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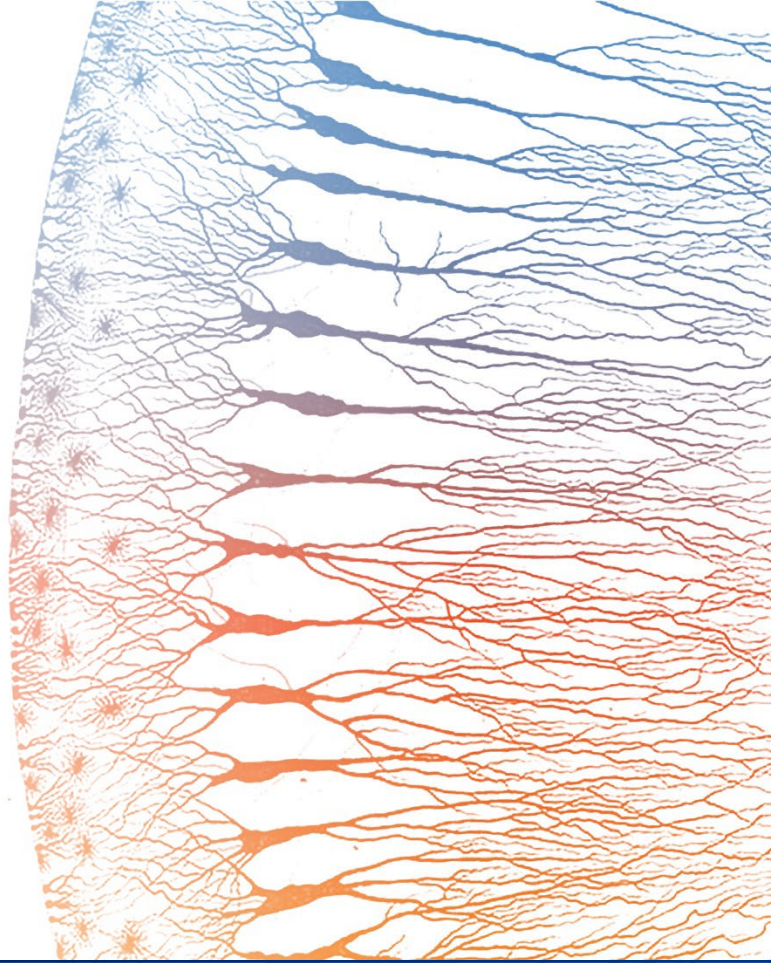
Defining Neurogenetic Medicines

Corporate Deck / February 2024



Forward-Looking Statements

This presentation contains forward-looking statements for the purposes of the safe harbor provisions under The Private Securities Litigation Reform Act of 1995 and other federal securities laws. The use of words such as “may,” “might,” “will,” “should,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “target,” “project,” “intend,” “future,” “potential,” or “continue,” and other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements include, among other things, statements about Voyager’s strategy and ability to become a leader in neurogenetic medicine, expectations for Voyager’s achievement of preclinical and clinical development milestones for its potential development candidates such as IND filings, the initiation of clinical trials, and generation of clinical data and proof-of-concept; Voyager’s ability to enter into new partnerships or research and development collaborations involving its platform technology and product development programs; Voyager’s ability to expand from gene therapy and antibodies into other modalities of neurogenetic medicine; Voyager’s ability to leverage receptors to its TRACER-derived capsid families for the delivery of non-viral neurogenetic medicines to the CNS; Voyager’s ability to generate near term and long term funding through reimbursement, upfront, milestone and royalty based fees (as applicable) under its existing licensing and collaboration agreements, and to obtain data regarding the performance of its TRACER-derived capsid families licensed to its collaborators and partners under such agreements; Voyager’s ability to maintain and advance product development programs under its current partnerships and collaborations; Voyager’s cash runway; and the sufficiency of Voyager’s cash resources. These forward-looking statements are only predictions, and Voyager may not actually achieve the plans, intentions, or expectations disclosed in the forward-looking statements. All forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from those that Voyager expected. Such risks and uncertainties include, among others, the expectations and decisions of regulatory authorities; the timing, initiation and conduct of preclinical studies and clinical trials; the availability of data from clinical trials; the availability or commercial potential of product candidates under collaborations; the willingness and ability of Voyager's collaboration partners to meet obligations under collaboration agreements with Voyager; the continued development of various technology platforms, including Voyager’s TRACER capsid discovery platform; Voyager’s scientific approach and program development progress, and the restricted supply of critical research components; the ability to attract and retain talented contractors and employees, including key scientists and business leaders; the ability to create and protect intellectual property; the sufficiency of cash resources; the possibility and the timing of Voyager’s receipt of program reimbursement, development or commercialization milestones, option exercise, and other payments under Voyager’s existing licensing or collaboration agreements; the ability of Voyager to negotiate and complete other licensing or collaboration agreements on terms acceptable to Voyager and third parties; the success of programs controlled by third party collaboration parties in which Voyager retains a financial interest, and the success of Voyager’s product candidates. These statements are also subject to a number of material risks and uncertainties that are described in Voyager’s most recent Annual Report on Form 10-K filed with the Securities and Exchange Commission, as updated by its subsequent filings with the Securities and Exchange Commission. Any forward-looking statement speaks only as of the date on which this presentation was presented. Voyager undertakes no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law.

