Agreement shall automatically terminate upon the issuance and sale of all of the Shares through Cowen on the terms and subject to the conditions set forth herein; *provided* that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(f) This Agreement shall remain in full force and effect unless terminated pursuant to Sections 11(a), (b), (c), (d) or (e) above or otherwise by mutual agreement of the parties; *provided*, *however*, that any such termination by mutual agreement shall in all cases be deemed to provide that Section 7(g), Section 9, Section 10, Section 16 and Section 17 shall remain in full force and effect.

(g) Any termination of this Agreement shall be effective on the date specified in such notice of termination; *provided, however,* that such termination shall not be effective until the close of business on the date of receipt of such notice by Cowen or the Company, as the case may be. If such termination shall occur prior to the Settlement Date for any sale of Shares, such Shares shall settle in accordance with the provisions of this Agreement.

12. Notices. All notices or other communications required or permitted to be given by any party to any other party pursuant to the terms of this Agreement or any Terms Agreement shall be in writing, unless otherwise specified in this Agreement, and if sent to Cowen, shall be delivered to Cowen at Cowen and Company, LLC, 599 Lexington Avenue, New York, NY 10022, fax no. 646-562-1124, Attention: General Counsel; or if sent to the Company, shall be delivered to Atreca, Inc., 450 E. Jamie Court, South San Francisco, CA 94080, Attention: General Counsel, email: cphillips@atreca.com; with a copy to Cooley LLP, 3175 Hanover Street, Palo Alto, California 94304, Attention: Michael Tenta and Danielle E. Naftulin, Fax: (650) 849-7400, email: mtenta@cooley.com and dnaftulin@cooley.com. Each party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose. Each such notice or other communication shall be deemed given (i) when delivered personally or by verifiable electronic transmission (with an original to follow) on or before 4:30 p.m., New York City time, on a Business Day (as defined below), or, if such day is not a Business Day on the next succeeding Business Day, (ii) on the next Business Day after timely delivery to a nationally-recognized overnight courier and (iii) on the Business Day actually received if deposited in the U.S. mail (certified or registered mail, return receipt requested, postage prepaid). For purposes of this Agreement, "**Business Day**" shall mean any day on which Nasdaq and commercial banks in the City of New York are open for business.

13. Successors and Assigns. This Agreement and any Terms Agreement shall inure to the benefit of and be binding upon the Company and Cowen and their respective successors and the affiliates, controlling persons, officers and directors referred to in Section 9 hereof. References to any of the parties contained in this Agreement or any Terms Agreement shall be deemed to include the successors and permitted assigns of such party. Nothing in this Agreement or any Terms Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and permitted assigns any rights, remedies, obligations or liabilities under or by reason of this Agreement or any such Terms Agreement, except as expressly provided in this Agreement or such Terms Agreement. Neither party may assign its rights or obligations under this Agreement or any Terms Agreement without the prior written consent of the other party; *provided*, *however*, that Cowen may assign its rights and obligations hereunder or under any Terms Agreement to an affiliate of Cowen without obtaining the Company's consent.

14. Adjustments for Share Splits. The parties acknowledge and agree that all share-related numbers contained in this Agreement or any Terms Agreement shall be adjusted to take

into account any share split, share dividend or similar event effected with respect to the Common Stock.

15. Entire Agreement; Amendment; Severability. This Agreement (including all schedules and exhibits attached hereto and Placement Notices issued pursuant hereto), together with any Terms Agreement, constitutes the entire agreement and supersedes all other prior and contemporaneous agreements and undertakings, both written and oral, among the parties hereto with regard to the subject matter hereof. Neither this Agreement, nor any Terms Agreement, nor any term hereof may be amended except pursuant to a written instrument executed by the Company and Cowen. In the event that any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable as written by a court of competent jurisdiction, then such provision shall be given full force and effect to the fullest possible extent that it is valid, legal and enforceable, and the remainder of the terms and provisions herein shall be construed as if such invalid, illegal or unenforceable term or provision was not contained herein, but only to the extent that giving effect to such provision and the remainder of the terms and provisions hereof shall be in accordance with the intent of the parties as reflected in this Agreement and any Terms Agreement.

16. Applicable Law; Consent to Jurisdiction. This Agreement and any Terms Agreement shall be governed by, and construed in accordance with, the internal laws of the State of New York without regard to the principles of conflicts of laws. Each party hereby irrevocably submits to the non-exclusive jurisdiction of the state and federal courts sitting in the City of New York, borough of Manhattan, for the adjudication of any dispute hereunder or in connection with any transaction contemplated hereby or by any Terms Agreement, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is brought in an inconvenient forum or that the venue of such suit, action or proceeding is improper. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof (certified or registered mail, return receipt requested) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law.

