# Capsida Biotherapeutics
# Corporate Update

**March 2025**

This presentation is made solely for informational purposes and contains forward-looking statements based on current expectations and assumptions. These statements are not guarantees of future results.

The information contained herein is provided only as of the date on which this presentation is made and is subject to change.

This presentation does not constitute an offer or solicitation of any offer to sell or purchase any securities.

# Solving the Challenges of Gen-1 Genetic Medicines

## Starting in CNS and Ophthalmology with IP rights and applicability across all therapeutic areas

| | CNS Challenges | Capsida Solutions |
|---|---|---|
| **Crossing the BBB** | Limited ability to cross BBB; < 1% neuronal transduction | >70% of neurons transduced in NHPs |
| **Safety Concerns** | Liver and dorsal root ganglia (DRG) toxicity | >16x liver & >50x DRG detargeting; lower dosing |
| **Patient Populations** | Narrow therapeutic index (TI) limits to ultra-rare/rare diseases | Broader TI = more common diseases across ages |
| **Route of Administration** | Direct injection to brain or CSF causes significant risks and inconsistent expression | IV limits risks and allows consistent expression |
| | IV delivery increases risk of off-target effects (esp. liver) and triggering immune response | Well-tolerated safety profile with no adverse histopathological findings |

# Next-generation Genetic Medicines Company

## Unlocking the full potential of gene therapy for all

### Wholly-owned Pipeline

**Two clinical programs in 2025**

**CAP-002: STXBP1-DEE**

**CAP-003: PD-GBA**
- Human POC in Q4

**Third clinical program in 2026**

**CAP-004: FA**

### Fully-integrated Capabilities

- » **Capsid engineering**
- » **Cargo optimization**
- » **Clinical development**
- » **In-house manufacturing**
- » **Protected by expansive IP portfolio**

### External Validation

**Strategic partnerships**

abbvie » 1st AbbVie opt-in ($40M) achieved

Lilly Prevail THERAPEUTICS — A Wholly Owned Subsidiary of Eli Lilly and Company

CRISPR THERAPEUTICS®

**Contract manufacturing**

KATE THERAPEUTICS — A NOVARTIS COMPANY

**>$300M funding to date, including $50M Series A**

VERSANT ventures

Westlake BioPartners

# Near Clinical Stage Wholly-owned Programs

## First human POC by end of 2025

| Disease / Target | Preclinical | IND-Enabling | Phase 1/2 | Key Catalysts |
|---|---|---|---|---|
| STXBP1 Developmental and Epileptic Encephalopathy (STXBP1-DEE) | **First-in-class CAP-002** | | | **2025** Q1 - IND filing<br>Q3 - First patient dosed<br>**2026** Q1 - First efficacy data |
| Parkinson's disease associated with GBA mutations (PD-GBA) | **Best-in-class CAP-003** | | | **2025** Q2 - IND filing<br>Q3 - First patient dosed<br>Q4 - First biomarker data<br>**2026** Q3 - First efficacy data (1 yr) |
| Friedreich's ataxia (FA) | **Best-in-class CAP-004** | | | **2025** Q1 - IND-enabling studies ongoing<br>Q3 - Traditional & self-regulating cargo results<br>**2026** Q2/Q3 - IND filing |

**AbbVie, Lilly, and CRISPR Tx partnerships each include one co-development/co-commercialization option**

# CAP-002: STXBP1-DEE

## STXBP1 Developmental and Epileptic Encephalopathy

# STXBP1 Developmental and Epileptic Encephalopathy

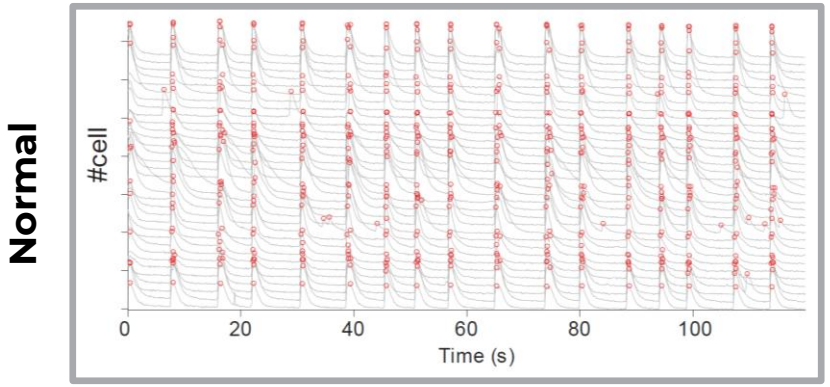
## Opportunity

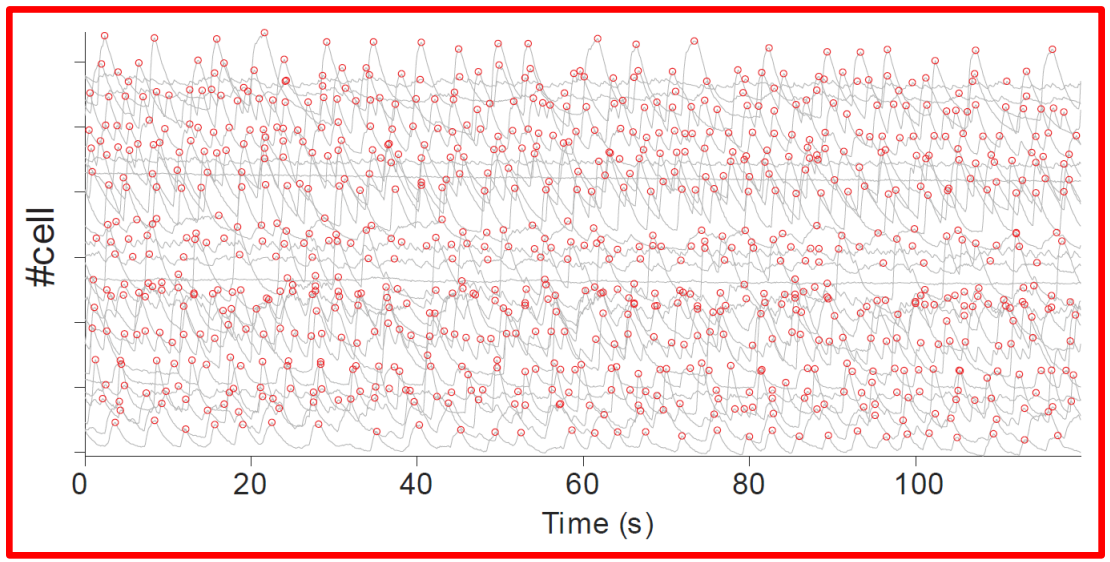
- DEE (like LGS and Dravet) with no approved treatments
- Seizures, developmental delays, and motor impairment
- ~5,000 patients in US and Europe
- Genetic validation and potential for FDA approval after Ph2
- >$1B peak year sales

