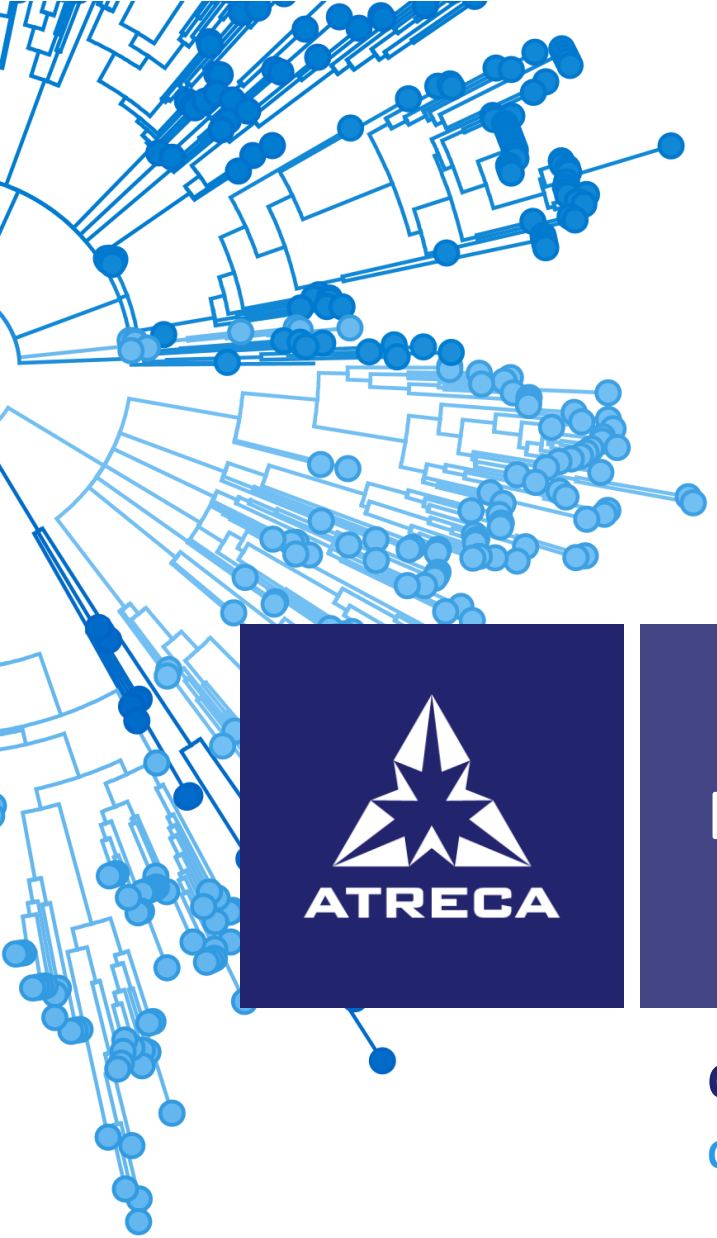


ATRECA

Delivering the Potential of Immunotherapy

Corporate Overview

October 2019

Legal Disclaimer

This presentation and the accompanying oral commentary contain 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 presentation and the accompanying oral commentary, 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 Investigational New Drug and other regulatory submissions;our expectations regarding the activity of our product candidate ATRC-101 or potential future product candidates once administered in a human subject; 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; and the implementationof our business model and strategic plans for our business, technologies, and current or potential future product candidates.

You should not rely on forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this presentation and the accompanying oral commentary 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 greater detail in our most recent Quarterly Report on Form 10-Q filed with the U.S. Securities and Exchange Commission, and may cause our actual results, performance or achievement to differ materially and adversely from those anticipated or implied by our forward-looking statements

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 presentation and the accompanying oral commentary. 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.

This presentation discusses our current and potential future product candidates that are under clinical investigation and which have not yet been approved for marketing by the U.S. Food and Drug Administration. No representation is made as to the safety or effectiveness of these current or potential future product candidates for the use for which such product candidates are being studied.

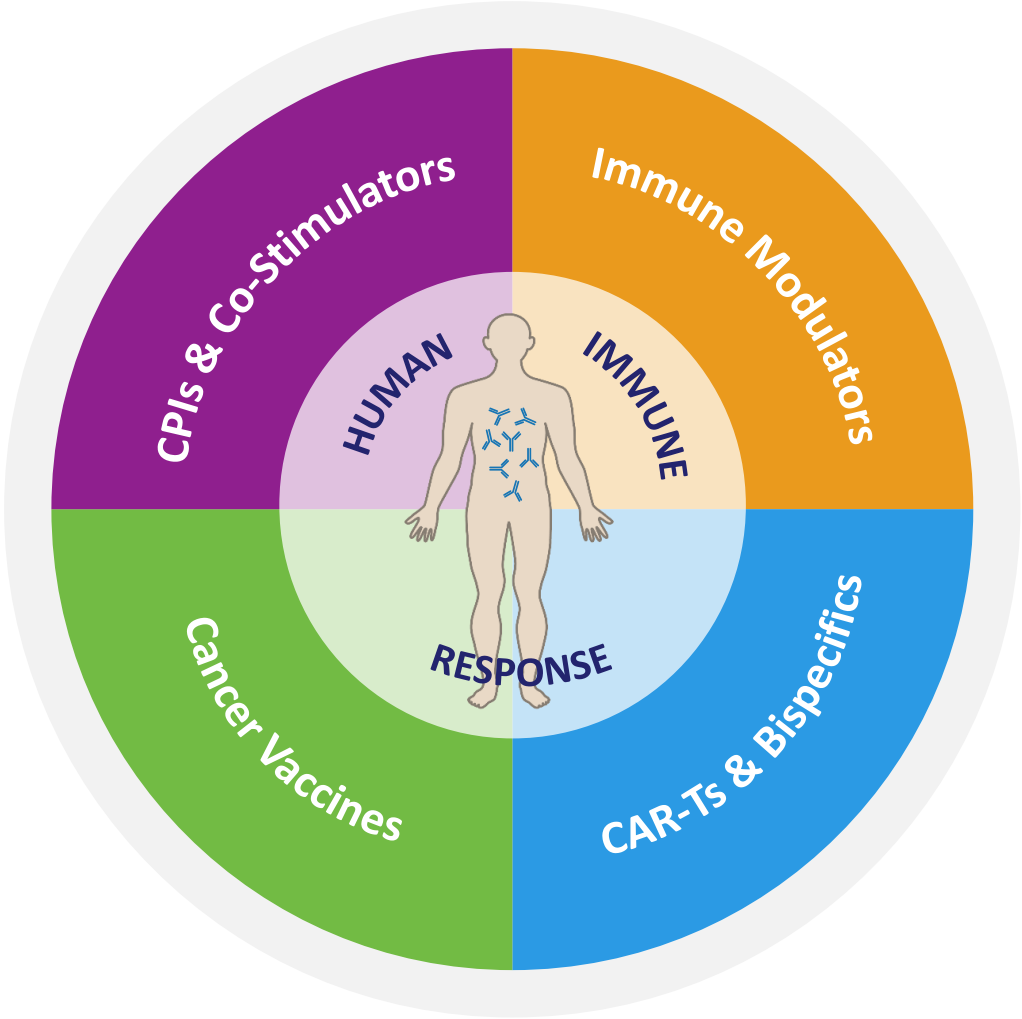
The forward-looking statements made in this presentation and the accompanying oral commentary relate only to events as of the date on which the statements are made, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. We undertake no obligation to update any forward-looking statements made in this presentation and the accompanying oral commentary to reflect events or circumstances after the date of this presentation and the accompanying oral commentary 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.

Investment Highlights

Discovering and Developing a Novel Class of Antibody-based Cancer Immunotherapeutics

Differentiated Discovery Approach	• First-mover advantages in accessing a potentially large and underexploited target space via interrogation of the human active anti-tumor immune response • Delivers novel antibodies binding to targets otherwise unlikely discoverable by traditional approaches • Scalable and industrialized platform
Large Opportunities	• Approach leads to antibodies that bind to "public" tumor targets • Potential treatments for large patient populations across multiple tumor types
Lead Candidate: ATRC-101	• Monoclonal antibody with a novel mechanism of action and target • Demonstrated potent single-agent anti-tumor activity in multiple preclinical solid tumor models • Anticipate filing IND in late 2019 and initiating Phase 1b trial in early 2020
Pipeline Expansion	• Growing hit library of >1,600 human antibodies that bind to non-autologous tumor tissue preferentially • Potential for additional product candidates with distinct mechanisms of action
Foundational Excellence	• Experienced management team with deep scientific, R&D and operational expertise • Support from leading institutional investors and SAB

One Central Phenomenon
Drives Responses to Oncology Immunotherapeutics

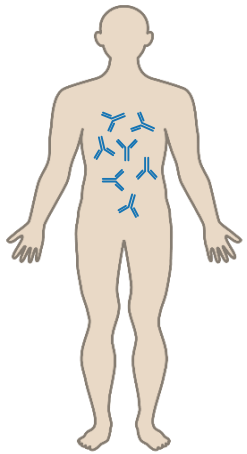


The **HUMAN IMMUNE RESPONSE** against tumor tissue is the **COMMON** phenomenon invoked by **ALL** classes of oncology immunotherapeutics to drive clinical responses in patients

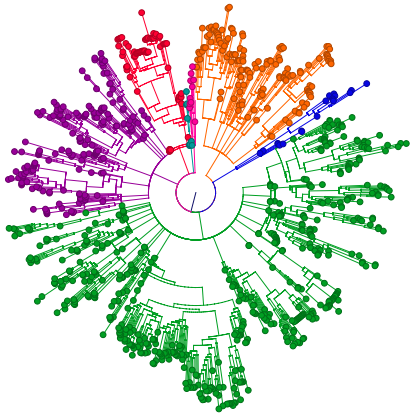
Atreca is one of the **FIRST MOVERS** in analyzing and exploiting the active anti-tumor immune response of **RESPONDERS** to discover and develop a new generation of **ANTIBODY-BASED** oncology therapeutics