Voyager: Emerging as a Leader in Neurogenetic Medicine

NASDAQ: VYGR Investment Highlights

PIPELINE

Pipeline of wholly-owned and partnered neurogenetic medicines, with at least four IND filings expected in 2024/2025[1], potentially generating **clinical data** in 2025/2026.

PLATFORM

Leading platform for CNS gene therapy delivery; multiple capsid families with multi-species data (NHPs, rodent); >50% transduction in multiple brain areas at 2E12 vg/kg in marmosets (ASGCT 2023).

PARTNERSHIPS

Blue-chip partnerships support strong cash position: **runway into 2027**[2], not including $8.2B in potential longer-term milestone payments.

POTENTIAL

Programs in antibodies and gene therapy; potential to expand into other **neurogenetic medicines**. Evaluating potential for identified receptor to enable non-viral transport of molecules across BBB.

[1] Two of these IND filings are pursuant to partnered programs and will be made by our collaboration partners. [2] Based on cash and cash equivalents and marketable securities as of December 31, 2023, as adjusted to give effect to the $100 million received in January 2024 from Novartis and the proceeds of the January 2024 public offering, along with amounts expected to be received as reimbursement for development costs under the Neurocrine and Novartis collaborations, certain near-term milestones, and interest income.

Wholly-Owned Pipeline

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CNS Pipeline Focuses on Validated Targets with High Potential Value

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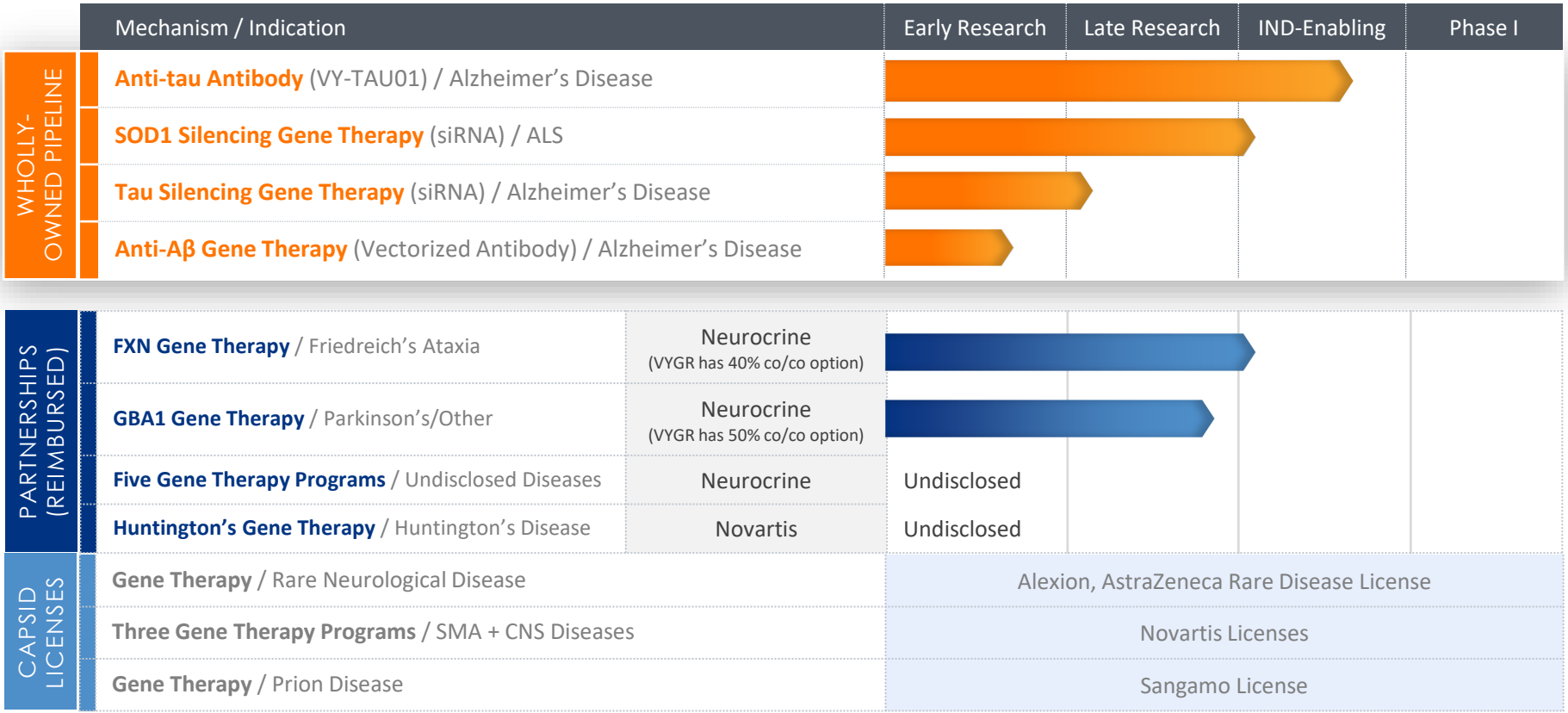

