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File No. 333-239654

PROSPECTUS



9,466,951 Shares

Class A Common Stock

This prospectus relates to the sale or other disposition from time to time of up to an aggregate of 9,466,951 shares of our Class A common stock, par value \$0.0001 per share, which includes 5,934,191 shares of our Class A common stock issuable upon the conversion of our Class B common stock, par value \$0.0001 per share, held by the selling stockholders named in this prospectus. These shares were acquired by the selling stockholders in connection with the closing of various transactions between us and the selling stockholders. We are not selling any Class A common stock under this prospectus and will not receive any of the proceeds from the sale or other disposition of shares by the selling stockholders.

We are registering the shares for resale by the selling stockholders identified in this prospectus or their transferees, pledgees, donees, or successors. However, our registration of the shares of Class A common stock covered by this prospectus does not mean that the selling stockholders will offer or sell any of the shares. The selling stockholders may sell or otherwise dispose of the shares of Class A common stock covered by this prospectus in a number of different ways and at varying prices. We provide more information about how the selling stockholders may sell or otherwise dispose of their shares of Class A common stock in the section entitled "Plan of Distribution." Discounts, concessions, commissions and similar selling expenses attributable to the sale of shares of Class A common stock covered by this prospectus will be borne by the selling stockholders. We will pay all registration expenses incurred relating to the registration of the shares with the Securities and Exchange Commission (including up to \$50,000 of reasonable legal expenses of the selling stockholders), and the selling stockholders will pay all selling expenses, including underwriting discounts and selling commissions, related to the sale of the shares registered under this registration statement. As of the date of this prospectus, no underwriter or other person has been engaged to facilitate the sale of the shares of Class A common stock covered hereby.

Our Class A common stock is listed on the NASDAQ Global Select Market under the symbol "BCEL." On August 11, 2020 the last reported sale price of our Class A common stock on the NASDAQ Global Select Market was \$13.79 per share.

Investing in our Class A common stock involves a high degree of risk. You should review carefully the risks and uncertainties described or incorporated by reference under the heading "Risk Factors" on page S-7 of this prospectus, and under similar headings in any amendment or supplement to this prospectus or as updated by any subsequent filing with the Securities and Exchange Commission that is incorporated by reference herein.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is July 10, 2020.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or SEC, using the "shelf" registration process. Under this process, the selling stockholders may from time to time, in one or more offerings, sell the Class A common stock described in this prospectus.

You should rely only on the information contained in, or incorporated by reference into, this prospectus (as supplemented and amended), along with the information contained in any free writing prospectuses we or the selling stockholders have authorized for use in connection with a specific offering. We have not authorized anyone to provide you with different information. We and the selling stockholders take no responsibility for, and can provide no assurances as to the reliability of, any other information that others may give you. The information contained in this prospectus (and in any supplement or amendment to this prospectus) or any related free writing prospectus, and the documents incorporated by reference herein and therein, are accurate only as of their respective dates, regardless of the time of delivery of this prospectus, any applicable prospectus supplement or any related free writing prospectus, or any sale of a security. We urge you to read carefully this prospectus (as supplemented and amended), together with the information incorporated herein by reference as described under the heading "Incorporation of Certain Information by Reference" before deciding whether to invest in any of the Class A common stock being offered.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the section entitled "Where You Can Find More Information."

Except as otherwise indicated herein or as the context otherwise requires, references in this prospectus to "Atreca," "the company," "we," "us," "our" and similar references refer to Atreca, Inc., a corporation under the laws of the State of Delaware.

This prospectus and the information incorporated herein by reference include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus and the information incorporated herein by reference are the property of their respective owners.

PROSPECTUS SUMMARY

The following summary highlights information contained elsewhere in this prospectus or incorporated by reference herein and does not contain all the information that may be important to purchasers of our securities. Prospective purchasers of our securities should carefully read the entire prospectus, any applicable prospectus supplement and any related free writing prospectus we or the selling stockholders have authorized for use in connection with a specific offering, including the risks of investing in our securities discussed under the heading "Risk Factors" contained in any applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus. Prospective purchasers of our securities should also carefully read the information incorporated by reference into this prospectus, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part.

Atreca, Inc.

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 cancers. Although existing cancer therapies, including the evolving class of cancer immunotherapeutics, have advanced significantly over recent years, cancer remains the second leading cause of death in the United States. 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 immuno-oncology targets provides us with a significant competitive advantage over traditional approaches which focus on the targets that many companies are aware of and can pursue. As of July 1, 2020, 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, engineered 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 tissue 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.

Our Lead Candidate: ATRC-101 for the Treatment of Solid Tumors

ATRC-101 is a monoclonal antibody derived from an antibody identified using our discovery platform in the active immune response of a patient. We believe that ATRC-101 may have broad potential as an immunotherapeutic agent in a range of solid tumors. ATRC-101 reacts in vitro with a majority of human ovarian, non-small cell lung, colorectal and breast cancer and acral melanoma samples from multiple patients. Furthermore, there were no signals of toxicological significance observed across a range of normal human tissues assessed in vitro for ATRC-101 reactivity. Both the mechanism of action of ATRC-101, which we refer to as Driver Antigen Engagement, and its target appear unlike those of other anti-tumor antibodies that have been or are currently in clinical development.

We have identified the target of ATRC-101 as a ribonucleoprotein, or RNP, complex. Although RNP complexes typically are intracellular, flow cytometry analysis of dissociated tumor tissue from multiple mouse tumor models indicated that the target of ATRC-101 can be found extracellularly. Multiple lines of evidence indicate that ATRC-101 binds to a polyadenylate-binding protein, or PABP, family member within its target RNP complex, and that a differentiated form of PABP-1 is present within its target RNP complex. We believe that the cellular response to stress is involved in generating the target of ATRC-101, including the stress induced by chemotherapeutics, and the chemotherapeutic doxorubicin induced the target of ATRC-101 in tumor tissue preclinically *in vivo*.

ATRC-101 has demonstrated robust anti-tumor activity as a single agent in multiple preclinical syngeneic tumor models, including a model of the T cell-excluded phenotype, in which PD-1 checkpoint inhibitors typically display limited activity. ATRC-101 has also demonstrated preclinical activity in combination with other immunotherapeutics, including a PD-1 checkpoint inhibitor. Additional lines of evidence indicate that ATRC-101 bound to its RNP target induces an immune response against tumor tissue in model systems in a manner similar to that in which other RNP complexes are known to drive immune system responses in humans. In particular, in tumor models, ATRC-101 appears to activate the innate immune system, which then induces an adaptive immune response involving T cells, which are required for anti-tumor activity of ATRC-101 *in vivo* in preclinical models. ATRC-101 demonstrates the ability of our platform to generate antibody candidates with novel targets and mechanisms of action.

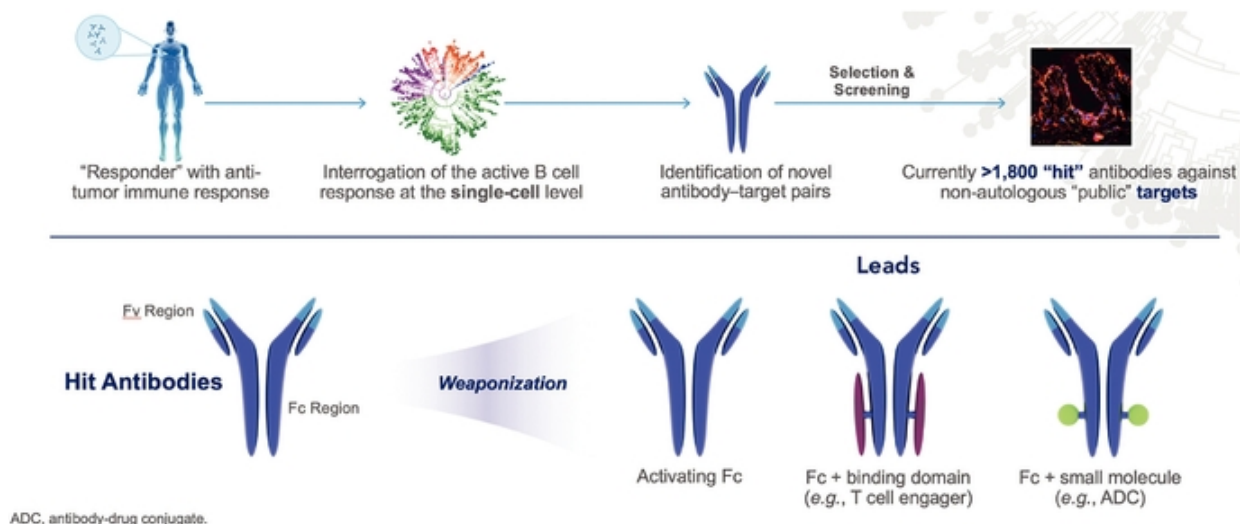
In repeat-dose, preclinical safety studies in both mice and non-human primates, we did not observe a safety signal. We obtained Investigational New Drug, or IND, clearance from the United States Food and Drug Administration to conduct clinical trials with ATRC-101 in late 2019 and launched an open-label, dose escalation trial in patients with select solid tumors in early 2020. Assuming we observe an acceptable safety profile, we then anticipate dosing ATRC-101 in expansion cohorts and in combination with other agents, including with select chemotherapeutics as well as with a PD-1 checkpoint inhibitor.

