

MEDIA RELEASE • COMMUNIQUE AUX MEDIAS • MEDIENMITTEILUNG

Novartis receives FDA approval for Mayzent® (siponimod), the first oral drug to treat secondary progressive MS with active disease

- *Mayzent® (siponimod) is the first and only treatment specifically approved for patients with active secondary progressive multiple sclerosis (SPMS) in over 15 years¹*
- *Up to 80% of patients with relapsing remitting MS (RRMS) will develop SPMS²; Mayzent addresses a critical unmet need for RRMS patients in transition and those with active SPMS who have transitioned*
- *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 decline³*
- *Mayzent is approved across the MS spectrum for clinically isolated syndrome (CIS), RRMS and active SPMS, with most patients not requiring a first dose observation*

Basel, March 27, 2019 – Novartis today announced that the US Food and Drug Administration (FDA) has approved Mayzent® (siponimod) for the treatment of adults with relapsing forms of multiple sclerosis, including secondary progressive multiple sclerosis (SPMS) with active disease, relapsing remitting multiple sclerosis (RRMS) and clinically isolated syndrome (CIS)*. SPMS is a debilitating form of multiple sclerosis (MS) characterized by progressive and irreversible neurological disability⁴. Mayzent is expected to be available in the US in approximately one week**. Patients will not require a first dose observation (FDO, cardiac monitoring upon initiation) unless they have certain pre-existing cardiac conditions.

“One of the most important aims of MS treatment is delaying disability progression and preserving cognition,” said Paul Hudson, Chief Executive Officer, Novartis Pharmaceuticals. “With Mayzent, SPMS patients with active disease will have access to the first effective oral therapy directed towards disease progression, even when MS transitions to a stage where deterioration is less dependent on the usual relapse activity. Mayzent is a testament to the Novartis mission to reimagine medicine. We are delighted that our ongoing commitment to stop MS has led to a much awaited treatment for these patients in need.”

Most patients transition from RRMS to SPMS over time². Therefore, starting therapy early is critical for patients to help slow the rate of disability progression. Disability progression most frequently includes – but is not limited to – an impact on ambulation, which could lead to patients needing a walking aid or a wheelchair, bladder dysfunction and cognitive decline⁵.

“We are grateful that there is a new treatment option for adults with active secondary progressive MS,” said Bruce Bebo, PhD, Executive Vice President, Research, US National MS Society. “We are hopeful this approval will stimulate a conversation between patients and healthcare professionals about disability progression after relapsing remitting MS and its early management.”

The approval of Mayzent is based on groundbreaking data from the Phase III EXPAND study, a randomized, double-blind, placebo-controlled study, comparing the efficacy and safety of Mayzent versus placebo in people living with SPMS. Patients enrolled in EXPAND were

representative of a typical SPMS population: at study initiation, patients had a mean age of 48 years, had been living with MS for approximately 16 years and more than 50% had a median Expanded Disability Status Scale (EDSS) score of 6.0 and relied on a walking aid³. Mayzent significantly reduced the risk of three-month confirmed disability progression (CDP) (primary endpoint; 21% reduction versus placebo, $p=0.013$; 33% reduction versus placebo in patients with relapse activity in the two years prior to screening, $p=0.0100$)³. Additionally, Mayzent meaningfully delayed the risk of six-month CDP (26% versus placebo, $p=0.0058$) and reduced the annualized relapse rate (ARR) by 55%³. Furthermore, EXPAND showed significant favorable outcomes in other relevant measures of MS disease activity, including cognition, MRI disease activity and brain volume loss (brain shrinkage)³.

Most common adverse reactions (incidence greater than 10%) were headache, hypertension, and transaminase increase.

“With the approval of Mayzent, we now have a much-needed therapeutic option to address SPMS with active disease,” said EXPAND Steering Committee member Bruce Cree, MD, PhD, MAS, Clinical Research Director and George A. Zimmermann Endowed Professor in Multiple Sclerosis, University of California, San Francisco, School of Medicine. “Importantly, healthcare professionals now have even more reason to help patients identify changing symptoms and uncover early signs of progression.”

