Biogen to Advance Investigational Spinal Muscular Atrophy Asset to Registrational Studies Based on Positive Interim Phase 1 Results

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- Salanersen (BIIB115/ION306) is a novel antisense oligonucleotide (ASO) with the potential to achieve high efficacy and once yearly dosing in spinal muscular atrophy (SMA)
- Interim Phase 1 data show children with SMA previously treated with gene therapy experienced a substantial slowing of neurodegeneration and clinically meaningful improvements in motor function following initiation of salanersen
- Based on these encouraging Phase 1 data, Biogen is engaging with regulators to advance salanersen to registrational stage studies, building on extensive experience in SMA

CAMBRIDGE, Mass., June 25, 2025 (GLOBE NEWSWIRE) -- Biogen Inc. (Nasdaq: BIIB) announced topline results from the Phase 1 study of salanersen (BIIB115/ION306), an antisense oligonucleotide (ASO) being developed for the treatment of spinal muscular atrophy (SMA). Leveraging the same mechanism of action as SPINRAZA (nusinersen) but designed to achieve greater potency, salanersen has the potential to achieve high efficacy and enable once yearly dosing. An interim analysis of the Phase 1 study in participants with SMA who were previously treated with gene therapy was conducted to inform the decision on whether to move salanersen forward into registrational studies. Both dose levels tested, 40 mg and 80 mg, given once a year, were generally well-tolerated and led to substantial slowing of neurodegeneration, as shown by reductions in neurofilament. Exploratory clinical outcome data shows clinically meaningful improvements in function and attainment of new World Health Organization (WHO) milestones over 1 year. These data will be presented today at the SMA Research & Clinical Care Meeting hosted by Cure SMA in Anaheim, Calif.

“Of the data generated, to me, it is neurofilament and the WHO milestones that are most easily interpretable, given these children had previously received gene therapy. To see a child dosed with gene therapy at one year of age and still unable to sit without support at age five then gain the ability to sit independently just 3 months after initiating salanersen, that is unexpected,” said Valeria A. Sansone, M.D., Ph.D., Clinical and Scientific Director at the Clinical Center NeMO in Milan, Professor of Neurology, University of Milan, and a principal investigator for the salanersen Phase 1 trial. “Given these are early data from a relatively small cohort, I am looking forward to further understanding the effects that salanersen can have in both previously treated and treatment-naïve individuals in the upcoming Phase 3 studies.”

The Phase 1 single ascending dose study was designed to evaluate the safety, tolerability and pharmacokinetics of salanersen. The trial consisted of two parts: Part A, a randomized and placebo-controlled segment in healthy adult male volunteers and Part B, an open-label segment in pediatric participants with SMA who previously received ZOLGENSMA® (onasemnogene abeparvovec) and had investigator-reported suboptimal clinical status. Interim results are from Part B (n=24) in individuals that received either 40 mg or 80 mg salanersen once a year. In participants with elevated baseline concentrations of neurofilament light chain (NfL), indicating ongoing neurodegeneration, initiation of salanersen led to mean reductions in NfL of 70% at 6-months which were sustained through the 1-year dosing interval.

“Despite the remarkable therapeutic advancements in the field of SMA over the past decade, there remains critical unmet needs. Salanersen represents the next phase of Biogen's ongoing pursuit to address these needs,” said Stephanie Fradette, Pharm.D., Head of the Neuromuscular Development Unit at Biogen. “We are encouraged by the available data and eager to move salanersen into the next stage of development as quickly as possible. We are deeply grateful for the trial participants and their families, investigators, and site staff.”

In addition to safety and NfL, exploratory clinical outcome data were evaluated for the subgroup of participants with at least one year of follow-up at the time of the interim analysis (n=8 participants aged 2-12 who received 40 mg of salanersen). Half (4/8) of these participants achieved new WHO motor milestones that they previously could not achieve on their own or required assistance to do, such as walking, crawling, standing, or sitting. Furthermore, these participants experienced clinically meaningful improvements in motor function from baseline to 1-year, including a 3.3-point (SD 4.46) mean improvement from baseline on the Hammersmith Functional Motor Scale – Expanded (HFMSE) and a 5.3 point (SD 4.75) improvement on the Revised Upper Limb Module (RULM).

