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MEDIA & INVESTOR RELEASE

Novartis receives positive CHMP opinion for Jakavi® to treat acute and chronic graft-versus-host disease

- *CHMP opinion based on Phase III REACH2 and REACH3 trials that showed Jakavi improved response rates and failure-free survival compared to best available therapy*[1,2]

- *Graft-versus-host disease (GvHD) is a serious and debilitating complication of stem cell transplants, with no established standard of care for patients who do not adequately respond to first-line steroid treatment*[3,4]

- *Nearly half of patients experience either acute or chronic GvHD, or both, following allogeneic transplants*[3,4]

Basel, March 25, 2022 — Novartis announced today the Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency (EMA) has adopted a positive opinion recommending approval of Jakavi® (ruxolitinib) for the treatment of patients aged 12 years and older with acute graft versus host disease or chronic graft versus host disease (GvHD) who have inadequate response to corticosteroids or other systemic therapies. If approved, Jakavi will be the first JAK1/2 inhibitor available for patients with GvHD in Europe[4].

“For many hematologic diseases, allogeneic transplant is the only treatment with the potential to be curative; however, half will go on to develop acute or chronic GvHD,” said Dr. Robert Zeiser, University Hospital Freiburg, Department of Haematology, Oncology and Stem Cell Transplantation, Freiburg, Germany. “It is encouraging that we may soon have a new standard of care for patients with this often debilitating condition who do not adequately respond to first-line corticosteroids or other systemic therapies.”

The CHMP positive opinion was based on data from the Phase III REACH2 and REACH3 clinical studies, in which Jakavi demonstrated superiority versus best available therapy (BAT) in patients with steroid-refractory and steroid-dependent acute and chronic GvHD, respectively.

Results from the REACH2 trial showed that overall response rate (ORR) at Day 28 was superior in the Jakavi arm at 62.3% vs. 39.4% in the BAT arm (odds ratio [OR], 2.64; $p<0.001$) in patients with steroid refractory/dependent acute GvHD. In those patients who maintained response at Day 56, the ORR in the Jakavi arm was 40% vs. 22% in the BAT arm ($p<0.001$). In REACH3, treatment with Jakavi led to significant improvements in ORR compared to BAT (49.7% vs. 25.6%; OR, 2.99; $P<0.0001$) in patients with steroid-refractory/dependent chronic GvHD at week 24, the primary endpoint of the study, regardless of the individual organs involved at baseline. Also, best overall response (BOR) rate at any time up to week 24 was achieved in 76.4% of patients in the Jakavi arm compared to 60.4% in the BAT arm (OR, 2.17; 95% CI, 1.34-3.52). Results from the two studies were published in

the April 22, 2020 (REACH2), and July 15, 2021 (REACH3) issues of *The New England Journal of Medicine*[1,2].

GvHD, a common and potentially life-threatening complication that can arise after allogeneic stem cell transplants, is a reaction where the donor's cells see the recipient's normal cells as foreign and attack them. Symptoms of GvHD can appear in the skin, gastrointestinal tract, liver, mouth, eyes, genitals, lungs, and joints[3,5-8].

Approximately 50 percent of allogeneic stem cell transplant recipients experience either acute or chronic GvHD, or both[4]. Acute GvHD typically occurs within the first 100 days of transplant, while chronic GvHD generally occurs more than 100 days after transplant. Both acute and chronic GvHD can be fatal and until now both have lacked an established standard of care for patients who do not adequately respond to first-line steroid treatment[3,4].

"This positive CHMP opinion for Jakavi in GvHD brings us one step closer to approval in Europe, for a condition where patients often experience severe and life-threatening symptoms," said Susanne Schaffert, PhD, President, Novartis Oncology. "With this exciting news, we may change the way GvHD is treated as about half of patients do not respond to previous corticosteroids or other systemic treatment."

The CHMP's positive opinion of Jakavi in acute and chronic GvHD will be referred to the European Commission (EC), which has the authority to grant marketing authorizations for medications in the EU. The EC will review the CHMP recommendations and is expected to make a final decision within approximately 2 months.

About Jakavi® (ruxolitinib)
Jakavi® (ruxolitinib) is an oral inhibitor of the JAK 1 and JAK 2 tyrosine kinases. Jakavi is approved by the European Commission for the treatment of adult patients with polycythemia vera (PV) who are resistant to or intolerant of hydroxyurea and for the treatment of disease-related splenomegaly or symptoms in adult patients with primary myelofibrosis (MF) (also known as chronic idiopathic MF), post-polycythemia vera MF or post-essential thrombocythemia MF. Jakavi is approved in over 100 countries for patients with MF, including EU countries, Switzerland, Canada, Japan and in more than 85 countries for patients with PV, including EU countries, Switzerland, Japan and Canada. The exact indication for Jakavi varies by country. Additional worldwide regulatory filings are underway in MF and PV.

Novartis licensed ruxolitinib from Incyte for development and commercialization outside the United States. Ruxolitinib is marketed in the United States by Incyte as Jakafi® for adults with PV who have had an inadequate response to or are intolerant of hydroxyurea, for adults with intermediate or high-risk MF, for adult and pediatric patients 12 years and older with steroid-refractory acute GvHD, and adult and pediatric patients 12 years and older with chronic GvHD after failure of one or two lines of corticosteroids or other systemic therapy.

Jakavi is a registered trademark of Novartis AG in countries outside the United States. Jakafi is a registered trademark of Incyte. The safety and efficacy profile of Jakavi has not yet been established outside of its approved indications.

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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 and requirements for increased pricing transparency; our ability to obtain or maintain proprietary intellectual property protection; the particular prescribing preferences of physicians and patients; general political, economic and business conditions, including the effects of and efforts to mitigate pandemic diseases such as COVID-19; safety, quality, data integrity 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 nearly 800 million people globally and we are finding innovative ways to expand access to our latest treatments. About 108,000 people of more than 140 nationalities work at Novartis around the world. Find out more at https://www.novartis.com.

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References

1. Zeiser R, et al. Ruxolitinib for Glucocorticoid-Refractory Chronic Graft-versus-Host Disease (REACH3). New England Journal of Medicine; July 2021.
2. Zeiser, R, et al. Ruxolitinib for Glucocorticoid-Refractory Acute Graft-versus-Host Disease (REACH2). New England Journal of Medicine. April 2020.
3. Leukemia and Lymphoma Society. Graft-Versus-Host Disease Overview. 2021. Available at: https://www.lls.org/treatment/types-treatment/stem-cell-transplantation/graft-versus-host-disease
4. Jaglowski SM, et al. Graft-versus-Host Disease: Why Haven't We Made More Progress? Curr Opin Hematol. 2014;21(2):141-147
5. Ferrara JL., et al. Graft-versus-host disease. Lancet. 2009;373(9674):1550-1561.
6. Zeiser R., et al. Pathophysiology of Chronic Graft-versus-Host Disease and Therapeutic Targets. N Engl J Med. 2017 Dec 28;377(26):2565-2579
7. Jagasia MH, et al. National Institutes of Health Consensus Development Project on Criteria for Clinical Trials in Chronic Graft-versus-Host Disease: I. The 2014 Diagnosis and Staging Working Group report. Biol Blood Marrow Transplant. 2015.
8. Martin PJ, Rizzo JD, Wingard JR, et al. First- and second-line systemic treatment of acute graft-versus-host disease: recommendations of the American Society of Blood and Marrow Transplantation. Biol Blood Marrow Transplant. 2012;18(8):1150-1163.

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