17. Waiver of Jury Trial. The Company and Cowen each hereby irrevocably waives any right it may have to a trial by jury in respect of any claim based upon or arising out of this Agreement, any Terms Agreement or any transaction contemplated hereby or thereby.

18. Absence of Fiduciary Relationship. The Company acknowledges and agrees that:

(a) Cowen has been retained solely to act as an arm's length contractual counterparty to the Company in connection with the sale of the Shares contemplated hereby and any Terms Agreement and that no fiduciary, advisory or agency relationship between the Company and Cowen has been created in respect of any of the transactions contemplated by this Agreement or any Terms Agreement, irrespective of whether Cowen has advised or is advising the Company on other matters;

(b) the Company is capable of evaluating and understanding and understands and accepts the terms, risks and conditions of the transactions contemplated by this Agreement or any Terms Agreement;

(c) the Company has been advised that Cowen and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that Cowen has no obligation to disclose such interests and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; and

(d) the Company waives, to the fullest extent permitted by law, any claims it may have against Cowen, for breach of fiduciary duty or alleged breach of fiduciary duty and agrees that Cowen shall have no liability (whether direct or indirect) to the Company in respect of such a fiduciary claim or to any person asserting a fiduciary duty claim on behalf of or in right of the Company, including stockholders, partners, employees or creditors of the Company.

19. Counterparts. This Agreement and any Terms Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery of an executed Agreement or any Terms Agreement by one party to the other may be made by facsimile or electronic transmission.

[Remainder of Page Intentionally Blank]

If the foregoing correctly sets forth the understanding between the Company and Cowen, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement between the Company and Cowen.

Very truly yours,

COWEN AND COMPANY, LLC

By: /s/ Michael Murphy
Name: Michael Murphy
Title: Managing Director

ACCEPTED as of the date first-above written:

ATRECA, INC.

By: /s/ John A. Orwin
Name: John A. Orwin
Title: President and CEO

SCHEDULE 1

FORM OF PLACEMENT NOTICE

From: [ ]
Cc: [ ]
To: [ ]
Subject: Cowen At the Market Offering—Placement Notice

Gentlemen:

Pursuant to the terms and subject to the conditions contained in the Sales Agreement between Atreca, Inc. (the "Company") and Cowen and Company, LLC ("Cowen"), dated August 12, 2020 (the "Agreement"), I hereby request on behalf of the Company that Cowen sell up to [ ] shares of the Company's Class A common stock, par value $0.0001 per share, at a minimum market price of $_____ per share. Sales should begin on the date of this Notice and shall continue until [DATE] [all shares are sold].

SCHEDULE 2

Notice Parties

Company
John A. Orwin, Chief Executive Officer
Herbert Cross, Chief Financial Officer
Courtney Phillips, General Counsel and Corporate Secretary

Cowen
Michael Murphy, Managing Director
Karen Reni O’Reilly, Director

SCHEDULE 3

Compensation

Cowen shall be paid compensation equal to 3% of the gross proceeds from the sales of Shares in an Agency Transaction pursuant to the terms of this Agreement.

EXHIBIT 2(b)

ATRECA, INC.

[_____] SHARES

TERMS AGREEMENT

____, 20__

Cowen and Company, LLC
599 Lexington Avenue
New York, NY 10022

Ladies & Gentlemen:

Atreca, Inc., a Delaware corporation (the "**Company**"), proposes, subject to the terms and conditions stated herein and in the Sales Agreement, dated August 12, 2020 (the "**Sales Agreement**"), between the Company and Cowen and Company, LLC ("**Cowen**"), to issue and sell to Cowen the securities specified in the Schedule hereto (the "**Purchased Securities**"). Unless otherwise defined below, terms defined in the Sales Agreement shall have the same meanings when used herein.

Each of the provisions of the Sales Agreement not specifically related to the solicitation by Cowen, as agent of the Company, of offers to purchase securities is incorporated herein by reference in its entirety, and shall be deemed to be part of this Terms Agreement to the same extent as if such provisions had been set forth in full herein. Each of the representations, warranties and agreements set forth therein shall be deemed to have been made as of the date of this Terms Agreement and the Settlement Date set forth in the Schedule hereto.

An amendment to the Registration Statement or a supplement to the Prospectus, as the case may be, relating to the Purchased Securities, in the form heretofore delivered to Cowen, is now proposed to be filed with the Commission.

Subject to the terms and conditions set forth herein and in the Sales Agreement which are incorporated herein by reference, the Company agrees to issue and sell to Cowen, and Cowen agrees to purchase from the Company, the Purchased Securities at the time and place and at the purchase price set forth in the Schedule hereto.

