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MEDIA UPDATE • MEDIA UPDATE • MEDIA UPDATE

Novartis breadth of data at 2019 ASH demonstrates commitment to reimagining medicine in hematology through innovative therapeutic platforms

- *With more than 140 abstracts, Novartis continues its leadership in hematology innovation*
- *Data for MBG453, an innovative anti-TIM-3 immunotherapy, with decitabine on preliminary response rates in patients with high-risk MDS and AML*
- *Safety and efficacy data for Kymriah® (tisagenlecleucel)* in real-world setting compared to pivotal trials in relapsed/refractory ALL and DLBCL*
- *Adakveo® (crizanlizumab) post-hoc analyses of hospitalization data from the SUSTAIN study and interim data from the global SWAY survey in SCD*

Basel, December 2, 2019 – Novartis looks forward to presenting data from the company's expansive hematology portfolio at the upcoming 61st American Society of Hematology Annual Meeting & Exposition (ASH), taking place December 7-10 in Orlando, Florida. More than 140 abstracts will be presented, demonstrating our growing pipeline of differentiated immunotherapies and our bold ambition to research and develop medicines that transform the standard of care for patients.

"Our data at ASH are evidence of the hard work, dedication and pioneering mindset of our teams. Novartis is deeply committed to build on its deep legacy in hematology to provide new innovative treatments and solutions that help people with malignant and benign blood disorders live longer, better lives," said Susanne Schaffert, PhD, President, Novartis Oncology.

Data at the 2019 ASH will focus on a range of disease areas, including:

- Phase Ib data from the first anti-TIM-3 antibody in hematology, MBG453
  - Phase Ib study of the anti-TIM-3 antibody MBG453 in combination with decitabine in patients with high-risk myelodysplastic syndrome (MDS) and acute myeloid leukemia (AML) [Abstract #570; oral presentation: Monday, December 9, 8:15 AM ET]

- Data will show real-world Kymriah results as a therapy for adults with relapsed/refractory (r/r) diffuse large B-cell lymphoma (DLBCL) and children and young adults with r/r acute lymphoblastic leukemia (ALL)
  - Tisagenlecleucel chimeric antigen receptor (CAR) T-cell therapy for adults with diffuse large B-cell lymphoma (DLBCL): real world experience from the Center for International Blood & Marrow Transplant Research (CIBMTR) Cellular Therapy

(CT) Registry [Abstract #766; oral presentation: Monday, December 9, 3:30 PM ET]
    - Tisagenlecleucel chimeric antigen receptor (CAR) T-cell therapy for relapsed/refractory children and young adults acute lymphoblastic leukemia (ALL): real world experience from the Center for International Blood & Marrow Transplant Research (CIBMTR) Cellular Therapy (CT) Registry [Abstract #2619; poster presentation: Sunday, December 8, 6:00 PM ET]

- Post hoc data from the SUSTAIN study, highlighting reductions in hospitalization for patients with sickle cell disease (SCD) treated with Adakveo (crizanlizumab) 5mg/kg; as well as international Sickle Cell World Assessment Survey (SWAY) insights on the impact of SCD
    - Crizanlizumab treatment is associated with clinically significant reductions in hospitalization in patients with sickle cell disease: results from the SUSTAIN study [Abstract # 2289; poster presentation: Sunday, December 8, 6:00 PM ET]
    - Impact of sickle cell disease symptoms on patients' daily lives: interim results from the International Sickle Cell World Assessment Survey (SWAY) [Abstract #2297; poster presentation: Sunday, December 8, 6:00 PM ET]
    - Management strategies and satisfaction levels in patients with sickle cell disease: interim results from the International Sickle Cell World Assessment Survey (SWAY) [Abstract #1017; poster presentation: Saturday, December 7, 5:30 PM ET]

- Evaluating new immune thrombocytopenia (ITP) quality of life index
    - The psychometric properties of the ITP Life Quality Index assessed in a large multinational "real-world" cohort of immune thrombocytopaenia patients [Abstract #386; oral presentation: Sunday, December 8, 7:45 AM ET]

Novartis plans to provide updates around the 2019 ASH Annual Meeting on Novartis.com, Twitter, Facebook and LinkedIn, delving into the core of our commitment to reimagining medicine, including interviews with the scientists, people and principles behind our innovation; insights on new findings and developments, and breaking news.

Product Information

Approved indications for products vary by country and not all indications are available in every country. Safety and efficacy profiles have not been established for investigational compounds or are outside the approved indications for marketed products. Because of the uncertainty of clinical trials, there is no guarantee that compounds will become commercially available or receive additional indications if already marketed.

For full prescribing information including important safety information about marketed products, please visit https://www.novartisoncology.com/news/product-portfolio.

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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 media update 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 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 media update as of this date and does not undertake any obligation to update any forward-looking statements contained in this media update 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 750 million people globally and we are finding innovative ways to expand access to our latest treatments. About 109,000 people of more than 140 nationalities work at Novartis around the world. Find out more at www.novartis.com.

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* Novartis and the University of Pennsylvania's Perelman School of Medicine developed Kymriah under a global collaboration. As of September 2019, Novartis and the University of Pennsylvania (Penn) entered into a new focused agreement on CAR-T clinical trials and concluded their seven-year research and development alliance, per the contractual terms, allowing each organization to pursue their own innovative research in cell and gene therapies.

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