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.

**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 system⁶.*

***Time of availability may vary as healthcare providers integrate Mayzent into their practices.*

About the EXPAND Study

EXPAND is a randomized, double-blind, placebo-controlled Phase III study, comparing the efficacy and safety of Mayzent versus placebo in people with SPMS with varying levels of disability, EDSS scores of 3.0–6.5³. It is the largest randomized, controlled study in SPMS to date, including 1,651 people with a diagnosis of SPMS from 31 countries³. Mayzent demonstrated a safety profile that was overall consistent with the known effects of S1P receptor modulation. It reduced the risk of three-month CDP by a statistically significant 21% ($p=0.013$; primary endpoint)³. CDP was defined as a 1-point increase in EDSS, if the baseline score was 3.0 - 5.0, or a 0.5-point increase, if the baseline score was 5.5 - 6.5³. Key secondary endpoints data included: no significant difference in the T25FW, and had a limited increase of T2 lesion volume by approximately 80% as compared to placebo. Additional secondary endpoints included a relative reduction in the ARR by 55%, and compared to placebo, more patients were free from gadolinium-enhancing lesions (89%) and from new or enlarging T2 lesions (57%)³.

About Mayzent® (siponimod)

Mayzent is a next generation, selective sphingosine 1-phosphate receptor modulator indicated for the treatment of relapsing forms of multiple sclerosis (RMS), to include clinically isolated syndrome (CIS), relapsing remitting disease, and active secondary progressive disease, in adults. Mayzent selectively binds to S1P1 and S1P5 receptors. In relation to the S1P1 receptor, it prevents the lymphocytes from egressing the lymph nodes and as a consequence, from entering the CNS of patients with MS. This leads to the anti-inflammatory effects of Mayzent³. Mayzent also enters the CNS and directly binds to the S1P5 and S1P1 sub-receptors on specific cells in the CNS (oligodendrocytes and astrocytes)⁷ to promote re-

myelination and prevent inflammation.

About Multiple Sclerosis

MS is a chronic disorder of the CNS that affects around 2.3 million people worldwide². There are three main forms of MS: RRMS (the most common form of the condition at diagnosis), SPMS and primary progressive MS (PPMS)⁸. MS disrupts the normal functioning of the brain, optic nerves and spinal cord through inflammation and tissue loss⁹.

SPMS follows an initial form of RRMS, which accounts for approximately 85% of all MS diagnoses, and is characterized by gradual worsening of neurological function over time³. This leads to a progressive accumulation of neurological disability. There remains a high unmet need for safe and effective treatments to help delay disability progression in SPMS with active disease (with relapses and/or evidence of new MRI activity)⁴.

Novartis in Neuroscience

Novartis has a strong ongoing commitment to neuroscience and to bringing innovative treatments to patients suffering from neurological conditions where there is a high unmet need. We are committed to supporting patients and physicians in multiple disease areas, including MS, migraine, Alzheimer's disease, Parkinson's disease, epilepsy and attention deficit hyperactivity disorder, and have a promising pipeline in MS, Alzheimer's disease, spinal muscular atrophy and specialty neurology.

Disclaimer

This press release contains forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995. Forward-looking statements can generally be identified by words such as "potential," "can," "will," "plan," "expect," "anticipate," "look forward," "believe," "committed," "investigational," "pipeline," "launch," or similar terms, or by express or implied discussions regarding potential marketing approvals, new indications or labeling for the investigational or approved products described in this press release, or regarding potential future revenues from such products. You should not place undue reliance on these statements. Such forward-looking statements are based on our current beliefs and expectations regarding future events, and are subject to significant known and unknown risks and uncertainties. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those set forth in the forward-looking statements. There can be no guarantee that the investigational or approved products described in this press release will be submitted or approved for sale or for any additional indications or labeling in any market, or at any particular time. Nor can there be any guarantee that such products will be commercially successful in the future. In particular, our expectations regarding such products could be affected by, among other things, the uncertainties inherent in research and development, including clinical trial results and additional analysis of existing clinical data; regulatory actions or delays or government regulation generally; global trends toward health care cost containment, including government, payor and general public pricing and reimbursement pressures; our ability to obtain or maintain proprietary intellectual property protection; the particular prescribing preferences of physicians and patients; general political and economic conditions; safety, quality or manufacturing issues; potential or actual data security and data privacy breaches, or disruptions of our information technology systems, and other risks and factors referred to in Novartis AG's current Form 20-F on file with the US Securities and Exchange Commission. Novartis is providing the information in this press release as of this date and does not undertake any obligation to update any forward-looking statements contained in this press release as a result of new information, future events or otherwise.