## CAP-002

- ✓ First and best in class IV-administered program
- ✓ Industry-leading brain wide STXBP1 protein increases
- ✓ Potential for correction of all phenotypes
- ✓ Safety demonstrated in NHPs, including liver and DRGs
- ✓ Successful pre-IND meeting, ODD granted, & GLP-tox dosed
- ○ Q1 IND and Q2 Fast Track filings

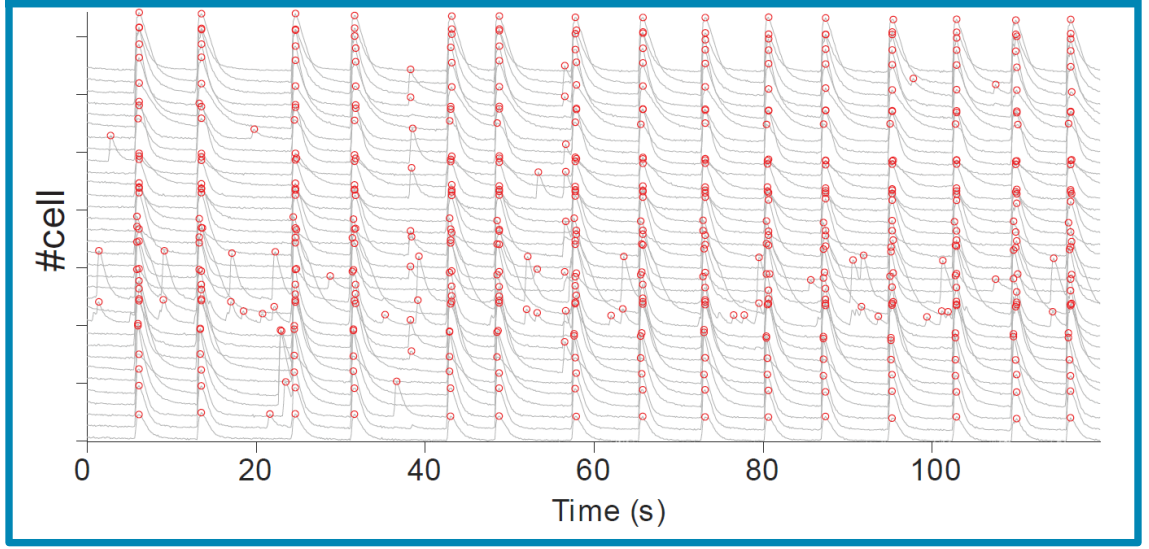
# CAP-002 Restores Normal STXBP1 Expression and Neuronal Firing in Human KO Neurons




**STXBP1 Knock Out**

**CAP-002 restores neurons to normal firing**

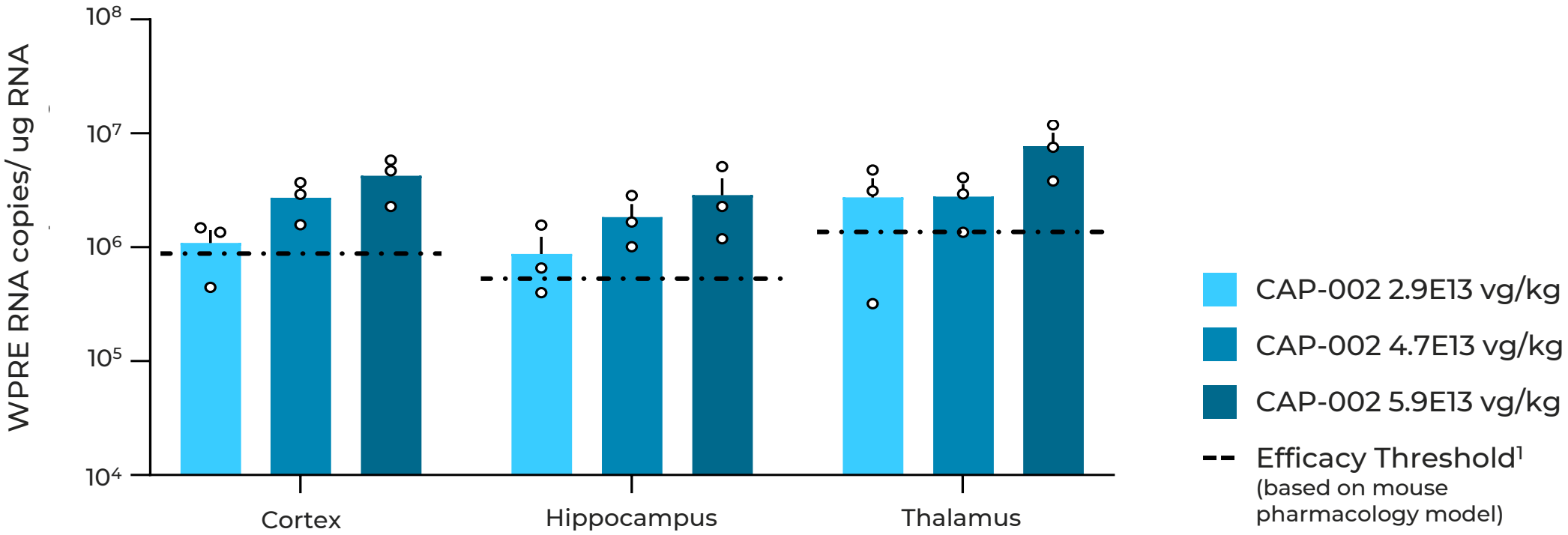



**STXBP1 KO with CAP-002**

Generated in collaboration with Neurospector, a CRO established by Matthijs Verhage's laboratory at VUmc Research BV, part of Foundation Stichting Amsterdam UMC