We own worldwide rights to ATRC-101. We have filed multiple patent applications relating to ATRC-101 and its variants. In February 2020, we filed a nonprovisional patent application in the United States, an international patent application under the Patent Cooperation Treaty, and a patent application in Taiwan, each relating to ATRC-101 and its variants.

The Atreca Drug Discovery Platform

We believe we may be able to address certain key limitations of the current oncology drug discovery paradigm by focusing on the common phenomenon driving clinical responses in cancer immunotherapy—an active human anti-tumor immune response. Our platform allows us to interrogate an active B cell response within an individual cancer patient to identify novel and relevant antibody-target pairs, which may enable us to develop antibody-based product candidates to treat large populations of patients with solid tumors. We believe that the significant time and capital invested in developing, refining and applying our differentiated discovery platform have provided us with significant

first-mover advantages and created barriers to entry. The figure below illustrates the overall concept of our drug discovery approach:



For example, establishing our non-interventional clinical studies to obtain patient samples, enabling longitudinal analyses, required approximately 1 to 2 years per study. We have built informatics expertise and infrastructure important to the operation of our platform in over eight years of operations. Our hit antibody generation process delivers hits at a high rate, has already generated over 1,800 hit antibodies and is supported by a growing intellectual property portfolio. Additionally, our investments of capital and time in building industrialized wet-lab capabilities, including the time required to identify and hire very qualified personnel, were substantial.

Our discovery process begins by gathering blood samples, mostly through company-sponsored non-interventional clinical studies, from cancer patients before, during and after they undergo treatment, which can induce an active anti-tumor immune response. Through this process, as of July 1, 2020, we have built a broad repository of over 1,500 samples from over 650 donors, representing over 30 different solid tumor types. We identify those patients with clinically meaningful responses to therapy, defined as those that reach validated surrogate endpoints of complete or partial response, stable disease for six months, or long-term progression-free survival. For those patients, we then examine their samples for rare antibody-producing B cells called plasmablasts that are elevated during an active immune response. We believe that these human immune responses, which often occur over an extended period of time, generate antibodies accessible with our platform that would be difficult to obtain through shorter term, non-human immunization or in vitro strategies.

We then employ a multi-step process to generate a potential product candidate. We start by isolating single plasmablasts and determining the sequences of the co-expressed antibody genes using our proprietary Immune Repertoire Capture® technology. We analyze these sequences to select antibodies, which we synthesize as recombinant proteins. We then test these antibodies to identify those that bind to tumor tissue from patients who are not the source of the antibody, referred to as non-autologous tumor tissue, preferentially over normal tissue. We then analyze these "hit" antibodies using a number of in vitro and in vivo assays, and often make structural changes to generate leads. A select number of these leads are refined further using protein engineering to enhance their drug-like properties as we identify and characterize their targets in parallel prior to initiating preclinical development and IND-enabling studies.

Strategic Collaborations

A key aspect of our strategy is to advance both our platform and the generation of clinical pipeline assets not only through our ongoing internal efforts, but also via partnerships with companies that have developed useful technologies. We believe this approach will allow us to expand our clinical pipeline in an accelerated manner.

In our continuing efforts to enhance our discovery platform, we have executed several partnerships specifically focused on accessing technology platforms that facilitate identification of the targets of the antibodies we discover, which is a key step in generating clinical candidates. These partnerships complement the ongoing expansion of our internal target identification capabilities and include collaborations with Merck, Serimmune and others.

In addition, in furtherance of our continuing efforts to generate clinical pipeline assets, we plan to enter into multiple collaborations to access best-in-class antibody engineering technologies that provide new or enhanced functionality beyond that found in naturally occurring antibodies. We expect these collaborations to enhance our ability to use our platform-generated antibodies to create clinical candidates that could be T cell-engagers, NK cell-engagers and antibody drug (toxin and immunostimulator) conjugates, among other formats.

Key Developments

Below is a summary of selected key developments affecting our business that have occurred since March 31, 2020:

- 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.
- In April 2020, we announced plans to collaborate with BeiGene Ltd. and IGM Biosciences, Inc., or IGM, which enable the parties to leverage their combined technology and expertise to discover, develop, and manufacture novel IgM and IgA antibodies targeting SARS-CoV-2 for the potential treatment of COVID-19. We and IGM executed a Material Transfer and Collaboration Agreement to allow both parties to commence their respective efforts and all three parties expect to work to finalize the financial and operational details of the collaboration in the coming months.
- In May 2020, we announced that we had successfully completed the first dosing cohort of our Phase 1b study of ATRC-101 in select solid tumors, and that we were commencing screening patients to enroll in the second dose cohort.
- In July 2020, we entered into a collaboration and license agreement with Xencor, Inc., or Xencor, to research, develop and commercialize T cell engaging bispecific antibodies as potential therapeutics in oncology. This collaboration will leverage Xencor's engineering platform to design and manufacture CD3 bispecific antibodies and our ability to generate novel antibody-target pairs through our discovery platform. Under the terms of this agreement, the companies will engage in a three-year discovery program. We 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.

Company Information

We were incorporated under the laws of the state of Delaware in 2010 under the name Atreca, Inc. Our principal executive offices are located at 450 E. Jamie Court, South San Francisco, CA 94080. Our telephone number is (650) 595-2595. Our website address is www.atreca.com. Information contained on, or that can be accessed through, our website is not incorporated by reference into this prospectus, and you should not consider information on our website to be part of this prospectus.

The Atreca design logo, "Atreca" and our other registered or common law trademarks, service marks, or trade names appearing in this prospectus are the property of Atreca, Inc. Other trade names, trademarks and service marks used in this prospectus are the property of their respective owners.

In addition, we are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act, or the JOBS Act, enacted in April 2012, and therefore we intend to take advantage of certain exemptions from various public company reporting requirements, including not being required to have our internal control over financial reporting audited by our independent registered public accounting firm pursuant to Section 404(b) of the Sarbanes-Oxley Act of 2002, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and any golden parachute payments not previously approved.

Risks Associated with our Business

Our business is subject to numerous risks, as described under the heading "Risk Factors" contained in the applicable prospectus supplement and in any free writing prospectuses we have authorized for use in connection with a specific offering, and under similar headings in the documents that are incorporated by reference into this prospectus.

The Offering

Class A common stock to be offered by the selling stockholders	9,466,951 shares, which includes 5,934,191 shares of Class A common stock issuable upon conversion of an aggregate of 5,934,191 shares of Class B common stock held by the selling stockholders named in this prospectus.
Use of proceeds	We will not receive any proceeds from the sale of the shares of Class A common stock covered by this prospectus.
Risk factors	See "Risk Factors" beginning on page S-7, for a discussion of factors you should carefully consider before deciding to invest in our Class A common stock.
NASDAQ Global Select Market symbol	BCEL

The selling stockholders named in this prospectus may offer and sell up to an aggregate of 9,466,951 shares of our Class A common stock, which includes 5,934,191 shares of Class A common stock issuable upon conversion of an aggregate of 5,934,191 shares of Class B common stock held by the selling stockholders named in this prospectus. Throughout this prospectus, when we refer to the shares of our Class A common stock being registered on behalf of the selling stockholders, we are referring to 9,466,951 shares of Class A common stock, including 5,934,191 shares of Class A common stock issuable upon conversion of an aggregate of 5,934,191 shares of Class B common stock reported to us as held by the selling stockholders as of August 10, 2020.

The selling stockholders purchased 7,466,951 shares of our Class A common stock and Class B common stock through several private placements of our convertible preferred stock prior to our initial public offering, effective as of October 15, 2015, August 10, 2017 and September 5, 2018, of which 3,532,760 shares of convertible preferred stock was converted into Class A common stock and 3,934,191 shares of convertible preferred stock was converted into Class B common stock in connection with our initial public offering.

On June 24, 2019, the selling stockholders purchased an aggregate of 2,000,000 shares of our Class B common stock offered in our initial public offering at \$17.00 per share.

On July 15, 2020, we entered into an underwriting agreement with Cowen and Company LLC, Evercore Group L.L.C. and Stifel, Nicolaus & Company, Incorporated, as representative of the several underwriters named therein, relating to the offering and sale of 7,812,500 shares of our common stock at the price to the public of \$16.00 per share. The sale of such shares closed on July 20, 2020, and the selling stockholders purchased 781,250 shares of our Class B common stock in such offering, which are not included in this prospectus.

We agreed to file this prospectus pursuant to a registration rights agreement with the selling stockholders dated March 11, 2020, or the Registration Rights Agreement. Additional information with respect to the Registration Rights Agreement is contained in this prospectus under the heading "Selling Stockholders" and in our Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 11, 2020 and our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2020.

When we refer to the selling stockholders, we are referring to the selling stockholders named herein and, as applicable, any donees, pledgees, transferees or other successors-in-interest selling shares received after the date of this prospectus from a selling stockholder as a gift, pledge, or other non-sale related transfer that may be identified in a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part.

RISK FACTORS

An investment in our Class A common stock involves a high degree of risk. Prior to making a decision about investing in our Class A common stock, you should consider carefully the specific risk factors discussed in the sections entitled "Risk Factors" contained in our most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q, as filed with the SEC, which are incorporated in this prospectus by reference in their entirety, as well as any amendment or updates to our risk factors reflected in subsequent filings with the SEC, including any prospectus supplement hereto. These risks and uncertainties are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us, or that we currently view as immaterial, may also impair our business. If any of the risks or uncertainties described in our SEC filings or any additional risks and uncertainties actually occur, our business, financial condition, results of operations and cash flow could be materially and adversely affected. In that case, the trading price of our Class A common stock could decline and you might lose all or part of your investment.

