UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): March 13, 2023

Sensei Biotherapeutics, Inc.
(Exact Name of Registrant as Specified in its Charter)

Delaware	**001-39980**	**83-1863385**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

451 D Street, Suite 710 **Boston, MA**	**02210**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: (240) 243-8000

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934:

Title of each class	Trading symbol	Name of each exchange on which registered
Common Stock	SNSE	The Nasdaq Stock Market LLC

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 7.01 Regulation FD Disclosure.

Corporate Presentation

On March 13, 2023, Sensei Biotherapeutics, Inc. (the "Company") updated its corporate presentation for use in meetings with investors, analysts and others. A copy of the presentation is furnished as Exhibit 99.1 to this Current Report on Form 8-K.

Silicon Valley Bank

The Company informs its investors and analysts that it does not hold cash deposits or securities at Silicon Valley Bank.

The information in Item 7.01 and the exhibit attached hereto are being furnished and shall not be deemed "filed" for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall they be deemed incorporated by reference into any filing under the Exchange Act or the Securities Act of 1933, as amended, whether filed before or after the date hereof and regardless of any general incorporation language in such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Exhibit Description
99.1	Sensei Biotherapeutics, Inc. corporate presentation, dated March 2023
104	The cover page from this Current Report on Form 8-K, formatted in Inline XBRL

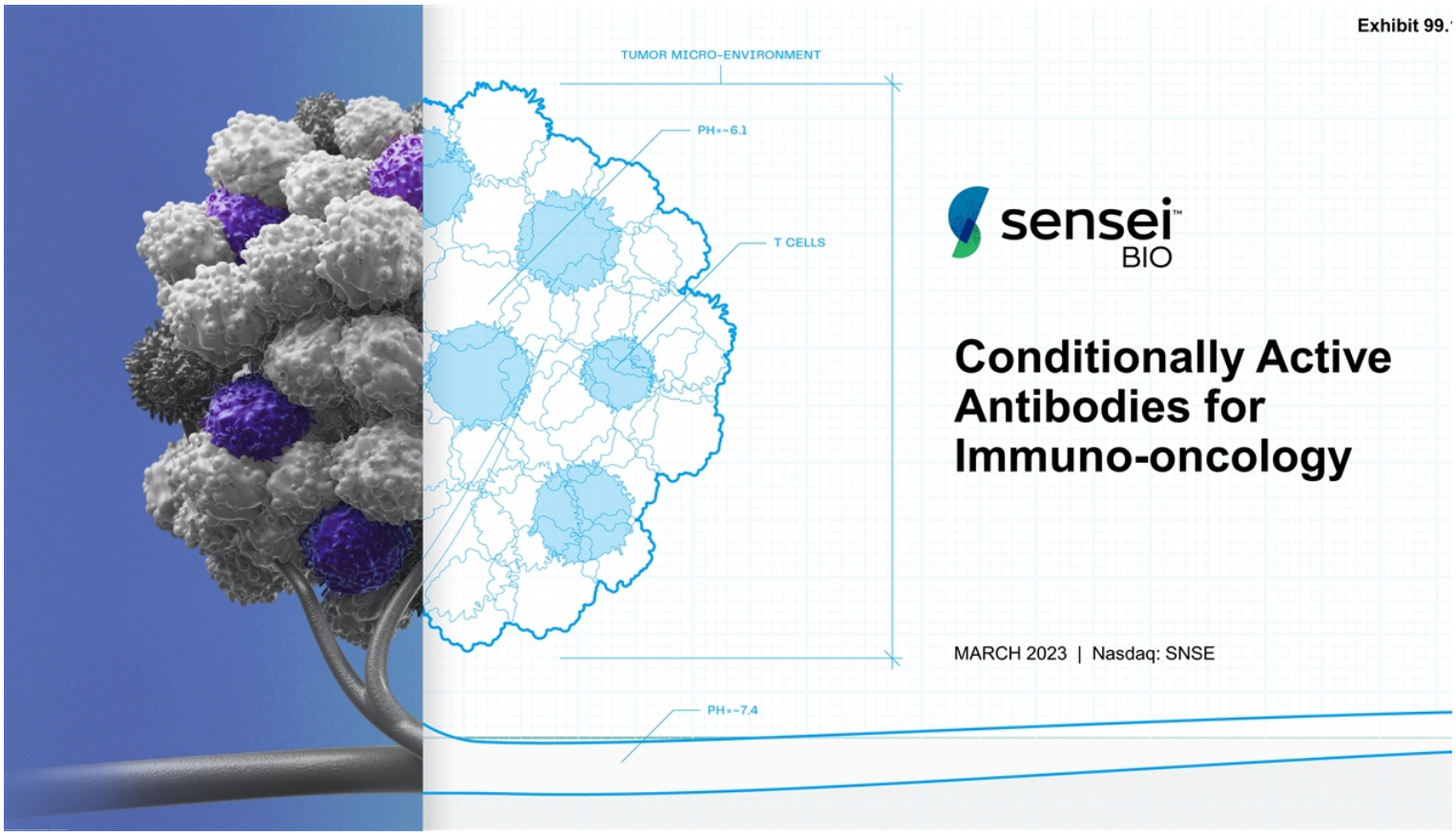
SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Sensei Biotherapeutics, Inc.

Date: March 13, 2023

/s/ Christopher W. Gerry
Christopher W. Gerry
General Counsel and Secretary

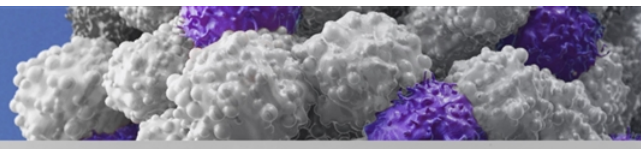


sensei BIO

Conditionally Active Antibodies for Immuno-oncology

MARCH 2023 | Nasdaq: SNSE

Disclaimer



This presentation has been prepared by Sensei Biotherapeutics, Inc. (the “Company,” "we," "us") and is made for informational purposes only. The information set forth herein does not purport to be complete or to contain all of the information you may desire. Statements contained herein are made as of the date of this presentation unless stated otherwise, and neither the delivery of this presentation at any time, nor any sale of securities, shall under any circumstances create an implication that the information contained herein is correct as of any time after such date or that information will be updated or revised to reflect information that subsequently becomes available or changes occurring after the date hereof.

This presentation contains estimates and other statistical data made by independent parties and by us relating to market shares and other data about our industry. This presentation also contains "forward-looking" statements as that term is defined in the Private Securities Litigation Reform Act of 1995 that are based on our management's beliefs and assumptions and on information currently available to management. These forward-looking statements include, without limitation, expectations regarding the development of our product candidates and platforms, the availability of data from our preclinical studies, the timing of selection of product candidates, the timing of IND submissions to the FDA, and our belief that our existing cash and cash equivalents will be sufficient to fund our operations at least into the second half of 2025.

When used in this presentation, the words and phrases "designed to," "may," "believes," "intends," "seeks," "anticipates," "plans," "estimates," "expects," "should," "assumes," "continues," "could," "will," "future" and the negative of these or similar terms and phrases are intended to identify forward-looking statements. Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Risks and uncertainties that may cause actual results to differ materially include uncertainties inherent in the development of therapeutic product candidates, such as preclinical discovery and development, conduct of clinical trials and related regulatory requirements, our reliance on third parties over which we may not always have full control, and other risk and uncertainties that are described in our Quarterly Report on Form 10-Q filed with the SEC on or about November 8, 2022 and our other Periodic Reports filed with the SEC. Forward-looking statements represent our management's beliefs and assumptions only as of the date of this presentation and include all matters that are not historical facts. Our actual future results may be materially different from what we expect. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in the forward-looking statements, even if new information becomes available in the future.