Our Novel Approach Inverts the Discovery Paradigm

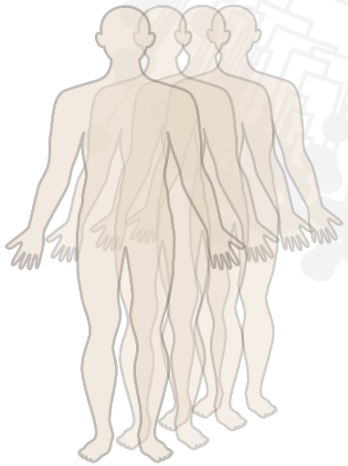
The HUMAN IMMUNE SYSTEM Tells Us What Is Important



Responder with Anti-Tumor Immune Response

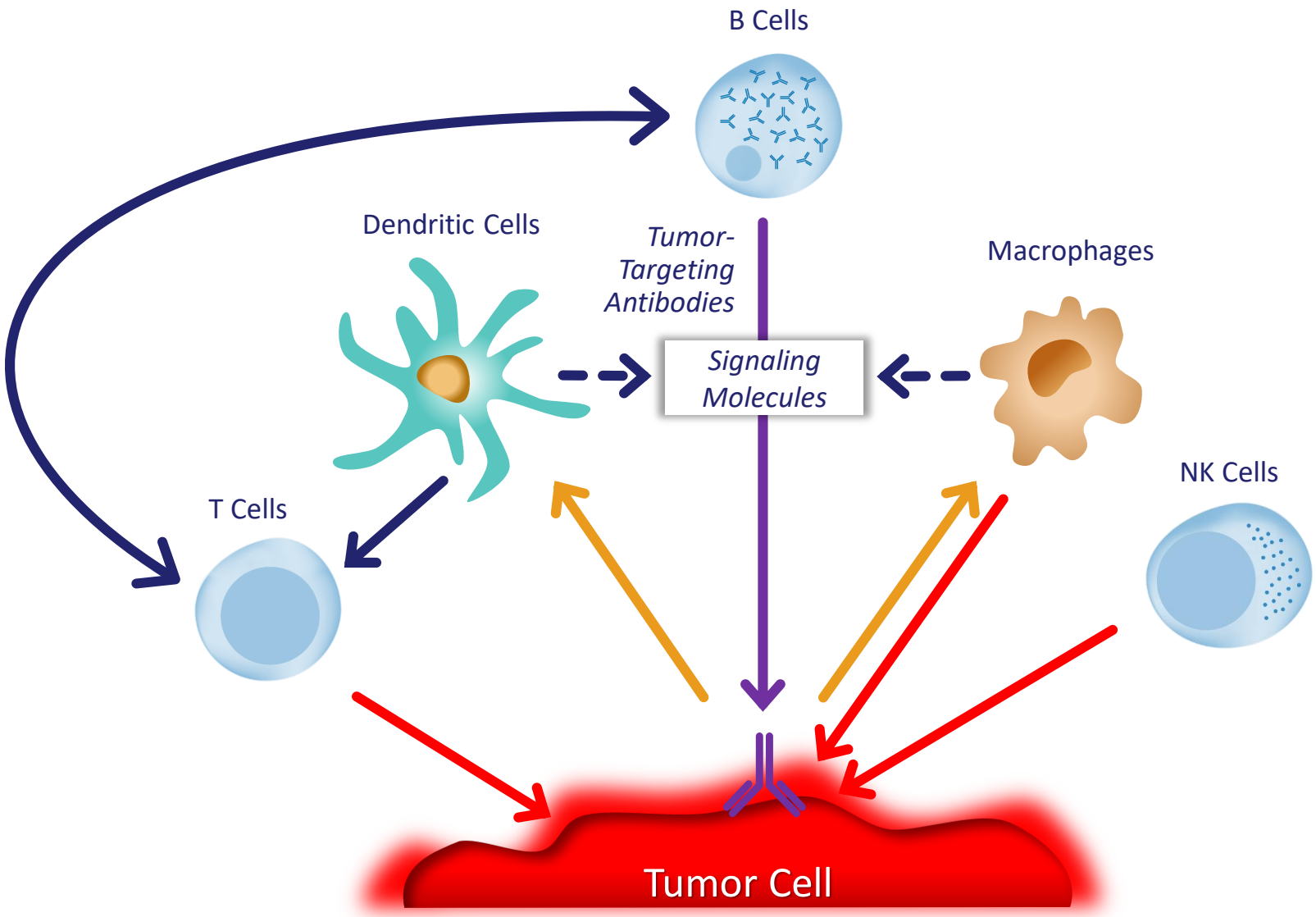


Interrogation of the Active B Cell Response via Atreca Discovery Platform



Novel Antibody-Target Pairs Yielding Product Candidates

Responder Patient B Cells Provide Our Window into Effective Anti-Tumor Immune Responses



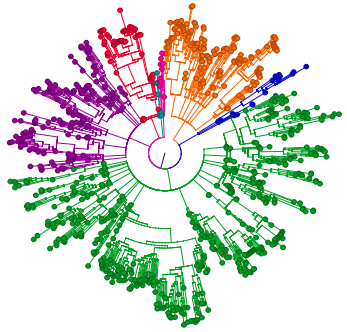
Features of Immune Response Against Tumor

1. **Antibody generation and binding**
2. **Antibody-mediated antigen delivery**
3. **Signaling**
4. **Tumor cell killing**

Atreca's Discovery Platform identifies antibodies from B cells generated in the active anti-tumor immune responses of patients

Four Fundamental Pillars of Our Discovery Platform

SAMPLE ACQUISITION & REPOSITORY



DIFFERENTIATED TECHNOLOGY

BIOINFORMATICS EXPERTISE

INDUSTRIALIZED WET LAB INFRASTRUCTURE

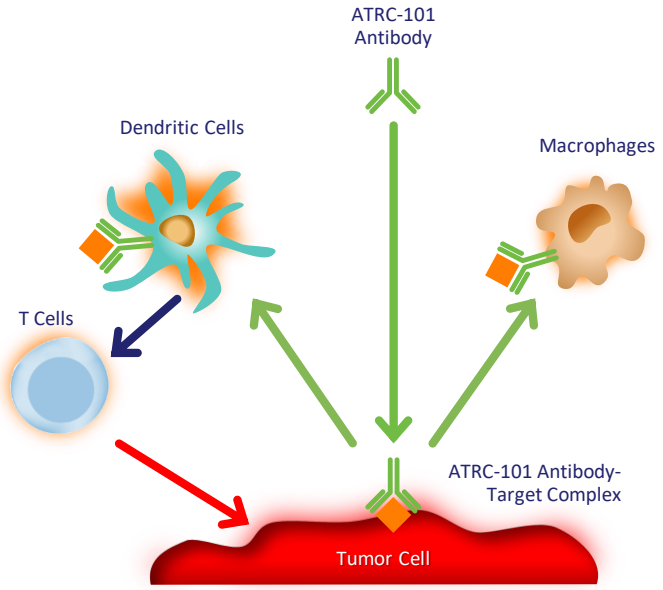
KNOWLEDGE

ENABLING OUR DISCOVERY PROCESS

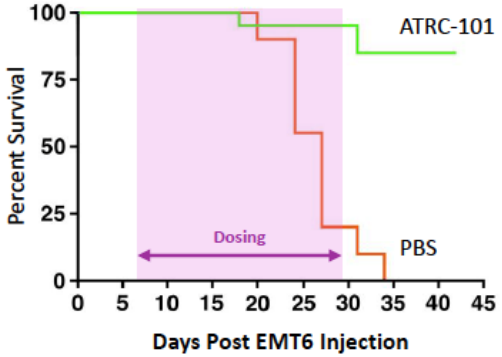
The Atreca Platform Delivers

ATRC-101: A Novel Way to Treat Cancer

Driver Antigen Engagement



Novel target: an RNP complex



Pipeline Opportunities via Hit Library

GROWING LIBRARY OF >1,600 ANTIBODIES

MOA	Status
Driver Antigen Engagement	• ATRC-101 preclinical data demonstrate this MOA • Working to identify other antibody-target pairs that are active via this MOA
T Cell Engagers	• **~6% of our hit antibody Fv regions test positive** in a single bispecific format in TDCC assays • >375 hit antibodies analyzed
Directed Killing	• **~17% of our hit antibodies test positive** in ADCC or ADCP assays • >375 hit antibodies analyzed
Toxin-Conjugates (ADCs)	• **~2% of our hit antibodies test positive** in internalization assays • >700 hit antibodies analyzed

The Atreca Discovery Platform

SAMPLE ACQUISITION:
A Diverse and Rapidly Growing Sample Repository

BLOOD SAMPLES FROM MULTIPLE SOURCES

Sponsored Clinical Sites

STUDIES DESIGNED TO SUPPORT OUR DISCOVERY EFFORTS

Sutter Health Palo Alto Medical Foundation

SARAH CANNON Fighting Cancer Together™

Academic Collaborations

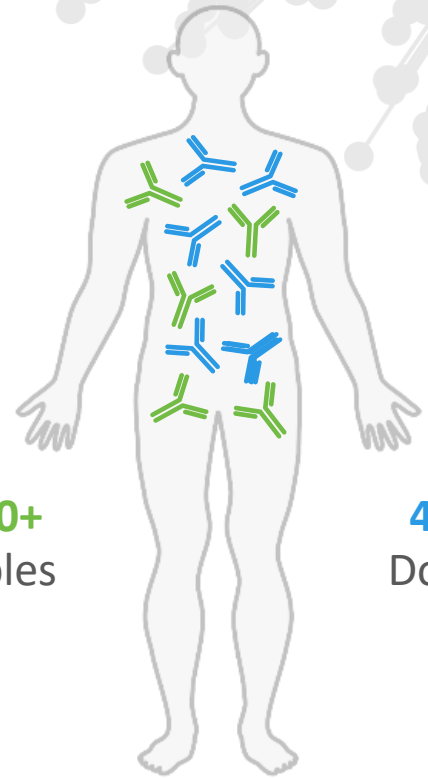
GROWING KOL NETWORK

UCSF · Cleveland Clinic · Dana-Farber Cancer Institute · BaylorScott&White HEALTH

