SAb BIOTHERAPEUTICS

ADVANCING A POWERFUL NEW CLASS OF IMMUNOTHERAPEUTIC ANTIBODIES

August 2022

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Experienced Management Team

Samuel J. Reich

EXECUTIVE CHAIRMAN, BOD

- 20 years Biopharma Executive and BOD
- Bioentrepreneur
- Co-founder Acuity Pharmaceuticals, OPKO Health, Biscayne Neurotherapeutics
- Molecular Biologist, Inventor, former PENN

Eddie J. Sullivan, PhD

PRESIDENT & CEO / CO-FOUNDER

- 20 years new technology development
- 25+ years biotech
- Former Japanese pharma
- BIO Executive Committee
- Reproductive physiologist

Russell Beyer, MBA, CMA

EVP & CHIEF FINANCIAL OFFICER

- 25+ years Pharma & Fortune 100
- Country/region CFO at AstraZeneca, Clorox
- Track record of driving growth, integrations
- Strategic financial, operations, reporting, planning

Christoph Bausch, PhD, MBA

EVP & CHIEF OPERATING OFFICER

- 20+ years research and discovery, biomanufacturing, business development, and platform technology commercialization
- MilliporeSigma (Merck KGaA)
- Stowers Institute for Medical Research Postdoc

Alexandra Kropotova, MD

EVP & CHIEF MEDICAL OFFICER

- 20+ years global clinical development
- Biopharmaceutical R&D leader, Pfizer, Wyeth, Sanofi, Teva Specialty R&D
- Board member, iBio
- Contributed to numerous patents & compounds leading portfolios from Phase I to BLA and NDA approvals

Novel DiversitAb™ Platform for Developing Highly-Differentiated Immunotherapies

Robust, growing clinical-stage pipeline spanning multiple therapeutic areas

Vertical integration enables rapid, scalable development of multi-targeted products

Leveraged advanced genetic engineering & antibody science to develop Tc bovine-derived fully-human polyclonal antibodies

Established proof-of-concept through funded programs & partnerships totaling ~$200MM

Strong corporate position with experienced leadership team and growing infrastructure

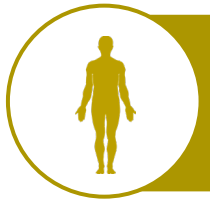
Innovative DiversitAb™ platform produces a new class of targeted fully-human, highly-potent polyclonal antibodies

Versatile Antibody Platform with Ability to Capture Multiple Markets

Human Antibody Discovery & Development Engine, New Source for IgG, Therapeutic Production Represents Multibillion-Dollar Market Opportunity

Polyclonal Antibody Development

-Fully-human, targeted, high-potency
-Multivalent, multi-targeted



Human Immunoglobulin

-Specifically targeted
-Large-scale, consistent, managed donor pool, genetically representing single human donor

Monoclonal Antibody Discovery

-Larger volume of antibodies
-Greater diversity; higher affinity
-Robust (ruminant) immune response

- **Robust pipeline across multiple therapeutic areas**
- **Potential to capture mAb, hIVIG, animal pAb markets and address unmet needs**
- ***In vivo* data demonstrating comparability to approved SC product and potential benefits over human-derived**
- **Multiple ongoing global pharma collaborations**

Multi-Pronged Business Strategy Powered by Novel Proprietary Platform

Opportunity to Create New Class of Immunotherapies

DiversitAb Platform

- **RAPID PROOF-OF-CONCEPT** (90 days to cGMP)
- **NATURAL HUMAN ANTIBODIES** (without human donors or serum)
- **MULTI-VALENT CAPABILITIES** (by nature, & by design–multiple targets in one product)
- **TARGET AGNOSTIC** (virus, bacteria, toxin, allergen)
- **SCALABLE, REPLICABLE, CONSISTENT PRODUCTION**

Product Development of Pipeline Assets:
Best-in-Class, First-in-Class & Unmet Needs

- Demonstrated clinical safety and efficacy
- Proof-of-platform with highly-mutating infectious disease
- Robust pipeline with broad therapeutic reach
- Demonstrated *in vivo* efficacy to >12 targets

Industry Partnering & Research Collaborations:
Monoclonal Discovery & Polyclonal Development/Production

- Multiple ongoing collaborations with global pharma
- Opportunities in monoclonal discovery, human immune globulins and therapeutic innovation

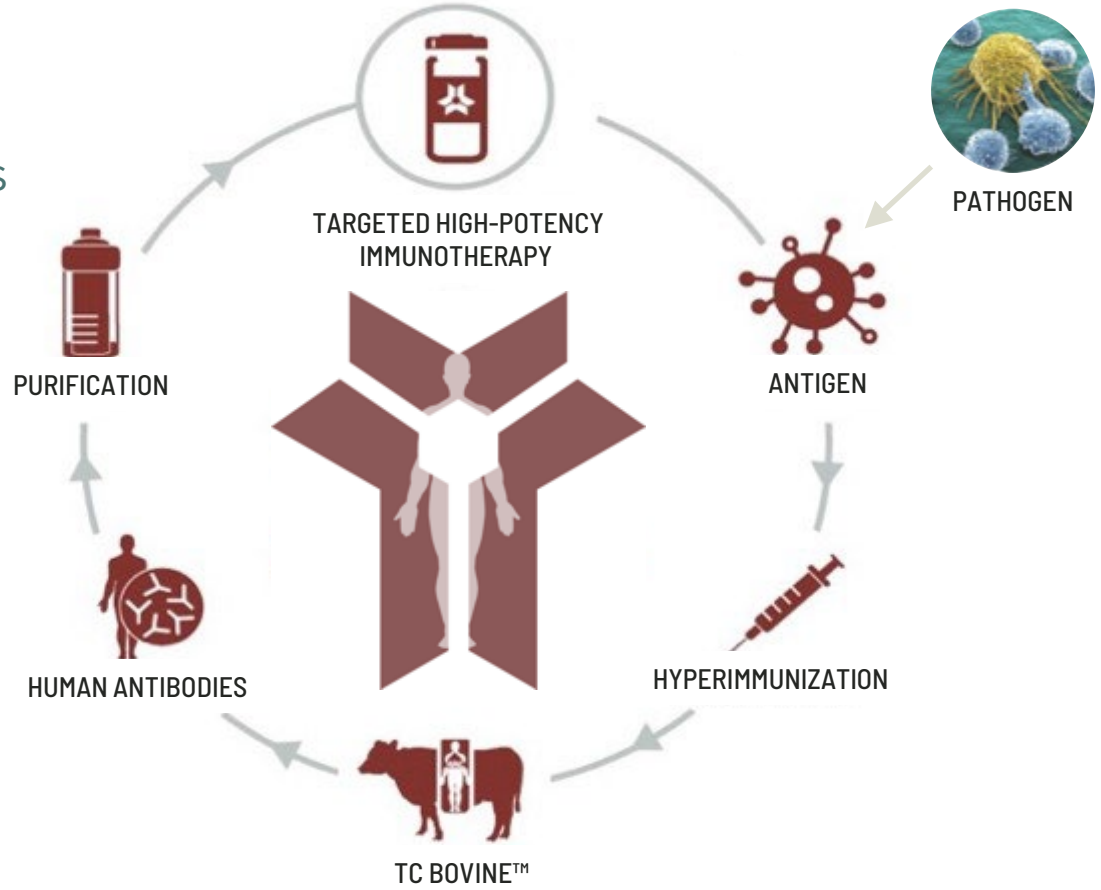
Global Public Health Security:
Emerging Infectious Disease & Biothreats

- $200M awarded for rapid & pandemic response
- Advancement of programs from preclinical into Phase 3 clinical development in the respiratory therapeutic area

DiversitAb™ Platform

Advancing a new class of fully-human polyclonal Tc bovine-derived antibodies without the need for human serum

- Reliable, controlled, consistent production of diverse, high-titer, high-avidity, fully-human polyclonal antibodies
- Generated antibodies behave similarly to human-derived with ability to specifically target
- Proprietary immunization strategies and robust immune response drive extremely high potency
- Well-established and understood regulatory path as biologic through FDA-CBER
- Vertical integration enabling rapid, scalable development and production of multivalent products



Polyclonals: Broader Spectrum Efficacy Valuable in Range of Indications

FDA: CENTER FOR **DRUG** EVALUATION & RESEARCH (CDER)

Characterized Monoclonal Antibody

mAb

Clones of a single antibody bind to a specific epitope

Monoclonal Approach

- Highly-targeted with specific activity
- Iterative Ab identification and selection process
- Selected and cloned *in vitro*
- May promote escape mutants via selective pressure
- Resistance may develop as pathogen/target mutates
- Current cocktail trend to address resistance

FDA: CENTER FOR **BIOLOGICS** EVALUATION & RESEARCH (CBER)

