Biogen and Stoke Therapeutics Announce First Patient Dosed in Phase 3 EMPEROR Study of Zorevunersen, a Potential Disease-Modifying Treatment for Dravet Syndrome

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– Global, pivotal Phase 3 study will evaluate efficacy and safety of zorevunersen compared to sham over a 52-week treatment period –

– Dravet syndrome is a rare genetic disease characterized by refractory seizures and neurodevelopmental impairments, with no currently approved medicines that address the underlying cause of the disease –

CAMBRIDGE, Mass. and BEDFORD, Mass., Aug. 11, 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 that the first patient has been dosed in the global Phase 3 EMPEROR study of zorevunersen for the treatment of Dravet syndrome. Zorevunersen, an investigational antisense oligonucleotide, has the potential to be the first disease-modifying treatment for Dravet syndrome.

"Our Phase 1/2 and open-label extension studies have provided a large dataset to support our understanding of zorevunersen and guide the EMPEROR study design, including dosing, duration and selection and powering of the endpoints," said Barry Ticho, M.D., Ph.D., Chief Medical Officer of Stoke Therapeutics. "Given the severity of this disease and the limitations of current treatments, the substantial and durable reductions in seizures and continuing improvements in cognition and behavior support our belief that zorevunersen may improve outcomes for patients with Dravet syndrome."

"The initiation of the EMPEROR study is a critical milestone in zorevunersen's development," said Katherine Dawson, M.D., Head of the Therapeutics Development Unit at Biogen. "Despite treatment with available anti-seizure medicines, no approved medications currently address the underlying cognitive and behavioral aspects of this rare, genetic disease. Together with Stoke, we look forward to working in collaboration with the hope of bringing forward zorevunersen as the first disease-modifying treatment option, if approved, for Dravet syndrome."

EMPEROR Pivotal Phase 3 Design Summary

- **Anticipated Enrollment:** Patients with Dravet syndrome between the ages of 2 and up to 18 years of age with a confirmed variant in the *SCN1A* gene not associated with gain of function.
- **Duration:** Following an 8-week baseline period, participants will be randomized 1:1 to receive either zorevunersen or sham for a 52-week treatment period.
- **Treatment Arms:** Patients in the active treatment arm will receive two 70mg loading doses (Day 1 and Week 8) followed by two 45mg maintenance doses (Week 24 and Week 40). All patients will continue to receive standard of care medicines throughout the study.
- **Primary Endpoint:** Change in major motor seizure frequency measured at Week 28.
- **Key Secondary Endpoints:** Change in major motor seizure frequency measured at Week 52. Change in behavior and cognition as measured by the Vineland-3 subdomains, including expressive communication, receptive communication, interpersonal relationships, coping skills and personal skills measured at Week 52.
- Eligible participants will be offered ongoing treatment with zorevunersen as part of an open-label extension (OLE) study.

"Dravet syndrome is one of the most well studied genetic epilepsies so we know the significant and life-altering effects it can have on patients and their caregivers," said Joseph Sullivan, M.D., FAES, principal investigator of the study and Professor of Neurology and Pediatrics and Director of the Pediatric Epilepsy Center of Excellence at the University of California San Francisco. "Providing additional relief from seizures remains an important clinical outcome, but the potential to address the underlying genetic cause to also address neurodevelopmental symptoms signals a fundamentally new way of treating the disease. The urgent need for treatments is evident in the high degree of interest in the EMPEROR study."

The EMPEROR clinical trial has initiated in the United States, United Kingdom, Japan and is planned for Europe. For more information on the EMPEROR study, please visit https://www.emperorstudy.com/ and https://clinicaltrials.gov/study/NCT06872125.

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.

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 the Company's proprietary approach. Stoke is headquartered in Bedford, Massachusetts. For more information, visit https://www.stoketherapeutics.com/.

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 the EMPEROR Study
The EMPEROR Phase 3 Study (NCT06872125) is a global, double-blind, sham-controlled study evaluating the efficacy, safety and tolerability of zorevunersen in children ages 2 to <18 with Dravet syndrome with a confirmed variant in the *SCN1A* gene not associated with gain of function. The trial is expected to enroll participants across the United States, Japan, United Kingdom and European Union, with participants being randomized 1:1 to receive either zorevunersen via intrathecal administration or a sham comparator for a 52-week treatment period following an 8-week baseline period. Following the completion of the study, eligible participants will be offered ongoing treatment with zorevunersen as part of an OLE study. The primary endpoint of the study is percent change from baseline in major motor seizure frequency at week 28 in patients receiving zorevunersen as compared to sham. The key secondary endpoints are the durability of effect on major motor seizure frequency and improvements in behavior and cognition as measured by Vineland-3 subdomains, including expressive communication, receptive communication, interpersonal relationships, coping skills and personal skills. Additional endpoints include safety, Clinician Global Impression of Change (CGI-C), Caregiver Global Impression of Change (CaGI-C), and the Bayley Scales of Infant Development (BSID-IV). For more information, visit https://www.emperorstudy.com/.

Biogen Safe Harbor
This news release contains forward-looking statements, including relating to the potential, benefits, safety and efficacy of Zorevunersen; the potential of Biogen's commercial business and pipeline programs, including Zorevunersen; the anticipated benefits and potential of Biogen's collaboration arrangement with Stoke Therapeutics; and risks and uncertainties associated with drug development and commercialization. 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," "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. 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, including, among others, 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; our ability to effectively implement our corporate strategy; the successful execution of our strategic and growth initiatives, including acquisitions; 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; 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 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 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.

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; the design, timing and results of the Phase 3 EMPEROR study; and the expectations and potential benefits of Stoke's collaboration with Biogen. 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.

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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