ATRECA

Repository of Samples Precisely Suited to Our Approach

SAMPLES FROM PATIENTS REPRESENTING OVER 30 DIFFERENT SOLID TUMOR TYPES



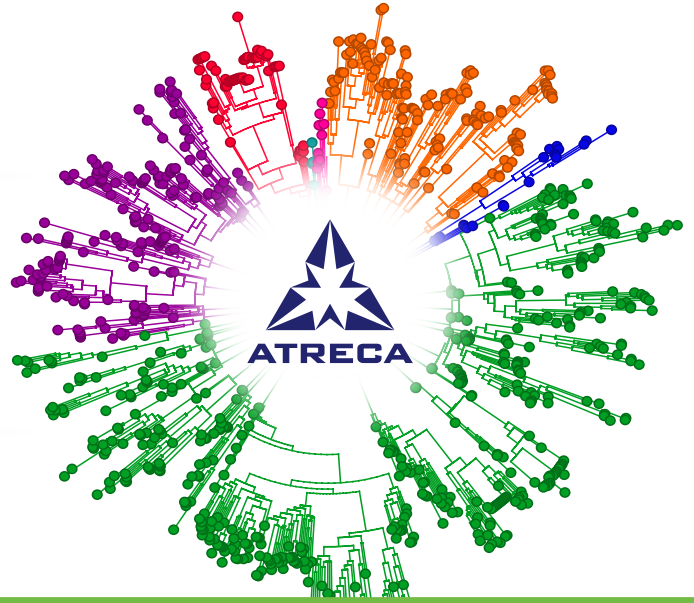
1,200+ Samples

400+ Donors

Collected at multiple time points to enable longitudinal analyses

REPERTOIRE GENERATION: Immune Repertoire Capture®
Enables Robust Analyses of Immune Response

MOLECULAR & CELL BIOLOGY



BIOINFORMATICS

B Cell Antibodies Generated by Human Immune Responses Typically Over Many Months

ACCURATE
Corrects for sequence error and quantitation bias

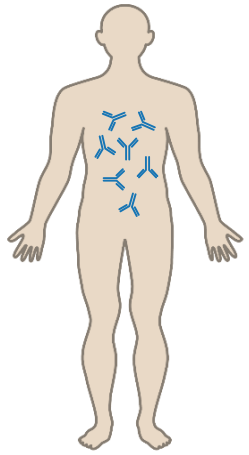
RELEVANT
Keeps native antibody chain pairings intact

EFFICIENT
Generates natively paired sequences for 65% of input B cells

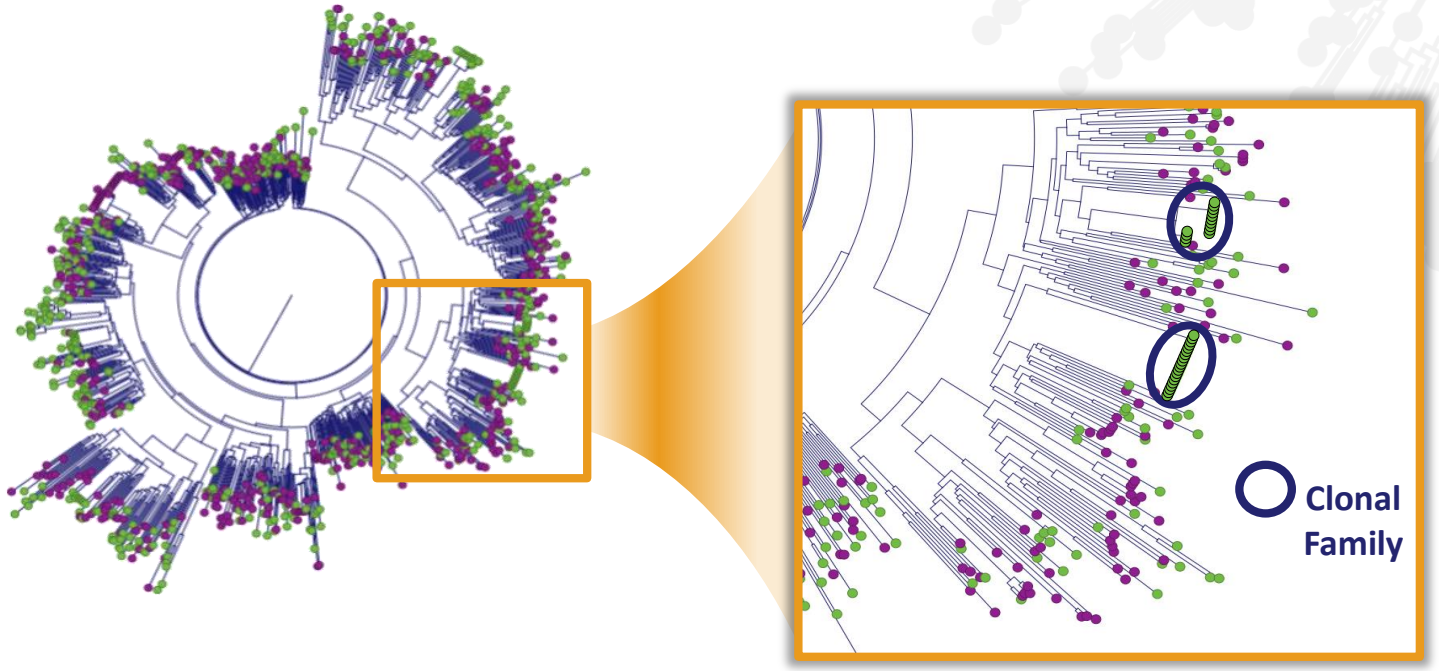
Atreca Captures the ACTIVE Immune Response at the Single-Cell Level

REPERTOIRE GENERATION:
We Enable New Analyses of the Immune Response

Proprietary Bioinformatics Enables Us to Identify the Responder Antibodies Most Likely to Target Human Tumor Tissue

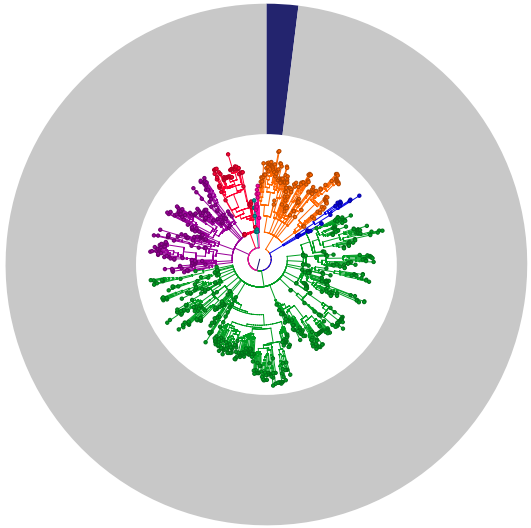


Renal Cell Carcinoma Patient with Clinical Response



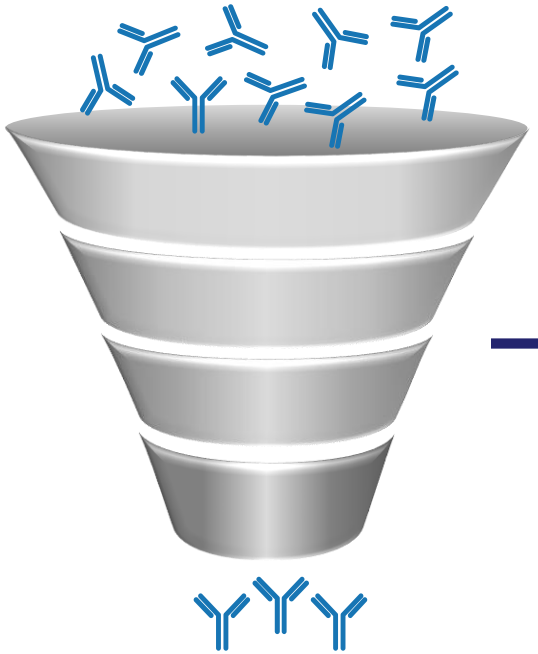
Plasmablast Repertoires from Renal Cell Carcinoma Patient with Clinical Response

HIT GENERATION: Growing Library of Antibodies Binding to "Public" Tumor Targets



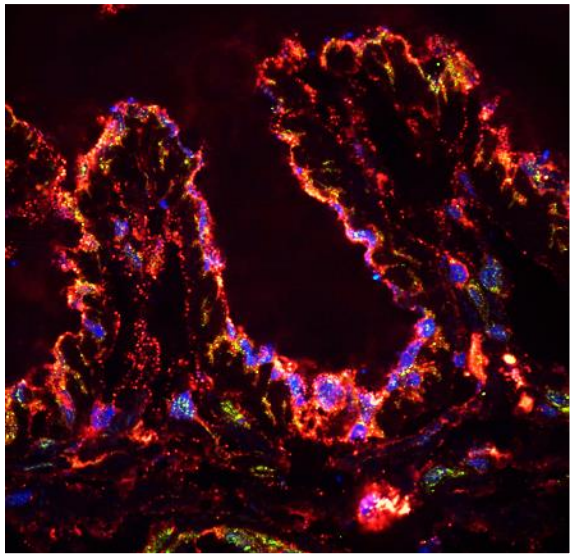
Responder
Antibody Repertoire
Analysis

~1%
Selected



Wet-Lab Analysis:
Selective Non-Autologous
Tumor Tissue Binding

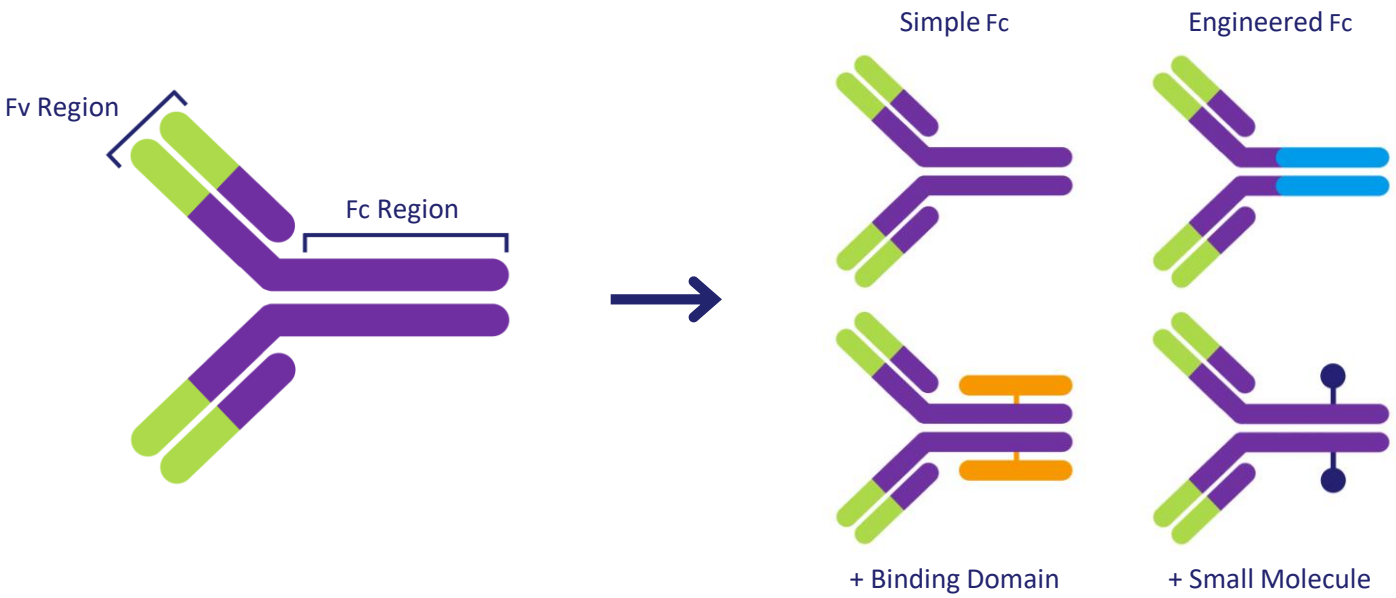
~45%
Positive



Currently **>1,600**
Antibodies Targeting
Non-Autologous Tumor

High Hit Rate and Scalability Promotes Additional Candidate Generation

LEAD GENERATION: Generating Programs from Large Hit Collection Across Multiple MOAs