Voyager Has Three Wholly-Owned Programs Targeting Alzheimer's

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HIGH UNMET NEED + COMMERCIAL POTENTIAL

~6 million people in U.S.*

Multiple approaches needed: Like oncology, combination treatment may improve outcomes (i.e., targeting amyloid and/or tau)

VALIDATED TARGETS

Amyloid validated by multiple FDA-approvals for third-parties

Tau pathology closely correlates with disease progression and cognitive decline

POTENTIALLY EFFICIENT PATH TO POB**

Amyloid and Tau PET tracers enable imaging for amyloid and tau pathology and use as clinical trial biomarkers

VY-TAU01 (ANTI-TAU ANTIBODY):

- Targets C-terminal domain. Multiple failed approaches targeted N-terminal; more consistent than mid-domain. IV-delivered antibody inhibited spread of pathological tau by >70% in mouse seeding model (AAIC 2022).
- Lead development candidate selected. GLP tox underway to enable **IND H1 2024**.

TAU SILENCING GENE THERAPY:

- Single IV administration robustly reduced tau mRNA and protein in brain of mice expressing human tau; may complement tau antibody and/or anti-amyloid approaches.
- IND targeted for 2026.

ANTI-Aβ GENE THERAPY:

- Voyager has preliminary data in mice showing vectorized antibody target engagement.
- Early research program.

* Alzheimer's Facts and Figures Report | Alzheimer's Association. https://www.alz.org/alzheimers-dementia/facts-figures

** Proof of Biology

VY-TAU01: Anti-Tau Antibody Designed to Halt Tau Spread and Slow Clinical Decline in Alzheimer's Disease (AD)

~6M Alzheimer's disease patients in the U.S.[1]

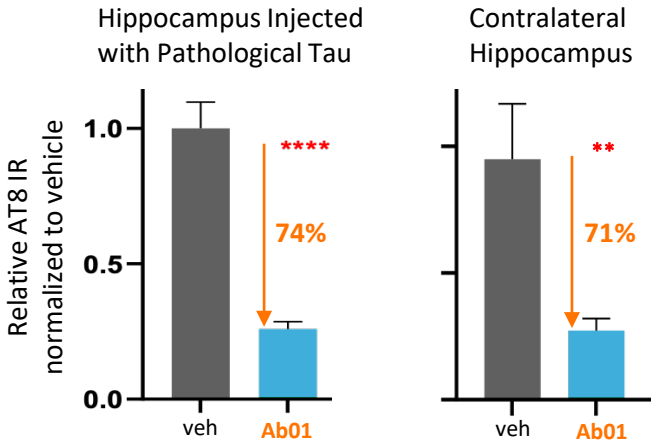
Like oncology, **combination treatment** may improve outcomes (i.e., targeting amyloid and/or tau)

Key Milestones:

- ✓ **Q2 2023:** Received pre-IND feedback from the FDA
- **Q1 2024:** Complete GLP toxicology studies
- **H1 2024:** File IND with FDA
- **2024:** Initiate Phase 1a single ascending dose study in healthy volunteers
- **2025:** Initiate Phase 1b multiple ascending dose study in early AD patients
- **H2 2026: Phase 1b clinical data expected (Tau PET imaging)**

VY-TAU01 is differentiated from other anti-tau antibodies by its binding to a unique C-terminal epitope

Murine surrogate of VY-TAU01 inhibits spread of pathological tau in mouse seeding model



Liu, AAIC, 2022

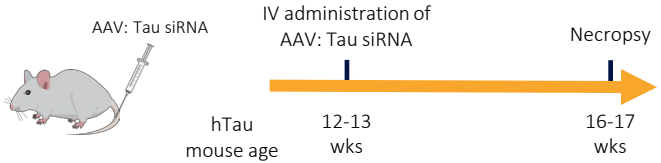
[1] Alzheimer's Facts and Figures Report | Alzheimer's Association. ** and **** indicate p <0.005 and < 0.0001, respectively, compared to the vehicle control group

VY-TAU01 Phase I Clinical Development Plan

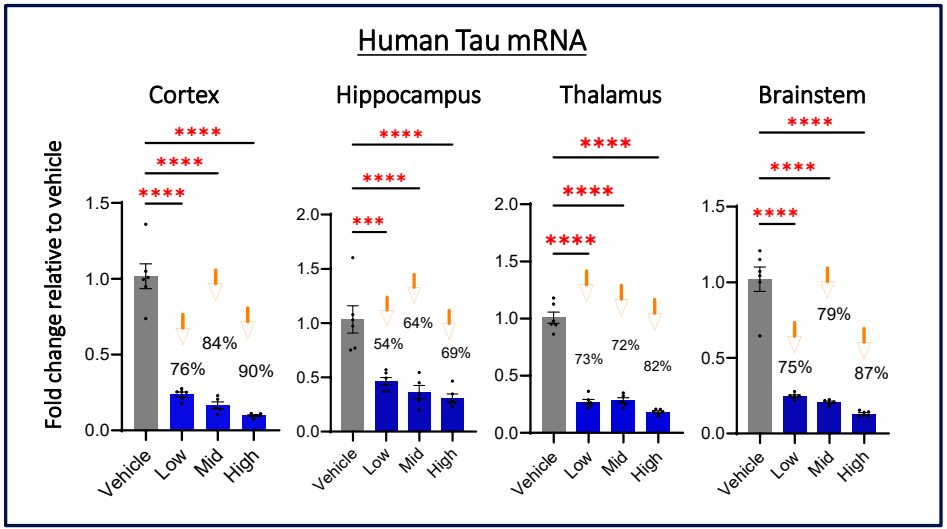
- **First-in-human, dose-escalation study to assess safety**
- **Single Ascending Dose study expected to be conducted in healthy volunteers**
  - *Timing:* IND filing expected H1 2024, followed by trial initiation
  - *Rationale:* healthy volunteer study expected to enable most efficient enrollment while providing initial safety data
- **Multiple Ascending Dose study expected to be conducted in patients with early Alzheimer's disease**
  - *Timing:* expected to initiate 2025 and generate key tau PET imaging data to potentially establish proof-of-biology H2 2026
  - Expect to utilize tau PET imaging to determine if treatment can decrease the spread of tau

