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): May 10, 2024

Neurogene Inc.

(Exact name of registrant as specified in its charter)

Delaware	**001-36327**	**98-0542593**
(State or other jurisdiction of incorporation or organization)	**(Commission File Number)**	**(I.R.S. Employer Identification No.)**

535 W 24th Street, 5th Floor
New York, NY 10011
(Address of principal executive offices, including zip code)

Registrant's telephone number, including area code: (877) 237-5020

N/A
(Former Name or Former Address, if Changed Since Last Report)

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 (see General Instruction A.2. below):

☐ 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 Act:

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Common Stock, $0.000001 par value	**NGNE**	**The Nasdaq Global Market**

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 2.02 Results of Operations and Financial Condition

On May 10, 2024, Neurogene Inc. (the "Company") issued a press release announcing financial results for the quarter ended March 31, 2024. A copy of the press release announcing such results is attached as Exhibit 99.1 to this Current Report on Form 8-K. Also on May 10, 2024, the Company posted an updated corporate presentation on its website. A copy of the corporate presentation is furnished as Exhibit 99.2 to this Current Report on Form 8-K.

The information in this Item 2.02 and Exhibits 99.1 and 99.2 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 such information or Exhibits 99.1 and 99.2 be deemed incorporated by reference into any filing under the Exchange Act or the Securities Act of 1933, as amended, except as expressly set forth by specific reference to such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Description
99.1	Press Release dated May 10, 2024
99.2	Corporate Presentation (May 2024)
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURE

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

NEUROGENE INC.

Date: May 10, 2024

By: /s/ Christine Mikail
Name: Christine Mikail
Title: President, Chief Financial Officer

Neurogene Reports First Quarter 2024 Financial Results and Highlights Recent Updates

Presented favorable safety data from Phase 1/2 NGN-401 gene therapy trial for Rett syndrome at ASGCT Annual Meeting

Received Australian HREC approval for NGN-401 trial

Remains on track to provide interim NGN-401 efficacy data from Cohort 1 in 4Q:24

Strong balance sheet with cash runway into 2H:26

NEW YORK – May 10, 2024 – Neurogene Inc. (Nasdaq: NGNE), a clinical-stage company founded to bring life-changing genetic medicines to patients and families affected by rare neurological diseases, today announced first quarter 2024 financial results and highlighted recent corporate updates.

"We have made substantial progress in our NGN-401 Rett syndrome gene therapy program since the beginning of the year, including dosing the third patient, expanding the trial to include additional patients and a high-dose cohort, and the recent clearance to conduct the trial in Australia," said Rachel McMinn, Ph.D., Founder and Chief Executive Officer of Neurogene. "We were pleased to present data at the ASGCT Annual Meeting earlier this week, which continued to show that NGN-401 has been generally well-tolerated. We remain on track to release interim efficacy data from the low-dose cohort in the fourth quarter of 2024."

Continued Dr. McMinn, "The NGN-401 data support our strategy to expand into additional disease areas that could benefit from gene therapy with transgene regulation, and we continue to plan to advance an additional product candidate into the clinic in 2025. We remain in a strong financial position with cash runway into the second half of 2026."

First Quarter 2024 and Recent Highlights, and Anticipated Milestones

Phase 1/2 Trial of NGN-401 Gene Therapy for Treatment of Rett Syndrome

- Presented favorable safety data from the first three pediatric patients in low-dose Cohort 1 at the American Society of Gene and Cell Therapy (ASGCT) Annual Meeting:
  - NGN-401 has been generally well-tolerated in all three patients with approximately nine, six and three months of follow-up, respectively
  - All treatment-related adverse events (AEs) have been mild/Grade 1, and all laboratory value changes are known risks of AAV administration and asymptomatic
  - No signs or symptoms of MeCP2 overexpression toxicity reported in any patient, including Patient 1 who is nine months post-dosing and has a mild *MECP2* variant predicted to result in residual MeCP2 expression
  - No treatment-emergent or intracerebroventricular procedure-related serious AEs
- Announced today acknowledgment from the Australian Therapeutic Goods Administration and approval from the Human Research Ethics Committee (HREC) to conduct the Phase1/2 clinical trial for NGN-401in Australia, the third region in which the trial is cleared
- Continues to expect to report interim clinical data, including efficacy data from Cohort 1, in the fourth quarter of 2024; additional interim data, including from Cohort 2, are expected in the second half of 2025

- Previously expanded the trial to include a high-dose Cohort 2 and more patients in low-dose Cohort 1; these updates are expected to generate a more complete data package and inform the design of a future NGN-401 registrational study
- Remains on track to complete enrollment in Cohort 1 in the second half of 2024 and to begin enrollment in Cohort 2 in the second quarter of 2024

Phase 1/2 Trial of NGN-101 Gene Therapy for Treatment of CLN5 Batten Disease

- Continuing enrollment in high-dose Cohort 3, and plans to provide interim clinical data and a regulatory update in the second half of 2024; given the rarity of the disease, U.S. Food and Drug Administration alignment on a streamlined registrational pathway will be critical for continued investment in the program

Additional Corporate Updates

- Advancing early-stage portfolio, and anticipates an additional product candidate using transgene regulation technology to enter the clinic in 2025

Upcoming Events

- 5th Annual Goldman Sachs Global Healthcare Conference: Management will provide a corporate presentation on June 12 at 1:20 p.m. ET and participate in 1x1 meetings
- 2024 IRSF (International Rett Syndrome Foundation) Rett Syndrome Scientific Meeting: Presentation of safety data from the Phase 1/2 NGN-401 gene therapy trial for Rett syndrome on June 18-19, 2024

First Quarter 2024 Financial Results

- **Cash Position:** Cash, cash equivalents and investments as of March 31, 2024 were $169.5 million. Cash outflows pertaining to the transaction with Neoleukin Therapeutics, including the offering costs associated with the pre-closing financing, were $9.6 million for the quarter ended March 31, 2024. The Company expects current cash, cash equivalents and marketable securities to fund operations into the second half of 2026.
- **Research & Development ("R&D") Expenses:** R&D expenses were $13.5 million for the three months ended March 31, 2024 compared to $10.3 million for the three months ended March 31, 2023. The increase in R&D expenses was primarily driven by an increase in NGN-401 clinical trial costs, increased preclinical costs related to our early discovery programs, and an increase in compensation and benefits expenses due to an increase in R&D headcount.
- **General & Administrative ("G&A") Expenses:** G&A expenses were $5.2 million for the three months ended March 31, 2024 compared to $2.8 million for the three months ended March 31, 2023. The increase in G&A expenses was primarily driven by an increase in compensation and benefits expenses due to an increase in G&A headcount, professional fees, insurance, information technology and other costs associated with becoming a public company.
- **Net Loss:** Net loss was $16.9 million for the three months ended March 31, 2024 compared to net loss of $12.3 million for the three months ended March 31, 2023.

