The New England Journal of Medicine Publishes Second Manuscript Reporting Positive Phase 2 Results for Biogen's Litifilimab (BIIB059) in Lupus

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- Part A results from the two-part Phase 2 LILAC study show litifilimab significantly reduced disease activity based on active joint count in people with systemic lupus erythematosus (SLE) compared to placebo
- Biogen is currently enrolling people with active SLE into two Phase 3 studies in 31 countries worldwide and plans to initiate a pivotal study in cutaneous lupus erythematosus (CLE) later this year
- Positive CLE results from Part B of LILAC were published separately in *The New England Journal of Medicine*, illustrating the body of evidence supporting the continued development of litifilimab for lupus

CAMBRIDGE, Mass., Sept. 07, 2022 (GLOBE NEWSWIRE) -- Biogen Inc. (Nasdaq: BIIB) today announced that *The New England Journal of Medicine (NEJM)* has published a second manuscript detailing positive results from the company's two-part Phase 2 LILAC study, which evaluated litifilimab (also known as BIIB059), an investigational drug, in systemic lupus erythematosus (SLE) and cutaneous lupus erythematosus (CLE). Results from the SLE portion of the study (Part A) published today show litifilimab met the study's primary endpoint by significantly reducing total active joint count compared to placebo. Positive data from the CLE portion of the study were published in *NEJM* on July 28th, 2022.

"Lupus is a debilitating autoimmune disease that causes chronic inflammation, pain and organ damage, and predominantly affects women and people of color," said Richard Furie, M.D., The Marilyn and Barry Rubenstein Chair in Rheumatology, Chief of the Division of Rheumatology at Northwell Health and Professor at the Feinstein Institutes for Medical Research. "Litifilimab has been shown to inhibit the production of type I interferons as well as other inflammatory mediators produced by plasmacytoid dendritic cells. Strong evidence has accumulated that these mediators contribute to disease activity in lupus."

Biogen is currently enrolling participants into the Phase 3 TOPAZ-1 and TOPAZ-2 studies, which will evaluate the efficacy and safety of litifilimab in participants with active SLE at 269 clinical trial sites worldwide. As part of Biogen's commitment to delivering diversity in its clinical trials, enrollment targets have been set in the TOPAZ studies to achieve appropriate representation of the African American and Hispanic/Latino communities. Biogen also plans to initiate a pivotal study of litifilimab in CLE in 2022.

"This second *NEJM* manuscript shows the totality of data from the Phase 2 LILAC program, reinforcing our belief in the potential of litifilimab as a first-in-class therapy for both systemic and cutaneous lupus," said Nathalie Franchimont, M.D., Ph.D., Head of the Multiple Sclerosis and Immunology Development Unit at Biogen. "At Biogen, our goal is to discover and develop new treatment options that not only reduce lupus disease activity but also decrease clinical manifestations that impact patients the most. We look forward to continuing our evaluation of litifilimab in Phase 3 studies and sharing additional data when available."

The Phase 2 LILAC Part A Results
LILAC was a randomized, double-blind, placebo-controlled study that evaluated the efficacy and safety of litifilimab versus placebo in two parts: Part A in participants who had SLE with active joint and skin manifestations; and Part B in participants with moderate-to-severe active CLE, including active subacute and chronic subtypes, with or without systemic manifestations. As previously reported, both Part A and Part B of the study met their respective primary endpoints, with litifilimab demonstrating superior efficacy to placebo in reducing total active joint count and improving skin disease activity in participants with SLE and CLE, respectively.

In Part A of LILAC, litifilimab significantly reduced the total number of swollen and tender joints in participants with SLE from baseline compared to placebo over 24 weeks. This Phase 2 trial was not powered to assess secondary endpoints.

In Part A, litifilimab was generally well tolerated, with most reported adverse events (AEs) rated as mild or moderate. The most common AEs reported in ≥5% of participants in the pooled litifilimab groups were diarrhea, nasopharyngitis, urinary tract infection, fall and headache.

About Litifilimab (BIIB059)
Litifilimab (known as BIIB059), discovered and developed in-house by Biogen scientists, is a humanized IgG1 monoclonal antibody (mAb) targeting blood dendritic cell antigen 2 (BDCA2) and is being investigated for the potential treatment of systemic lupus erythematosus (SLE) and cutaneous lupus erythematosus (CLE). BDCA2 is a receptor that is exclusively expressed on a subset of human immune cells called Plasmacytoid Dendritic Cells (pDCs). Binding of litifilimab to BDCA2 has been shown to reduce production of pro-inflammatory molecules by pDCs, including type-I interferon (IFN-I) as well as other cytokines and chemokines.[1,2] These pro-inflammatory mediators are thought to play a major role in the pathogenesis of systemic and cutaneous lupus.