Hits
Antibodies Targeting Selected Tumor Antigens

Industrialized Assays
In Vitro and *in Vivo*

Lead and Future Programs
Candidates Utilizing a Wide Range of Formats and MOAs

- **Driver Antigen Engagement**
- **T Cell Engagers**
- **Directed Killing**
- **Toxin-Conjugates (ADCs)**

Solving a Key Issue in Immunotherapy:
How to Destroy Solid Tumors in Large Groups of Patients

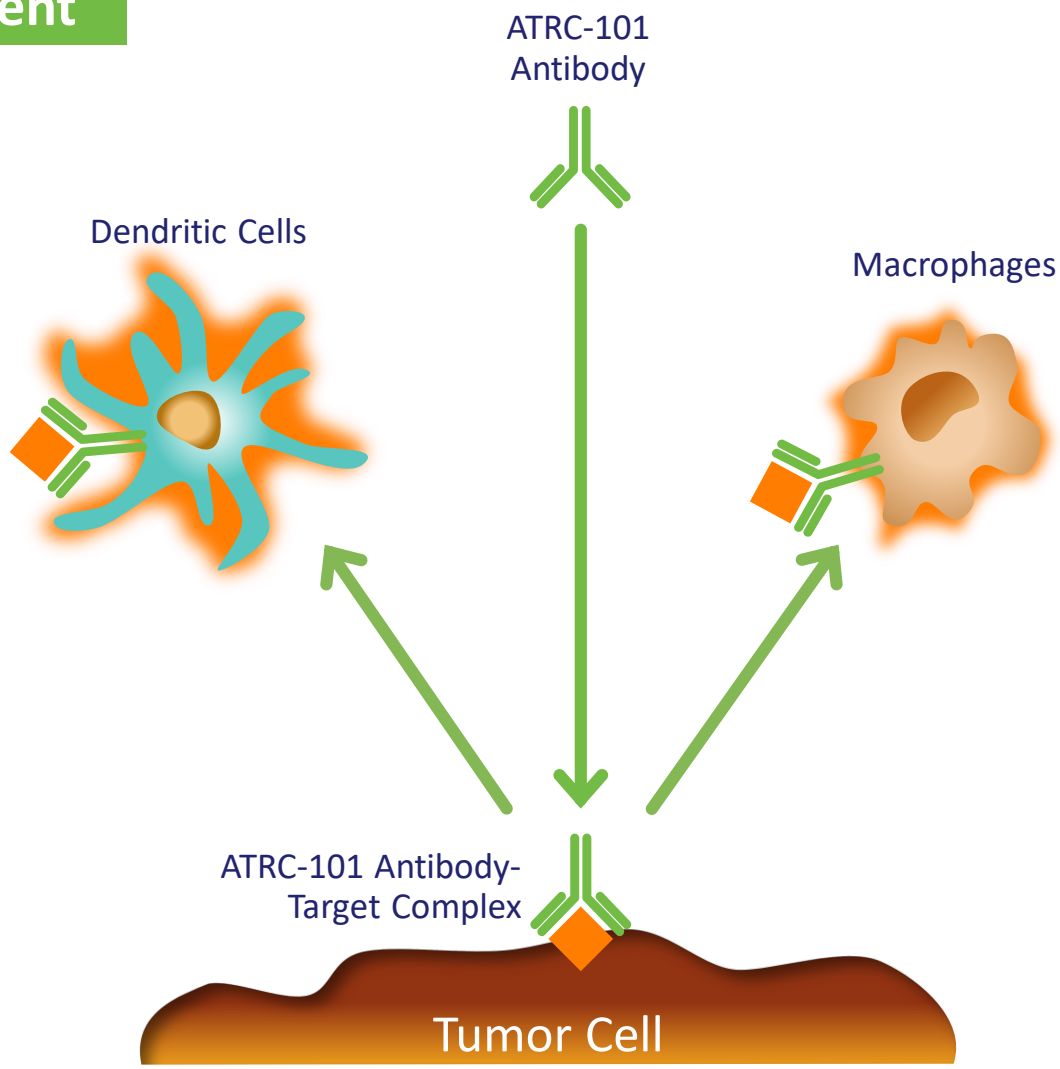
ATRC-101

Driver Antigen Engagement

ATRC-101: A Novel Way to Treat Cancer

Driver Antigen Engagement

Step 1

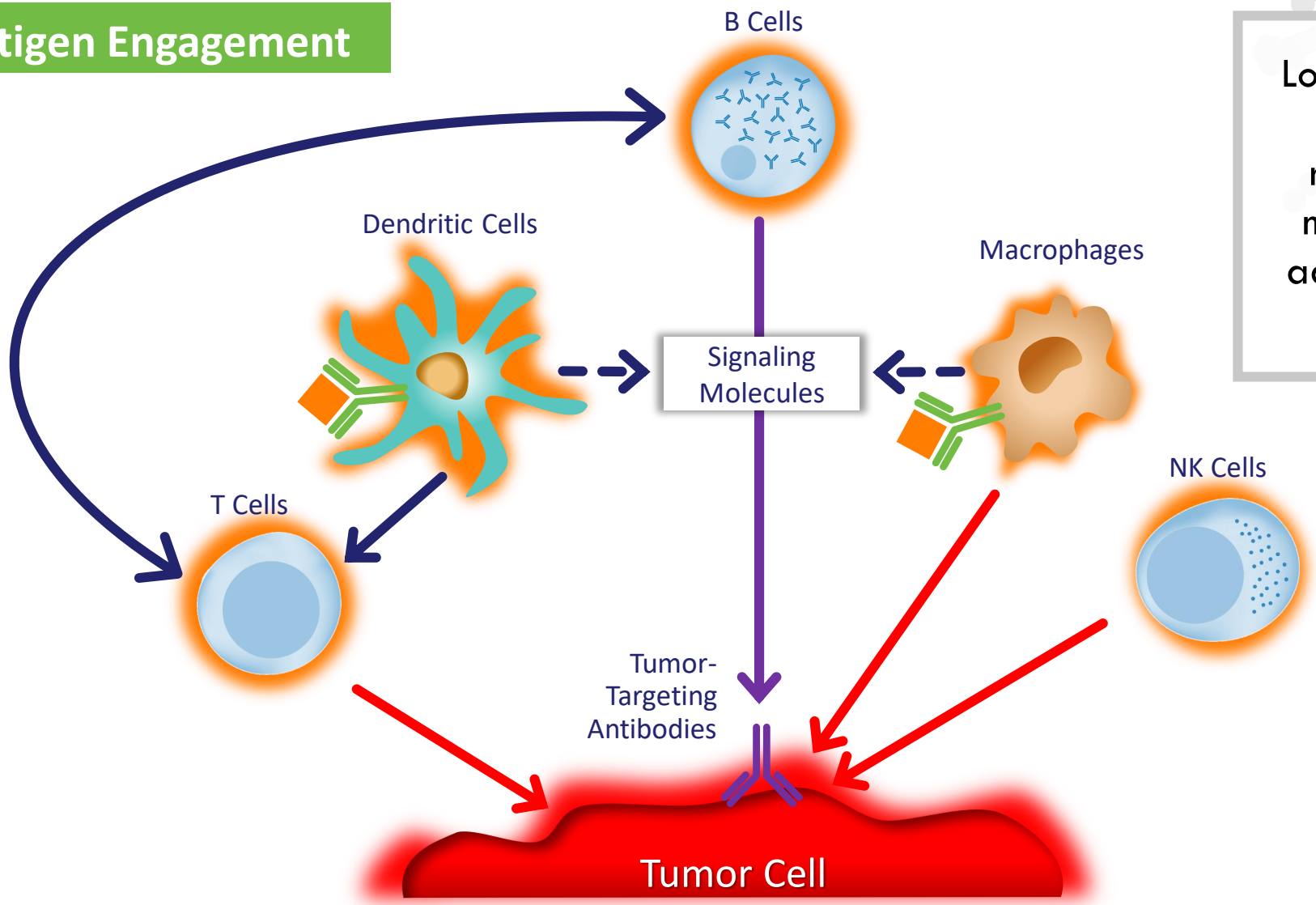


Engagement of its antigen on tumor by a systemically delivered ATRC-101 antibody activates the local innate immune system