The cumulative data from the Phase 1 study indicate that salanersen has a generally well tolerated safety profile at both the 40 mg and 80 mg doses, with most adverse events (AEs) mild to moderate in severity. The most common AEs were pyrexia and upper respiratory tract infection.

Biogen is currently engaging with global health authorities regarding the design of the Phase 3 studies. Biogen licensed the global development, manufacturing and commercialization rights for salanersen from Ionis Pharmaceuticals, Inc. Salanersen was discovered by Ionis.

About Spinal Muscular Atrophy (SMA)
SMA is a rare, genetic, neuromuscular disease that affects individuals of all ages. It is characterized by a loss of motor neurons in the spinal cord and lower brain stem, resulting in progressive muscle atrophy and weakness.[1] SMA is caused by a deficiency in the production of survival motor neuron (SMN) protein due to a damaged or missing *SMN1* gene, with a spectrum of disease severity.[1] Some individuals with SMA may never sit; some sit but never walk; and some walk but may lose that ability over time.[2] In the absence of treatment, children with the most severe form of SMA would usually not be expected to reach their second birthday.[1]

SMA impacts approximately 1 in 10,000 live births,[3-6] is a leading cause of genetic death among infants[7] and causes a range of disability in teenagers and adults.[2]

About SPINRAZA
SPINRAZA (nusinersen) 12mg/5 mL injection is approved in more than 71 countries to treat infants, children and adults with spinal muscular atrophy (SMA). As a foundation of care in SMA, more than 14,000 individuals have been treated with SPINRAZA worldwide.[8]

SPINRAZA is an antisense oligonucleotide (ASO) that targets the underlying cause of motor neuron loss by continuously increasing the amount of full-length survival motor neuron (SMN) protein produced in the body.[9] It is administered directly into the central nervous system, where motor neurons

reside, to deliver treatment where the disease starts.[9]

SPINRAZA has shown efficacy across ages and SMA types with a well-established safety profile based on data in patients treated up to 10 years,[10,11] combined with unsurpassed real-world experience. The most common adverse events observed in clinical studies were respiratory infection, fever, constipation, headache, vomiting and back pain. Laboratory tests can monitor for renal toxicity and coagulation abnormalities, including acute severe low platelet counts, which have been observed after administration of some ASOs.

Biogen licensed the global rights to develop, manufacture and commercialize SPINRAZA from Ionis Pharmaceuticals, Inc. (Nasdaq: IONS). Please click here for Important Safety Information and full Prescribing Information for SPINRAZA in the U.S., or visit your respective country's product website.

About Biogen
Founded in 1978, Biogen is a leading biotechnology company that pioneers innovative science to deliver new medicines to transform patients' lives and to create value for shareholders and our communities. We apply deep understanding of human biology and leverage different modalities to advance first-in-class treatments or therapies that deliver superior outcomes. Our approach is to take bold risks, balanced with return on investment to deliver long-term growth.

We routinely post information that may be important to investors on our website at www.biogen.com. Follow us on social media - Facebook, LinkedIn, X, YouTube.

Biogen Safe Harbor
This news release contains forward-looking statements, including statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, including statements about potential clinical effects of BIIB115; the potential benefits, safety and efficacy of BIIB115; the clinical development program for BIIB115; the identification and treatment of SMA; our research and development program for the treatment of SMA; the potential of our commercial business and pipeline programs, including BIIB115; and risks and uncertainties associated with drug development and commercialization. These forward-looking statements may be accompanied by words such as "aim," "anticipate," "believe," "could," "estimate," "expect," "forecast," "intend," "may," "plan," "potential," "possible," "will," "would" and other words and terms of similar meaning. Drug development and commercialization involve a high degree of risk and only a small number of research and development programs result in commercialization of a product. Results in early stage clinical trials may not be indicative of full results or results from later stage or larger scale clinical trials and do not ensure regulatory approval. You should not place undue reliance on these statements or the scientific data presented.