Certain information contained in this presentation relates to, or is based on, studies, publications, surveys and other data obtained from third-party sources and the Company's own internal estimates and research. While the Company believes these third-party sources to be reliable as of the date of this presentation, it has not independently verified, and makes no representation as to the adequacy, fairness, accuracy or completeness of, any information obtained from third-party sources. In addition, all of the market data included in this presentation involves a number of assumptions and limitations, and there can be no guarantee as to the accuracy or reliability of such assumptions. Finally, while we believe our own internal research is reliable, such research has not been verified by any independent source.

sensei™ BIO

Engineered Selectivity to Extend the Reach of Immuno-oncology Agents

*Consists of cash, cash equivalents and marketable securities

Innovative Pipeline of IO Drugs with Broad Commercial Potential

Program (Target)	Indication	Discovery	IND-enabling	Phase 1 / 2 Clinical
SNS-101* (VISTA)	Solid Tumors			
SNS-102 (VSIG4)	Solid Tumors			
SNS-103 (ENTPDase1/CD39)	Solid Tumors			

NIH NATIONAL CANCER INSTITUTE

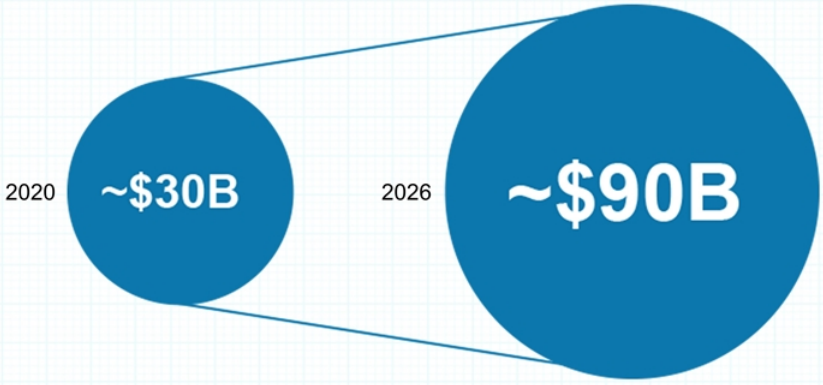
*Sensei has entered into a Cooperative Research and Development Agreement (CRADA) with the National Cancer Institute. The goal of this collaborative effort is to further elucidate the role of VISTA in immune checkpoint resistance and expand the potential of SNS-101 as a combination therapy beyond anti-PD-1.

REGENERON

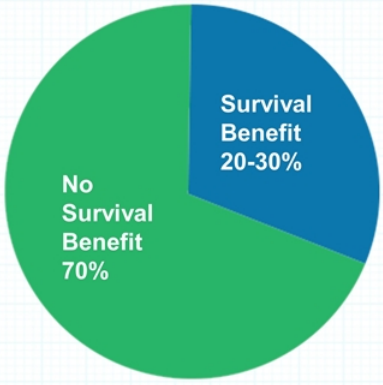
*Sensei has entered into a clinical supply agreement with Regeneron supporting the planned evaluation of SNS-101 in combination with Regeneron's anti-PD-1 therapy Libtayo® (cemiplimab) in a Phase 1/2 clinical trial in solid tumors.

The Modern-Day Challenge in Immuno-Oncology

The PD-1/PD-L1 market is big and growing fast[1]



PD-1/PD-L1 monotherapy does not benefit 70% of patients[2]



1. Gerber et al., Biochemical Pharmacology 2016
2. Market estimates from PD-1 and PDL-1 Inhibitors Market Size in 2021 – MarketWatch, 360 Research

Lack of Selectivity is a Major Obstacle to CI Innovation

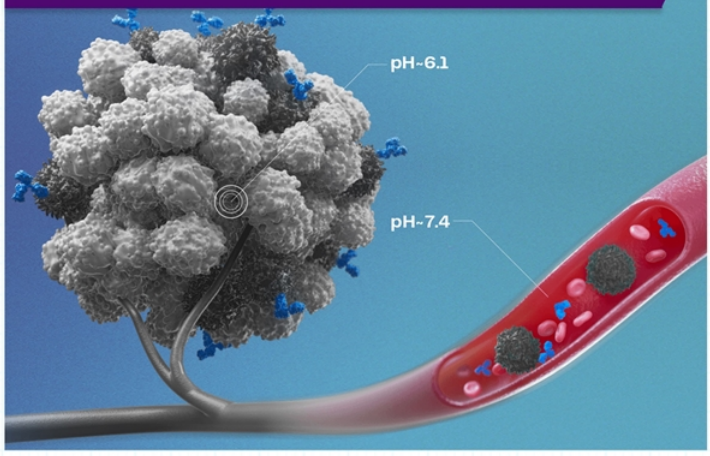
Industry Problem	Sensei's Solution
Conventional antibodies target immune checkpoints that are highly expressed in normal tissues, resulting in:	**Conditionally active antibodies are selectively targeted to the tumor microenvironment, potentially providing:**
Dose-limiting toxicities due to on-target/off-tumor action	Little or no toxicity due to selective on-target/on-tumor action
Pharmacological sink effect requires higher and more frequent dosing	Lower and less frequent doses by avoiding normal tissue binding
Suboptimal activity due to poor PK and dose-limiting toxicities	Powerful activity selectively focused on the tumor microenvironment

Only one new checkpoint inhibitor has been approved since the original CTLA-4 and PD-1/PD-L1 group

pH-sensitive Antibodies Have Potential to Selectively Bind Their Targets in the Low-pH Tumor Microenvironment

