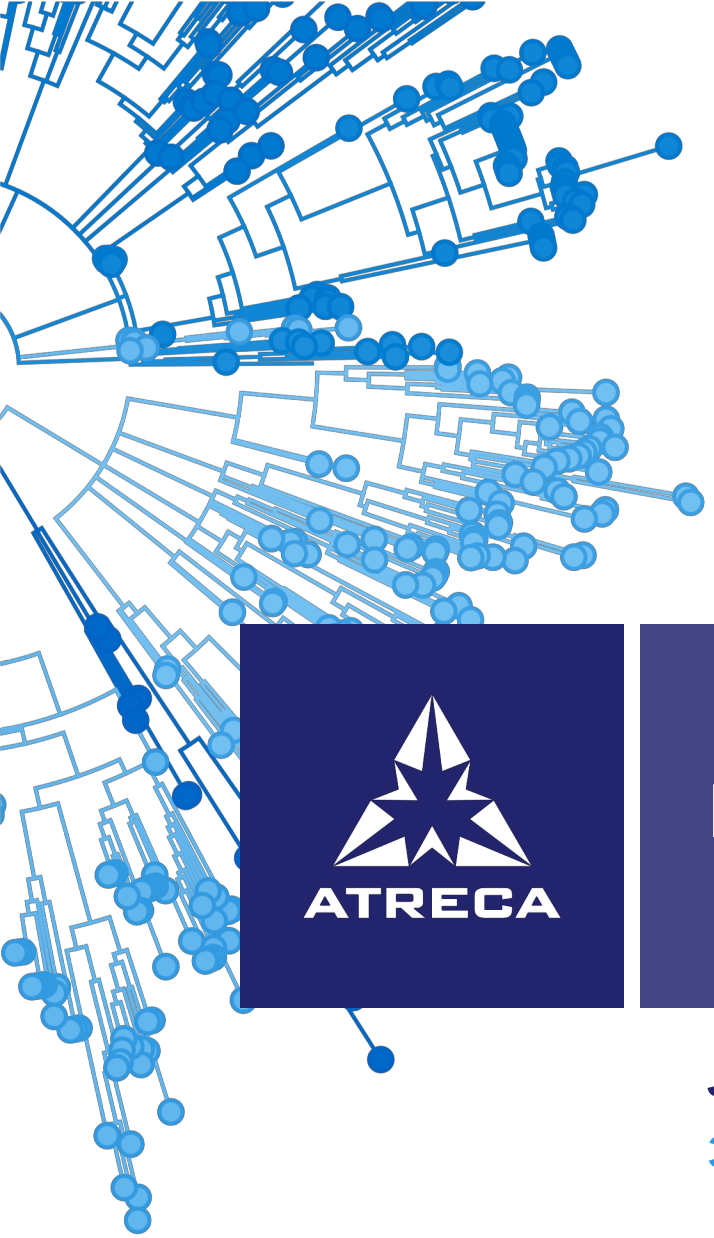


Delivering the Full Potential of Immunotherapy

John A. Orwin, President and CEO

39th Annual Cowen Health Care Conference

Safe Harbor

Certain information set forth in this presentation contains "forward-looking information", including "future oriented financial information" under applicable securities laws (collectively referred to herein as forward-looking statements). Except for statements of historical fact, information contained herein constitutes forward-looking statements and includes, but is not limited to, the

(i) projected financial performance of the Company

(ii) the expected development of the Company's business, projects and collaborations

(iii) execution of the Company's vision and growth strategy

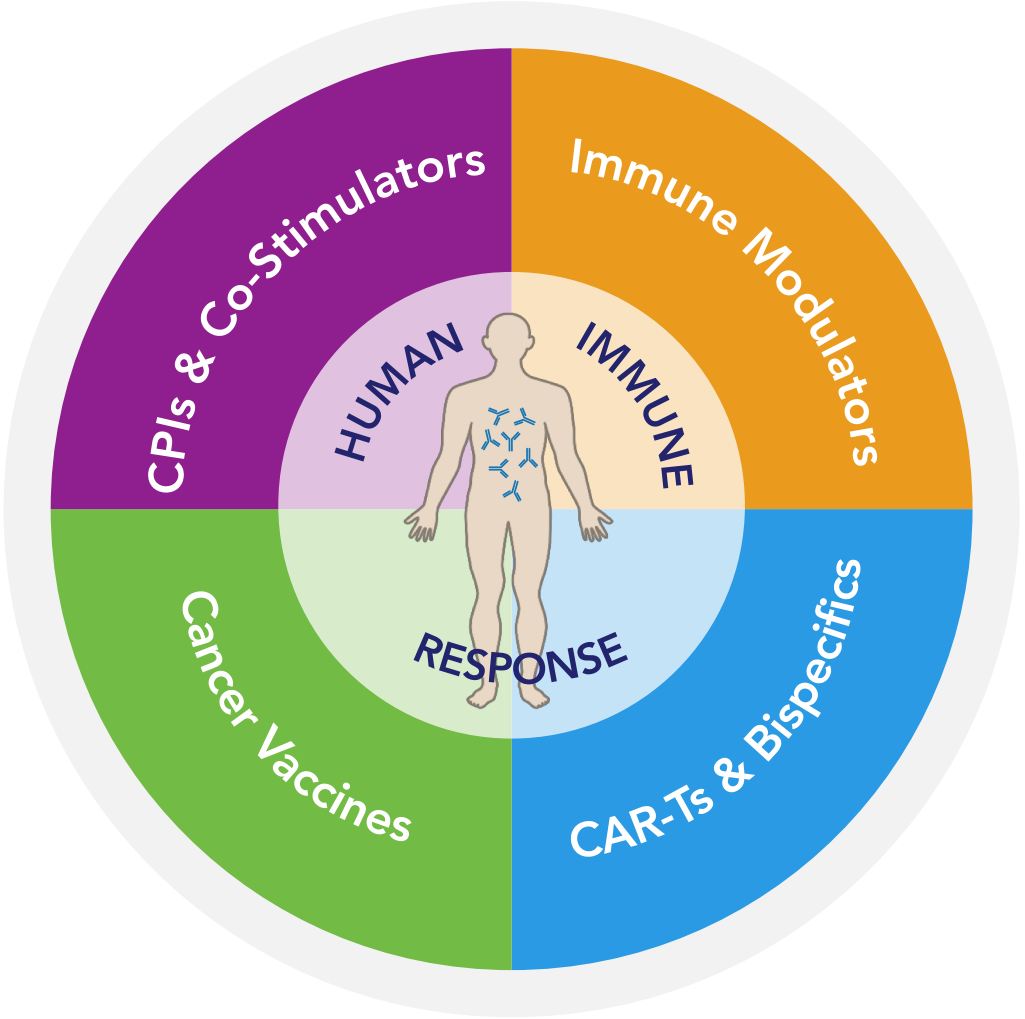
(iv) sources and availability of third-party financing for the Company

(v) renewal of the Company's current customer, supplier and other material agreements; and

(vi) future liquidity, working capital, and capital requirements.

Although forward-looking statements contained in this presentation are based upon what management of the Company believes are reasonable assumptions, there can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. The Company undertakes no obligation to update forward-looking statements if circumstances or management's estimates or opinions should change except as required by applicable securities laws. The reader is cautioned not to place undue reliance on forward-looking statements.

One Central Phenomenon Drives Responses to Oncology Immunotherapeutics



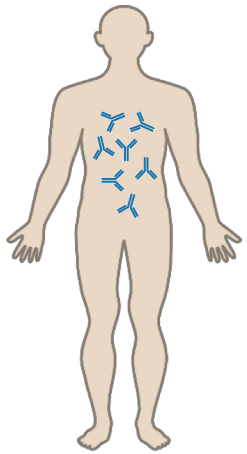
The **HUMAN IMMUNE RESPONSE** against tumor tissue is the **KEY** phenomenon invoked by **ALL** classes of oncology immunotherapeutics to drive positive patient outcomes

Atreca Owns that Key Part of the Landscape

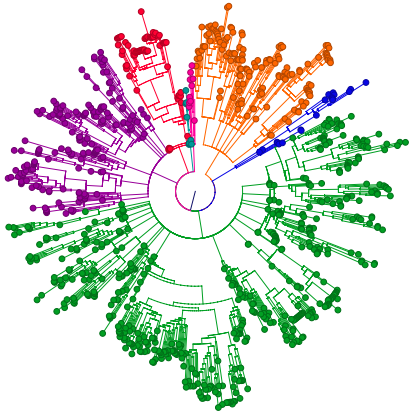
Atreca is the **FIRST MOVER** in analyzing and exploiting the active anti-tumor immune response of **RESPONDERS** to discover and develop a new generation of **ANTIBODY-BASED** oncology therapeutics

Our Novel Approach Inverts the Discovery Paradigm

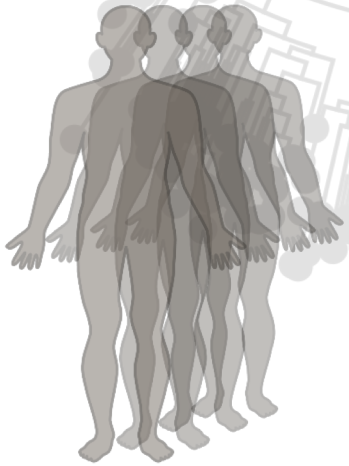
The HUMAN IMMUNE SYSTEM Tells Us What Is Important