Plasma-Derived Polyclonal Antibodies

pAbs

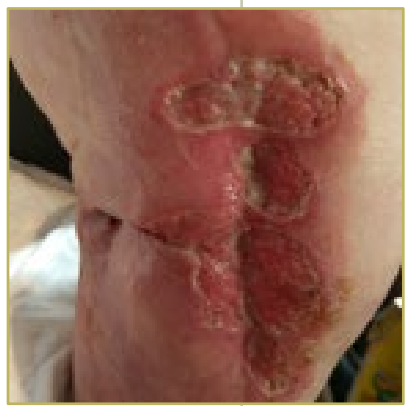
Natural mixture of many antibodies bind to multiple epitopes

Polyclonal Approach

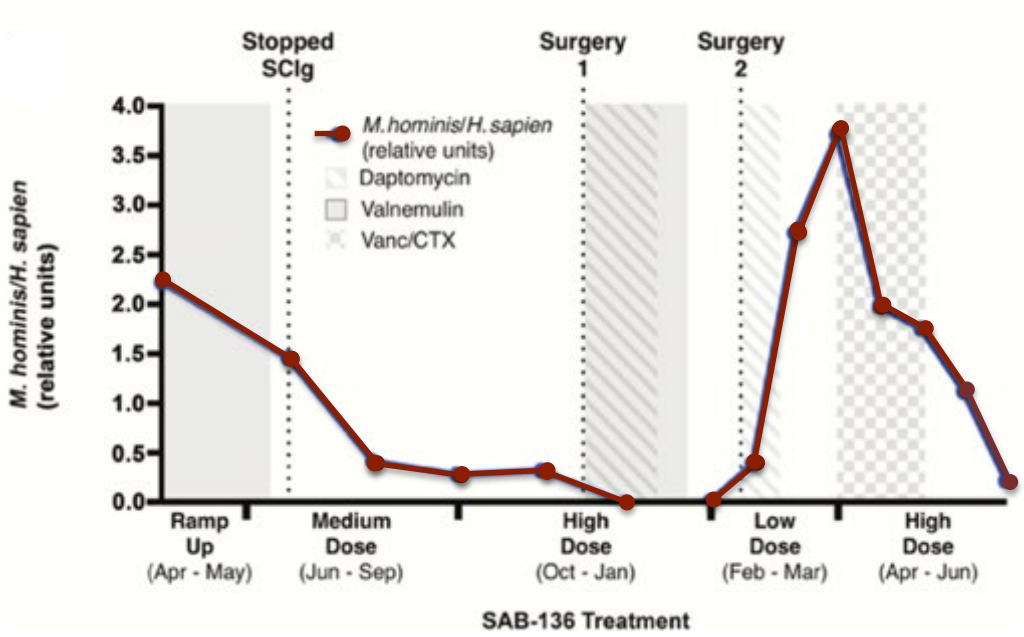
- Diversity of antibodies with multiple modalities
- Naturally selected and produced *in vivo*
- Effective against escape mutants
- Reduced possibility of resistance
- Activates cellular immunity
- Synergistic properties not duplicated by mono- or oligoclonals

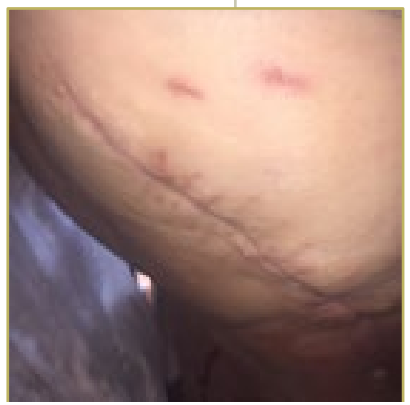
Demonstrated Human Safety and Efficacy in Multi-Dosing Regimen

High-dose therapy resulted in improved clinical parameters associated with reduced *M. hominis* burden following two subsequent infections



Open wound persisted ~7 years prior to treatment





Same area following treatment with SAB -136

BRIGHAM AND WOMEN'S HOSPITAL

HARVARD MEDICAL SCHOOL

JARED N SILVER, CAMERON D ASHBAUGH, JACOB J MILES, HUA WU, GREGORY T MARECKI, JOYCE K HWANG, JIN-AN JIAO, MARK ABRAMS, EDDIE J SULLIVAN, DUANE R WESEMANN, DEPLOYMENT OF TRANSCHROMOSOMAL BOVINE FOR PERSONALIZED ANTIMICROBIAL THERAPY, CLINICAL INFECTIOUS DISEASES, VOLUME 66, ISSUE 7, 1 APRIL 2018, PAGES 1116–1119

DiversitAb™ Platform is Clinically Validated Across Several Targets

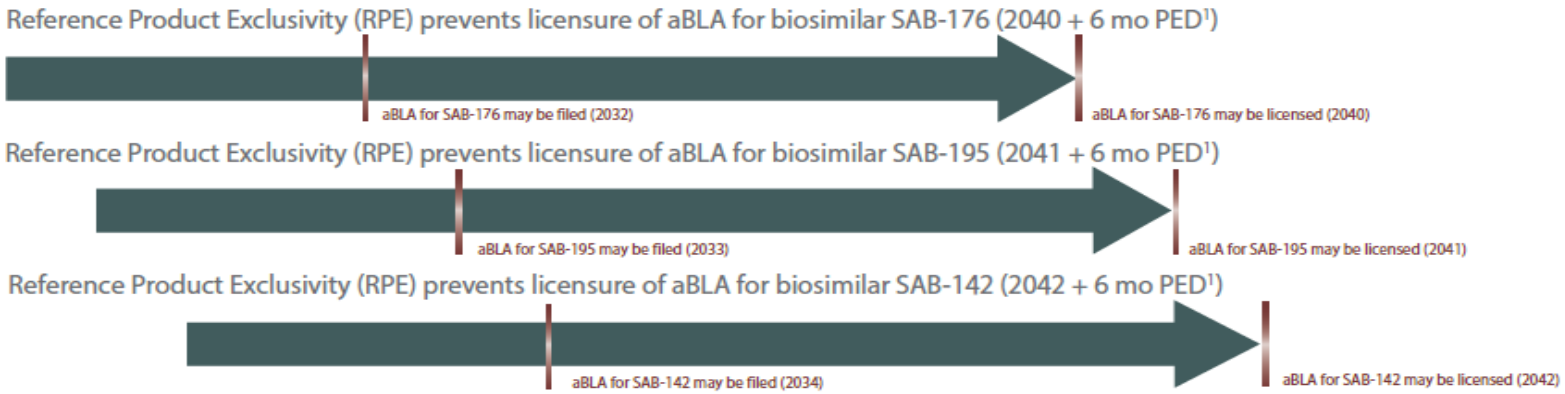
3 INDs & 1 CTA	Filed in US and ex-US
7 Clinical Trials	Span from Phase 1 to Phase 3 across 3 indications
Public Collaborations	DoD, BARDA, NIH NIAID, Naval Medical Research Center, USAMRIID
Academic Collaborations	Brigham and Women's Hospital, Harvard, University of South Dakota, University of Pittsburgh

Referenced Trials:

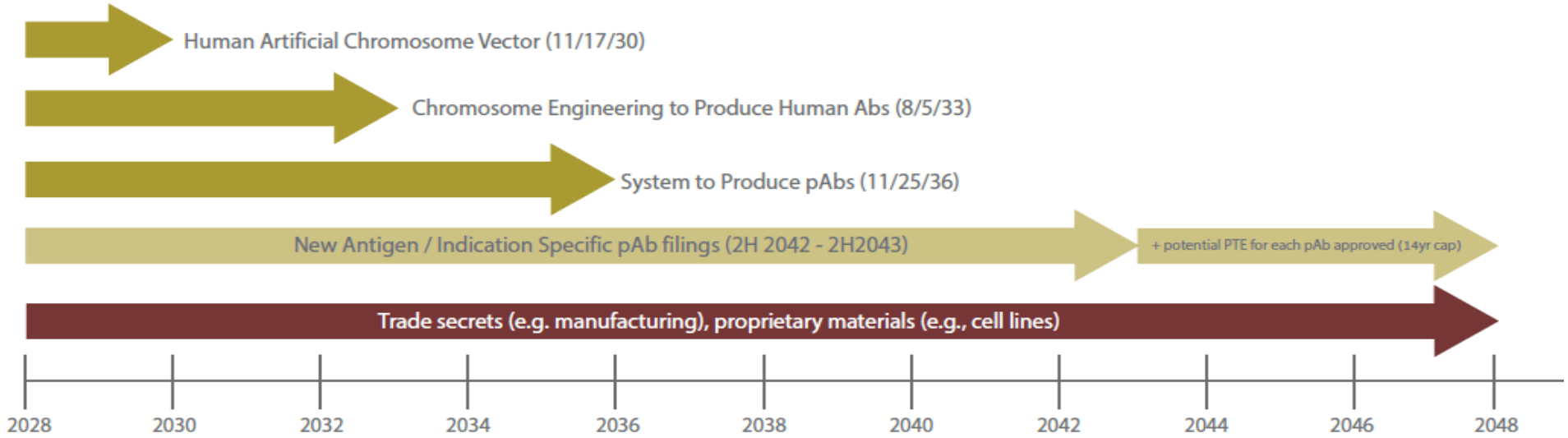
- Safety, Tolerability, and Pharmacokinetics of SAB-176 in Healthy Participants – Full Text View - ClinicalTrials.gov
- Study of SAB-176 in Healthy Adult Participants - Full Text View - ClinicalTrials.gov
- Safety, Tolerability, and Pharmacokinetics of SAB-185 in Healthy Participants – Full Text View - ClinicalTrials.gov
- Safety, Tolerability, and Pharmacokinetics of SAB-185 in Ambulatory Participants With COVID-19 - Full Text View - ClinicalTrials.gov
- ACTIV-2: A Study for Outpatients With COVID-19 - Full Text View - ClinicalTrials.gov
- Safety, Tolerability, and Pharmacokinetics of SAB-301 in Healthy Adults – Full Text View - ClinicalTrials.gov

