REGENXBIO Announces Additional Positive Long-term and Interim Phase I/IIa Trial Update for RGX-314 for the Treatment of Wet AMD

April 22, 2020 06:30 AM EDT

ROCKVILLE, Md., April 22, 2020 /PRNewswire/ --

- *RGX-314 continues to be well-tolerated at all dose levels*
- *Long-term, durable treatment effect demonstrated over two years in Cohort 3*
  - *Mean improvement in vision (+14 letters) and stable retinal thickness (+2 µm)*
  - *50% of patients (3/6) remain anti-VEGF injection-free over two years*
  - *67% of patients (4/6) are anti-VEGF injection-free from nine months to two years*
  - *Stable intraocular RGX-314 protein expression over two years*
- *73% of patients (8/11) in Cohort 5 remain anti-VEGF injection-free over nine months*
- *Intraocular RGX-314 protein levels at six months demonstrate dose-dependent expression across cohorts*
- *Company on track to provide one-year data from Cohorts 4 & 5 in mid-2020 and initiate RGX-314 subretinal delivery pivotal program in 2H 2020*
- *Webcast conference call to be hosted Wednesday, April 22 at 8:30 a.m. ET featuring wet AMD Key Opinion Leaders, Allen C. Ho, M.D., Robert Avery, M.D., and Peter Campochiaro, M.D.*

REGENXBIO Inc. (Nasdaq: RGNX), a leading clinical-stage biotechnology company seeking to improve lives through the curative potential of gene therapy based on its proprietary NAV® Technology Platform, today provided additional long-term data from the ongoing Phase I/IIa trial of RGX-314 for the treatment of wet age-related macular degeneration (wet AMD).

"I am impressed by the overall outcomes in patients after a one-time administration of RGX-314. I believe that RGX-314 is the leading gene therapy program for a major retinal disease such as wet AMD and could be an important potential one-time treatment option for AMD patients who require frequent and burdensome anti-VEGF injections. Real-world evidence demonstrates that patients lose vision over time with our current standard of care and incur significant treatment burden with frequent clinic visits and injections," said Allen C. Ho, M.D., Director of Retina Research at Wills Eye Hospital and Mid Atlantic Retina and investigator surgeon in the RGX-314 trial.

"The clinical profile of RGX-314 appears very promising as a one-time treatment strategy for wet AMD as we continue to learn about the consistent and durable effects of our anti-VEGF gene therapy," added Steve Pakola, M.D., Chief Medical Officer of REGENXBIO. "We are encouraged that all patients in Cohort 5 who were anti-VEGF injection-free at six months remained anti-VEGF injection-free at nine months. We also have further evidence of dose-dependent intraocular protein levels in this Phase I/IIa study. We are on track to have one-year data from our later cohorts in mid-2020 and look forward to initiating a pivotal program for the subretinal delivery of RGX-314 in the second half of 2020. We are also continuing our preparations to initiate a Phase II trial for the in-office suprachoroidal delivery of RGX-314 in wet AMD patients in the first half of this year."

Study Design and Safety

In the Phase I/IIa trial of RGX-314, 42 patients with severe wet AMD requiring frequent anti-vascular endothelial growth factor (anti-VEGF) injections were treated across five dose cohorts, with doses ranging from $3x10^9$ GC/eye to $2.5x10^{11}$ GC/eye. Patients were enrolled into all dose cohorts independent of their neutralizing antibody titers to AAV and did not receive prophylactic immune suppressive oral corticosteroid therapy before or after administration of RGX-314.

Patients in the study are being assessed each month for 24 months and will receive safety follow-up for five years after RGX-314 administration. Efficacy assessments for the study include reduction in anti-VEGF intravitreal injections, change in vision as measured by Best Corrected Visual Acuity (BCVA), change in central retinal thickness (CRT) as measured by spectral domain optical coherence tomography (SD-OCT), and protein expression levels as measured from aqueous samples by electrochemiluminescence immunoassay (ECL).

As of April 6, 2020, RGX-314 continued to be well-tolerated across all cohorts, with no drug-related serious adverse events (SAEs) reported. Sixteen SAEs that were not related to RGX-314, including two ocular procedure-related SAEs, were reported in ten patients. There have been no reports of clinically-determined immune responses, drug-related ocular inflammation, or post-surgical inflammation beyond what is expected following routine vitrectomy.

Across all 42 patients in the study, the most common nonserious adverse events in the study eye were generally assessed as mild (90%). These included post-operative conjunctival hemorrhage (69% of patients), post-operative inflammation (36% of patients), eye irritation (17% of patients), eye pain (17% of patients), and post-operative visual acuity reduction (17% of patients). In 67% of patients across all cohorts, and in 83% of patients in Cohorts 3-5, mild to moderate retinal pigmentary changes were observed on imaging, the majority of which were in the peripheral inferior retina. There was no evidence of clinical symptoms or changes to visual acuity related to retinal pigmentary changes. Retinal hemorrhage was observed in 17% of

patients and is an anticipated event in patients with severe wet AMD.