Responder with Anti-Tumor Immune Response

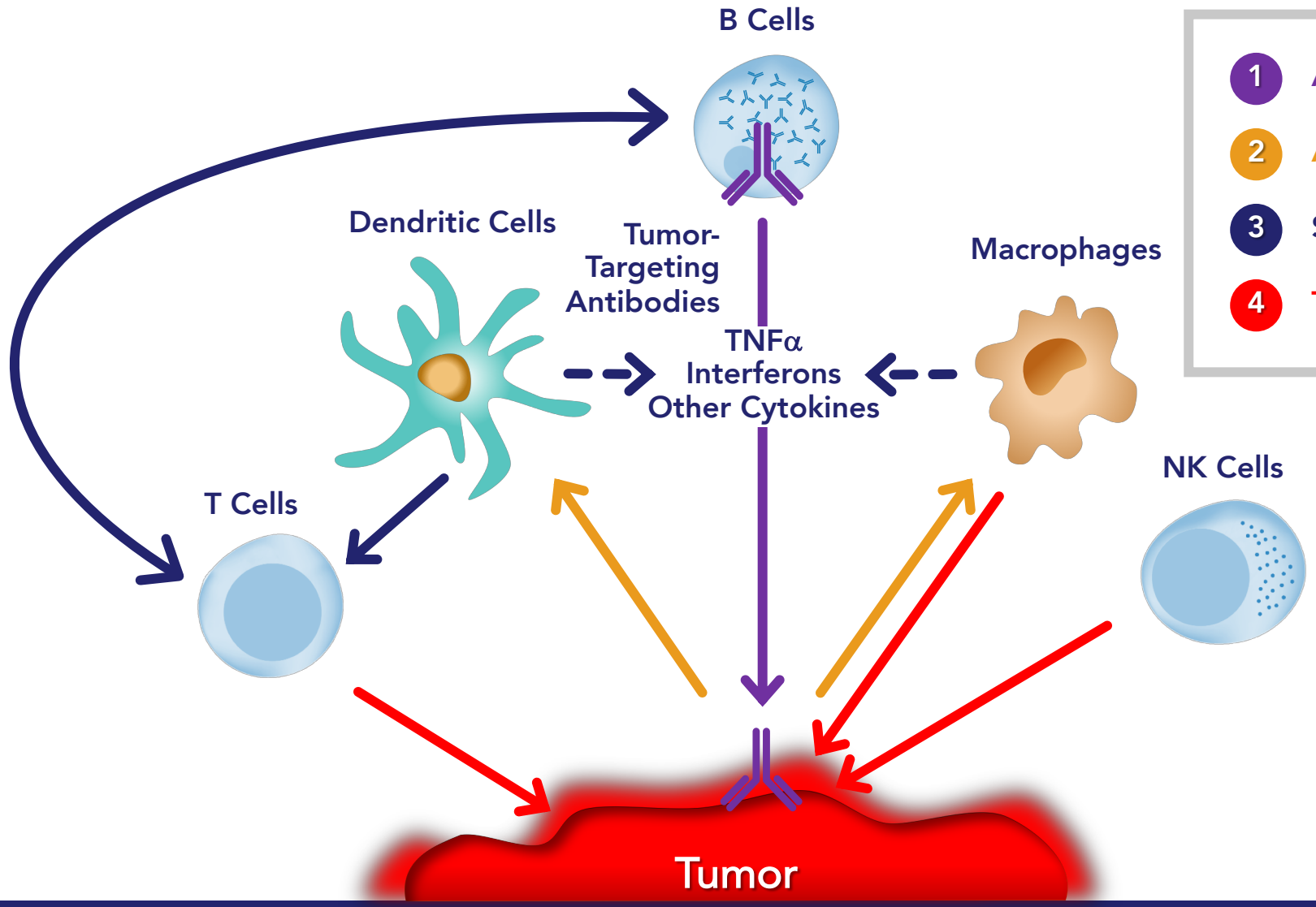


Interrogation of the Active B Cell Response via Atreca Engine



Novel and Highly Relevant Antibody-Target Pairs Yielding Therapeutics

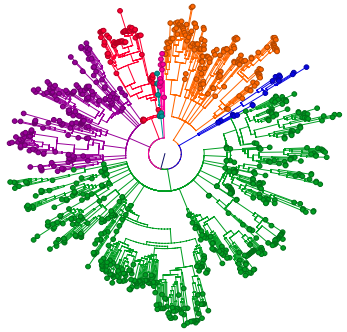
Responder Patient B Cells Provide Our Window into Effective Anti-Tumor Immune Responses