Risks Related To This Offering

The selling stockholders named in this prospectus hold a significant portion of our total outstanding shares of Class A common stock and Class B common stock, and any sale of such shares into the market in the future could cause the market price of our Class A common stock and Class B common stock to drop significantly, even if our business is doing well.

The selling stockholders named in this prospectus may offer and sell up to an aggregate of 9,466,951 shares of our Class A common stock and Class B common stock that they currently hold, which represents approximately 26.3% of our total outstanding shares of Class A common stock and Class B common stock as of August 12, 2020. Sales of a substantial number of shares of our Class A common stock in the public market by the selling stockholders named in this prospectus, or the perception that these sales might occur, could depress the market price of our Class A common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that sales by these stockholders may have on the prevailing market price of our Class A common stock.

FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements about us and our industry that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations or financial condition, business strategy and plans and objectives of management for future operations, are forward-looking statements. In some cases, you can identify forward-looking statements because they contain words such as "anticipate," "believe," "contemplate," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "target," "will" or "would" or the negative of these words or other similar terms or expressions, although not all forward-looking statements contain these words. These forward-looking statements include, but are not limited to, statements concerning the following:

- the initiation, timing, progress and results of our research and development programs, preclinical studies, any clinical trials and IND and other regulatory submissions;
- our expectations regarding the activity of ATRC-101 or potential future product candidates once administered in a human subject;
- our expectations and beliefs regarding the market for cancer therapies and development of the immuno-oncology industry;
- our ability to identify and develop product candidates for treatment of additional disease indications;
- our or a potential future collaborator's ability to obtain and maintain regulatory approval of any of our current or potential future product candidates;
- the rate and degree of market acceptance of any approved product candidates;
- the implementation of our business model and strategic plans for our business, technologies, and current or potential future product candidates;
- our or any potential future collaborator's ability to obtain and maintain intellectual property protection for our discovery platform and current or potential future product candidates and our ability to operate our business without infringing the intellectual property rights of others;
- our expectations regarding our ability to expand our pipeline through collaborations, the timing of our entry into additional collaborations and our ability to finalize the financial and operational details of our collaboration with BeiGene Ltd. and IGM Biosciences, Inc.; and
- our use of net proceeds to us from this offering.

You should not rely on forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this prospectus primarily on our current expectations and projections about future events and trends that we believe may affect our business, financial condition and operating results. The outcome of the events described in these forward-looking statements is subject to risks, uncertainties and other factors described in the section titled "Risk Factors" and elsewhere in this prospectus. Moreover, we operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time, and it is not possible for us to predict all risks and uncertainties that could have an impact on the forward-looking statements contained in this prospectus. The results, events and circumstances reflected in the forward-looking statements may not be achieved or occur, and actual results, events or circumstances could differ materially from those described in the forward-looking statements. You should read this prospectus and the documents that we reference in this prospectus and have filed as exhibits to the registration statement, of which this prospectus is a part, that we have filed with the SEC with the understanding

that our actual future results, levels of activity, performance and achievements may be materially different from what we expect.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based on information available to us as of the date of this prospectus. While we believe that information provides a reasonable basis for these statements, that information may be limited or incomplete. Our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all relevant information. These statements are inherently uncertain, and investors are cautioned not to unduly rely on these statements.

The forward-looking statements made in this prospectus relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statements made in this prospectus to reflect events or circumstances after the date of this prospectus or to reflect new information or the occurrence of unanticipated events, except as required by law. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments. We qualify all of our forward-looking statements by these cautionary statements.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale or other disposition of shares of our Class A common stock by the selling stockholders pursuant to this prospectus. The selling stockholders will receive all of the net proceeds from sales of the Class A common stock sold pursuant to this prospectus.

SELLING STOCKHOLDERS

The selling stockholders named in this prospectus may offer and sell up to an aggregate of 9,466,951 shares of our Class A common stock, which includes 5,934,191 shares of our Class A common stock issuable upon the conversion of our Class B common stock held by the selling stockholders named in this prospectus. The foregoing shares represent shares of Class A common stock and Class B common stock reported to us as held by the selling stockholders as of August 10, 2020.

On March 11, 2020, we entered into a registration rights agreement, or the Registration Rights Agreement, with the selling stockholders, pursuant to which the selling stockholders are entitled to certain resale registration rights with respect to shares of our Class A common stock held by the selling stockholders. Under the agreement, following a demand by the selling stockholders, we are obligated to file a resale registration statement on Form S-3, or other appropriate form, covering such Class A common stock held by the selling stockholders, and to keep such registration statement effective until the earlier of (i) all registrable securities covered by the registration statement have been sold or may be sold freely without limitations or restrictions as to volume or manner of sale pursuant to Rule 144 of the Securities Act, as amended, or Rule 144, or (ii) all registrable securities covered by the registration statement otherwise cease to be considered registrable securities pursuant to the terms of the agreement. Under the agreement, the selling stockholders have the right to one underwritten public offering per calendar year, but no more than three underwritten public offerings in total, to effect the sale or distribution of its registrable securities, subject to specified exceptions, conditions and limitations. The agreement requires us to bear expenses incurred by us in effecting any registration pursuant to the agreement, and up to \$50,000 of expenses per underwritten public offering for counsel for the selling stockholders and also includes customary indemnification obligations in connection with registrations conducted pursuant to the agreement. The rights of the selling stockholders under the agreement terminate automatically upon the earlier to occur of the following events: (i) all registrable securities covered by the agreement have been sold pursuant to an effective registration statement; (ii) all registrable securities covered by the agreement have been sold by pursuant to Rule 144, or other similar rule; (iii) all registrable securities covered by the agreement may be resold without limitations as to volume or manner of sale pursuant to Rule 144; or (iv) 10 years after the date of the agreement. Additional information with respect to the Registration Rights Agreement is contained in our Annual Report on Form 10-K filed with the SEC on March 11, 2020 and our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2020.

Baker Brothers Life Sciences L.P. and 667, L.P., together Baker Brothers, are limited partnerships under the advisement of Baker Bros. Advisors LP, which purchased an aggregate of 781,250 of the shares of our Class B common stock offered in the follow-on public offering, or the Follow-on Shares, we completed in July 2020 at the public offering price of \$16.00 per share, for an aggregate purchase price of approximately \$12.5 million, which shares are not included in this prospectus. In addition, Baker Brothers purchased an aggregate of 2,000,000 shares of our Class B common stock offered in our initial public offering at \$17.00 per share on June 24, 2019, for an aggregate purchase price of approximately \$34.0 million. In addition, Baker Brothers purchased an aggregate of 7,466,951 shares of our Class A common stock and Class B common stock through several private placements of our convertible preferred stock prior to our initial public offering, effective as of October 15, 2015, August 10, 2017 and September 5, 2018, for an aggregate purchase price of approximately \$94.8 million, of which 3,532,760 shares of convertible preferred stock was converted into Class A common stock and 3,934,191 shares of convertible preferred stock was converted into Class B common stock in connection with our initial public offering. Other than the Follow-on Shares, the shares purchased in these transactions are included in the shares of Class A common stock offered by this prospectus.

On September 5, 2018, we entered into a nominating agreement with Baker Brothers, or the Nominating Agreement. Pursuant to the Nominating Agreement, during the period beginning at the

closing of our initial public offering until when Baker Brothers no longer beneficially own at least 3,333,333 shares of our common stock (subject to adjustment for stock splits, combinations, recapitalizations and similar transactions), or the Nominating Agreement Period, 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 Brothers Designee, unless a majority of our disinterested directors reasonably and in good faith determines that a Baker Brothers Designee would not be qualified to serve as our director under law, rules of the stock exchange on which our shares are listed, our amended and restated bylaws, or any of our company policies. If a Baker Brothers Designee resigns his or her seat on our board of directors or is removed or does not become a director for any reason, the vacancy will be filled by the election or appointment of another designee of Baker Brothers as soon as reasonably practicable, subject to compliance with applicable laws, rules and regulations. Furthermore, during the Nominating Agreement Period, if there is no Baker Brothers Designee on our board of directors, we will have the obligation to invite two board of directors observer designees of Baker Brothers, or the Baker Brothers Observers, to attend all meetings of our board of directors and all meetings of the committees of our board of directors as a nonvoting observer, subject to Baker Brothers Observers' agreement to hold in confidence the information they receive as observers of our board of directors and committee meetings, as well as subject to their exclusion from our board of directors' meetings to preserve our attorney-client privilege, to avoid conflicts of interest, if Baker Brothers is determined by our board of directors to be a competitor or other customary conditions. The Nominating Agreement automatically terminates upon the earlier of when Baker Brothers, together with its affiliates, no longer beneficially owns at least 3,333,333 shares of our common stock or the consummation of our acquisition in a change of control transaction, as such terms are defined in our amended and restated certificate of incorporation.

We are party to an amended and restated investors' rights agreement, or the IRA, with certain holders of our Class A common stock and Class B common stock, as applicable, including Baker Brothers. The IRA provides these holders of our Class A common stock and Class B common stock with certain registration rights, including the right to demand that we file a registration statement or request that their shares be covered by a registration statement that we are otherwise filing, and also the right to obligate us to an agreement to provide for additional rights to demand that we file a registration statement or request that their shares be covered by a registration statement that we have filed and maintain as effective.

