REGENXBIO Presents Interim Clinical Data from Phase I/II AFFINITY DUCHENNE™ Trial of RGX-202 at 28th Annual International Congress of the World Muscle Society

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- *RGX-202, a potential one-time AAV Therapeutic for the treatment of Duchenne that includes an optimized transgene for a novel microdystrophin, continues to be well-tolerated in three patients from dose level 1 ($1x10^{14}$ GC/kg)*
- *Initial biomarker data in two patients who completed three-month assessment demonstrate robust microdystrophin expression with localization to the muscle cell membrane*
    - *Patient aged 4.4 years old had expression level at 38.8% of control*
- *Trial dose escalation expected by end of 2023*
- *Pivotal dose determination and initiation of pivotal program anticipated in 2024*
    - *Plan to use RGX-202 microdystrophin as a surrogate endpoint to support a Biologics License Application filing using the accelerated approval pathway*
    - *RGX-202 development program uses commercial-ready cGMP material from the REGENXBIO Manufacturing Innovation Center*
- *Conference call today, Tuesday, October 3, 2023, at 4:30 p.m. ET*

ROCKVILLE, Md., Oct. 3, 2023 /PRNewswire/ -- REGENXBIO Inc. (Nasdaq: RGNX) today announced additional interim safety data and initial efficacy data from the Phase I/II AFFINITY DUCHENNE™ trial of RGX-202 for the treatment of Duchenne Muscular Dystrophy (Duchenne). Results were shared at the 28th Annual International Congress of the World Muscle Society.

"Duchenne is a rare degenerative disease, and without a functional dystrophin protein, muscles progressively weaken, leading to loss of mobility and declining respiratory and cardiac function," said Olivier Danos, Ph.D., Chief Scientific Officer of REGENXBIO. "The unique construct of RGX-202, inclusive of the C-Terminal domain, has the potential to make a meaningful impact for patients and we are encouraged by these interim safety and efficacy results."

RGX-202 is an investigational one-time AAV therapeutic for Duchenne, using the NAV® AAV8 vector to deliver a transgene for a novel microdystrophin that includes the functional elements of the C-Terminal (CT) domain as well as a muscle-specific promoter to support a targeted therapy for improved resistance to muscle damage associated with Duchenne.

Data were presented from dose level 1 ($1x10^{14}$ genome copies (GC)/kg body weight) of the ongoing Phase I/II AFFINITY DUCHENNE™ trial, which continues to recruit ambulatory patients (aged 4 to 11 years) and is using commercial-ready cGMP material from the REGENXBIO Manufacturing Innovation Center.

Safety Update
As of September 28, 2023, RGX-202 was reported to be well tolerated with no drug-related serious adverse events in three patients, aged 4.4, 10.6 and 6.3 years, dosed to date at dose level 1. Time of post-administration follow up ranges from three weeks to more than five months. The two patients who reached three-month follow-up have completed the immunosuppression regimen per study protocol.

Biomarker Data
Initial biomarker data from two patients who completed three-month trial assessments indicate encouraging increases in expression of RGX-202 microdystrophin from bicep muscle biopsies taken at three months following one-time administration of RGX-202. In addition, RGX-202 microdystrophin was detectable by immunofluorescence staining throughout muscle tissue at three months, with RGX-202 microdystrophin protein localized to the sarcolemma.

RGX-202 microdystrophin levels were measured using an automated and precise western blot method (Jess), and comparable results were confirmed with a proprietary liquid chromatography-mass spectrometry (LC-MS) method.

In the patient aged 4.4 years old, RGX-202 microdystrophin expression was measured to be 38.8% compared to control. A reduction from baseline in serum creatinine kinase (CK) levels of 43% was observed at ten weeks, supporting evidence of clinical improvement. Elevated CK levels are associated with muscle injury and are uniformly elevated in patients with Duchenne.

In the patient aged 10.6 years old, RGX-202 microdystrophin expression was measured to be 11.1% compared to control and a reduction from baseline in serum CK levels of 44% was observed at ten weeks.