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

We've Built and Optimized a Proprietary and Knowledge-Driven DISCOVERY ENGINE

SAMPLE REPOSITORY & RELATIONSHIPS



TECHNOLOGY

IN SILICO ANALYSIS

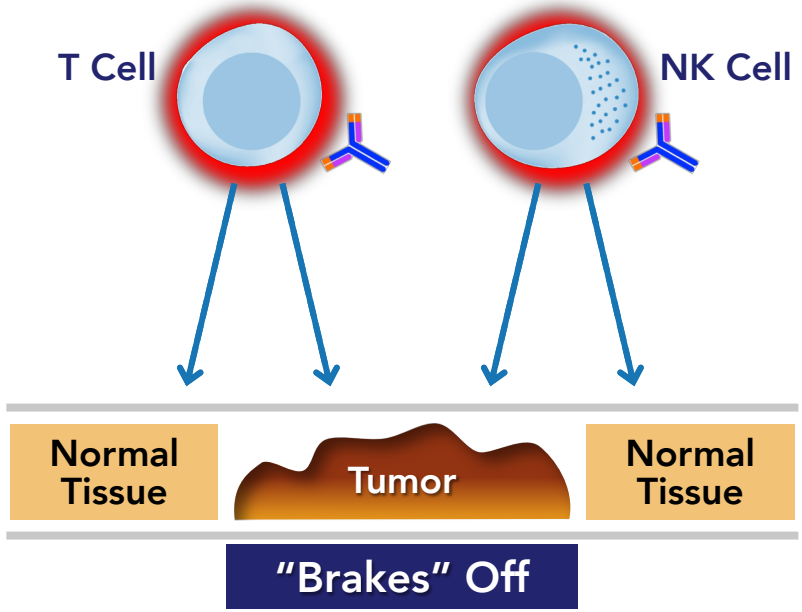
WET LAB ANALYSIS

KNOWLEDGE

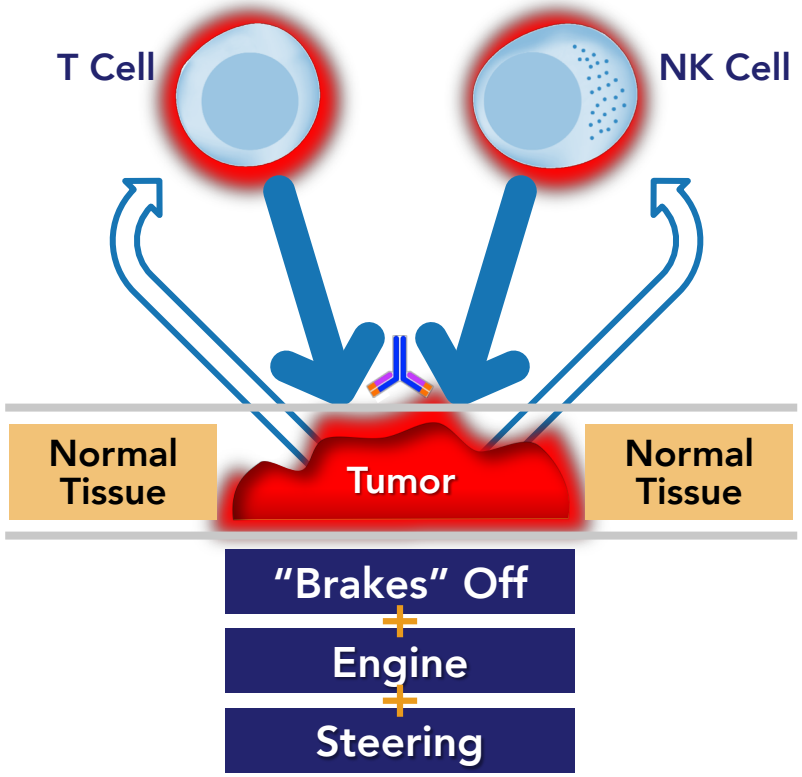
ENABLING OUR DISCOVERY PROCESS

Enabling Immunotherapeutics that Drive an Immune System Attack on Tumor Tissue

Current Immunotherapies Focus on Lymphocytes

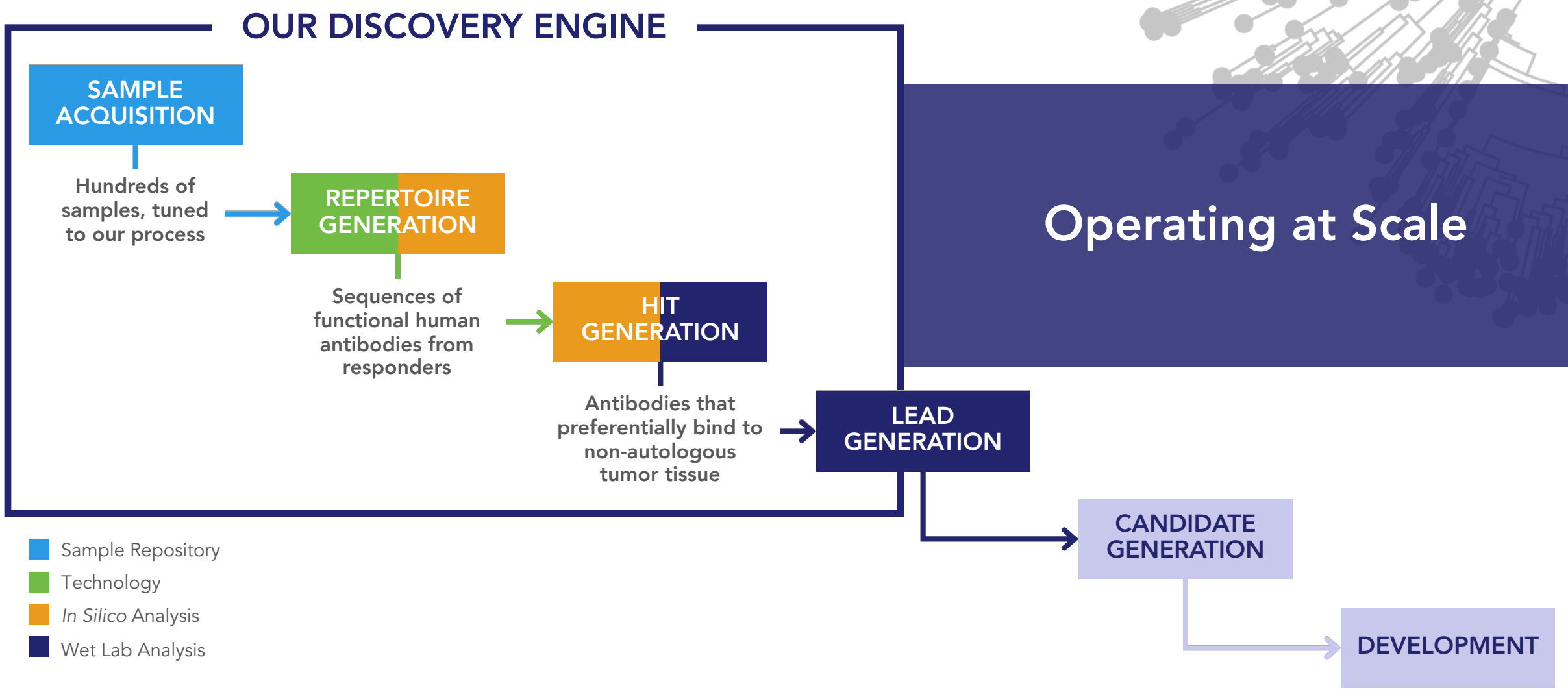


Our Programs Target Tumor Antigens

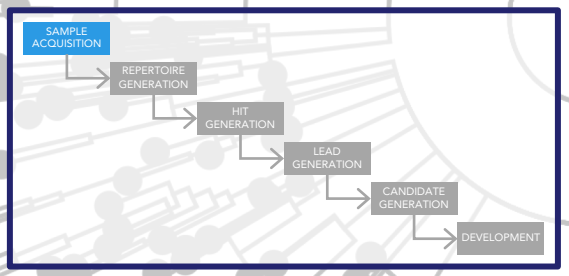


COLD → HOT

Our Engine Enables Our Unique and Proven DISCOVERY PROCESS



SAMPLE ACQUISITION:
A Diverse and Rapidly Growing Sample Repository



SAMPLES FROM MULTIPLE SOURCES

Sponsored Clinical Sites

STUDIES TAILOR-MADE TO SUPPORT OUR DISCOVERY EFFORT

Sutter Health Palo Alto Medical Foundation

SARAH CANNON Fighting Cancer Together

Academic Collaborations

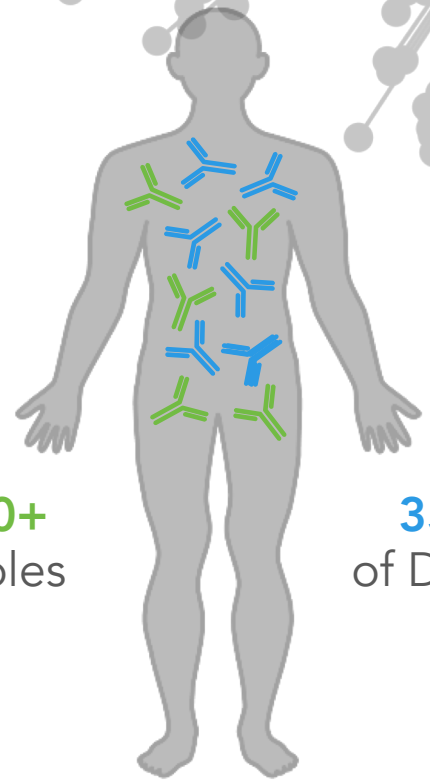
GROWING KOL NETWORK

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

ATRECA

Repository of Samples Precisely Suited to Our Approach

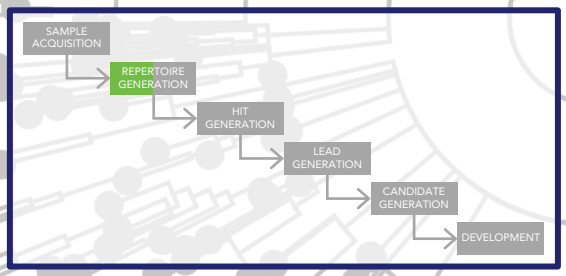
SAMPLES FROM PATIENTS WITH ~30 DIFFERENT SOLID TUMORS



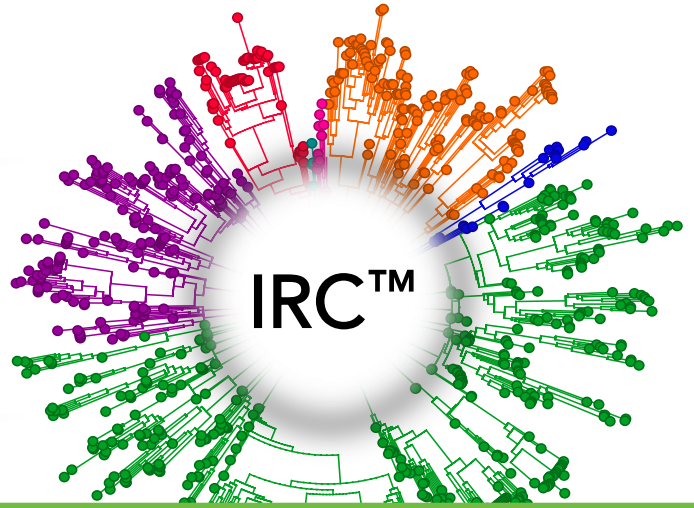
1100+ Samples

350+ of Donors

REPERTOIRE GENERATION:
Immune Repertoire Capture® Is Transformational



MOLECULAR & CELL BIOLOGY



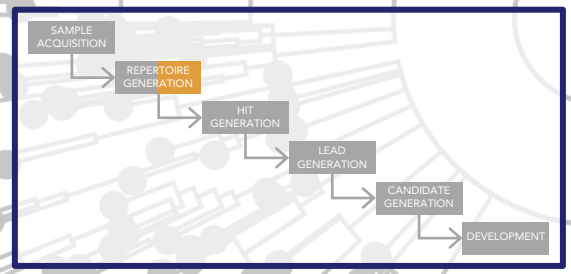
BIOINFORMATICS

Functional Antibodies and TCRs from Active Immune Responses

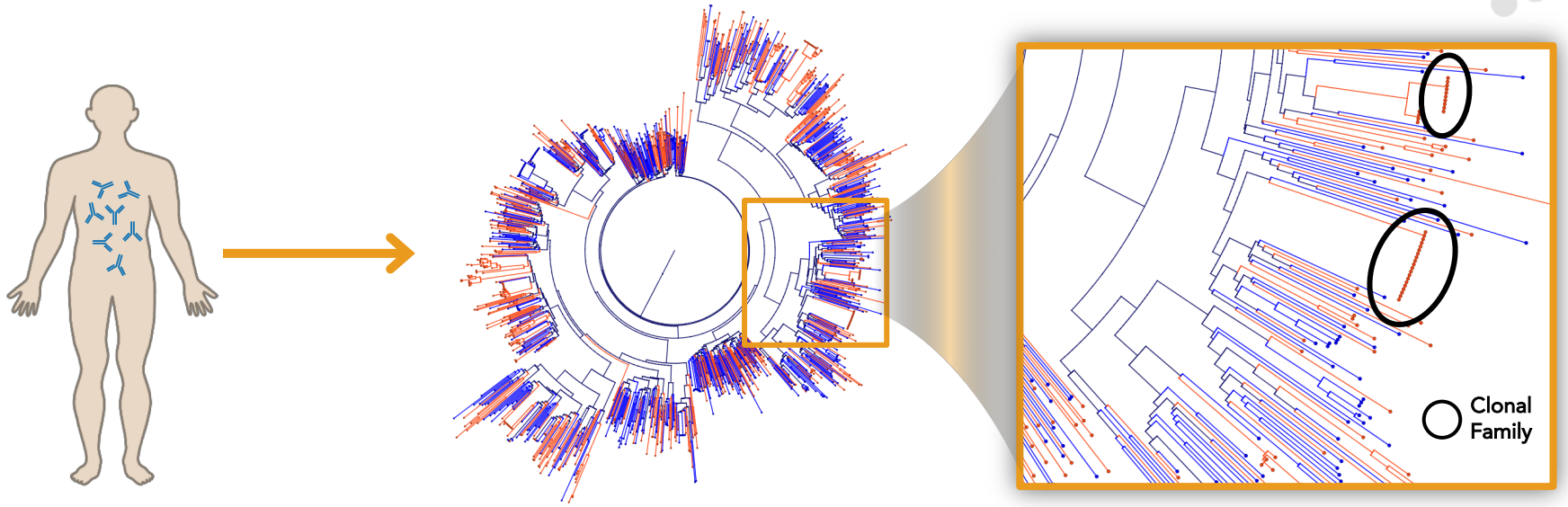
UNBIASED	ACCURATE	EFFICIENT
True Frequencies	Virtually Error-Free	Cells to Sequence in Days

Only 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

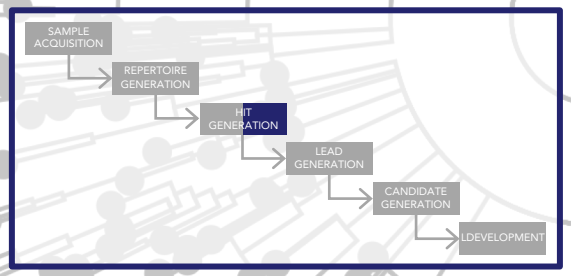


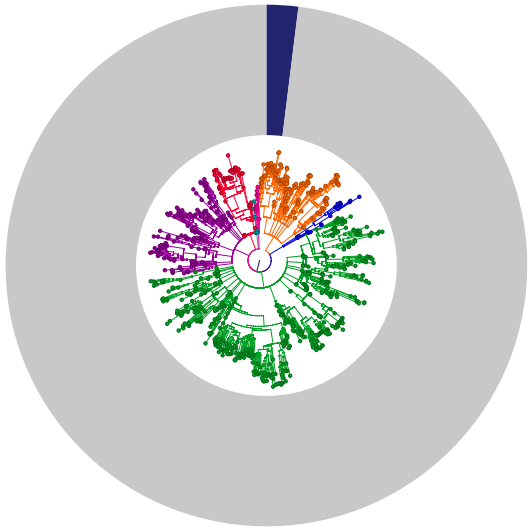
Metastatic RCC* Patient Responding to Nivolumab and Radiation

Changes in the Active B Cell Response Elicited by a T Cell-Targeted Drug

*Renal Cell Carcinoma

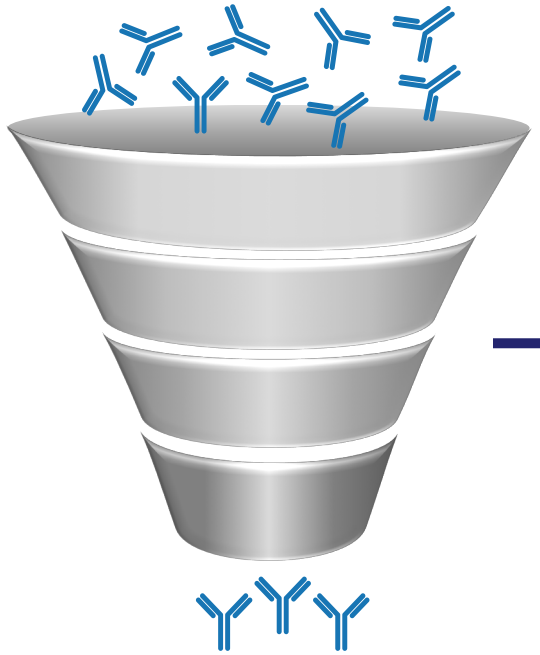
HIT GENERATION: Rapidly Expanding Collection of Antibodies Binding "Public" Tumor Antigens