Notwithstanding any provision of the Sales Agreement or this Terms Agreement to the contrary, the Company consents to Cowen trading in the Common Stock for Cowen's own account and for the account of its clients at the same time as sales of the Purchased Securities occur pursuant to this Terms Agreement.

If the foregoing is in accordance with your understanding, please sign and return to us a counterpart hereof, whereupon this Terms Agreement, including those provisions of the Sales Agreement incorporated herein by reference, shall constitute a binding agreement between Cowen and the Company.

ATRECA, INC.

By: _____
Name:
Title:

Accepted and agreed as of
the date first above written:

COWEN AND COMPANY, LLC

By: _____
Name:
Title:

Schedule to Terms Agreement

Title of Purchased Securities:

Class A Common Stock, par value $0.0001 per share

Number of Shares of Purchased Securities:

[•] Shares

Purchase Price Payable by Cowen:

$**[•]** per Share

Method of and Specified Funds for Payment of Purchase Price:

[By wire transfer to a bank account specified by the Company in same day funds.**]**

Method of Delivery:

[To Cowen's account, or the account of Cowen's designee, at The Depository Trust Company via DWAC in return for payment of the purchase price.**]**

Settlement Date:

[•], 20**[•]**

Closing Location:

[•]

Documents to be Delivered:

The following documents referred to in the Sales Agreement shall be delivered on the Settlement Date as a condition to the closing for the Purchased Securities (which documents shall be dated on or as of the Settlement Date and shall be appropriately updated to cover any Permitted Free Writing Prospectuses and any amendments or supplements to the Registration Statement, the Prospectus, any Permitted Free Writing Prospectuses and any documents incorporated by reference therein):

(1) the opinion and negative assurance letter referred to in Section 8(e);
(2) the opinion and negative assurance letter referred to in Section 8(f)
(3) the "comfort letter" referred to in Section 8(g);
(4) the representation certificate referred to in Section 8(h);
(5) the secretary's certificate referred to in Section 8(i)
(6) such other documents as Cowen shall reasonably request.

Time of sale: **[•] [**a.m./p.m.**]** (New York City time) on **[•]**, **[•]**

Time of sale information:

- The number of shares of Purchased Securities set forth above.

EXHIBIT 7(m)

OFFICER CERTIFICATE

The undersigned, the duly qualified and elected _____, of Atreca, Inc. ("**Company**"), a Delaware corporation, does hereby certify in such capacity and on behalf of the Company, pursuant to Section 7(m) of the Sales Agreement dated August 12, 2020 (the "**Sales Agreement**") between the Company and Cowen and Company, LLC, that to the best of the knowledge of the undersigned.

(i) The representations and warranties of the Company in Section 6 of the Sales Agreement (A) to the extent such representations and warranties are subject to qualifications and exceptions contained therein relating to materiality or Material Adverse Effect, are true and correct on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof, except for those representations and warranties that speak solely as of a specific date and which were true and correct as of such date, and (B) to the extent such representations and warranties are not subject to any qualifications or exceptions, are true and correct in all material respects as of the date hereof as if made on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof except for those representations and warranties that speak solely as of a specific date and which were true and correct as of such date; and

(ii) The Company has complied with all agreements and satisfied all conditions on its part to be performed or satisfied pursuant to the Sales Agreement at or prior to the date hereof.

By: _____
Name:
Title:

Date: _____

EXHIBIT 7(n)(i)

LEGAL OPINION

[To be circulated separately.]

Exhibit 31.1

CERTIFICATIONS

I, John A. Orwin, certify that:

1. I have reviewed this Form 10-Q of Atreca, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (c) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 12, 2020

By: /s/ JOHN A. ORWIN
John A. Orwin
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Herbert Cross, certify that:

1. I have reviewed this Form 10-Q of Atreca, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (c) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 12, 2020

By: /s/ HERBERT CROSS
Herbert Cross
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

CERTIFICATION

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), John A. Orwin, Chief Executive Officer of Atreca, Inc. (the "Company"), and Herbert Cross, Chief Financial Officer of the Company, each hereby certifies that, to the best of his knowledge:

1. The Company's Quarterly Report on Form 10-Q for the period ended June 30, 2020, to which this Certification is attached as Exhibit 32.1 (the "Periodic Report"), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

2. The information contained in the Periodic Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 12, 2020

IN WITNESS WHEREOF, the undersigned has set his hands hereto as of the 12th day of August, 2020.

/s/ JOHN A. ORWIN
John A. Orwin
Chief Executive Officer

/s/ HERBERT CROSS
Herbert Cross
Chief Financial Officer

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Atreca, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.