The New England Journal of Medicine Publishes First Data to Demonstrate the Potential for Disease Modification in Dravet Syndrome

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–Results show that targeting the underlying cause of Dravet syndrome with zorevunersen may improve outcomes for people with this rare, devastating genetic neurodevelopmental disease–

–Data support ongoing global Phase 3 EMPEROR study–

BEDFORD, Mass. and CAMBRIDGE, Mass., March 04, 2026 (GLOBE NEWSWIRE) -- Stoke Therapeutics, Inc. (Nasdaq: STOK), a biotechnology company dedicated to restoring protein expression by harnessing the body's potential with RNA medicine, and Biogen Inc. (NASDAQ: BIIB), today announced the publication of data from studies of the investigational medicine zorevunersen in *The New England Journal of Medicine (NEJM)*. The publication includes results from two completed Phase 1/2a and ongoing open-label extension (OLE) studies that demonstrate, for the first time, the potential for disease modification in people living with Dravet syndrome. These data showed substantial and durable reductions in seizures and improvements across multiple measures of cognition and behavior that began in the Phase 1/2a treatment period and continued through three additional years of treatment in the OLEs. The effects were shown in people treated with zorevunersen on top of standard of care anti-seizure medicines (ASMs).

Dravet syndrome is a severe developmental and epileptic encephalopathy (DEE) in which people experience severe and recurrent seizures and a plateauing in their neurodevelopment around the age of two. Over time, children with Dravet syndrome fall further and further behind their neurotypical peers in their ability to achieve developmental milestones. There are currently no approved disease-modifying medicines to treat Dravet syndrome.

"These data mark a potential turning point in the treatment of Dravet syndrome," said Helen Cross, MB ChB, Ph.D., corresponding author of the *NEJM* publication and The Prince of Wales's Chair of Childhood Epilepsy and Director of University College London Great Ormond Street Institute of Child Health, Honorary Consultant in Paediatric Neurology at Great Ormond Street Hospital. "While reducing seizures is still critical, the improvements in cognition, behavior and quality of life seen in these studies suggest we may be changing the course of the disease and therefore the lives of patients and their families."

"Dravet syndrome arrives without warning for families, just as it did for our family more than 25 years ago when my son began having seizures," said Mary Anne Meskis, Chief Executive Officer of the Dravet Syndrome Foundation. "While awareness, diagnosis and medical care have advanced significantly over the years, the realities of Dravet syndrome remain severe and life-altering for patients and their families. A treatment that could help someone like my son dress himself independently or better communicate with his parents would profoundly change the cadence and quality of our everyday lives."

Efficacy Results
The Phase 1/2a studies evaluated single and multiple doses of zorevunersen up to 70 mg with a primary endpoint of safety. Change in major motor seizure frequency was assessed as a secondary endpoint. Substantial reductions in seizures were observed among zorevunersen-treated patients in the Phase 1/2a studies and continued through three years of treatment in the OLEs. The most substantial reductions in seizure frequency were observed among patients treated with initial doses of 70 mg in the Phase 1/2a studies.

Changes in neurodevelopment, functioning, clinical status and quality of life for all patients were assessed as additional endpoints in the OLEs using standard clinical assessments. Improvements in communication, motor skills, socialization, daily living and quality of life continued through three additional years of treatment.

Summary of Safety Data
Zorevunersen has been generally well tolerated across the Phase 1/2a and OLE studies. Eighty-one patients received at least one dose of zorevunersen and were evaluated for safety, and more than 800 doses have been administered across these studies to date. The most common treatment-related adverse event was cerebrospinal fluid (CSF) protein elevations with a higher incidence observed in the OLE studies (44%, n=33/75). No related clinical manifestations have been observed, although one patient discontinued treatment due to elevated CSF protein levels. All serious adverse events were assessed to be unrelated to zorevunersen except in one patient who experienced suspected unexpected serious adverse reactions (SUSARs).

"The discovery of the genetic cause of Dravet syndrome 25 years ago changed how researchers thought about the disease and how to treat it," said Barry Ticho, M.D., Ph.D., Chief Medical Officer of Stoke Therapeutics. "By targeting the underlying genetic cause of the disease, zorevunersen has the potential to be the first disease-modifying medicine for the treatment of Dravet syndrome. We look forward to the results of our Phase 3 EMPEROR study expected in mid-2027."

"This publication in *NEJM* demonstrates an appreciation of the severity of Dravet syndrome and the potential of this novel approach to transform the way the disease is treated," said Katherine Dawson, M.D., Head of Therapeutics Development Unit at Biogen. "For more than 10 years Biogen has been advancing cutting-edge research to address some of the most rare, devastating and neglected diseases, and we are proud to partner with Stoke on this first-of-its-kind investigational drug."

The full publication titled, "Zorevunersen in Children and Adolescents with Dravet Syndrome," appears in the March 5 issue of *The New England Journal of Medicine*.