# STXBP1 Expression with CAP-002 is Above Levels Required for Significant Correction of All Disease Phenotypes

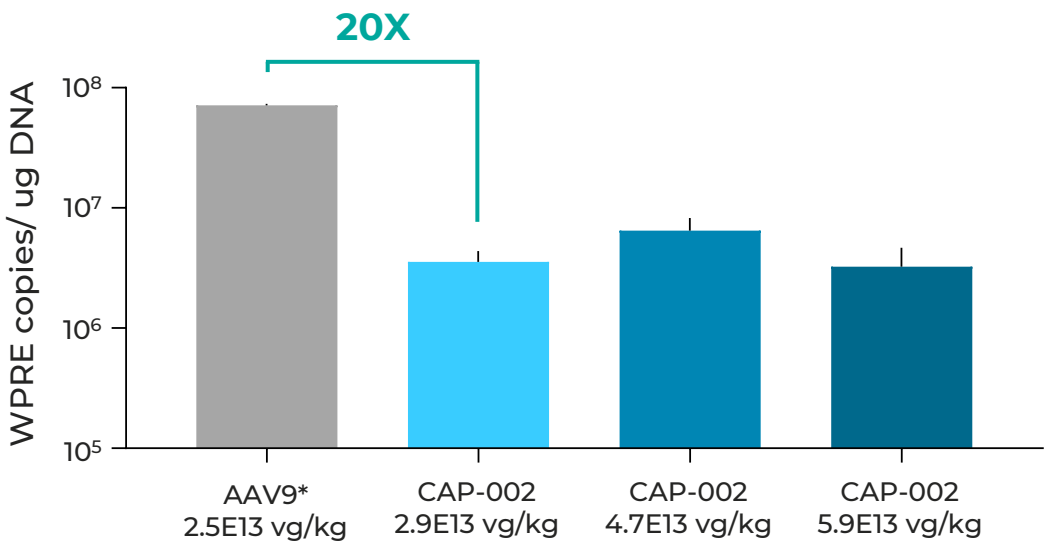
## Brain Expression in NHPs



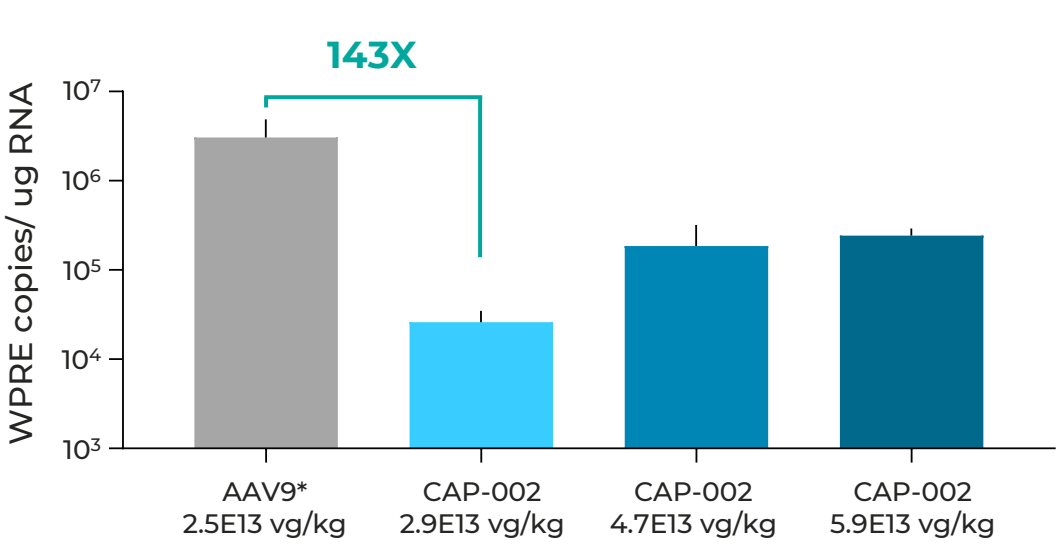

[1]Murine data generated in collaboration with lab of Mingshan Xue, Baylor College of Medicine

# CAP-002 is Substantially Detargeted from Liver and DRGs in NHPs Compared to AAV9

## Liver DNA




## DRG RNA




**Well-tolerated safety profile with no adverse histopathological findings**

*Historical IV-delivered AAV9 2.5E13 vg/kg (non-STXBP1 cargo control)

# CAP-002 STXBP1-DEE Clinical Plan

## Potential for approval after Ph1/2 study

**Clinical Ph1/2 Planning**

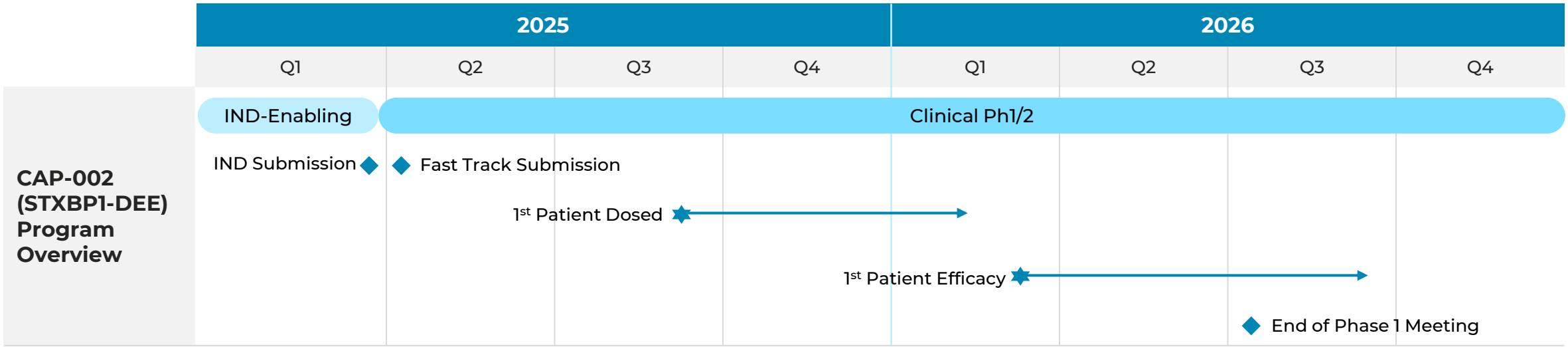
**Population**

- 18 months – 7 years
- Potential expansion to broader ages
- Ph1: 6 patients

**Key Measurements**

- Safety
- Motor, language, neurocognitive, seizure, and EEG
- Clinical scales consistent with STARR natural history study

