TAYSHA GENE THERAPIES

Astellas Pharma's Strategic Investment

October 25, 2022

Legal disclosure

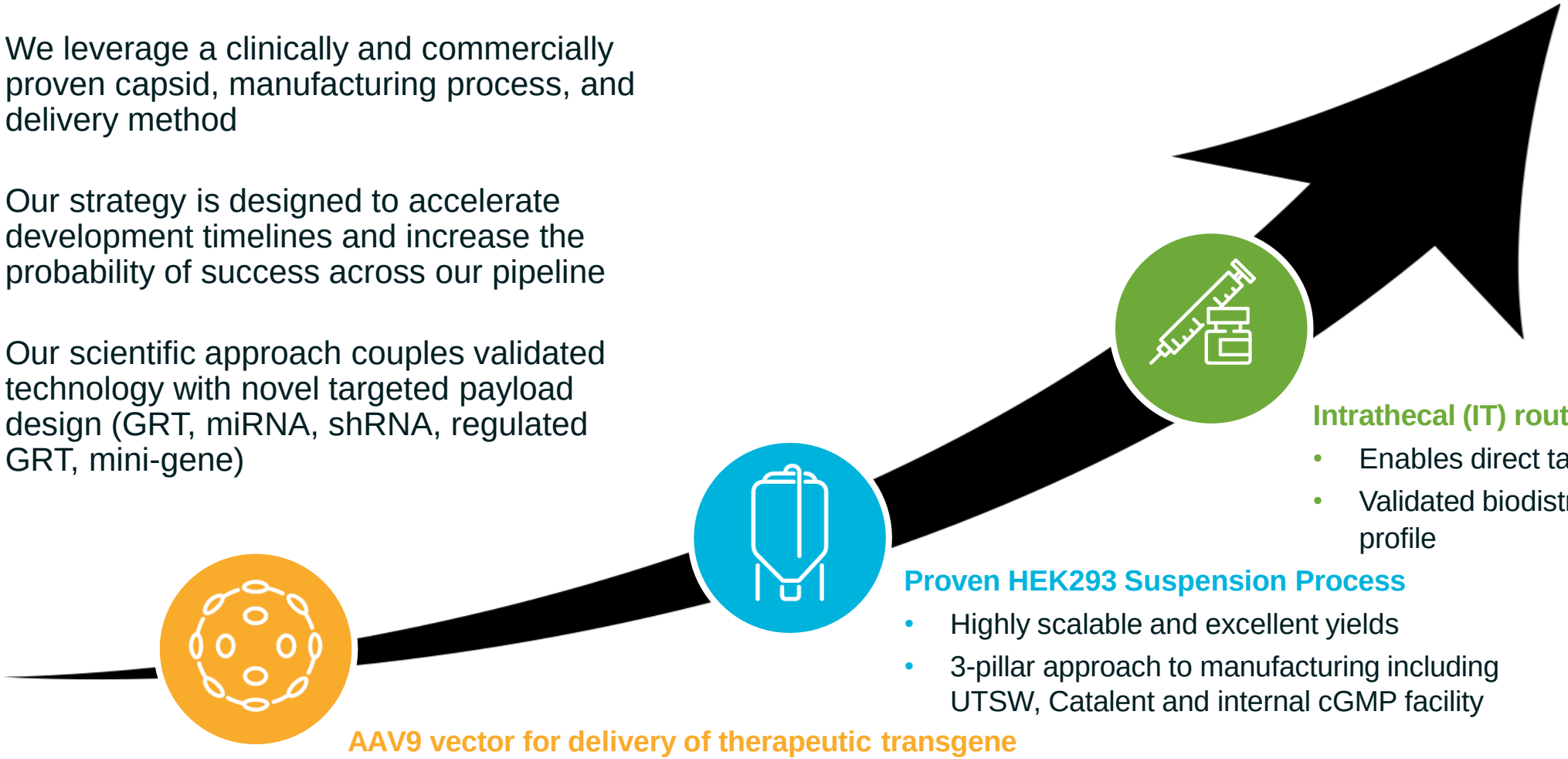
FORWARD LOOKING STATEMENTS

This presentation contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this presentation, including statements regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words “anticipate,” “believe,” “estimate,” “expect,” “intend,” “may,” “might,” “plan,” “predict,” “project,” “target,” “potential,” “will,” “would,” “could,” “should,” “continue,” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements are subject to a number of risks, uncertainties and assumptions. Risks regarding our business are described in detail in our Securities and Exchange Commission filings, including in our Annual Report on Form 10-K for the year ended December 31, 2020 and our Quarterly Report on Form 10-Q for the quarter ended June 30, 2022, both of which are available on the SEC’s website at www.sec.gov. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. The forward-looking statements contained in this presentation reflect our current views with respect to future events, and we assume no obligation to update any forward-looking statements except as required by applicable law.

This presentation includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties as well as our own estimates of potential market opportunities. All of the market data used in this prospectus involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such data. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. Our estimates of the potential market opportunities for our product candidates include several key assumptions based on our industry knowledge, industry publications, third-party research and other surveys, which may be based on a small sample size and may fail to accurately reflect market opportunities. While we believe that our internal assumptions are reasonable, no independent source has verified such assumptions.

