VBI VACCINES

ACTIVATING THE POWER WITHIN

# VBI-1901 Program Overview

B. Riley Securities 2022 Oncology Investor Conference

NASDAQ : VBIV

January 28, 2022

# Forward-Looking & Safe Harbor 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 impact of general economic, industry or political conditions in the United States or internationally; the impact of the ongoing COVID-19 pandemic on our clinical studies, manufacturing, business plan, and the global economy; the ability to successfully manufacture and commercialize PreHevbrio; 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 pipeline candidates and the commercialization of PreHevbrio; the ability to obtain appropriate or necessary regulatory approvals to market potential products; 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.

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 SEC and the Canadian securities authorities, including its Annual Report on Form 10-K filed with the SEC on March 2, 2021, and filed with the Canadian security authorities at sedar.com on March 2, 2021, as may be supplemented or amended by the Company's Quarterly Reports on Form 10-Q.

Given these risks, uncertainties and factors, you are cautioned not to place undue reliance on such forward-looking statements, which are qualified in their entirety by this cautionary statement.

All such forward-looking statements made herein are based on our current expectations and we undertake no duty or obligation to update or revise any forward-looking statements for any reason, except as required by law.

# Rationale for Immunotherapeutic Application of eVLP Technology

## Utilizing Foreign Viral Antigen Targets

# VBI's Unique Approach to Immuno-Oncology Vaccines is Differentiated from Past Attempts

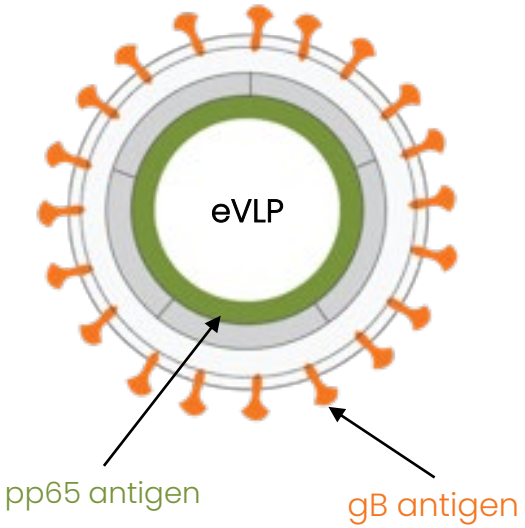
## Shortcomings of Past Cancer Vaccines

- Lack of inherent potency
- Lack of balanced immunity
- Lack of breadth
- Poorly immunogenic delivery

## VBI's eVLP Approach

- Target CMV+ tumors as foreign viral antigen overcomes 'anti-self' immunity
- eVLPs induce both CD4+ and CD8+ immunity
- Both gB & pp65 antigens are "full length" to provide epitope cross-reactivity aimed to broaden immune response
- eVLPs are naturally presented to dendritic cells and stimulate both innate and adaptive immunity

VBI-1901
Bivalent eVLP



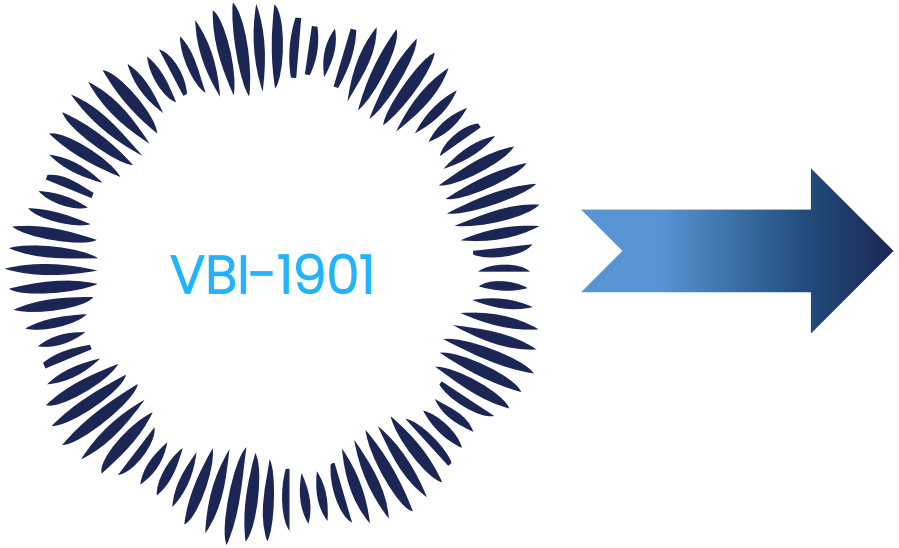
# Broad Clinical Evidence Supports CMV as an Immunotherapeutic Viral Target in GBM