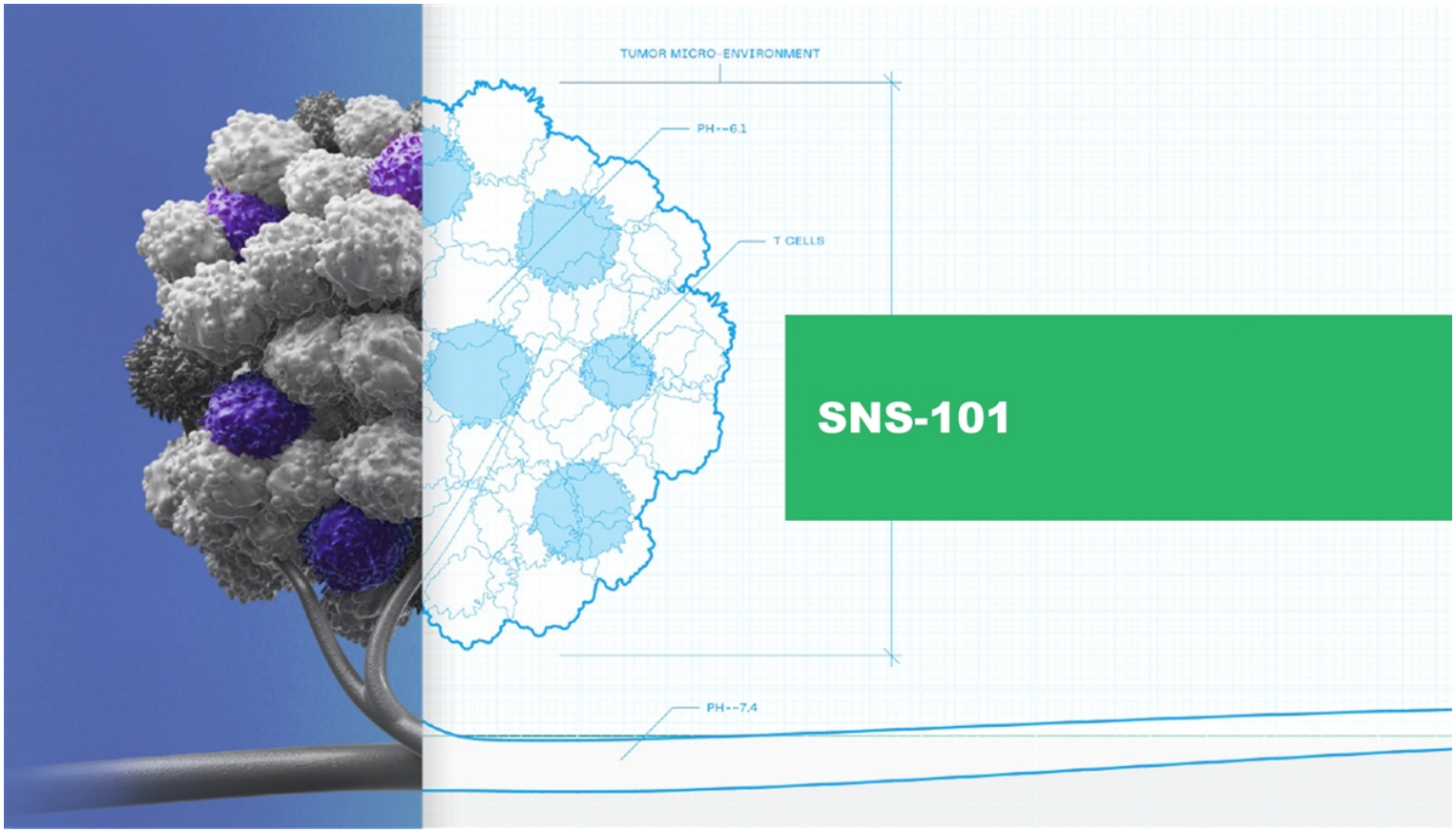
TMAb Platform

The tumor microenvironment of pH ~6 is lower than physiological pH of 7.4



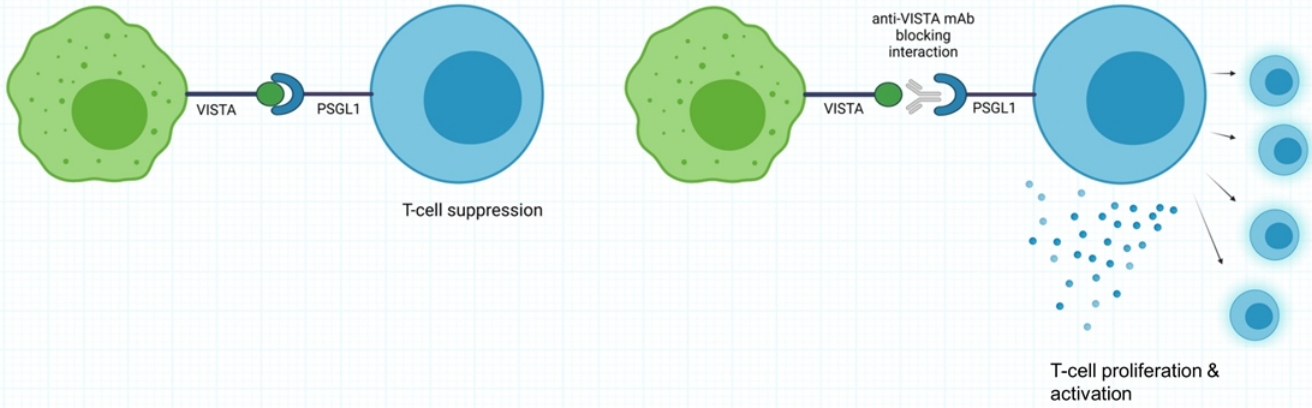
Sensei's technology identifies pH-sensitive antibodies designed to bind only at the tumor

- Exploits the tumor microenvironment using pH-selective properties
- Intended to alleviate undesirable properties:
  - Dose-limiting toxicities due to on-target/off-tumor binding
  - Higher and more frequent dosing due to poor pharmacokinetics (Target-mediated Drug Disposition (TMDD))
- Bolsters specific activities
- Goal is to unlock previously undruggable immune targets


TUMOR MICRO-ENVIRONMENT
PH~6.1
T CELLS
PH~7.4
SNS-101

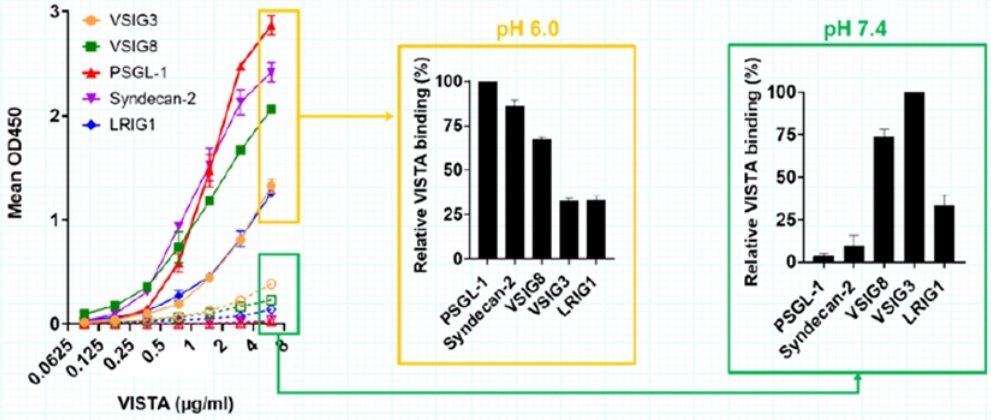
VISTA: A Potent T cell Checkpoint Extensively Expressed on Myeloid Cells[1]

VISTA is a B7 family member that suppresses T cell function



1. Lines et al. Cancer research vol. 74,7 (2014)

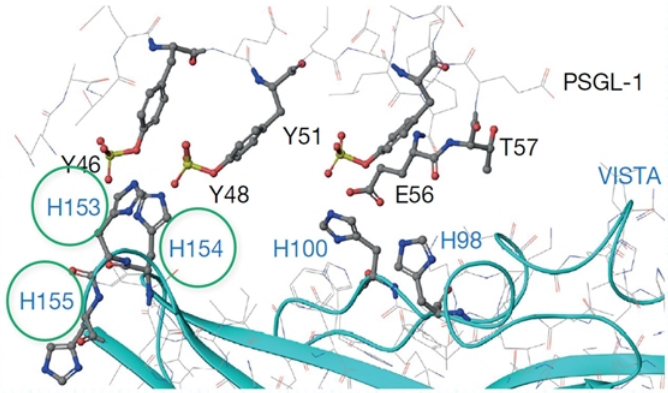
The VISTA:PSGL-1 Interaction is Selective for low pH



VISTA Checkpoint is Activated at the Low pH of the Tumor Microenvironment

VISTA extracellular domain is uniquely rich in histidines[1]

Protonated VISTA histidines are required for PSGL-1 binding[1]



1. Johnston et al., Nature 2019

SNS-101: Selectively Targeting VISTA with a pH-sensitive Antibody

Key features

- Selectivity for Active VISTA^{pH6} over VISTA$^{pH7.4}$
- Designed to block VISTA's interaction with PSGL-1 and all other T-cell receptors at pH 6.0
- IgG1 format
- Active Fc

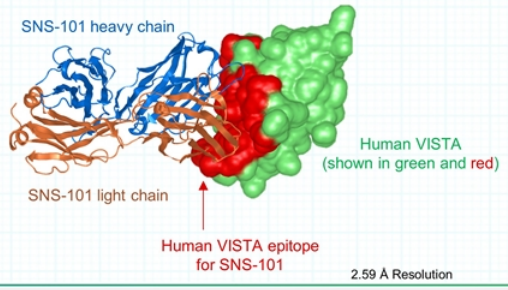
Development milestones

- Multi-dose Non-Human Primate (NHP) PK & Toxicology data expected in 1H 2023
- IND submission expected in or prior to April 2023