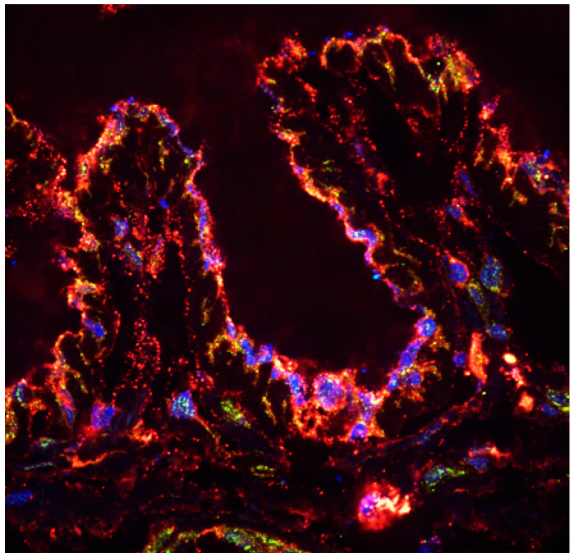
Responder Antibody Repertoire Analysis

1% Selected



Wet-Lab Analysis: Human Tumor Binding

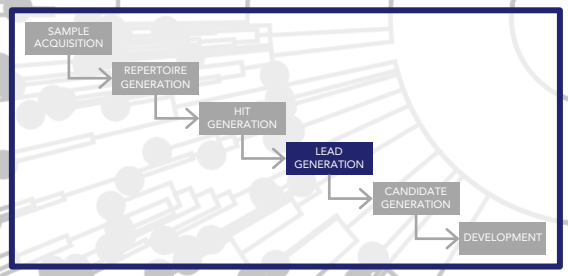
45% Positive

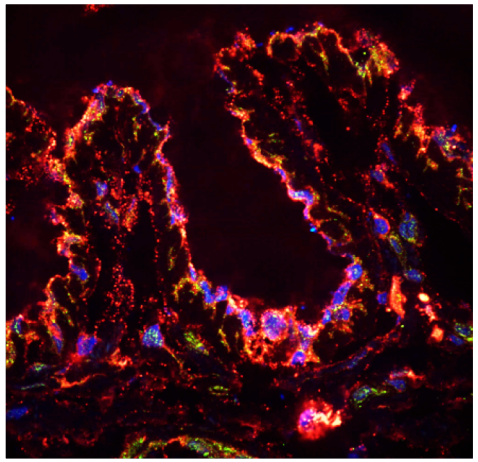


Currently **>1200** Antibodies Targeting Non-Autologous Tumor

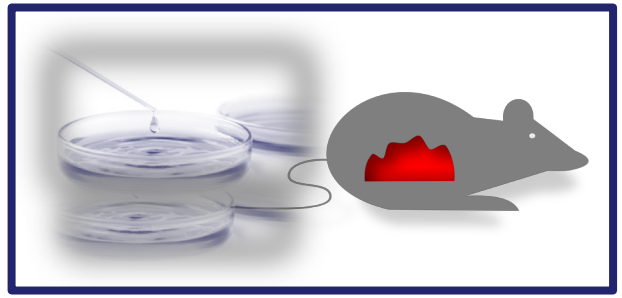
Very High Hit Rate Enables a "Land Grab" and Robust Pipeline

LEAD GENERATION: Generating Programs from Our Large Hit Collection Across Multiple Modalities





Hits
Antibodies Targeting Non-Autologous Tumor



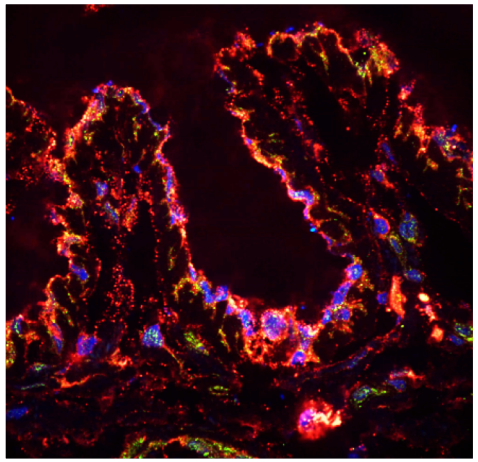
Industrialized Assays
in Vitro and *in Vivo*

- Driver Antigen Engagement
- Antibody Directed Killing
- T/NK Cellular Engagement
- Modulator/Toxin Delivery

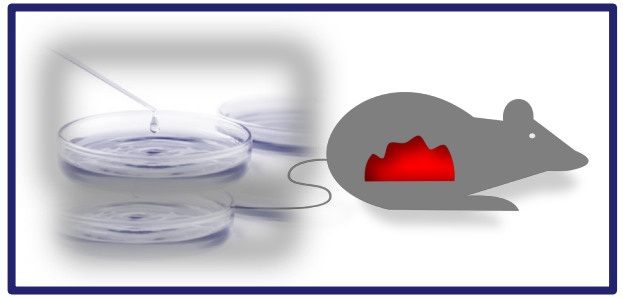
Lead Programs
Antibody-Target Pairs Utilizing a Wide Range of Formats and MOAs

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

LEAD GENERATION: Generating Programs from Our Large Hit Collection Across Multiple Modalities



Hits
Antibodies Targeting Non-Autologous Tumor



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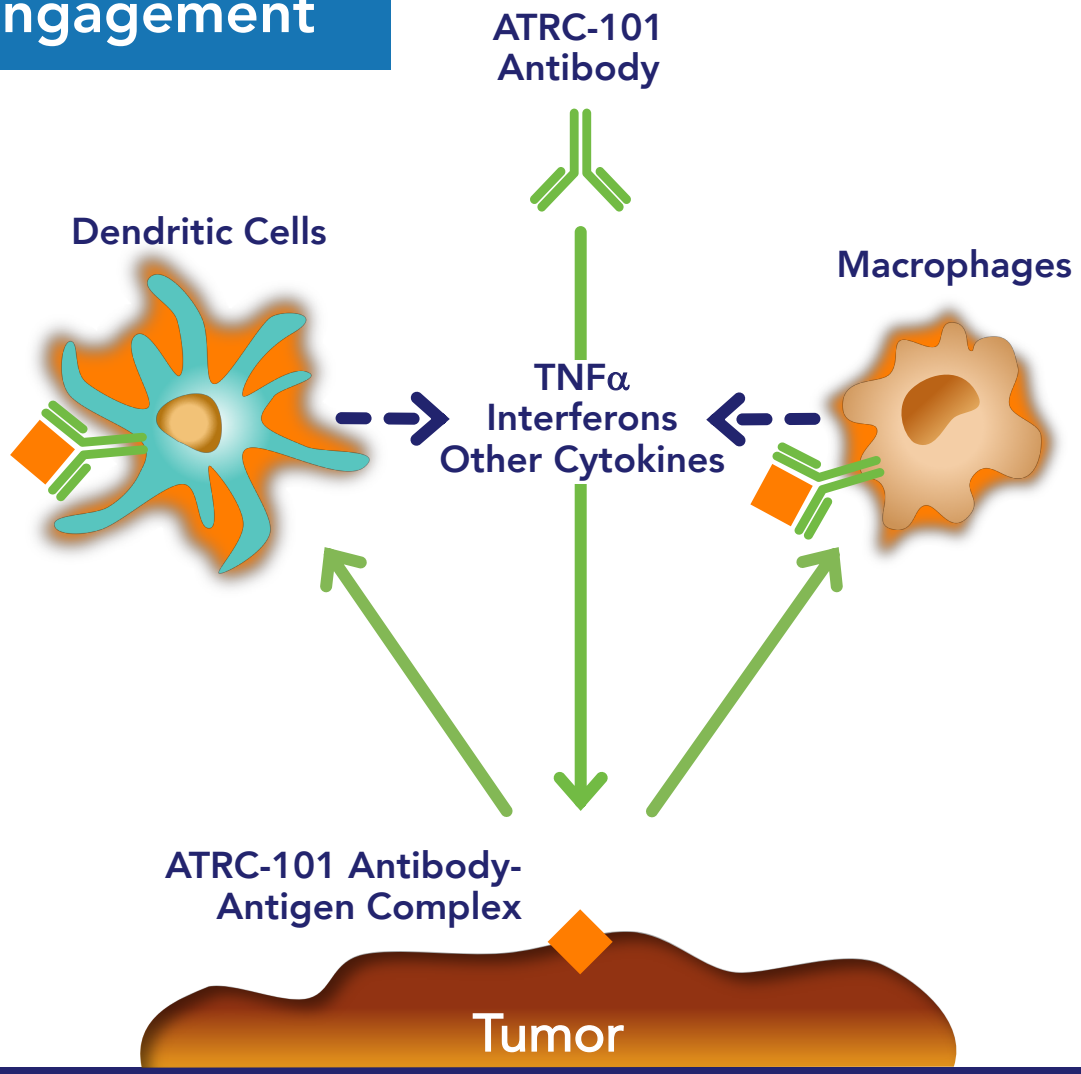
Solving a Key Issue in Immunotherapy:
How to Destroy Solid Tumors in Large Groups of Patients