About Neurogene

The mission of Neurogene is to treat devastating neurological diseases to improve the lives of patients and families impacted by these rare diseases. Neurogene is developing novel approaches and treatments to address the limitations of conventional gene therapy in central nervous system disorders. This includes selecting a delivery approach to maximize distribution to target tissues and designing

products to maximize potency and purity for an optimized efficacy and safety profile. The Company's novel and proprietary EXACT transgene regulation platform technology allows for the delivery of therapeutic levels while limiting transgene toxicity associated with conventional gene therapy. Neurogene has constructed a state-of-the-art gene therapy manufacturing facility in Houston, Texas. CGMP production of NGN-401 was conducted in this facility and will support pivotal clinical development activities. For more information, visit www.neurogene.com.

Cautionary Note Regarding Forward-Looking Statements

Statements in this press release which are not historical in nature are intended to be, and hereby are identified as, forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements may discuss goals, intentions and expectations as to future plans, trends, events, results of operations or financial condition, or otherwise, based on current expectations and beliefs of the management of Neurogene, as well as assumptions made by, and information currently available to, management of Neurogene, including, but not limited to, statements regarding: the therapeutic potential and utility, efficacy and clinical benefits of NGN-401 and NGN-101; the safety and tolerability profile of NGN-401; trial designs, clinical development plans and timing for each of NGN-401 and NGN-101, including anticipated timing of enrollment in and clinical trial results from the Company's NGN-401 Phase 1/2 trial for Rett syndrome or NGN-101 Phase 1/2 trial for CLN5 Batten Disease; initiation of new clinical sites for NGN-401 in Australia; expected interactions with the FDA regarding NGN-101; nomination of additional preclinical product candidates; and our expected cash resources and liquidity. Forward-looking statements generally include statements that are predictive in nature and depend upon or refer to future events or conditions, and include words such as "may," "will," "should," "would," "expect," "anticipate," "plan," "likely," "believe," "estimate," "project," "intend," "on track," and other similar expressions or the negative or plural of these words, or other similar expressions that are predictions or indicate future events or prospects, although not all forward-looking statements contain these words. Forward-looking statements are based on current beliefs and assumptions that are subject to risks, uncertainties and assumptions that are difficult to predict with regard to timing, extent, likelihood, and degree of occurrence, which could cause actual results to differ materially from anticipated results and many of which are outside of Neurogene's control. Such risks, uncertainties and assumptions include, among other things: risks related to the timing and success of enrolling patients in the expanded cohort of our Phase 1/2 clinical trial of NGN-401 for the treatment of Rett syndrome; the expected timing and results of dosing of patients in our clinical trials, including NGN-401 and NGN-101; the potential that we may not be able to expand our Phase 1/2 clinical trial of NGN-401 for the treatment of Rett syndrome into Australia based on a variety of factors, including but not limited to any decisions of regulatory authorities, costs of expanding the trial in Australia, the availability of suitable clinical test sites, and the ability to enroll patients in Australia, or other reasons; the potential for negative impacts to patients resulting from using a higher dose of NGN-401 in Cohort 2 of the Phase 1/2 clinical trial for the treatment of Rett syndrome; the risk that we may not be able to report our data on the predicted timeline; risks related to our ability to obtain regulatory approval for, and ultimately commercialize, our product candidates, including NGN-401; and other risks and uncertainties identified under the heading "Risk Factors" included in our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the Securities and Exchange Commission ("SEC") on March 18, 2024, or our Quarterly Report on Form 10-Q for the quarter ended March 31, 2024, and other filings that the Company has made and may make with the SEC in the future. Nothing in this communication should be regarded as a representation by any person that the forward-looking statements set forth herein will be achieved or that the contemplated results of any such forward-looking statements will be achieved. Forward-looking statements in this communication speak only as of the day they are made and are

qualified in their entirety by reference to the cautionary statements herein. Except as required by applicable law, Neurogene undertakes no obligation to revise or update any forward-looking statement, or to make any other forward-looking statements, whether as a result of new information, future events or otherwise.

This communication contains hyperlinks to information that is not deemed to be incorporated by reference into this communication.

- Financial Tables Follow -

Neurogene Inc.

Condensed Consolidated Balance Sheets

(In Thousands of U.S. dollars)

	March 31, 2024	December 31, 2023
Assets		
Cash and cash equivalents	$ 150,140	$ 148,210
Other current assets	24,001	52,138
Non-current assets	21,209	22,225
Total assets	$ 195,350	$ 222,573
Liabilities		
Current liabilities	$ 11,818	$ 22,973
Non-current liabilities	12,755	13,576
Total liabilities	24,573	36,549
Stockholders' equity	170,777	186,024
Total liabilities and stockholders' equity	$ 195,350	$ 222,573

Neurogene Inc.

Condensed Consolidated Statements of Operations

(In thousands of U.S. dollars, except share information)

	Three Months Ended March 31,	
	2024	**2023**
Operating expenses:		
Research and development	$ 13,541	$ 10,283
General and administrative	5,238	2,752
Total operating expenses	18,779	13,035
Loss from operations	(18,779)	(13,035)
Other income, net	1,858	772
Net loss	$ (16,921)	$ (12,263)
Per share information: [1]		
Net loss per share, basic and diluted	$ (1.00)	$ (28.28)
Weighted-average shares of common stock outstanding, basic and diluted	16,903,735	433,623

[1] For the three months ended March 31, 2023, net loss per share information is presented for the Company's then outstanding Class A common stock. For the three months ended March 31, 2024, net loss per share information is presented for the Company's common stock. See Note 1, *Reverse Merger and Pre-Closing Financing* and Note 3, *Net Loss Per Share Attributable to Common Stockholders*, for additional information.

