VBI VACCINES

CORPORATE PRESENTATION

NASDAQ: VBIV

NOVEMBER 2020

Forward-Looking Statements

Certain statements in this presentation that are forward-looking and not statements of historical fact are forward-looking statements within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and are forward-looking information within the meaning of Canadian securities laws (collectively "forward-looking statements"). The company cautions that such statements involve risks and uncertainties that may materially affect the company's results of operations. Such forward-looking statements are based on the beliefs of management as well as assumptions made by and information currently available to management. Actual results could differ materially from those contemplated by the forward-looking statements as a result of certain factors, including but not limited to the ability to establish that potential products are efficacious or safe in preclinical or clinical trials; the ability to establish or maintain collaborations on the development of therapeutic candidates; the impact of the recent COVID-19 outbreak on our clinical studies, manufacturing, business plan and the global economy; the ability to obtain appropriate or necessary governmental approvals to market potential products, including the approval of Sci-B-Vac® in the U.S., Europe, and Canada following the completion of its recent Phase 3 studies; the ability to obtain future funding for developmental products and working capital and to obtain such funding on commercially reasonable terms; the company's ability to manufacture product candidates on a commercial scale or in collaborations with third parties; changes in the size and nature of competitors; the ability to retain key executives and scientists; and the ability to secure and enforce legal rights related to the company's products, including patent protection. A discussion of these and other factors, including risks and uncertainties with respect to the company, is set forth in the Company's filings with the Securities and Exchange Commission and the Canadian securities authorities, including its Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 5, 2020, and filed with the Canadian security authorities at sedar.com on March 5, 2020, and may be supplemented or amended by the Company's Quarterly Reports on Form 10-Q. The company disclaims any intention or obligation to revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

Overview of VBI Vaccines

- Leveraging significant immunology expertise to address unmet medical needs in both **INFECTIOUS DISEASE** and **IMMUNO-ONCOLOGY**
- Advancing prevention and treatment of **HEPATITIS B:**
  - *Sci-B-Vac®* : Only 3-antigen Hepatitis B vaccine; recently completed a Phase III program in the U.S., Europe, and Canada; approved and marketed in Israel
  - *VBI-2601* : Immuno-therapeutic in development in a collaboration with Brii Biosciences for a functional cure for chronic Hepatitis B
- Leveraging a proprietary enveloped virus-like particle (eVLP) platform technology to develop next-generation vaccines:
  - *VBI-1901* : **GLIOBLASTOMA** (GBM) vaccine immunotherapeutic candidate (currently in Phase I/IIa study)
  - *VBI-2900* : **CORONAVIRUS PROGRAM** – Two clinical candidates selected
    - *VBI-2901* : Trivalent pan-coronavirus vaccine candidate targeting COVID-19, SARS, MERS
    - *VBI-2902* : Monovalent vaccine candidate targeting COVID-19
  - *VBI-1501* : Prophylactic **CMV** vaccine candidate (positive topline Phase I data announced in May 2018)

VBI Vaccines Pipeline

		PRE-CLINICAL	PHASE I	PHASE II	PHASE III	APPROVED	STATUS
INFECTIOUS DISEASE							
Hepatitis B – Prophylaxis	**Sci-B-Vac®** *VLP*						• Approved in for use and commercially-available in Israel
							• BLA and MAA on-track for Q4 submission for regulatory approval in U.S. and Europe
Hepatitis B – Therapeutic	**VBI-2601** *VLP*						• License & collaboration agreement with Brii Biosciences • Initial Phase Ib/IIa data expected H2 2020
Cytomegalovirus (CMV)	**VBI-1501** *eVLP*						• Positive Phase I data announced May 2018
Coronavirus Program	**VBI-2900** *eVLP*						• CAD$56 million Canadian Gov. funding announced August 2020 • Two clinical candidates selected for human clinical studies
Zika	**VBI-2501** *eVLP*						• Candidate selected from NRC collaboration
IMMUNO-ONCOLOGY							
Glioblastoma (GBM)	**VBI-1901** *eVLP*						• Ongoing Phase I/IIa • PR and biomarker strategy reported at AACR 2020 • Next readout expected Q4 2020
Other CMV+ Tumors	**VBI-1901** *eVLP*						• Preclinical work ongoing

Recent Key Achievements

MARCH 2020 – NOVEMBER 2020

September 2020	Additional biomarker data presented at the ESMO Virtual Congress 2020, building upon potentially predictive biomarker strategy first announced in June 2020
August 2020	Positive preclinical coronavirus program data announced enabling selection of two clinical vaccine candidates: VBI-2901 and VBI-2902
August 2020	Announcement of up to CAD$56 million contribution from Strategic Innovation Fund of Canadian Government to support coronavirus program development through Phase 2 clinical studies
June 2020	Positive VBI-1901 + GM-CSF (GBM) data announced at AACR Annual Meeting highlighting an observed partial tumor response and the identification of a promising, potentially predictive biomarker strategy
May 2020	Announcement of formation of Commercial Advisory Board
May 2020	Secured $50 million debt financing from K2 HealthVentures
April 2020	Closed Public Offering for gross proceeds of $57.5 million
March 2020	Announcement of pan-coronavirus vaccine development collaboration with the NRC of Canada
March 2020	Announcement of 12-month overall survival (OS) and median OS data from Part A of the ongoing Phase I/IIa study of VBI-1901 (GBM)
March 2020	First patient dosed in Phase IIa portion of ongoing study of VBI-1901 + GSK's $AS01_B$ adjuvant system (GBM)

Hepatitis B - Prophylaxis

a. SCI-B-VAC®

Only commercially-available 3-antigen vaccine containing pre-S1, pre-S2, and S antigens of Hepatitis B virus

Chronic HBV is a Significant and Increasing Unmet Need in US & EU

There are more than 2,000,000,000 individuals WW with serological evidence of Hepatitis B, of these ~292M are chronic carriers

U.S.

CDC estimates that anywhere from **850,000 – 2.2M people** in the U.S. are chronically infected with Hepatitis B

Estimated new cases of Hepatitis B have been **increasing since 2012, from roughly 18,800 new cases in 2012 to 21,000 in 2016**

The CDC has determined this increase is largely due to the **ongoing opioid epidemic**

Europe

The European Centre for Disease Prevention and Control (ECDC) estimates that in the EU/EEA **~5M people** are chronically infected with Hepatitis B

Among EU/EEA countries that consistently report, the rate of new cases **increased from 6.7/100,000 in 2008 to 10.2/100,000 in 2017**, with UK reporting roughly 62% of all new chronic cases

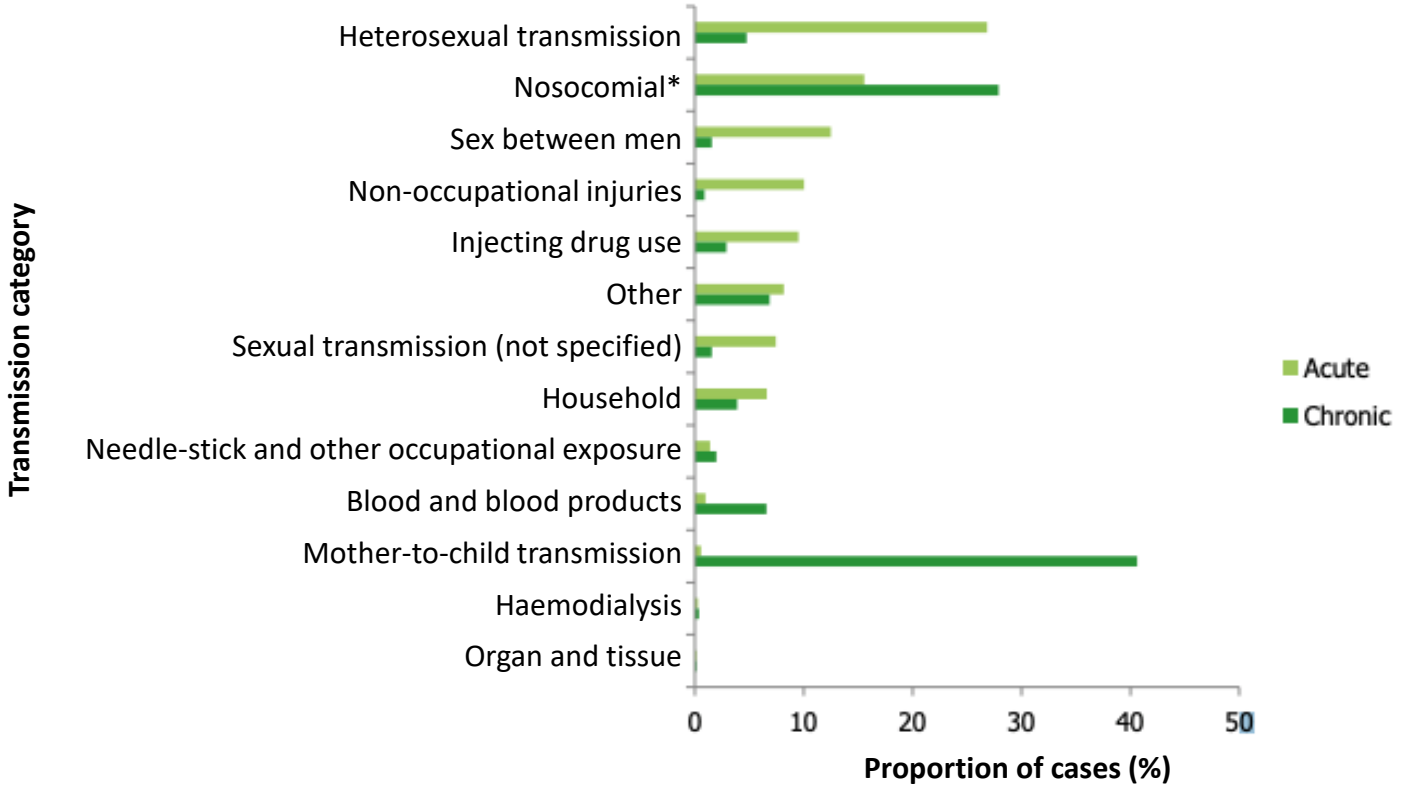
The increase in Europe is largely due to the **increased population migration and refugee crises** – a 2012 study noted the prevalence of HBsAg in the base EU population varied (0.01-0.7%), but the prevalence of HBsAg in the three largest migrant groups in each country was similar, ~4%

Sources: U.S. Center for Disease Control and Prevention (CDC), Disease Burden of Hepatitis B 2010-2016; European Centre for Disease Prevention and Control (ECDC) Systematic Review on Hepatitis B in the EU/EAA 2005-2015 & Hepatitis B – Annual Epidemiological Report for 2017; https://academic.oup.com/eurpub/article/23/4/642/426712/Changing-epidemiology-of-Hepatitis-B-and-migration

Transmission of Chronic Hepatitis B

Chronic Hepatitis B is most commonly transmitted from mother to child (pediatrics) or through nosocomial transmission (i.e. patients exposed in the healthcare setting)

2017 Transmission of Hepatitis B Cases by Acute and Chronic Disease Status (EU/EEA)



*Nosocomial transmission includes hospitals, nursing homes, psychiatric institutions, and dental services. This category refers mainly to patients exposed through healthcare settings, distinct from "needle-stick and other occupational exposure" which refers to staff

Source: European Center for Disease Prevention and Control (ECDC) Hepatitis B Annual Epidemiological Report for 2017

HBV Vaccination Rates : U.S.