"I am encouraged by these initial results demonstrating that RGX-202 appears to be well tolerated and leads to robust microdystrophin expression in muscle tissue, which are important early findings," said Aravindhan Veerapandiyan, M.D., Pediatric Neuromuscular Neurologist, Arkansas Children's

Hospital, and primary investigator in the trial. "I know that there is still unmet need for these boys for new treatment options that have the potential to impact the trajectory of the disease."

Clinical Program Updates

REGENXBIO expects to dose patients at dose level 2 ($2x10^{14}$ genome copies (GC)/kg body weight) in the Phase I/II AFFINITY DUCHENNE trial by the end of 2023. In addition, the trial protocol has been amended to accelerate the development of RGX-202, updating the dose expansion phase of the trial to begin after two patients, from the previous three patients.

Today, REGENXBIO also provided an update on a newly completed preclinical efficacy study evaluating RGX-202 manufactured using REGENXBIO's NAVXpress™ commercial-ready process at both dose levels. RGX-202 at dose level 2 showed improvement in functional performance, compared to dose level 1, as determined by forelimb muscle strength and treadmill exhaustion in *mdx* mice. This data further supports plans to immediately initiate dose escalation to dose level 2.

The Company expects to share initial strength and functional assessment data for both dose levels in 2024. Additionally, REGENXBIO expects to make a pivotal dose determination and initiate a pivotal program for RGX-202 in 2024.

"We are pleased to share these encouraging results and updates, enabling us to accelerate our development of RGX-202 with the goal of reaching pivotal phase faster," said Kenneth T. Mills, President and Chief Executive Officer of REGENXBIO. "We plan to scale up production of RGX-202 using commercial-ready cGMP material from the REGENXBIO Manufacturing Innovation Center to support a pivotal program in 2024, with a clear path to submit a BLA using the accelerated approval pathway, with RGX-202 microdystrophin as a surrogate endpoint for clinical benefit. This update firmly establishes RGX-202 as a key feature of our '5x'25' vision to have five gene therapies either on the market or in late-stage development by 2025."

Conference Call Details

REGENXBIO will host a conference call Tuesday, October 3 at 4:30 p.m. ET with principal investigator, Dr. Aravindhan Veerapandiyan, to discuss these results and the RGX-202 program.

Listeners can register for the webcast via this link. Analysts wishing to participate in the question and answer session should use this link. A copy of the slides being presented will be available via the Company's investor website. Those who plan on participating are advised to join 15 minutes prior to the start time. A replay of the webcast will also be available via the Company's investor website approximately two hours after the call's conclusion.

AFFINITY DUCHENNE Trial Design

The Phase I/II AFFINITY DUCHENNE trial is a multicenter, open-label dose escalation and dose expansion clinical study to evaluate the safety, tolerability and clinical efficacy of a one-time intravenous (IV) dose of RGX-202 in patients with Duchenne. In the dose evaluation phase of the trial, four ambulatory, pediatric patients (ages 4 to 11 years old) are expected to enroll in two cohorts with doses of 1x1014 genome copies (GC)/kg body weight (n=2) and 2x1014 GC/kg body weight (n=2). After an independent safety data review for each cohort, a dose expansion phase of the trial may allow for up to seven additional patients to be enrolled at each dose level (for a total of up to nine patients in each dose cohort).

The trial design consists of thorough safety measures informed by the Duchenne community and engagement with key opinion leaders, including a comprehensive, short-term, prophylactic immunosuppression regimen to proactively mitigate potential complement-mediated immunologic responses, and inclusion criteria based on dystrophin gene mutation status, including DMD gene mutations in exons 18 and above. Trial endpoints include safety, immunogenicity assessments, pharmacodynamic and pharmacokinetic measures of RGX-202, including microdystrophin protein levels in muscle, and strength and functional assessments, including the North Star Ambulatory Assessment (NSAA) and timed function tests. Initial trial sites are located in the U.S., with additional sites in Canada and Europe expected to follow.