We filed our amended and restated certificate of incorporation with the Secretary of State of the State of Delaware on June 24, 2019. Thereunder, holders of shares of Class B common stock, all outstanding shares of which are currently held by Baker Brothers, has the right to convert each share of Class B common stock held by such holder into one share of Class A common stock at such holder's election, provided that such shares of Class B common stock may only be converted into shares of Class A common stock when, as immediately prior to or as a result of such conversion, such conversion would not result in such holder beneficially owning (for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended and the rules and regulations promulgated thereunder, or the Exchange Act), when aggregated with affiliates with whom such holder is required to aggregate beneficial ownership for purposes of Section 13(d) of the Exchange Act, in excess of, initially, 4.99% of any class of securities of Atreca registered under the Exchange Act, which percentage may be increased or decreased to such other percentage as any holder of outstanding shares of Class B common stock may designate in writing upon 61 days' notice to Atreca, provided, however, that no holder may make such an election to change the percentage unless all holders managed by the same investment advisor as such electing holder make the same election. The Class B common stock is non-voting.

Except for the ownership of the shares of Class A common stock and Class B common stock, the Registration Rights Agreement, the Nominating Agreement, the IRA, our amended and restated

certificate of incorporation and the participation by entities affiliated with Brother Bakers in our private placements of convertible preferred stock and our initial public offering, the selling stockholders have not had any material relationship with us or our affiliates within the past three years.

The table below, including the footnotes, lists the selling stockholders and other information regarding the beneficial ownership of the shares of our Class A common stock and Class B common stock held by the selling stockholders based on information provided to us by the selling stockholders. Generally, a person "beneficially owns" shares of our Class A common stock or Class B common stock, as applicable, if the person has or shares with others the right to vote those shares or to dispose of them, or if the person has the right to acquire voting or disposition rights within 60 days. The percentages of shares owned prior to and after the offering are based on an aggregate of 36,029,407 shares of our Class A common stock and Class B common stock outstanding as of August 12, 2020, which includes the outstanding shares of Class A common stock offered by this prospectus. The number of shares beneficially owned prior to the offering indicates the number of shares of Class A common stock and Class B common stock reported to us as beneficially owned by the selling stockholders as of August 10, 2020.

The maximum number of shares to be sold column indicates the total number of shares of our Class A common stock that the selling stockholders may offer under this prospectus.

The shares beneficially owned after offering number assumes the sale of all of the shares offered by the selling stockholders pursuant to this prospectus. However, because the selling stockholders may sell all or some of their shares under this prospectus from time to time, or in another permitted manner, we cannot assure you as to the actual number of shares that will be sold by the selling stockholders or that will be held by the selling stockholders after completion of any sales. We do not know how long any of the selling stockholders will hold the shares before selling them.

The selling stockholders may sell all, some or none of their shares covered by this prospectus in this offering. See "Plan of Distribution."

Name of Selling Stockholder	Shares Beneficially Owned Prior to Offering				Maximum Number of Shares to be Sold Pursuant to this Prospectus	Shares Beneficially Owned After Offering ⁽¹⁾	
	Number of Class A Common Stock Shares	Percent	Number of Class B Common Stock Shares	Percent		Number	Percent
Entities Affiliated with Baker Bros. Advisors LP ⁽²⁾	3,532,760	12.1%	6,715,441	100.0%	9,466,951	—	—

- (1) The selling stockholders may offer and sell all or part of the Class A common stock covered by this prospectus, but no estimates can be made as to the amount of shares of Class A common stock that will be held by the selling stockholders after the completion of this offering.
- (2) The shares of Class A common stock and Class B common stock reported to us as beneficially owned by Baker Bros. Advisors LP consists of 3,223,030 shares of Class A common stock and 6,173,327 shares of Class B common stock held of record by Baker Brothers Life Sciences L.P. and 309,730 shares of Class A common stock and 542,114 shares of Class B common stock held of record by 667, L.P.

PLAN OF DISTRIBUTION

The selling stockholders may, from time to time, sell any or all of their shares of Class A common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These sales may be at fixed or negotiated prices. The selling stockholders may use any one or more of the following methods when selling shares:

- ordinary brokerage transactions and transactions in which a broker-dealer solicits purchasers;
- block trades in which a broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account under this prospectus;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- "at the market" or through market makers or into an existing market for the shares;
- short sales;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- through the distribution of the Class A common stock by any selling stockholder to its partners, members or stockholders;
- through broker-dealers that agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- through one or more underwritten offerings on a firm commitment or best efforts basis;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. The selling stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144, as permitted by that rule, or Section 4(a)(1) under the Securities Act, if available, rather than under this prospectus, provided that they meet the criteria and conform to the requirements of those provisions.

In connection with the sale of the shares, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the Class A common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our Class A common stock short and deliver these securities to close out their short positions, or loan or pledge the Class A common stock to broker dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the shares offered by them will be the purchase price of the Class A common stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with their agents from time to time, to

reject, in whole or in part, any proposed purchase of Class A common stock to be made directly or through agents. We will not receive any of the proceeds from this offering.

The selling stockholders and any broker-dealers that act in connection with the sale of securities may be deemed to be "underwriters" within the meaning of Section 2(a)(11) of the Securities Act in connection with such sales, and any commissions received by such broker-dealers and any profit on the resale of the securities sold by them while acting as principals may be deemed to be underwriting discounts or commissions under the Securities Act. In the event that any selling stockholder is deemed to be an "underwriter" within the meaning of Section 2(a)(11) of the Securities Act, the selling stockholder will be subject to the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act. To our knowledge, none of the selling stockholders received any shares as underwriting compensation.

The selling stockholders may from time to time pledge or grant a security interest in some or all of the shares of Class A common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of Class A common stock from time to time under this prospectus after we have filed a supplement to this prospectus, or, if required, a post-effective amendment to the registration statement of which this prospectus is a part, supplementing or amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus.

The selling stockholders also may transfer the shares of Class A common stock in other circumstances, in which case the transferees or other successors in interest will be the selling beneficial owners for purposes of this prospectus and may sell the shares of Class A common stock from time to time under this prospectus after we have filed a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part, supplementing or amending the list of selling stockholders to include the transferee or other successors in interest as selling stockholders under this prospectus.

To the extent required, the shares of our Class A common stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agents, dealer or underwriter, any applicable commissions or discounts with respect to a particular offer will be set forth in an amendment or supplement to this prospectus.

We will pay all registration expenses incurred relating to the registration of the shares with the SEC (including up to \$50,000 of reasonable legal expenses of the selling stockholders) pursuant to the Registration Rights Agreement, and the selling stockholders will pay all selling expenses, including underwriting discounts and selling commissions, related to the sale of the shares registered under this registration statement. We have agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

The selling stockholders have advised us that they have not entered into any agreements, understandings or arrangements with any underwriters or broker-dealers regarding the sale of their shares of Class A common stock, nor is there an underwriter or coordinating broker acting in connection with a proposed sale of shares of Class A common stock by any selling stockholder. If we are notified by any selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of shares of Class A common stock, if required, we will file a supplement to this prospectus. If the selling stockholders use this prospectus for any sale of the shares of Class A common stock, they will be subject to the prospectus delivery requirements of the Securities Act.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares of our Class A common stock in the market and to the activities of the selling stockholders and their affiliates. These rules may limit the timing of purchases

and sales of the shares by such selling stockholders. Regulation M may also restrict the ability of any person engaged in the distribution of the shares of Class A common stock to engage in market-making activities with respect to the shares of Class A common stock. All of the foregoing may affect the marketability of the shares of Class A common stock and the ability of any person or entity to engage in market-making activities with respect to the shares of Class A common stock.

Our Class A common stock is listed on The NASDAQ Global Select Market under the symbol "BCEL." There can be no assurance that any selling stockholder will sell any or all of the shares of Class A common stock registered pursuant to this prospectus.

LEGAL MATTERS

The validity of the Class A common stock being offered hereby was passed upon by Cooley LLP, Palo Alto, California.

