Biogen and Stoke Therapeutics Announce Presentation of Data from Studies of Zorevunersen, an Investigational Medicine for Dravet syndrome, at the 16th European Paediatric Neurology Society (EPNS) Congress

July 10, 2025

– Data from an analysis designed to evaluate the potential effects of the Phase 3 zorevunersen dosing regimen showed improvements in cognition and behavior at Week 68 –

– These findings support the inclusion of key secondary endpoints assessing cognition and behavior in the Phase 3 EMPEROR study and contrast with outcomes observed in natural history data –

CAMBRIDGE, Mass. and BEDFORD, Mass., July 10, 2025 (GLOBE NEWSWIRE) -- Biogen Inc. (Nasdaq: BIIB) and Stoke Therapeutics, Inc. (Nasdaq: STOK), a biotechnology company dedicated to restoring protein expression by harnessing the body's potential with RNA medicine, today announced the presentation of data from an analysis that informed the design of the Phase 3 EMPEROR study and evaluated the potential effects of the Phase 3 zorevunersen dosing regimen. The data are complementary to previously reported data from a broader cohort of patients treated with zorevunersen in the Phase 1/2a and open label extension (OLE) studies that showed improvements within the first 9 months and continuing improvements through an additional two years. The new analysis is best aligned with the timing and dosing regimen that will be evaluated in the pivotal Phase 3 EMPEROR study and showed improvements in multiple measures of cognition and behavior at Week 68. The results contrasted with findings from a natural history study in which patients with Dravet syndrome were treated with standard of care medicines. Zorevunersen is in development as a first-in-class potential disease modifying treatment for Dravet syndrome. Results were presented as part of the Epilepsy II session at the 16th European Paediatric Neurology Society (EPNS) Congress.

"Dravet syndrome is a complex neurodevelopmental disorder that has significant impacts on patients and their families," said Dr. Andreas Brunklaus, Consultant Paediatric Neurologist at the Royal Hospital for Children in Glasgow, Honorary Professor at the University of Glasgow, and a zorevunersen study investigator. "Natural history data shows the limitations of treating this disease with anti-seizure medicines. The zorevunersen data give us early evidence that this new genetically-targeted approach could address the underlying cause of Dravet syndrome, resulting in additional seizure control and offer patients the opportunity to experience improvements in cognition and behavior."

Previously presented data from the two Phase 1/2a and OLE studies showed substantial and durable reductions in major motor seizure frequency on top of a background of standard anti-seizure medicines and improvements in multiple measures of cognition and behavior through two years of treatment in the OLE studies. Data indicated responses may be better among patients who were treated with loading doses of 70mg followed by maintenance doses of 45mg. Zorevunersen was generally well-tolerated across these studies.

"Effects on behavior and cognition are a key secondary endpoint in our Phase 3 EMPEROR study," said Barry Ticho, M.D., Ph.D., Chief Medical Officer of Stoke Therapeutics. "Feedback from caregivers and clinicians, and analyses like this one, give us insight into which assessments have the greatest potential to demonstrate meaningful effects for patients within the year-long treatment period."

"Most patients with Dravet syndrome continue to experience seizures despite treatment with the best available anti-seizure medicines, and there are currently no medications approved that address the underlying cognitive and behavioral aspects of the disease," said Katherine Dawson, M.D., Head of the Therapeutics Development Unit at Biogen. "We look forward to continuing to work together to advance zorevunersen as a potential first-in-class disease modifying medicine for Dravet syndrome."