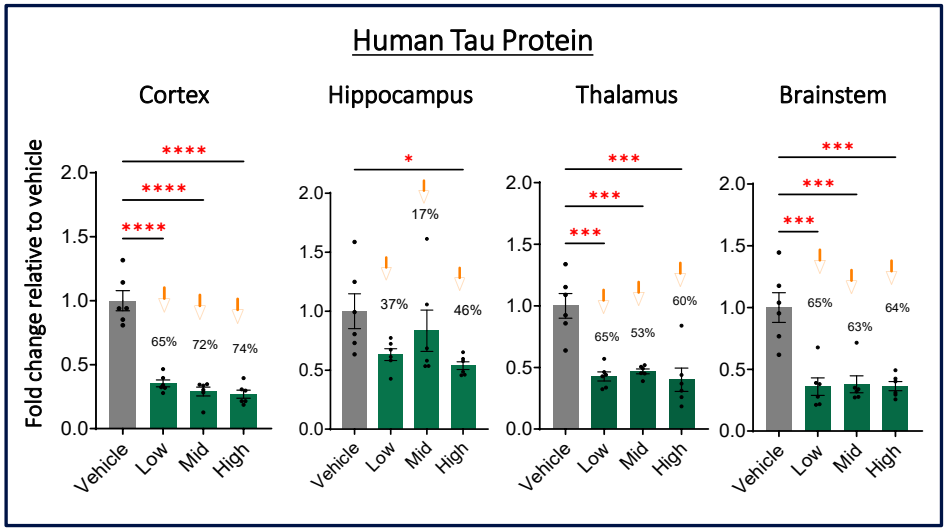
Intravenous Administration of Tau Silencing Gene Therapy Robustly Reduced Tau mRNA and Protein in Brain of Mice Expressing Human Tau

Tau Silencing Gene Therapy: Vectorized tau-targeted siRNA delivered by a proprietary, blood-brain barrier (BBB)-penetrant AAV capsid derived from Voyager's TRACER™ platform



Robust Reductions in Human Tau mRNA and Protein Across Multiple Brain Regions of hTau Mice Following a Single Intravenous Administration





Vectorized primary artificial microRNA targeting human tau mRNA delivered by BBB-penetrant capsid administered by intravenous injection to hTau transgenic mice at 12-13 weeks of age; tissue harvested for analysis 4 weeks following administration; mRNA measured by RT-qRCR; protein measured in soluble fraction of brain regions by AlphaLISA. Asterisks correspond to statistical significance, with * indicating p<0.05 and **** indicating p<0.0001

Gene Therapy Approach to a Validated Target in ALS*

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HIGH UNMET NEED + COMMERCIAL POTENTIAL

~20,000 people in U.S.**

~600 ALS patients have a SOD1 mutation**,†,‡

Previous treatments have been minimally effective; disease is typically fatal within 3 years of diagnosis

VALIDATED TARGET

SOD1

SOD1 mutations cause toxic gain of function in forms of familial ALS

FDA-approved tofersen is an ASO targeting SOD1 that has demonstrated clinical effect. Gene therapy approach could provide more durable solution

EFFICIENT PATH TO PROOF-OF-BIOLOGY

SOD1 measurable in CSF; plasma neurofilament light chain biomarkers measurable in plasma

ROBUST PRECLINICAL PHARMACOLOGY

Preclinical data showed robust SOD1 mRNA reduction (NHPs) and significant improvements in survival (rodents)

STATUS: Lead development candidate selected

MILESTONE: Expect to file IND mid-2025; laying foundation to potentially generate early capsid clinical proof-of-concept data

* Amyotrophic Lateral Sclerosis

** Mehta P., et al. Prevalence of amyotrophic lateral sclerosis in the United States, 2018. Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration. 2023 Aug 21:1-7. doi: 10.1080/21678421.2023.2245858. Epub ahead of print. PMID: 37602649.