EXPERTS

The financial statements, incorporated in this prospectus by reference from the Company's [Annual Report on Form 10-K for the year ended December 31, 2019](#), have been audited by OUM & Co. LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference. Such financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of a registration statement on Form S-3 we filed with the SEC. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. Neither we nor any agent, underwriter or dealer has authorized any person to provide you with different information. We are not making an offer of these securities in any state where the offer is not permitted. You should not assume that the information in this prospectus is accurate as of any date other than the date on the front page of this prospectus, regardless of the time of delivery of this prospectus or any sale of the securities offered by this prospectus.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public at the SEC's website at <http://www.sec.gov>, which contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the SEC. We maintain a website at www.atreca.com. The information contained in, or that can be accessed through, our website is not incorporated by reference herein and is not part of this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with it, which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus. The information incorporated by reference is considered to be part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings (including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to the effectiveness of such registration statement) we will make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act until the termination of the offering of the shares covered by this prospectus (other than information furnished under Item 2.02 or Item 7.01 of Form 8-K):

- [our Annual Report on Form 10-K for the year ended December 31, 2019, filed with the SEC on March 11, 2020](#), including the information specifically incorporated by reference therein from our [Definitive Proxy Statement on Schedule 14A, filed on April 29, 2020](#);
- our Quarterly Report on Form 10-Q for the quarters ended March 31, 2020, filed with the SEC on May 14, 2020, and June 30, 2020, filed with the SEC on [August 12, 2020](#);
- our Current Reports on Form 8-K filed with the SEC on [May 21, 2020](#), [June 16, 2020](#), [July 8, 2020](#) and [July 16, 2020 \(only with respect to Item 8.01\)](#); and

- [the description of our Class A common stock set forth in our registration statement on Form 8-A, filed with the SEC on June 10, 2019, including any amendments thereto or reports filed for the purposes of updating this description.](#)

We will furnish without charge to each person, including any beneficial owner, to whom a prospectus is delivered, upon written or oral request, a copy of any or all of the documents incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits that are specifically incorporated by reference into such documents. You should direct any requests for documents to:

Atreca, Inc.
450 East Jamie Court
South San Francisco, California 94080
(650) 595-2595
Attn: General Counsel

PROSPECTUS



9,466,951 Shares

Class A Common Stock

This prospectus relates to the sale or other disposition from time to time of up to an aggregate of 9,466,951 shares of our Class A common stock, par value \$0.0001 per share, which includes 5,934,191 shares of our Class A common stock issuable upon the conversion of our Class B common stock, par value \$0.0001 per share, held by the selling stockholders named in this prospectus. These shares were acquired by the selling stockholders in connection with the closing of various transactions between us and the selling stockholders. We are not selling any Class A common stock under this prospectus and will not receive any of the proceeds from the sale or other disposition of shares by the selling stockholders.

We are registering the shares for resale by the selling stockholders identified in this prospectus or their transferees, pledgees, donees, or successors. However, our registration of the shares of Class A common stock covered by this prospectus does not mean that the selling stockholders will offer or sell any of the shares. The selling stockholders may sell or otherwise dispose of the shares of Class A common stock covered by this prospectus in a number of different ways and at varying prices. We provide more information about how the selling stockholders may sell or otherwise dispose of their shares of Class A common stock in the section entitled "Plan of Distribution." Discounts, concessions, commissions and similar selling expenses attributable to the sale of shares of Class A common stock covered by this prospectus will be borne by the selling stockholders. We will pay all registration expenses incurred relating to the registration of the shares with the Securities and Exchange Commission (including up to \$50,000 of reasonable legal expenses of the selling stockholders), and the selling stockholders will pay all selling expenses, including underwriting discounts and selling commissions, related to the sale of the shares registered under this registration statement. As of the date of this prospectus, no underwriter or other person has been engaged to facilitate the sale of the shares of Class A common stock covered hereby.

Our Class A common stock is listed on the NASDAQ Global Select Market under the symbol "BCEL." On July 1, 2020, the last reported sale price of our Class A common stock on the NASDAQ Global Select Market was \$22.10 per share.

Investing in our Class A common stock involves a high degree of risk. You should review carefully the risks and uncertainties described or incorporated by reference under the heading "Risk Factors" on page 7 of this prospectus, and under similar headings in any amendment or supplement to this prospectus or as updated by any subsequent filing with the Securities and Exchange Commission that is incorporated by reference herein.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is July 10, 2020.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or SEC, using the "shelf" registration process. Under this process, the selling stockholders may from time to time, in one or more offerings, sell the Class A common stock described in this prospectus.

You should rely only on the information contained in, or incorporated by reference into, this prospectus (as supplemented and amended), along with the information contained in any free writing prospectuses we or the selling stockholders have authorized for use in connection with a specific offering. We have not authorized anyone to provide you with different information. We and the selling stockholders take no responsibility for, and can provide no assurances as to the reliability of, any other information that others may give you. The information contained in this prospectus (and in any supplement or amendment to this prospectus) or any related free writing prospectus, and the documents incorporated by reference herein and therein, are accurate only as of their respective dates, regardless of the time of delivery of this prospectus, any applicable prospectus supplement or any related free writing prospectus, or any sale of a security. We urge you to read carefully this prospectus (as supplemented and amended), together with the information incorporated herein by reference as described under the heading "Incorporation of Certain Information by Reference" before deciding whether to invest in any of the Class A common stock being offered.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the section entitled "Where You Can Find More Information."

Except as otherwise indicated herein or as the context otherwise requires, references in this prospectus to "Atreca," "the company," "we," "us," "our" and similar references refer to Atreca, Inc., a corporation under the laws of the State of Delaware.

This prospectus and the information incorporated herein by reference include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus and the information incorporated herein by reference are the property of their respective owners.

PROSPECTUS SUMMARY

The following summary highlights information contained elsewhere in this prospectus or incorporated by reference herein and does not contain all the information that may be important to purchasers of our securities. Prospective purchasers of our securities should carefully read the entire prospectus, any applicable prospectus supplement and any related free writing prospectus we or the selling stockholders have authorized for use in connection with a specific offering, including the risks of investing in our securities discussed under the heading "Risk Factors" contained in any applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus. Prospective purchasers of our securities should also carefully read the information incorporated by reference into this prospectus, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part.

Atreca, Inc.

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 cancers. Although existing cancer therapies, including the evolving class of cancer immunotherapeutics, have advanced significantly over recent years, cancer remains the second leading cause of death in the United States. 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 immuno-oncology targets provides us with a significant competitive advantage over traditional approaches which focus on the targets that many companies are aware of and can pursue. As of July 1, 2020, 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, engineered 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 tissue 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.

Our Lead Candidate: ATRC-101 for the Treatment of Solid Tumors

ATRC-101 is a monoclonal antibody derived from an antibody identified using our discovery platform in the active immune response of a patient. We believe that ATRC-101 may have broad potential as an immunotherapeutic agent in a range of solid tumors. ATRC-101 reacts *in vitro* with a majority of human ovarian, non-small cell lung, colorectal, breast cancer and acral melanoma samples from multiple patients. Furthermore, there were no signals of toxicological significance observed across a range of normal human tissues assessed *in vitro* for ATRC-101 reactivity. Both the mechanism of action of ATRC-101, which we refer to as Driver Antigen Engagement, and its target appear unlike those of other anti-tumor antibodies that have been or are currently in clinical development.

We have identified the target of ATRC-101 as a ribonucleoprotein, or RNP, complex. Although RNP complexes typically are intracellular, flow cytometry analysis of dissociated tumor tissue from multiple mouse tumor models indicated that the target of ATRC-101 can be found extracellularly. Multiple lines of evidence indicate that ATRC-101 binds to a polyadenylate-binding protein, or PABP, family member within its target RNP complex, and that a differentiated form of PABP-1 is present within its target RNP complex. We believe that the cellular response to stress is involved in generating the target of ATRC-101, including the stress induced by chemotherapeutics, and the chemotherapeutic doxorubicin induced the target of ATRC-101 in tumor tissue preclinically *in vivo*.

ATRC-101 has demonstrated robust anti-tumor activity as a single agent in multiple preclinical syngeneic tumor models, including a model of the T cell-excluded phenotype, in which PD-1 checkpoint inhibitors typically display limited activity. ATRC-101 has also demonstrated preclinical activity in combination with other immunotherapeutics, including a PD-1 checkpoint inhibitor. Additional lines of evidence indicate that ATRC-101 bound to its RNP target induces an immune response against tumor tissue in model systems in a manner similar to that in which other RNP complexes are known to drive immune system responses in humans. In particular, in tumor models, ATRC-101 appears to activate the innate immune system, which then induces an adaptive immune response involving T cells, which are required for anti-tumor activity of ATRC-101 *in vivo* in preclinical models. ATRC-101 demonstrates the ability of our platform to generate antibody candidates with novel targets and mechanisms of action.

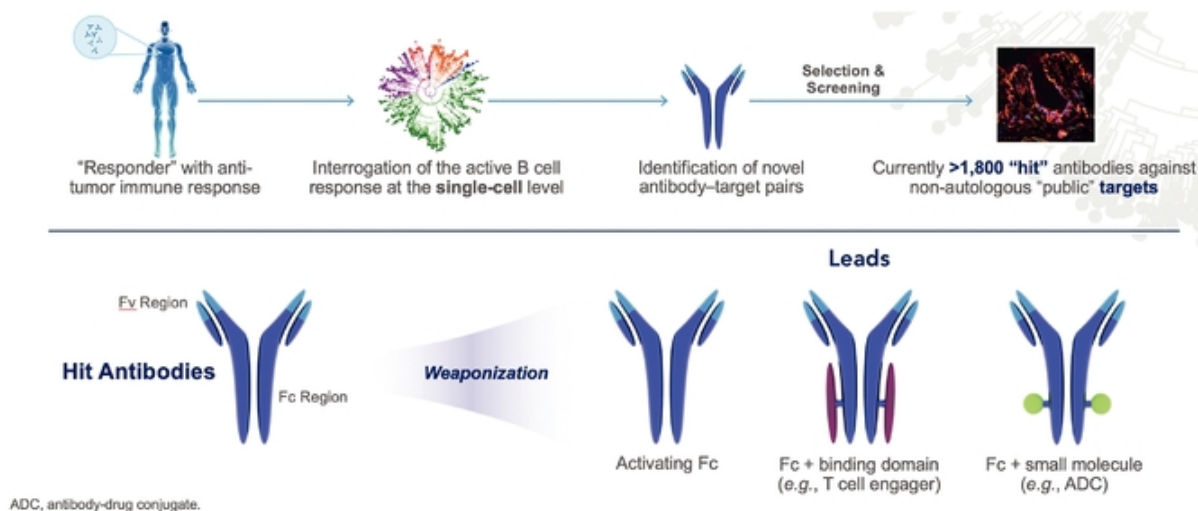
In repeat-dose, preclinical safety studies in both mice and non-human primates, we did not observe a safety signal. We obtained Investigational New Drug, or IND clearance from the United States Food and Drug Administration to conduct clinical trials with ATRC-101 in late 2019 and launched an open-label, dose escalation trial in patients with select solid tumors in early 2020. Assuming we observe an acceptable safety profile, we then anticipate dosing ATRC-101 in expansion cohorts and in combination with other agents, including with select chemotherapeutics as well as with a PD-1 checkpoint inhibitor.