About Systemic Lupus Erythematosus (SLE)
SLE, the systemic form of lupus, is a chronic autoimmune disease that affects multiple organ systems with periods of illness or flares alternating with periods of inactivity.[3] SLE can present itself in several ways including rash, arthritis, anemia, thrombocytopenia, serositis, nephritis, seizures or psychosis.[4] SLE is associated with a greater risk of death from causes such as infection and cardiovascular disease.

Lupus affects an estimated 5 million people worldwide.[5] An estimated 90 percent of people living with lupus are women; most begin to see symptoms between the ages of 15-40.[6] The disease disproportionately impacts diverse ethno-racial groups, including African American, Asian, American Indian/Alaskan Native and Hispanic/Latino communities.[6-10] There is currently no cure for lupus.

Decades of study by Biogen on pathways at the intersection of neurology and immunology provide the company with expertise in specialized immunology. Biogen is advancing two lupus therapies in Phase 3 trials. Dapirolizumab pegol is being developed in collaboration with UCB for systemic lupus erythematosus (SLE). The second, litifilimab (BIIB059), was fully developed in-house at Biogen and is now in Phase 3 for SLE, with plans for further study in CLE.

About Biogen
As pioneers in neuroscience, Biogen discovers, develops, and delivers worldwide innovative therapies for people living with serious neurological diseases as well as related therapeutic adjacencies. One of the world's first global biotechnology companies, Biogen was founded in 1978 by Charles Weissmann, Heinz Schaller, Sir Kenneth Murray, and Nobel Prize winners Walter Gilbert and Phillip Sharp. Today, Biogen has a leading portfolio of medicines to treat multiple sclerosis, has introduced the first approved treatment for spinal muscular atrophy, and developed the first and only approved treatment to address a defining pathology of Alzheimer's disease. Biogen is also commercializing biosimilars and focusing on advancing one of the industry's most diversified pipelines in neuroscience that will transform the standard of care for patients in several areas of high unmet need.

In 2020, Biogen launched a bold 20-year, $250 million initiative to address the deeply interrelated issues of climate, health, and equity. Healthy Climate, Healthy Lives™ aims to eliminate fossil fuels across the company's operations, build collaborations with renowned institutions to advance the science to improve human health outcomes, and support underserved communities.

We routinely post information that may be important to investors on our website at www.biogen.com. Follow us on social media - Twitter, LinkedIn, Facebook, 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, about the potential benefits, safety and efficacy of BIIB059; the results of the Phase 2 LILAC study; the identification and treatment of lupus, SLE and CLE; our research and development program for the treatment of lupus, SLE and CLE; the clinical development program for BIIB059; the design and enrollment of the TOPAZ-1 and TOPAZ-2 studies; risks and uncertainties associated with drug development and commercialization; and the potential of our pipeline programs, including BIIB059 and dapirolizumab pegol. These statements may be identified by words such as "aim," "anticipate," "believe," "could," "estimate," "expect," "forecast," "goal," "intend," "may," "plan," "possible," "potential," "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.

These statements involve risks and uncertainties that could cause actual results to differ materially from those reflected in such statements, including without limitation risks that we may not fully enroll the TOPAZ-1 and TOPAZ-2 studies or it will take longer than expected; unexpected concerns that may arise from additional data, analysis or results obtained during the TOPAZ-1 and TOPAZ-2 studies; the occurrence of adverse safety events; risks of unexpected costs or delays; the risks of other unexpected hurdles; failure to protect and enforce our data, intellectual property and other proprietary rights and uncertainties relating to intellectual property claims and challenges; regulatory authorities may require additional information or further studies; product liability claims; third party collaboration risks; and the direct and indirect impacts of the ongoing COVID-19 pandemic on our business, results of operations and financial condition. The foregoing sets forth many, but not all, of the factors that could cause actual results to differ from our expectations in any forward-looking statement. Investors should consider this cautionary statement as well as the risk factors identified in our most recent annual or quarterly report and in other reports we have filed with the U.S. Securities and Exchange Commission. These statements are based on our current beliefs and expectations and speak only as of the date of this news release. We do not undertake any obligation to publicly update any forward-looking statements, whether as a result of new information, future developments or otherwise.

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