Intellectual Property

Regulatory Exclusivity



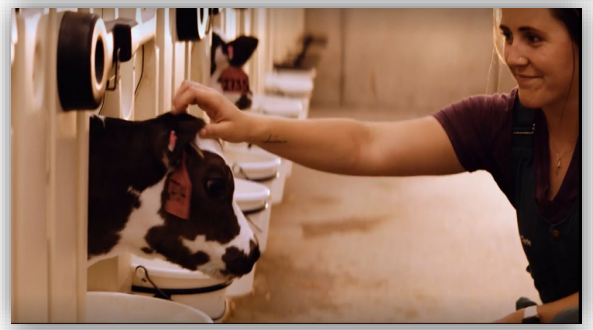
Patent Exclusivity

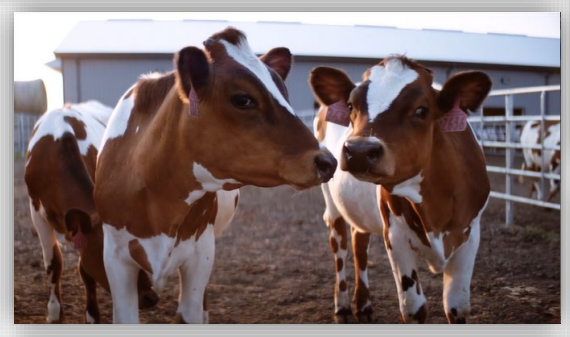


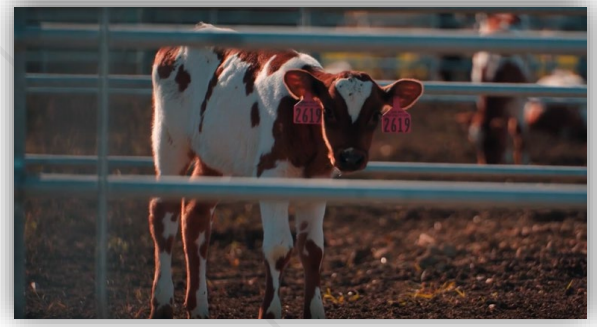
Assumptions: licensure of BLA for (i) SAB-176 for flu in 2028; (ii) SAB-195 for C. diff in 2029; and (iii) SAB-142 for type 1 diabetes in 2030

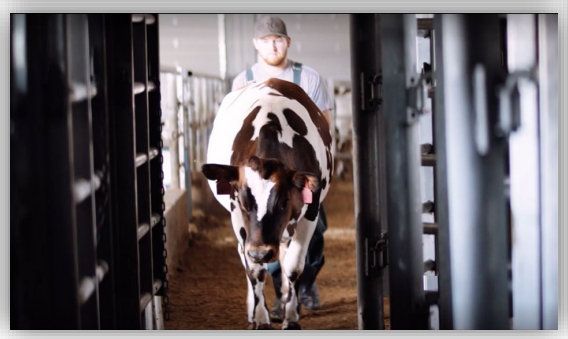
[1]Potential Pediatric Exclusivity + 6 months

Scaled Infrastructure & Capacity: Tc Bovine & Plasma Production Facility









Scaled Infrastructure & Capacity: Laboratory & Manufacturing

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SELECTED PIPELINE PROGRAMS

Robust Biologic Pipeline with Broad Polyclonal Therapeutic Reach

Ongoing discovery programs in oncology, autoimmune, infectious and anti-idiotype diseases

	PRODUCT	INDICATION	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3	COMMERCIAL
GASTROINTESTINAL	SAB-195	CLOSTRIDIOIDES DIFFICILE						
RESPIRATORY	SAB-176	SEASONAL INFLUENZA	Phase 1 Trial & Phase 2a Challenge Study Top line results available					
IMMUNOLOGY	SAB-142	TYPE 1 DIABETES						
	SAB-142	IMMUNOLOGY						

Government-funded Phase 3 clinical-stage program

RESPIRATORY	SAB-185	COVID-19	Phase 3 Trial (NIH ACTIV-2)					

Clinical Development Programs: Focus Over the Next 4+ Years

Consistent delivery of one IND per year

2023

- ↑SAB-195 IND (C. diff.)
- ↑SAB-176 2023-2024 flu season Phase 2b FPI

2024

- ↑SAB-142 IND (T1D)
- ↑SAB-142 Phase 1/POBA in T1D early onset FPI
- ↑SAB-195 Phase 1/POBA FPI
- ↑SAB-195 Phase 2 FPI
- ↑SAB-176 2023-2024 flu/COVID season Phase 2b topline

2025

- ↑SAB-142 IND (immunology)
- ↑SAB-142 Phase 1/POBA T1D early onset ongoing
- ↑SAB-195 Phase 2 Top line
- ↑SAB-176 Phase 3 FPI

2026

- ↑SAB-142 Phase 1/POBA T1D early onset top line
- ↑SAB-195 Phase 3 start

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SAB-195:

Clostridioides difficile Infections: Fast to Proof-of-Concept

High Unmet Medical Needs Remain

High Morbidity, Mortality, and Costs

Clostridioides difficile Infection (CDI or C. diff.) is a bacterial infection of the large intestine (colon). A spectrum of clinical disease ranges from mild diarrhea to severe. CDI is characterized by abdominal pain, fever, diarrhea, nausea, and vomiting. Complications of severe CDI include kidney failure, toxic megacolon, bowel perforation, and death.

- CDI infection is one of the most prevalent health care–associated bacterial infections in the US and developed world
  - ~ 500,000 infections per year in the US[1]
  - ~ 30,000 deaths in the US[1]
- CDI infection is associated with significant costs: Up to $4.8 billion each year in excess health care costs for acute care facilities alone[1]
- Patients with the first CDI recurrence have a risk of subsequent recurrence from 25% to 40% and higher[1, 2]
- CDI-attributable median length of stay and costs (in US$) increased from 7 (4-13) days and $13,168 ($7,525-$24,456) for patients with primary CDI only to 15 (8-25) days and $28,218 ($15,050-$47,030) for patients with recurrent CDI[2]
- The risk of death for patients with recurrent CDI is 33% higher compared to those patients without recurrence

References:
1. CDC. Atlanta, GA: U.S. Department of Health and Human Services. Accessed 6/27/2022 Nearly half a million Americans suffered from Clostridium difficile infections in a single year | CDC Online Newsroom | CDC
2. Economic burden of primary compared with recurrent Clostridium difficile infection in hospitalized patients: a prospective cohort study . J Hosp Infection. 2016 Jul;93(3):286-9

Value Proposition: SAB-195

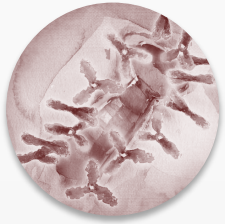
First-in-class fully human polyclonal antibody treatment with dual mechanism of action designed to treat severe CDI and reduce CDI recurrence in high-risk patients

Key Differentiators

First-in-class fully human polyclonal antibody treatment

Only treatment with dual mode of action:

- Unlike bezlotoxumab, SAB-195 targets surface antigen on C. difficile as well as multiple toxins
- Unlike antibiotics, SAB-195 targets several C. difficile toxins responsible for severity of the disease