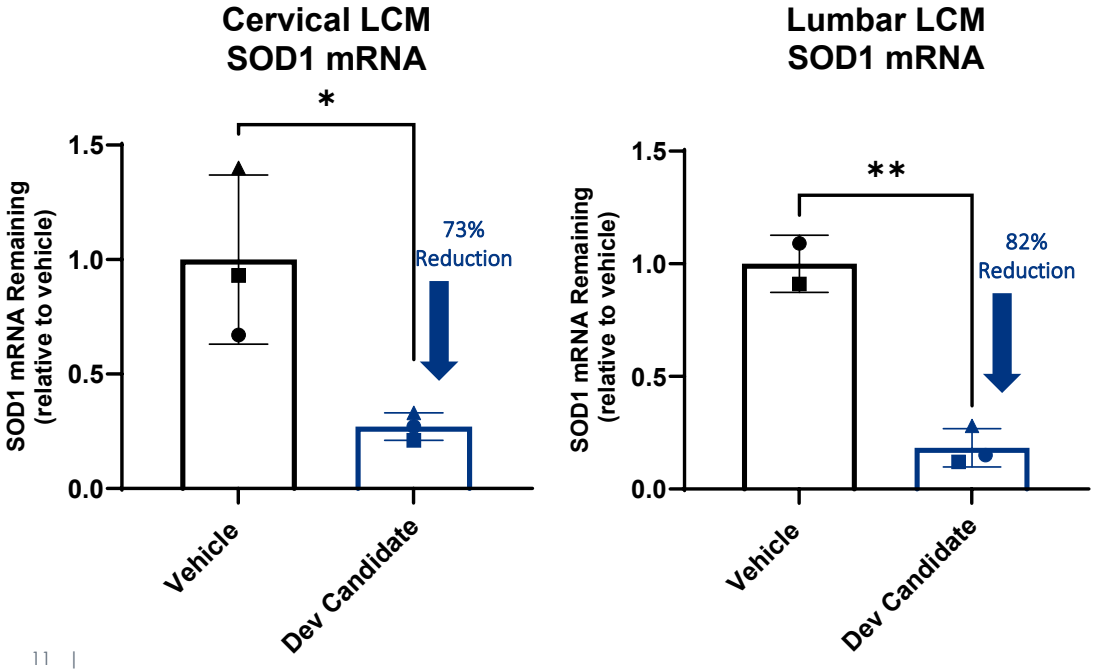
† Brown C., et al. Estimated Prevalence and Incidence of Amyotrophic Lateral Sclerosis and SOD1 and C9orf72 Genetic Variants. Neuroepidemiology. 2021;55(5):342-353. doi: 10.1159/000516752. Epub 2021 Jul 9.

‡ Ricci C., et al. A Novel Variant in Superoxide Dismutase 1 Gene (p.V119M) in Als Patients with Pure Lower Motor Neuron Presentation. Genes (Basel). 2021 Sep 29;12(10):1544. doi: 10.3390/genes12101544.

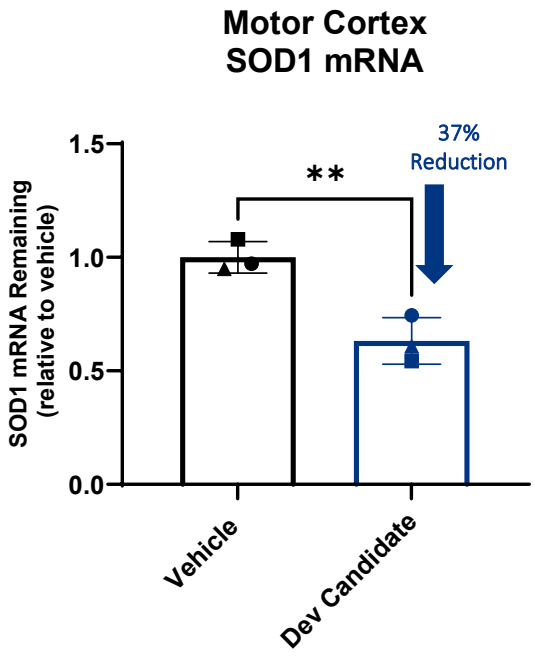
Development Candidate Shows up to 82% Reduction of SOD1 mRNA in Spinal Cord Motor Neurons of Non-Human Primates

SOD1 Silencing Gene Therapy: Vectorized SOD1-targeted siRNA delivered by a proprietary, blood-brain barrier (BBB)-penetrant AAV capsid derived from Voyager's TRACER™ platform

Robust Reduction in SOD1 mRNA in Cervical and Lumbar Motor Neurons in NHPs Following a Single Intravenous Administration



Robust Reduction in SOD1 mRNA also Observed in Motor Cortex



Samples collected from adult NHPs (*macaca fascicularis*) 56-days following IV administration of AAV gene therapy. LCM = Laser Capture Microdissection of presumed motor neurons. * p<0.05, ** indicating p<0.01.

TRACER™ AAV Capsid Platform

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Voyager's TRACER Has the Potential to Revolutionize Delivery Across the BBB

Molecular Therapy
Methods & Clinical Development

Rapid evolution of blood-brain-barrier-penetrating AAV capsids by RNA-driven biopanning *(Nonnenmacher, 2020)*

EUROPEAN SOCIETY OF GENE & CELL THERAPY

Identification of a Cell Surface Receptor Utilized by an Engineered BBB-Penetrant Capsid Family with Enhanced Brain Tropism in Non-Human Primates and Mice *(Hoffman, 2022)*

ASGCT American Society of Gene + Cell Therapy

Directed Evolution of AAV9 Peptide Display Libraries Identifies a Family of Cross-Species Variants with Enhanced Brain Tropism in Non-Human Primates and Mice Following Systemic Administration *(Moyer, 2022)*

"Frankly, when I saw the first non-human primate data, I literally fell out of my chair."