**Plan to leverage ODD and other designations** to accelerate approval




EEG = electroencephalogram; STARR = STXBP1 Clinical Trial Ready

# CAP-003: PD-GBA

## Parkinson’s disease associated with GBA mutations

# Parkinson's Disease Associated with GBA Mutations

## Opportunity

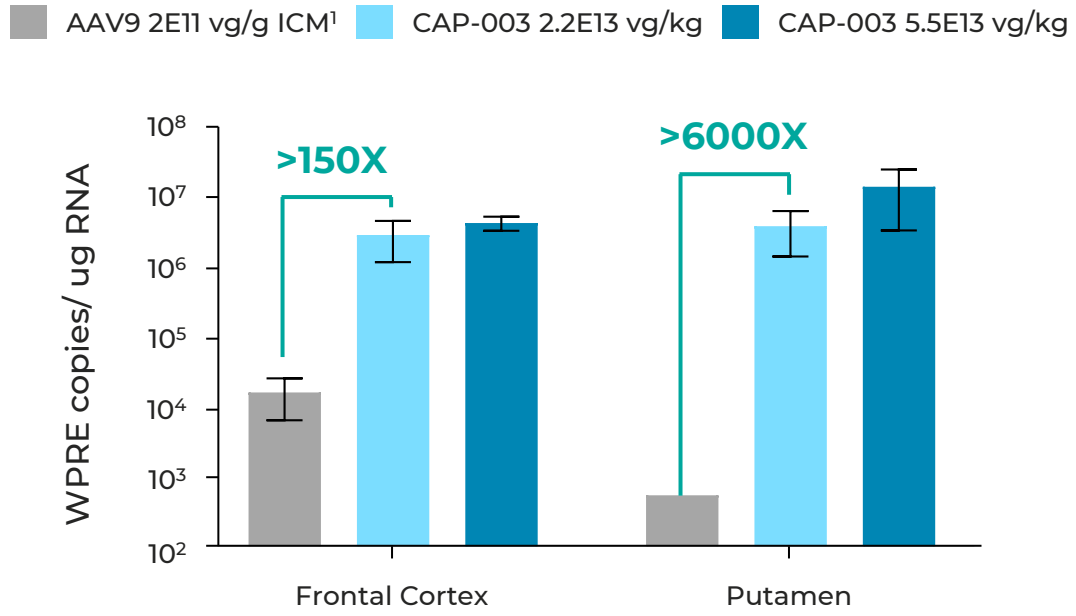
- Up to 15% of all PD cases = ~330k patients in US and Europe
- No approved GBA1 treatments and no PD disease modifying treatments
- >$1B peak year sales
- Potential for expansion to idiopathic PD

## CAP-003

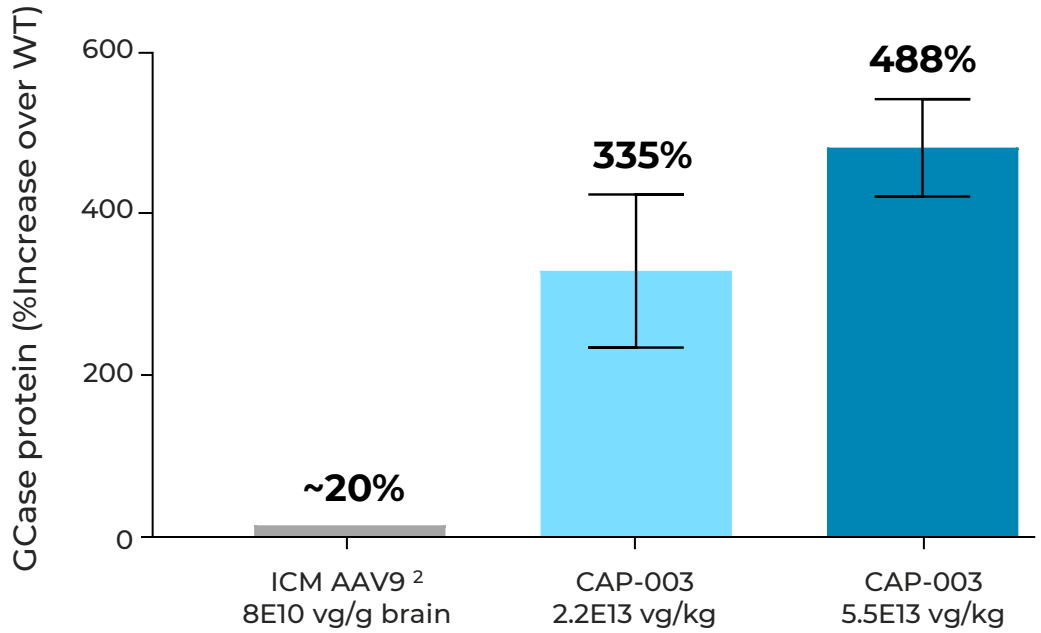
- ✓ Best in class IV-administered program
- ✓ Industry-leading brainwide GCase enzyme elevation
- ✓ Potential for significant disease modification
- ✓ Safety demonstrated in NHPs, including liver and DRGs
- ✓ Successful pre-IND meeting & GLP-tox dosed
- ○ Q2 IND and fast track filings