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Melissa Forst
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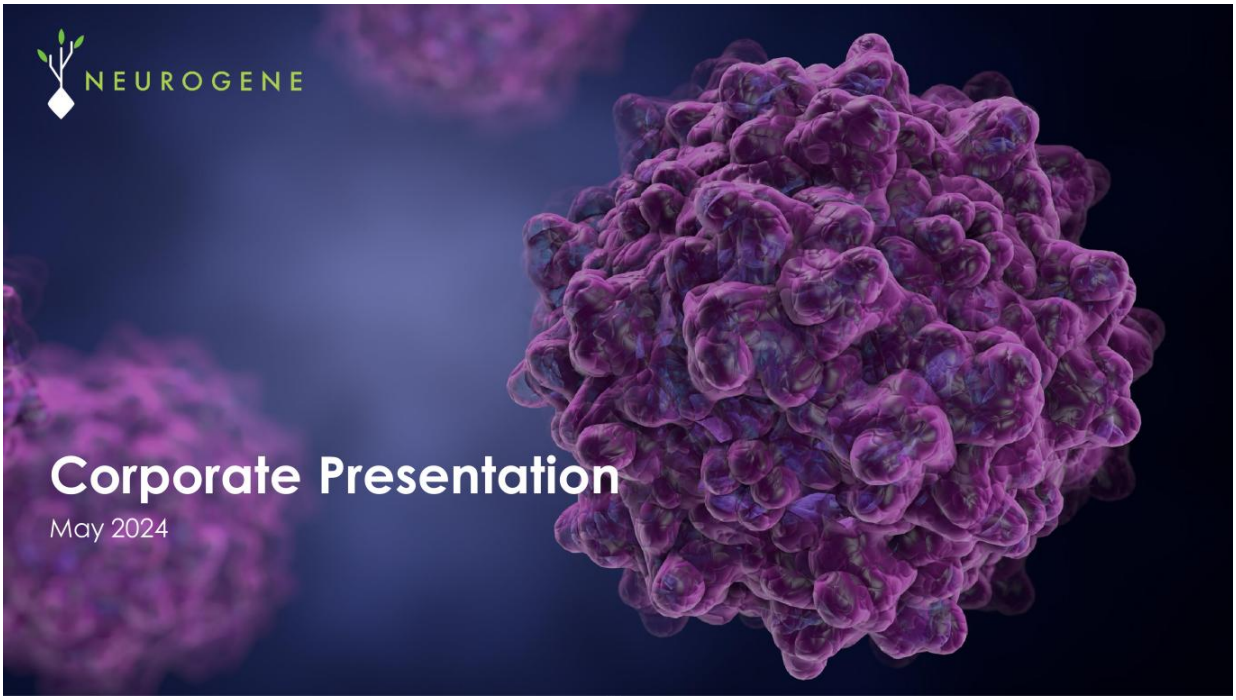
Neurogene@argotpartners.com


NEUROGENE
Corporate Presentation
May 2024

Disclaimer

Forward Looking Statements

This communication contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements may discuss goals, intentions and expectations as to future plans, trends, events, results of operations or financial condition, or otherwise, based on current expectations and beliefs of the management of Neurogene, as well as assumptions made by, and information currently available to, management of Neurogene, including, but not limited to, statements regarding the therapeutic potential and utility, efficacy and clinical benefits of its programs, including its EXACT™ technology, NGN-401 and NGN-101; market opportunities for Neurogene's product candidates; the safety and tolerability profile of NGN-401 and NGN-101, trial designs, clinical development plans and timing for NGN-401 and NGN-101, including completion of Cohort 1 dosing, first patient dosing of Cohort 2, and anticipated clinical data results in NGN-401 Phase 1/2 trial for Rett syndrome and anticipated clinical data results in NGN-101 Phase 1/2 trial for CLN5 Batten disease; anticipated impact of expansion of the Phase 1/2 trial for NGN-401, including initiation of a high dose Cohort 2 and expansion into the United Kingdom and Australia; future interactions with U.S. or foreign regulatory authorities; anticipated early-stage discovery and expectations regarding the initiation of future clinical trials for programs in development; and Neurogene's cash runway. Forward-looking statements generally include statements that are predictive in nature and depend upon or refer to future events or conditions, and include words such as "may," "will," "should," "would," "expect," "anticipate," "plan," "likely," "believe," "estimate," "project," "intend," and other similar expressions or the negative or plural of these words, or other similar expressions that are predictions or indicate future events or prospects, although not all forward-looking statements contain these words. Statements that are not historical facts are forward-looking statements. Forward-looking statements are based on current beliefs and assumptions that are subject to risks and uncertainties and are not guarantees of future performance. Actual results could differ materially from those contained in any forward-looking statement as a result of various factors, including, without limitation: Neurogene's limited operating history; the significant net losses incurred since inception of Neurogene; the ability to raise additional capital to finance operations; the ability to advance product candidates through non-clinical and clinical development; the ability to obtain regulatory approval for, and ultimately commercialize, Neurogene's product candidates; Neurogene's limited experience in designing and conducting clinical trials; the ability to identify and pivot to other programs, product candidates, or indications that may be more profitable or successful than Neurogene's current product candidates; expectations regarding the market and potential for Neurogene's current product candidates; expectations regarding the potential tolerability, safety or efficacy for Neurogene's current product candidates; the ability to attract, hire, and retain skilled executive officers and employees; reliance on third parties, contract manufacturers, and contract research organizations; the ability of Neurogene to protect its intellectual property and proprietary technologies; risks related to Neurogene's ability to correctly estimate its respective operating expenses, including its projected cash runway; and legislative, regulatory, political and economic developments and general market conditions.

The foregoing review of important factors that could cause actual events to differ from expectations should not be construed as exhaustive and should be read in conjunction with statements that are included herein and elsewhere, including the risk factors included in the Company's most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q filed with the Securities and Exchange Commission (SEC), as well as risk factors associated with companies, such as Neurogene, that operate in the biopharma industry. These forward-looking statements involve a number of risks, uncertainties (some of which are beyond Neurogene's control) or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. Nothing in this communication should be regarded as a representation by any person that the forward-looking statements set forth herein will be achieved or that the contemplated results of any such forward-looking statements will be achieved. Forward-looking statements in this communication speak only as of the day they are made and are qualified in their entirety by reference to the cautionary statements herein. Except as required by applicable law, Neurogene undertakes no obligation to revise or update any forward-looking statement, or to make any other forward-looking statements, whether as a result of new information, future events or otherwise.

Industry and Market Data

Certain information contained in this Presentation relates to or is based on studies, publications, surveys and Neurogene's own internal estimates and research. In this Presentation, Neurogene relies on, and refers to, publicly available information and statistics regarding market participants in the sector in which Neurogene competes and other industry data. Any comparison of Neurogene to any other entity assumes the reliability of the information available to Neurogene. Neurogene obtained this information and statistics from third-party sources, including reports by market research firms and company filings. In addition, all of the market data included in this Presentation involve a number of assumptions and limitations, and there can be no guarantee as to the accuracy or reliability of such assumptions. Finally, while Neurogene believes its internal research is reliable, such research has not been verified by any independent source and Neurogene has not independently verified the information.

Trademarks

This Presentation may contain trademarks, service marks, trade names and copyrights of other companies, which are the property of their respective owners. Solely for convenience, some of the trademarks, service marks, trade names and copyrights referred to in this Presentation may be listed without the TM, SM © or ® symbols, but Neurogene will assert, to the fullest extent under applicable law, the rights of the applicable owners, if any, to these trademarks, service marks, trade names and copyrights.