ATRC-101: A Novel Way to Treat Cancer

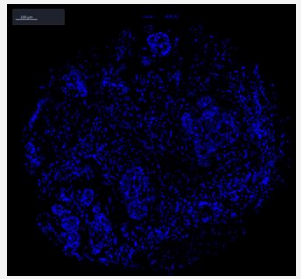
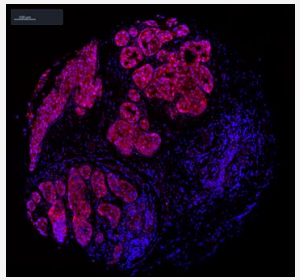
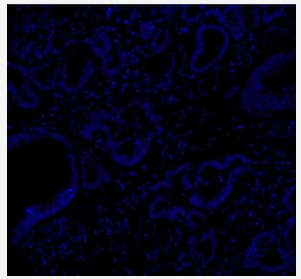
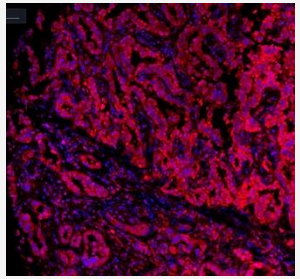
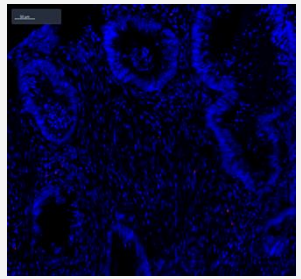
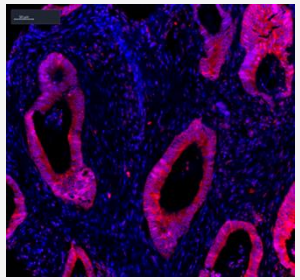
Driver Antigen Engagement

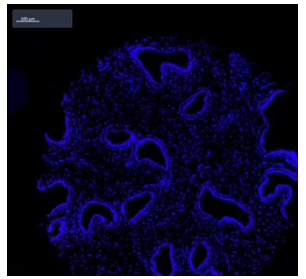
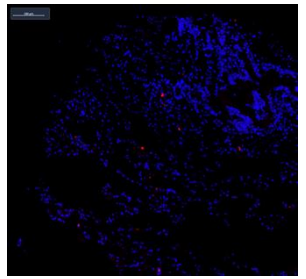
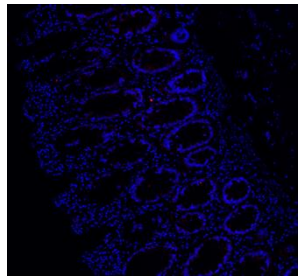
Step 2



Local innate immune system activation leads to a remodeling of the tumor microenvironment and an adaptive immune response against tumor

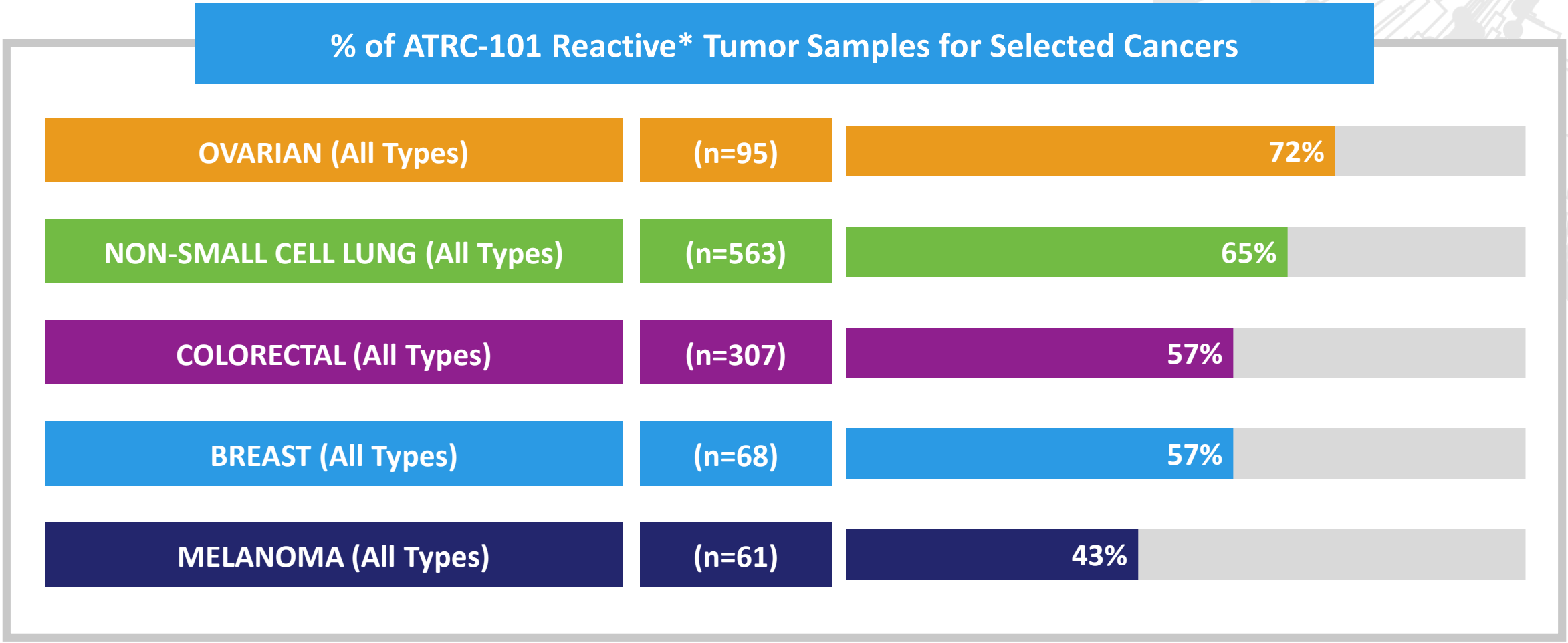
ATRC-101 Binds to Multiple Types of Malignant Tumor Tissue

	CONTROL	ATRC-101
CARCINOMA Breast Invasive Ductal		
ADENOCARCINOMA Lung		
ADENOCARCINOMA Colon		

ATRC-101	
	BENIGN Breast Fibroadenoma
	NORMAL Adjacent Lung
	NORMAL Adjacent Colon

ATRC-101 human Fc substituted for mouse Fc

ATRC-101 Has Potential to Treat Large Groups of Patients

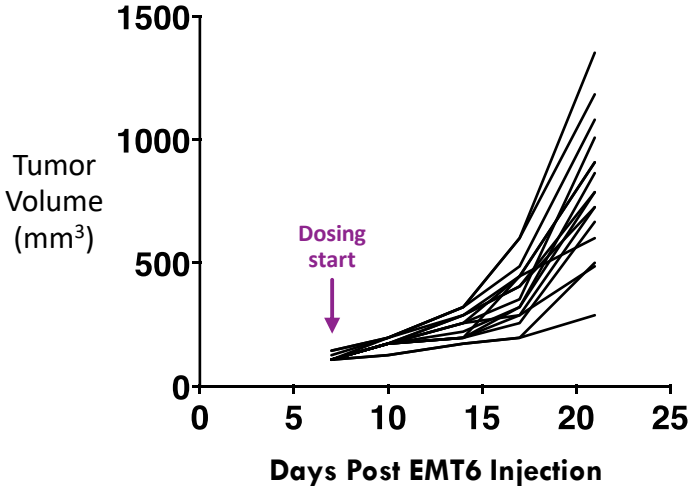


ATRC-101 human Fc substituted for mouse Fc

* 2+ (moderate or greater reactivity) on scale of 0 to 4

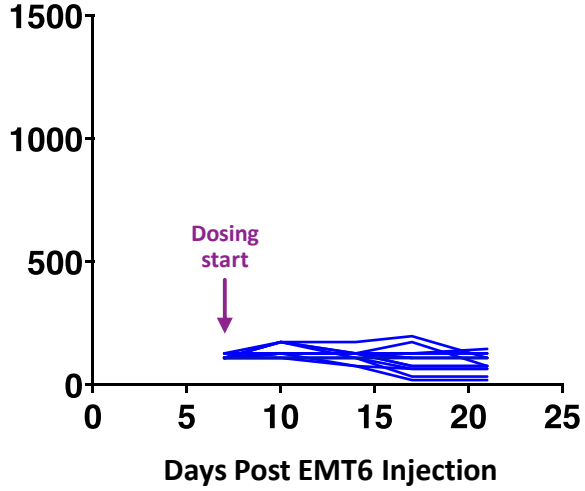
ATRC-101 Antibody Monotherapy Active *in Vivo*

PBS
(n = 15)



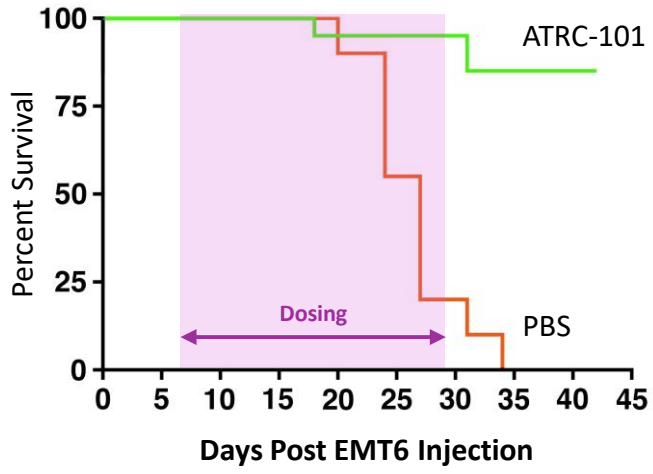
Control Tumor Growth

ATRC-101 (10 mg/kg)
(n = 15)



Tumor Growth Suppressed in All Animals

ATRC-101 (5 mg/kg)
(n = 20 per group)



Significant Effect on Survival

Dosing: 2x per week starting at Day 7 (at randomization)
Last dose: Day 21

ATRC-101 human Fc substituted for mouse Fc

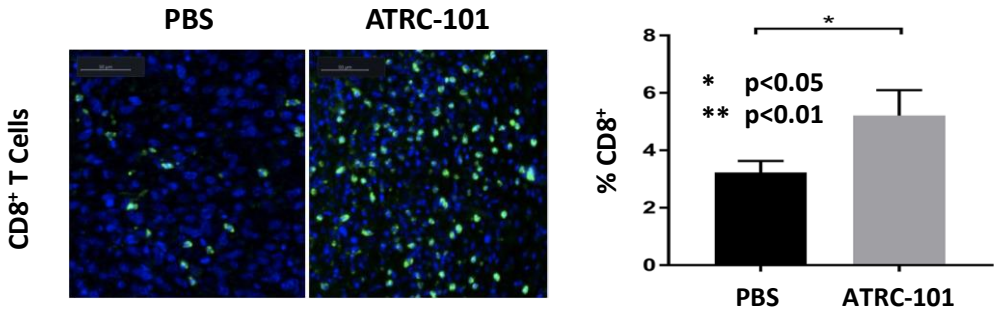
Dosing: 2x per week starting at Day 7 (at randomization)
Last dose: Day 29