- In 1991, the ACIP recommended a comprehensive HBV vaccination program : universal vaccination for children and for high-risk populations
- Despite this recommendation being in place for ~15 years, coverage rates among US adults remains low
- During 2010-2015, hepatitis B vaccination coverage decreased among all adults aged ≥ 19 years
- Vaccination rates have remained stable, however, among adults aged ≥ 19 years with chronic liver conditions and among health care providers

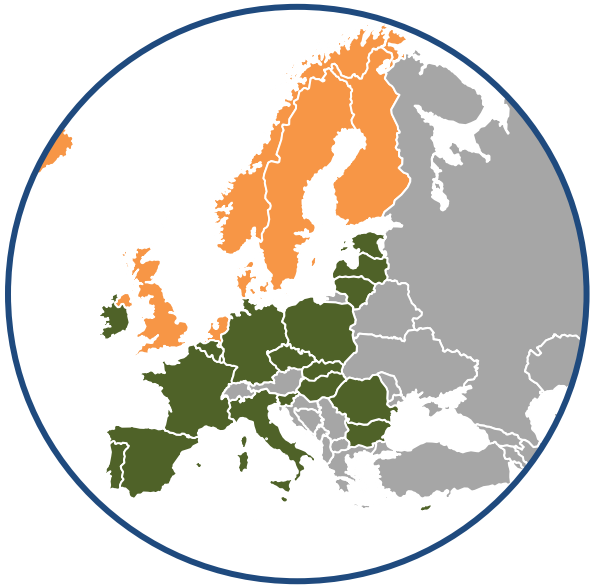
Reported US Hepatitis B Vaccination Coverage - 2015	
Otherwise Healthy	
Adults aged ≥ 19 years	24.6%
Adults aged 19-49 years	32.0%
Adults age ≥ 50 years	16.5%
High-Risk	
Chronic Liver Conditions	27.4%
Diabetics – Age 19-59 years	24.4%
Diabetics – Age ≥ 60 years	12.6%
Healthcare Providers ≥ 19 years	64.7%

Source: 2015 CDC Surveillance of Vaccination Coverage Among Adult Populations

HBV Vaccination Rates : Europe

- In 1992, the World Health Assembly recommended the inclusion of Hepatitis B vaccination in all national immunization programs
- By 2004, the majority of European member states had introduced the vaccine, either as universal infant, universal newborn, or universal adolescent
- A number of EU member states, however, had not introduced the vaccine into the routine program – all of these were northern European countries

RECOMMENDATION FOR HEPATITIS B VACCINATION BY COUNTRY (VENICE II SURVEY)



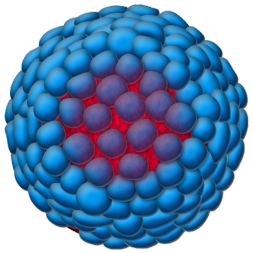
- HBV vaccination included in the routine childhood vaccination & recommended for high risk groups incl. healthcare workers (HCWs):
  - *74% of surveyed countries (20/27)*
- HBV vaccination only recommended for high-risk groups incl. HCWs
  - *26% of surveyed countries (7/27)*
- Countries not included in VENICE II survey

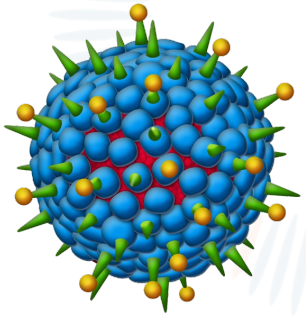
Despite recommendations, estimated adult HBV vaccine coverage rates vary greatly (e.g. 8% in Denmark, 33% in Germany)

Note: Since this survey, the UK implemented routine childhood vaccination against Hepatitis B (in Aug. 2017)

Sources: http://venice.cineca.org/Report_Hepatitis_B_Vaccination.pdf; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3840285/

Sci-B-Vac® : Importance of 3-antigen Conformation





	Yeast-Derived Vaccines*	Sci-B-Vac®
Viral antigens mimicked:		
S Antigen	✓	✓
Pre-S2		✓
Pre-S1		✓
Adjuvant:	Alum/TLR9	Alum
Derivation:	rDNA yeast	Mammalian cell

- Pre-S1 antigen induces key neutralizing antibodies that block virus receptor binding
- Published data demonstrates that T cell response to pre-S1 and pre-S2 antigens can further boost responses to the S antigens, resulting in a more immunogenic response

*Includes Engerix-B®, Recombivax HB®, and Heplisav-B®

Sci-B-Vac®: Two Phase III Studies to Support Approval in U.S., Europe, and Canada

Phase III Study	PROTECT *2-arm safety and immunogenicity study*	CONSTANT *4-arm lot-to-lot consistency study*
N size	1,607	2,838
Age Range	18+ years	18-45 years
Control Vaccine	Engerix-B® (GSK)	Engerix-B® (GSK)
Primary Endpoint(s)	Based on seroprotection rates (SPR): i. Non-inferiority in adults ≥ age 18 ii. Superiority in adults ≥ age 45	Consistency of immune response as measured by Geometric Mean Concentration (GMC) of antibodies across three consecutively manufactured lots of Sci-B-Vac®
Secondary Endpoint(s)	i. Safety and tolerability ii. Non-inferiority of SPR after 2 doses of Sci-B-Vac® vs. 3 doses of Engerix-B®	i. Safety and tolerability ii. Non-inferiority of SPR after 3 doses of Sci-B-Vac® vs. 3 doses of Engerix-B®
Top-Line Data Readout	June 2019	January 2020

Phase 3 Study Subject Disposition

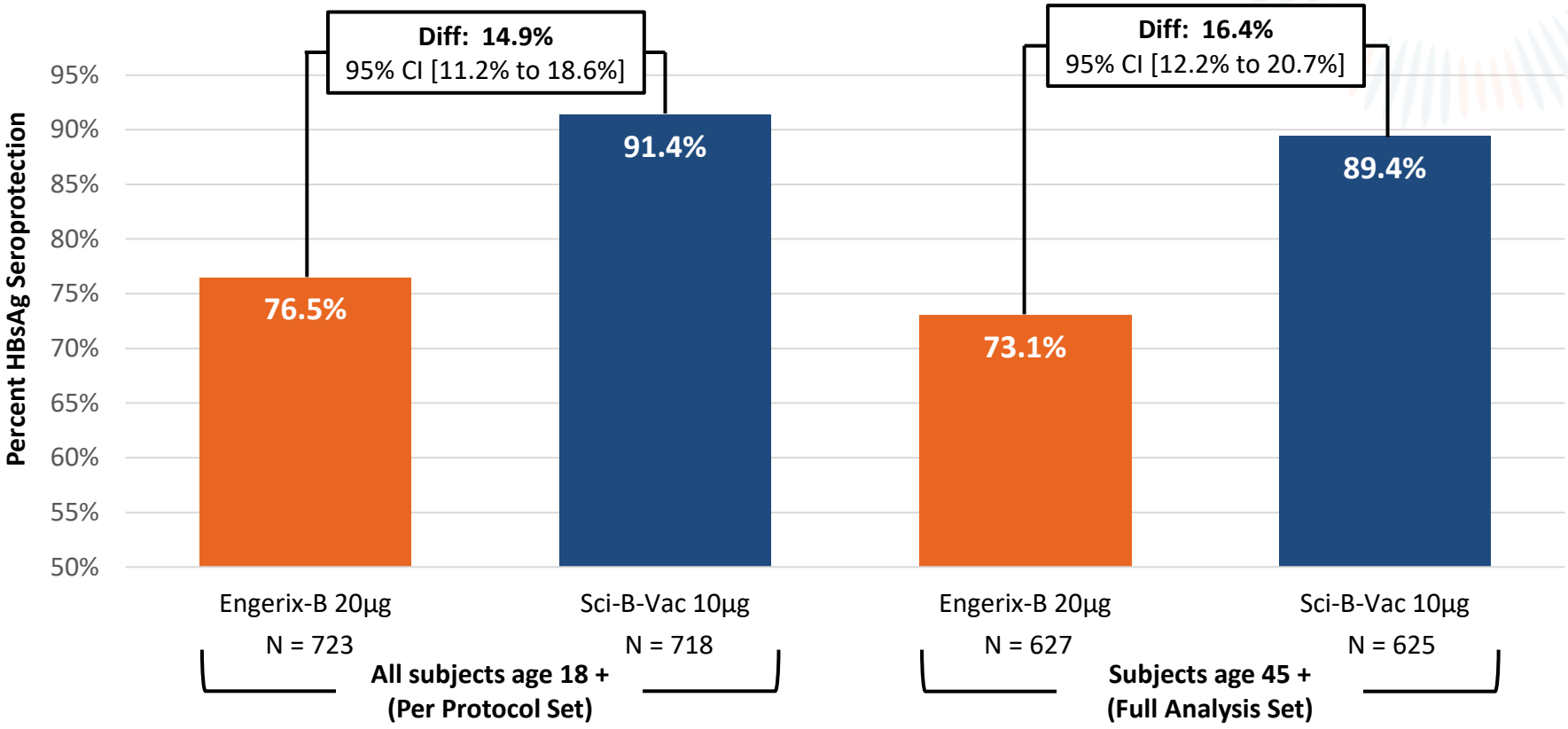
	PROTECT		CONSTANT			
Subjects Screened - *Screening Failure*	2,472 *865 (35%)*		4,452 *1,614 (36%)*			
Subjects Randomized	1,607 at 28 clinical study sites		2,838 at 37 clinical study sites			
Clinical Study Arms	**Engerix-B 20µg**	**Sci-B-Vac 10µg**	**Engerix-B 20µg**	**Lot A Sci-B-Vac 10µg**	**Lot B Sci-B-Vac 10µg**	**Lot C Sci-B-Vac 10µg**
Subjects Randomized	811	796	712	711	709	706
Mean Age	56.6	56.6	33.4	33.8	32.9	33.9
Age Segmentation:						
- 18-44 years	154 (19%)	145 (18%)	100% age 18-45 years			
- 45-64 years	361 (45%)	355 (45%)				
- 65+ years	296 (37%)	296 (37%)				
Gender:						
- Male	303 (37%)	315 (40%)	291 (40.9%)	303 (42.6%)	313 (44.1%)	291 (41.2%)
- Female	508 (63%)	481 (60%)	421 (59.1%)	408 (57.4%)	396 (55.9%)	415 (58.8%)
Mean BMI	29.1	29.4	25.7	25.9	25.8	26.0
Withdrew	42 (5.2%)	40 (5.0%)	69 (9.7%)	75 (10.5%)	72 (10.2%)	81 (11.5%)
Completed Study	769	756	643	636	637	625