- Prins RM (2008) – Autologous, GBM tumor lysate DC vaccine
  - Single imzn. increased CMV pp65-specific CD8+ T cells from 0.2% to 4.4%
- Crough T (2012) – Single patient receiving 4 infusions of autologous CMV-specific T-cells
  - MRI revealed improvement with stable disease reported for 17 months
- Schuessler A (2014) – 10 patients receiving 3-4 infusions of autologous CMV-specific T-cells
  - 10 recurrent GBM pts, 3-4 infusions of autologous CMV-specific T cells
  - Achieved median OS of 403 days and only minor adverse events
- Mitchell DA (2015) – CMV-specific DC vaccine with tetanus pre-conditioning
  - OS (>36.6 months) vs. control cohort with median OS of 18.5 months
- Batich K (2017) – CMV-specific DC vaccine with GM-CSF & Temozolomide
  - OS increased (>41.1 months) vs historic control
- Smith C (2020) – Adoptive CMV-specific T cell therapy of patients with primary GBM
  - Improved overall survival when given prior to recurrence

# Beyond GBM : CMV Antigens Are an Ideal Target Present in Multiple Solid Tumors

The presence of CMV promotes disease progression, but also provides an opportunity for vaccine-induced tumor targeting & productive inflammation

Potential Application to Multiple Cancers




## CNS Cancers

### Glioblastoma

- Over 95% CMV+
- Key References:
  - Cobbs 2002, 2013
  - Lucas KG 2011
  - Nair SK 2014
  - Batich K 2017
  - Penas-Prado 2018

### Other Brain Tumors

- Wolmer-Solberg N (2013) Int J Cancer
- Baryawno N (2011) J Clin Invest
- Libard S (2014) PLoS ONE

## Other Solid Tumors

### Breast Cancer

- Over 90% CMV+
- Key References:
  - Pasquereau (2017) Open J Virol
  - Herbein (2014) Frontiers Oncol
  - Taher C (2013) J Clin Virol
  - B Cox (2010) BJC
  - Harkins LE (2010) Herpesviridae

### Others Requiring Analysis

- CRC, Prostate
- Prevalence typically ~50% (higher than standard TAAs)

# VBI-1901:
# Ongoing Phase 1/2a Study in rGBM

# Ongoing Phase 1/2a Study Design & Objectives

## Two-part, open-label, dose escalation study designed to assess the safety, tolerability, and optimal therapeutic dose level of VBI-1901 in recurrent GBM patients

### Phase 1 (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

### Phase 2a (Part B) : Extension Phase – Recurrent GBM (1st recurrence 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 : 2 partial responses + 2 stable disease observed

*VBI-1901 + GSK's AS01 adjuvant:*

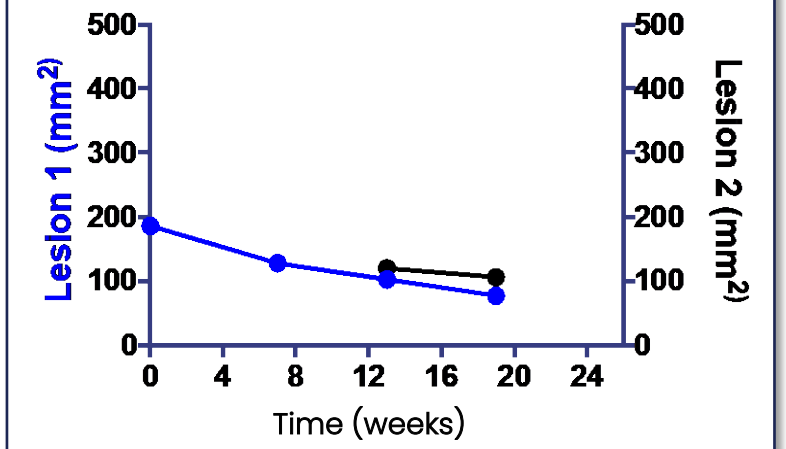
- Enrollment completed October 2020 (n=10)
- Tumor Responses : 5 stable disease observed

