The New England Journal of Medicine Publishes Positive Phase 2 Data on Litifilimab (BIIB059) in Cutaneous Lupus Erythematosus

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- Results from Phase 2 LILAC study showed litifilimab significantly reduced skin disease activity in people with cutaneous lupus erythematosus (CLE) compared to placebo as measured by the primary endpoint
- Biogen is also evaluating litifilimab in systemic lupus erythematosus through the Phase 3 TOPAZ studies and plans to initiate a pivotal study in CLE later this year
- Biogen is advancing two lupus therapies in Phase 3 trials to address this chronic autoimmune disease

CAMBRIDGE, Mass., July 28, 2022 (GLOBE NEWSWIRE) -- Biogen Inc. (Nasdaq: BIIB) today announced that *The New England Journal of Medicine* (*NEJM*) has published positive results from the cutaneous lupus erythematosus (CLE) portion of the two-part Phase 2 LILAC study (Part B) evaluating litifilimab (known as BIIB059), an investigational drug for the treatment of lupus. Litifilimab met its primary endpoint by demonstrating superior efficacy to placebo in reducing skin disease activity.

“CLE can have a lasting negative impact on skin symptoms and emotional aspects of people’s lives, leading to a debilitating impact on quality of life and irreversible skin damage,” said Victoria Werth, M.S., M.D., Professor of Dermatology at the University of Pennsylvania’s Perelman School of Medicine. “Despite advancements over the past two decades, CLE represents a high unmet medical need with no cure. The LILAC study is among the first randomized controlled trials in CLE and I am encouraged by the publication of these positive results in NEJM.”

Biogen has progressed litifilimab to late-stage development and is actively enrolling participants with systemic lupus erythematosus into the Phase 3 TOPAZ-1 and TOPAZ-2 studies, with plans to initiate a pivotal study in CLE this year. Litifilimab has a novel mechanism of action that engages blood dendritic cell antigen 2 (BDCA2), a receptor solely expressed on the surface of plasmacytoid dendritic cells, resulting in decreased production of type 1 interferons, cytokines and chemokines at the site of inflammation such as the skin.[1]

“Litifilimab was developed by Biogen scientists as a potential first-in-class therapy for lupus,” said Nathalie Franchimont, M.D., Ph.D., Head of the Multiple Sclerosis and Immunology Development Unit at Biogen. “These Phase 2 data underscore our goal of delivering meaningful new therapies to people with cutaneous lupus, an autoimmune disease affecting the skin that can occur with or without impacting other organs, who currently have limited treatment options. We are excited to progress this promising candidate into late-stage development to further evaluate its potential, particularly in those who historically have been underserved.”

The Phase 2 LILAC Part B 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 systemic lupus erythematosus (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,[2,3] 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.

Part B of the LILAC study assessed multiple doses of litifilimab or placebo in participants with active, histologically confirmed CLE. The primary analysis included a test of dose-response to assess whether there was a response across the four dose groups (placebo, 50, 150, or 450 mg litifilimab, administered subcutaneously at weeks 0, 2, 4, 8, and 12) on the basis of the primary endpoint of skin disease activity. This Phase 2 trial was not powered to assess secondary endpoints.

The LILAC study population in Part B was representative of the broader CLE patient population, with approximately 10 percent of participants who reported race and ethnicity identifying as Black or African American. In Part B, litifilimab demonstrated a significant dose-response relationship based on the percent change from baseline in the Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI-A) score (primary endpoint), a measure of skin disease activity, at Week 16.

In Part B, 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 nasopharyngitis, headache, injection-site erythema, SLE, arthralgia, upper respiratory tract infection, influenza, pruritus, and cough.

Detailed findings for Part A of LILAC, which enrolled participants with SLE with active joint and skin manifestations, will be published separately in a peer-reviewed journal.

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), and it has been shown to reduce inflammatory production from pDCs, including type-I IFN (IFN-I) as well as other cytokines and chemokines. These inflammatory mediators are thought to play a major role in the pathogenesis of systemic and cutaneous lupus.

About Cutaneous Lupus Erythematosus (CLE)
CLE, a type of lupus, is a chronic autoimmune skin disease that can occur with or without systemic manifestations; people with CLE frequently experience symptoms including rash, pain, pruritis (itch) and photosensitivity as well as skin damage that may worsen over time and can include irreversible scarring alopecia and dyspigmentation that can be disfiguring and substantially impact quality of life.[4-7]

Although anyone can develop lupus, 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.[9-12] 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 study; 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 study or it will take longer than expected; unexpected concerns that may arise from additional data, analysis or results obtained during the TOPAZ-1 study; 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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