Both PROTECT Co-Primary Endpoints Successfully Met

Co-Primary Endpoints at Day 196, 4 weeks post-3rd vaccination:

1. Non-Inferiority of seroprotection rate (SPR) achieved in all subjects age 18+

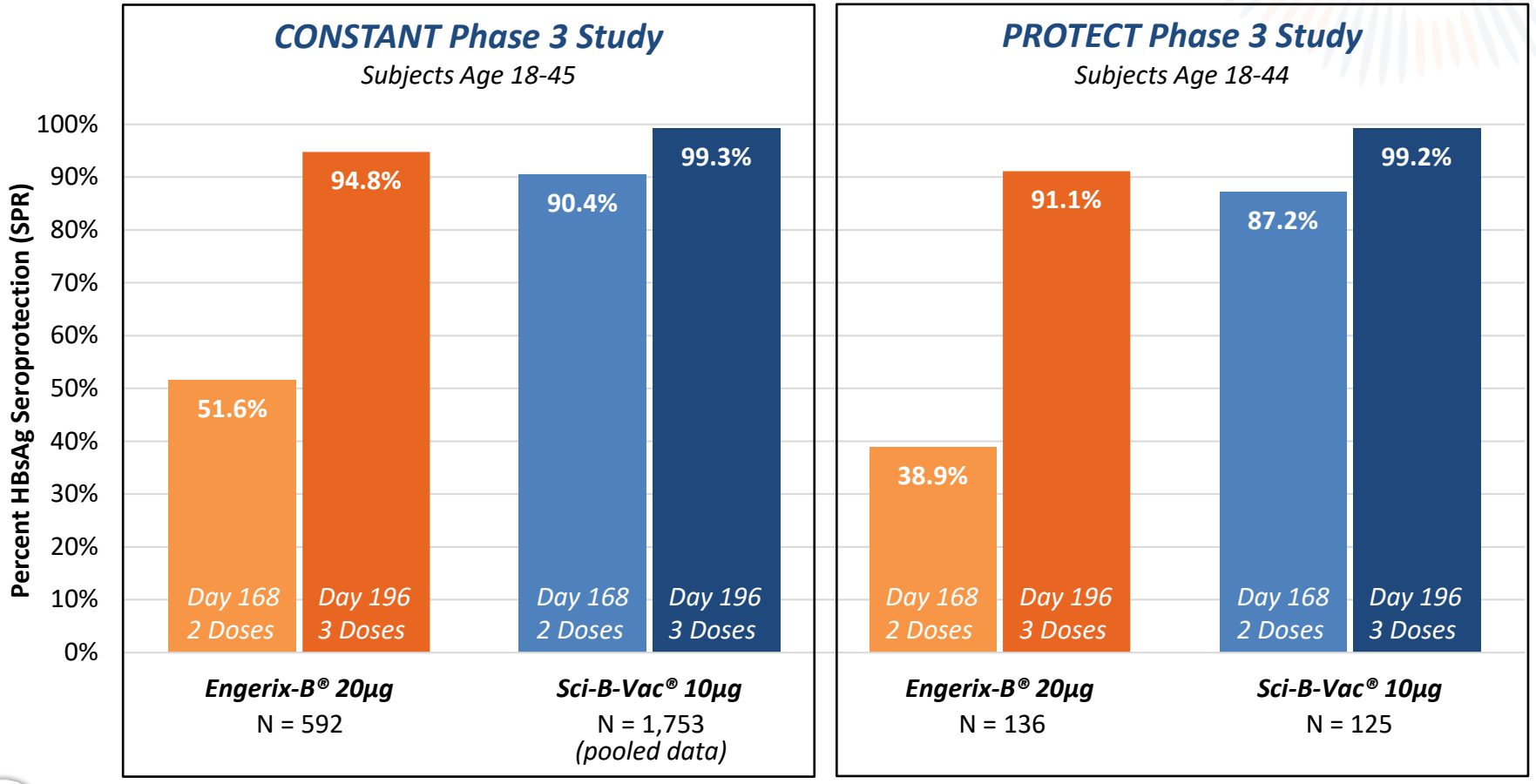
2. Statistical and clinical superiority, as defined in the protocol, achieved in subjects age 45+



- *Non-inferiority :* If the lower bound of the 95% confidence interval (CI) of the difference between the SPR in the Sci-B-Vac® arm minus the SPR in the Engerix-B® arm is > -5%, Sci-B-Vac® will be declared non-inferior to Engerix-B®
- *Statistical superiority :* If the lower bound of the same 95% CI is greater than 0%, Sci-B-Vac® will be declared statistically superior to Engerix-B®
- *Clinical superiority :* If the lower bound of the same 95% CI is > 5%, Sci-B-Vac® will be declared clinically superior to Engerix-B®

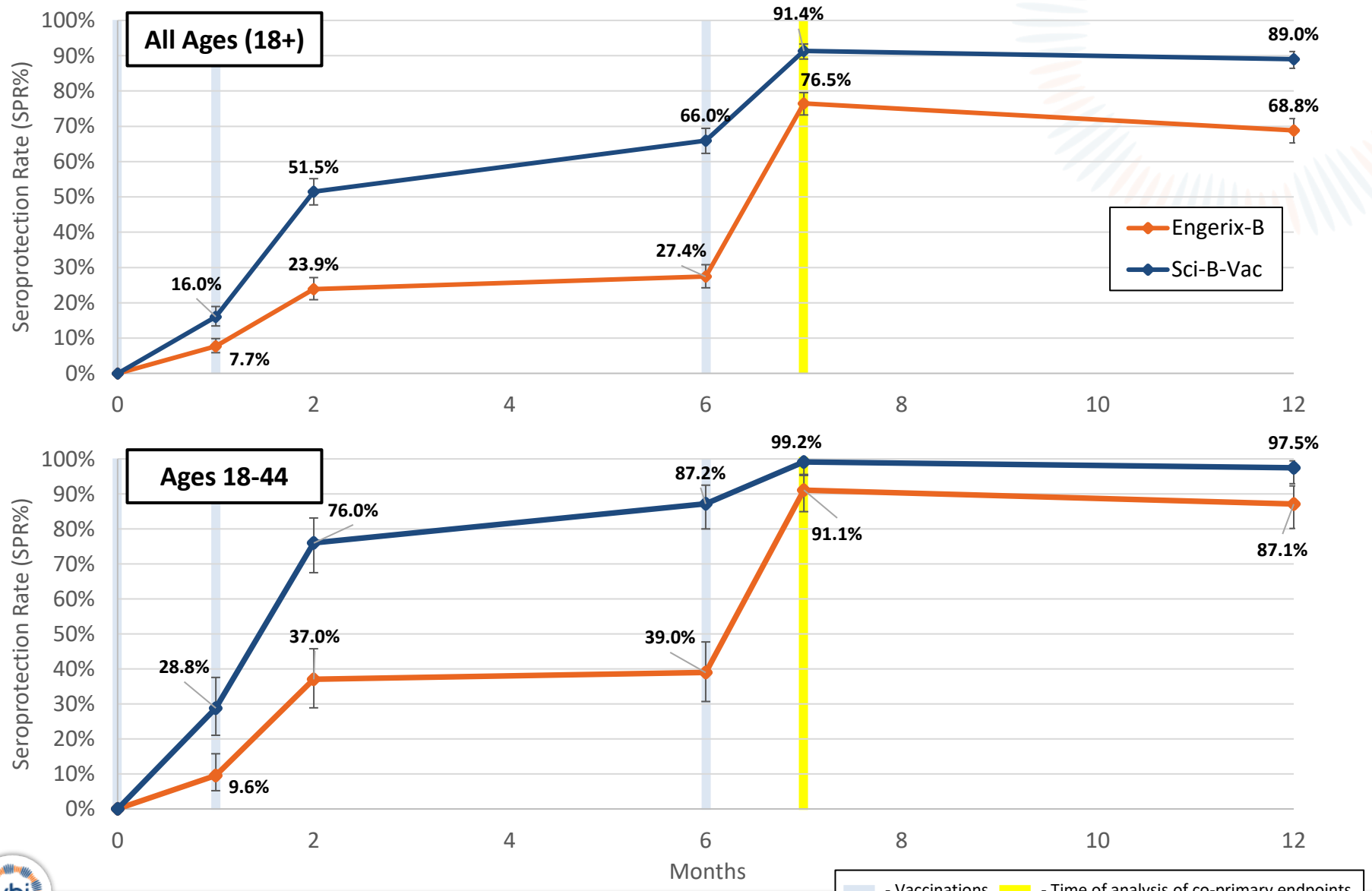
Kinetics of Seroprotection Rates (SPR) in Younger Adults – Age 18-45 Years

At each time point, day 168 after two vaccinations and day 196 after three vaccinations, the SPR achieved with Sci-B-Vac® was higher than the SPR achieved with Engerix-B®



NOTE : SPR defined as percent (%) of subjects with anti-HBsAg titers > 10mIU/mL

Kinetics of Seroprotection Rates by Age Groups



Seroprotection Rates in Subgroup Populations

SPR of Sci-B-Vac® vs. Engerix-B® was statistically significantly higher in all key subgroup analyses of adults age ≥ 18 years, at Day 196, 4 weeks post-3rd vaccination, including:

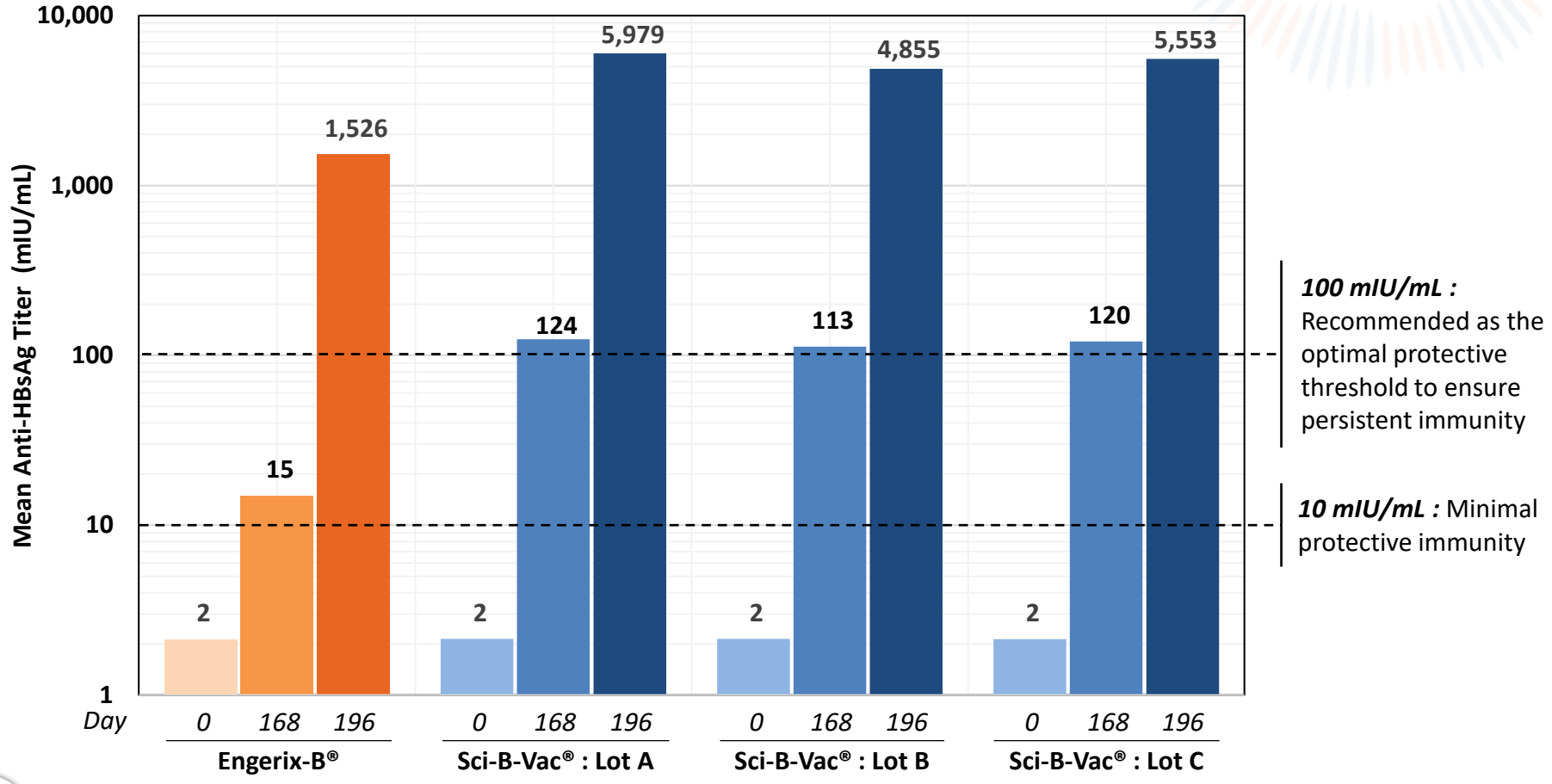
Diabetics	**58.3%** Engerix-B® vs. **83.3%** Sci-B-Vac® *SPR difference: 25.0%; 95% CI [8.4%, 40.4%]*
Subjects with a Body Mass Index (BMI) > 30	**68.1%** Engerix-B® vs. **89.2%** Sci-B-Vac® *SPR difference: 21.1%; 95% CI [14.3%, 28.0%]*

CONSTANT : Anti-HBs Antibody Titers After 2 & 3 Vaccinations

Antibody GMC achieved with Sci-B-Vac® was more than 7.5x that achieved with Engerix-B® after 2 vaccinations (day 168) and more than 3x after 3 vaccinations (day 196)

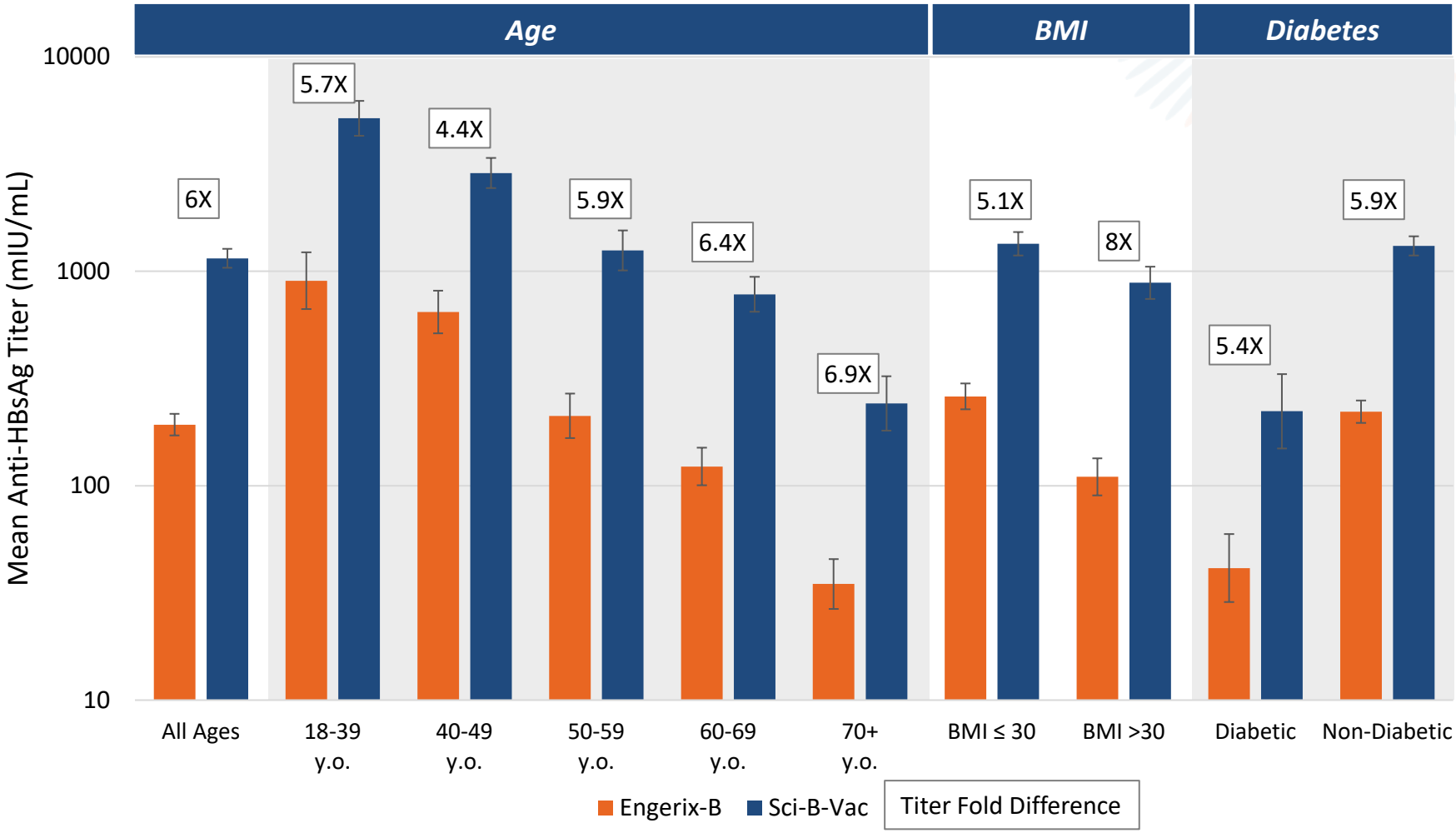
CONSTANT Phase 3 Study – Anti-HBsAg Antibody Titers

Subjects Age 18-45



PROTECT : Anti-HBsAg Titers in Subgroup Populations

5-8x fold higher antibody GMC is maintained for patients who received Sci-B-Vac vs. Engerix-B regardless of age, BMI, or diabetes status



Error bars = SE; The GMC and SE are calculated based on log10-transformed data, then transformed back to Anti-HBsAg Antibody titer

Summary of Safety Data from PROTECT & CONSTANT

OVERALL :

- No safety signals observed in PROTECT or CONSTANT
- Sci-B-Vac safety profile consistent with previous studies and post-marketing use (Israel)
- High rate of completion of vaccinations for Engerix-B and Sci-B-Vac
- Low rate of vaccine discontinuation due to non-serious adverse events (AEs) – in PROTECT, 0.4% vs. 0.4% and due to SAEs of 0.2% vs. 0.3% for Engerix-B and Sci-B-Vac, respectively

REACTOGENICITY – SOLICITED AEs :

- Higher rates of mild-to-moderate injection site pain, tenderness and myalgia reported by subjects receiving Sci-B-Vac compared to Engerix-B
- Reactogenicity symptoms generally resolved without intervention within 1-7 days
- No increase in reactogenicity symptoms over the 3-dose vaccination schedule

Key Unmet Medical Need and Market Segmentation

	Target Population	Key Product Attributes Driving Use	Est. Unvaccinated Population
ADULT POPULATION (AGE 18+)			
Young, "Otherwise Healthy"	• Public service sector workers (incl. HCWs) • Military • Pre-diabetics	• Earlier seroprotection • Cost	US : 5M+ | EU : 5M+ *TOTAL: 10M+* [conservative estimate]
Older Adults	• Age 45+	• Superior seroprotection rates • Safety	US : 50M | EU : 35M *TOTAL: 85M*
Immuno-Compromised/High-Risk	• Diabetics • CKD/ESRD patients • Other high-risk populations	• Higher seroprotection rates • Safety	US : 30M | EU : 20M *TOTAL: 50M*
PEDIATRIC POPULATION (AGE 0-17)			
High-risk, Immuno-compromised Newborns	*Children born:* • with immuno-compromising conditions (e.g. Thalassemia) • to HBV-infected mothers • in high endemic areas	• Higher seroprotection rates • Safety	• ~8M births each year in US/EU • ~75,000 births to HBV+ mothers • ~1/2,000 children are born with a primary immuno-compromising condition

Sources: U.S. Center for Disease Control, U.S. Department of Health and Human Services, European Centre for Disease Prevention and Control, World Health Organization, U.S. Census Population Data

PROTECT/CONSTANT Data Summary & Next Steps

When comparing Sci-B-Vac® at 10µg to Engerix-B® at 20µg, PROTECT and CONSTANT top-line data showed:

- ✓ **Higher rates of protection in all adults**, at all time points on a per-visit basis, with statistical and clinical superiority in adults age 45 years and older
- ✓ Higher seroprotection in **key immunocompromised populations** including obese individuals, diabetics, and elderly
- ✓ Confirmation of **robust immune response elicited with Sci-B-Vac®** – including with respect to both SPR and anti-HBsAg antibody titers – after both two and three vaccinations
- ✓ **Lot-to-lot manufacturing consistency**, required as part of the chemistry, manufacturing, and control (CMC) portion of the BLA
- ✓ **Clean safety profile** of the vaccine, with no new safety risks identified

Next Steps:

- **Q4 2020 :** Submissions of applications for regulatory approvals in the U.S., Europe, and Canada expected to begin

Hepatitis B - Therapeutic

b. VBI-2601

Potential to contribute to a functional cure by inducing and sustaining broad and effective immunity against chronic Hepatitis B infection

Functional Cure Combination for Hepatitis B

Scientific consensus is that a functional cure is within reach, but will likely be achieved through a combination approach

A functional cure will likely require the achievement of the below:

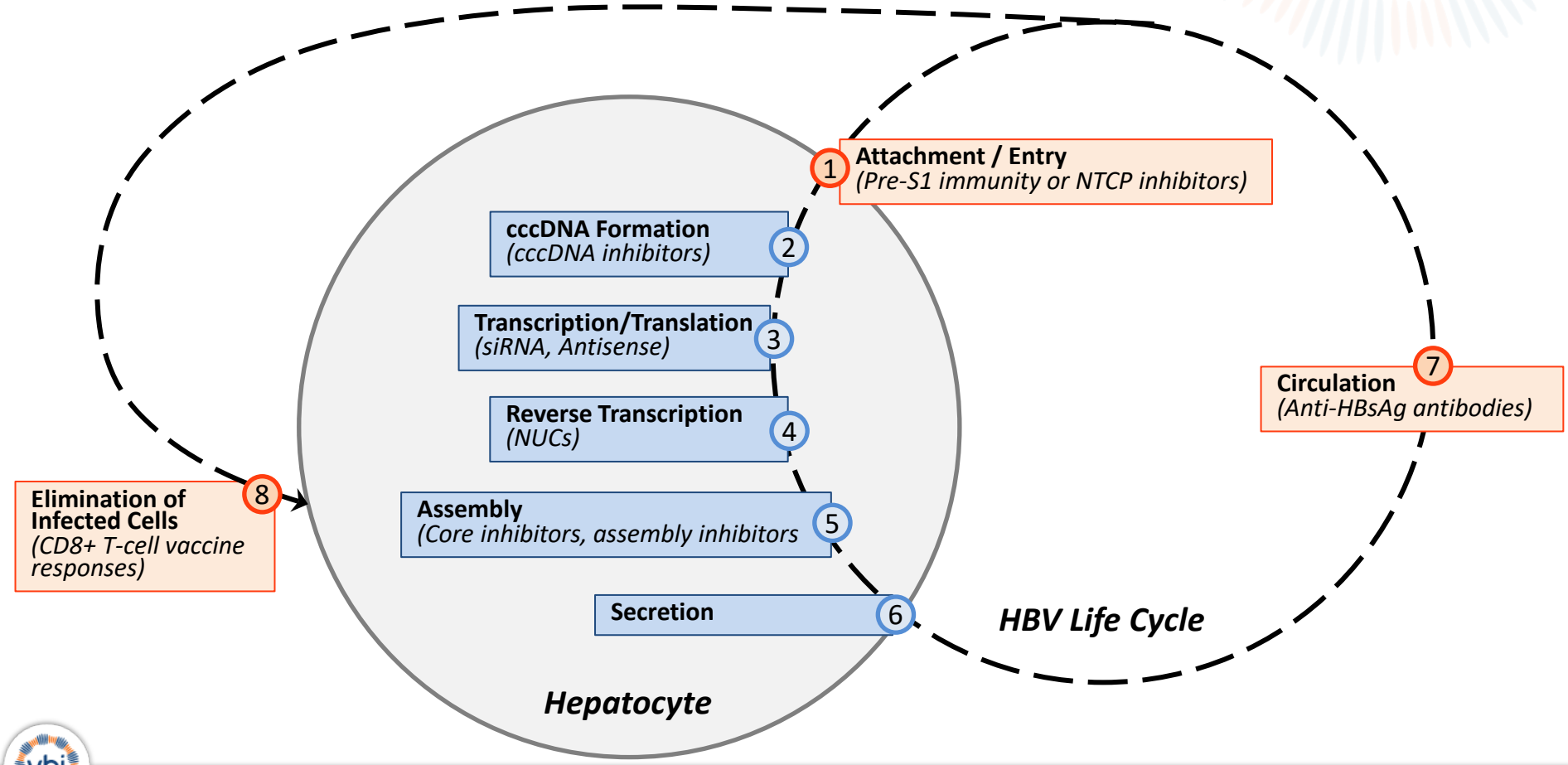
1. Drive down hepatitis B virus (HBV) DNA
2. Drive down immuno-suppressive HBV S-antigen
3. Achieve long-term immunologic control

Consensus is building that an immuno-therapeutic would be needed to achieve long-term immunologic control and restore the body's defense against hepatitis B infection

VBI-2601 Well Positioned as an Immuno-Therapeutic Component of a Functional Cure for Hepatitis B

VBI-2601 is designed to impact circulating virus (via anti-S immunity – step 7), viral entry (via pre-S1 immunity – step 1), and infected hepatocytes (via T-cell immunity – step 8)

Current NUCs & next-generation therapies impact intracellular steps downstream of transcription (steps 3, 4, & 5)



Development Rationale for VBI-2601

New therapeutic formulation (VBI-2601) enhances T-cell response – foundation for safe intervention in combination with next-generation antivirals and immunomodulators

- Sci-B-Vac has demonstrated ability to restore HBV immunity in Chronic HBV & other non-responsive populations [Hoa et al., 2009]
  - Restoration of HBV immunity is considered a key element of HBV "functional cure"

- VBI-2601 is a novel formulation of Sci-B-Vac that provides enhanced Th1 immunity, including improved T-cell responses and increased IgG2a production
  - Builds on safety and potency of Sci-B-Vac
  - Foundation of safety data (Sci-B-Vac in over 500,000 individuals) makes VBI-2601 ideal for a combination study
  - Preclinical studies support enhanced immunity of distinct formulation

Brii Biosciences License & Collaboration Agreement

In December 2018, VBI announced a license and collaboration agreement with Brii Biosciences ("Brii Bio") to develop a functional cure for Hepatitis B

- Under the agreement, VBI and Brii Bio will collaborate in the development of the product candidate through to completion of a proof-of-concept clinical trial, following which, Brii Bio will be responsible for funding all development in the licensed territory – China, Hong Kong, Macau, and Taiwan
- VBI received gross proceeds of $11 million, consisting of a $4M upfront payment and a $7M equity investment at $3.05 per share
- VBI is eligible to receive an additional $117.5 million in potential milestone payments and potential low double-digit royalties on commercial sales in the licensed territory
- VBI will retain all rights outside of the licensed territory with respect to the treatment of hepatitis B

Tx HBV Phase Ib/IIa Clinical Study Design

Two-part, multi-center, controlled, dose-escalation study of VBI-2601 in patients with chronic hepatitis B to assess safety, tolerability, and antiviral activity

- The study is expected to enroll up to 65 subjects, across 5 cohorts:
  - Cohort A : NUC-only control
  - Cohort B : VBI-2601 (dose level 1)
  - Cohort C : VBI-2601 (dose level 1) + Brii adjuvant
  - Cohort D : VBI-2601 (dose level 2)
  - Cohort E : VBI-2601 (dose level 2) + Brii adjuvant
- The study is being conducted at clinical study sites in Australia, New Zealand, Thailand, South Korea, Hong Kong, and China
- Key outcomes:
  - Restimulation of HBV immunity – antibodies to S, T-cell immunity
  - Virologic measures: S antigen, DNA, RNA
- Enrollment in the study initiated in November 2019

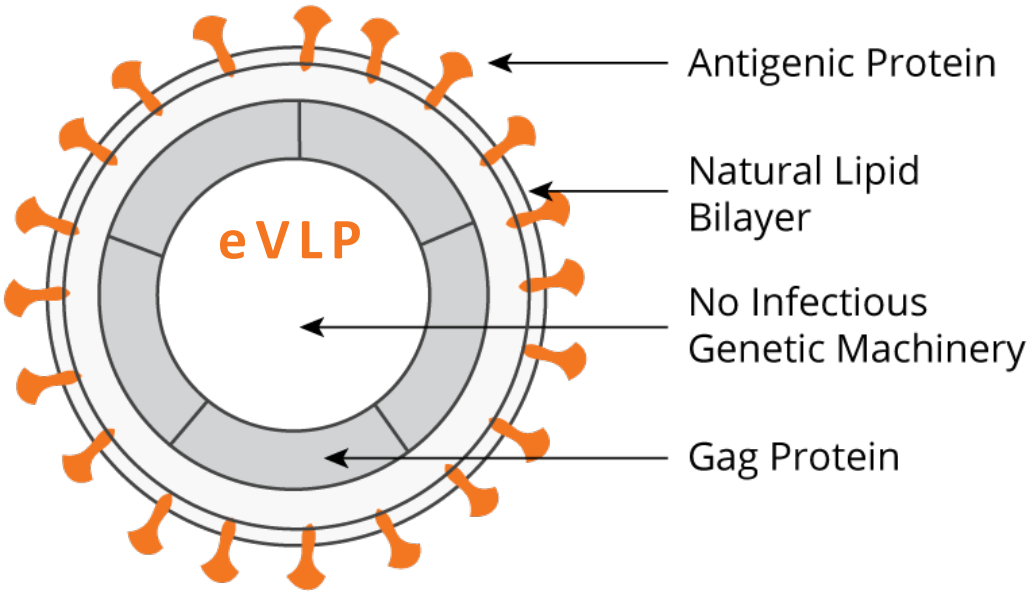
VBI-2601 (Tx HBV) : Program Milestones

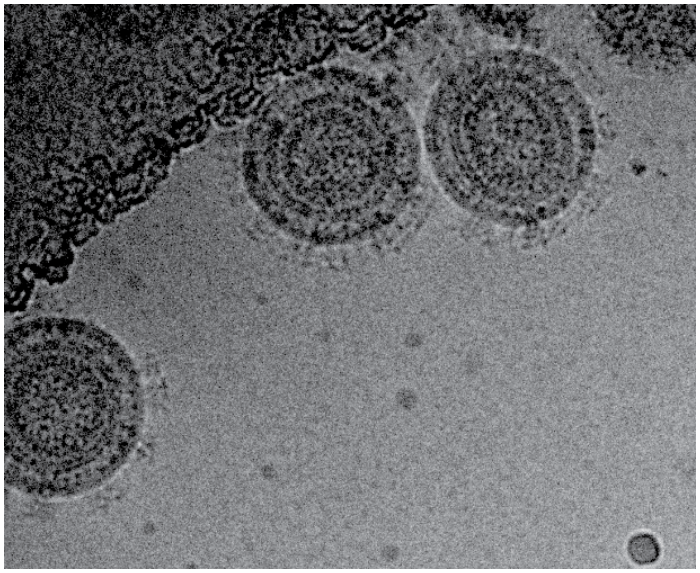
- ☑ *December 2018 :* License and collaboration agreement announced with Brii Biosciences for up to $129M + royalties to develop a functional cure for hepatitis B
- ☑ *January 2019 :* Initiation of pre-clinical studies
- ☑ *Q4 2019 :* Initiation of proof-of-concept Phase Ib/IIa study in subjects with chronic hepatitis B
- ☐ *Q4 2020 :* Initial human proof-of-concept Phase Ib/IIa data expected

Enveloped Virus-Like Particle (“eVLP”) Vaccine Technology

eVLPs are a 3rd-Generation Class of Synthetic Vaccines

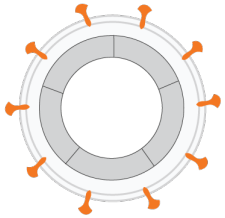
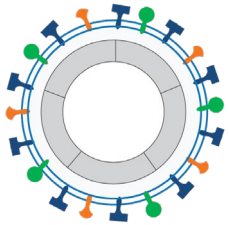
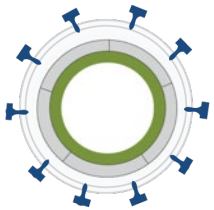
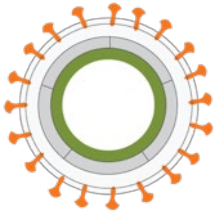
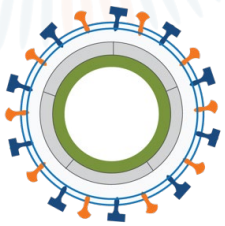
- eVLPs are the same size and structure as enveloped viruses, presenting antigens in their natural state for an improved immune response
- The foundation of the eVLP Platform is a stable, protein-based core which has the flexibility to express additional vaccine antigens of interest





Electron Microscopy image of VBI's CMV eVLPs captured at Scripps Institute.