Monovalent Affinity (K_D) [nM]

pH 6.0	pH 7.4
0.218	132 (~No binding)

Co-Crystal Structure of SNS-101 and VISTA



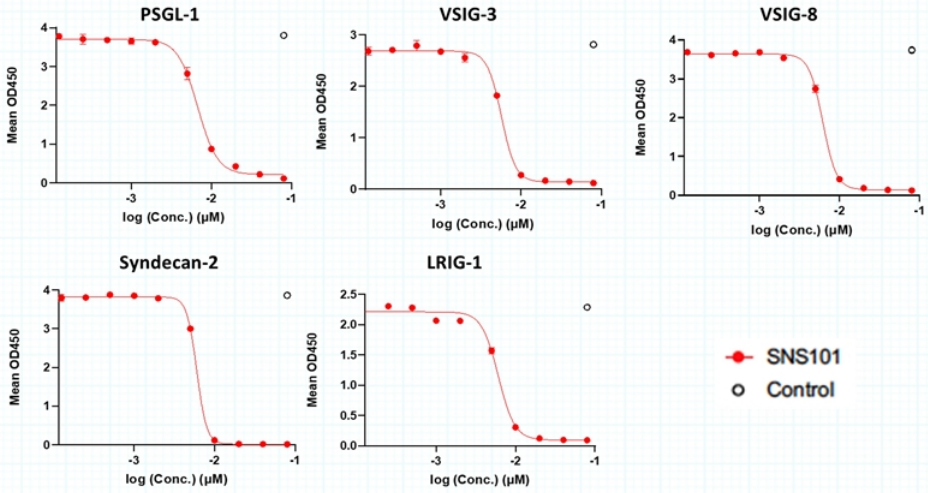
SNS-101 Is a Fully Differentiated Anti-VISTA Antibody

	SNS-101 sensei BIO	CI-8993; JNJ-61610588 (J&J/Curis)	K01401-020; W0180 (Pierre Fabre)	HMBD-002 (Hummingbird)	KVA12.1 (Kineta)	VISTA.18 (BMS)	(PMC-309) Pharm Abcine
Inhibit PSGL-1 Binding	✓	✓	✓	✗	✓	✓	✓
pH Sensitive Binding	✓	✗	✗	✗	✗	✓	✗
Fc Active	✓ (IgG1)	✓ (IgG1)	N/A	✗	✓ (IgG1)	✗ (IgG4)	✓ (IgG1)
Stage	Preclinical	Phase 1	Phase 1	Phase 1	Phase 1	Preclinical	Preclinical

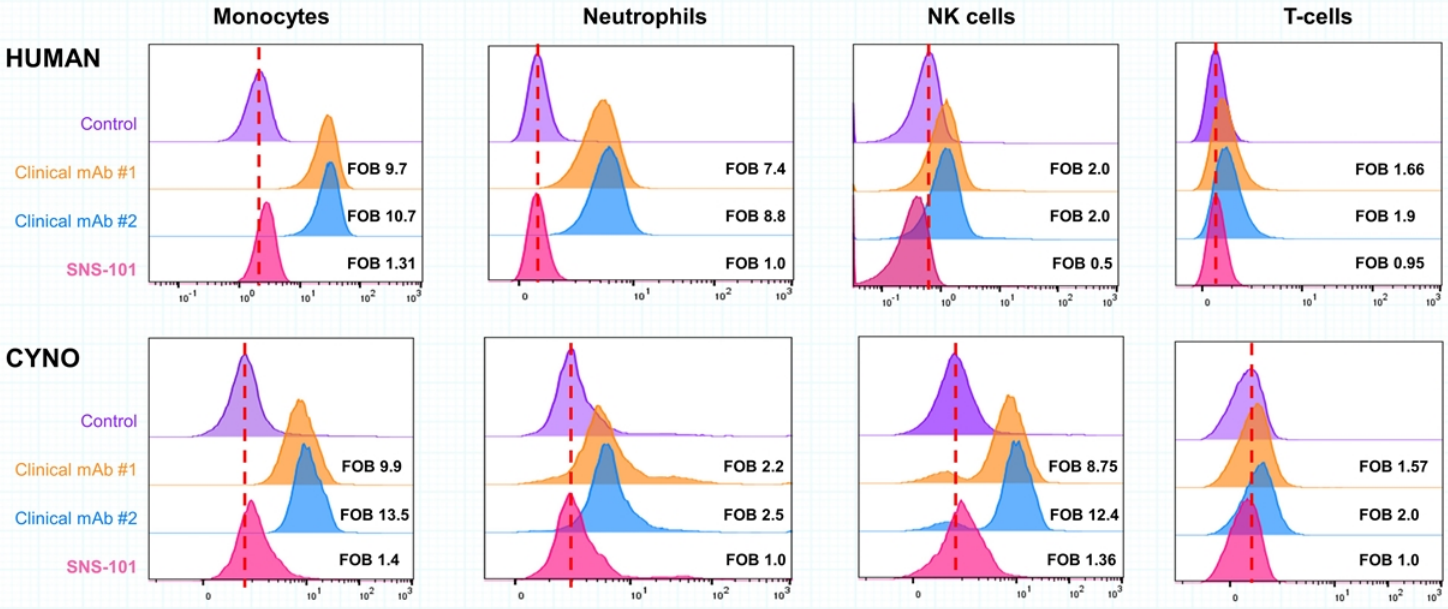
Johnston et al., Nature 2019; Kineta website; Snyder et al, AACR Annual Meeting 2016; Pierre Fabre website; Hummingbird website; Thakkar et al, J of Immunother Cancer, 2022; PharmAbcine website

SNS-101 Strongly Inhibits the VISTA:PSGL-1 Interaction And All Other Potential Binding Partners at pH 6.0 in *In Vitro* Assay

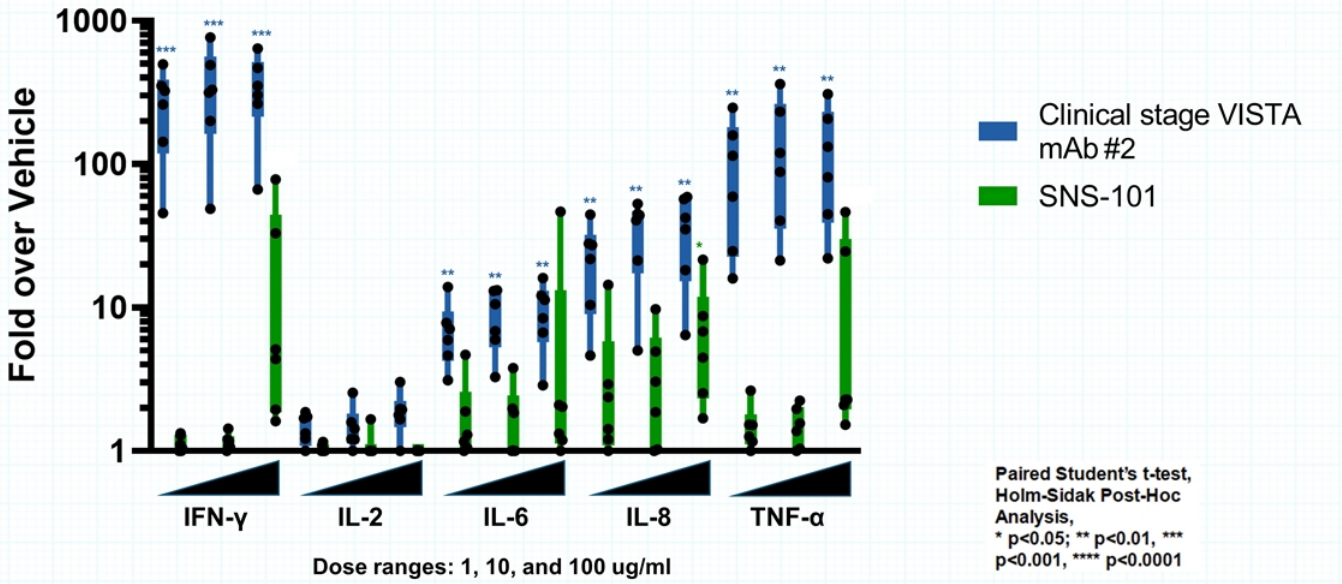
Receptor	IC50 [nM]
PSGL-1	7
VSIG3	6
VSIG8	6
Syndecan-2	6
LRIG1	6