ClinicalTrials.gov Identifier : NCT03382977

# Encouraging Tumor Responses, Survival Benefit, & Safety Observed in Phase 1 (Part A)

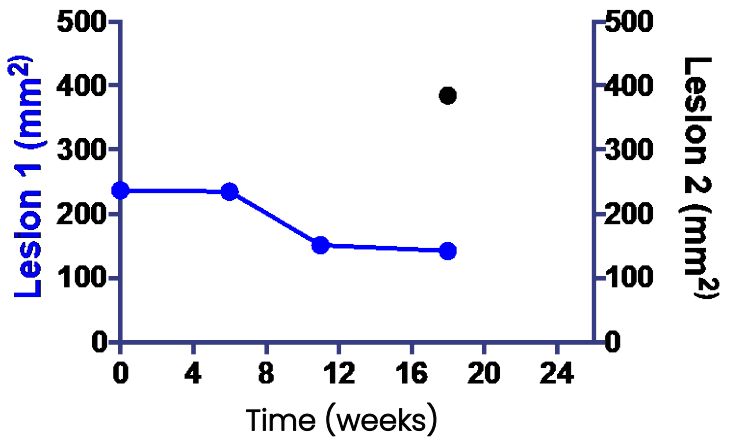
## 3/6 patients in the high-dose (10µg) cohort had evidence of stable disease (SD) by MRI, compared to 1/6 and 0/6 in the low-dose and intermediate-dose cohorts

### Patient 03-006



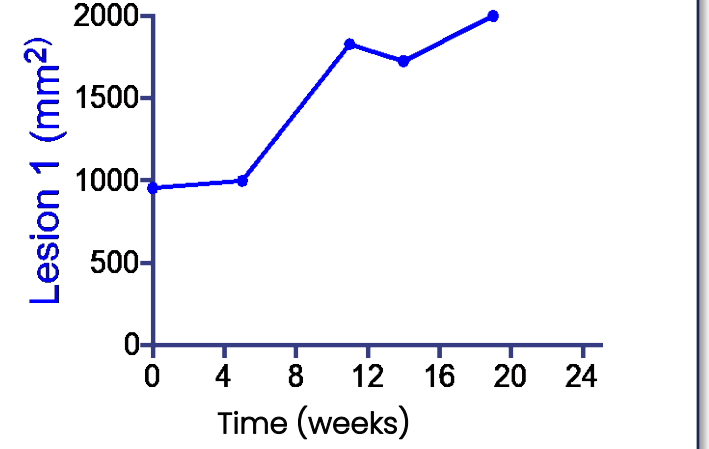

- ~60% reduction in primary tumor
- New tumor (black) prevented PR designation

### Patient 03-004




- >50% reduction in primary tumor
- New tumor (black) prevented PR designation

### Patient 03-003



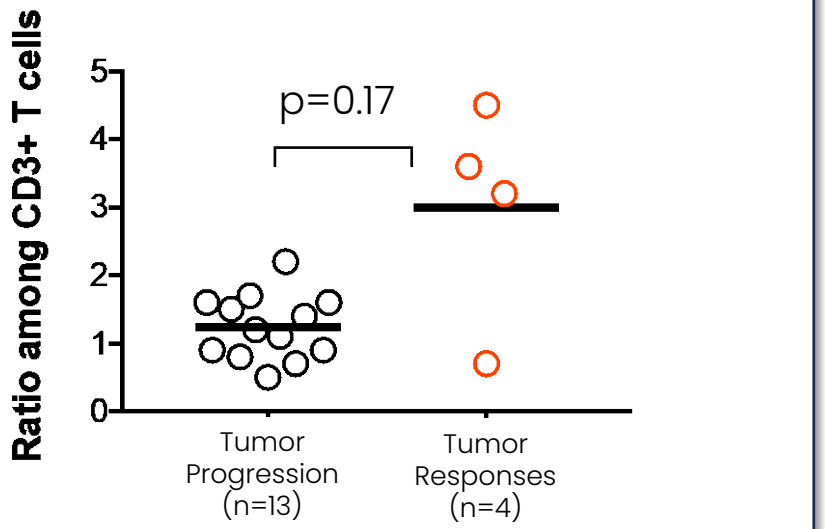

- Presumed immune infiltration into tumor (pseudoprogression)