Dravet syndrome is a severe developmental and epileptic encephalopathy (DEE) that is characterized by severe, recurrent seizures as well as significant cognitive and behavioral impairments. There are no approved disease-modifying therapies for people living with Dravet syndrome. Currently, it is estimated that up to 38,000 people are living with Dravet syndrome in the United States (~16,000), United Kingdom, EU-4 (Germany, France, Italy, Spain) and Japan.[1]

Description of the Modeled Analysis
A mixed-effects model for repeated measures (MMRM) analysis was used to evaluate the potential effects of the Phase 3 zorevunersen dosing regimen on patient cognition and behavior at Week 68. The model was developed using clinical data from patients in the Phase 1/2a ADMIRAL study and the LONGWING OLE study. An analysis of patients who received a total cumulative dose consistent with the Phase 3 EMPEROR regimen of two loading doses of 70mg followed by two maintenance doses of 45mg, showed improvements in cognition and behavior. The analysis was performed to inform the design of the Phase 3 EMPEROR study. Baseline covariates for patients followed in the BUTTERFLY natural history study were matched to the selected ADMIRAL patient population. Improvements in patients treated with zorevunersen contrasted with findings from BUTTERFLY.

These data support the selection of five sub-domains of the Vineland-3 Adaptive Behavior Scales, including Receptive Communication, Expressive Communication, Interpersonal Relationships, Coping Skills, and Personal Skills now under evaluation as key secondary endpoints in the Phase 3 EMPEROR study.

Details of the presentation are as follows:

Title: Zorevunersen demonstrates potential as a disease modifying therapy in patients with Dravet syndrome through durable seizure reduction and improvements in cognition, behavior, and functioning with up to 24 months of maintenance dosing in open-label extension studies
Presenter: Andreas Brunklaus, M.D., Consultant Paediatric Neurologist at the Royal Hospital for Children, Glasgow, Honorary Professor at the University of Glasgow
Session: Epilepsy II
Date/Time: Thursday, July 10, 11:51 AM CEST
Location: Saal 5, International Congress Center München, Germany

The presentation will be available for download on the Stoke Therapeutics website under the Investors & News tab.

About Dravet Syndrome
Dravet syndrome is a severe developmental and epileptic encephalopathy (DEE) characterized by severe, recurrent seizures as well as significant cognitive and behavioral impairments. Most cases of Dravet are caused by mutations in one copy of the *SCN1A* gene, leading to insufficient levels of NaV1.1 protein in neuronal cells in the brain. More than 90 percent of patients continue to experience seizures despite treatment with the best available anti-seizure medicines. Complications of the disease often contribute to a poor quality of life for patients and their caregivers. Developmental and cognitive impairments often include intellectual disability, developmental delays, movement and balance issues, language and speech disturbances, growth defects, sleep abnormalities, disruptions of the autonomic nervous system and mood disorders. Compared with the general epilepsy population, people living with Dravet syndrome have a higher risk of sudden unexpected death in epilepsy, or SUDEP. Dravet syndrome occurs globally and is not concentrated in a particular geographic area or ethnic group. Currently, it is estimated that up to 38,000 people are living with Dravet syndrome in the U.S. (~16,000), UK, EU-4 and Japan.[1]

About Zorevunersen
Zorevunersen is an investigational antisense oligonucleotide that is designed to treat the underlying cause of Dravet syndrome by increasing NaV1.1 protein production in brain cells from the non-mutated (wild-type) copy of the *SCN1A* gene. This highly differentiated mechanism of action aims to reduce seizure frequency beyond what has been achieved with anti-seizure medicines and to improve neurodevelopment, cognition, and behavior. Zorevunersen has demonstrated the potential for disease modification and has been granted orphan drug designation by the FDA and the EMA. The FDA has also granted zorevunersen rare pediatric disease designation and Breakthrough Therapy Designation for the treatment of Dravet syndrome with a confirmed mutation not associated with gain-of-function, in the SCN1A gene. Stoke has a strategic collaboration with Biogen to develop and commercialize zorevunersen for Dravet syndrome. Under the collaboration, Stoke retains exclusive rights for zorevunersen in the United States, Canada, and Mexico; Biogen receives exclusive rest of world commercialization rights.