No Significant Binding of SNS-101 to Monocytes, Neutrophils, NK Cells and T-cells in Whole blood at Physiological pH



SNS-101 Induced Substantially Lower Cytokine Release in Whole-blood Assay at Neutral pH Compared to pH-independent VISTA Antibody

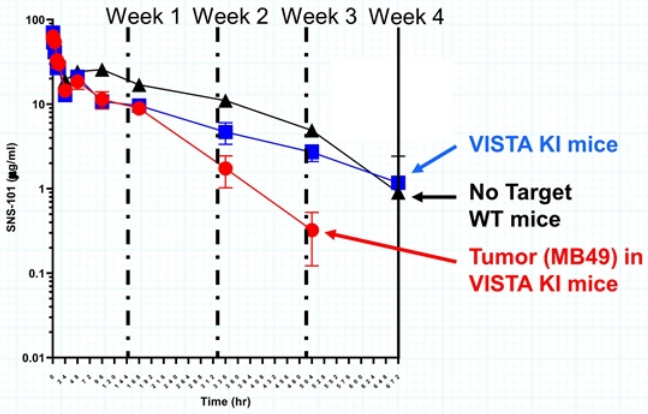


Dose ranges: 1, 10, and 100 ug/ml

Paired Student's t-test, Holm-Sidak Post-Hoc Analysis,
* p<0.05; ** p<0.01, *** p<0.001, **** p<0.0001

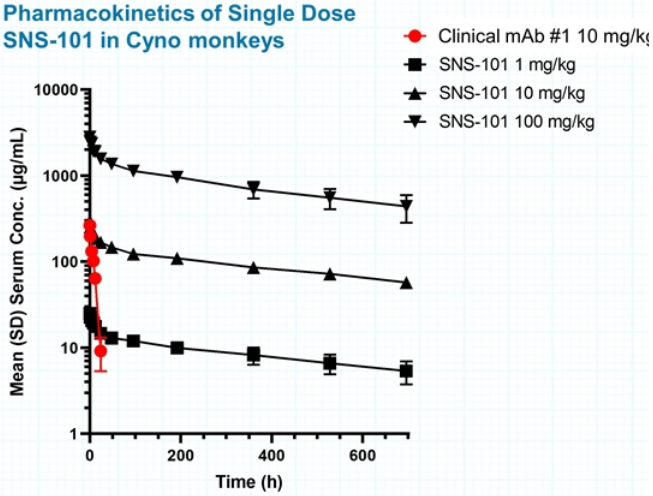
SNS-101 Has Displayed a Favorable Single-dose PK Profile in Preclinical Studies - *No Significant TMDD in Human VISTA KI Mice or Non-human Primates*

Pharmacokinetics of Single Dose 5 mg/kg SNS-101 in VISTA Knock-in Mice



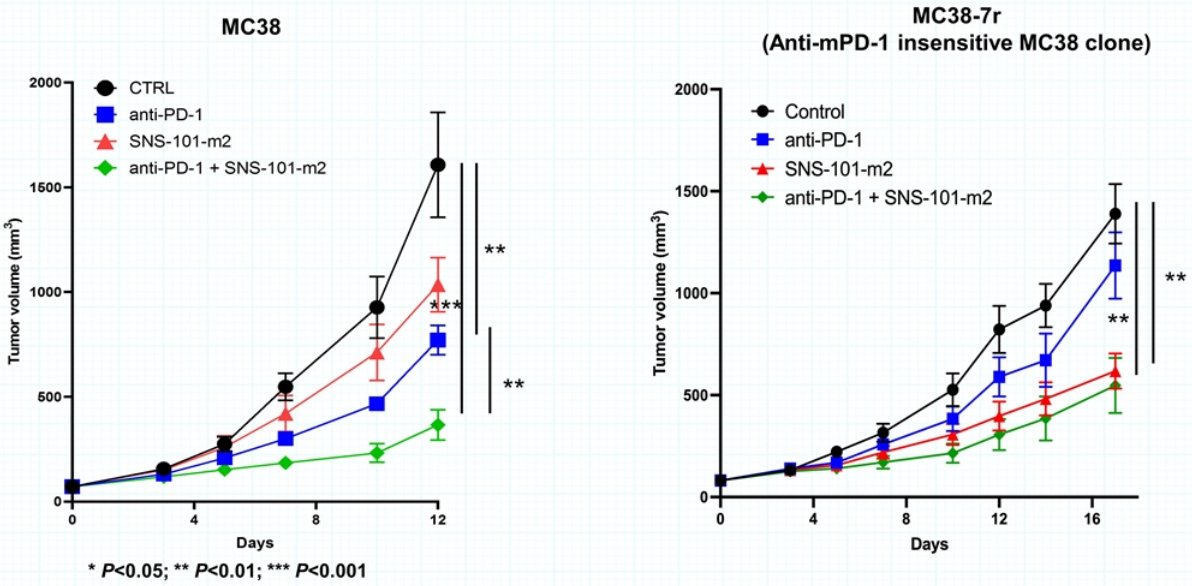
Demonstrated a long mean residence time in the blood, indicating a lack of significant target-mediated drug disposition (TMDD) and clearance in non-malignant tissues

Pharmacokinetics of Single Dose SNS-101 in Cyno monkeys



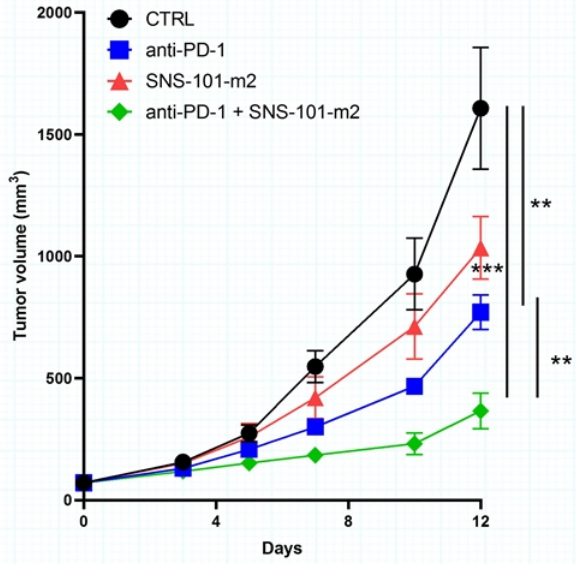
SNS-101 displays linear elimination kinetics unlike a pH-independent anti-VISTA mAb, which demonstrates TMDD and rapid clearance

SNS-101 Drove Single-agent Activity and Deepened Anti-tumor Responses to PD-1 in Human VISTA KI Mice