Multiple eVLP Candidates have Clinical & Preclinical Proof-of-Concept

	Infectious Disease			*Immuno-Oncology*	
	- VBI-1501 - Px CMV	**- VBI-2901 - Px Pan-Coronavirus**	**- VBI-2501 - Px Zika**	**- VBI-1901 - Tx CMV+ Tumors**	**- VBI-2701 - Immuno-Oncology**
Schematic					
Construct Design	*Monovalent:* Modified gB-G	*Trivalent:* Spike proteins for COVID-19, SARS, MERS	*Bivalent:* Modified-E / NS1	*Bivalent:* gB / pp65 (major CD4, CD8 & Ab epitopes)	*Bivalent* with Immunomodulatory protein
Adjuvant	Alum	Undisclosed	Alum	GM-CSF	Self Adjuvanted
Most Advanced Dev. Stage	Ph I complete	Preclinical	Preclinical	Ph I/II ongoing	Research
Key Features	Modified gB elicits fibroblast & epithelial cell neutralization Qualitatively enhanced neutralizing response	Potentially broad neutralizing antibodies against most clinically relevant human coronaviruses and potential new variants	Modified-E enhances neutralizing responses NS1 T cell response enhances antibody response & protection	Internal antigen expression elicits T cell immunity Stimulates innate immunity	Immunomodulatory proteins can enhance antigen-specific Th1 immunity

Glioblastoma (GBM) – VBI-1901

Targeting CMV as a foreign viral antigen approach to Immuno-Oncology (GBM) with a bivalent eVLP expressing two potent CMV antigens – pp65 and gB

Impact and Risks of Cytomegalovirus (CMV)

ONCOLOGY

Solid Tumors:

- 90%+ of some solid tumors, incl. glioblastomas, breast cancers, and medulloblastomas are CMV+
- CMV is not causative, but does influence disease progression of CMV+ tumors
- In multiple clinical studies, CMV-targeting vaccines have increased overall survival in GBM patients
- Because CMV is so broadly (and differentially) expressed on tumor cells, but not on healthy cells, a potent CMV vaccine has potential to make “cold tumors hot”
- GBM is one of the most aggressive cancers with few therapeutic options and no standard of care in the recurrent setting

Clinical Study Design & Results Observed To-Date From Ongoing Phase I/IIa Study in Recurrent GBM Patients

Part A : Dose-Escalation Phase – *Recurrent GBM (any # of recurrences)*

Study Arm 1: **Low Dose** *(n=6)*
0.4µg + GM-CSF

VS.

Study Arm 2: **Int. Dose** *(n=6)*
2.0µg + GM-CSF

VS.

Study Arm 3: **High Dose** *(n=6)*
10.0µg + GM-CSF

- Enrollment completed December 2018 (n=18)
- 12-month overall survival (OS) rate of 83% in Vaccine Responders (n=6) vs. 33% in Non-Responders (n=9)
- Vaccine Responders saw a 6.25-month improvement in median OS (14.0 mos) vs. Non-Responders (7.75 mos)
- Tumor responses observed in 3 patients in the high-dose cohort, with evidence of stable disease based on two or more consecutive MRI scans
- VBI-1901 was well-tolerated at all doses, with no safety signals observed

Part B : Extension Phase – *Recurrent GBM (1st recurrent only)*

Study Arm 1: **High Dose** *(n=10)*
10.0µg + GM-CSF

VS.

Study Arm 2: **High Dose** *(n=10)*
10.0µg + GSK's $AS01_B$ Adjuvant

VBI-1901 + GM-CSF:

- Enrollment completed April 2020 (n=10)
- Tumor responses observed in 2 subjects, including one partial response
- Results from 2 patients pending

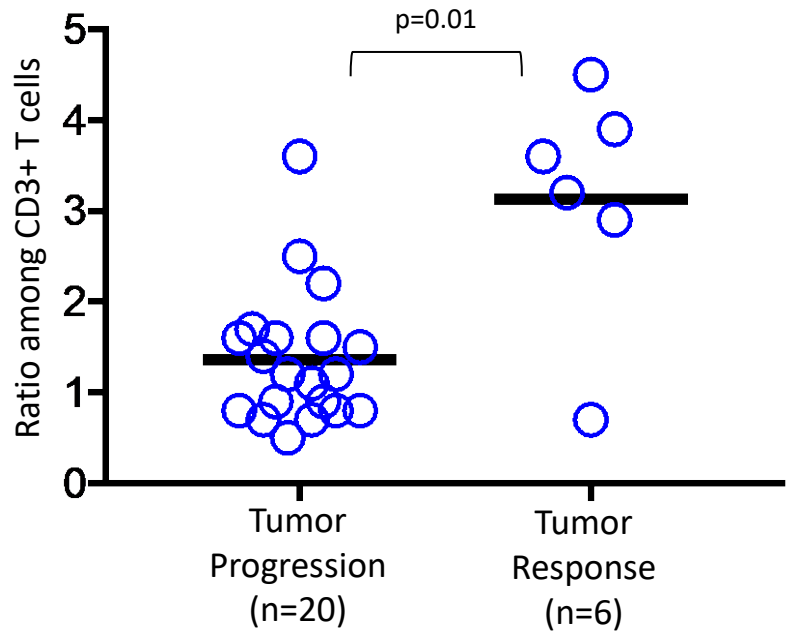
VBI-1901 + GSK's $AS01_B$ adjuvant:

- Enrollment ongoing

Identified Biomarker from Part A and B:

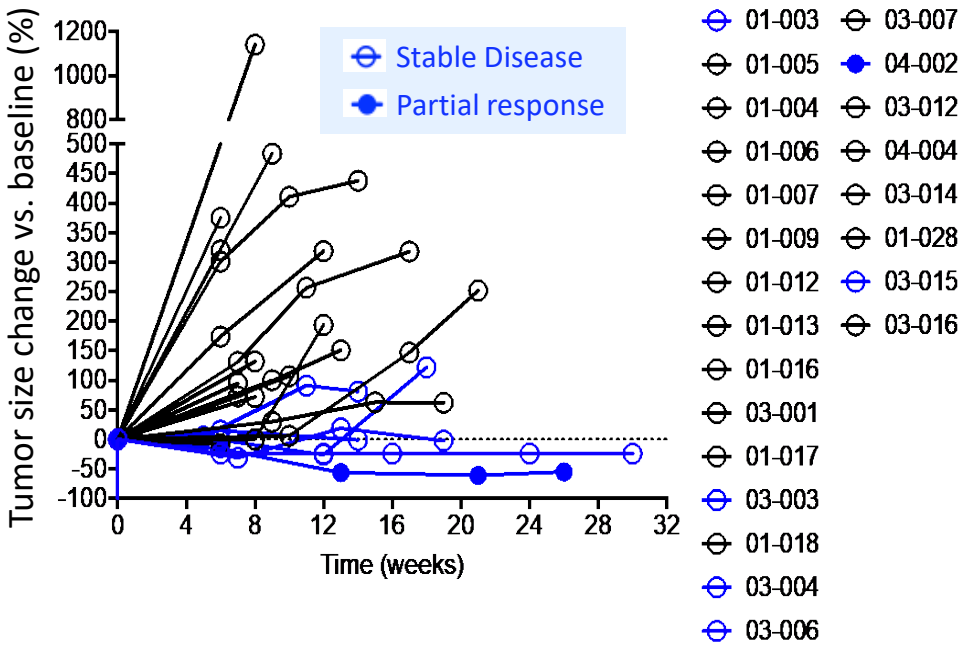
Normal Baseline CD4+/CD8+ Ratio is Associated with Tumor Responses

CD4+/CD8+ T Cell Ratio



Change in Tumor Size Over Time

Tumor growth kinetics are delayed among patients with normal (blue) vs. low (black) baseline CD4+/CD8+ ratios

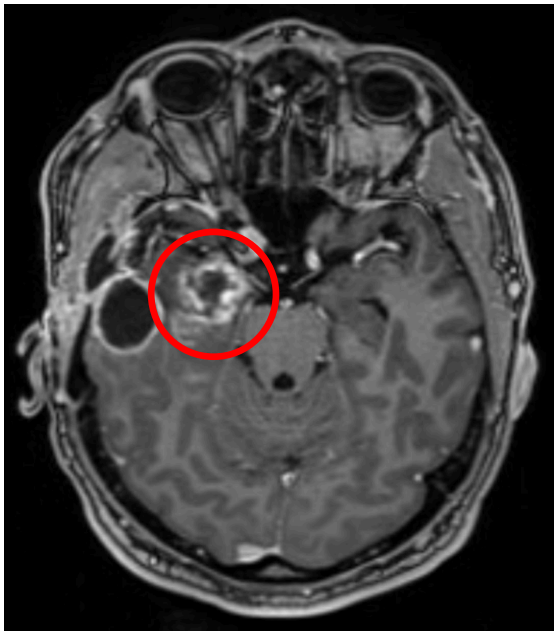


A biomarker present at baseline, the CD4+/CD8+ T cell ratio, captures the immunological "fitness" of CD4+ T cells in recurrent GBM patients

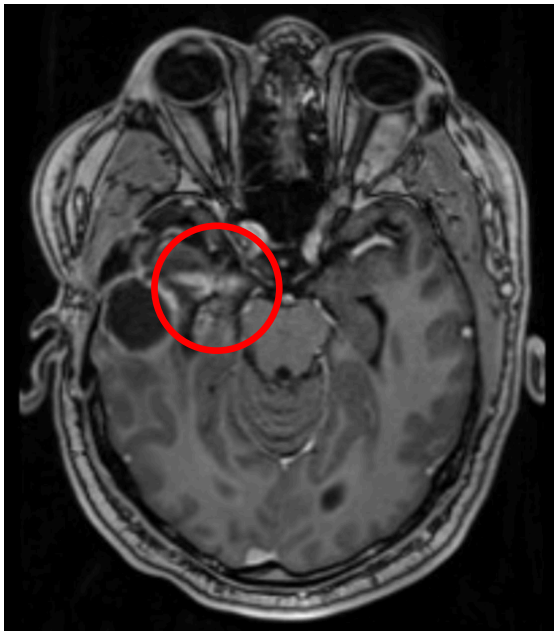
MRI of Patient with Partial Tumor Response

Patient (04-002)