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 800 million people globally and we are finding innovative ways to expand access to our latest treatments. About 130,000 people of nearly 150 nationalities work at Novartis around the world. Find out more at www.novartis.com.

Novartis is on Twitter. Sign up to follow @Novartis at <http://twitter.com/novartis>
For Novartis multimedia content, please visit www.novartis.com/news/media-library
For questions about the site or required registration, please contact media.relations@novartis.com

References

1. National MS Society Brochure. Disease Modifying Therapies for MS. <http://www.nationalmssociety.org/NationalMSSociety/media/MSNationalFiles/Brochures/Brochure-The-MS-Disease-Modifying-Medications.pdf>. Accessed March 2019.
2. Multiple Sclerosis International Federation. Atlas of MS 2013. <http://www.msif.org/wp-content/uploads/2014/09/Atlas-of-MS.pdf>. Accessed March 2019.
3. Kappos L, Cree B, Fox R, et al. Siponimod versus placebo in secondary progressive multiple sclerosis (EXPAND): a double-blind, randomized, phase 3 study. *Lancet*. Published online March 22, 2018. [http://dx.doi.org/10.1016/S0140-6736\(18\)30475-6](http://dx.doi.org/10.1016/S0140-6736(18)30475-6).
4. National Multiple Sclerosis Society. Secondary Progressive MS (SPMS). <https://www.nationalmssociety.org/What-is-MS/Types-of-MS/Secondary-progressive-MS>. Accessed March, 2019.
5. Gross H, Watson C. Characteristics, burden of illness, and physical functioning of patients with relapsing-remitting and secondary progressive multiple sclerosis: a cross-sectional US survey. *Neuropsychiatric Disease and Treatment*. 2017;13:1349-1357.
6. National MS Society. Clinically Isolated Syndrome (CIS). [https://www.nationalmssociety.org/Symptoms-Diagnosis/Clinically-Isolated-Syndrome-\(CIS\)](https://www.nationalmssociety.org/Symptoms-Diagnosis/Clinically-Isolated-Syndrome-(CIS)). Accessed March 2019.
7. Tavares A, et al. Brain distribution of MS565, an imaging analogue of Mayzent (BAF312), in non-human primates. *Neurology*. 2014;82(10):suppl. P1.168.
8. MS Society. Types of MS. <https://www.mssociety.org.uk/what-is-ms/types-of-ms>. Accessed March 2019.
9. PubMed Health. Multiple Sclerosis (MS). <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001747/>. Accessed March 2019.

###

Novartis Media Relations

Central media line: +41 61 324 2200
E-mail: media.relations@novartis.com

Eric Althoff
Novartis Global Media Relations
+41 61 324 7999 (direct)
+41 79 593 4202 (mobile)
eric.althoff@novartis.com

Angela Fiorin
Novartis Global Pharma Communications
+41 61 324 8631 (direct)
+41 79 752 6955 (mobile)
angela.fiorin@novartis.com

Novartis Investor Relations

Central investor relations line: +41 61 324 7944
E-mail: investor.relations@novartis.com

Central
Samir Shah +41 61 324 7944
Pierre-Michel Bringer +41 61 324 1065
Thomas Hungerbuehler +41 61 324 8425
Isabella Zinck +41 61 324 7188

North America
Richard Pulik +1 212 830 2448
Cory Twining +1 212 830 2417