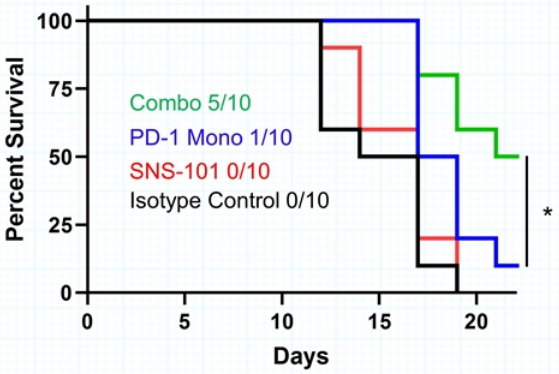


* *P*<0.05; ** *P*<0.01; *** *P*<0.001

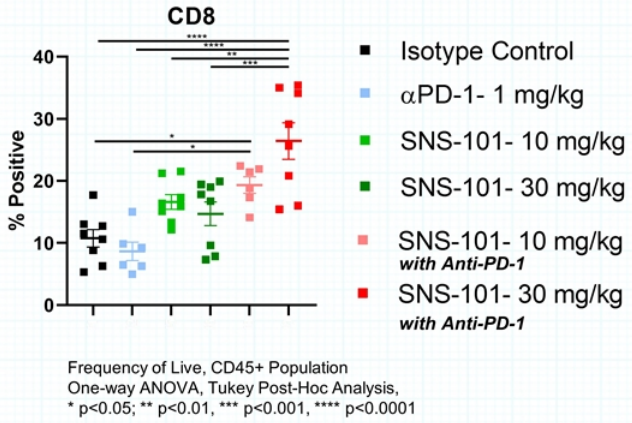
SNS-101 with Anti-PD-1 Demonstrated Strong Combinatorial Anti-tumor Activity in MC38 Model in Human VISTA Knock-in Mice



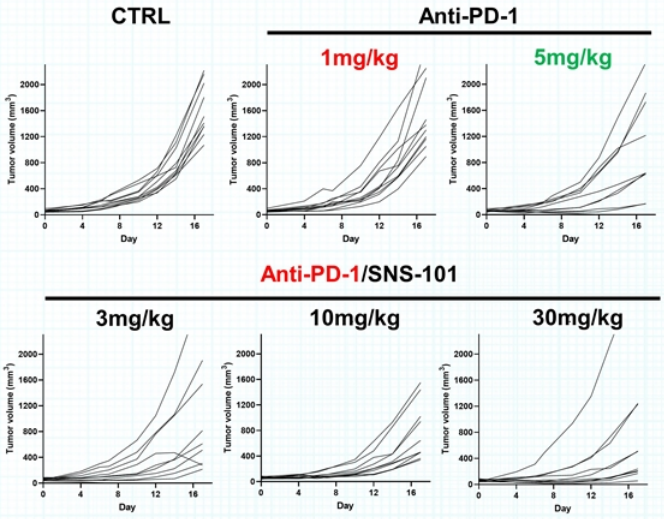
* *P*<0.05; ** *P*<0.01; *** *P*<0.001



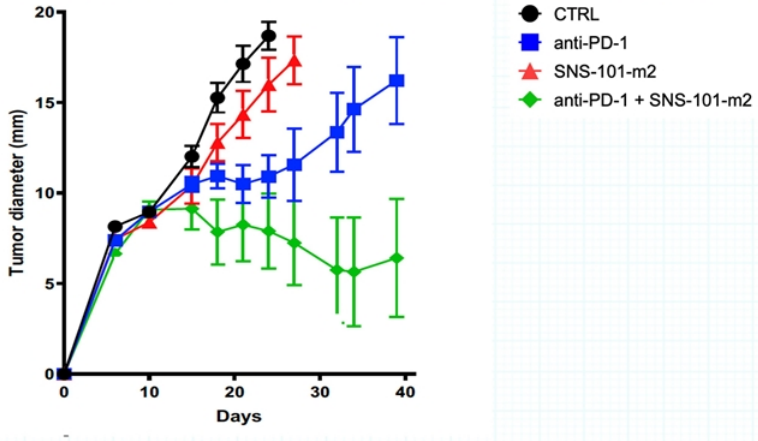
SNS-101 Increased CD8 T-cells in Combination With Anti-PD-1 in MC38 Tumors *In Vivo*

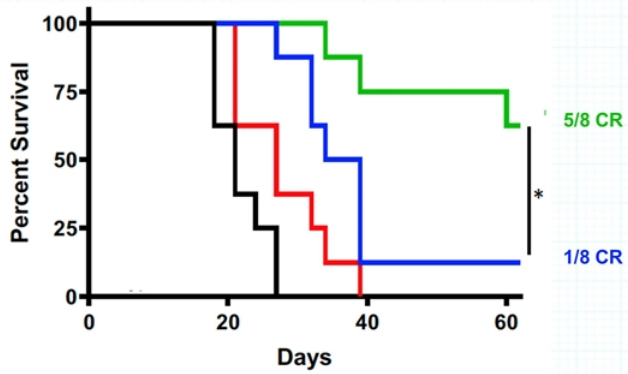


Frequency of Live, CD45+ Population
One-way ANOVA, Tukey Post-Hoc Analysis,
* p<0.05; ** p<0.01, *** p<0.001, **** p<0.0001



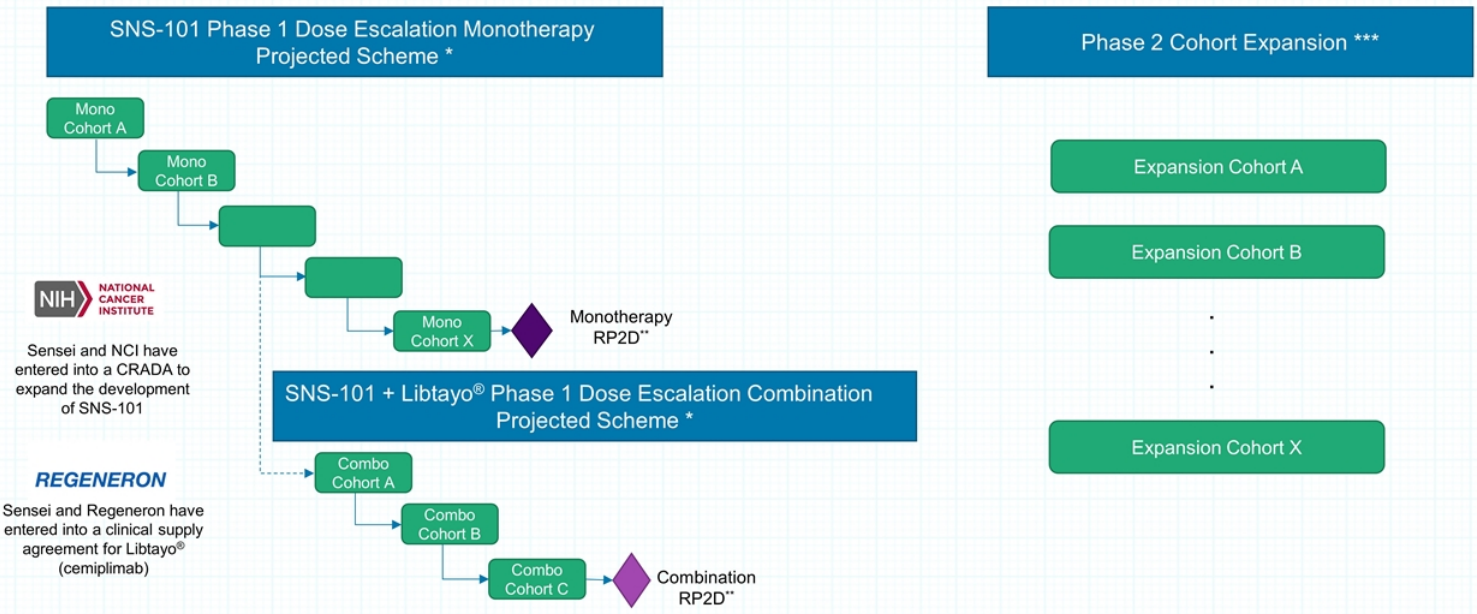
SNS-101 Re-sensitized Anti-PD-1 Insensitive Sarcoma Tumors in Human VISTA Knock-in Mice