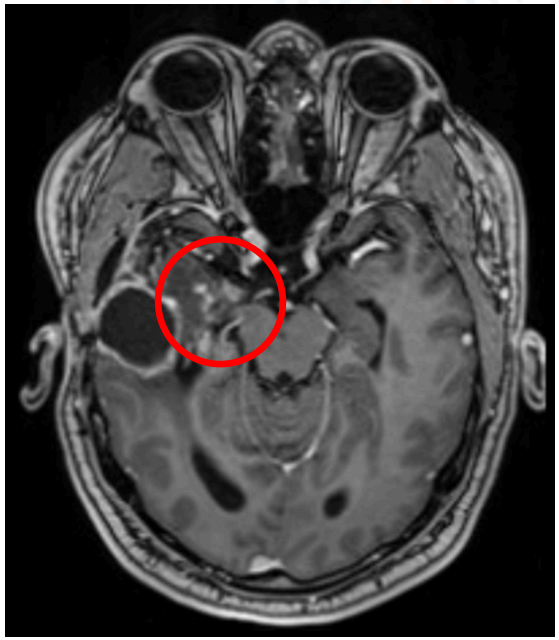
Baseline



Week 24



Week 36



VBI-1901 (GBM) : Program Milestones

- ☑ *December 2018 :* Completion of enrollment in Part A of the Phase I/IIa
- ☑ *June 2019 :* Presentation of expanded immunologic data and tumor and clinical responses at ASCO Annual Meeting
- ☑ *July 2019 :* Initiation of enrollment in Part B of the Phase I/IIa study
- ☑ *September 2019 :* Announcement of GSK collaboration to clinically evaluate VBI-1901 + GSK's $AS01_B$ adjuvant system in additional study arm of ongoing Phase I/IIa study
- ☑ *Q4 2019 :* Initial immunologic data from VBI-1901 + GM-CSF Part B and expanded Part A data expected
- ☑ *Q1 2020 :* Initiation of enrollment in VBI-1901 + GSK's $AS01_B$ study arm expected, subject to FDA acceptance of the amended protocol and investigational site institutional review board approval
- ☑ *Mid-year 2020 :* Expanded immunologic and tumor response data as well as potentially-predictive biomarker data expected from VBI-1901 + GM-CSF Phase IIa (Part B) study arm
- ☐ *Q4 2020 :* Initial immunologic and tumor response data from VBI-1901 + $AS01_B$ (Part B) study arm expected

Coronavirus Program – VBI-2900

Prophylactic vaccine program advancing two candidates for human clinical studies: a trivalent eVLP, VBI-2901, and a monovalent eVLP, VBI-2902

Impact and Risks of Coronavirus

INFECTIOUS DISEASE

Coronaviruses :

- Coronaviruses are a large family of viruses that usually cause respiratory illness of varying severity, including the common cold and pneumonia
- Seven coronaviruses are known to be pathogenic in humans, with three of those seven causing serious outcomes:
  - SARS-CoV-2 – the novel coronavirus identified as the cause of COVID-19
  - MERS-CoV – identified in 2012 as the cause of Middle East respiratory syndrome (MERS)
  - SARS-CoV – identified in 2002 as the cause of severe acute respiratory syndrome (SARS)[1]

COVID-19 :

- COVID-19 spreads primarily through droplets of saliva or discharge from the nose of an infected individual
- COVID-19 is responsible for the most widespread coronavirus outbreak to-date, with over 47 million confirmed cases and over 1.2 million deaths worldwide as of November 3, 2020[2]
- Most people infected with COVID-19 experience mild to moderate respiratory illness
- Older people, along with those who have underlying medical issues such as cardiovascular disease, diabetes, chronic respiratory disease, etc., are more likely to develop serious illness[1]

1. "Coronavirus." *World Health Organization*, https://www.who.int/health-topics/coronavirus.
2. "Coronavirus COVID-19 Global Cases." *Center for Systems Science and Engineering at Johns Hopkins University,* https://coronavirus.jhu.edu/map.html

VBI-2900: Coronavirus Program with Two Optimized Vaccine Candidates (VBI-2901 & VBI-2902)

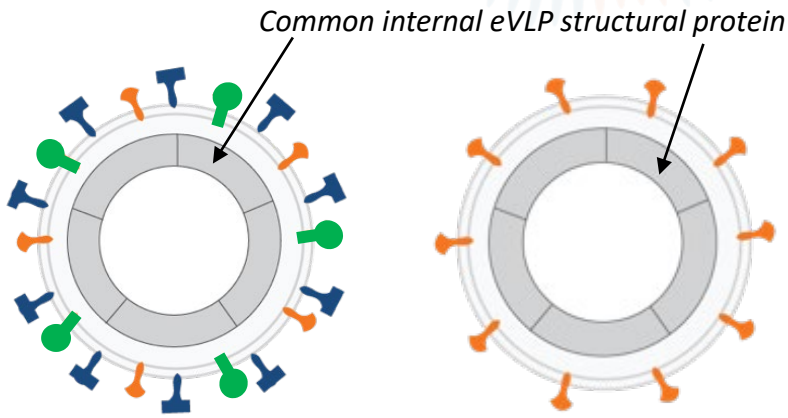
Vaccine Candidates Selected for Human Clinical Studies Based on Data From Three Preclinical Mouse Studies

Objectives of Preclinical Studies

Assess the impact of:

1. VBI's enveloped virus-like particle (eVLP) platform technology vs. recombinant vaccine candidates
2. Differences in the conformation of the spike protein
3. A variety of adjuvants

Optimized Vaccine Candidates



VBI-2901

Trivalent
Vaccine Candidate

VBI-2902

Monovalent
Vaccine Candidate

Spike Proteins:

- **SARS-CoV-2** (COVID-19)
- **SARS-CoV** (Severe Acute Respiratory Syndrome – SARS)
- **MERS-CoV** (Middle East Respiratory Syndrome – MERS)

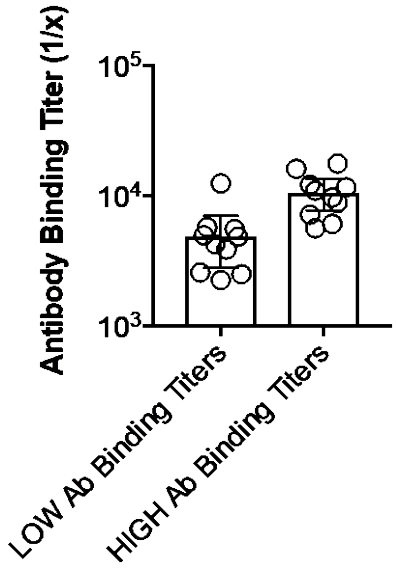
High-Titer COVID-19 Convalescent Sera Used as Benchmarking Data

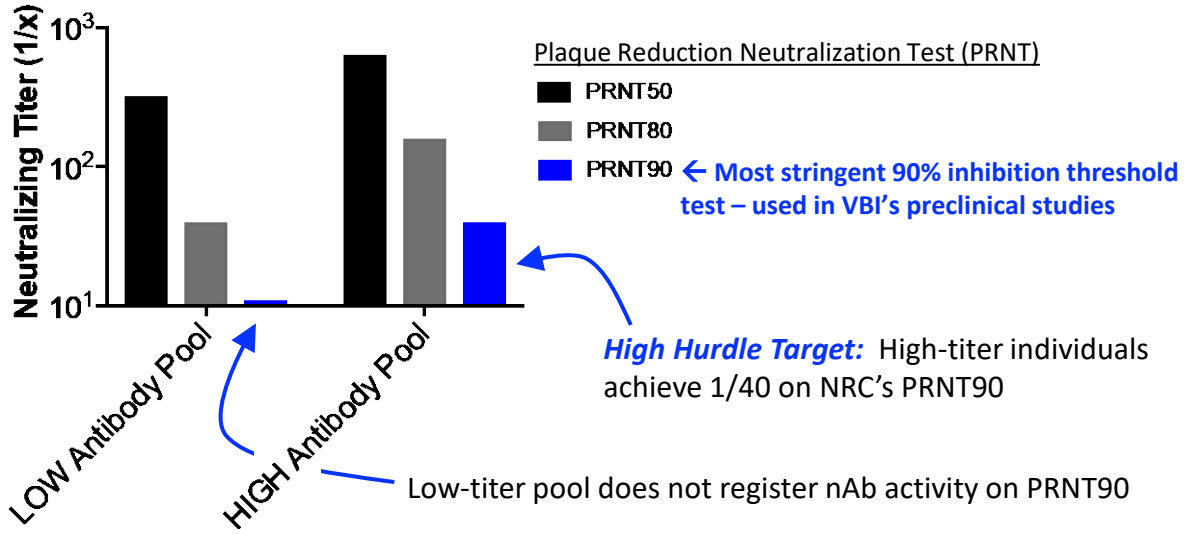
Convalescent Sera From 20 Individuals Who Had Contracted and Recovered From COVID-19 Were Collected For Comparison

However, consistent with emerging literature, variance exists among recovered individuals → collected samples were grouped according to the strength of the immune response

High-Titer	Collected from individuals who mounted a robust, high-titer antibody binding response to infection
Low-Titer	Collected from individuals who mounted a weaker, lower-titer antibody binding response to infection

Neutralizing antibody (nAb) activity using infectious SARS-CoV-2 virus (performed at the NRC*) confirms higher nAb activity observed in high-titer pool of sera

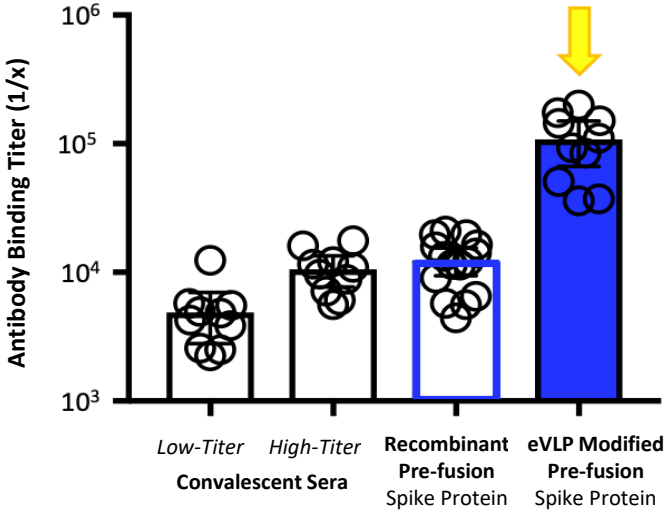


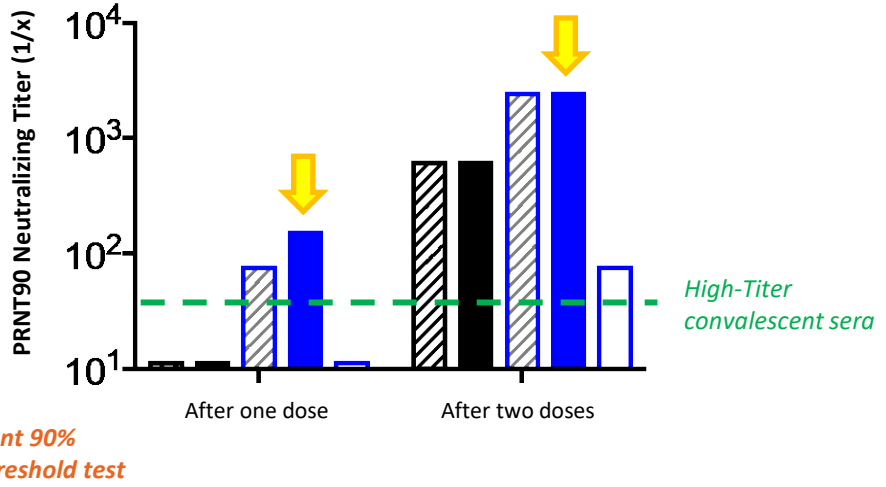


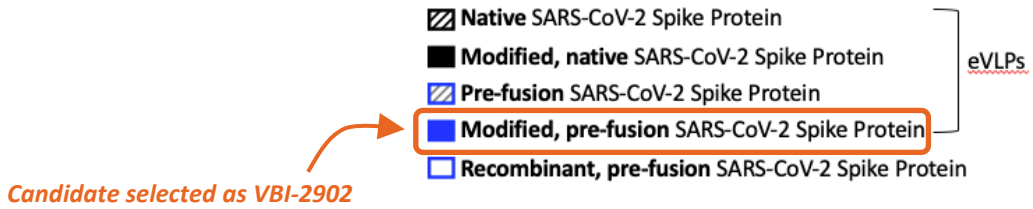
*NRC– National Research Council of Canada