Summary of Long-term Data for Cohort 3 Over Two Years

Positive long-term potential efficacy signals were sustained over two years in Cohort 3.The mean change in visual acuity across all six patients in Cohort 3 was markedly improved over two years, with a mean BCVA improvement of +14 letters, and the mean change in CRT was stable, with an increase of +2 µm.

Patients in Cohort 3 also demonstrated long-term reductions in anti-VEGF treatment burden over two years with a mean annualized rate of 2.8 anti-VEGF injections after administration of RGX-314, which is a reduction of over 60% from the mean annualized injection rate during the twelve months prior to administration of RGX-314. Three out of six (50%) patients received no anti-VEGF injections over two years following one-time administration of RGX-314. One patient received four anti-VEGF injections after RGX-314 administration and then did not receive anti-VEGF injections from nine months through two years.

The four patients who did not receive anti-VEGF injections after nine months demonstrated a mean BCVA improvement of +14 letters, with a range of +6 letters to +25 letters. In addition, these patients had stable retinal thickness with a mean change of +9 µm.

Additionally, long-term intraocular RGX-314 protein expression was stable in patients in Cohort 3 over two years. The mean RGX-314 protein expression level in Cohort 3 was 227.2 ng/ml at two years, compared to 217.8 ng/ml at six months. The mean RGX-314 protein expression level in the four patients who did not receive anti-VEGF injections after nine months was 291.7 ng/ml at two years, compared to 273.6 ng/ml at six months.

Summary of Data for Cohorts 4 and 5

Consistent with previous results, intraocular RGX-314 protein expression levels increased in a dose-dependent manner across cohorts when measured at six months after administration of RGX-314; the mean protein expression level in Cohort 4 and Cohort 5 was 653.6 ng/ml and 848.7 ng/ml, respectively.

Patients in Cohort 5 continued to demonstrate a meaningful reduction in anti-VEGF treatment burden over nine months following administration of RGX-314, with 8/11 (73%) patients remaining anti-VEGF injection-free, and a reduction across the cohort of over 80% from the mean annualized injection rate during the 12 months prior to RGX-314 administration.

Conference Call

In connection with this announcement, REGENXBIO will host a webcast and conference call with accompanying slides today at 8:30 a.m. ET. This event will feature study investigators Allen C. Ho, M.D., Wills Eye Hospital and Mid Atlantic Retina, Robert Avery, M.D., Founder of California Retina Consultants and Research Foundation, and Peter Campochiaro, M.D., Johns Hopkins Wilmer Eye Institute.

To access a live or recorded webcast of the call and accompanying slides, please visit the "Investors" section of the REGENXBIO website at www.regenxbio.com. To access the live webcast by phone, dial (855) 422-8964 (domestic) or (210) 229-8819 (international) and enter the passcode 6668158. The recorded webcast will be available for approximately 30 days following the call.

About RGX-314

RGX-314 is being developed as a potential one-time treatment for wet AMD, diabetic retinopathy, and other additional chronic retinal conditions treated with anti-VEGF. RGX-314 consists of the NAV AAV8 vector encoding an antibody fragment which is designed to inhibit VEGF, modifying the pathway for formation of new leaky blood vessels which lead to retinal fluid accumulation and vision loss.

About the Phase I/IIa Clinical Trial of RGX-314

RGX-314 is being evaluated in a Phase I/IIa, multi-center, open-label, multiple-cohort, dose-escalation study in adult patients with wet AMD in the United States. The study includes patients previously treated for wet AMD who are responsive to anti-VEGF therapy. The study is designed to evaluate five escalating doses of RGX-314, with six patients in the first three dose cohorts and 12 patients in the fourth and fifth dose cohorts. Patients were enrolled into all dose cohorts independent of their neutralizing antibody titers to AAV and did not receive prophylactic immune suppressive oral corticosteroid therapy before or after administration of RGX-314. The primary endpoint of the study is safety at 6 months following administration of RGX-314. Secondary endpoints include visual acuity, retinal thickness on SD-OCT, ocular RGX-314 protein expression, and the need for additional anti-VEGF therapy. Following completion of the primary study period, patients enter a follow-up period and will continue to be assessed until week 106 for long-term safety and durability of effect.

About Wet AMD

Wet AMD is characterized by loss of vision due to new, leaky blood vessel formation in the retina. Wet AMD is a significant cause of vision loss in the United States, Europe and Japan, with up to 2 million people living with wet AMD in these geographies alone. Current anti-VEGF therapies have significantly changed the landscape for treatment of wet AMD, becoming the standard of care due to their ability to prevent progression of vision loss in the majority of patients. These therapies, however, require life-long intraocular injections, typically repeated every four to 12 weeks in frequency, to maintain efficacy. Due to the burden of treatment, patients often experience a decline in vision with reduced frequency of treatment over time.

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 in multiple therapeutic areas.

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," "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 and clinical trials. 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, the impact of the COVID-19 pandemic or similar public health crises on REGENXBIO's business, 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, 2019, 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. 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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