Neurogene is a Differentiated Clinical-Stage Company Utilizing EXACT™ Technology to Treat Complex Neurological Diseases

- Novel EXACT technology designed to overcome key limitations of conventional gene therapy
- Pipeline addresses attractive market opportunities, including Rett syndrome
- Internal manufacturing provides financial and strategic pipeline flexibility
- 2H:26 cash runway enables operations beyond clinical inflection points

EXACT: Expression Attenuation via Construct Tuning

Neurogene Clinical Stage Pipeline

Product Candidate	Indication	IND* Enabling	Phase I/2	Pivotal	Near-Term Expected Milestones
NGN-401	Rett Syndrome				Interim Data 4Q:24, Additional Data 2H:25
NGN-101	CLN5 Batten Disease				Interim Data 2H:24

*IND = investigational new drug.

Multiple discovery stage assets in development with plans to advance one program into the clinic in 2025

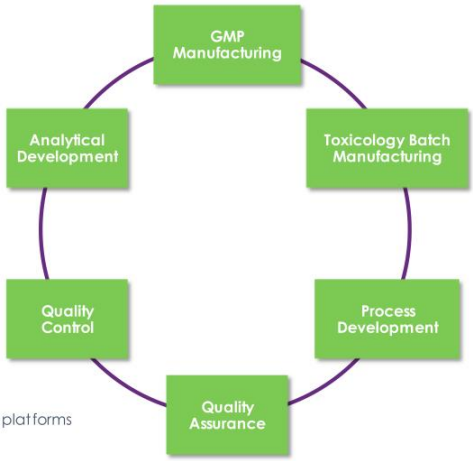
EXACT Developed to Solve the Limitations of Conventional Gene Therapy in Complex Neurological Disorders

Today's Gene Therapy is Limited By:	Neurogene's Solutions:
Variable Gene Expression	**Novel, modular EXACT gene regulation technology and other regulatory elements** designed to optimize transgene expression to maximize the therapeutic window
Safety Limitations	**Novel and proprietary EXACT gene regulation technology** designed to avoid transgene related toxicity associated with conventional gene therapy
Inefficient Gene Delivery	Select **ICV delivery approach** to maximize **AAV9** distribution to target CNS tissues Design products to **maximize potency and purity** for potentially optimized efficacy/safety profile

NEUROGENE

ICV = intracerebroventricular
AAV = adeno-associated virus
CNS = central nervous system

Wholly-Owned and Fully Integrated In-House AAV Manufacturing



- Flexibility to manufacture AAV product at low cost
- Own product quality and development timelines
- Process development expertise supports both HEK293 and Sf9/rBV manufacturing platforms
- Flexibility to rapidly adapt CMC execution to program needs

Current research and clinical-grade manufacturing capabilities are designed for commercial-grade product to avoid potential future comparability challenges

Experienced Leadership Team

Management Team

Rachel McMinn, Ph.D.
Founder and CEO

Christine Mikail, J.D.
President and CFO

Julie Jordan, M.D.
CMO

Stuart Cobb, Ph.D.
CSO

Ricardo Jimenez
SVP, Technical Operations

Effie Albanis, M.D.
SVP, Early Clinical and Translationall Research

Andrew Mulberg, M.D.
SVP, Regulatory Affairs

Arvind Sreedharan
SVP, Business Operations

NGN-401 for Rett Syndrome

Leveraging EXACT gene regulation technology

Rett Syndrome – Devastating Disorder with High Unmet Need

Genetics

- X-Linked disorder causing mutations in the gene encoding for methyl-CpG binding protein 2 (MeCP2)
- Unknown incidence in boys, but typically lethal by ~3 years of age due to no healthy copy of MeCP2

Compelling Market Opportunity

- U.S. prevalence - ~6,000-9,000 patients
- WW incidence - 1:10,000-1:15,000 live female births

High Unmet Need

- There are no approved treatments that address root cause of disease
- Significant unmet need remains for new treatment options

NEUROGENE

U.S. prevalence estimate based on published incidence rates: Laurvick CL, et al. J Pediatr 2006;148(3):347–35.
WW incidence estimate based on published incidence rates: Pini G, et al. Orphanet Journal of Rare Diseases (2016) 11:132.

Rett Syndrome Treatment Requires Tight Gene Regulation

Rett Syndrome*

Too little
gene expression drives disease

- ~50% of cells express WT levels of MeCP2
- ~50% are MeCP2 **deficient**

Balanced treatment goal

MeCP2 Duplication Disorder**

Too much
gene expression drives disease

- ~100% cells express **2x** MeCP2 levels

- Rett syndrome (RTT) is a severe neurological disorder caused by mosaic mutations in X-linked MeCP2 gene
- Mice modeling RTT recapitulate many neurological phenotypes observed clinically; disease reversibility has been demonstrated in both immature and mature adult animals

NGN-401 is designed to deliver therapeutic levels of MeCP2 to deficient cells while maintaining a non-toxic level in unaffected cells

NEUROGENE

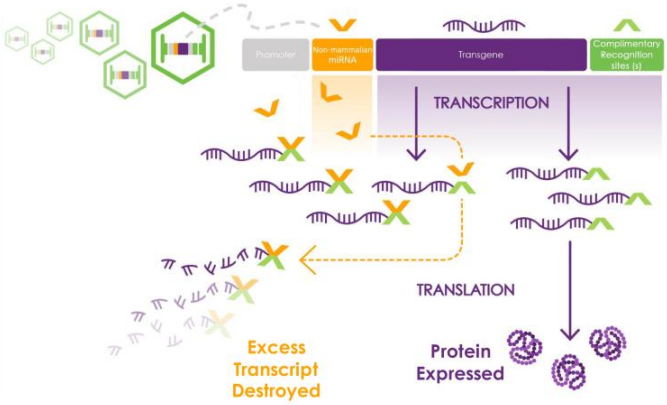
*Represents female Rett syndrome; **Represents male duplication disorder; WT = wildtype
Pini G, et al. Orphanet Journal of Rare Diseases (2016) 11:132.