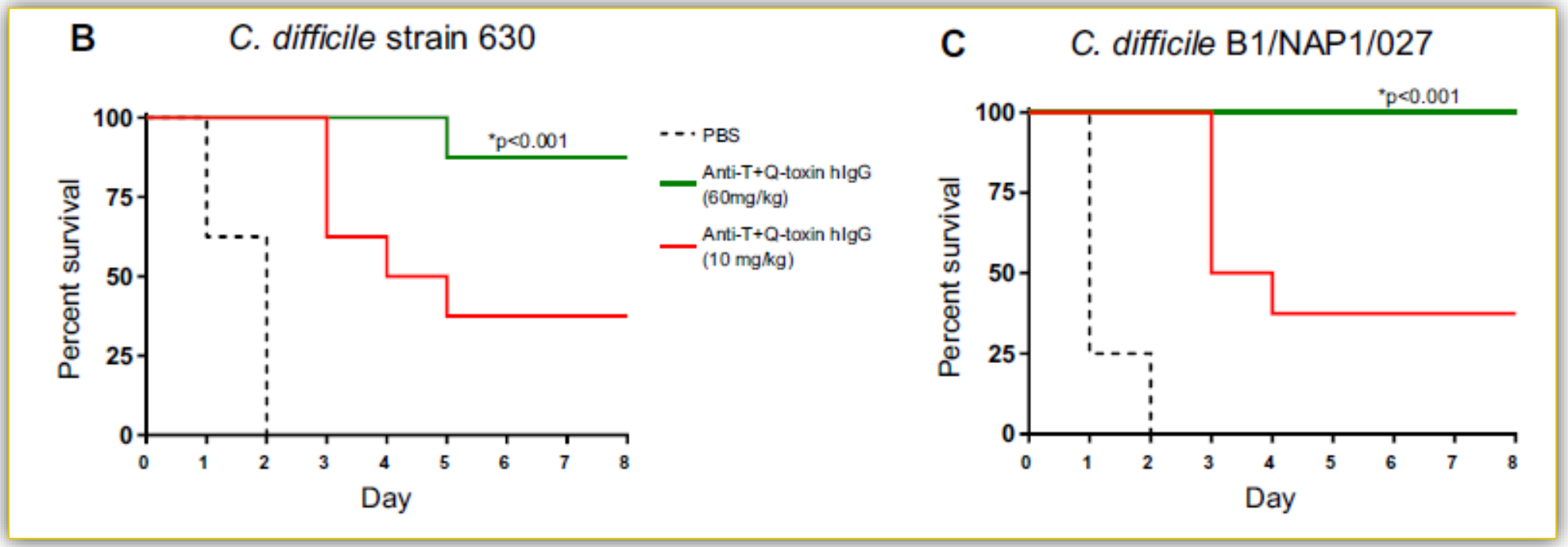


SAB-195 is a target-specific treatment targeting only C. difficile while fully preserving good microbiome

Preclinical data supports potential for competitive efficacy as first-line pAb therapy for severe CDI in patients who are at high risk for CDI recurrences

SAB-195 Preclinical Data

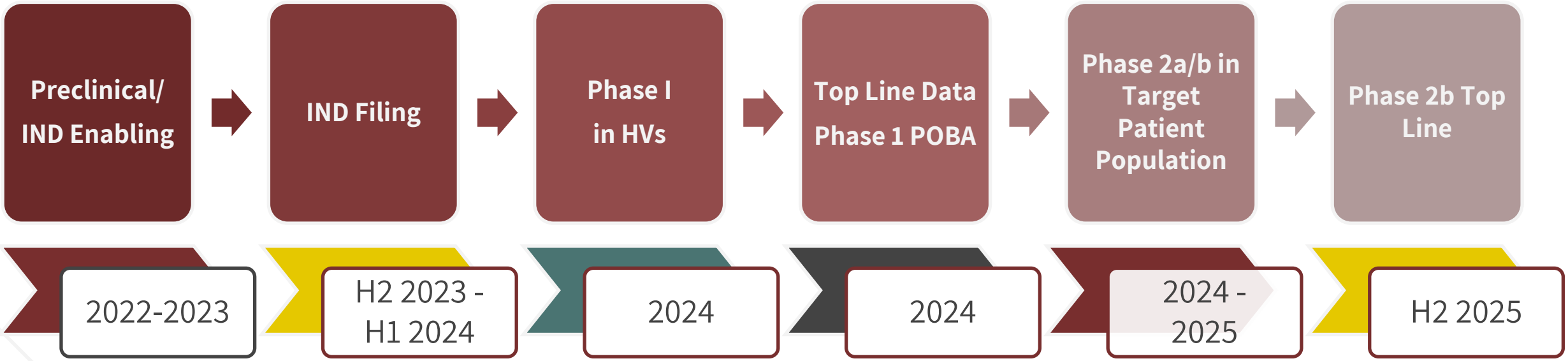
Tc bovine Immunized with Antigen Fusion Proteins Constructed from RBD of TcdA,TcdB(630), TcdB(027) and CDT



Tc bovine-derived anti-quadrivalent toxin hIgG provided 90% to 100% protection in hamsters against C. difficile strain 630 or more virulent epidemic strain NAP1

- Clostridium difficile chimeric toxin receptor binding domain vaccine induced protection against different strains in active and passive challenge models.. Jing-Hui Tian a, Gregory Glenn a, David Flyer a, Bin Zhou a, Ye Liu a, Eddie Sullivan b, Hua Wub, James F. Cummings a, Larry Ellingsworth a,ñ, Gale Smith
- https://pubmed.ncbi.nlm.nih.gov/28669616/#:~:text=Vaccine,33)%3A4079%2D4087

SAB-195 Development Timelines



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SAB-176:
First-In-Class Biologic Anti-Influenza Treatment

Unmet Need of Seasonal Influenza

CDC; 2018-19 FLU SEASON

Devastating health and economic impacts

- Estimated 30,000 - 50,000 deaths/year U.S. with 290,000 - 650,000 globally
- ~500,000 hospitalizations annually in U.S.
- Average US hospital stay: $8,000 - $9,000/day; 4-8 days/stay
- Often 30% - 70% failure rate for vaccine; vaccine ineffective in at-risk sub-populations

No current effective treatment for seasonal influenza

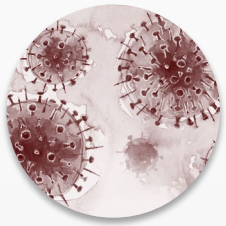
- Current antiviral has a 48-hour window
- Approved antiviral small molecule treatments may shorten duration of fever and symptoms, but not effective against clinically meaningful endpoints or neuraminidase mutation; limited efficacious window

Value Proposition: SAB-176

First-in-class fully human polyclonal antibody treatment aimed to provide superior long-lasting efficacy for prophylaxis and management of influenza in patients at high-risk

Key Differentiators

First and only biologic for management of influenza in high-risk patients



Adaptive and cross-reactive to multiple influenza strains

Fully human pAbs uniquely positioned to manage influenza course in high-risk patients including but not limited to:

- Immunocompromised
- Immunosenescent patients
- Patients in long-term care facilities

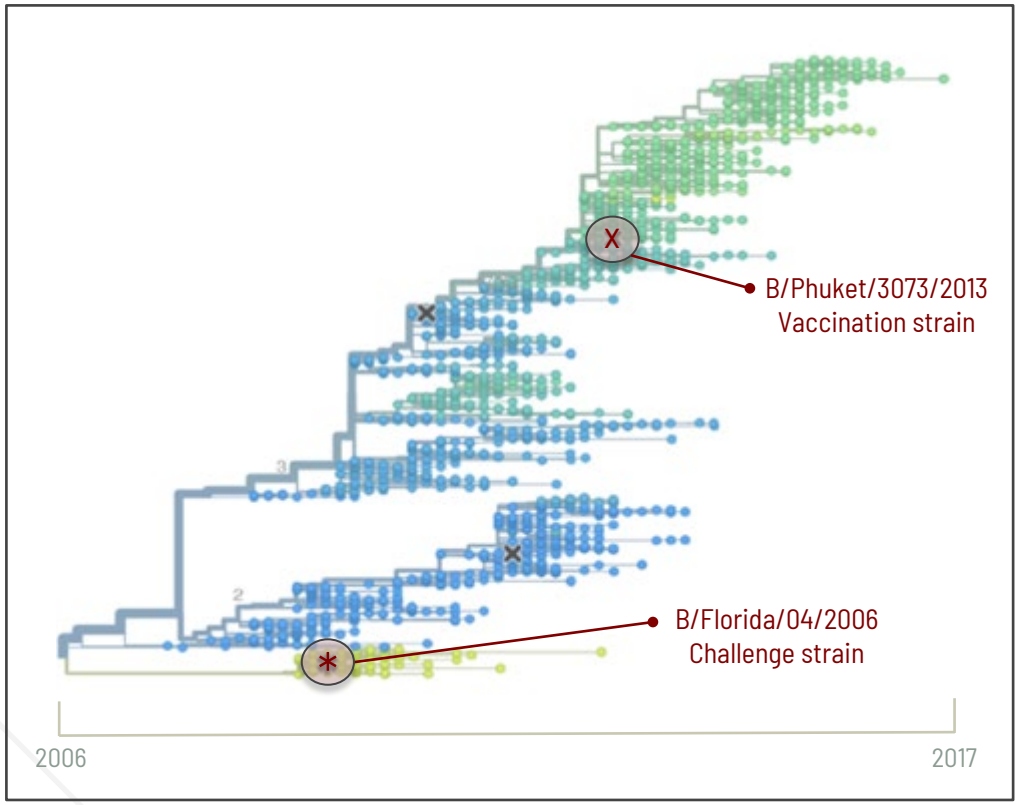
Established Proof-of-Concept in the well-established validated influenza challenge model