# IV-delivered CAP-003 Achieves Superior Expression and GCase Protein Compared to ICM-delivered AAV9 in NHPs

## Brain RNA




## Brain GCase Protein

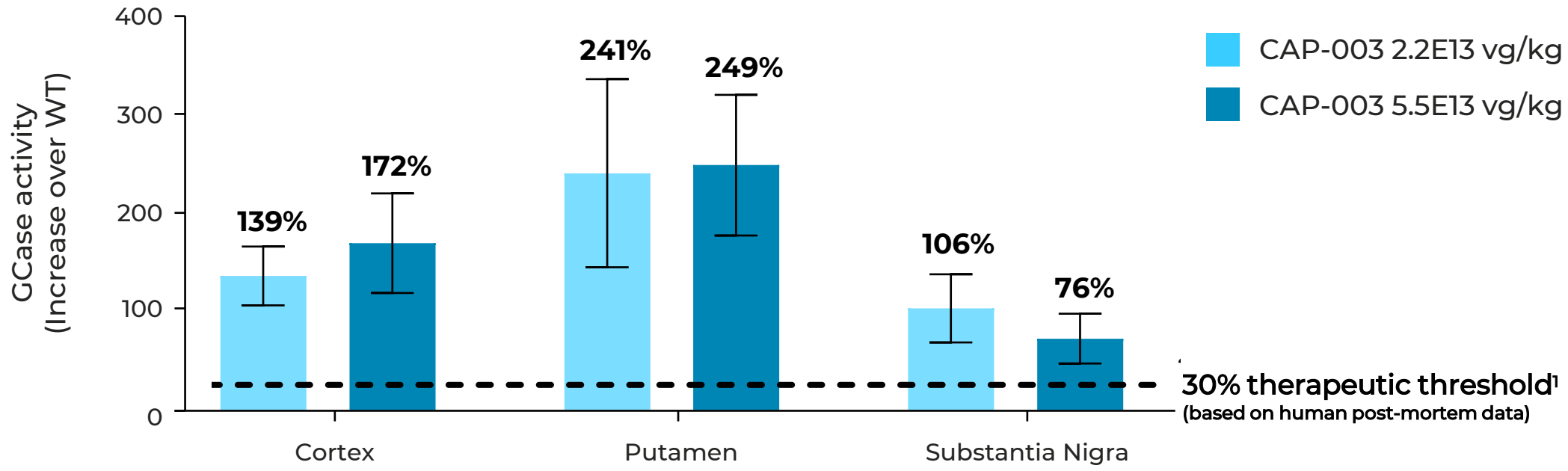



[1] AAV9 ICM data generated from past Capsida study with same expression cassette (promoter, regulatory elements, etc.) but different therapeutic cargo; no protein or %neuron comparison possible

[2] Reported by Prevail (Source: 2019 S1 filing) in their non-clinical NHP studies (~20% increase across cortex, hippocampus, midbrain)