VBI-1901 was safe and well-tolerated, with no vaccine-associated SAES or evidence of vaccine-induced cerebral edema observed

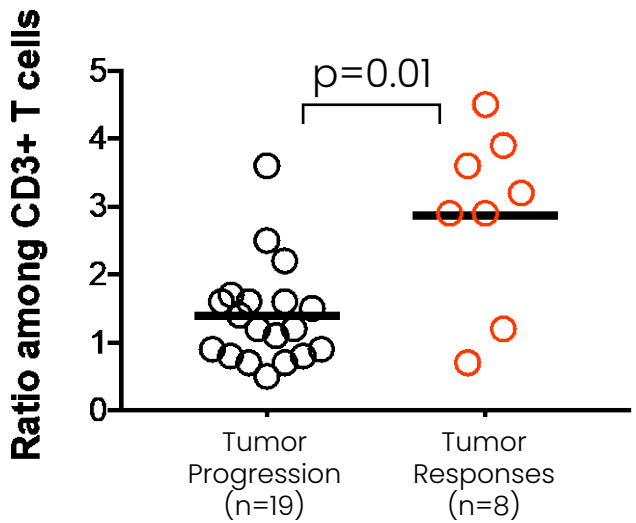
# Can a Baseline Biomarker Be Identified Associated With Those Patients Responding to VBI-1901 Treatment?

## Baseline CD4/CD8 T cell ratio captures immunological fitness of patient, enabling response to VBI-1901 + GM-CSF

**Phase 1 (Part A)**
**CD4/CD8 T Cell Ratio**




**Phase 1/2 (Parts A & B)**
**CD4/CD8 T Cell Ratio**




Part A of Trial

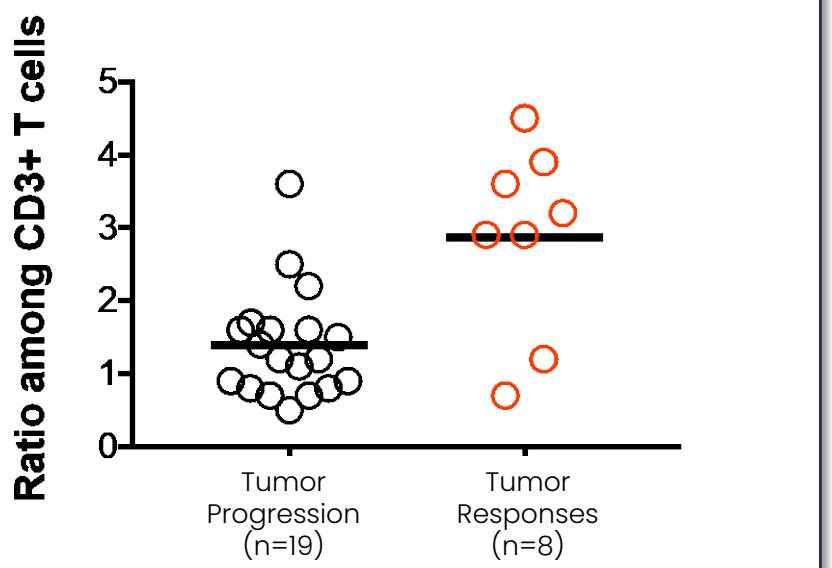
Normal CD4/CD8 ratio: median overall survival (mOS) = 409 days

