# Biogen and Eisai Report Data from Long-Term Extension Phase 1b Study of Investigational Alzheimer's Disease Treatment Aducanumab

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**Data Includes Additional Analyses of Long-Term Extension Phase 1b Study With Titration Cohort at 36 Months and Fixed-Dose Cohorts at 48 Months**

CAMBRIDGE, Mass., Aug. 28, 2018 (GLOBE NEWSWIRE) -- Biogen (Nasdaq: BIIB) and Eisai Co., Ltd. (Headquarters: Tokyo, CEO: Haruo Naito, "Eisai") announced results from a recent analysis of the ongoing long-term extension (LTE) Phase 1b study of aducanumab, an investigational treatment for mild cognitive impairment (MCI) due to Alzheimer's disease (AD) and mild AD dementia. The updated analyses include data from the placebo-controlled period and LTE for patients treated with aducanumab up to 36 months in the titration cohort and up to 48 months in the fixed-dose cohorts. The results are generally consistent with previous interim analyses, and there were no changes to the risk-benefit profile of aducanumab.

The Phase 1b study is a randomized, double-blind, placebo-controlled, multiple-dose study evaluating the safety, tolerability, pharmacokinetics (PK), pharmacodynamics (PD) and clinical effects of aducanumab in patients with prodromal AD or mild AD dementia. The study includes fixed dosing at 1, 3, 6 and 10 mg/kg as well as an arm with a titration regimen in which patients received a gradually increased dose of aducanumab until they reach a maximum dose of 10 mg/kg.

In the Phase 1b study 196 patients received aducanumab or placebo, of which 143 patients entered the LTE. The LTE cohorts were allocated across six dosing arms including: placebo switchers, 1 mg/kg switchers to 3 mg/kg, fixed doses (3 mg/kg, 6 mg/kg, 10 mg/kg) and titration. Additionally, there were discontinuations as expected in studies of 36 or more months. As a result, there are small patient numbers in the new analyses.

The results for each dose arm are generally consistent with previous interim analyses. Amyloid plaque levels as measured by positron emission tomography (PET) continued to decrease in a dose- and time-dependent manner in patients from the titration cohort at 36 months and fixed-dose cohorts at 48 months. Amyloid plaque levels in the 10 mg/kg fixed-dose at 48 months remained at a level considered below the quantitative cut point that discriminates between a positive and negative scan. Analyses of exploratory clinical endpoints Clinical Dementia Rating Sum of Boxes (CDR-SB) and the Mini-Mental State Examination (MMSE) suggest a continued benefit on the rate of clinical decline over 36 months and 48 months, respectively. Clinical effects with titrated aducanumab in the second year of the LTE were generally consistent with findings in the 10 mg/kg fixed-dose cohorts.

Of the 185 patients dosed with aducanumab in the Phase 1b study, 46 patients experienced amyloid imaging abnormalities (ARIA)-E (edema). Eight patients experienced more than one episode of ARIA-E. The majority of ARIA events occurred early in the course of treatment; they were typically mild radiographically (MRI), clinically asymptomatic and resolved or stabilized within 4-12 weeks, with most patients continuing treatment. In the Phase 1b LTE, the most commonly reported adverse events were headache, fall and ARIA.

Detailed results of the study will be presented at upcoming medical conferences.

**About Aducanumab**
Aducanumab (BIIB037) is an investigational compound being studied for the treatment of early Alzheimer's disease. Aducanumab is a human recombinant monoclonal antibody (mAb) derived from a de-identified library of B cells collected from healthy elderly subjects with no signs of cognitive impairment or cognitively impaired elderly subjects with unusually slow cognitive decline using Neurimmune's technology platform called Reverse Translational Medicine (RTM). Biogen licensed aducanumab from Neurimmune under a collaboration and license agreement. As of October 22, 2017, Biogen and Eisai Co. Ltd. are collaborating on the development and commercialization of aducanumab globally.