EXACT Acts As a Genetic Thermostat, Limiting Transgene Expression

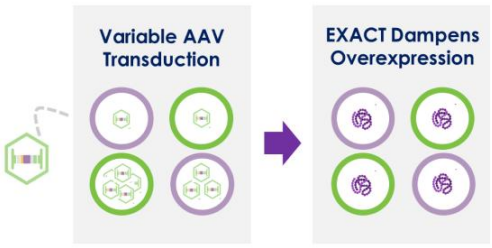
EXACT miRNA controls transgene levels to targeted range

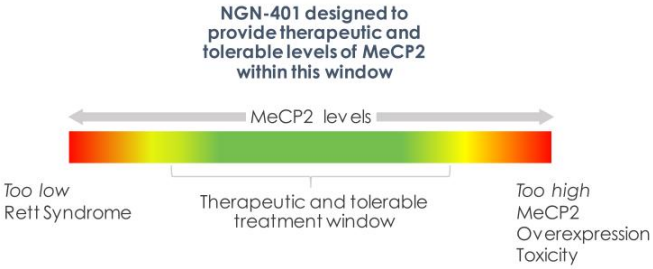
Regulatory elements designed to avoid off-target effects

EXACT is expected to enable gene therapy for Rett syndrome and other complex disorders



EXACT Designed to Widen Therapeutic Window and Enable Gene Therapy for Rett Syndrome

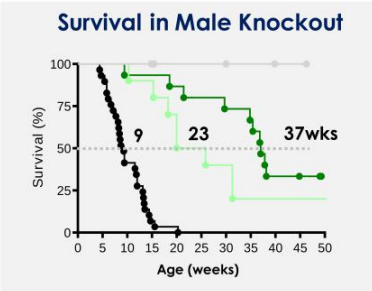


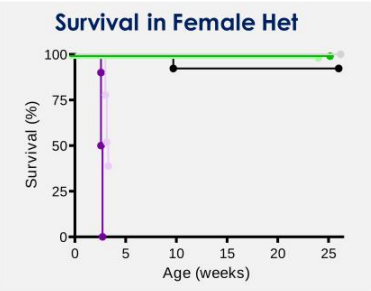


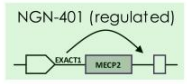
- ~50% of cells express WT levels of MeCP2
- ~50% are MeCP2 **deficient**

NGN-401 Demonstrates Efficacy and Safety in *Mecp2* Mouse Models

ICV Delivery of NGN-401 Delivers Targeted MeCP2 Levels





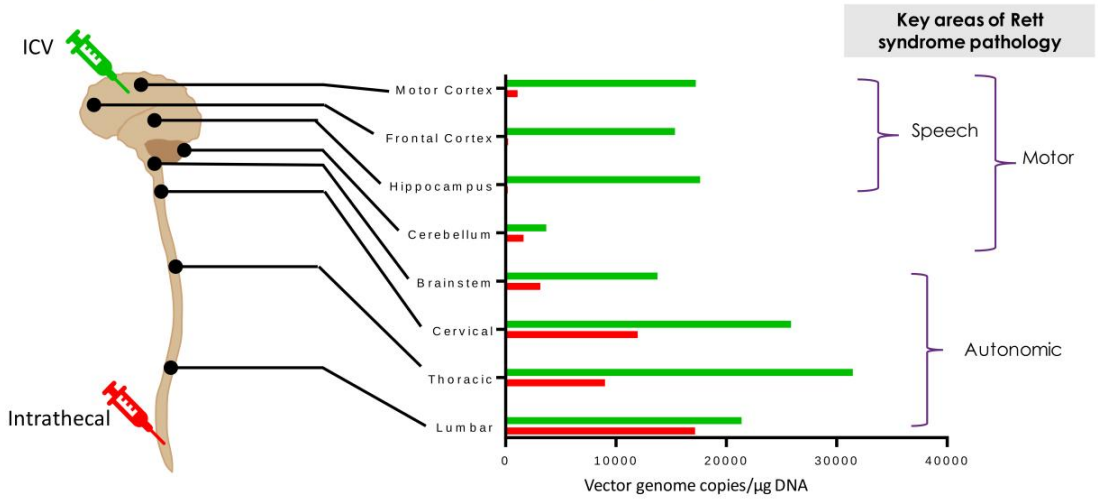


NGN-401 1e11 vg
NGN-401 3e11 vg
Unregulated 1e11 vg
Unregulated 3e11 vg

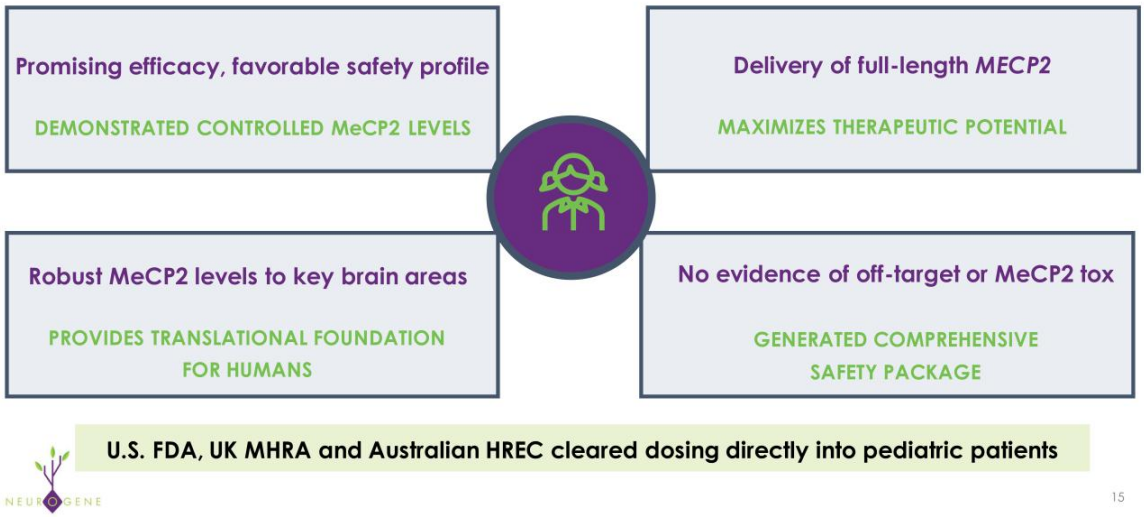
WT+ Vehicle
Male or female + Vehicle

NEUROGENE Het=heterozygous for Mecp2, mirroring genetic makeup of human females with Rett syndrome

ICV Administration Significantly Better Distribution Than IT-L To Key Areas of the Nervous System Underlying Rett Syndrome in NHPs



NGN-401 Preclinical Data Enabled Pediatric Clinical Approach



U.S. FDA, UK MHRA and Australian HREC cleared dosing directly into pediatric patients

Cardinal Clinical Features of Rett Syndrome

Inability to Communicate

- Loss of purposeful hand use & involuntary hand movements
- Loss of spoken language

Impaired Fine and Gross Motor Skills

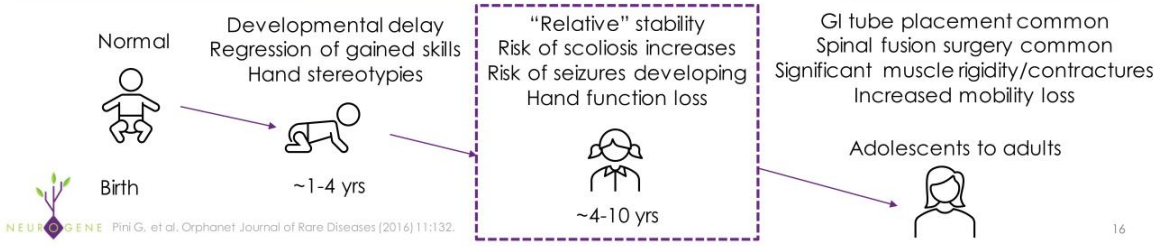
- Loss of hand function
- Gait abnormalities
- Ambulation requiring assistance or non-ambulatory