We caution that these statements are subject to risks and uncertainties, many of which are outside of our control and could cause future events or results to be materially different from those stated or implied in this document, including, among others, factors relating to: our substantial dependence on revenue from our products and other payments under licensing, collaboration, acquisition or divestiture agreements; uncertainty of long-term success in developing, licensing, or acquiring other product candidates or additional indications for existing products; expectations, plans and prospects relating to product approvals, approvals of additional indications for our existing products, sales, pricing, growth, reimbursement and launch of our marketed and pipeline products; the potential impact of increased product competition in the biopharmaceutical and healthcare industry, as well as any other markets in which we compete, including increased competition from new originator therapies, generics, prodrugs and biosimilars of existing products and products approved under abbreviated regulatory pathways; our ability to effectively implement our corporate strategy; the successful execution of our strategic and growth initiatives, including acquisitions; the drivers for growing our business; difficulties in obtaining and maintaining adequate coverage, pricing, and reimbursement for our products; the drivers for growing our business, including our dependence on collaborators and other third parties for the development, regulatory approval, and commercialization of products and other aspects of our business, which are outside of our full control; risks associated with current and potential future healthcare reforms; risks related to commercialization of biosimilars, which is subject to such risks related to our reliance on third-parties, intellectual property, competitive and market challenges and regulatory compliance; failure to obtain, protect, and enforce our data, intellectual property, and other proprietary rights and the risks and uncertainties relating to intellectual property claims and challenges; the risk that positive results in a clinical trial may not be replicated in subsequent or confirmatory trials or success in early stage clinical trials may not be predictive of results in later stage or large scale clinical trials or trials in other potential indications; risks associated with clinical trials, including our ability to adequately manage clinical activities, unexpected concerns that may arise from additional data or analysis obtained during clinical trials, regulatory authorities may require additional information or further studies, or may fail to approve or may delay approval of our drug candidates; the occurrence of adverse safety events, restrictions on use with our products, or product liability claims; risks relating to technology, including our incorporation of new technologies such as artificial intelligence into some of our processes; risks related to use of information technology systems and potential impacts of any breakdowns, interruptions, invasions, corruptions, data breaches, destructions and/or other cybersecurity incidents of our systems or those of connected and/or third-party systems; problems with our manufacturing capacity, including our ability to manufacture products efficiently or adequately address global bulk supply risks; risks relating to management, personnel and other organizational changes, including our ability to attracting, retaining and motivating qualified individuals; risks related to the failure to comply with current and new legal and regulatory requirements, including judicial decisions, accounting standards, and tariff or trade restrictions; the risks of doing business internationally, including geopolitical tensions, acts of war and large-scale crises; risks relating to investment in our manufacturing capacity; risks relating to the distribution and sale by third parties of counterfeit or unfit versions of our products; risks relating to the use of social media for our business, results of operations and financial condition; fluctuations in our operating results; risks related to investment in properties; risks relating to access to capital and credit markets to finance our present and future operations and business initiatives and obtain funding for such activities on favorable terms; risks related to indebtedness; the market, interest, and credit risks associated with our investment portfolio; risks relating to share repurchase programs; change in control provisions in certain of our collaboration agreements; fluctuations in our effective tax rate and obligations in various jurisdictions in which we are subject to taxation; environmental risks; and any other risks and uncertainties that are described in other reports we have filed with the U.S. Securities and Exchange Commission. These statements speak only as of the date of this presentation and the discussions during this conference call and are based on information and estimates available to us at this time. Should known or unknown risks or uncertainties materialize or should underlying assumptions prove inaccurate, actual results could vary materially from past results and those anticipated, estimated or projected. Investors are cautioned not to put undue reliance on forward-looking statements. A further list and description of risks, uncertainties and other matters can be found in our Annual Report on Form 10-K for the fiscal year ended December 31, 2024 and in our subsequent reports on Form 10-Q and Form 10-K, in each case including in the sections thereof captioned "Note Regarding Forward-Looking Statements" and "Item 1A. Risk Factors," and in our subsequent reports on Form 8-K. Except as required by law, we do not undertake any obligation to publicly update any forward-looking statements whether as a result of any new information, future events, changed circumstances or otherwise.

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