# All CAP-003 Doses Exceed 30% Efficacy Threshold for Normalizing GCase Activity in Patients

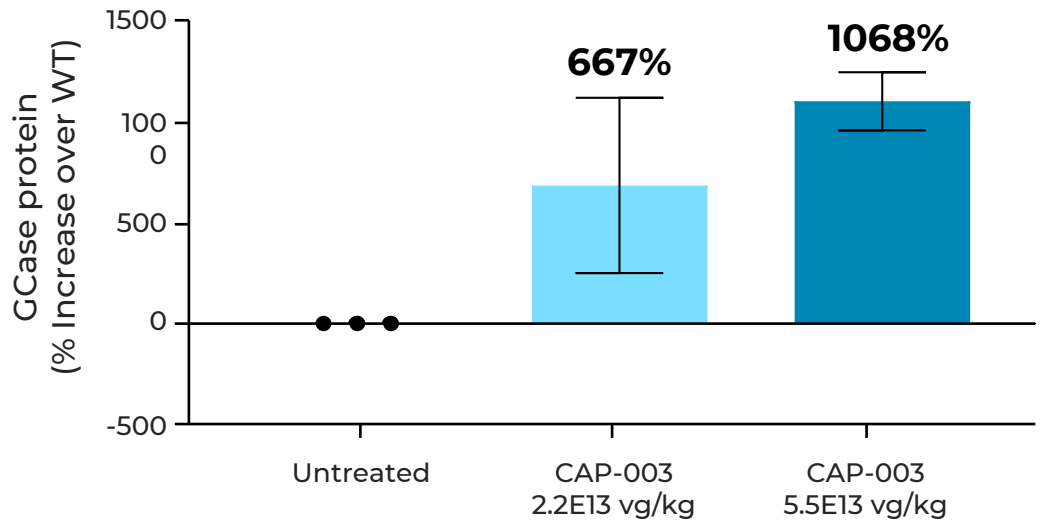
## Brain GCase Activity in NHPs



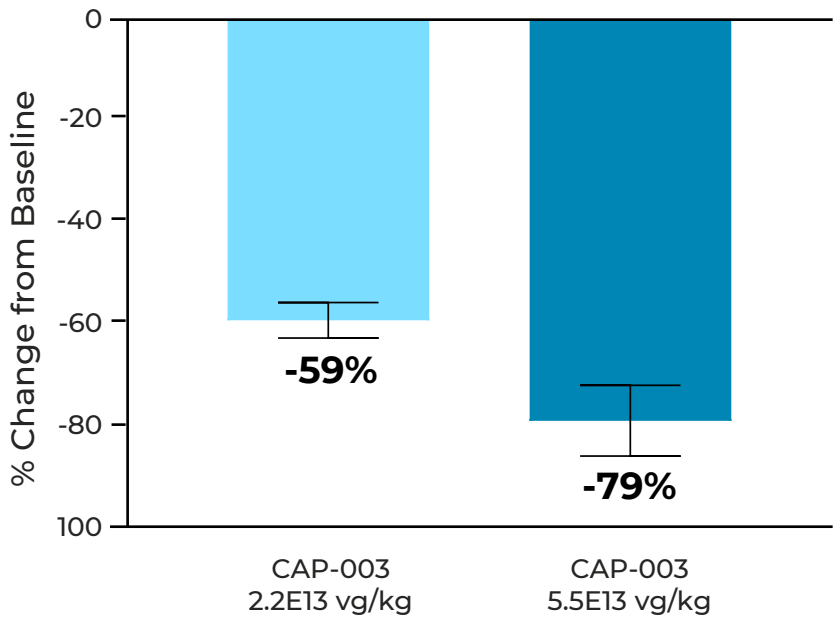

1 Leyns et al., 2023

# GCase and GluSph in NHPs Correlate to Brain Expression Validating Use as Clinical Biomarkers

## CSF GCase Protein



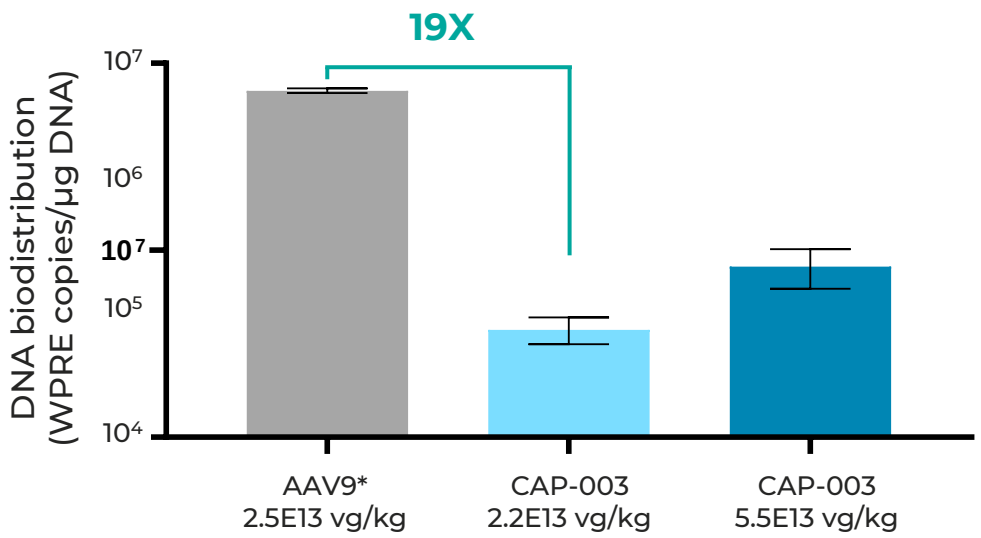

## Plasma GluSph



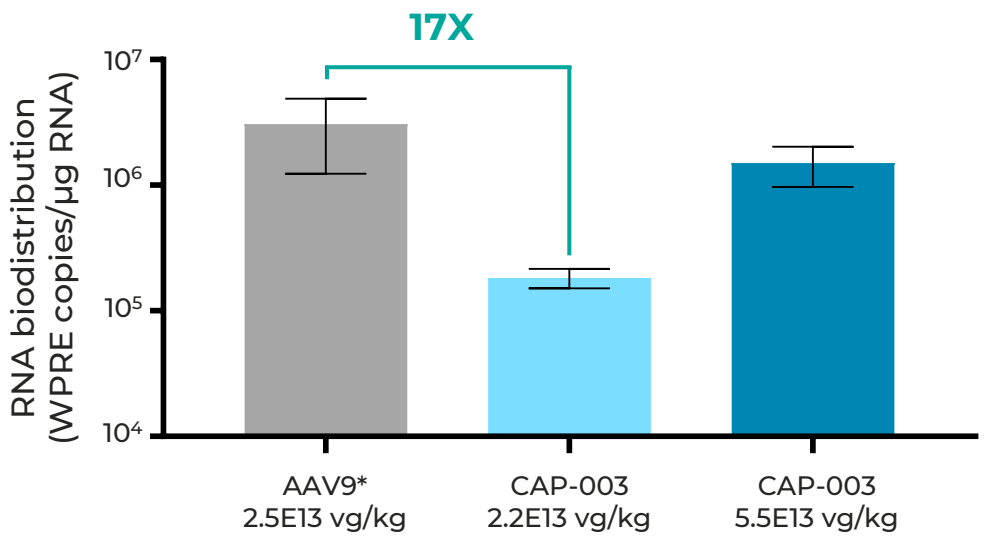

GluSph = Glucosylsphingosine

# CAP-003 is Substantially Detargeted from Liver and DRGs in NHPs Compared to AAV9

## Liver DNA




## DRG RNA




**Well-tolerated safety profile with no adverse histopathological findings**

*Historical IV-delivered AAV9 2.5E13 vg/kg (non-GBA cargo control)

# CAP-003 (PD-GBA) Phase 1/2 Clinical Plan

**Clinical Ph1/2 Planning**

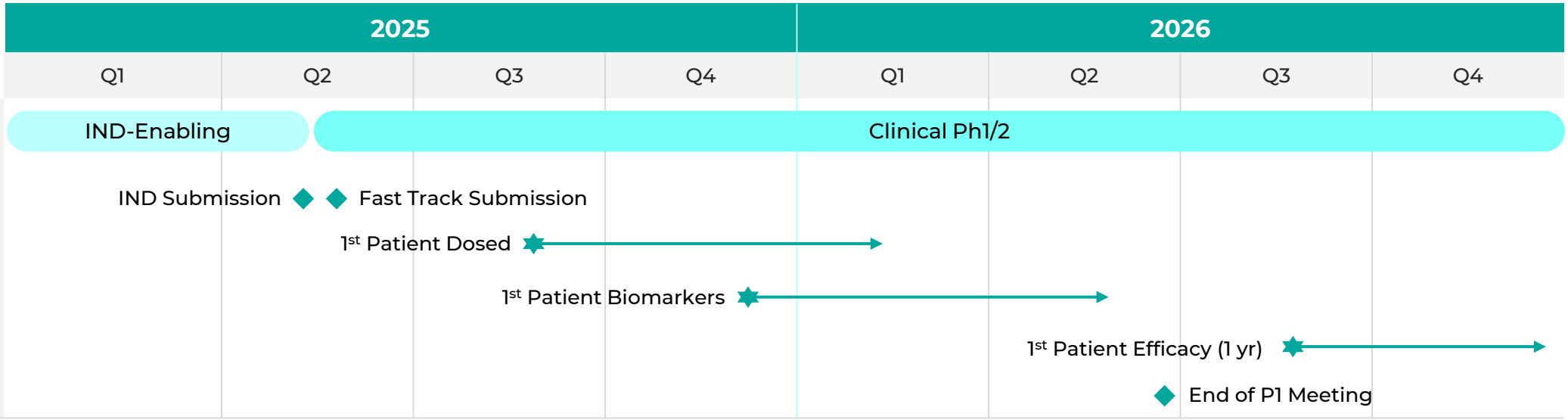
**Population**

- Ages 21-75 years
- PD Hoehn & Yahr Stage 1-3
- Ph1: 6 patients

**Key Measurements**

- Safety
- Biomarkers (e.g., GCase, GluSph, & GluCer)
- 1 & 2-year efficacy (e.g., MDS-UPDRS, cognition, etc.)