— **BOB SMITH**, Senior VP, Global Gene Therapy Business, Pfizer, speaking about Voyager's TRACER capsids at The Meeting on the Mesa, 2023, as reported in *Cell&Gene*

cell & gene

"…the partnership with Voyager positions us to really take advantage of these industry-leading BBB penetrant capsids, these capsids have incredible CNS tropism and transduction efficiency and allows us a noninvasive IV delivery…"

– **JUDE ONYIA**, Ph.D., CSO Neurocrine Biosciences and Director of Voyager Therapeutics, speaking at 2023 Neurocrine Analyst Day event

NEUROCRINE BIOSCIENCES

Voyager's TRACER-Derived Capsids Have Potential to Power Next-Gen Gene Therapy

TRACER capsid discovery platform derived from evaluation of 200M+ variants of AAV5 and AAV9

Minimally invasive **I.V. Delivery**

Customizable cell tropisms (neurons, glial cells) and levels of liver de-targeting

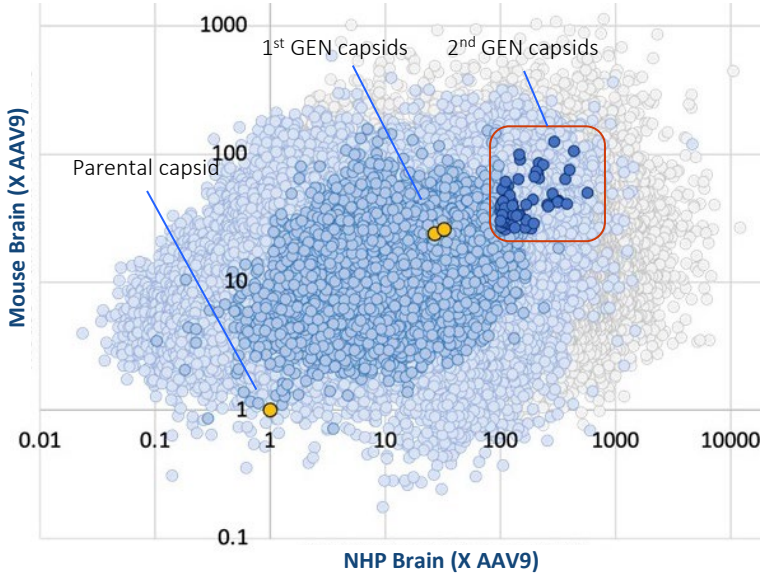
Receptor identification enables rational design

Multi-Species Validation

Improved, broad **CNS transduction**

Fully integrated: capsid engineering, NHP in vivo validation, scalable production (HEK, Sf9)

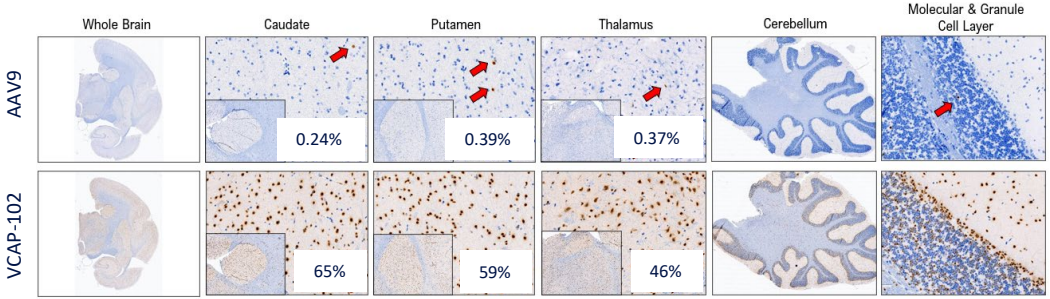
*>100-fold improved CNS delivery across species**



 *Compared to conventional AAV9 dosed intravenously in non-human primates (NHPs)

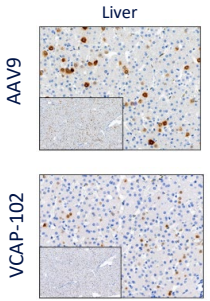
Novel IV Capsids with Potential to Transform CNS Treatment

Widespread CNS Distribution at Low Doses (2E12 VG/kg in marmosets)

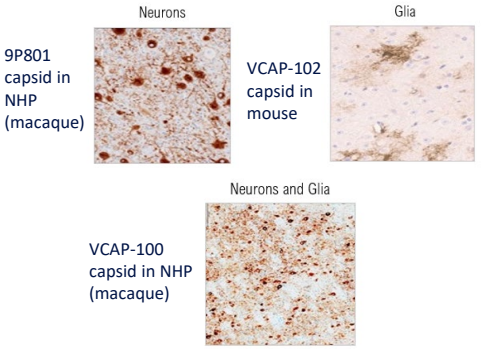


Dosing was at 2E12 VG/kg of scCBA-cynoH2B-HA; intravenous; 28 days in-life; n=3 adult male *Callithrix jacchus*.