PD-1 Checkpoint Inhibitors Display Only Modest Efficacy in EMT6 Model
ATRC-101 Antibody Monotherapy Also Active in CT26 Model

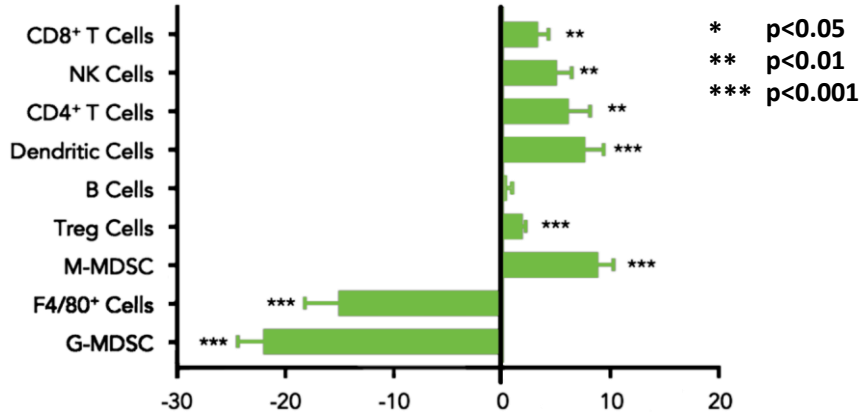
ATRC-101 Preclinical Data Supporting Mechanism of Action

Impact on the Tumor Microenvironment

ATRC-101 dosing leads to an increase in cytotoxic (CD8⁺) T Cells

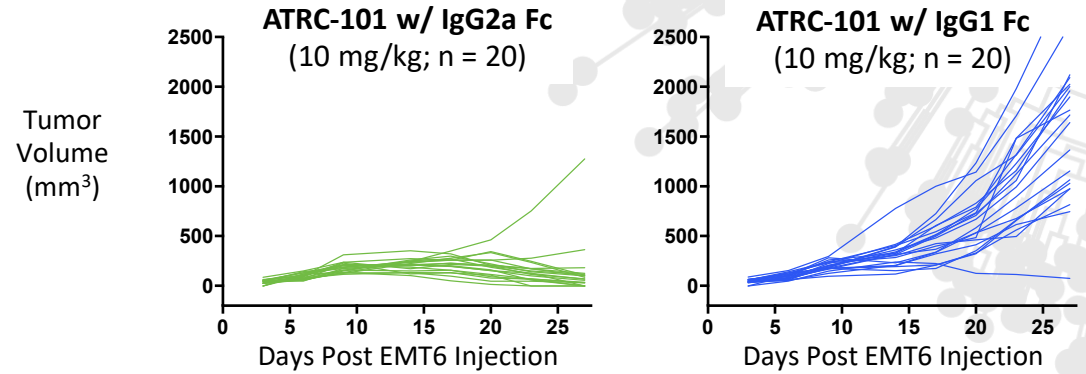


ATRC-101 dosing results in broad changes to white blood cell populations in EMT6 tumor microenvironment

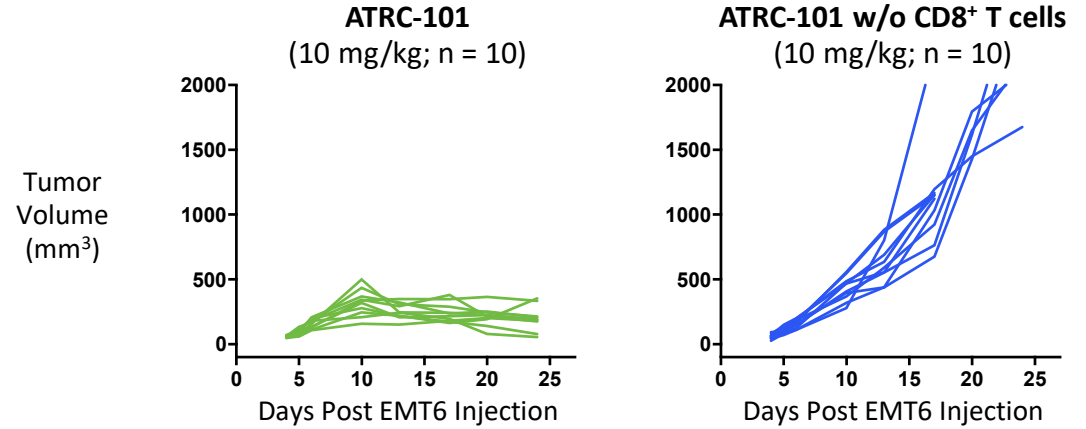


Requirement for Innate and Adaptive Immune Systems

ATRC-101 activity requires interactions with innate immune cell FcRs



ATRC-101 activity requires CD8⁺ T Cells



All studies conducted using "Lead" with patient antibody original, non-engineered Fv and human Fc substituted for mouse Fc

ATRC-101 Mechanism of Action, Target and Safety Studies

Cellular Mechanism of Action and Target

Dosing with ATRC-101 Leads to

- Remodeling of the tumor microenvironment
- Destruction of neoplastic cells in tumor tissue
- Induction of an ‘‘immune memory’’ against the tumor

Activity of ATRC-101 *in Vivo* Requires

- Interactions of its Fc region with innate immune cell FcRs
- A functional adaptive immune system
- Cytotoxic $CD8^+$ T cells

ATRC-101 Targets an RNP Complex

- ATRC-101 binds to target reconstituted *in vitro* using a single recombinant protein, polyadenylate-binding protein 1, and *in vitro* transcribed poly(A) RNA
- ATRC-101 appears to bind selectively to a target that is a version of a complex present widely across normal tissues
- Target components initially identified through experiments involving immunoprecipitation and mass spectrometry

Safety Studies Summary

Normal Tissue Binding

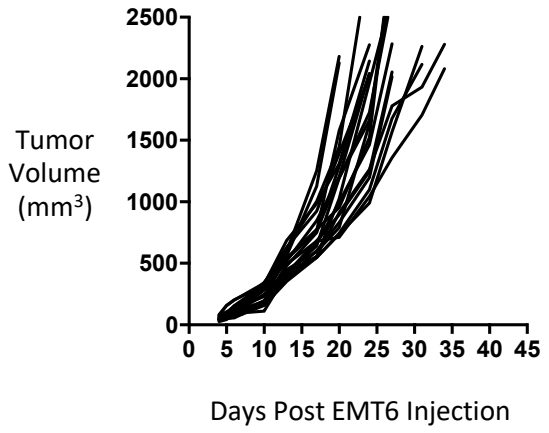
- No signal of toxicological significance across a wide range of normal human tissues in sensitive GLP immunohistochemistry studies

In Vivo Safety Assessments

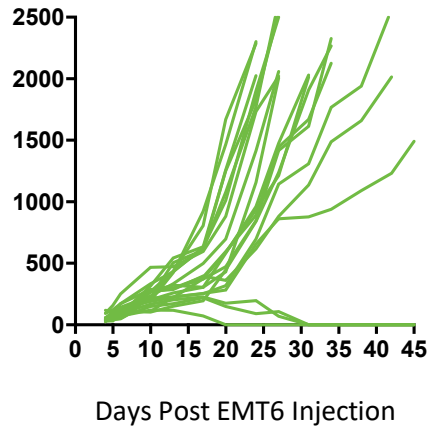
- Four repeat doses over 4 weeks of up to 100 mg/kg in NHPs were well-tolerated and no definitive safety signals were observed
- No definitive safety signals observed in mouse models

ATRC-101 Activity Enhanced by Anti-PD-1 *in Vivo*

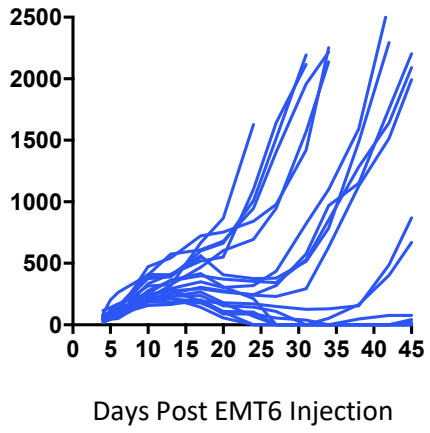
PBS
(n = 20)



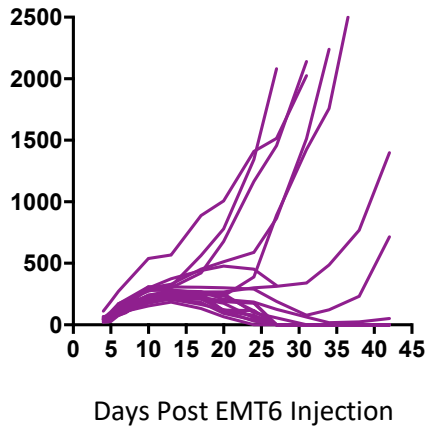
Anti-PD-1 (10 mg/kg)
(n = 20)



ATRC-101 (2.5 mg/kg)
(n = 20)



ATRC-101 + Anti-PD-1
(n = 20)



Anti-PD-1: Dosing 2x per week x 2 weeks (last dose Day 21)
ATRC-101 Antibody: Dosing 2x per week x 3.5 weeks (last dose Day 28)

ATRC-101 human Fc substituted for mouse Fc

ATRC-101 Mechanism of Action Provides Rationale for Enhanced Activity of Combination