Reduced CD4/CD8 ratio: mOS = 260 days

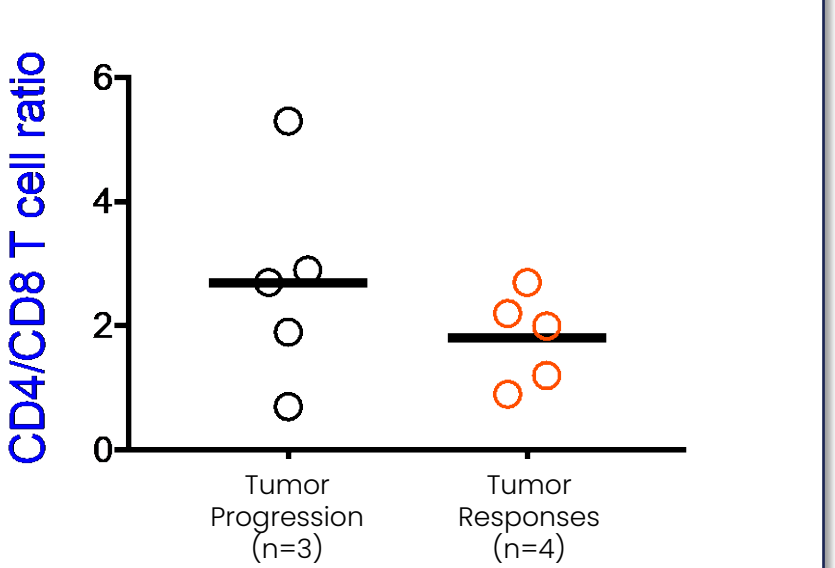
# Baseline CD4/CD8 Ratio is Not Associated with Those Patients Responding to VBI-1901 Treatment with $AS01_B$

$AS01_B$ may help overcome deficits in immune fitness (low CD4/CD8 ratio)

VBI-1901 + GM-CSF
CD4/CD8 T Cell Ratio



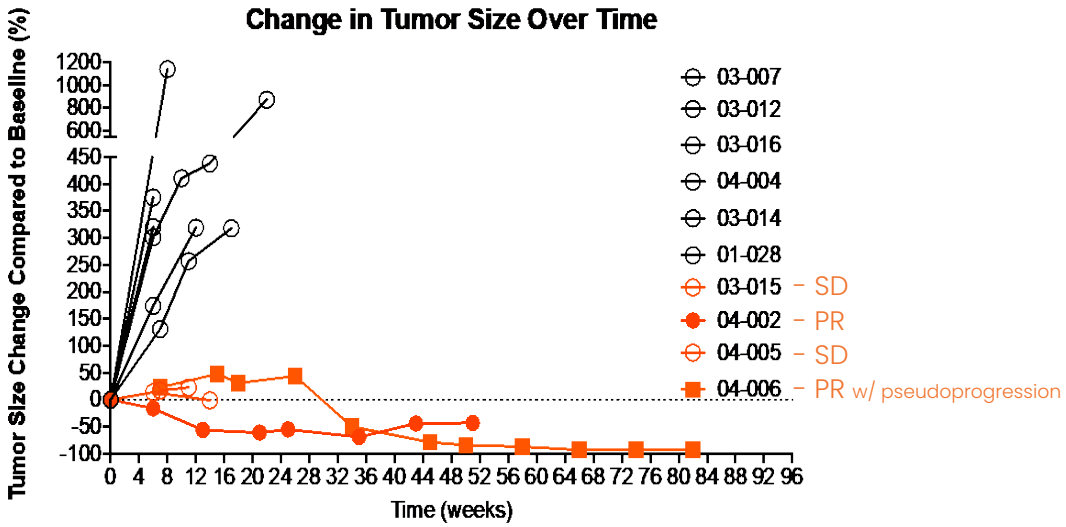

VBI-1901 + $AS01_B$
Baseline CD4/CD8 T Cell Ratio



# Phase 2a (Part B) : Tumor Response Data

## VBI-1901 10µg + GM-CSF[1]

Disease Control Rate : 40% (n=4/10)