About Dravet Syndrome
Dravet syndrome is a severe developmental and epileptic encephalopathy (DEE) characterized by 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. Even when treated with the best available anti-seizure medicines (ASMs), up to 57 percent of patients with Dravet syndrome do not achieve ≥50 percent reduction in seizure frequency. 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; up to 20 percent of children and adolescents with Dravet syndrome die before adulthood due to SUDEP, prolonged seizures, seizure-related accidents or infections [1]. 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 [2]. There are no approved disease-modifying therapies for people living with Dravet syndrome.

About Zorevunersen
Zorevunersen is an investigational antisense oligonucleotide that is designed to treat the underlying cause of Dravet syndrome by increasing functional NaV1.1 protein production in brain cells from the unaffected (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 Phase 1/2a and Open-Label Extension Studies of Zorevunersen
Two Phase 1/2a open-label, multicenter studies were conducted and evaluated the effects of zorevunersen in patients with highly refractory Dravet syndrome ages 2 to 18 years (N=81). Primary endpoints were the safety profile, plasma pharmacokinetics (PK) and exposure in cerebrospinal fluid (CSF) of single and multiple doses of zorevunersen. Secondary endpoints included percentage change from baseline in major motor seizure frequency, overall clinical status (a measure of patients' overall functioning) and quality of life. The ADMIRAL Phase 1/2a study included an exploratory endpoint to evaluate changes in neurodevelopmental status (cognition & behavior) as measured by Vineland Adaptive Behavior Scales, Third Edition (Vineland-3). The Phase 1/2a studies were completed in November 2023.

Following treatment in the Phase 1/2a studies, eligible patients continued treatment with zorevunersen every four months in one of two OLEs. There was at least a 6-month gap between the last dose administered in the Phase 1/2a studies and the first dose administered in the OLEs. The primary endpoints are the safety profile of multiple doses of zorevunersen. Secondary endpoints include PK parameters, percentage change from baseline in major motor seizure frequency, change in overall clinical status, and change from baseline in quality of life. Exploratory endpoints include changes in neurodevelopment status as measured by Vineland-3. The OLE studies are ongoing.

About the Phase 3 EMPEROR Study
The Phase 3 EMPEROR 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. Stoke expects to complete enrollment of approximately 150 patients in the United States, United Kingdom and Japan in Q2 2026, with a data readout on track for mid-2027 to support the submission of a New Drug Application (NDA) to the FDA. At least 20 additional patients are expected to enroll in Germany, Spain, France and Italy starting in the second quarter of 2026. Participants are 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 treatment period, 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/.

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. 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.

Stoke Therapeutics 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 potential benefits, safety and efficacy of zorevunersen; the timing and expected progress of clinical trials, data readouts, regulatory meetings, regulatory decisions and other presentations. Statements including words such as "plan," "anticipate", "potential," "will," "continue," "may", "expect," or similar words 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: Stokes ability to advance, obtain regulatory approval and ultimately commercialize its product candidates; that if collaborators were to breach or terminate their agreements, Stoke 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 into 2028; and the other risks and uncertainties described under the heading "Risk Factors" in its 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 news release contains forward-looking statements, including, among others, relating to: the potential clinical effects of zorevunersen; the potential for zorevunersen to improve outcomes for patients with Dravet syndrome; the potential benefits, safety and efficacy of zorevunersen; potential regulatory discussions, submissions and approvals and the timing thereof; the treatment of the underlying causes of Dravet syndrome; the anticipated benefits, risks and potential of Biogen's collaboration arrangements with Stoke Therapeutics; the potential of Biogen's commercial business and pipeline programs, including zorevunersen; 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," "outlook," "plan," "possible," "potential," "predict," "project," "prospect," "should," "target," "will," "would" or the negative of these words or 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 differ materially from those stated or implied in this document, including, among others, uncertainty of our long-term success in developing, licensing, or acquiring other product candidates or additional indications for existing products; expectations, plans, prospects and timing of actions 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; 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 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; 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; and 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, which are available on the SEC's website at www.sec.gov.

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, 2025 and in our subsequent reports on Form 10-Q. 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.

Biogen Digital Media Disclosure

From time to time, we have used, or expect in the future to use, our investor relations website (investors.biogen.com), the Biogen LinkedIn account (linkedin.com/company/biogen-) and the Biogen X account (https://x.com/biogen) as a means of disclosing information to the public in a broad, non-exclusionary manner, including for purposes of the SEC's Regulation Fair Disclosure (Reg FD). Accordingly, investors should monitor our investor relations website and these social media channels in addition to our press releases, SEC filings, public conference calls and websites, as the information posted on them could be material to investors.

References:

1. Symonds, J. et al. Early childhood epilepsies: epidemiology, classification, aetiology, and socio-economic determinants. *Brain.* 2021;144(9):2879-2891.
2. 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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