ATRC-101 Program

IND in 2019

A Novel and Potentially Fundamental Way to Treat Cancer

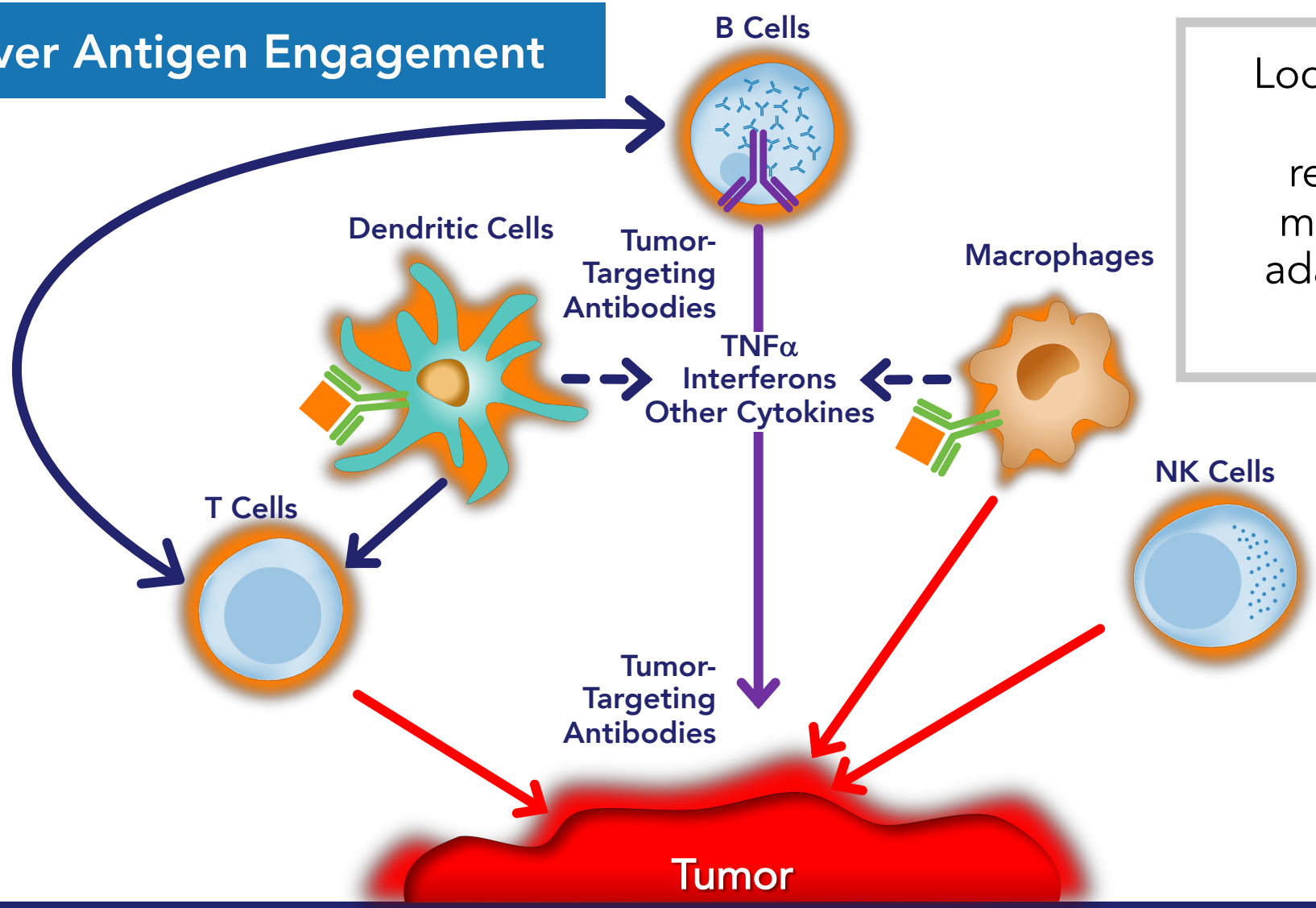
Driver Antigen Engagement



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

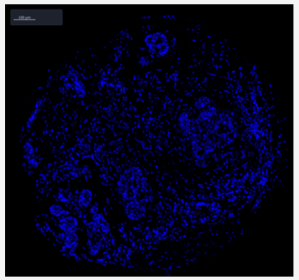
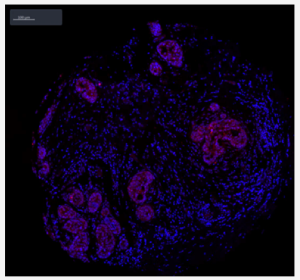
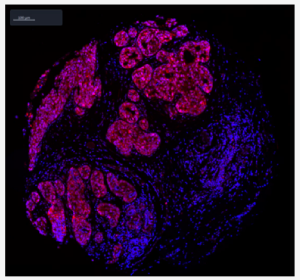
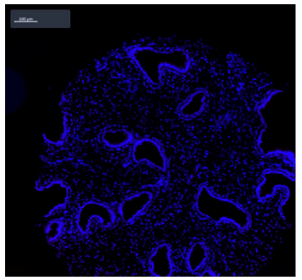
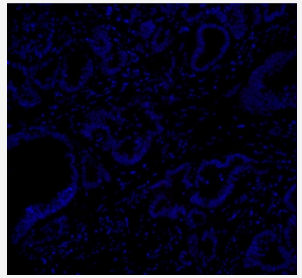
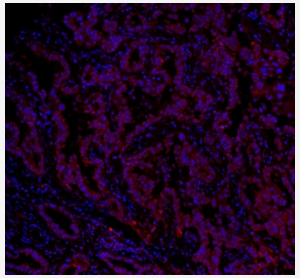
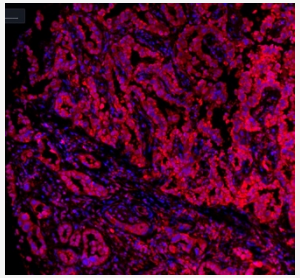
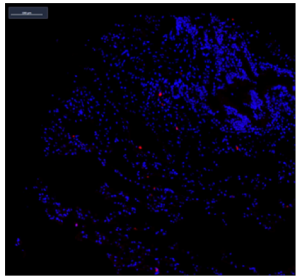
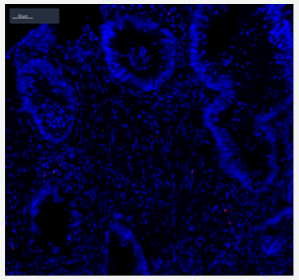
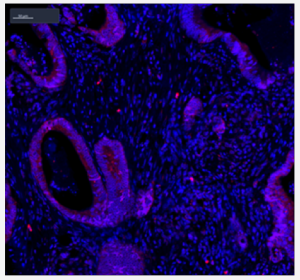
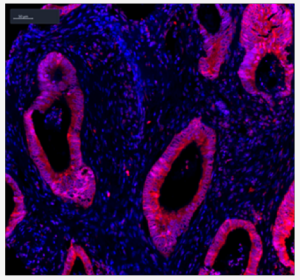
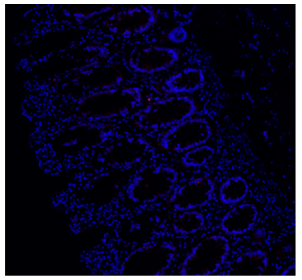
A Novel and Potentially Fundamental Way to Treat Cancer

Driver Antigen Engagement

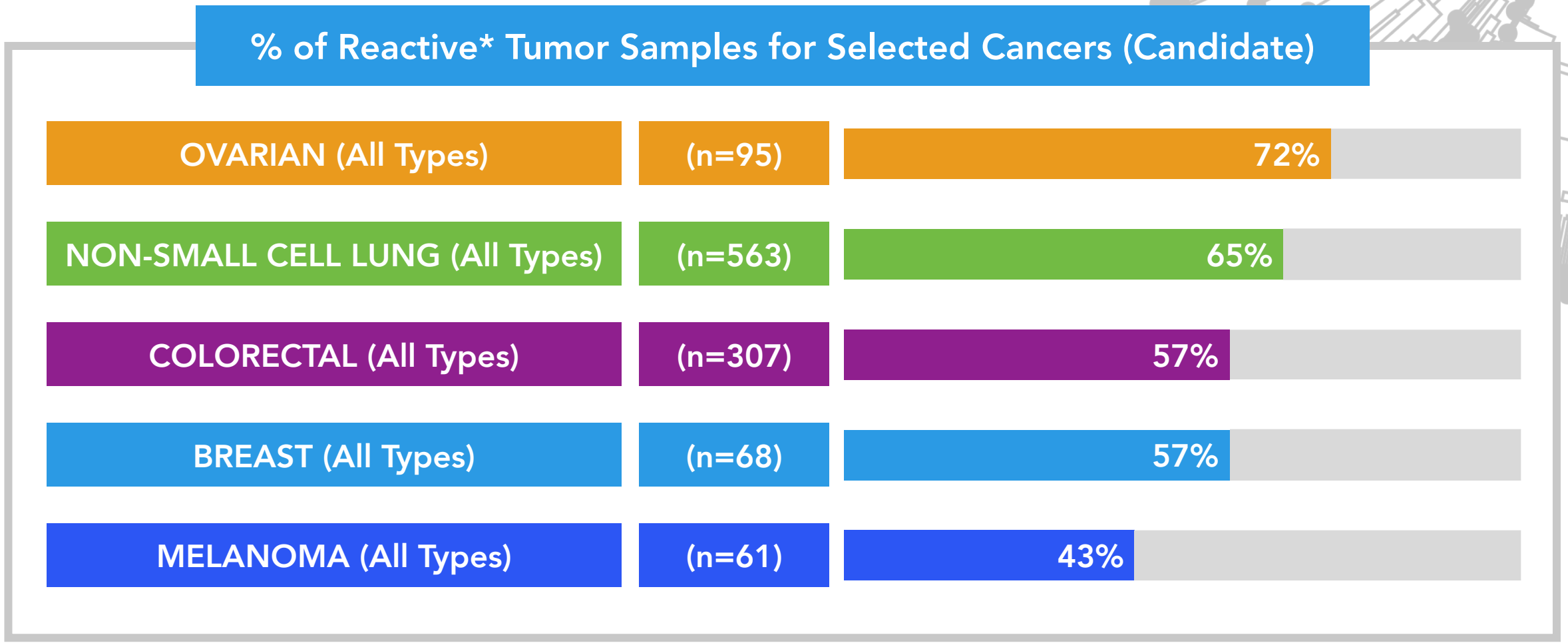


Local innate immune system activation leads to a remodeling of the tumor microenvironment and an adaptive immune response against tumor

ATRC-101 Antibodies Bind to Multiple Types of Malignant Tumor Tissue

	CONTROL	LEAD	CANDIDATE	CANDIDATE	
Breast Invasive Ductal CARCINOMA					BENIGN Breast Fibroadenoma
Lung ADENOCARCINOMA					NORMAL Adjacent Lung
Colon ADENOCARCINOMA					NORMAL Adjacent Colon

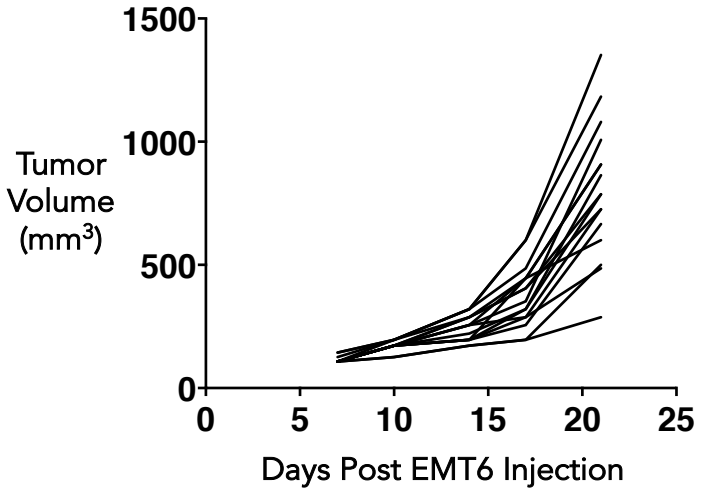
ATRC-101 Has Potential to Treat Large Groups of Patients



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

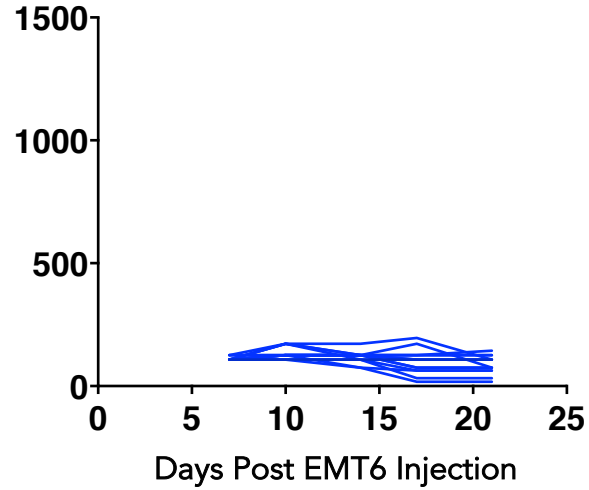
ATRC-101 Antibody Monotherapy Active *in Vivo*

PBS
(n = 15)



Control Tumor Growth

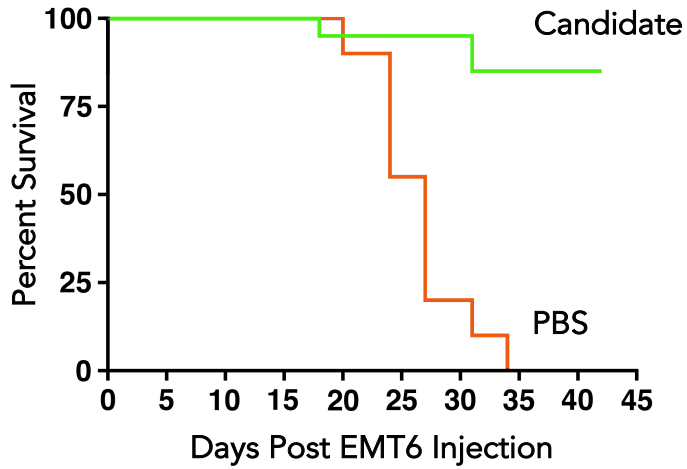
Candidate (10 mg/kg)
(n = 15)