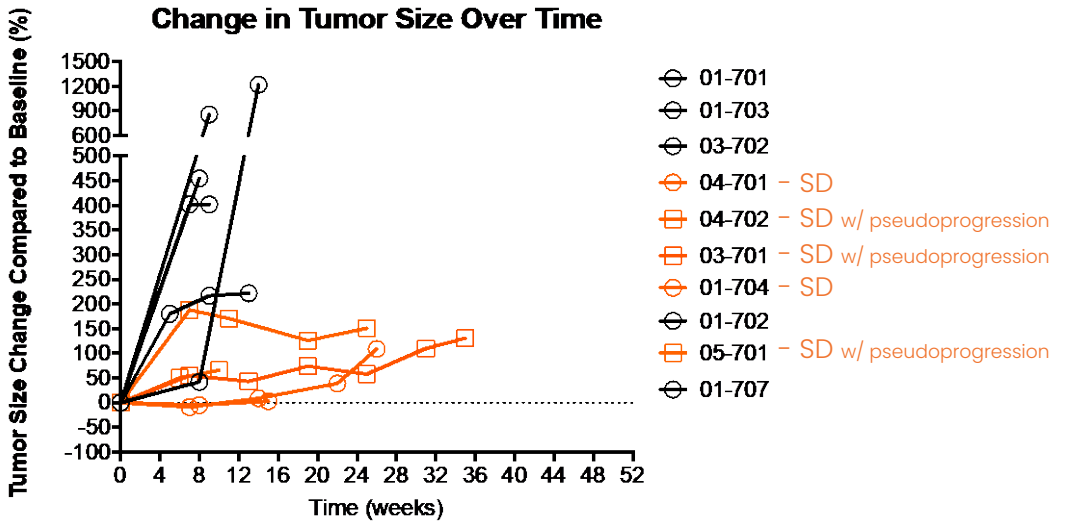



Tumor Responses :

- ✓ 2 Partial Responses (PRs)*
- ✓ 2 Stable Disease (SD)

## VBI-1901 10µg + AS01[1]

Disease Control Rate : 56% (n=5/9)




Tumor Responses :

- ✓ 5 Stable Disease (SD)

**Disease Control Rate** = Stable Disease (SD) + Partial Response (PR) + Complete Response (CR)

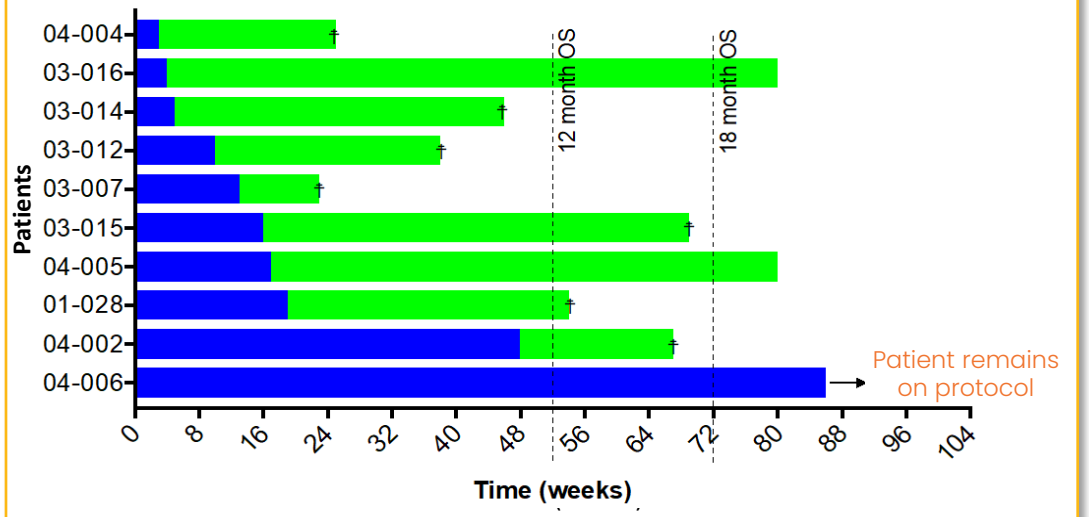
⊖ – No tumor response

Source: [1]World Vaccine & Immunotherapy Congress 2021; December 1, 2021 (VBI presentation); *Tumor responses in glioblastoma patients are classified according to the Response Assessment in Neuro-Oncology (RANO) criteria, which defines a partial response (PR) as a greater than 50% reduction in the sum of products of perpendicular diameters of all measurable enhancing lesions compared with the baseline, sustained for at least four weeks, with no new lesions or clinical progression of disease

# Phase 2a (Part B) : Clinical Outcomes

Based upon Phase 1/2a study data, U.S. FDA granted Fast Track Designation for VBI-1901 + GM-CSF for the treatment of recurrent GBM patients with first tumor recurrence