Efficacy Against Mutational Drift

Adaptive & Cross Reactive to Mutating Strains

Highly-Mutational Influenza Virus

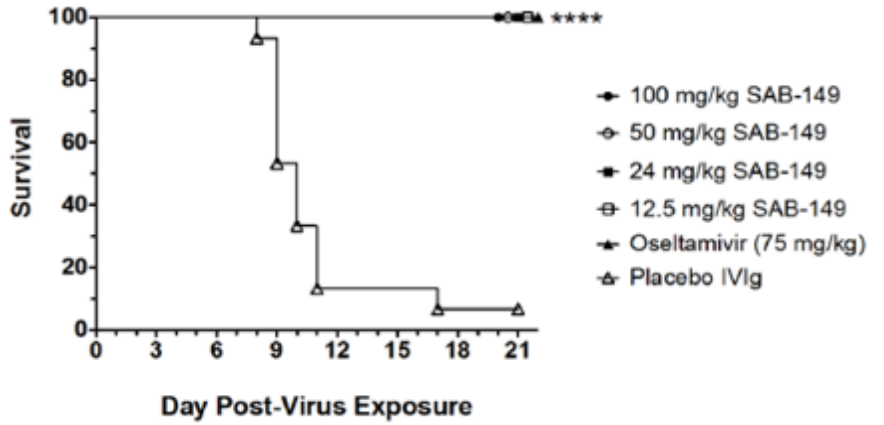
BYAM PHYLOGENIC TREE



SOURCE: NEXTFLU AT HTTPS://NEXTFLU.ORG/VIC/12Y/

100% Protection at All Dose Levels in Influenza Mouse Challenge

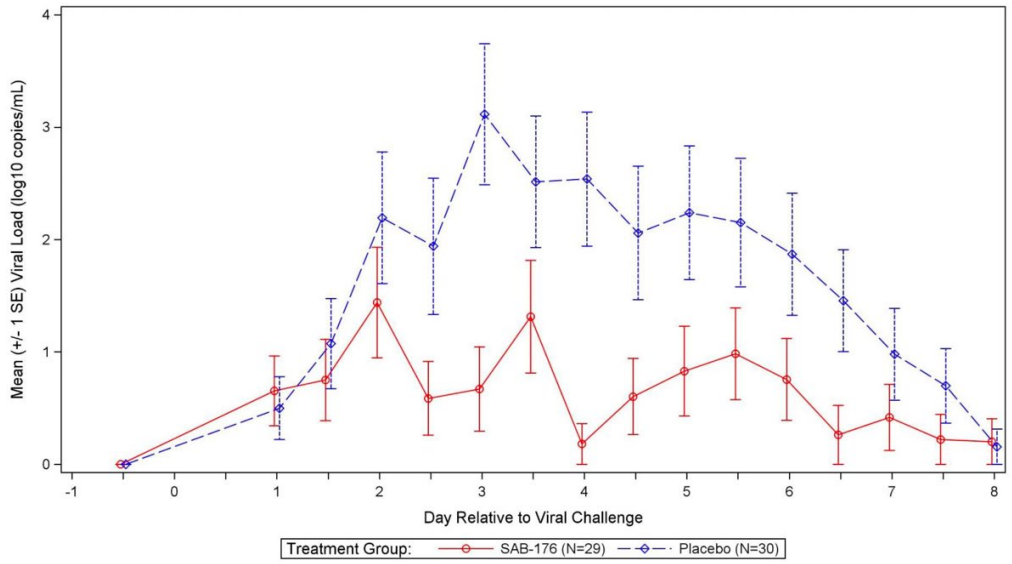
Antibodies produced to **B/Phuket/3073/2013** protected against **B/Florida/04/2006**



Established Proof-of-Concept for SAB-176:
Met Primary Endpoint of Viral Load Reduction in Phase 2a Challenge Study

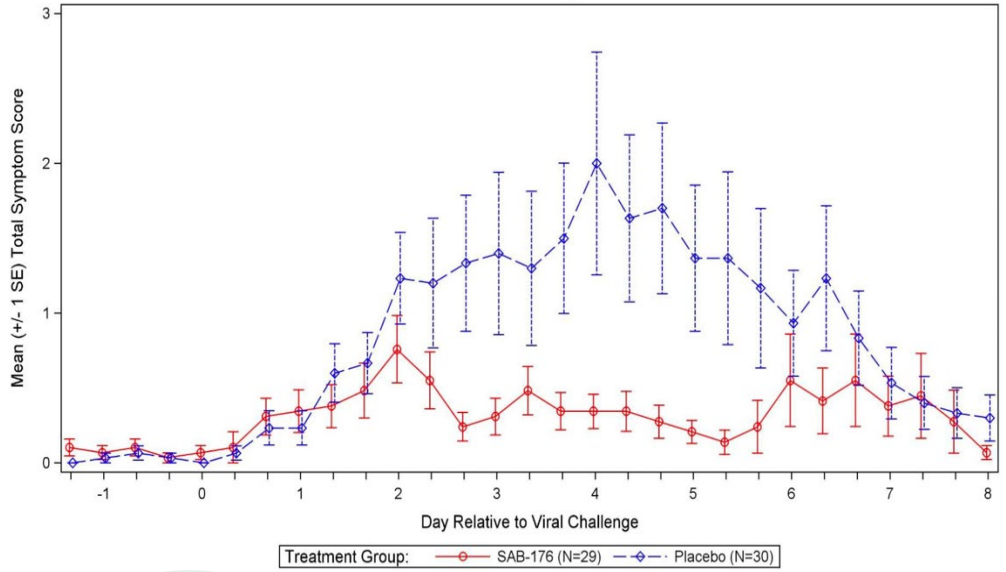
Achieved Statistically Significant (p = 0.026) Reduction in Viral Load

Mean Viral Load by Nasal Samples qRT-qPCR by Day Relative to Viral Challenge



SAB-176 Achieved Statistically Significant (p = 0.013) Improvement in Symptomology at Day 4

Mean Total Symptom Score by Day Relative to Viral Challenge



SAB-176 not specifically targeted to pH1N1 strain used in challenge study

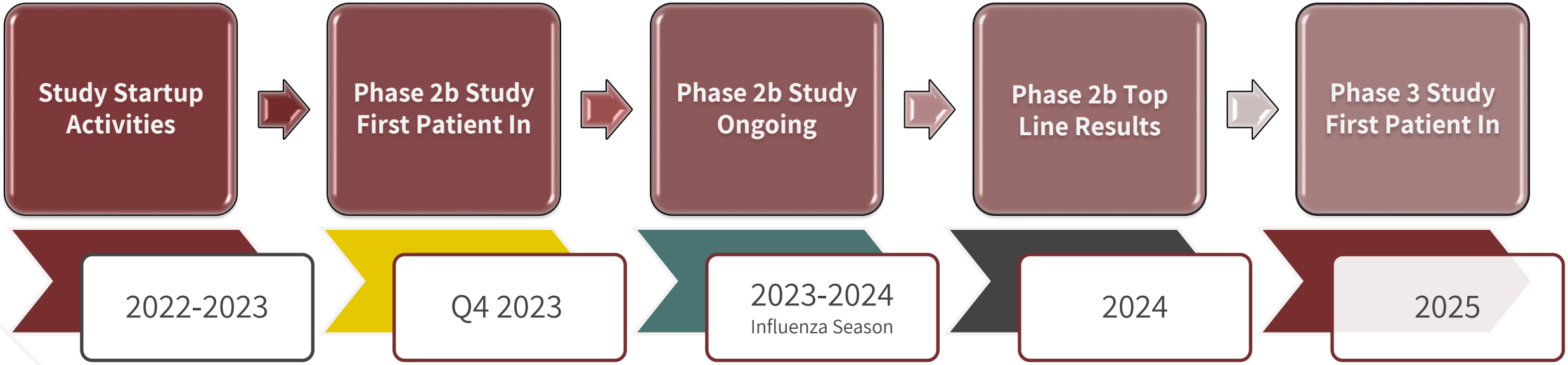
Statistically significant reduction in virus load confirms high cross reactivity to pandemic strain (not targeted with immunogen)