We own worldwide rights to ATRC-101. We have filed multiple patent applications relating to ATRC-101 and its variants. In February 2020, we filed a nonprovisional patent application in the United States, an international patent application under the Patent Cooperation Treaty, and a patent application in Taiwan, each relating to ATRC-101 and its variants.

The Atreca Drug Discovery Platform

We believe we may be able to address certain key limitations of the current oncology drug discovery paradigm by focusing on the common phenomenon driving clinical responses in cancer immunotherapy—an active human anti-tumor immune response. Our platform allows us to interrogate an active B cell response within an individual cancer patient to identify novel and relevant antibody-target pairs, which may enable us to develop antibody-based product candidates to treat large populations of patients with solid tumors. We believe that the significant time and capital invested in developing, refining and applying our differentiated discovery platform have provided us with significant

first-mover advantages and created barriers to entry. The figure below illustrates the overall concept of our drug discovery approach:



For example, establishing our non-interventional clinical studies to obtain patient samples, enabling longitudinal analyses, required approximately 1 to 2 years per study. We have built informatics expertise and infrastructure important to the operation of our platform in over eight years of operations. Our hit antibody generation process delivers hits at a high rate, has already generated over 1,800 hit antibodies and is supported by a growing intellectual property portfolio. Additionally, our investments of capital and time in building industrialized wet-lab capabilities, including the time required to identify and hire very qualified personnel, were substantial.

Our discovery process begins by gathering blood samples, mostly through company-sponsored non-interventional clinical studies, from cancer patients before, during and after they undergo treatment, which can induce an active anti-tumor immune response. Through this process, as of July 1, 2020, we have built a broad repository of over 1,500 samples from over 650 donors, representing over 30 different solid tumor types. We identify those patients with clinically meaningful responses to therapy, defined as those that reach validated surrogate endpoints of complete or partial response, stable disease for six months, or long-term progression-free survival. For those patients, we then examine their samples for rare antibody-producing B cells called plasmablasts that are elevated during an active immune response. We believe that these human immune responses, which often occur over an extended period of time, generate antibodies accessible with our platform that would be difficult to obtain through shorter term, non-human immunization or *in vitro* strategies.

We then employ a multi-step process to generate a potential product candidate. We start by isolating single plasmablasts and determining the sequences of the co-expressed antibody genes using our proprietary Immune Repertoire Capture® technology. We analyze these sequences to select antibodies, which we synthesize as recombinant proteins. We then test these antibodies to identify those that bind to tumor tissue from patients who are not the source of the antibody, referred to as non-autologous tumor tissue, preferentially over normal tissue. We then analyze these "hit" antibodies using a number of *in vitro* and *in vivo* assays, and often make structural changes to generate leads. A select number of these leads are refined further using protein engineering to enhance their drug-like properties as we identify and characterize their targets in parallel prior to initiating preclinical development and IND-enabling studies.

Strategic Collaborations

A key aspect of our strategy is to advance both our platform and the generation of clinical pipeline assets not only through our ongoing internal efforts, but also via partnerships with companies that have developed useful technologies. We believe this approach will allow us to expand our clinical pipeline in an accelerated manner.

In our continuing efforts to enhance our discovery platform, we have executed several partnerships specifically focused on accessing technology platforms that facilitate identification of the targets of the antibodies we discover, which is a key step in generating clinical candidates. These partnerships complement the ongoing expansion of our internal target identification capabilities and include collaborations with Merck, Serimmune and others.

In addition, in furtherance of our continuing efforts to generate clinical pipeline assets, we plan to enter into multiple collaborations to access best-in-class antibody engineering technologies that provide new or enhanced functionality beyond that found in naturally occurring antibodies. We expect these collaborations to enhance our ability to use our platform-generated antibodies to create clinical candidates that could be T cell-engagers, NK cell-engagers and antibody drug (toxin and immunostimulator) conjugates, among other formats. We are in discussions with a number of companies and expect to execute at least one such collaboration in 2020.

Key Developments

Below is a summary of selected key developments affecting our business that have occurred since March 31, 2020:

- 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.
- In April 2020, we announced plans to collaborate with BeiGene Ltd. and IGM Biosciences, Inc., or IGM, which enable the parties to leverage their combined technology and expertise to discover, develop, and manufacture novel IgM and IgA antibodies targeting SARS-CoV-2 for the potential treatment of COVID-19. We and IGM executed a Material Transfer and Collaboration Agreement to allow both parties to commence their respective efforts and all three parties expect to work to finalize the financial and operational details of the collaboration in the coming months.
- In May 2020, we announced that we had successfully completed the first dosing cohort of our Phase 1b study of ATRC-101 in select solid tumors, and that we were commencing screening patients to enroll in the second dose cohort.

Company Information

We were incorporated under the laws of the state of Delaware in 2010 under the name Atreca, Inc. Our principal executive offices are located at 450 E. Jamie Court, South San Francisco, CA 94080. Our telephone number is (650) 595-2595. Our website address is www.atreca.com. Information

contained on, or that can be accessed through, our website is not incorporated by reference into this prospectus, and you should not consider information on our website to be part of this prospectus.

The Atreca design logo, "Atreca" and our other registered or common law trademarks, service marks, or trade names appearing in this prospectus are the property of Atreca, Inc. Other trade names, trademarks and service marks used in this prospectus are the property of their respective owners.

Risks Associated with our Business

Our business is subject to numerous risks, as described under the heading "Risk Factors" contained in the applicable prospectus supplement and in any free writing prospectuses we have authorized for use in connection with a specific offering, and under similar headings in the documents that are incorporated by reference into this prospectus.

The Offering

Class A common stock to be offered by the selling stockholders	9,466,951 shares, which includes 5,934,191 shares of Class A common stock issuable upon conversion of an aggregate of 5,934,191 shares of Class B common stock held by the selling stockholders named in this prospectus.
Use of proceeds	We will not receive any proceeds from the sale of the shares of Class A common stock covered by this prospectus.
Risk factors	See "Risk Factors" beginning on page 7, for a discussion of factors you should carefully consider before deciding to invest in our Class A common stock.
NASDAQ Global Select Market symbol	BCEL

The selling stockholders named in this prospectus may offer and sell up to an aggregate of 9,466,951 shares of our Class A common stock, which includes 5,934,191 shares of Class A common stock issuable upon conversion of an aggregate of 5,934,191 shares of Class B common stock held by the selling stockholders named in this prospectus. Throughout this prospectus, when we refer to the shares of our Class A common stock being registered on behalf of the selling stockholders, we are referring to all 9,466,951 shares of Class A common stock, including 5,934,191 shares of Class A common stock issuable upon conversion of an aggregate of 5,934,191 shares of Class B common stock reported to us as held by the selling stockholders as of June 30, 2020.

The selling stockholders purchased 7,466,951 shares of our Class A common stock and Class B common stock through several private placements of our convertible preferred stock prior to our initial public offering, effective as of October 15, 2015, August 10, 2017 and September 5, 2018, of which 3,532,760 shares of convertible preferred stock was converted into Class A common stock and 3,934,191 shares of convertible preferred stock was converted into Class B common stock in connection with our initial public offering.

On June 24, 2019, the selling stockholders purchased an aggregate of 2,000,000 shares of our Class B common stock offered in our initial public offering at \$17.00 per share.

We agreed to file this prospectus pursuant to a registration rights agreement with the selling stockholders dated March 11, 2020, or the Registration Rights Agreement. Additional information with respect to the Registration Rights Agreement is contained in this prospectus under the heading "Selling Stockholders" and in our Annual Report on Form 10-K filed with the Securities and Exchange

Commission on March 11, 2020 and our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2020.

When we refer to the selling stockholders, we are referring to the selling stockholders named herein and, as applicable, any donees, pledgees, transferees or other successors-in-interest selling shares received after the date of this prospectus from a selling stockholder as a gift, pledge, or other non-sale related transfer that may be identified in a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part.

RISK FACTORS

An investment in our Class A common stock involves a high degree of risk. Prior to making a decision about investing in our Class A common stock, you should consider carefully the specific risk factors discussed in the sections entitled "Risk Factors" contained in our most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q, as filed with the SEC, which are incorporated in this prospectus by reference in their entirety, as well as any amendment or updates to our risk factors reflected in subsequent filings with the SEC, including any prospectus supplement hereto. These risks and uncertainties are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us, or that we currently view as immaterial, may also impair our business. If any of the risks or uncertainties described in our SEC filings or any additional risks and uncertainties actually occur, our business, financial condition, results of operations and cash flow could be materially and adversely affected. In that case, the trading price of our Class A common stock could decline and you might lose all or part of your investment.