Autonomic Dysfunction

- Severe apnea episodes
- Hyperventilation
- Constipation
- Difficulty swallowing
- Sleep disturbance

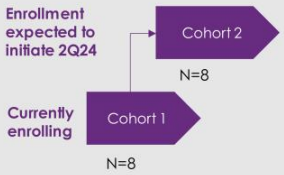
Additional Disease Manifestations

- Seizures
- Anxiety
- Scoliosis
- Muscle contractures



NEUROGENE Pini G, et al. Orphanet Journal of Rare Diseases (2016) 11:132.

Phase 1/2 Trial for NGN-401 Designed to Inform Future Pivotal Clinical Trial



- **Cohort 1 dose of 1E15 vg (total), Cohort 2 dose of 3E15 vg (total)**
- **Cohorts to enroll concurrently**
- **Both doses within GLP toxicology safety margin**
- **Key assessments at 3, 6, 9 and 12 months, which include caregiver and clinician assessments – RSBQ, CGI-I and CGI-S**

Key Eligibility Criteria

- Female, age ≥4 to ≤10 years with Classic Rett syndrome
- Clinical diagnosis & genetic confirmation of pathogenic MeCP2 mutation
- Clinical Global Impression-Severity (CGI-S) score of 4-6

Efficacy Assessments of Interest

Autonomic Function	Objective device to monitor breathing
Hand Function	Physician assessment of improvement
Communication	Physician assessment of improvement
Gross Motor Function	Physician assessment of improvement

NEUROGENE GLP = Good Laboratory Practice, CGI-I=Clinician Global Impression of Improvement, RSBQ=Rett syndrome behavior questionnaire (more details on Slide 36)

NGN-401 Study Inclusion Criteria is Driven by Severity of Rett Syndrome Domains Under CGI-S

Limited impairment | **Modest impairment** | **Eligible for Phase 1/2 clinical trial**

Clinical domains	CGI-S=1	CGI-S=2	CGI-S=3	CGI-S=4	CGI-S=5	CGI-S=6	CGI-S=7
Language/ Communication	Normal	May have unusual features (eg echolalia, reading disability)	Phrases-sentences. May have conversations or echolalia	<5 words Babbles Makes choices 25%-50%	No words Babbles Makes choices ≤25%	Vocalizations Occasionally screams Rarely or makes no choices	No words No vocalizations Screams No choices
Ambulation	No impairment	Normal, may have slight evidence of dystonia/ ataxia/ dyspraxia	Walks, able to use stairs/run May ride tricycle or climb	Walks independently Unable to use stairs or run	Walks with assistance	Stands with support or independently May walk with support Sits independently or with support	Cannot sit Doesn't stand or walk
Hand use	Normal, no impairment	Normal, may have slight fine motor issue	Bilateral pincer grasp. May use pen to write but has fine motor issues like tremor	Reaches for objects, raking grasp or unilateral pincer May use utensils/cup	Reaches No grasps	Rarely-occasionally reaches out No grasp	None
Social (eye contact)	Normal	Occasional eye gaze avoidance	Appropriate eye contact, >30s	Eye contact <20s	Eye contact <10s	Eye contact, inconsistent 5s	None
Autonomic	None	Minimal	No or minimal breathing abnormalities (<5%) warm, pink extremities	Breathing dysrhythmia <50% No cynanosis Cool UE, Pink LE	Breathing dysrhythmia 50% No cynanosis Cold UE, Pink LE	Breathing dysrhythmia 50-100% May have cynanosis Cool UE or LE, may be blue	Breathing dysrhythmia constantly with cynanosis Cold UE and LE, Mottled/blue
Seizures	None	None or controlled	None, with or without meds	Monthly-weekly	Weekly	Weekly-daily	Daily
Attentiveness	Normal	Occasional inattention	Attentive to conversation, follows commands	50-100%	50%	<50%	0%

NGN-401 Has Been Generally Well-Tolerated in First Three Patients Dosed in Cohort 1

Baseline Demographics

	Patient 1	Patient 2	Patient 3
Age at Dosing	7 years old	4 years old	6 years old
Race	Asian	White	White
MECP2 mutation	Mild	Severe	Severe
Time post- NGN-401 administration	~9 months	~6 months	~3 months

- All treatment-emergent adverse events (TEAEs) related to NGN-401 have been **mild/Grade 1** and transient or resolving, and most AEs are known potential risks of AAV
- There have been **no treatment-emergent or ICV procedure-related serious AEs (SAEs)**
- **No signs or symptoms indicative of MeCP2 overexpression toxicity** have been reported in any participant, including Patient 1 who has a mild variant predicted to result in residual MeCP2 expression

As of data cut-off of April 19, 2024
ASGCT 2024

NGN-401 Phase 1/2 Clinical Trial Status Update and Anticipated Milestones

Phase 1/2 Clinical Trial Status

- ☑ First patient dosed 3Q:23, second patient dosed 4Q:23, third patient dosed 1Q:24
- ☑ No treatment-emergent, procedure-related serious adverse events or overexpression toxicity observed to date

2024 Anticipated Key Milestones

- ☑ Expand ongoing Phase 1/2 clinical trial in 1H:24 to enroll a larger cohort of patients
- ❑ Initiate dosing of Cohort 2 in 2Q:24
- ❑ Complete dosing of Cohort 1 in 2H:24
- ❑ Interim Phase 1/2 clinical data 4Q:24
- ❑ Additional Phase 1/2 clinical data from expanded low dose and high dose cohorts in 2H:25

NEUROGENE DSMB = Data and Safety Monitoring Board

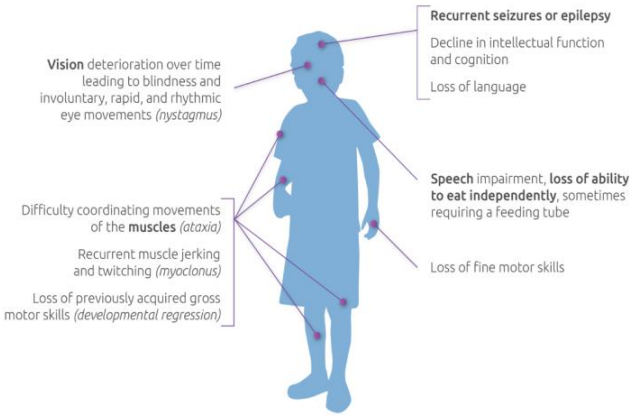
NGN-101 for CLN5 Batten Disease

Treating both CNS and vision through dual route of administration

CLN5 Batten Disease - Fatal, Neurodegenerative Disease With No Disease-Specific Treatment Options

CLN5 Batten disease has no available treatment options

Brineura, approved globally for a similar indication, CLN2, has transformed clinical outcomes in Batten disease

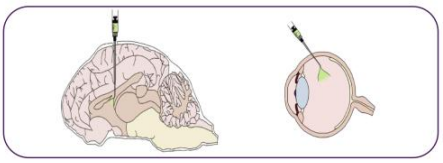


NEUROGENE Simonati A et al. Phenotype and natural history of variant late infantile ceroid-lipofuscinosis 5. Dev Med Child Neurol. 2017 Aug;59(8):815-821.