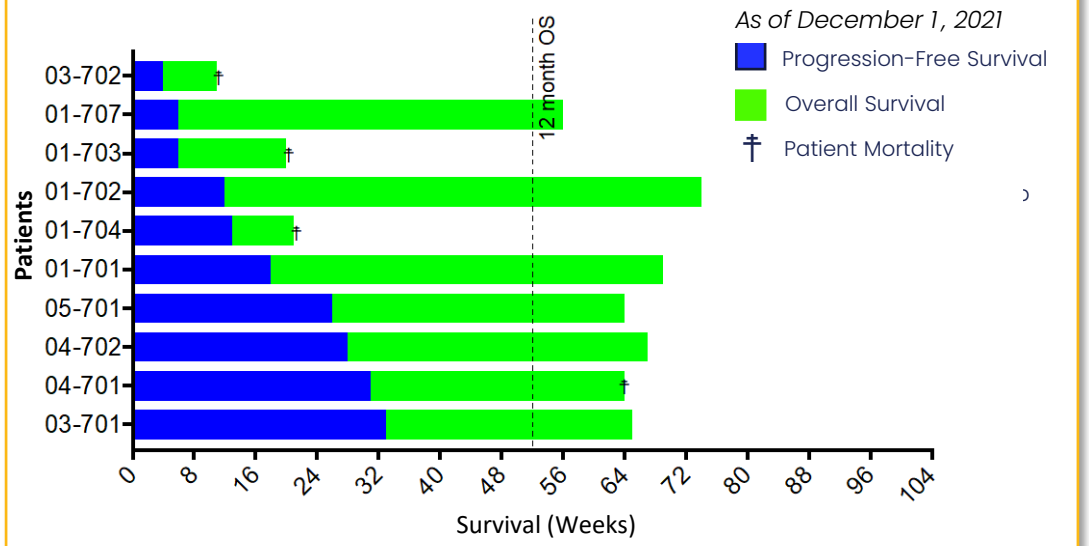
## VBI-1901 10µg + GM-CSF[1]




Overall Survival (OS):

- ✓ 12-month : 60% (n=6/10)
- ✓ 18-month : 30% (n=3/10)

## VBI-1901 10µg + AS01[1]




Overall Survival (OS):

- ✓ 12-month : 70% (n=7/10)
- • 18-month OS not yet reached

Historical control data have demonstrated 6-month and 12-month OS to be ~60% and ~30%, respectively, after treatment with a monotherapy[2]

Sources: [1]World Vaccine & Immunotherapy Congress 2021; December 1, 2021 (VBI presentation); [2]Taal W, Oosterkamp HM, Walenkamp AME, et al. Single-agent bevacizumab or lomustine versus a combination of bevacizumab plus lomustine in patients with recurrent glioblastoma (BELOB trial): a randomized controlled phase 2 trial. Lancet Oncol. 2014; 15: 943-953

# Summary of CMV-Specific GBM Immunotherapeutic Candidate, VBI-1901

## VBI-1901 has demonstrated encouraging tumor responses in Phase 1/2a clinical study

- VBI-1901 + GM-CSF : **Phase 1/2a Preliminary Conclusions**
  - VBI-1901 + GM-CSF is safe and well tolerated
  - 7/16 tumor responses in patients receiving high dose of VBI-1901 + GM-CSF (Parts A & B of the study)
    - Two subjects experienced a Partial Response (>50% reduction)
    - Two others experienced 50% reduction in primary tumor, but new lesions prevented I-RANO designation of Partial Response
  - CD4/CD8 biomarker may identify those most likely to respond & derive benefit from treatment with VBI-1901
- VBI-1901 + $AS01_B$ : **Phase 1/2a Preliminary Conclusions**
  - VBI-1901 + $AS01_B$ is safe and well tolerated
  - 5/10 tumor responses in patients receiving high dose of VBI-1901 + $AS01_B$
    - Three experienced pseudoprogression – strong indication of T-cell migration into tumor microenvironment
  - $AS01_B$ avoids reliance on CD4/CD8 biomarker (potentially increasing number of patients who may benefit)

**Upcoming Milestones**

- Q1 2022 : VBI expects to initiate expansion of ongoing study in recurrent GBM, increasing study size and adding a control arm
- Mid-Year 2022 : VBI expects to evaluate VBI-1901 in the frontline setting as part of the INSIGhT trial, an ongoing adaptive platform clinical study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