Orchard Therapeutics Presents an Integrated Data Analysis Demonstrating Sustained Clinical Benefit of OTL-200 for the Treatment of Metachromatic Leukodystrophy

September 4, 2019

Further Demonstration that OTL-200 Provides Meaningful Clinical Benefit on Cognitive and Motor Function

No Standard Treatment Options Available, Regulatory Submission in Europe Planned for First Half of 2020 and U.S. Approximately One Year Later

BOSTON and LONDON, Sept. 04, 2019 (GLOBE NEWSWIRE) -- Orchard Therapeutics (Nasdaq: ORTX), a leading commercial-stage biopharmaceutical company dedicated to transforming the lives of patients with serious and life-threatening rare diseases through innovative gene therapies, today announced results from an integrated data analysis of OTL-200, a gene therapy in development for the treatment of metachromatic leukodystrophy (MLD) at the San Raffaele-Telethon Institute for Gene Therapy (SR-Tiget) in Milan, Italy. The results, which demonstrate positive clinical effects of OTL-200 in the treatment of MLD and a consistent safety profile, were featured today in an oral presentation at the Society for the Study of Inborn Errors of Metabolism (SSIEM) symposium in Rotterdam, the Netherlands. MLD is a devastating and rapidly progressing disease with no standard treatment options. In its most severe forms, patients will not survive beyond their first few years of life.

“We recognize the urgent need for patients and families suffering from the devastating impacts of MLD and are pleased to present additional integrated data from a total of 29 patients treated with OTL-200,” said Dr. Valeria Calbi, a hematologist at San Raffaele Scientific Institute and SR-Tiget. “This analysis confirms and expands upon previously reported results for the primary efficacy endpoint, with significantly superior gross motor function measure scores compared with untreated patients, along with positive effects on cognitive function. These data demonstrate that the majority of patients treated with gene therapy at pre-symptomatic and early symptomatic stages of their disease experienced clinical benefit, while patients in the natural history cohort showed the expected rapid decline in motor and cognitive function.”

As part of this integrated analysis, data from 29 early-onset MLD patients (16 late infantile and 13 early juvenile) treated with gene therapy were analyzed to assess the efficacy and safety of OTL-200. As of the date of last follow-up, 26 patients are alive and have completed up to 7.5 years of follow-up (median 3.2 years) post-gene therapy. The three patient deaths were deemed unrelated to treatment with OTL-200. Results from patients treated with OTL-200 were compared with those from an age-matched natural history cohort of 31 untreated MLD patients.

“The results of the integrated data analysis further underscore our commitment to bring one-time, potentially curative treatment options to patients living with MLD and other devastating rare genetic diseases that lack meaningful treatment options,” said Mark Rothera, president and chief executive officer of Orchard. “We are encouraged by the data presented today, which brings us one step closer to our anticipated submissions for regulatory approval in Europe in the first half of 2020 and the U.S. approximately one year later and further confirms the potential of our platform approach to treat MLD and other inherited diseases.”

Efficacy Data from the Integrated Analysis
With the addition of nine patients treated through expanded access programs, the integrated analysis of OTL-200 has demonstrated the following:

- Consistent with the results from the registrational study, patients treated with OTL-200 in the integrated data analysis demonstrated a reconstitution of arylsulfatase-A (ARSA) enzyme activity in the hematopoietic system and stable engraftment of gene-corrected cells within one-month of receiving treatment.
- The treatment difference in gross motor function, as measured by gross motor function measurement (GMFM) total score, continued to increase with the addition of more patients. A statistically significant treatment difference in GMFM – above the pre-specified 10 percentage point improvement threshold established in the trial – was observed between OTL-200 treated patients and untreated age-matched participants in the natural history cohort.
    - The treatment difference between late infantile patients and the untreated age-matched natural history cohort was 65.6 percentage points ($p < 0.001$) and 71.5 percentage points ($p < 0.001$) at two- and three-years of follow-up, respectively.
    - The treatment difference between early juvenile patients and the untreated age-matched natural history cohort was 42 percentage points ($p = 0.036$) and 56.7 percentage points ($p = 0.001$) at two- and three-years of follow-up, respectively.
- At an age when patients in the untreated natural history cohort showed severe cognitive impairment, cognitive performance scores were maintained within normal range for most treated patients.

Safety Data from the Integrated Analysis

- Consistent with the results from the registrational study, treatment with OTL-200 was well-tolerated, with no serious adverse events or deaths related to treatment.
- To date, no cases of malignancy or adverse events indicative of oncogenic transformation have been reported. There was no evidence of abnormal clonal proliferation as assessed by clinical and laboratory examination.
- As previously reported, two patients in the registrational study who were symptomatic at the time of treatment died due to

rapid disease progression unrelated to treatment with gene therapy. One patient in the expanded access cohort died due to ischemic cerebral infarction, also deemed unrelated to OTL-200 treatment.

Next Steps for OTL-200

The company intends to complete the necessary development work and prepare a marketing authorization application, or MAA, for submission in Europe in the first half of 2020. Work is also underway to prepare a biologics licensing application, or BLA, for submission in the U.S. approximately one year later.