On Track to File IND in Late 2019 and Initiate Phase 1b in Early 2020

OBJECTIVES

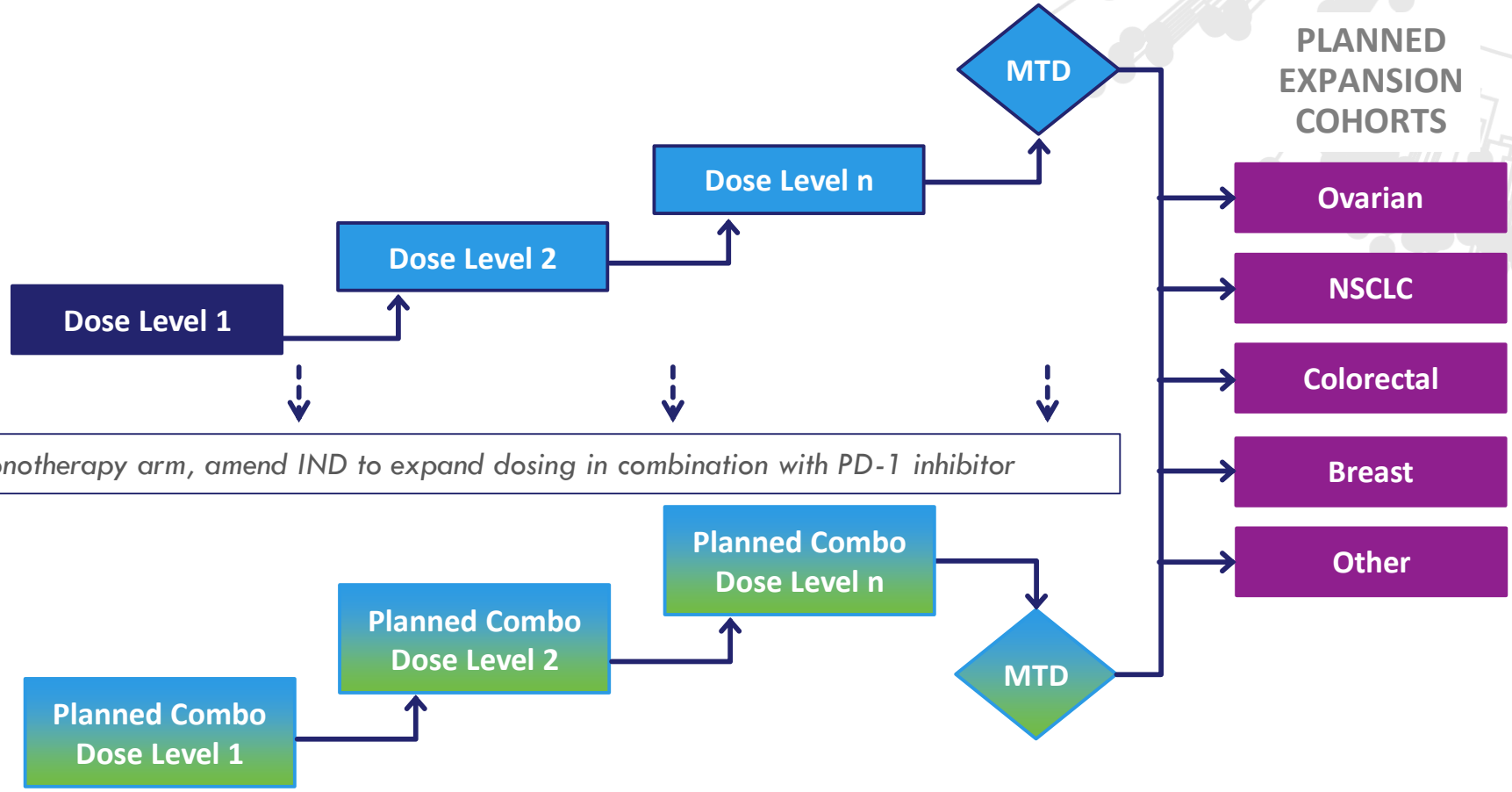
- Determine MTD or Phase 2 dose
- Characterize safety
- Characterize potential biomarkers
- Measure initial clinical activity
- Retrospectively analyze target expression

MONOTHERAPY ARM

- Open-label, dose escalation, adaptive 3+3 design
- Patients with advanced solid tumors that demonstrated >50% reactivity to ATRC-101 in preclinical studies

PLANNED COMBINATION ARM

- Non-responders to checkpoint inhibitors



Upon confirmation of safety in monotherapy arm, amend IND to expand dosing in combination with PD-1 inhibitor

Future Programs

Multiple Mechanisms of Action

Multiple Approaches to Drug Development

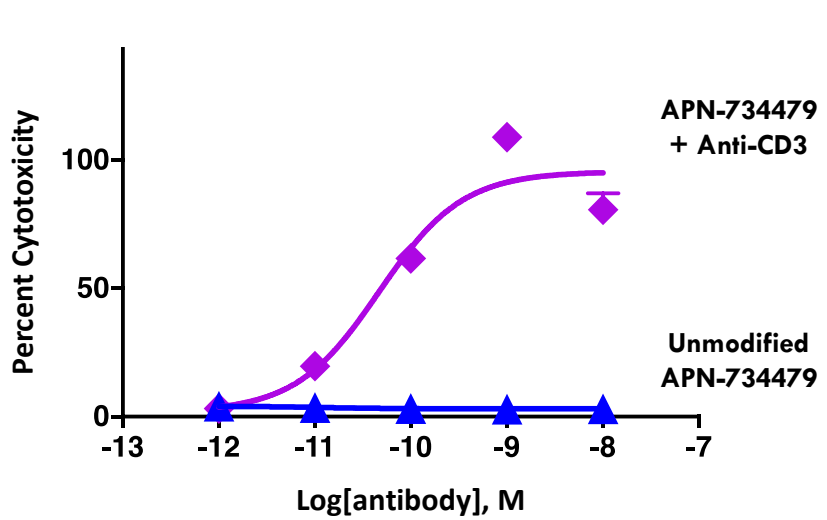
GROWING LIBRARY OF >1,600 ANTIBODIES

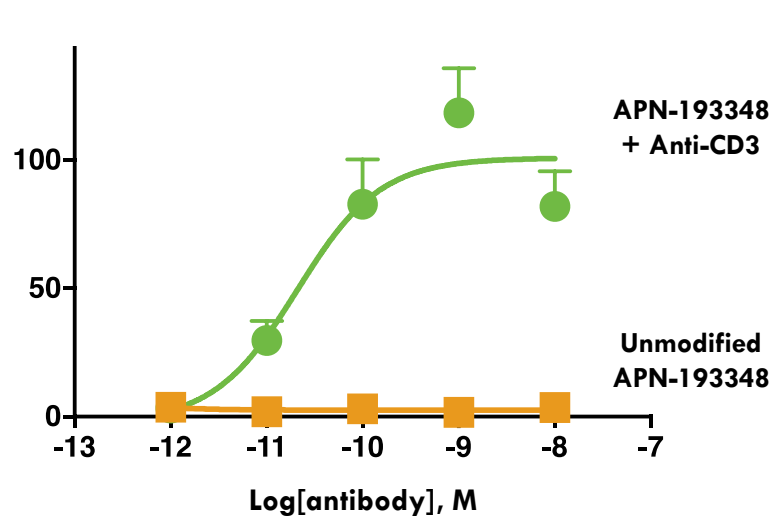
MOA	Description	Status
Driver Antigen Engagement	Antibody directly targets tumor to activate the innate and adaptive immune systems	• ATRC-101 preclinical data demonstrate this MOA • Working to identify other antibody-target pairs that are active via this MOA
T Cell Engagers	‘‘Bispecific’’ simultaneously activates and directs T cells to the tumor for cell killing via T cell-dependent cellular cytotoxicity (TDCC)	• **~6% of our hit antibody Fv regions test positive** in a single bispecific format in TDCC assays • >375 hit antibodies analyzed
Directed Killing	Antibody-dependent cellular cytotoxicity (ADCC) or antibody-dependent cellular phagocytosis (ADCP)	• **~17% of our hit antibodies test positive** in ADCC or ADCP assays • >375 hit antibodies analyzed
Toxin-Conjugates (ADCs)	Cellular toxins are conjugated to internalizing tumor targeting antibodies to generate cytotoxicity	• **~2% of our hit antibodies test positive** in internalization assays • >700 hit antibodies analyzed

Atreca Antibodies Direct T Cells to Kill Tumor Cells When Engineered into T Cell Engager Format

T Cell Engagers

Examples of Hit Antibodies with Potent Activity as Bispecifics *in Vitro*



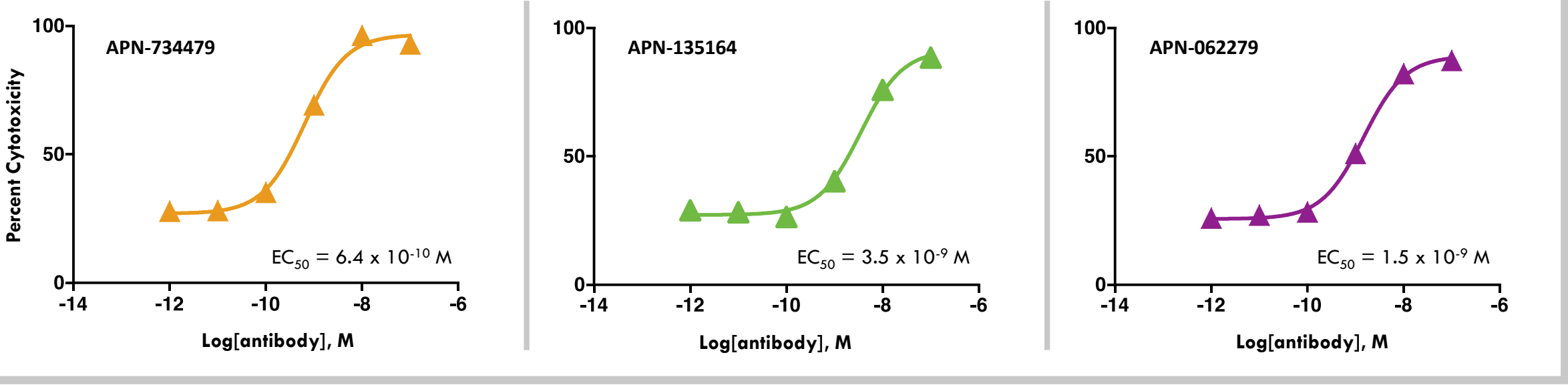


~6% of Hit Antibody Fv Regions Test Positive in a Single Bispecific Format in TDCC Assays
>375 Hit Antibodies Analyzed