Liver De-Targeting



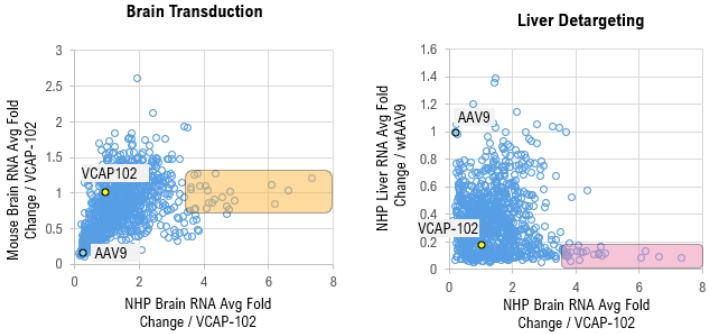
Neurons and Glia Transduced



Cross Species Transduction (Cyno, AGM, Marmoset, Mouse)

Data from NHPs/marmosets; presented at ASGCT 2023, Moyer et. al.

Gen2 Capsids: Higher CNS Potency, Further Liver De-targeting

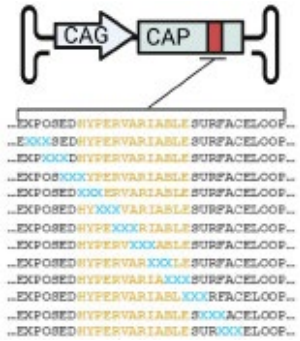


Receptor Broadens Potential in Neurogenetic Medicines

Voyager Identifies Receptor X

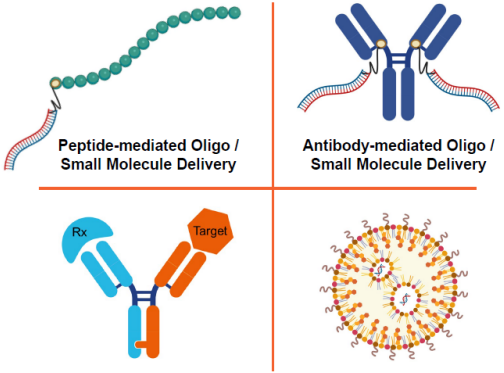
- Human and mouse receptors tested; confirmed human form binds capsids
- Significantly increases transduction of VCAP-101 and VCAP-102 capsids in vitro
- Ligand identified
- Data presented at ESGCT 2022, ASGCT 2023

Actively using Receptor X to speed evolution of novel capsid families

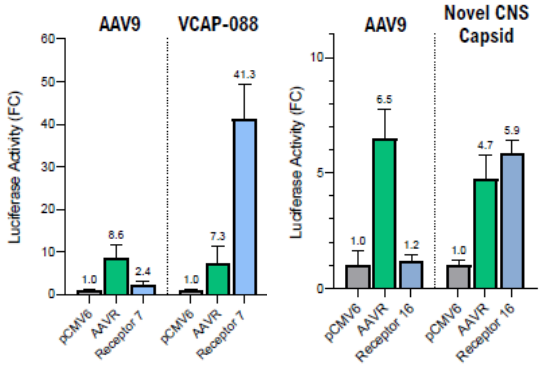


in vitro screen

Work underway to leverage Receptor X for potential non-viral CNS delivery



Searching for additional receptors for other capsid families; two preliminarily identified (ASGCT 2023)



Expanded opportunities in neurogenetic medicines: siRNAs, ASOs, etc.

Business

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New Novartis Transaction Provides Potential Validation; Transaction and Subsequent Public Offering Extend Runway into 2027

Voyager Receives:

World-leading partner:	Novartis is a global leader in gene therapy, with particular expertise in the development and commercialization of CNS gene therapies, including for SMA.
Near-term value:	**$100M up-front consideration**, including $20M equity investment
Program funding:	Fully-reimbursed for HD program costs until IND; Novartis is responsible for all SMA and post-IND HD program costs.
Significant potential future value:	Up to **$1.2B in potential milestones** (preclinical, development, regulatory and sales milestones). High-single-digit to low-double-digit tiered royalties on annual global net sales of collaboration products.

January 2024: Completed $100M public offering

Novartis Receives:

HD: worldwide rights to Voyager's AAV gene therapy for Huntington's disease, leveraging Voyager's TRACER capsids and proprietary vectorized siRNA payload for HD.

SMA: worldwide target-exclusive access to Voyager's TRACER capsids for use in an AAV gene therapy for SMA.