Reinforces ability to generate broadly neutralizing antibodies to viral variants

SAB-176: Clinical Development Plan

	Phase 1: Healthy Volunteers	Planned Phase 2a Challenge Study: Healthy Volunteers	Planned Phase 2b and Phase 3 Designs	
STUDY DESIGN	• Randomized, double-blind, placebo-controlled • 27 healthy volunteers • Single ascending dose study • 1, 10, 25 and 50 mg/kg	• 60 total participants • 60 randomized to SAB-176 or control (30-30) • Challenge strain: H1N1 California (pandemic)	• 300-600 participants • High-risk of serious influenza with symptoms < 4 days • SAB-176 and SOC vs SOC • Dose ranging	• ~1,000 participants (TBD) • High-risk of serious influenza with symptoms ≤ 3-4 days • SAB-176 and SOC vs SOC
ENDPOINTS	• Primary: safety • Secondary: pharmacokinetics, pharmacodynamics, anti-drug antibodies	• Primary: safety and viral load reduction • Secondary: sign/symptom reduction	• Primary: time to onset of clinically significant influenza • Reduction of risk developing influenza symptoms	• Primary: hospitalization and ICU days and death • Secondary: multiple
TIMING	• All participants reached end-of-study • Data being analyzed for final report • Readout expected mid-2021	• Study start 2Q2021 • Readout reported 4Q2021	• Multi-site: Northern hemisphere and/or Southern hemisphere	• Multi-site: Northern hemisphere and/or Southern hemisphere

SAB-176 Development Timelines



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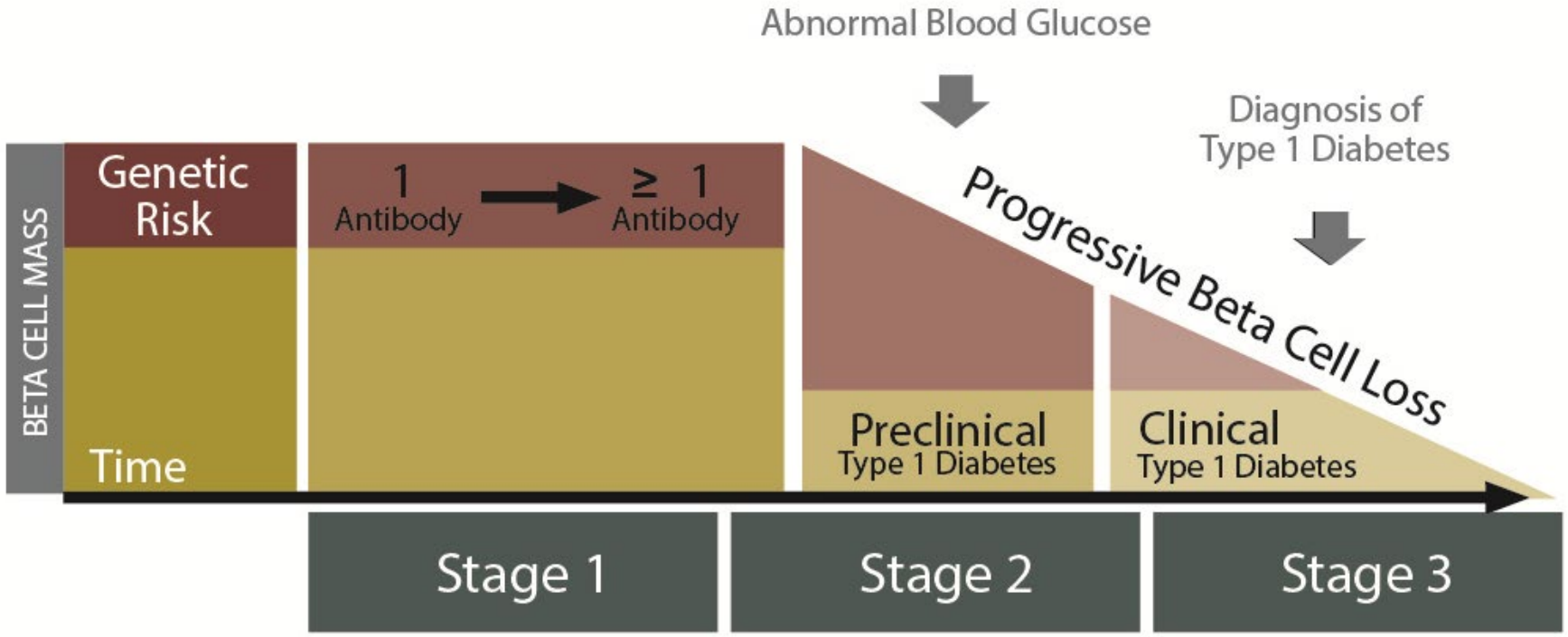
SAB-142:
Asset with a Multi-Indication Potential

Type 1 Diabetes

High Unmet Medical Needs Drive High Level of Competition

- Disease-modifying treatments in late-stage development:
  - >100 active interventional trials with small molecules, biologics, and cell therapies in Type 1 Diabetes



Value Proposition: SAB-142

First-in-class fully human polyclonal antibody treatment aimed to provide superior efficacy for delaying onset of clinical Stage 3 T1D

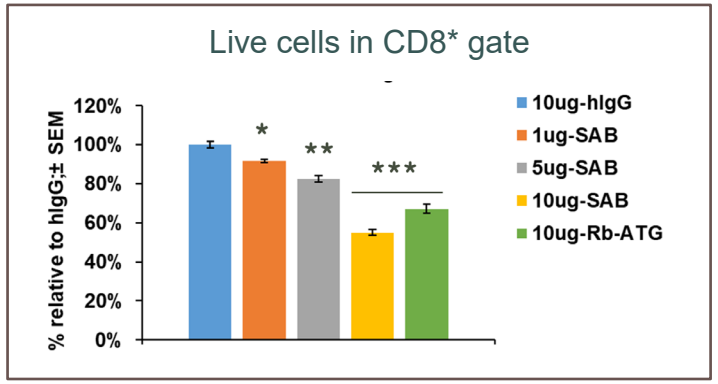
Key Differentiators

First-in-class fully human polyclonal antibody treatment aimed to provide superior efficacy for delaying onset of clinical Stage 3 T1D

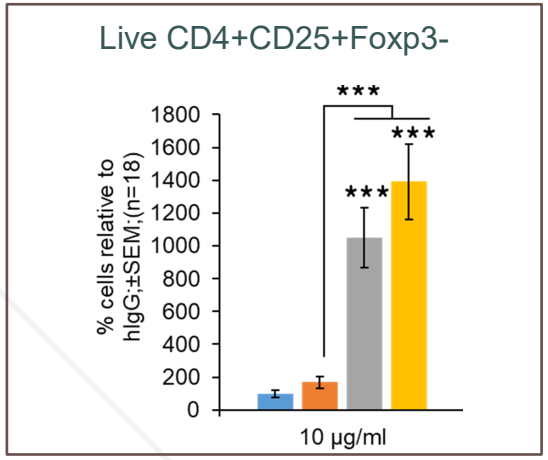
Validated Mechanism of Action by a 3rd party ATG demonstrating reduction in loss of C-peptide vs. placebo (Haller, 2019)

SAB-142: Similar Activity to Approved Rabbit ATG Targets CD8 and Protects T-Regulatory Cells