Risks Related To This Offering

The selling stockholders named in this prospectus hold a significant portion of our total outstanding shares of Class A common stock and Class B common stock, and any sale of such shares into the market in the future could cause the market price of our Class A common stock and Class B common stock to drop significantly, even if our business is doing well.

The selling stockholders named in this prospectus may offer and sell up to an aggregate of 9,466,951 shares of our Class A common stock and Class B common stock that they currently hold, which represents approximately 33.6% of our total outstanding shares of Class A common stock and Class B common stock as of June 30, 2020. Sales of a substantial number of shares of our Class A common stock in the public market by the selling stockholders named in this prospectus, or the perception that these sales might occur, could depress the market price of our Class A common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that sales by these stockholders may have on the prevailing market price of our Class A common stock.

FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements about us and our industry that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations or financial condition, business strategy and plans and objectives of management for future operations, are forward-looking statements. In some cases, you can identify forward-looking statements because they contain words such as "anticipate," "believe," "contemplate," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "target," "will" or "would" or the negative of these words or other similar terms or expressions, although not all forward-looking statements contain these words. These forward-looking statements include, but are not limited to, statements concerning the following:

- the initiation, timing, progress and results of our research and development programs, preclinical studies, any clinical trials and IND and other regulatory submissions;
- our expectations regarding the activity of ATRC-101 or potential future product candidates once administered in a human subject;
- our expectations and beliefs regarding the market for cancer therapies and development of the immuno-oncology industry;
- our ability to identify and develop product candidates for treatment of additional disease indications;
- our or a potential future collaborator's ability to obtain and maintain regulatory approval of any of our current or potential future product candidates;
- the rate and degree of market acceptance of any approved product candidates;
- the implementation of our business model and strategic plans for our business, technologies, and current or potential future product candidates;
- our or any potential future collaborator's ability to obtain and maintain intellectual property protection for our discovery platform and current or potential future product candidates and our ability to operate our business without infringing the intellectual property rights of others; and
- our use of net proceeds to us from this offering.

You should not rely on forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this prospectus primarily on our current expectations and projections about future events and trends that we believe may affect our business, financial condition and operating results. The outcome of the events described in these forward-looking statements is subject to risks, uncertainties and other factors described in the section titled "Risk Factors" and elsewhere in this prospectus. Moreover, we operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time, and it is not possible for us to predict all risks and uncertainties that could have an impact on the forward-looking statements contained in this prospectus. The results, events and circumstances reflected in the forward-looking statements may not be achieved or occur, and actual results, events or circumstances could differ materially from those described in the forward-looking statements. You should read this prospectus and the documents that we reference in this prospectus and have filed as exhibits to the registration statement, of which this prospectus is a part, that we have filed with the SEC with the understanding that our actual future results, levels of activity, performance and achievements may be materially different from what we expect.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based on information available to us as of the date of this

prospectus. While we believe that information provides a reasonable basis for these statements, that information may be limited or incomplete. Our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all relevant information. These statements are inherently uncertain, and investors are cautioned not to unduly rely on these statements.

The forward-looking statements made in this prospectus relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statements made in this prospectus to reflect events or circumstances after the date of this prospectus or to reflect new information or the occurrence of unanticipated events, except as required by law. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments. We qualify all of our forward-looking statements by these cautionary statements.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale or other disposition of shares of our Class A common stock by the selling stockholders pursuant to this prospectus. The selling stockholders will receive all of the net proceeds from sales of the Class A common stock sold pursuant to this prospectus.

SELLING STOCKHOLDERS

The selling stockholders named in this prospectus may offer and sell up to an aggregate of 9,466,951 shares of our Class A common stock, which includes 5,934,191 shares of our Class A common stock issuable upon the conversion of our Class B common stock held by the selling stockholders named in this prospectus. The foregoing shares represent all shares of Class A common stock and Class B common stock reported to us as held by the selling stockholders as of June 30, 2020.

On March 11, 2020, we entered into a registration rights agreement, or the Registration Rights Agreement, with the selling stockholders, pursuant to which the selling stockholders are entitled to certain resale registration rights with respect to shares of our Class A common stock held by the selling stockholders. Under the agreement, following a demand by the selling stockholders, we are obligated to file a resale registration statement on Form S-3, or other appropriate form, covering such Class A common stock held by the selling stockholders, and to keep such registration statement effective until the earlier of (i) all registrable securities covered by the registration statement have been sold or may be sold freely without limitations or restrictions as to volume or manner of sale pursuant to Rule 144 of the Securities Act, as amended, or Rule 144, or (ii) all registrable securities covered by the registration statement otherwise cease to be considered registrable securities pursuant to the terms of the agreement. Under the agreement, the selling stockholders have the right to one underwritten public offering per calendar year, but no more than three underwritten public offerings in total, to effect the sale or distribution of its registrable securities, subject to specified exceptions, conditions and limitations. The agreement requires us to bear expenses incurred by us in effecting any registration pursuant to the agreement, and up to \$50,000 of expenses per underwritten public offering for counsel for the selling stockholders and also includes customary indemnification obligations in connection with registrations conducted pursuant to the agreement. The rights of the selling stockholders under the agreement terminate automatically upon the earlier to occur of the following events: (i) all registrable securities covered by the agreement have been sold pursuant to an effective registration statement; (ii) all registrable securities covered by the agreement have been sold by pursuant to Rule 144, or other similar rule; (iii) all registrable securities covered by the agreement may be resold without limitations as to volume or manner of sale pursuant to Rule 144; or (iv) 10 years after the date of the agreement. Additional information with respect to the Registration Rights Agreement is contained in our Annual Report on Form 10-K filed with the SEC on March 11, 2020 and our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2020.

Baker Brothers Life Sciences L.P. and 667, L.P., an entity affiliated with Baker Brothers Life Sciences L.P., together Baker Brothers, purchased an aggregate of 2,000,000 shares of our Class B common stock offered in our initial public offering at \$17.00 per share on June 24, 2019, for an aggregate purchase price of approximately \$34.0 million. In addition, Baker Brothers purchased an aggregate of 7,466,951 shares of our Class A common stock and Class B common stock through several private placements of our convertible preferred stock prior to our initial public offering, effective as of October 15, 2015, August 10, 2017 and September 5, 2018, for an aggregate purchase price of approximately \$94.8 million, of which 3,532,760 shares of convertible preferred stock was converted into Class A common stock and 3,934,191 shares of convertible preferred stock was converted into Class B common stock in connection with our initial public offering. The shares purchased in these transactions are included in the shares of Class A common stock offered by this prospectus.

On September 5, 2018, we entered into a nominating agreement with Baker Brothers, or the Nominating Agreement. Pursuant to the Nominating Agreement, during the period beginning at the closing of our initial public offering until when Baker Brothers no longer beneficially own at least 3,333,333 shares of our common stock (subject to adjustment for stock splits, combinations, recapitalizations and similar transactions), or the Nominating Agreement Period, 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 Brothers Designee, unless a majority of our disinterested directors reasonably and in good faith determines that a Baker Brothers Designee would not be qualified to serve as our director under law, rules of the stock exchange on which our shares are listed, our amended and restated bylaws, or any of our company policies. If a Baker Brothers Designee resigns his or her seat on our board of directors or is removed or does not become a director for any reason, the vacancy will be filled by the election or appointment of another designee of Baker Brothers as soon as reasonably practicable, subject to compliance with applicable laws, rules and regulations. Furthermore, during the Nominating Agreement Period, if there is no Baker Brothers Designee on our board of directors, we will have the obligation to invite two board of directors observer designees of Baker Brothers, or the Baker Brothers Observers, to attend all meetings of our board of directors and all meetings of the committees of our board of directors as a nonvoting observer, subject to Baker Brothers Observers' agreement to hold in confidence the information they receive as observers of our board of directors and committee meetings, as well as subject to their exclusion from our board of directors' meetings to preserve our attorney-client privilege, to avoid conflicts of interest, if Baker Brothers is determined by our board of directors to be a competitor or other customary conditions. The Nominating Agreement automatically terminates upon the earlier of when Baker Brothers, together with its affiliates, no longer beneficially owns at least 3,333,333 shares of our common stock or the consummation of our acquisition in a change of control transaction, as such terms are defined in our amended and restated certificate of incorporation.

We are party to an amended and restated investors' rights agreement, or the IRA, with certain holders of our Class A common stock and Class B common stock, as applicable, including Baker Brothers. The IRA provides these holders of our Class A common stock and Class B common stock with certain registration rights, including the right to demand that we file a registration statement or request that their shares be covered by a registration statement that we are otherwise filing, and also the right to obligate us to an agreement to provide for additional rights to demand that we file a registration statement or request that their shares be covered by a registration statement that we have filed and maintain as effective.