Novartis Deal Builds Voyager's Blue-Chip Partnering Portfolio

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	Disease/Target (Cells, Tissues, Transgenes)	Upfront Payment[4]	Potential Option + Option Exercise Fees	Potential Milestone Payments[1]	Tiered Royalties
NEUROCRINE BIOSCIENCES	**NBIX1:** FA + 2 targets	NBIX1: $165M	N/A	NBIX1: $1.3B[2]	**NBIX1**: U.S. high-single-digit to high-teens; ex-U.S. mid-single-digit to mid-teens[2]
	NBIX2: GBA1 + 3 targets	NBIX2: $175M		NBIX2: $4.2B[3]	**NBIX2**: GBA, U.S. low double-digit to twenty; ex-U.S. high single-digit to mid-teen. 3 targets, U.S. high single-digit to mid-teen; ex-U.S. mid single-digit to low double-digit[3]
NOVARTIS	**NVS1:** 2 CNS targets (expandable to 2 additional rare CNS targets)	NVS1: $54M	NVS1: $25M exercised ($61M potential expansion)	NVS1: $600M for exercised targets ($600M potential expansion)	**NVS1:** Mid- to high-single-digit
	NVS2: HD + SMA	**NVS2:** $100M[4]	**NVS2:** N/A	**NVS2:** $1.2B	**NVS2:** High-single-digit to low-double-digit tiered royalties on global net sales.
ALEXION AstraZeneca Rare Disease	1 rare neurologic disease target	$30M	$10M – exercised	$290M	Mid- to high-single-digit
Sangamo THERAPEUTICS	Prion disease	Undisclosed	N/A	Undisclosed	Undisclosed; also undisclosed portion of licensing revenues if program is licensed

1. Potential milestone payments represent maximum potential payments under applicable agreement(s).2. After the Phase 1 readout, Voyager has the option to either: (1) co-develop and co-commercialize with Neurocrine Biosciences in the U.S. under a 60/40 cost- and profit-sharing arrangement (Neurocrine/Voyager), or (2) permit Neurocrine Biosciences to retain full U.S. commercial rights in exchange for milestone payments and royalties based on U.S. sales. 3. After the Phase 1 readout, Voyager has the option to either: (1) co-develop and co-commercialize with Neurocrine Biosciences in the U.S. under a 50/50 cost- and profit-sharing arrangement, or (2) permit Neurocrine Biosciences to retain full U.S. commercial rights in exchange for milestone payments and royalties based on U.S. sales. 4. NVS2 $100 million payment consists of $80 million in cash and $20 million equity investment.

Multiple Partnership Structures Driving Potential Long-Term Value

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CAPSID LICENSES

DESIGNED TO PROVIDE:

- Validation (third-party buy-in, potential program use)
- Near-term funding (upfront and option exercise payments)
- Long-term funding (potential milestone payments and royalties)
- Multiple 'shots on goal' to demonstrate human translation

ALEXION AstraZeneca Rare Disease

NOVARTIS

PROGRAM PARTNERSHIPS

DESIGNED TO PROVIDE:

- Potential for significant long-term value (profit share or milestone payments and royalties)
- Cost savings (program funding)
- Validation (investment into program)
- Near-term funding (potential upfront, early development milestone payments)

NEUROCRINE BIOSCIENCES

NOVARTIS

ADDITIONAL STRUCTURES

DESIGNED TO PROVIDE:

- Opportunities to combine TRACER capsids and receptor technology with novel payloads and biologics, placing Voyager at forefront of neurogenetic medicine
- Opportunistic evaluation of alternative deal structures

Sangamo THERAPEUTICS

Management Team: Extensive Neurogenetic Medicines Expertise

Al Sandrock, M.D., Ph.D.
Chief Executive Officer
Biogen · Harvard Medical School

Robin Swartz
Chief Operating Officer,
Acting Chief Business Officer
Sanofi Genzyme

Todd Carter, Ph.D.
Chief Scientific Officer
Broad Institute · bci

Peter Pfreundschuh
Chief Financial Officer
Frequency Therapeutics · UroGen Pharma

Michelle Quinn Smith
Chief Human Resources Officer
Flagship Pioneering · Takeda

Trista Morrison
Chief Corporate Affairs Officer,
Chief of Staff to CEO
sobi · saniona

Jacqui Fahey Sandell
Chief Legal Officer
Jounce Therapeutics · Takeda

Runway into 2027 Expected to Enable Key Clinical Data on Several Programs

Q4 2023 ✓	**Development candidate** selected in wholly-owned SOD1 ALS gene therapy program
Q1 2024 ✓	**Novartis collaboration** for HD program + SMA capsid; $100M payment (upfront and equity) + potential $1.2B milestones
Q1 2024 ✓	Executed **$100M public offering**; extending runway into 2027
Q1 2024 ✓	Development candidate selected in **NBIX-partnered** Friedreich's ataxia gene therapy; $5M milestone
H1 2024 ○	IND filing expected with anti-tau antibody VY-TAU01 for Alzheimer's disease (AD)
2024 ○	Phase 1a trial (Single Ascending Dose in healthy volunteers) initiation expected with VY-TAU01
2025 ○	Phase 1b trial (Multiple Ascending Dose in AD patients) initiation expected with VY-TAU01
Mid-2025 ○	IND filing and clinical trial initiation expected with SOD1 silencing gene therapy in ALS patients, laying foundation to potentially generate **proof-of-concept** based on validated biomarkers
2025 ○	IND filings and clinical trial initiations anticipated with at least two partnered gene therapy programs
H2 2026 ○	Key tau PET imaging data expected; potential to generate **clinical data for VY-TAU01**
Ongoing ○	Potential for additional value-creating partnerships; discussions ongoing

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Thank You

www.voyagertherapeutics.com