**About the Joint Development Agreement between Biogen and Eisai for Alzheimer's Disease**
Eisai and Biogen are widely collaborating on the joint development and commercialization of Alzheimer's disease treatments. Biogen serves as the lead for co-development of aducanumab, Biogen's investigational anti-amyloid beta (Aβ) antibody for patients with Alzheimer's disease which Eisai has been co-developing since October 22, 2017. Eisai serves as the lead in the co-development of elenbecestat, a BACE inhibitor, and BAN2401, an anti-amyloid beta (Aβ) protofibril antibody, and the companies plan to pursue marketing authorizations for the three compounds worldwide. If approved, the companies will also co-promote the products in major markets, such as the United States, the European Union and Japan.

**About Biogen**
At Biogen, our mission is clear: we are pioneers in neuroscience. Biogen discovers, develops and delivers worldwide innovative therapies for people living with serious neurological and neurodegenerative diseases. One of the world's first global biotechnology companies, Biogen was founded in 1978 by Charles Weissmann, Heinz Schaller, Kenneth Murray and Nobel Prize winners Walter Gilbert and Phillip Sharp, and today has the leading portfolio of medicines to treat multiple sclerosis; has introduced the first and only approved treatment for spinal muscular atrophy; and is focused on advancing neuroscience research programs in Alzheimer's disease and dementia, multiple sclerosis and neuroimmunology, movement disorders, neuromuscular disorders, pain, ophthalmology, neuropsychiatry and acute neurology. Biogen also manufactures and commercializes biosimilars of advanced biologics.

We routinely post information that may be important to investors on our website at www.biogen.com. To learn more, please visit www.biogen.com and follow us on social media – Twitter, LinkedIn, Facebook, YouTube.

**About Eisai Co., Ltd.**
Eisai Co., Ltd. is a leading global research and development-based pharmaceutical company headquartered in Japan. We define our corporate mission as "giving first thought to patients and their families and to increasing the benefits health care provides," which we call our *human health care* (*hhc*) philosophy. With approximately 10,000 employees working across our global network of R&D facilities, manufacturing sites and marketing subsidiaries, we strive to realize our hhc philosophy by delivering innovative products to address unmet medical needs, with a particular focus in our strategic areas of Neurology and Oncology.

Leveraging the experience gained from the development and marketing of Aricept®, a treatment for Alzheimer's disease and dementia with Lewy bodies, Eisai has been working to establish a social environment that involves patients in each community in cooperation with various stakeholders

including the government, healthcare professionals and care workers, and is estimated to have held over ten thousand dementia awareness events worldwide. As a pioneer in the field of dementia treatment, Eisai is striving to not only develop next generation treatments but also to develop diagnosis methods and provide solutions.

For more information about Eisai Co., Ltd., please visit https://www.eisai.com.

**Biogen Safe Harbor**
This press release contains forward-looking statements, including statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 about additional results from the Phase 1b study of aducanumab; the potential clinical effects of aducanumab; the potential benefits, safety and efficacy of aducanumab; and risks and uncertainties associated with drug development and commercialization. These forward-looking statements may be accompanied by words such as "aim," "anticipate," "believe," "could," "estimate," "expect," "forecast," "intend," "may," "plan," "potential," "possible," "will" 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, unexpected concerns that may arise from additional data, analysis or results obtained during clinical trials; regulatory authorities may require additional information or further studies, or may fail or refuse to approve or may delay approval of Biogen's drug candidates, including aducanumab; the occurrence of adverse safety events; risks of unexpected costs or delays; the risks of other unexpected hurdles; uncertainty of success in the development and potential commercialization of aducanumab; failure to protect and enforce Biogen's data, intellectual property and other proprietary rights and uncertainties relating to intellectual property claims and challenges; product liability claims; and third party collaboration risks. The foregoing sets forth many, but not all, of the factors that could cause actual results to differ from Biogen's expectations in any forward-looking statement. Investors should consider this cautionary statement, as well as the risk factors identified in Biogen's most recent annual or quarterly report and in other reports Biogen has filed with the Securities and Exchange Commission. These statements are based on Biogen's current beliefs and expectations and speak only as of the date of this press release. Biogen does not undertake any obligation to publicly update any forward-looking statements, whether as a result of new information, future developments or otherwise.

MEDIA CONTACT:

David Caouette
+1 617 679 4945
public.affairs@biogen.com

INVESTOR CONTACT:

Matt Calistri
+1 781 464 2442
IR@biogen.com

Source: Biogen Inc.