Novartis data at AAN show Gilenya® is the first and only disease-modifying therapy with proven superiority versus glatiramer acetate in relapsing remitting MS

- Full results from the ASSESS study demonstrate patients with relapsing remitting multiple sclerosis (RRMS) taking Gilenya® (fingolimod) 0.5mg had significantly fewer relapses than patients taking glatiramer acetate 20mg\(^1\)

- Gilenya showed significant superiority versus glatiramer acetate in other key measures of disease activity, such as brain lesions\(^1\)

- There were more discontinuations on glatiramer acetate compared to Gilenya reinforcing Gilenya’s established safety profile\(^1\)

- In clinical practice many MS patients are still treated with interferon-beta 1a and glatiramer acetate despite re-occurrence of disease activity and availability of higher-efficacy treatments\(^2\)

**Basel, May 10, 2019** – Novartis today announced the full data of the ASSESS study, which evaluated the efficacy of oral, once-daily Gilenya® (fingolimod) at 0.5mg and 0.25mg versus once-daily subcutaneous injections of glatiramer acetate 20mg in reducing disease activity over 12 months in patients with relapsing remitting multiple sclerosis (RRMS). The results demonstrated Gilenya 0.5mg’s superior efficacy over glatiramer acetate 20mg in reducing the annualized relapse rate (ARR), a key measure of disease activity, with a 40.7% relative reduction over one year versus the active comparator (ARR estimates of 0.153 vs. 0.258, respectively, ARR ratio: 0.493, \(p=0.0138\)). ASSESS is the first direct head-to-head trial of any disease-modifying therapy versus glatiramer acetate, a current standard of care often used in first-line treatment, to show superiority in measures of disease activity, such as relapses and brain lesions. Gilenya 0.25mg achieved a relative ARR reduction of 14.6% but did not reach statistical significance, thereby suggesting Gilenya 0.5mg as the superior efficacious dose for this patient population. For the first time, results are being presented at the 2019 American Academy of Neurology Annual Meeting (AAN) in Philadelphia, Pennsylvania, USA\(^1\).

“Large clinical trials in MS are designed to help clinicians better understand the safety and efficacy of treatments, and what may be the right choice for their patients,” said Bruce Cree, MD, PhD, MAS, George A. Zimmermann Endowed Professor in Multiple Sclerosis at the University of California San Francisco, and ASSESS Principal Study Investigator. “As the first head-to-head study of two established MS treatments (fingolimod and glatiramer acetate 20mg), the ASSESS study now provides evidence that fingolimod 0.5mg is superior in reducing relapses and other key measures of disease activity, such as brain lesions, a significant concern for people living with MS and their health care providers.”

The safety of Gilenya observed in ASSESS across both doses was consistent with the established safety profile of the drug, with overall more discontinuations due to adverse events and unsatisfactory treatment effects reported in patients using glatiramer acetate\(^1\).
However, in clinical practice many MS patients are still treated with interferon-beta 1a and glatiramer acetate despite re-occurrence of disease activity and the availability of higher-efficacy treatments. This may be an indicator of MS treatment inertia. Secondary endpoints of ASSESS examined reduction in disease activity, as measured by magnetic resonance imaging (MRI), at 12 months. Gilenya 0.5mg and 0.25mg significantly reduced the mean number of new or newly enlarged T2 brain lesions compared with glatiramer acetate 20mg (p<0.0001). Additionally, both doses significantly reduced the number of gadolinium-enhancing T1 brain lesions compared with glatiramer acetate 20mg (p=0.0167 and p=0.0011, respectively). The change in percent brain volume from baseline with Gilenya 0.5mg was similar to glatiramer acetate at 12 months (p=0.1045).

"Gilenya is an example of our strong leadership in neuroscience and our commitment to stop MS," said Danny Bar-Zohar, Global Head of Neuroscience Development, Novartis Pharmaceuticals. "With Gilenya, we continue to reimagine MS care across generations. The full ASSESS results are once again proof point of Gilenya’s efficacy in reducing the impact of the disease."