Tumor Growth Suppressed in All Animals

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

Survival Analysis (5 mg/kg)
(n = 20 per group)



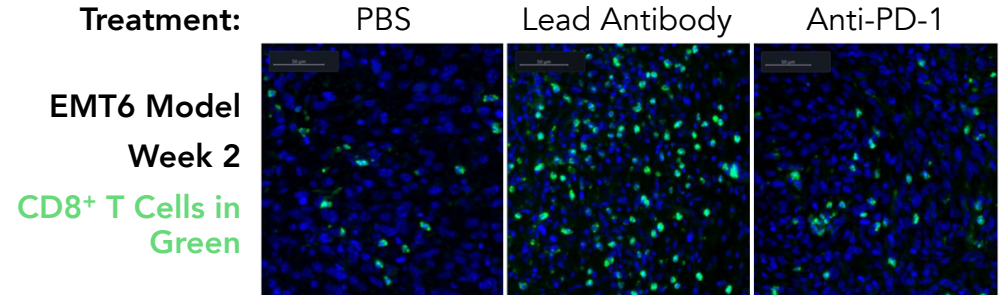
Tumor Eliminated in Majority of Animals

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

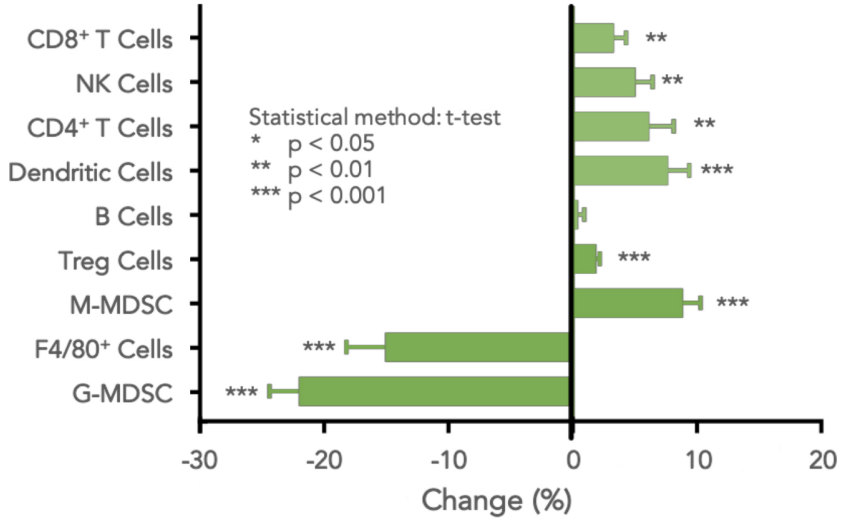
EMT6 Mouse Model: Relatively "Cold" Syngeneic Tumor Model
ATRC-101 Antibody Monotherapy Also Active in CT26 Model

MOA and Target Provide Strong Rationale for Potency

Analysis of Tumor Microenvironment Cells



Changes Induced by Lead Compared to PBS in EMT6 Model
(via Flow Cytometry)



Treatment with ATRC-101 Antibody Causes

- Remodeling of tumor microenvironment
- Destruction of neoplastic cells
- Immunologic memory against tumor

Activity of ATRC-101 Antibody Requires

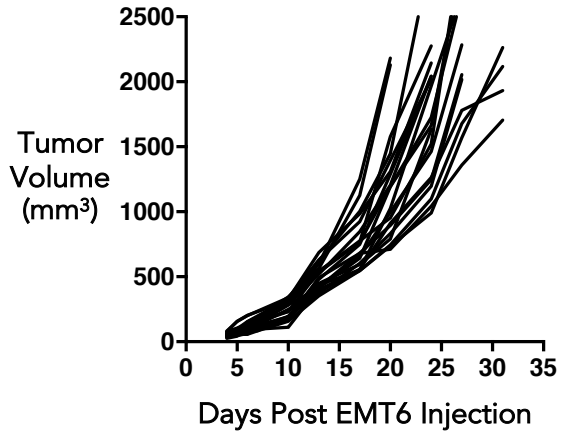
- Functional Fc-FcR interactions (N297A kills activity)
- Adaptive immune system (no activity in *nu/nu* mice)
- $CD8^+$ T cells (ablation kills activity)

Target of ATRC-101 Antibody

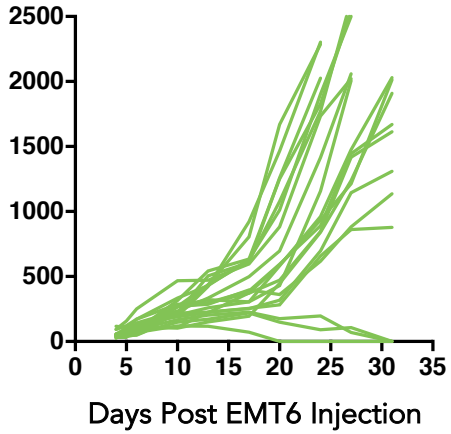
- Well-known class of target with human data
- Molecular pathways provide clear rationale
- No candidates against target yet to reach clinic

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

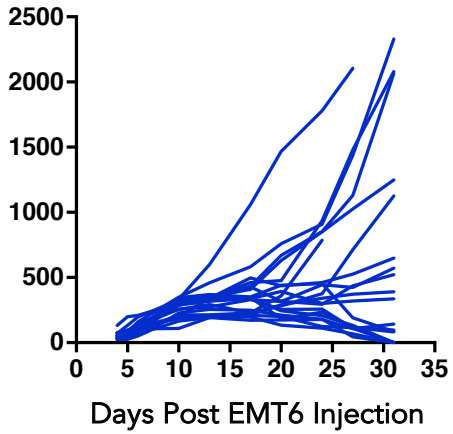
PBS
(n = 20)



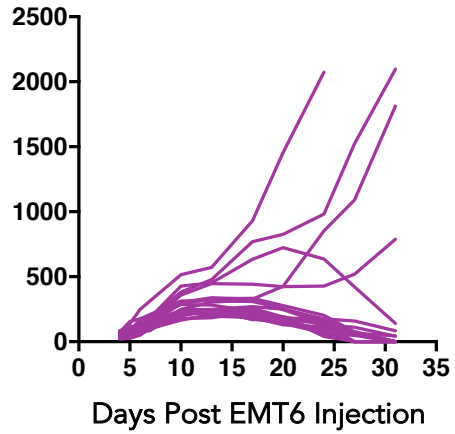
Anti-PD-1 (10 mg/kg)
(n = 20)



Lead (10 mg/kg)
(n = 20)



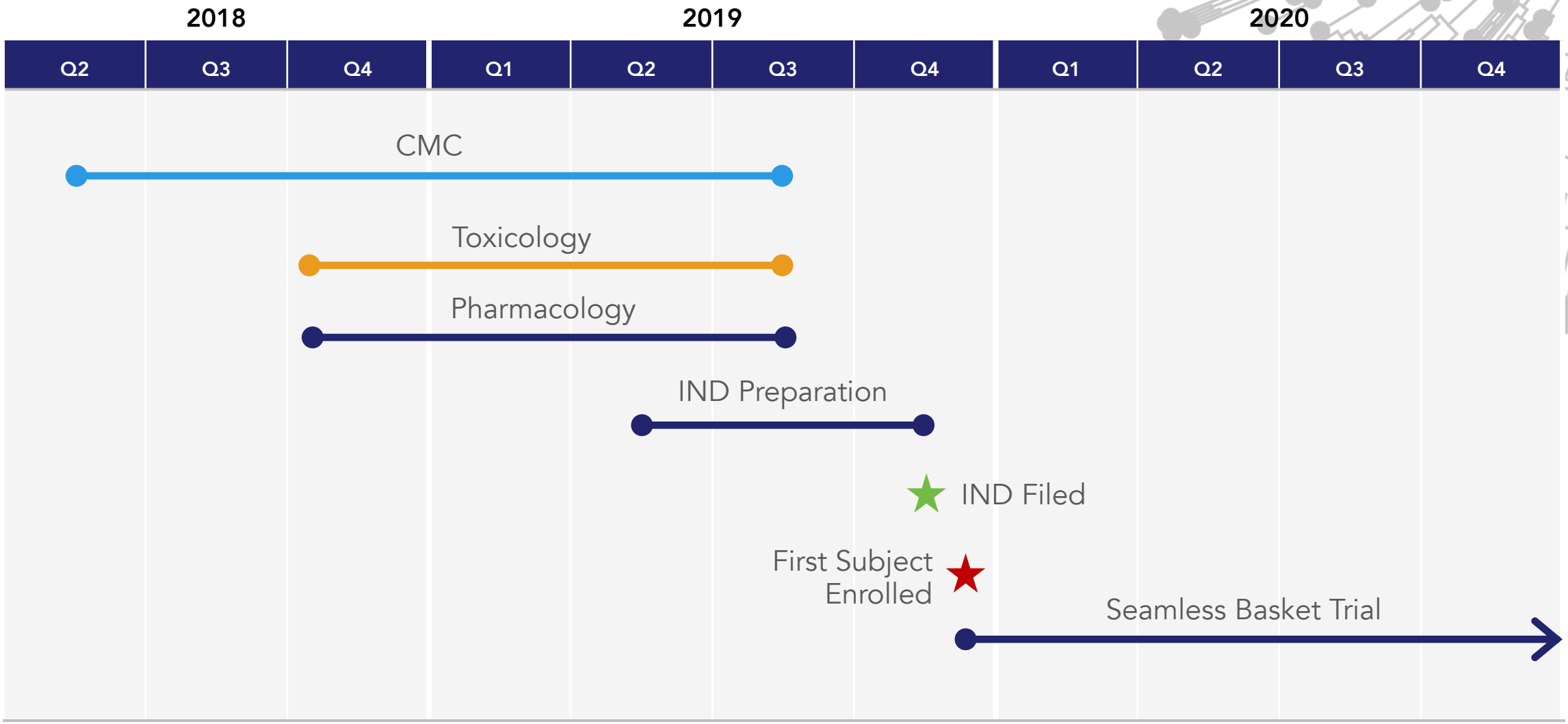
Lead + Anti-PD-1
(n = 20)