NGN-101 Dual Delivery Supported by Compelling Preclinical Data

Dual route of administration

First clinical gene therapy study targeting both neurodegeneration and vision loss

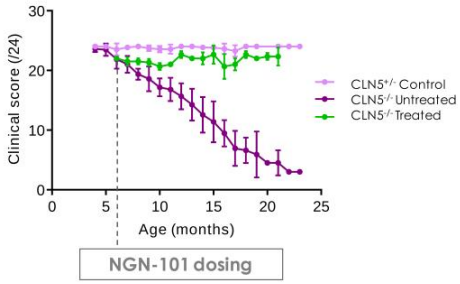


NGN-101 product design

NEUROGENE IVT = Intravitreal

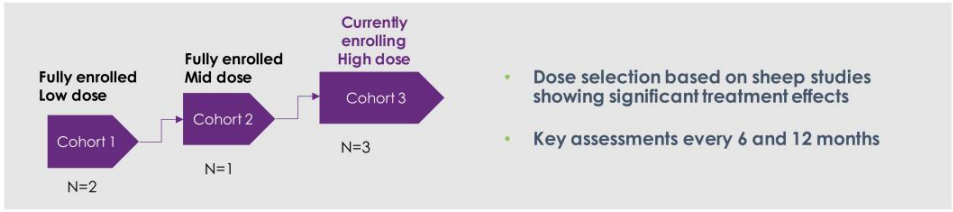
NGN-101 dosing (ICV+IVT) in CLN5 knockout sheep

Combination dosing leads to halting of disease progression



NGN-101 dosing

Clinical Study Design For NGN-101 Addresses Vision and CNS



- **Dose selection based on sheep studies showing significant treatment effects**
- **Key assessments every 6 and 12 months**

Key Eligibility Criteria

- Age ≥3 to ≤9 years
- Genetic diagnosis of CLN5
- Onset of disease ≤5 years of age
- Score of ≥1 on the Hamburg motor domain at minimum, the equivalent of 20/200 visual acuity or better at the time of screening

Efficacy Endpoints/Markers of Interest

Optical Coherence Tomography (OCT)	Preservation of key retinal layers is a leading indicator of vision stability
Visual Acuity	Stability in treated eye vs. worsening in untreated eye could provide evidence of clinical benefit
Hamburg Motor Scale	Scale has been used previously to support BMRN's ERT Brineura® for CLN2 disease

NEUROGENE ERT = Enzyme replacement therapy

NGN-101 — Defining a Registration Path

FDA meeting focused on finalizing CMC plans completed 4Q:23

Potency Assay

FDA accepted proposed potency assay strategy, a first milestone in determining continuation of the program

Improved Manufacturing Process

FDA alignment on proposed comparability strategy for using Neurogene-made material with substantially improved profile to Phase 1/2 drug product

Plan to request FDA meeting in 2H:24 to align on clinical requirements for streamlined registration

Complete enrollment of high dose cohort in 2024

Continue collection of clinical trial data on vision and motor for analysis

Ongoing natural history data analysis

Alignment with FDA on streamlined registration pathway required to move program forward

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Key Anticipated Milestone Events

Key Upcoming Anticipated Milestones and Pipeline Developments

Rett syndrome (NGN-401)

- ☑ Expand ongoing Phase 1/2 clinical trial in 1H:24 to enroll a larger cohort of patients
- ❑ Interim Phase 1/2 clinical data 4Q:24
- ❑ Additional Phase 1/2 clinical data from expanded low dose and high dose cohorts in 2H:25

CLN5 Batten disease (NGN-101)

- ❑ Interim Phase 1/2 clinical data in 2H:24
- ❑ Engage in FDA discussions regarding a streamlined registrational pathway in 2H:24

Early-stage discovery

- ❑ Advance one program into the clinic (2025)

Approximately $170 million cash on hand as of March 31, 2024, expected to fund operations into 2H:26

Why Neurogene?

- Unlocking multi-billion dollar neurological disease markets
- Proprietary capabilities and technology enable addressing complex diseases
- Strategy focused on efficiency and maximizing probability of success
- Leadership team with deep operational, technological and clinical experience
- Strong balance sheet and fiscally disciplined approach

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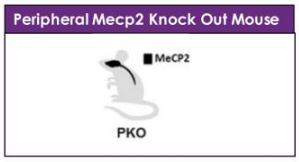
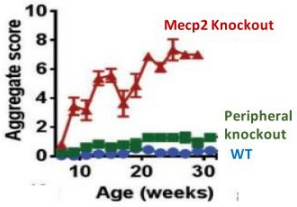
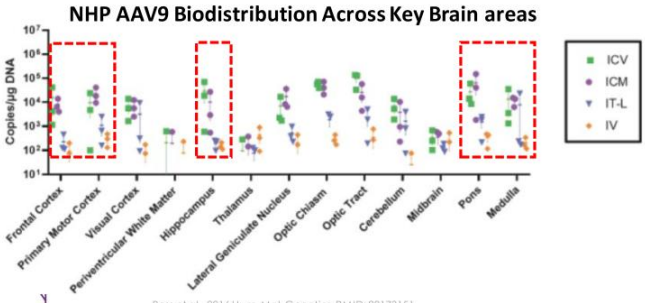
Appendix

Rett Syndrome Primarily Results from Loss of *MECP2* Function in the Brain, Making the Brain the Key Target Area for Gene Therapy







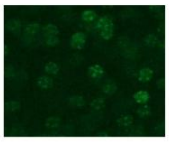
- Limiting expression of MeCP2 to only the brain/spinal cord results in a near normal mouse
- NHP biodistribution study shows 10-100x greater distribution for ICV/ICM compared to IT-L
- Delivery of NGN-401 via ICV chosen to maximize *MECP2* expression in the brain