Our strategy is focused on rapid clinical and commercial development

- We leverage a clinically and commercially proven capsid, manufacturing process, and delivery method
- Our strategy is designed to accelerate development timelines and increase the probability of success across our pipeline
- Our scientific approach couples validated technology with novel targeted payload design (GRT, miRNA, shRNA, regulated GRT, mini-gene)



Intrathecal (IT) route of administration

- Enables direct targeting to CNS
- Validated biodistribution and tolerability profile

Proven HEK293 Suspension Process

- Highly scalable and excellent yields
- 3-pillar approach to manufacturing including UTSW, Catalent and internal cGMP facility

AAV9 vector for delivery of therapeutic transgene

- Demonstrated clinical activity and tolerability across multiple CNS indications

Transformative investment by Astellas validates technology platform, innovative approach and lead clinical programs

Transaction Overview

- Taysha and Astellas establish strategic investment to support development of Taysha's AAV-based gene therapy development programs for GAN and Rett syndrome
- Astellas to invest a total of $50 million to acquire 15% of the company
- Astellas to receive an exclusive option to obtain an exclusive license for worldwide development, manufacturing and commercial rights to TSHA-120 in GAN for a period of time until after receipt of the formal Type B end-of-Phase 2 meeting minutes with FDA
- Astellas to receive an exclusive option to obtain an exclusive license for the worldwide development, manufacturing and commercial rights to TSHA-102 in Rett syndrome for a period of time until after the company provides Astellas access to certain clinical data from the female pediatric study
- Astellas to receive certain rights related to any potential change in control of Taysha for a period of time upon receipt of the Rett data package
- Astellas to receive one Board observer seat on the Taysha Board of Directors

Advantages

- Validates Taysha's capabilities and proven technology platform
- Reinforces the therapeutic and market opportunity of Taysha's two lead programs in GAN and Rett syndrome
- Board seat provides strategic alignment with Astellas and enables Taysha to leverage Astellas' gene therapy clinical and commercial experience

Astellas as a premier partner in gene therapy

- Premier biopharmaceutical company with global R&D, manufacturing and commercial capabilities
- Large scale, fully integrated, in-house cGMP manufacturing for gene therapies
- Extensive gene therapy clinical and commercial expertise
- Track record of success
- Global reach and footprint
- Commitment to expansion of its capabilities and footprint in gene therapy

Shared long-term vision for bringing new transformative AAV gene therapies to patients living with serious genetic diseases and limited treatment options

Comprehensive set of evidence generated across disease manifestations support a robust clinical package

TSHA-120
GAN

Assessment	Type	Findings
MFM32	Motor Function	• TSHA-120 demonstrated clinically meaningful slowing of disease progression across all therapeutic dose cohorts compared to natural history decline • Durability of effect observed up to 6 years post dosing
Nerve Conduction	Electrophysiologic	• TSHA-120 patients demonstrated recoverability, stabilization, and improvement in sensory response
Histopathology	Nerve Biopsy	• TSHA-120 treated patients demonstrated histopathological presence of regenerative nerve clusters suggesting active regeneration of nerve fibers
Retinal nerve fiber layer (RNFL)	Biomarker measuring thickness	• TSHA-120 stabilized RNFL preventing further progression of axonal loss
LogMar	Visual Acuity	• Treated patients with TSHA-120 stabilized visual acuity compared to pre-treatment decline
Comparability	CMC	• Commercial grade material comparable to clinical grade via release assay panel

Totality of preclinical data generated to date represents most robust package supporting Rett syndrome clinical development

TSHA-102
Rett Syndrome

Study Scope	Species	Findings
Neonatal (n=49)	Mouse	• Near normalization of survival in neonatal knockout Rett mice • Normalization of body weight • Normalization of behavior as assessed by Bird Score
Pharmacology (n=252)	Mouse	• Significant improvement in survival, body weight, motor function and respiratory health across treatment ages in Rett knockout mouse model
Toxicology (n=160)	Rat	• Favorable safety profile of TSHA-102 in Sprague Dawley rats up to 3.85E12 vg/animal up to the 26-week time point • Nerve conduction studies remained in normal range for all groups at all timepoints • Motor nerve conduction studies remained normal even at high dose
Toxicology (n=24)	NHP	• Doses of up to 2.31E14 vg/animal (HED 2.0E15) were well tolerated with broad biodistribution to brain, spinal cord in NHPs

Focused on achieving anticipated near-term milestones and building long-term value

- December 2022: Type B end-of-Phase 2 meeting for TSHA-120 in GAN scheduled with FDA
- January 2023: Receipt of formal FDA meeting minutes on GAN regulatory pathway
- H1 2023: Preliminary clinical data for TSHA-102 from the entire first cohort of patients in the adult Rett syndrome study
- H1 2023: Initiation of pediatric study for TSHA-102 in Rett syndrome

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Q&A