Optimized eVLPs Enhanced Neutralizing and Antibody Binding Titers After One Dose

- **PRNT90 Neutralizing Activity: 4X higher than convalescent sera after one dose, 64X higher after two doses**
- **Antibody Binding Activity: 10X higher than convalescent sera & recombinant constructs after one dose**

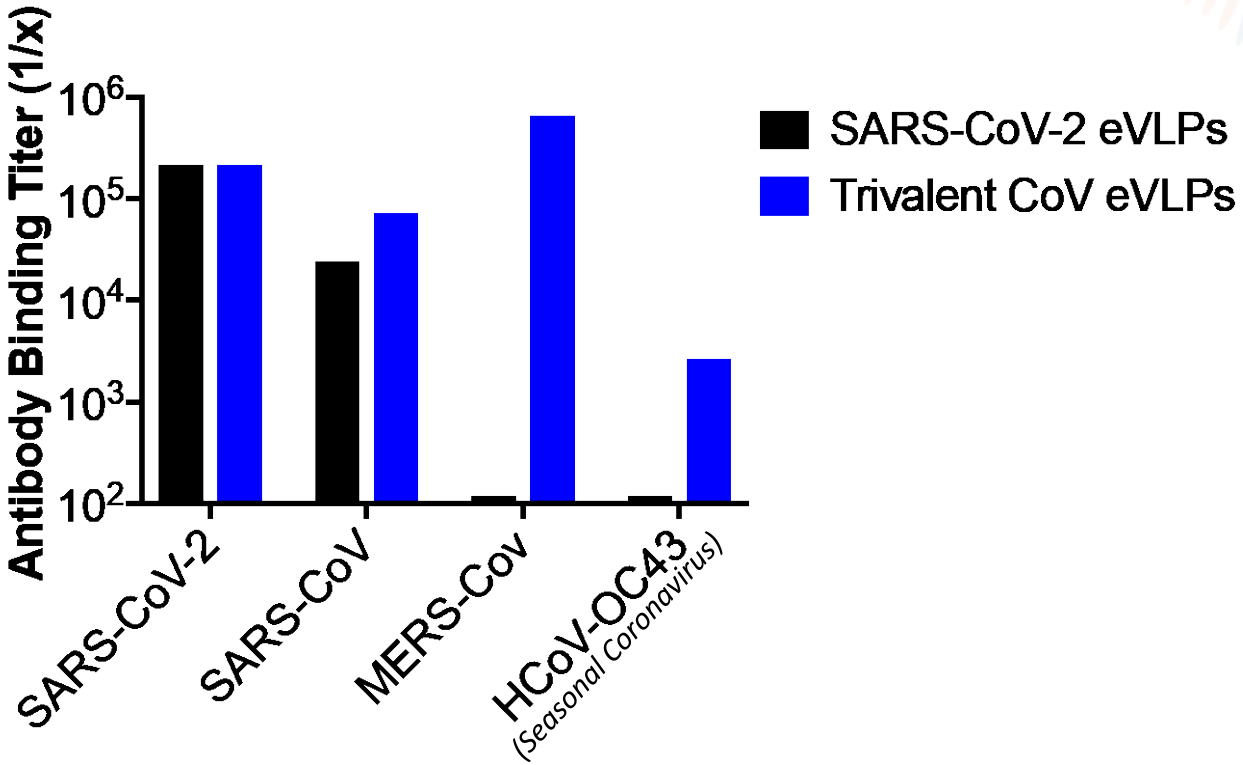






Trivalent eVLP Offered Additional Breadth of Reactivity Across Coronaviruses

The Trivalent eVLP Vaccine Construct Further Induced Antibody Binding Titers Across COVID-19, SARS, and MERS Spike Proteins in Addition to Broadening Reactivity to Seasonal Circulating Coronavirus Not Expressed in the Vaccine



Note: Data generated is from the first mouse study using an eVLP expressing the native form of the spike protein – not the optimized modified pre-fusion form. While this data is after 3 doses, incorporation of the optimized COVID-19 spike protein in the trivalent candidate is expected to further increase antibody binding titers after fewer doses.

VBI-2900 (Coronavirus) : Program Milestones

- ☑ **March 2020** : Announcement of collaboration with the National Research Council of Canada (NRC) to develop a pan-coronavirus vaccine candidate targeting COVID-19, severe acute respiratory syndrome (SARS), and Middle East respiratory syndrome (MERS)

- ☑ **August 2020** : Announcement of up to CAD$56 million contribution from the Strategic Innovation Fund of the Canadian Government to support development through Phase 2 clinical studies

- ☑ **August 2020** : Announcement of preclinical data and selection of two candidates to advance into human clinical studies

- ❑ **Around Year-End 2020** : Initiation of adaptive Phase 1/2 human clinical study expected, subject to regulatory approval

Cytomegalovirus (CMV) – VBI-1501

eVLP vaccine candidate potently expresses a modified-form of the gB antigen, which is functionally differentiated from other gB approaches

Impact and Risks of Cytomegalovirus (CMV)

INFECTIOUS DISEASE

Birth Defects *(Congenital Infection):*

- Congenital CMV is a leading cause of birth defects worldwide
- A first exposure during pregnancy can lead to death, blindness, deafness, and developmental delays of the newborn
- ~30,000 infants are born in U.S. with CMV annually
- 5,000+ will develop permanent impairments (more impacted births than Downs Syndrome)
- Direct economic costs of CMV infection exceeds $3.0B per year in U.S.
- No approved treatment or prevention
- ~$1B U.S. annual market with a $5B catch-up market opportunity

Transplant Rejection/Mortality:

- CMV is also a leading cause of transplant rejection in both the solid organ transplant and the stem-cell transplant settings
- Over 100,000 individuals in the U.S. are on the waiting list to receive a solid-organ transplant
- Matching based on CMV sero-status is not practical given other constraints (e.g. timely organ supply)
- Despite anti-viral pretreatment, CMV status of both recipient and donor still has a major impact on organ and recipient survival

Summary of Phase I Study Results

Phase I Study in 128 CMV-Negative Healthy Adults (18-40 years)

- VBI-1501 is safe and well tolerated at all doses tested, with and without the adjuvant alum, with no concern about evaluating VBI-1501A at higher doses
- VBI-1501A is immunogenic, even at a low dose
  - **gB antibody binding titers** induced at all dose levels, with clear evidence of dose-dependent boosting after each vaccination
  - **Neutralizing antibodies against fibroblast cell infection** were comparable to those from CMV-positive controls in 100% of subjects receiving the highest dose
  - **Neutralizing antibodies against epithelial cell infection** had a correlation with higher gB binding titers and fibroblast cell neutralizing activity, suggesting the modified form of the gB-G used in VBI-1501A qualitatively enriches for functional nAb activity
  - **Highest dose** tested (2.0µg) is 1/10th that of several other licensed VLP-based vaccines and past non-VBI CMV candidates
- There is strong scientific rationale to support that higher doses of VBI-1501A could improve the immunogenicity and efficacy

Summary

VBI Vaccines Leadership

MANAGEMENT

Jeff Baxter
President & CEO

GlaxoSmithKline · THE COLUMN GROUP

Dr. David Anderson, Ph.D.
Chief Scientific Officer

HARVARD MEDICAL SCHOOL

Dr. Francisco Diaz-Mitoma, M.D., Ph.D.
Chief Medical Officer

LAKEHEAD · LAURENTIAN · MEDICINE · AMRIC Advanced Medical Research Institute of Canada

Chris McNulty
Chief Financial Officer

Massachusetts Institute of Technology · genzyme · HARVARD BUSINESS SCHOOL

Nell Beattie
Chief Business Officer

ARTISAN Healthcare Consulting · Tuck School of Business at Dartmouth

Avi Mazaltov
Global Head of Manufacturing
SciVac General Manager

TEVA · omrix Biopharmaceuticals Ltd. a Johnson & Johnson company

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gsk GlaxoSmithKline · SANOFI

Blaine H. McKee, Ph.D.

genzyme · Shire · immunogen

VBI Vaccines Global Footprint

HEADQUARTERS – CAMBRIDGE, MA

- 8 FTEs (Incl. CEO, CSO, CFO, CBO)
- Central location in biotechnology hub

RESEARCH OPERATIONS – OTTAWA, CANADA

- ~35 FTEs (Incl. CMO)
- R&D team and facility

MANUFACTURING FACILITY – REHOVOT, ISRAEL

- ~85 FTEs
- GMP manufacturing facility for the production of Sci-B-Vac®

Summary

ANTICIPATED CATALYSTS THROUGH 2020 YEAR-END :

1. ***Sci-B-Vac®*: *Hepatitis B Prophylactic Vaccine***
   - *Beginning Q4 2020 –* Submissions of applications for regulatory approvals in the U.S., Europe, and Canada expected to begin

2. ***VBI-1901*: *GBM Vaccine Immunotherapeutic (Immuno-Oncology)***
   - *Q4 2020 –* Initial immunologic and tumor response data expected from VBI-1901 + $AS01_B$ Phase IIa (Part B) study arm

3. ***VBI-2601*: *Hepatitis B Immunotherapeutic***
   - *Q4 2020 –* Initial human proof-of-concept Phase Ib/IIa data readout expected

4. ***VBI-2900*: *Prophylactic Coronavirus Vaccine Program***
   - *Around Year-End 2020 –* Initiation of adaptive Phase 1/2 human clinical study expected, subject to regulatory approval

VBI Vaccines Inc.

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