A bridging study is currently underway to assess a cryopreserved formulation of OTL-200 in patients with pre-symptomatic MLD, with data expected by the end of 2019. For more information, please visit https://clinicaltrials.gov/ct2/show/NCT03392987.

About MLD and OTL-200
Metachromatic leukodystrophy (MLD) is a rare and life-threatening inherited disease of the body's metabolic system occurring in approximately one in every 100,000 live births. MLD is caused by a mutation in the arylsulfatase-A (ARSA) gene that results in the accumulation of sulfatides in the brain and other areas of the body, including the liver, the gallbladder, kidneys, and/or spleen. Over time, the nervous system is damaged and patients with MLD will experience neurological problems such as motor, behavioral and cognitive regression, severe spasticity and seizures, finding it more and more difficult to move, talk, swallow, eat and see. Currently, there are no effective treatments for MLD. In its late infantile form, mortality at 5 years from onset is estimated at 50% and 44% at 10 years for juvenile patients.[1] OTL-200 is an *ex vivo*, autologous, hematopoietic stem cell-based gene therapy being studied for the treatment of MLD. OTL-200 was acquired from GSK in April 2018 and originated from a pioneering collaboration between GSK and the Hospital San Raffaele and Fondazione Telethon, acting through their joint San Raffaele-Telethon Institute for Gene Therapy in Milan, initiated in 2010.

About Orchard
Orchard Therapeutics is a fully integrated commercial-stage biopharmaceutical company dedicated to transforming the lives of patients with serious and life-threatening rare diseases through innovative gene therapies.

Orchard's portfolio of *ex vivo*, autologous, hematopoietic stem cell (HSC) based gene therapies includes Strimvelis®, a gammaretroviral vector-based gene therapy and the first such treatment approved by the European Medicines Agency for severe combined immune deficiency due to adenosine deaminase deficiency (ADA-SCID). Additional programs for neurometabolic disorders, primary immune deficiencies and hemoglobinopathies are all based on lentiviral vector-based gene modification of autologous HSCs and include three advanced registrational studies for metachromatic leukodystrophy (MLD), ADA-SCID and Wiskott-Aldrich syndrome (WAS), clinical programs for X-linked chronic granulomatous disease (X-CGD), transfusion-dependent beta-thalassemia (TDT) and mucopolysaccharidosis type I (MPS-I), as well as an extensive preclinical pipeline. Strimvelis, as well as the programs in MLD, WAS and TDT were acquired by Orchard from GSK in April 2018 and originated from a pioneering collaboration between GSK and the San Raffaele Telethon Institute for Gene Therapy in Milan, Italy initiated in 2010.

Orchard currently has offices in the U.K. and the U.S., including London, San Francisco and Boston.

Forward-Looking Statements
This press release contains certain forward-looking statements which are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements may be identified by words such as "anticipates," "believes," "expects," "intends," "projects," and "future" or similar expressions that are intended to identify forward-looking statements. Forward-looking statements include express or implied statements relating to, among other things, Orchard's expectations regarding the timing of regulatory submissions for approval of its product candidates, including OTL-200 for the treatment of metachromatic leukodystrophy, the timing of interactions with regulators and regulatory submissions related to ongoing and new clinical trials for its product candidates, the timing of announcement of clinical data for its product candidates, including OTL-200, and the likelihood that such data will be positive and support further clinical development and regulatory approval of its product candidates, and the likelihood of approval of such product candidates by the applicable regulatory authorities. These statements are neither promises nor guarantees and are subject to a variety of risks and uncertainties, many of which are beyond Orchard's control, which could cause actual results to differ materially from those contemplated in these forward-looking statements. In particular, the risks and uncertainties include, without limitation: the risk that any one or more of Orchard's product candidates, including OTL-200, will not be successfully developed or commercialized, the risk of cessation or delay of any of Orchard's ongoing or planned clinical trials, the risk that prior results, such as signals of safety, activity or durability of effect, observed from preclinical studies or clinical trials will not be replicated or will not continue in ongoing or future studies or trials involving Orchard's product candidates, the delay of any of Orchard's regulatory submissions, the failure to obtain marketing approval from the applicable regulatory authorities for any of Orchard's product candidates, the receipt of restricted marketing approvals, and the risk of delays in Orchard's ability to commercialize its product candidates, if approved. Given these uncertainties, the reader is advised not to place any undue reliance on such forward-looking statements.

Other risks and uncertainties faced by Orchard include those identified under the heading "Risk Factors" in Orchard's annual report on Form 20-F for the year ended December 31, 2018 as filed with the U.S. Securities and Exchange Commission (SEC) on March 22, 2019, as well as subsequent filings and reports filed with the SEC. The forward-looking statements contained in this press release reflect Orchard's views as of the date hereof, and Orchard does not assume and specifically disclaims any obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by law.

---

[1]Mahmood et al. Metachromatic Leukodystrophy: A Case of Triplets with the Late Infantile Variant and a Systematic Review of the Literature. Journal of Child Neurology 2010, DOI: http://doi.org/10.1177/0883073809341669

Contacts

Investors
Renee Leck
Director, Investor Relations
+1 862-242-0764

Renee.Leck@orchard-tx.com

Media
Molly Cameron
Manager, Corporate Communications
+1 978-339-3378
media@orchard-tx.com

Source: Orchard Therapeutics