**CAP-003 (PD-GBA) Program Overview**




GluSph = glucosylsphingosine; GluCer = glucosylceramide;
MDS-UPDRS = Unified Parkinson's Disease Rating Scale

# CAP-004: FA

## Friedreich’s ataxia

# Friedreich's Ataxia

## Opportunity

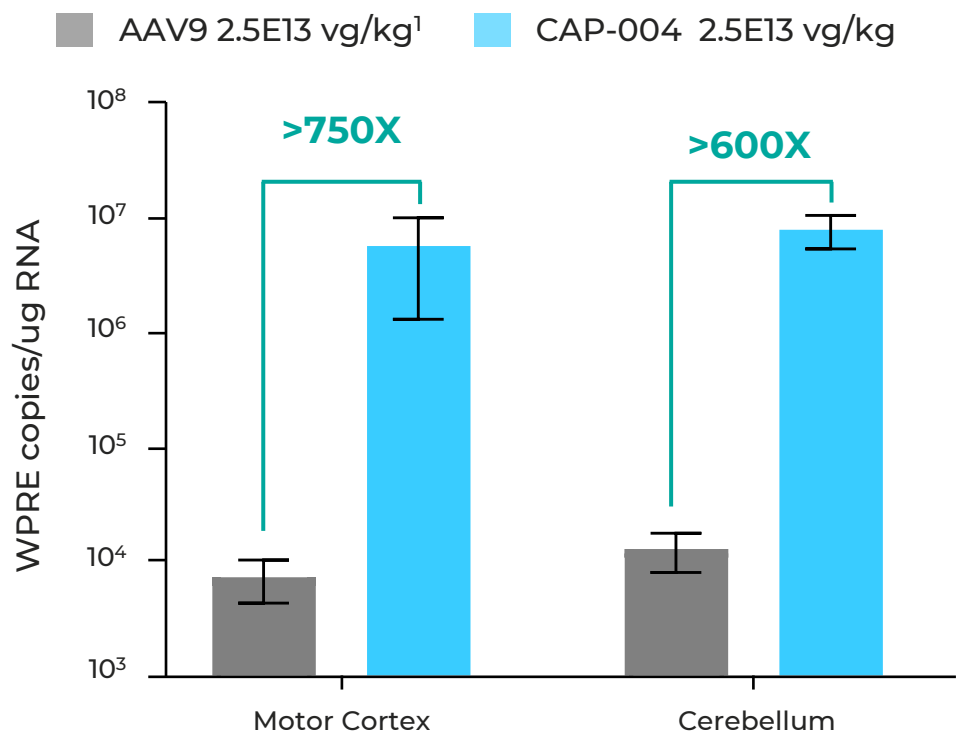
- CNS, cardiac, and sensory manifestations
- ~5,000 patients in the US and 15,000 worldwide
- Genetic validation and potential for FDA approval after Ph2
- >$1B peak year sales

## CAP-004

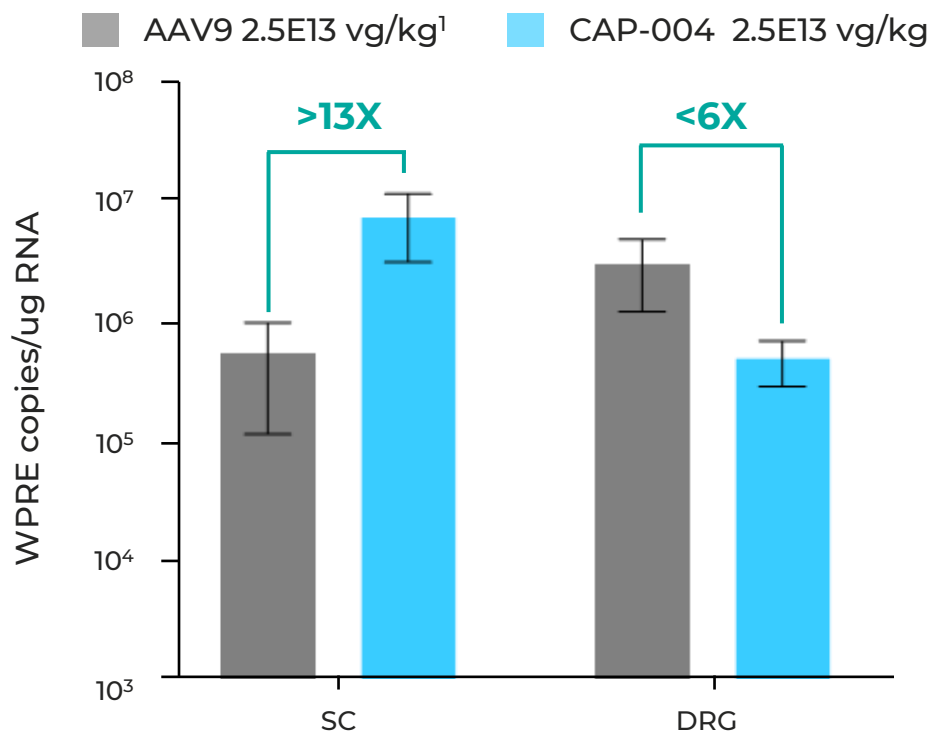
- ✓ Best in class IV-administered program
- ✓ Industry-leading frataxin protein expression in all relevant tissues
- ✓ Potential for correction of CNS, cardiac, and sensory manifestations
- ✓ Safety demonstrated in NHPs, including liver and DRGs
- ✓ IND-enabling studies ongoing, incl. self-regulating cargo
- ○ Q2/Q3 2026 IND Filing