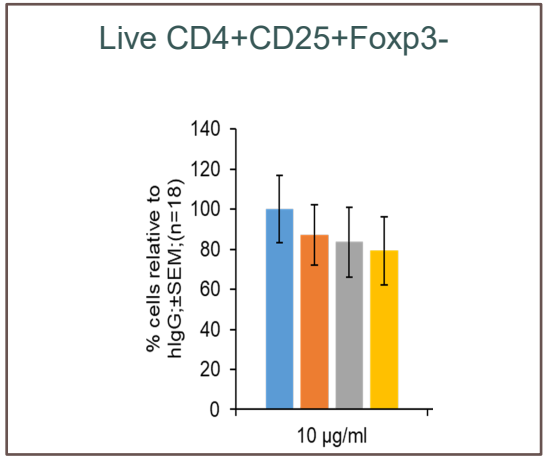
CD8 T Cells



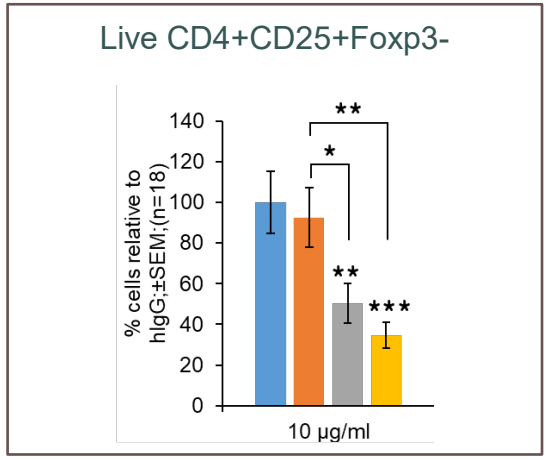
Treg Cells

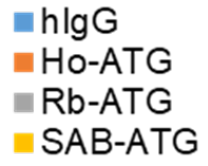


Activated CD4 T Cells



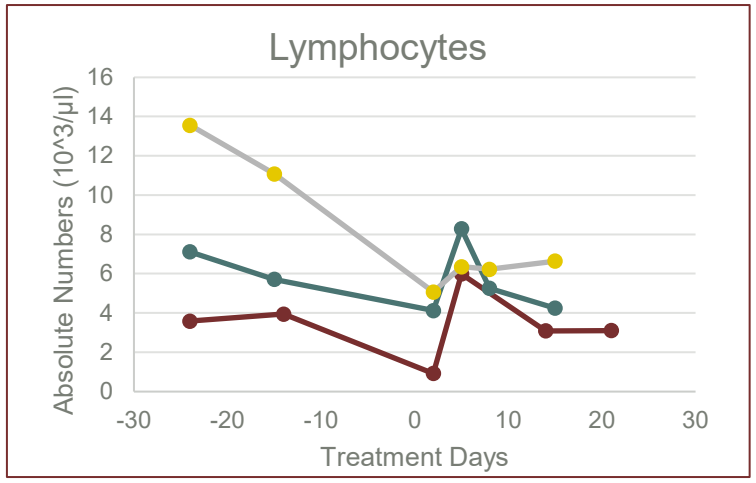
Naïve CD4 T Cells

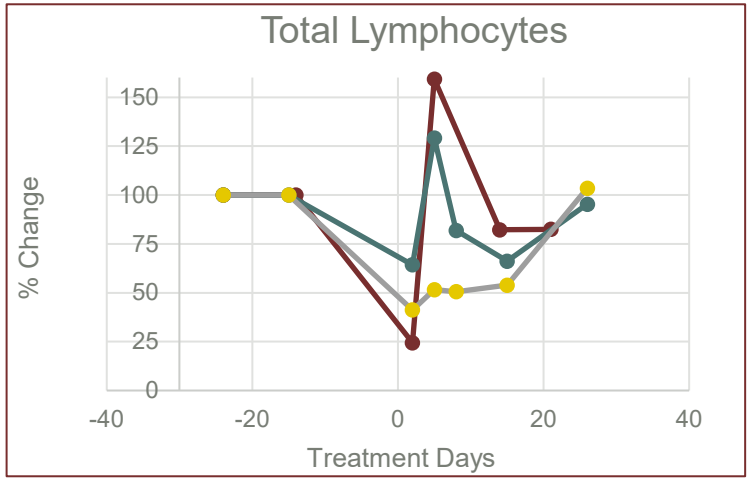


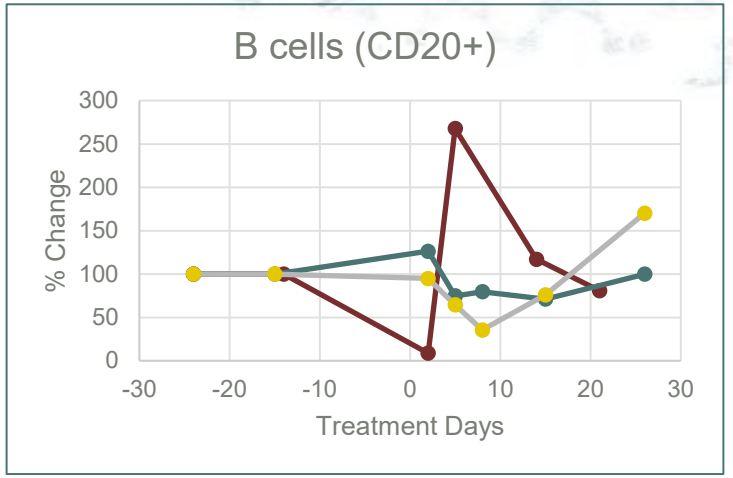


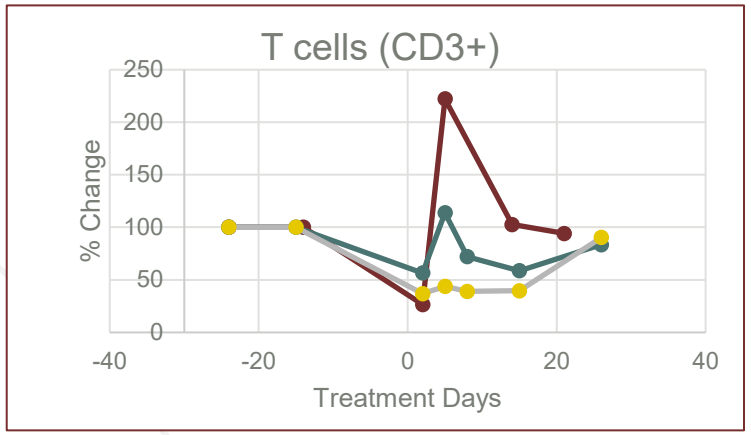
SAB-142 Preclinical Data Continued

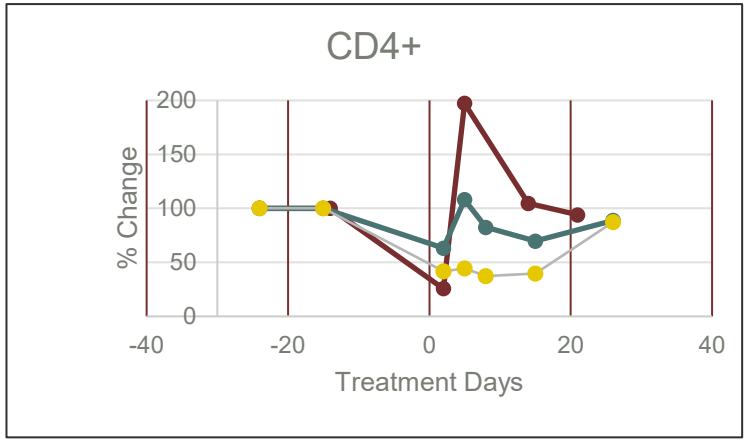
Major Subsets of Peripheral Blood Lymphocytes

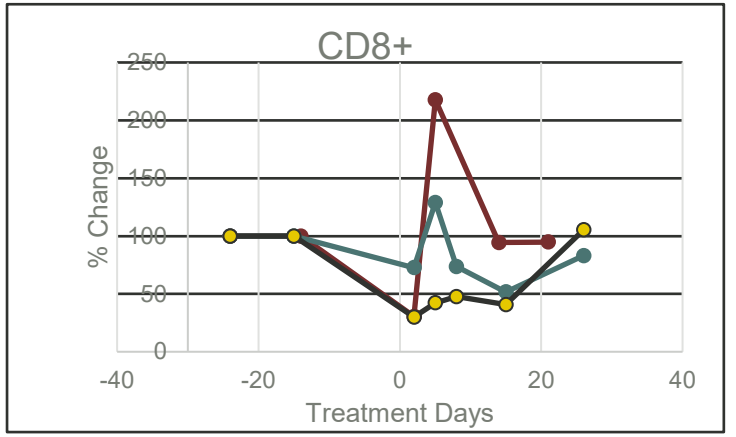










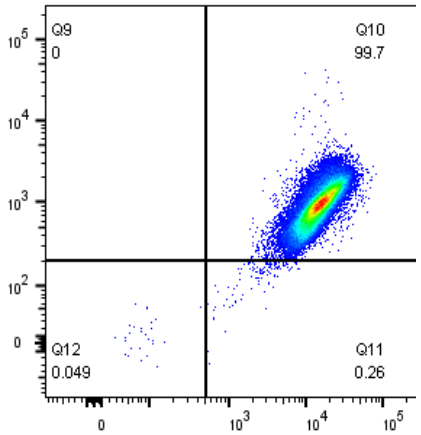


Changes in major subsets of peripheral blood lymphocytes (total lymphocytes. T and B cells, CD4+ and CD8+ T helpers and killers, respectively) following SAB-142 and ATG treatments. **Red: 5 mg/kg ATG; Blue: 1 mg/kg SAB-142; Grey: 5 mg/kg SAB-142**