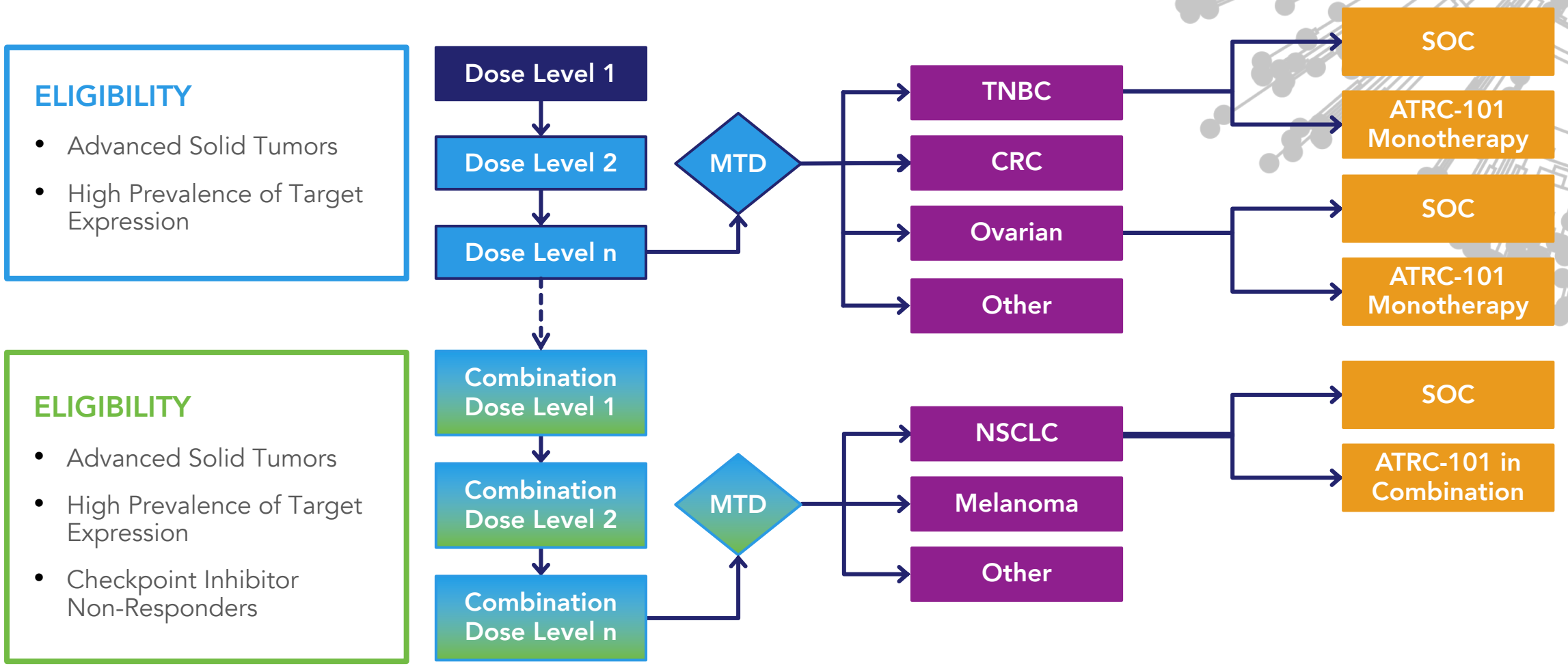
Anti-PD-1: Dosing 2x per week x 2 weeks (last dose Day 19)
ATRC-101 Antibody: Dosing 2x per week x 3.5 weeks (last dose Day 29)

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

ATRC-101 Clinical Development Timeline



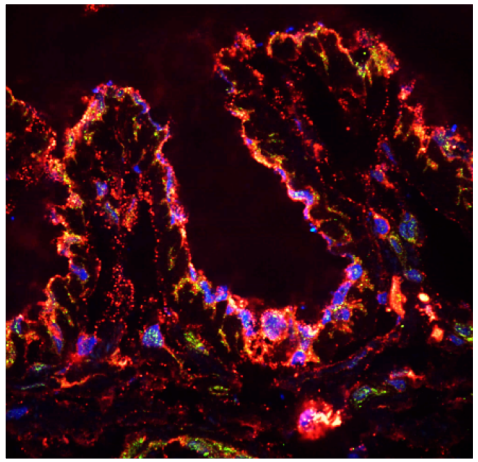
Seamless Basket Trial Design



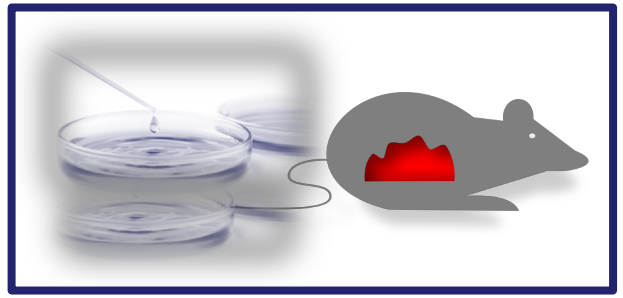
Next Programs

Multiple MOAs

LEAD GENERATION: Generating Programs from Our Large Hit Collection Across Multiple Modalities



Hits
Antibodies Targeting Non-Autologous Tumor



Industrialized Assays
in Vitro and *in Vivo*

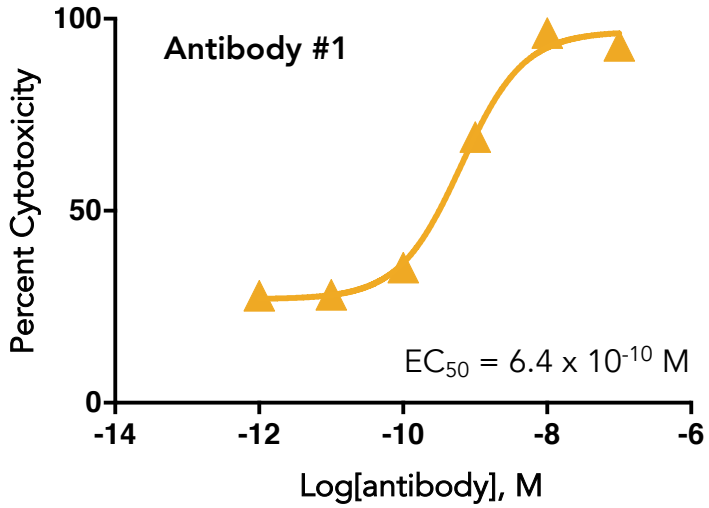
- Driver Antigen Engagement
- Antibody Directed Killing
- T/NK Cellular Engagement
- Modulator/Toxin Delivery

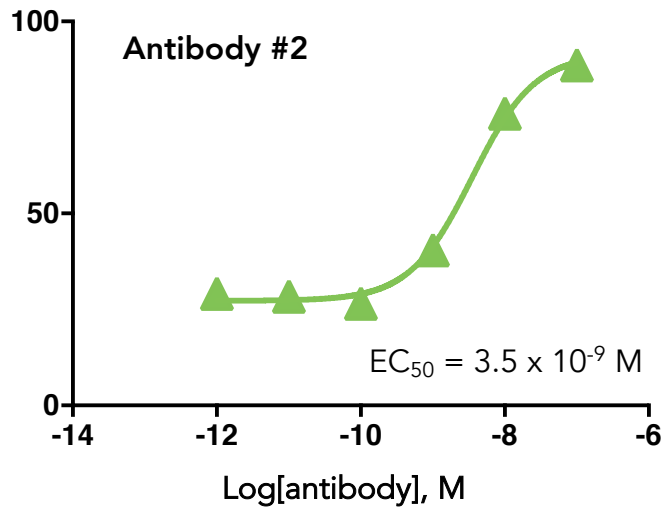
Lead Programs
Antibody-Target Pairs Utilizing a Wide Range of Formats and MOAs

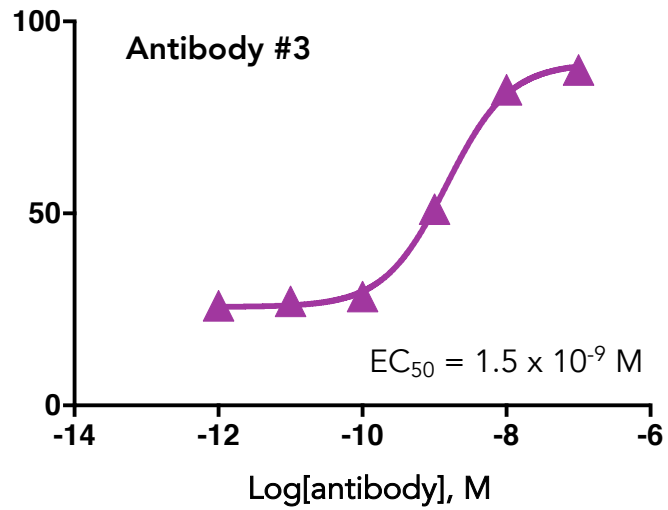
Solving a Key Issue in Immunotherapy:
How to Destroy Solid Tumors in Large Groups of Patients

Atreca Antibodies Direct Innate Immune System Cells to Kill Tumor Cells

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







Industrialized Assays

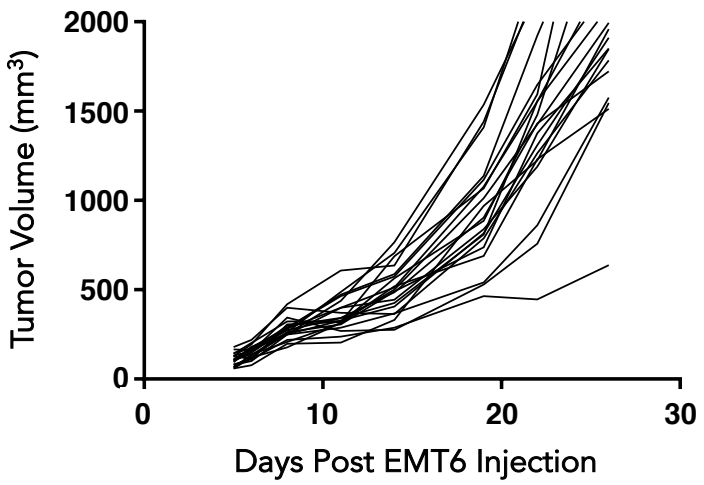
- Antibody Dependent Cellular Cytotoxicity (ADCC)
- Antibody Dependent Cellular Phagocytosis (ADCP)
- Complement Dependent Cytotoxicity (CDC)

~25% of Antibodies Tested Are Positive in One of These Three Assays

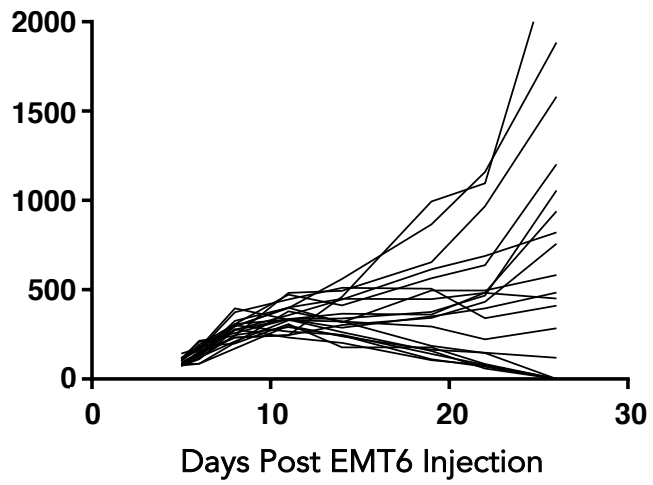
ATRC-201 Lead Antibody Active *in Vivo*

Screening Assay Result in EMT6 Model with Co-administered NK Cell Activator (4-1BB/CD137 Agonist)