Atreca Antibodies Direct Innate Immune System Cells to Kill Tumor Cells

Directed Killing

Examples of Hit Antibodies with Potent ADCC Activity *in Vitro*

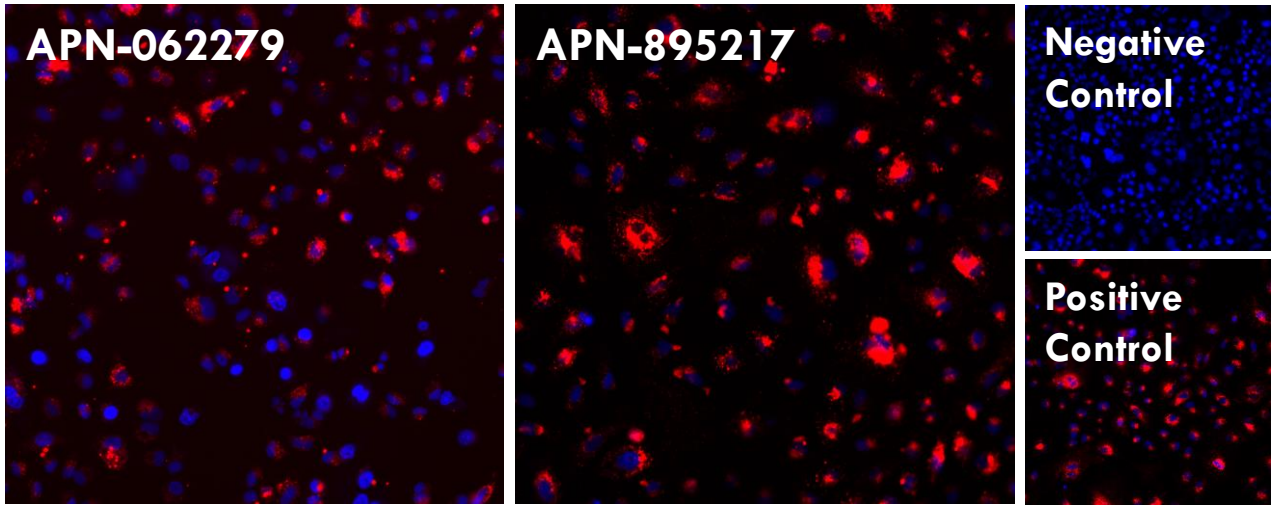


~17% of Hit Antibodies Test Positive in ADCC or ADCP Assays
>375 Hit Antibodies Analyzed

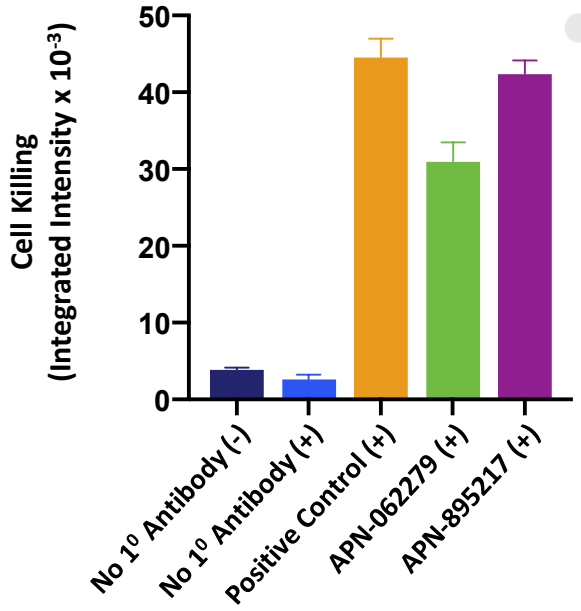
Atreca Antibodies Internalize and Deliver Toxins into Tumor Cells

Toxin-Conjugates (ADCs)

Antibody Internalization into Tumor Cells



Cytotoxic Payload Delivery



(+): Pre-incubated with toxin-conjugated secondary antibody

(-): No pre-incubation with toxin-conjugated secondary antibody

~2% of Hit Antibodies Test Positive in Internalization Assays
>700 Hit Antibodies Analyzed

Key Milestones and Financial Overview

Anticipated Milestones and Financial Overview

Upcoming Milestones

2019	2020	2021
• **Late 2019:** ATRC-101 IND Filed	• **Early 2020:** ATRC-101 Phase 1b Trial Initiated • **2020:** Strategic Drug Discovery Partnership	• **2021:** IND for Second Product Candidate Filed

Financial Overview

- IPO completed in June 2019 raising $130.8M in net proceeds
- Cash, cash equivalents & investments of $219.7M as of June 30, 2019

Seasoned and Experienced Team

MANAGEMENT

John Orwin, President & CEO, Director
Johnson & Johnson, Rhone-Poulenc Rorer, Genentech; CEO at Affymax and Relypsa

Tito Serafini, Ph.D., Chief Strategy Officer, Director
Founder, Atreca; Former UC Berkeley Professor; Founder/Exec, Renovis

Herb Cross, Chief Financial Officer
CFO at ARMO, Balance, KaloBios and Affymax

Guy Cavet, Ph.D., Chief Technical Officer
Genentech, Merck, Rosetta, Crescendo Bioscience

N. Michael Greenberg, Ph.D., Chief Scientific Officer
Fred Hutch, Pfizer, MedImmune / AstraZeneca

BOARD OF DIRECTORS

Brian Atwood, Chairman
Former Founder & CEO, Cell Design Labs

Franklin Berger
Former Managing Director, J.P. Morgan

David Lacey, M.D.
Former SVP of Discovery Research, Amgen

William Robinson, M.D., Ph.D.
Professor, Stanford; Founder, Atreca

Lindsey Rolfe, BSc, MB ChB, MRCP, FFPM
Chief Medical Officer, Clovis Oncology

TECHNICAL ADVISORS

Lawrence Steinman, M.D.
Professor, Stanford; Founder, Atreca

Robert Darnell, M.D., Ph.D.
Robert and Harriet Heilbrunn Professor of Cancer Biology and Senior Physician, Rockefeller University

Mark Davis, Ph.D.
Director, Institute for Immunity, Transplantation and Infection, Stanford

Lawrence Fong, M.D.
Leader, Cancer Immunotherapy Program, UCSF

Lori Kunkel, M.D.
Former CMO, Pharmacyclics and Proteolix

Lewis Lanier, Ph.D.
Chairman of the Department of Microbiology and Immunology, UCSF

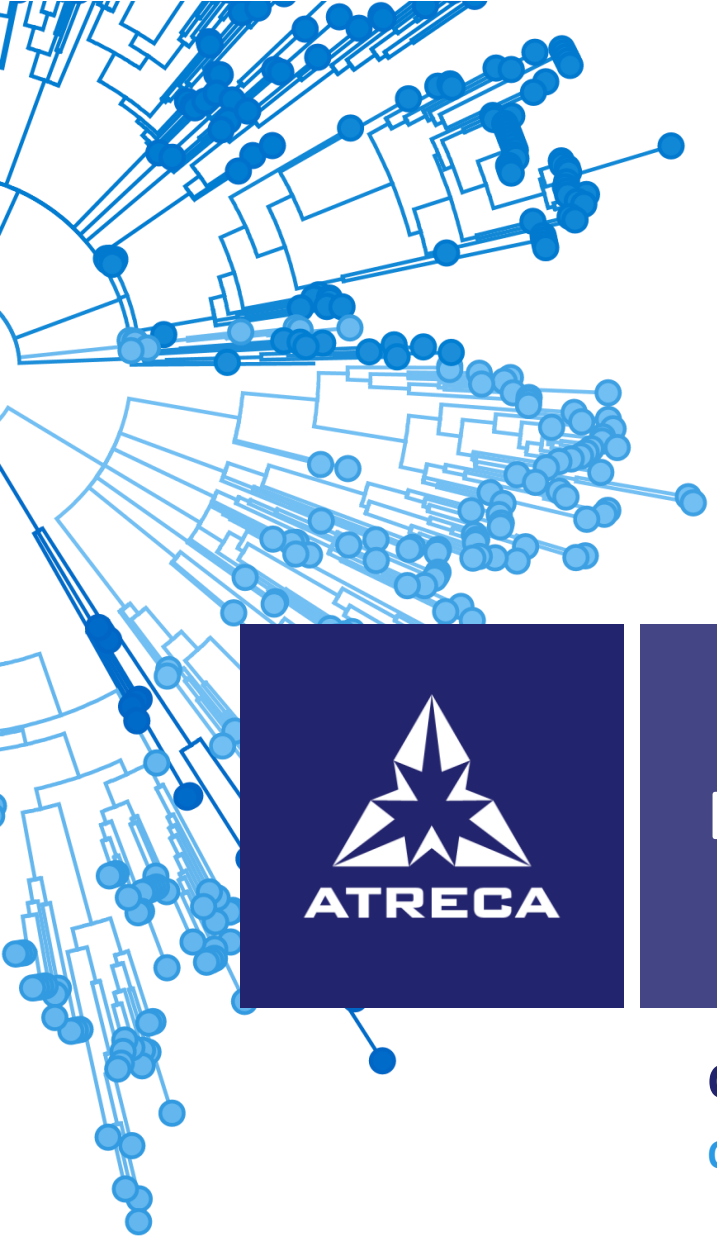
SELECTED PRE-IPO INVESTORS

AISLING CAPITAL
CORMORANT ASSET MANAGEMENT
Baker Brothers Advisors
EcoR1 CAPITAL
Redmile Group
SAMSARA BIOCAPITAL
WELLINGTON MANAGEMENT
TAVISTOCK GROUP
TEKLA Capital Management LLC

Investment Highlights

Discovering and Developing a Novel Class of Antibody-based Cancer Immunotherapeutics

Differentiated Discovery Approach	• First-mover advantages in accessing a potentially large and underexploited target space via interrogation of the human active anti-tumor immune response • Delivers novel antibodies binding to targets otherwise unlikely discoverable by traditional approaches • Scalable and industrialized platform
Large Opportunities	• Approach leads to antibodies that bind to "public" tumor targets • Potential treatments for large patient populations across multiple tumor types
Lead Candidate: ATRC-101	• Monoclonal antibody with a novel mechanism of action and target • Demonstrated potent single-agent anti-tumor activity in multiple preclinical solid tumor models • Anticipate filing IND in late 2019 and initiating Phase 1b trial in early 2020
Pipeline Expansion	• Growing hit library of >1,600 human antibodies that bind to non-autologous tumor tissue preferentially • Potential for additional product candidates with distinct mechanisms of action
Foundational Excellence	• Experienced management team with deep scientific, R&D and operational expertise • Support from leading institutional investors and SAB



ATRECA

Delivering the Potential of Immunotherapy

Corporate Overview

October 2019