Ross et al., 2016 Hum. Mol. Genetics, PMID: 28173151

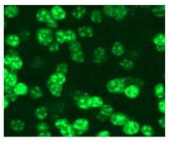
NHP data from ASGCT 2021 Annual meeting May 11-14

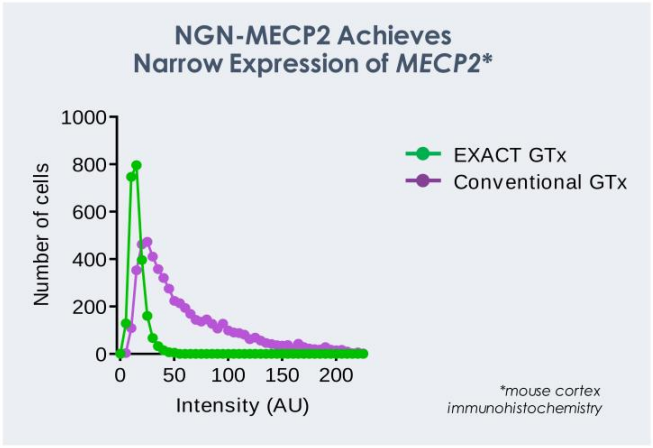
EXACT Delivers Consistent Levels of *MECP2* Expression on Cell-by-Cell Basis

EXACT



Conventional

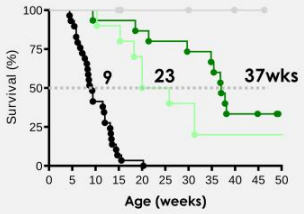




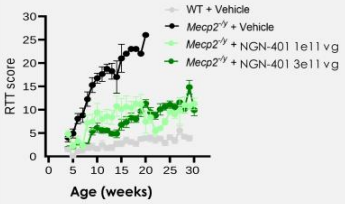
NGN-401 Demonstrates Tight *MECP2* Regulation That Translates to Compelling Outcomes in a Knockout Mouse Model

ICV Delivery of NGN-401 Delivers Targeted MeCP2 Levels

Survival



Clinical Score*



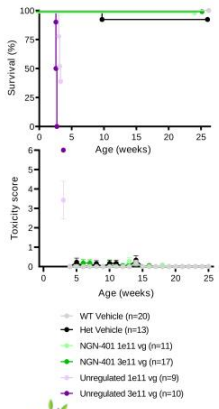
Key domains improved:

- Motor
- Gait
- Breathing

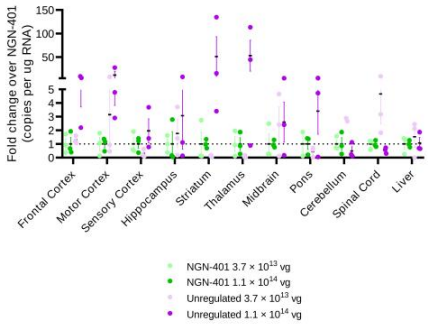
NEUROGENE *RTT scored 0-5 for six domains: mobility, gait, clasping, breathing, tremor, body condition

NGN-401 Via ICV Delivery Well Tolerated in Multiple Studies While Conventional Unregulated Gene Therapy is Toxic

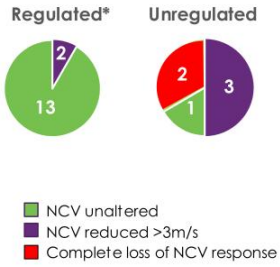
NGN-401 Well Tolerated in Female Mouse Model, Unregulated MeCP2 Highly Toxic



Tight mRNA Levels in NHPs for NGN-401, While Unregulated Has Substantially Greater Variance



NGN-401 Well Tolerated in NHP studies, While Unregulated MeCP2 Demonstrates Early Toxicity

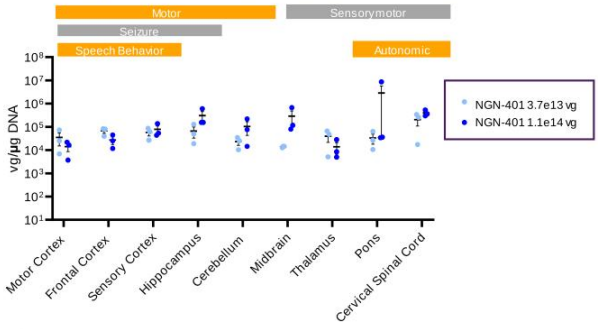


NOTE: toxicity scoring developed to capture phenotypes associated with MeCP2 overexpression including general condition, tremor, loss of limb use.
*Regulated includes NGN-401 and another EXACT vector; data at 30 days
NCV=nerve conduction velocity; NHP = non-human primates

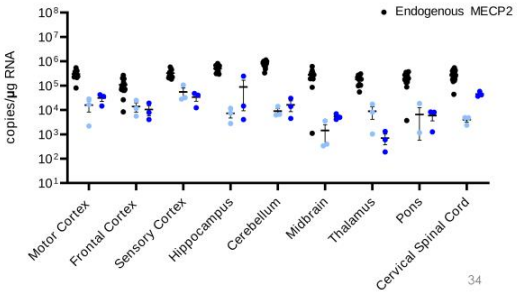
NGN-401 Distribution and Expression Levels in NHPs Support Encouraging Profile for Human Testing

- NGN-401 distributes to key regions underlying RTT pathophysiology in WT non-human primates
- Degree of mRNA expression tracks vector genome biodistribution of AAV9 across key brain regions
- Aggregate transgene expression below levels of endogenous *MECP2* mRNA (100% of cells), avoiding overexpression concerns

Vector Biodistribution with ICV Administration Addresses Key Areas of the Brain Affected in Rett Syndrome



NGN-401 mRNA Expression Levels Below Endogenous



GLP Toxicology in NHPs Support Favorable Safety Profile

- NGN-401 evaluated in GLP NHP toxicology study with 90-day and 180-day cohorts
- No signs or symptoms of MeCP2 overexpression observed
- >4x safety margin relative to NGN-401 clinical starting dose in Phase 1/2
- Overall toxicology profile consistent with typical profile of intra-CSF administered AAV9 product
  - Slight to minimal non-adverse pathology detected in the dorsal root ganglion (DRG) nerves
  - Early and transient liver enzyme elevations observed, which resolved quickly without intervention

Explanation of CGI-I and RSBQ

CGI-I
(Clinician Global Impression of Improvement)

RSBQ
(Rett Syndrome Behavior Questionnaire)

Score	Definition
0	not true
1	somewhat or sometimes true
2	very true

Domain	Total Possible Points (90)
General mood	16
Breathing problems	10
Hand behaviors	12
Repetitive face movements	8
Body rocking and expressionless face	12
Nighttime behaviors	6
Fear/anxiety	8
Walking/standing	4
Other	14