Gilenya is a leading oral disease-modifying therapy that has demonstrated high efficacy across multiple measures of disease activity in adult patients and pediatric patients aged 10 years and older with RRMS. To date, Gilenya has been used to treat more than 275,000 patients worldwide. Long-term experience has shown Gilenya treatment to be convenient for people to incorporate into everyday life, leading to high treatment satisfaction, long-term persistence, and ultimately improved long-term outcomes. Gilenya 0.25mg is not approved for adults with RRMS.

Top-line results of ASSESS had been released previously in October 2018.

About the ASSESS Study
The ASSESS study (NCT01633112) is a Phase IIIb randomized, rater- and dose-blinded study to compare the safety and efficacy of Gilenya 0.25mg and 0.5mg administered orally once-daily, with glatiramer acetate 20mg administered via subcutaneous injections once-daily, in patients with RRMS over the course of one year. Novartis initiated the ASSESS study in 2012 as part of a post-approval commitment to the US Food and Drug Administration (FDA). In agreement with the FDA, a total of 1,064 patients were enrolled into ASSESS, with 352, 370 and 342 patients randomized in Gilenya 0.5mg, Gilenya 0.25mg and glatiramer acetate 20mg arms respectively.

About Multiple Sclerosis
Multiple sclerosis is a chronic disorder of the central nervous system (CNS) that disrupts the normal functioning of the brain, optic nerves and spinal cord through inflammation and tissue loss. In adults, there are three main types of MS: RRMS, secondary progressive MS (SPMS) and primary progressive MS (PPMS). Approximately 85% of people with MS have RRMS, where the immune system attacks healthy tissue. In children, RRMS account for nearly all cases (approximately 98%).

About Novartis in Multiple Sclerosis
The Novartis multiple sclerosis portfolio includes Gilenya (an S1P modulator), which is indicated for relapsing forms of MS. In the United States and the European Union, Gilenya is indicated for the treatment of adult patients and children and adolescents 10 years of age and older with relapsing multiple sclerosis.

On 26 March, 2019, FDA approved Mayzent® (siponimod) for the treatment of adults with relapsing forms of multiple sclerosis, including SPMS with active disease, RRMS and clinically isolated syndrome (CIS). The approval is based on the Phase III EXPAND trial, the largest controlled clinical study of SPMS patients, showing Mayzent significantly reduced the risk of
disease progression, including impact on physical disability and cognitive decline. Novartis is committed to bringing Mayzent to patients worldwide, and additional regulatory filings are currently underway with other health authorities outside the US. Regulatory action for Mayzent in the European Union is anticipated in late 2019, with additional regulatory action anticipated in Switzerland, Japan, Australia and Canada this year.

An investigational compound currently being investigated in two Phase III pivotal studies is ofatumumab (OMB157), a fully human monoclonal antibody which targets CD20 and is subcutaneously administered. Ofatumumab is in development for relapsing MS.

Extavia® (interferon beta-1b for subcutaneous injection) is approved in the US for the treatment of relapsing forms of MS. In Europe, Extavia is approved to treat people with RRMS, SPMS with active disease and people who have had a single clinical event suggestive of MS.

In the US, the Sandoz Division of Novartis markets Glatopa® (glatiramer acetate injection) 20mg/mL and 40mg/mL, generic versions of Teva's glatiramer acetate.

*Clinically isolated syndrome (CIS) is defined as a first episode of neurologic symptoms that lasts at least 24 hours and is caused by inflammation or demyelination in the central nervous system*.

**Disclaimer**

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About Novartis
Novartis is reimagining medicine to improve and extend people’s lives. As a leading global medicines company, we use innovative science and digital technologies to create transformative treatments in areas of great medical need. In our quest to find new medicines, we consistently rank among the world’s top companies investing in research and development. Novartis products reach more than 750 million people globally and we are finding innovative ways to expand access to our latest treatments. About 105 000 people of more than 140 nationalities work at Novartis around the world. Find out more at www.novartis.com.

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