* p<0.05

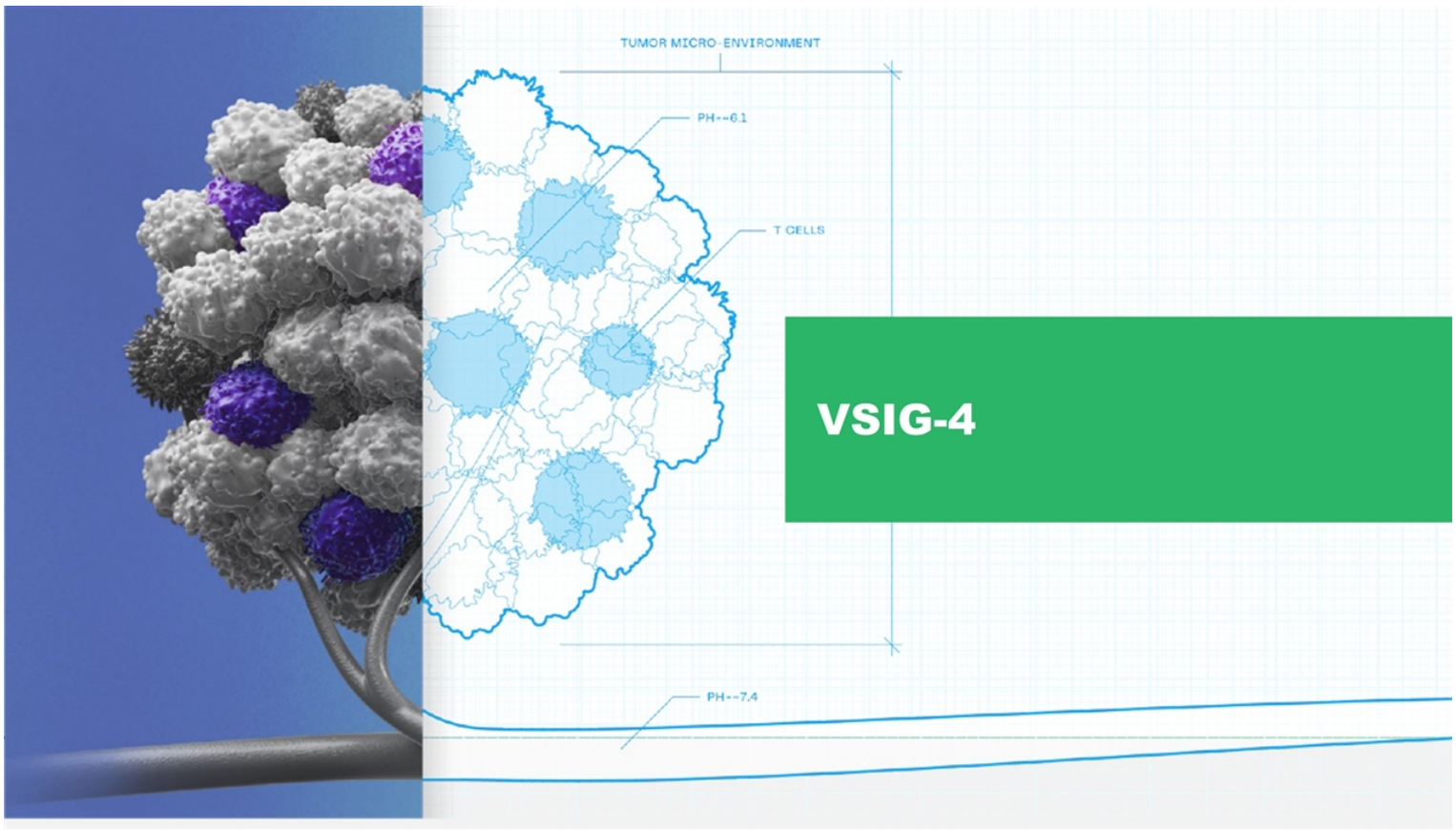
Preliminary SNS-101 Phase 1/2 Study Schematic



sensei BIO

* Phase 1/2 study design is preliminary and subject to change, including based on feedback from the FDA following submission of IND.
** RP2D = Recommended Phase 2 Dose

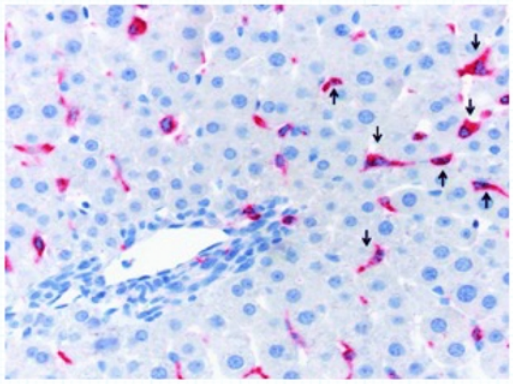
*** Tumor types, indication and samples size to be determined based on findings from dose-escalation phase and emerging scientific data; cohorts may run concurrently.



VSIG-4

VSIG4 is an Immunosuppressive Receptor with On-Target, Off-Tumor Challenges

Tissue macrophages (Kupffer cells) in liver

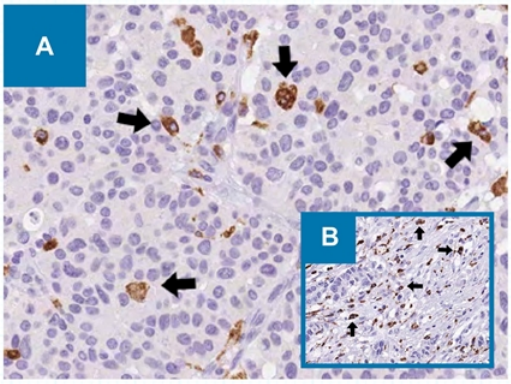


In the liver, VSIG-4 …

Is expressed on Kupffer cells[1-2]

Appears to drive significant target-mediated drug disposition (TMDD) and clearance

Tumor-associated macrophages in tumor and stroma (inset)



In the tumor microenvironment, VSIG-4 …

Correlates with immunosuppressive "M2" macrophage infiltration[3]

Inhibits T cell activation[4]

Promotes tumor growth based on data from a syngeneic Lewis lung carcinoma model in knockout mice[5]