# IV CAP-004 Achieves CNS/PNS RNA Expression Levels Expected to Fully Correct FXN deficits in Patients

## Brain FXN in NHPs




## Spinal Cord & Sensory Neuron FXN in NHPs

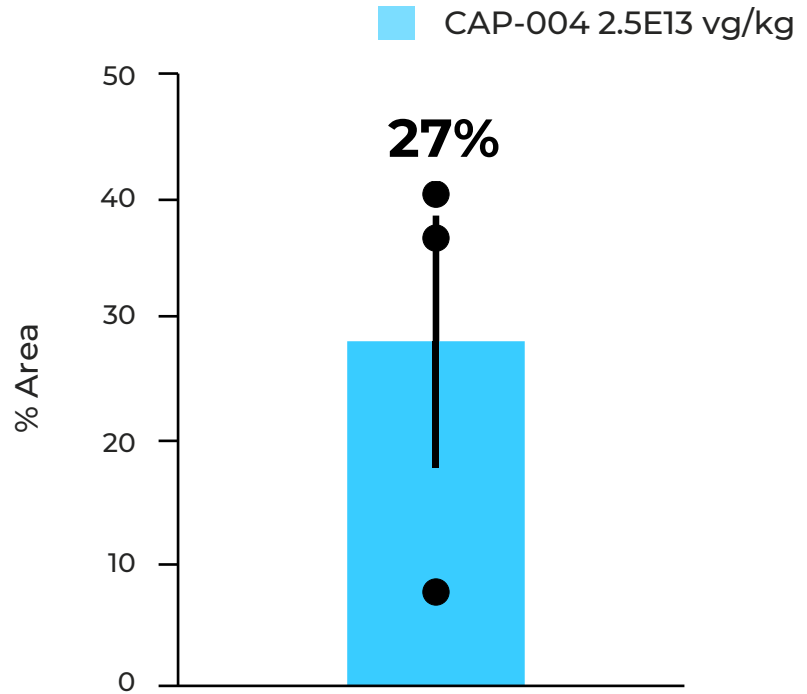



FXN = Frataxin

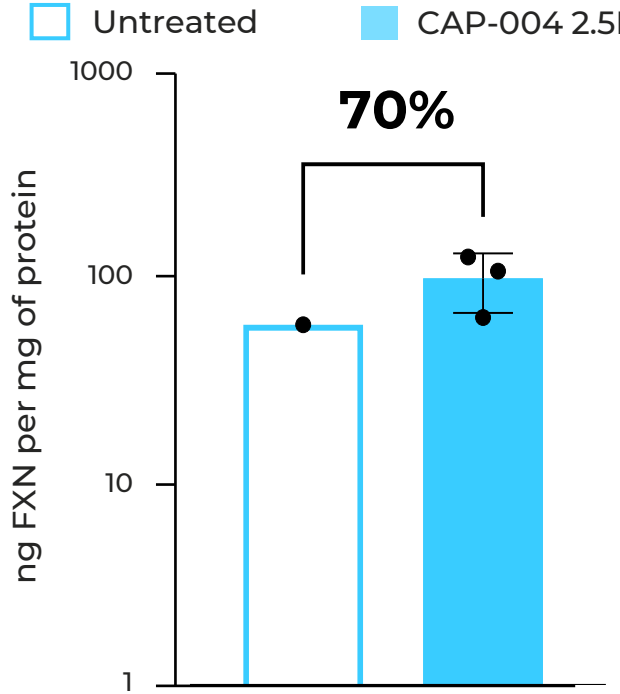
[1] AAV9 data generated from past Capsida study with same expression cassette (promoter, regulatory elements, etc.) but different therapeutic cargo

# 27% Average Transduction of Left Ventricle with CAP-004 Results in >70% Increase in FXN Expression in Heart

## Left Ventricle %HA Positive Area in NHPs




## Cardiac FXN protein levels increase in NHPs



# Platform and Capabilities

# Capsida – Uniquely Positioned to Lead Gene Therapy

## Capsid Engineering Scale

Fully industrialized and roboticized platform

Screening capabilities across cell types in NHPs and human cells

## CNS Tropism

>99% specific to neurons

>70% neurons transduced

Broad IP capsids and capsid/cargo

## Peripheral Detargeting

>16x liver & >50x DRG detargeted

Superior off-target safety profile

Broad IP protecting detargeting

## Therapeutic Expression

Expression in NHPs with potential for full disease correction

Industry leading expression levels across pipeline programs

## Clinical Translatability

Identified/patented novel human receptor with complete homology in NHPs and humans

Validated expression in NHPs including primates >20 years old

## Manufacturability

In-house process development and GMP manufacturing

Productivity surpassing AAV9

Quality specifications > FDA requirements

**Only Capsida has created all the capabilities and results needed to deliver on the promise of gene therapy**

# In-house Process & Analytical Development and cGMP Manufacturing

## Enables Capsida to control quality, timelines, and costs

| | | |
|---|---|---|
| **Vector Production** |  | Rapid production of engineered capsids for preclinical studies |
| **Process & Analytical Development** |  | Conduct manufacturability assessment in HEK293 suspension process |
| | | Up to 50 L bioreactor scale |
| | | Develop and optimize key analytical assays |
| **cGMP Manufacturing** |  | 15,000 $ft^2$ cGMP Manufacturing Facility |
| | | Leverages single use systems |
| | | 200L bioreactor scale with ability to significantly expand capacity |
| | | Finish – fill operations |
| | | Unidirectional flow |
| | | In-house QC capabilities for product release |
| | | Modular clean rooms |

**Excellent yields and quality specifications at or above FDA standards**

# Corporate & Finance

# Leadership Team and Board of Directors

## Decades of Industry Experience and Drug Development Expertise

### Leadership

**Peter Anastasiou**
Chief Executive Officer

**Nicholas Flytzanis, PhD**
Founder, Chief Research and Innovation Officer

**Nick Goeden, PhD**
Founder, Chief Technology Officer

**Julie Hakim**
Chief Financial Officer

**Bethany Mancilla**
Chief Business Officer

**Rob Murphy**
Chief Manufacturing and Quality Officer

**Swati Tole, MD**
Chief Medical Officer

### Board Members

**Clare Ozawa, PhD**

**Beth Seidenberg, MD**

**Viviana Gradinaru, PhD**
Founder

**Rita Balice-Gordon, PhD**
CEO, Muna Tx

**Frank Verwiel, MD**
Chairman, Intellia

**Peter Anastasiou**
Chief Executive Officer

# >$300M Funding to Date

**2019**

**$50M** Series A

**2021**

CNS **$90M**

**2023**

CNS **$55M**

Ophthalmology **$70M**

Contract manufacturing

**$12M** convertible note

**2025**

AbbVie opt-in **($40M)**

Potential additional milestones

Series B (TBD)

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**Wholly-owned Programs with Multiple Catalysts in 2025**

CAPSIDA BIOTHERAPEUTICS

# Our Pipeline is Making the Impossible Possible


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