About Stoke Therapeutics
Stoke Therapeutics (Nasdaq: STOK), is a biotechnology company dedicated to restoring protein expression by harnessing the body's potential with RNA medicine. Using Stoke's proprietary TANGO (Targeted Augmentation of Nuclear Gene Output) approach, Stoke is developing antisense oligonucleotides (ASOs) to selectively restore naturally-occurring protein levels. Stoke's first medicine in development, zorevunersen, has demonstrated the potential for disease modification in patients with Dravet syndrome and is currently being evaluated in a Phase 3 study. Stoke's initial focus are diseases of the central nervous system and the eye that are caused by a loss of ~50% of normal protein levels (haploinsufficiency). Proof of concept has been demonstrated in other organs, tissues, and systems, supporting broad potential for Stoke's proprietary approach. Stoke is headquartered in Bedford, Massachusetts with offices in Cambridge, Massachusetts. For more information, visit https://www.stoketherapeutics.com/.

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.

Cautionary Note Regarding Forward-Looking Statements
This press release contains forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995, including, but not limited to: the ability of zorevunersen to treat the underlying causes of Dravet syndrome and reduce seizures or show improvements in behavior and cognition at the indicated dosing levels or at all; and the design, timing and results of the Phase 3 EMPEROR study. Statements including words such as "anticipate," "could," "expect," "plan," "will," or "may" and statements in the future tense are forward-looking statements. These forward-looking statements involve risks and uncertainties, as well as assumptions, which, if they prove incorrect or do not fully materialize, could cause Stoke's results to differ materially from those expressed or implied by such forward-looking statements, including, but not limited to, risks and uncertainties related to: Stoke's ability to advance, obtain regulatory approval and ultimately commercialize its product candidates; that if Stoke's collaborators were to breach or terminate their agreements, it would not obtain the anticipated financial or other benefits; the possibility that Stoke and Biogen may not be successful in their development of zorevunersen and that, even if successful, they may be unable to successfully commercialize zorevunersen; positive results in a clinical trial may not be replicated in subsequent trials or successes in early stage clinical trials may not be predictive of results in later stage trials; Stoke's ability to protect its intellectual property; Stoke's ability to fund development activities and achieve development goals through mid-2028; and the other risks and uncertainties described under the heading "Risk Factors" in Stoke's Annual Report on Form 10-K for the year ended December 31, 2024, its quarterly reports on Form 10-Q, and the other documents it files with the Securities and Exchange Commission. These forward-looking statements speak only as of the date of this press release, and Stoke undertakes no obligation to revise or update any forward-looking statements to reflect events or circumstances after the date hereof.

Biogen Safe Harbor

This press release contains forward-looking statements, relating to: our strategy and plans; the potential of, and expectations for, our commercial business and pipeline programs; clinical development programs, clinical trials, and data readouts and presentations; regulatory discussions, submissions, filings, and approvals; the potential benefits, safety, and efficacy of our and our collaboration partners' products and investigational therapies; and actions to improve the risk profile and productivity of R&D pipeline, collaborations, and business development activities. These forward-looking statements may be accompanied by such words as "aim," "anticipate," "assume," "believe," "contemplate," "continue," "could," "estimate," "expect," "forecast," "goal," "guidance," "hope," "intend," "may," "objective," "outlook," "plan," "possible," "potential," "predict," "project," "prospect," "should," "target," "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. Given their forward-looking nature, these statements involve substantial risks and uncertainties that may be based on inaccurate assumptions and could cause actual results to differ materially from those reflected in such statements.

This press release includes, among others, forward-looking statements including relating to: the ability of zorevunersen to treat the underlying causes of Dravet syndrome, the design, timing and results of the Phase 3 EMPEROR study and the potential effects of the Phase 3 zorevunersen dosing regimen. These forward-looking statements are based on management's current beliefs and assumptions and on information currently available to management. Given their nature, we cannot assure that any outcome expressed in these forward looking statements will be realized in whole or in part. 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. These statements speak only as of the date of this press release 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 , 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.

Reference:

1. Based on Stoke Therapeutics' preliminary estimates, which scaled annual incidence to prevalence using country-specific live birth rates over the past 85 years and adjusted for Dravet-specific mortality. The estimate is based on incidence rates published by Wu et al., Pediatrics, 2015.

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