About RGX-202

RGX-202 is designed to deliver a transgene for a novel microdystrophin that includes the functional elements of the C-Terminal (CT) domain found in naturally occurring dystrophin. Presence of the CT domain has been shown in preclinical studies to recruit several key proteins to the muscle cell membrane, leading to improved muscle resistance to contraction-induced muscle damage in dystrophic mice. Additional design features, including codon optimization and reduction of CpG content, may potentially improve gene expression, increase translational efficiency and reduce immunogenicity. RGX-202 is designed to support the delivery and targeted expression of genes throughout skeletal and heart muscle using the NAV AAV8 vector, a vector used in numerous clinical trials, and a well-characterized muscle-specific promoter (Spc5-12).

About Duchenne Muscular Dystrophy

Duchenne is a severe, progressive, degenerative muscle disease, affecting 1 in 3,500 to 5,000 boys born each year worldwide. Duchenne is caused by mutations in the Duchenne gene which encodes for dystrophin, a protein involved in muscle cell structure and signaling pathways. Without dystrophin, muscles throughout the body degenerate and become weak, eventually leading to loss of movement and independence, required support for breathing, cardiomyopathy and premature death.

About REGENXBIO Inc.

REGENXBIO is a leading clinical-stage biotechnology company seeking to improve lives through the curative potential of gene therapy. REGENXBIO's NAV Technology Platform, a proprietary adeno-associated virus (AAV) gene delivery platform, consists of exclusive rights to more than 100 novel AAV vectors, including AAV7, AAV8, AAV9 and AAVrh10. REGENXBIO and its third-party NAV Technology Platform Licensees are applying the NAV Technology Platform in the development of a broad pipeline of candidates, including late-stage and commercial programs, in multiple therapeutic areas. REGENXBIO is committed to a "5x'25" strategy to progress five AAV Therapeutics from our internal pipeline and licensed programs into pivotal-stage or commercial products by 2025.

FORWARD-LOOKING STATEMENTS

This press release includes "forward-looking statements," within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements express a belief, expectation or intention and are generally accompanied by words that convey projected future events or outcomes such as "believe," "may," "will," "estimate," "continue," "anticipate," "assume," "design," "intend," "expect," "could," "plan," "potential," "predict," "seek," "should," "would" or by variations of such words or by similar expressions. The forward-looking statements include statements relating to, among other things, REGENXBIO's future operations, clinical trials, costs and cash flow. REGENXBIO has based these forward-looking statements on its current expectations and assumptions and analyses made by REGENXBIO in light of its experience and its perception of historical trends, current conditions and expected future developments, as well as other factors REGENXBIO believes are appropriate under the circumstances. However, whether actual results and developments will conform with REGENXBIO's expectations and predictions is subject to a number of risks and uncertainties, including the timing of enrollment, commencement and completion and the success of clinical trials conducted by REGENXBIO, its licensees and its partners, the timing of commencement and completion and the success of preclinical studies conducted by REGENXBIO and its development partners, the timely development and launch of new products, the ability to obtain and maintain regulatory approval of product candidates, the ability to obtain and maintain intellectual property protection for product candidates and technology, trends and challenges in the business and markets in which REGENXBIO operates, the size and growth of potential markets for product candidates and the ability to serve those markets, the rate and degree of acceptance of product candidates, and other factors, many of which are

beyond the control of REGENXBIO. Refer to the "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of REGENXBIO's Annual Report on Form 10-K for the year ended December 31, 2022, and comparable "risk factors" sections of REGENXBIO's Quarterly Reports on Form 10-Q and other filings, which have been filed with the U.S. Securities and Exchange Commission (SEC) and are available on the SEC's website at WWW.SEC.GOV. All of the forward-looking statements made in this press release are expressly qualified by the cautionary statements contained or referred to herein. The actual results or developments anticipated may not be realized or, even if substantially realized, they may not have the expected consequences to or effects on REGENXBIO or its businesses or operations. Such statements are not guarantees of future performance and actual results or developments may differ materially from those projected in the forward-looking statements. Readers are cautioned not to rely too heavily on the forward-looking statements contained in this press release. These forward-looking statements speak only as of the date of this press release. Except as required by law, REGENXBIO does not undertake any obligation, and specifically declines any obligation, to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

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