We filed our amended and restated certificate of incorporation with the Secretary of State of the State of Delaware on June 24, 2019. Thereunder, holders of shares of Class B common stock, all outstanding shares of which are currently held by Baker Brothers, has the right to convert each share of Class B common stock held by such holder into one share of Class A common stock at such holder's election, provided that such shares of Class B common stock may only be converted into shares of Class A common stock when, as immediately prior to or as a result of such conversion, such conversion would not result in such holder beneficially owning (for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended and the rules and regulations promulgated thereunder, or the Exchange Act), when aggregated with affiliates with whom such holder is required to aggregate beneficial ownership for purposes of Section 13(d) of the Exchange Act, in excess of, initially, 4.99% of any class of securities of Atreca registered under the Exchange Act, which percentage may be increased or decreased to such other percentage as any holder of outstanding shares of Class B common stock may designate in writing upon 61 days' notice to Atreca, provided, however, that no holder may make such an election to change the percentage unless all holders managed by the same investment advisor as such electing holder make the same election. The Class B common stock is non-voting.

Except for the ownership of the shares of Class A common stock and Class B common stock, the Registration Rights Agreement, the Nominating Agreement, the IRA, our amended and restated certificate of incorporation and the participation by entities affiliated with Brother Bakers in our private placements of convertible preferred stock and our initial public offering, the selling stockholders have not had any material relationship with us or our affiliates within the past three years.

The table below, including the footnotes, lists the selling stockholders and other information regarding the beneficial ownership of the shares of our Class A common stock and Class B common

stock held by the selling stockholders based on information provided to us by the selling stockholders. Generally, a person "beneficially owns" shares of our Class A common stock or Class B common stock, as applicable, if the person has or shares with others the right to vote those shares or to dispose of them, or if the person has the right to acquire voting or disposition rights within 60 days. The percentages of shares owned prior to and after the offering are based on an aggregate of 28,203,005 shares of our Class A common stock and Class B common stock outstanding as of July 1, 2020, which includes the outstanding shares of Class A common stock offered by this prospectus. The number of shares beneficially owned prior to the offering indicates the number of shares of Class A common stock and Class B common stock reported to us as beneficially owned by the selling stockholders as of June 30, 2020.

The maximum number of shares to be sold column indicates the total number of shares of our Class A common stock that the selling stockholders may offer under this prospectus.

The shares beneficially owned after offering number assumes the sale of all of the shares offered by the selling stockholders pursuant to this prospectus. However, because the selling stockholders may sell all or some of their shares under this prospectus from time to time, or in another permitted manner, we cannot assure you as to the actual number of shares that will be sold by the selling stockholders or that will be held by the selling stockholders after completion of any sales. We do not know how long any of the selling stockholders will hold the shares before selling them.

The selling stockholders may sell all, some or none of their shares in this offering. See "Plan of Distribution."

<u>Name of Selling Stockholder</u>	<u>Shares Beneficially Owned Prior to Offering</u>				<u>Maximum Number of Shares to be Sold Pursuant to this Prospectus</u>	<u>Shares Beneficially Owned After Offering(1)</u>	
	<u>Number of Class A Common Stock Shares</u>	<u>Percent</u>	<u>Number of Class B Common Stock Shares</u>	<u>Percent</u>		<u>Number</u>	<u>Percent</u>
Entities Affiliated with Baker Brothers							
Life Sciences L.P.(2)	3,532,760	15.86%	5,934,191	100.0%	9,466,951	—	—

- (1) The selling stockholders may offer and sell all or part of the Class A common stock covered by this prospectus, but no estimates can be made as to the amount of shares of Class A common stock that will be held by the selling stockholders after the completion of this offering.
- (2) The shares of Class A common stock and Class B common stock reported to us as beneficially owned by Baker Brothers consists of 3,223,030 shares of Class A common stock and 5,540,107 shares of Class B common stock held of record by Baker Brothers Life Sciences L.P. and 309,730 shares of Class A common stock and 394,084 shares of Class B common stock held of record by 667, L.P.

PLAN OF DISTRIBUTION

The selling stockholders may, from time to time, sell any or all of their shares of Class A common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These sales may be at fixed or negotiated prices. The selling stockholders may use any one or more of the following methods when selling shares:

- ordinary brokerage transactions and transactions in which a broker-dealer solicits purchasers;
- block trades in which a broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account under this prospectus;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- "at the market" or through market makers or into an existing market for the shares;
- short sales;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- through the distribution of the Class A common stock by any selling stockholder to its partners, members or stockholders;
- through broker-dealers that agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- through one or more underwritten offerings on a firm commitment or best efforts basis;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. The selling stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144, as permitted by that rule, or Section 4(a)(1) under the Securities Act, if available, rather than under this prospectus, provided that they meet the criteria and conform to the requirements of those provisions.

In connection with the sale of the shares, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the Class A common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our Class A common stock short and deliver these securities to close out their short positions, or loan or pledge the Class A common stock to broker dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the shares offered by them will be the purchase price of the Class A common stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with their agents from time to time, to

reject, in whole or in part, any proposed purchase of Class A common stock to be made directly or through agents. We will not receive any of the proceeds from this offering.

The selling stockholders and any broker-dealers that act in connection with the sale of securities may be deemed to be "underwriters" within the meaning of Section 2(a)(11) of the Securities Act in connection with such sales, and any commissions received by such broker-dealers and any profit on the resale of the securities sold by them while acting as principals may be deemed to be underwriting discounts or commissions under the Securities Act. In the event that any selling stockholder is deemed to be an "underwriter" within the meaning of Section 2(a)(11) of the Securities Act, the selling stockholder will be subject to the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act. To our knowledge, none of the selling stockholders received any shares as underwriting compensation.

The selling stockholders may from time to time pledge or grant a security interest in some or all of the shares of Class A common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of Class A common stock from time to time under this prospectus after we have filed a supplement to this prospectus, or, if required, a post-effective amendment to the registration statement of which this prospectus is a part, supplementing or amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus.

The selling stockholders also may transfer the shares of Class A common stock in other circumstances, in which case the transferees or other successors in interest will be the selling beneficial owners for purposes of this prospectus and may sell the shares of Class A common stock from time to time under this prospectus after we have filed a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part, supplementing or amending the list of selling stockholders to include the transferee or other successors in interest as selling stockholders under this prospectus.

To the extent required, the shares of our Class A common stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agents, dealer or underwriter, any applicable commissions or discounts with respect to a particular offer will be set forth in an amendment or supplement to this prospectus.

We will pay all registration expenses incurred relating to the registration of the shares with the SEC (including up to \$50,000 of reasonable legal expenses of the selling stockholders) pursuant to the Registration Rights Agreement, and the selling stockholders will pay all selling expenses, including underwriting discounts and selling commissions, related to the sale of the shares registered under this registration statement. We have agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

The selling stockholders have advised us that they have not entered into any agreements, understandings or arrangements with any underwriters or broker-dealers regarding the sale of their shares of Class A common stock, nor is there an underwriter or coordinating broker acting in connection with a proposed sale of shares of Class A common stock by any selling stockholder. If we are notified by any selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of shares of Class A common stock, if required, we will file a supplement to this prospectus. If the selling stockholders use this prospectus for any sale of the shares of Class A common stock, they will be subject to the prospectus delivery requirements of the Securities Act.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares of our Class A common stock in the market and to the activities of the selling stockholders and their affiliates. These rules may limit the timing of purchases

and sales of the shares by such selling stockholders. Regulation M may also restrict the ability of any person engaged in the distribution of the shares of Class A common stock to engage in market-making activities with respect to the shares of Class A common stock. All of the foregoing may affect the marketability of the shares of Class A common stock and the ability of any person or entity to engage in market-making activities with respect to the shares of Class A common stock.

Our Class A common stock is listed on The NASDAQ Global Select Market under the symbol "BCEL." There can be no assurance that any selling stockholder will sell any or all of the shares of Class A common stock registered pursuant to this prospectus.

LEGAL MATTERS

The validity of the Class A common stock being offered hereby was passed upon by Cooley LLP, Palo Alto, California.

EXPERTS

The financial statements, incorporated in this prospectus by reference from the Company's [Annual Report on Form 10-K for the year ended December 31, 2019](#), have been audited by OUM & Co. LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference. Such financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of a registration statement on Form S-3 we filed with the SEC. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. Neither we nor any agent, underwriter or dealer has authorized any person to provide you with different information. We are not making an offer of these securities in any state where the offer is not permitted. You should not assume that the information in this prospectus is accurate as of any date other than the date on the front page of this prospectus, regardless of the time of delivery of this prospectus or any sale of the securities offered by this prospectus.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public at the SEC's website at <http://www.sec.gov>, which contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the SEC. We maintain a website at www.atreca.com. The information contained in, or that can be accessed through, our website is not incorporated by reference herein and is not part of this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with it, which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus. The information incorporated by reference is considered to be part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings (including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to the effectiveness of such registration statement) we will make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act until the termination of the offering of the shares covered by this prospectus (other than information furnished under Item 2.02 or Item 7.01 of Form 8-K):

- our [Annual Report on Form 10-K for the year ended December 31, 2019, filed with the SEC on March 11, 2020](#), including the information specifically incorporated by reference therein from our [Definitive Proxy Statement on Schedule 14A, filed on April 29, 2020](#);
- [our Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, filed with the SEC on May 14, 2020](#);
- our Current Reports on Form 8-K filed with the SEC on [May 21, 2020](#), and [June 16, 2020](#); and

- [the description of our Class A common stock set forth in our registration statement on Form 8-A, filed with the SEC on June 10, 2019, including any amendments thereto or reports filed for the purposes of updating this description.](#)

You can request a copy of these filings, at no cost, by writing or telephoning us at the following address or telephone number:

Atreca, Inc.
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