SAB-142: MoA Clinically Validated by 3rd Party Compound

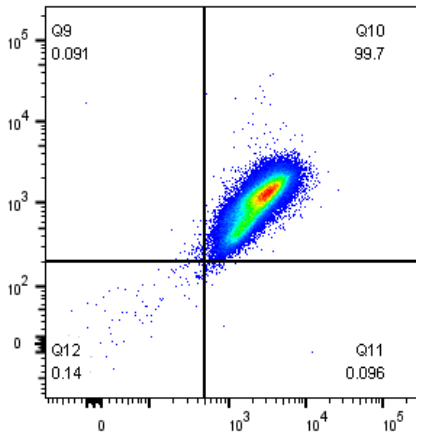
2 Years: Low-Dose ATG Preserved C-Peptide in New Onset T1D*

Tc Bovine Human-PB, Rabbit THYMO-AF488, Equine ATGAM-AF488 and Anti-CD3-APC



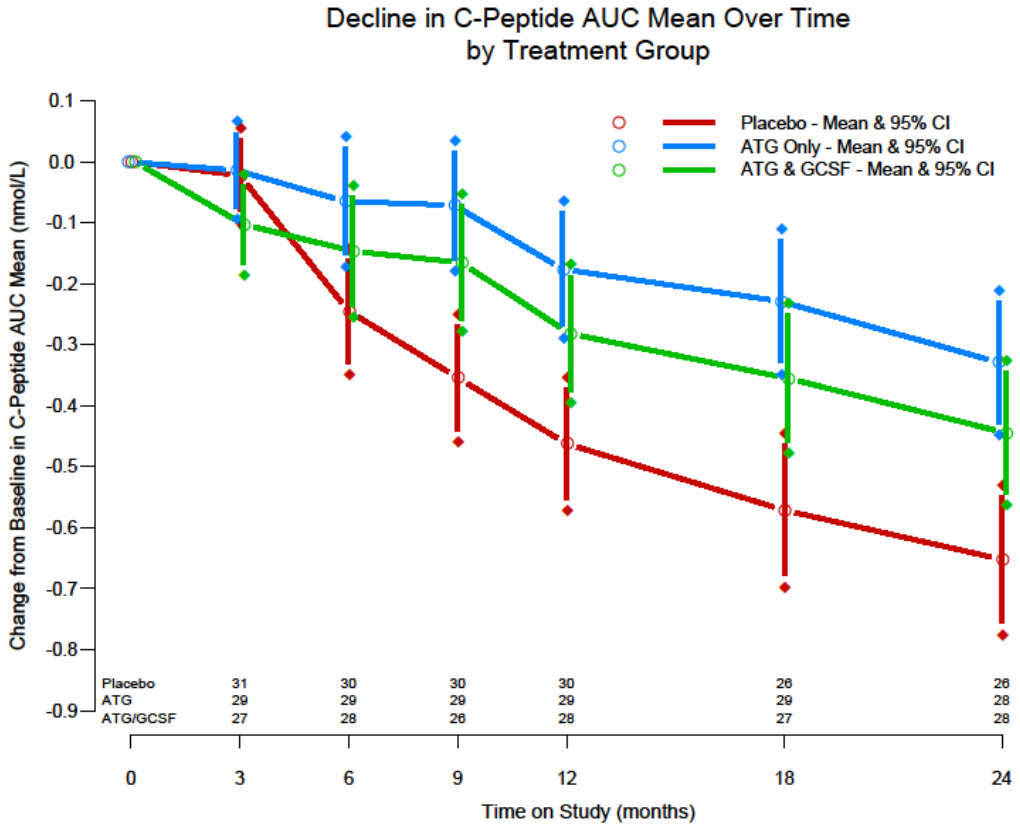
RABBIT THYMO-AF488

Thymoglobulin
Anti-thymocyte Globulin (Rabbit)



EQUINE ATGAM-AF488

Atgam®
lymphocyte immune globulin, anti-thymocyte globulin (equine)
250 mg protein
50 mg/mL



p=0.00005
ATG vs Placebo

Placebo

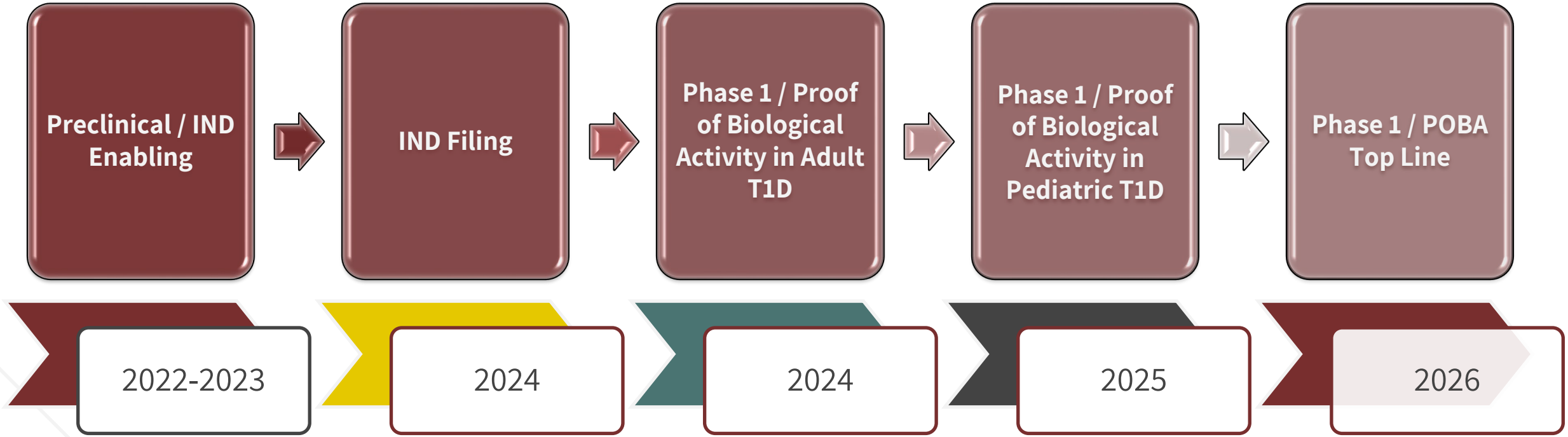
*RABBIT ATG FROM SANOFI – NOT SAB-142 (HUMAN TC-BOVINE DERIVED ATG)

Haller et al. Diabetes. 2019. June, 68(6): 1267-1276

SAB-142: Clinical Development Plan T1D

	Phase 1-2: Early Onset T1D in Adults, followed by adults and adolescents at C-peptide interim analysis	Phase 3: New and Recent Onset T1D in Adults and Children (Study 1) At Risk Adults and Children (Study 2)
STUDY DESIGN	• Open-label • Teplizumab or ATG more likely to be a control • XX participants • Ascending dose SAB-142 study • XXX mg/kg (preclinical NHP data will adjust) • Biomarker-driven escalation with adaptive randomization based on Safety + CD4, CD8+ cells and Tregs	• Randomized, blinded, PBO and teplizumab controlled • 90 (45:45), a control is either ATG or teplizumab • SAB-142 vs ATG/ teplizumab
ENDPOINTS	• Primary: acute and long-term safety • Primary POBA: C-peptide • Secondary: pharmacokinetics, pharmacodynamics, hypersensitivity (ADA), C-protein, HbA1c, T regs, CD3, CD8/CD4 and other markers.	**New and Recent Onset T1D in Adults and Children (Study 1):** • Primary: improvement/control of TID disease • Secondary: safety, pharmacokinetics, pharmacodynamics, hypersensitivity and serum sickness (ADA), C-protein, HbA1c, CD3, CD8/CD4 and other markers. **At Risk Adults and Children (study 2):** • Primary: time to onset of clinical stage (Stage 3) T1D • Secondary: safety, pharmacokinetics, pharmacodynamics, hypersensitivity and serum sickness (ADA), C-protein, HbA1c, CD3, CD8/CD4 and other markers.

SAB-142 Development Timelines



Summary

- **Executive Management:** Proven team with biotech startup, rapid drug development, and entrepreneurial experience.
- **Platform:** Innovative DiversitAb™ platform produces a new class of targeted fully-human, highly-potent polyclonal antibodies, with a broad efficacy spectrum in a broad range of indications.
- **SAB-195:** Preclinical data supports potential for competitive efficacy as first-line pAb therapy for severe CDI in patients who are at a high risk for recurrences, expect to file IND in 1H 2024.
- **SAB-176:** First-in-class fully-human polyclonal antibody treatment aimed to provide superior efficacy for prophylaxis and management of influenza in patients at high-risk, planned initiation of Phase 2b trial in 2H 2023.
- **SAB-142:** First-in-class fully-human polyclonal antibody treatment aimed to provide superior efficacy for delaying onset of clinical Stage 3 Type 1 Diabetes, IND submission expected in 2024.