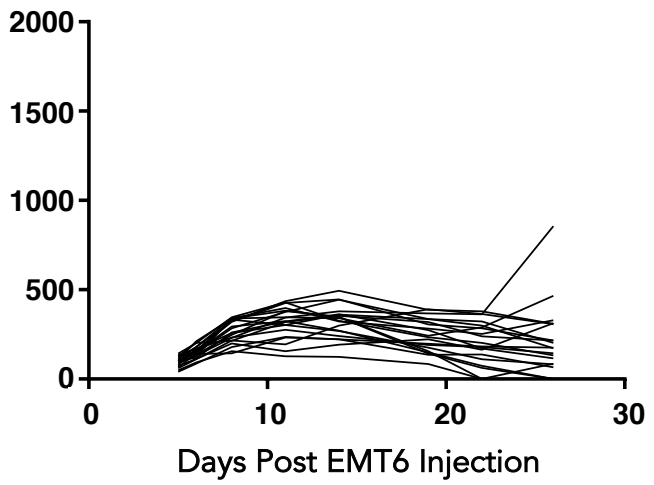
PBS
(n = 20)



Anti-4-1BB
(n = 20)



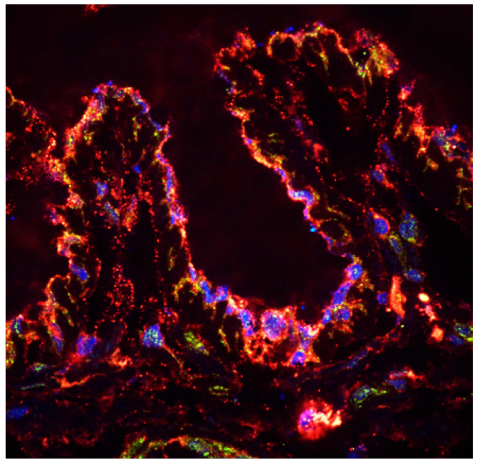
Anti-4-1BB + Lead Antibody
(n = 20)



Anti-4-1BB: Dosing 2 mg/kg 2x per week x 2 weeks (last dose Day 19)
ATRC-201 Antibody: Dosing 20 mg/kg 2x per week x 3.5 weeks (last dose Day 29)

Next Steps in Campaign Underway to Generate Candidate

LEAD GENERATION: Generating Programs from Our Large Hit Collection Across Multiple Modalities



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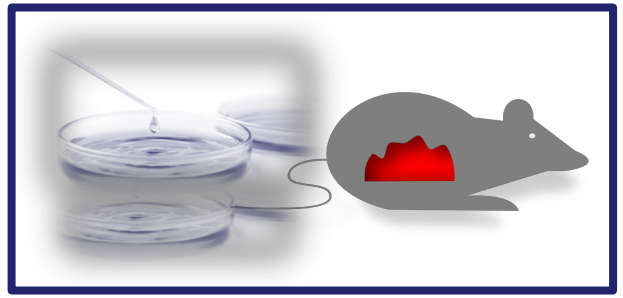
Antibodies Targeting Non-Autologous Tumor



Industrialized Assays
in Vitro and *in Vivo*

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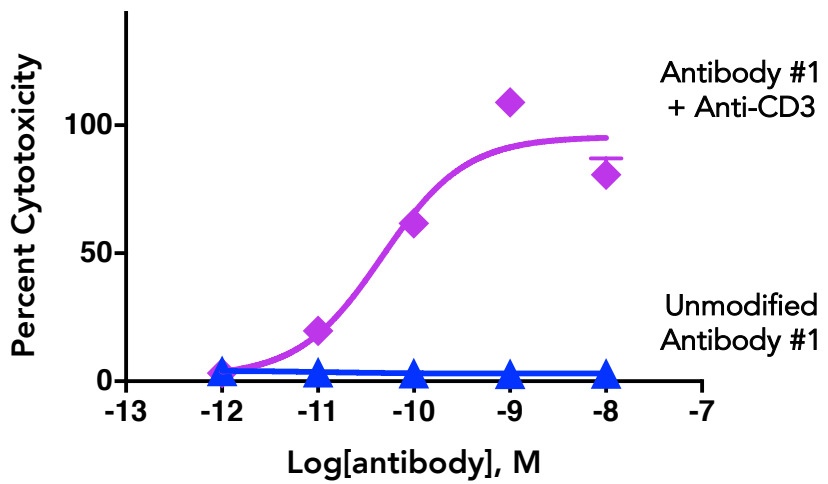
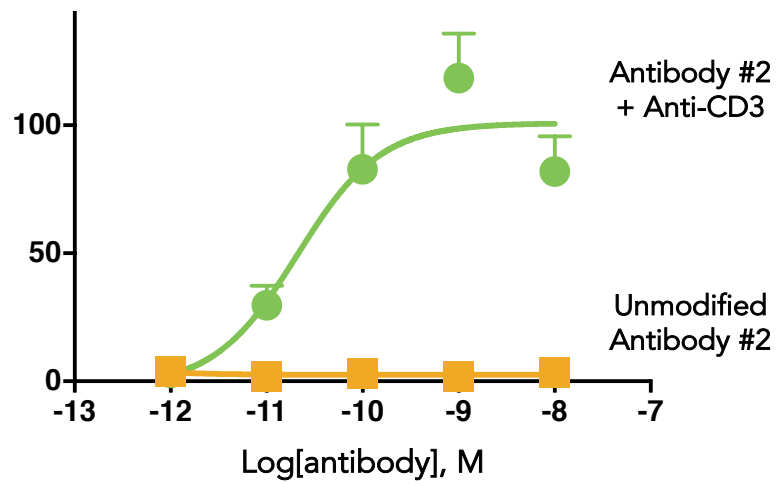
Lead Programs
Antibody-Target Pairs Utilizing a Wide Range of Formats and MOAs

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

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

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





Multiple Atreca Antibodies Target and Activate Human T Cells to Kill Tumor Cells When Designed as Bispecific Engagers

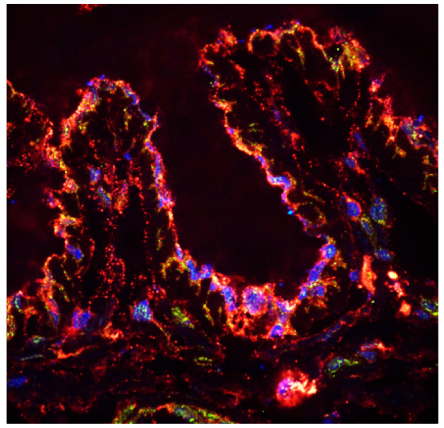
Our Engine Is Delivering an Expanding Oncology Pipeline

PROGRAM SERIES	MOA	DISCOVERY	CANDIDATE GENERATION	IND-ENABLING STUDIES	CLINICAL DEVELOPMENT
100	Driver Antigen Engagement	ATRC-101			FIH: 2019
200	Directed Killing	ATRC-201			FIH: 2020+
300	T Cell Engagement				FIH: 2021+
400	Modulator Delivery				

Multiple Opportunities to Expand Pipeline via Partnerships

Goal to monetize large hit collection and utilize best-in-class technology

Atreca Tumor-Targeting Responder Antibodies



>1200 Antibodies and Growing

Driver Antigen Engagement

PARTNERSHIP OPPORTUNITIES

- **Antibody Directed Killing**
- **T/NK Cellular Engagement**
- **Modulator/Toxin Delivery**

- Atreca human antibodies target solid tumors via their novel antigens
- Unique assets provide "content" for complementary technologies

Leveraging Our Unique Approach and First Mover Status

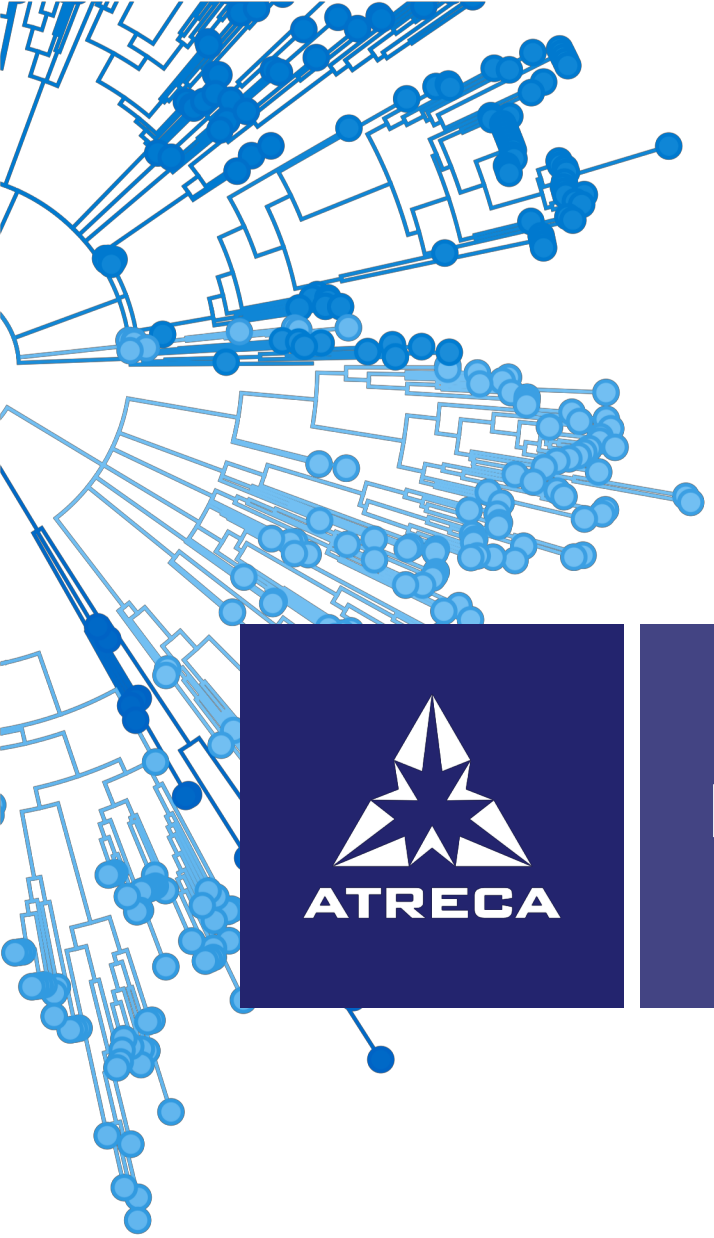
Analyzing and Exploiting the Active Anti-Tumor Immune Response

Industrialized Discovery
ENGINE & PROCESS

+

Growing
PORTFOLIO & PIPELINE

OPPORTUNITIES to Inform MULTIPLE THERAPEUTIC AREAS



ATRECA

Delivering the Full Potential of Immunotherapy