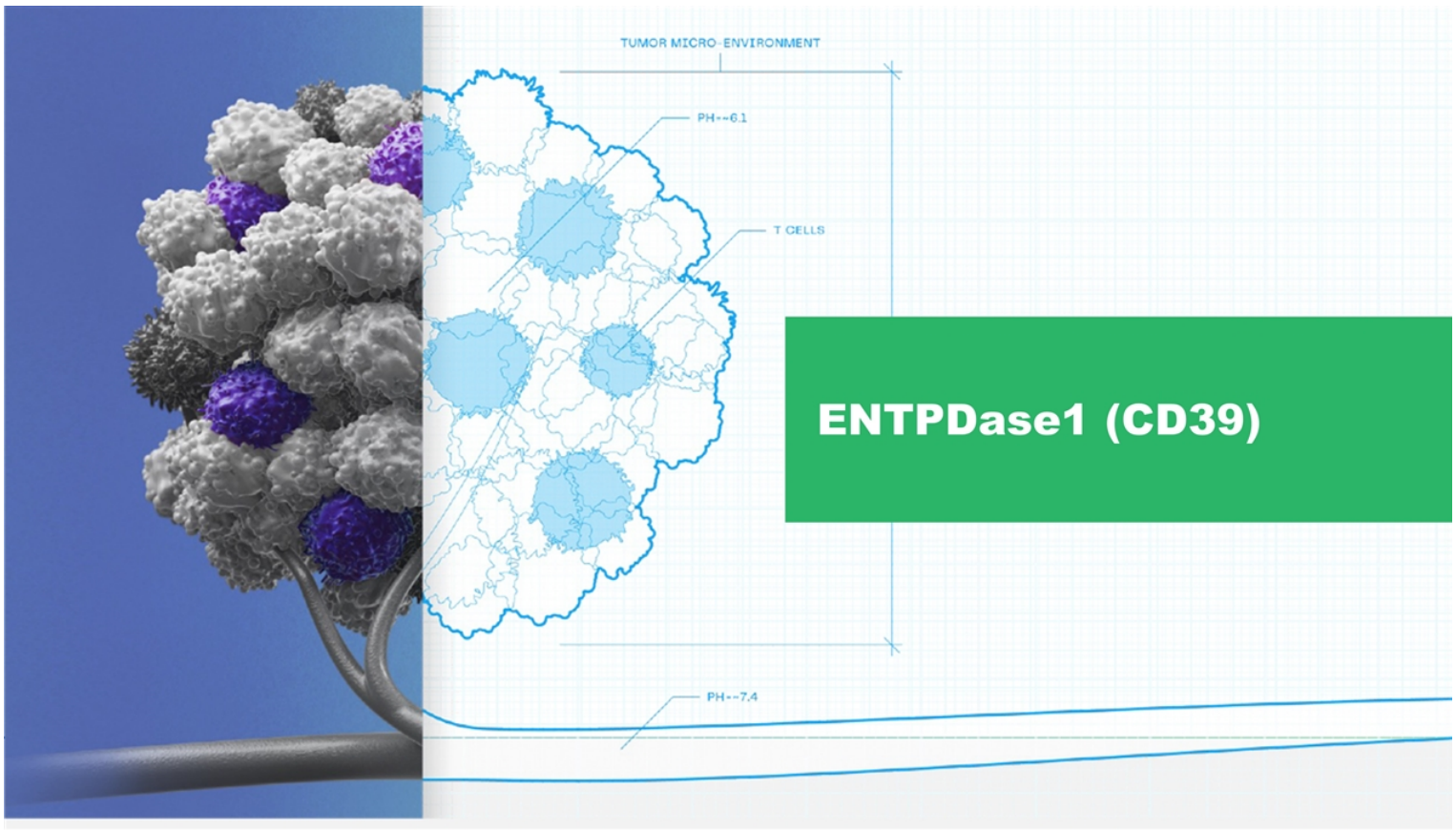
Sensei Has Identified pH-sensitive VSIG4 Antibodies

- Program milestones to date:
  - Identified 8 parental antibodies for optimization and are currently testing progeny antibodies;
  - Identified pH-sensitive antibodies highlighting the potential breadth of the TMAb platform;
  - Identified novel VSIG4 receptors on primary T-cells by Hi-Res proteomics, which are currently in verification stage.
- Plan to select product candidate in 2023

pH-Sensitive VSIG4 Parental Antibodies Selected for Further Optimization

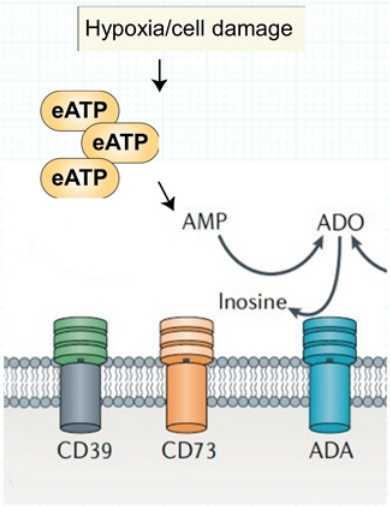
Antibody Reference #	Ratio of pH Selectivity (6.0 vs 7.4)	Blockage of Immobilized VSIG4-T-cell Inhibition	Blockage of Cellular VSIG4-T-cell Inhibition
1	1	+	+
2	7	+	+
3	1	+	+
4	3	+	+
5	3	+/-	+
6	25	+	+
7	1	+	+
8	2	-	+

*** Ratio assessed by flow cytometry on VSIG4 overexpressing cells**



ENTPDase1 (CD39)

ENTPDase1 (CD39) is the Rate Limiting Enzyme in the Production of Immunosuppressive Adenosine



- Primary function is conversion of extracellular ATP / ADP to adenosine, which exerts immunosuppressive properties through binding to A2a/A2b receptors
- Expressed on various immune cells in both tumors and normal tissues
- Development of a TMAb antibody has potential for improved safety and PK profile compared to competitor CD39 mAbs

Figure adapted from: Moesta et al, *Nat Rev Immunol.* 2020; 20 (12)

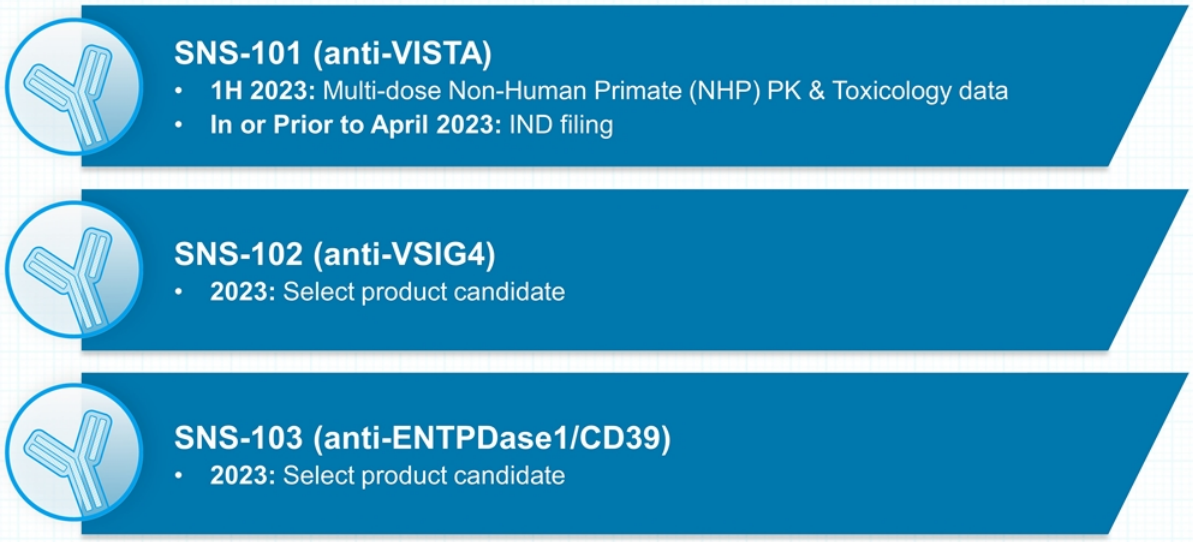
Sensei Has Identified pH-sensitive ENTPDase1 (CD39) Antibodies

- Program milestones to date:
  - Identified 8 parental antibodies for further optimization
  - Identified pH-sensitive parental antibodies for lead optimization
- Plan to select lead product candidate in 2023

pH-Sensitive CD39 Parental Antibodies Selected for Further Optimization

Antibody Reference #	Ratio of pH Selectivity (6.0 vs 7.4)
1	1
2	6
3	4
4	5
5	18
6	1
7	1
8	1

Expected Program Milestones



Engineered Selectivity to Extend the Reach of Immuno-oncology Agents

*Consists of cash, cash equivalents and marketable securities

Proven Team With Deep Experience

John Celebi, MBA
President and CEO

Erin Colgan
Chief Financial Officer

Patrick Gallagher
Chief Business Officer

Edward van der Horst, Ph.D.
Chief Scientific Officer

Christopher Gerry, J.D.
VP, General Counsel

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Appendix

References for Slide 24

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