

**MEDIA RELEASE • COMMUNIQUE AUX MEDIAS • MEDIENMITTEILUNG**

## **Novartis expands development programs for NASH through clinical collaboration with Allergan**

- *Phase IIb clinical trial to evaluate a combination of a Novartis FXR agonist and Allergan's cenicriviroc for NASH, a progressive form of non-alcoholic fatty liver disease*
- *There are currently no approved treatments for NASH, which is a major cause of liver disease worldwide and the leading cause of liver transplants for people under 50 in the US<sup>1</sup>*
- *Novartis has a rapidly growing development portfolio in NASH, investigating single and combination therapies across all stages of the disease*

**Basel, April 18, 2017** – Novartis announced today that it has entered into a clinical trial agreement with Allergan plc to conduct a Phase IIb study, involving the combination of a Novartis FXR agonist and Allergan's cenicriviroc (CVC) for the treatment of non-alcoholic steatohepatitis (NASH). The financial details of this transaction are not disclosed.

NASH is the progressive form of non-alcoholic fatty liver disease (NAFLD), which is characterized by the accumulation of fat in the liver, inflammation and fibrosis (scarring), and can eventually lead to cirrhosis and liver failure. NASH is a major cause of liver disease worldwide and the leading cause of liver transplants for people under 50 in the US<sup>1</sup>. There are currently no approved treatments for NASH.

“Our clinical collaboration with Allergan expands our development programs for NASH, bringing together science and expertise to investigate a potential new combination therapy in an effort to make a positive change for people living with this condition,” said Vas Narasimhan, Global Head, Drug Development and Chief Medical Officer, Novartis. “We believe that collaboration is key to developing the best possible treatments that are urgently needed for NASH patients.”

CVC is a once-daily, oral, Phase III ready potent immunomodulator that blocks two chemokine receptors, CCR2 and CCR5, which are involved in inflammatory and fibrogenic pathways. In the Phase IIb CENTAUR study, CVC demonstrated a clinically meaningful improvement in fibrosis of at least one stage without worsening of NASH after one year of treatment, which is one of only two approvable Phase III endpoints. With its unique Mechanism of Action (MOA) and its favorable safety profile, CVC represents an ideal candidate to become the backbone of NASH multi-therapy treatment. CVC has been granted Fast Track designation by the US Food and Drug Administration (FDA) in patients with NASH and liver fibrosis.

Novartis is developing Farnesoid X receptor (FXR) agonists for the treatment of chronic liver diseases, including NASH. The most advanced investigational compound is a potent, non-bile acid FXR agonist, which recently received Fast Track designation from the FDA and is in a Phase II clinical trial. As part of this agreement, Novartis and Allergan will conduct a Phase IIb clinical trial to assess the safety, efficacy and tolerability of a combination therapy for NASH.

In December 2016, Novartis announced an exclusive option for a collaboration and license agreement with Conatus Pharmaceuticals Inc. to jointly develop emricasan for NASH. Emricasan is an investigational, first-in-class, oral, pan-caspase inhibitor and our agreement with Conatus has the potential to expand treatment options for people in various stages of NASH, including those with the advanced form of the disease, NASH cirrhosis. Both collaborations with Conatus and Allergan continue to support the growing Novartis portfolio to develop new therapies in chronic liver diseases, including NASH.

#### **About Novartis FXR agonists**

Novartis scientists began to develop leads for the FXR agonism program in 2007. Through this effort, several non-bile acid FXR agonists have been identified and pre-clinical data demonstrates that these compounds are very selective with differentiated biological profiles. FXR agonists have been shown to address three of the most important aspects of NASH progression by reducing fat, inflammation and fibrosis in the liver. First-in-human studies have continued to support their differentiated profiles and their potential for further development. Two Novartis FXR agonists are now in worldwide clinical studies in NASH patients and both have received Fast Track designation status from the FDA.

#### **About Non-Alcoholic Steatohepatitis (NASH)**

NASH is a chronic, progressive form of non-alcoholic fatty liver disease. It is a leading cause of liver disease worldwide and it is estimated to affect 3% to 5% of the US population alone<sup>2</sup>. As fat builds up in the liver, it triggers a vicious cycle of chronic inflammation and liver scarring called fibrosis. Over time, liver inflammation and fibrosis may progress to cirrhosis, which can lead to liver failure and, barring a transplant, death. NASH is expected to be the principal cause of liver transplantation in the US by 2020<sup>3</sup> and is currently the leading cause of liver transplants for people under 50 in the US<sup>1</sup>.

#### **Disclaimer**

The foregoing release contains forward-looking statements that can be identified by words such as “expands,” “development programs,” “to evaluate,” “rapidly growing,” “investigating,” “to investigate,” “positive change,” “believe,” “Fast Track designation,” “investigational,” “will,” “option,” “growing,” “potential,” “may,” “expected,” or similar terms, or by express or implied discussions regarding potential marketing approvals for cenicriviroc, the FXR agonists being developed internally by Novartis, and emricasan, either as single agents or in combination, or regarding potential future revenues from these products. You should not place undue reliance on these statements. Such forward-looking statements are based on the current beliefs and expectations of management 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 necessary government approvals for the transaction with Allergan or exercise of the option with Conatus will be obtained in any particular time frame, or at all. Neither can there be any guarantee that any other closing conditions for the transactions with Allergan or Conatus will be met in any particular time frame, or at all. Nor can there be any guarantee that the collaborations with Allergan or Conatus will achieve any of their intended goals and objectives, or in any particular time frame. Nor can there be any guarantee that cenicriviroc or the FXR agonists being developed internally by Novartis, or emricaasan, either as single agents or in combination, will be submitted or approved for sale in any market, or at any particular time. Nor can there be any guarantee that any or all of these products will be commercially successful in the future. Management’s expectations regarding each of the transactions, cenicriviroc, emricasan, and the FXR agonists being developed internally by Novartis could be affected by, among other things, a failure to obtain necessary government approvals for the transactions with Allergan and Conatus, or delays in obtaining such approvals, and the potential that any other closing conditions for the transaction may not be

met; 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; the company's ability to obtain or maintain proprietary intellectual property protection; general economic and industry conditions; global trends toward health care cost containment, including ongoing pricing pressures; safety, quality or manufacturing issues, 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 provides innovative healthcare solutions that address the evolving needs of patients and societies. Headquartered in Basel, Switzerland, Novartis offers a diversified portfolio to best meet these needs: innovative medicines, cost-saving generic and biosimilar pharmaceuticals and eye care. Novartis has leading positions globally in each of these areas. In 2016, the Group achieved net sales of USD 48.5 billion, while R&D throughout the Group amounted to approximately USD 9.0 billion. Novartis Group companies employ approximately 118,000 full-time-equivalent associates. Novartis products are sold in approximately 155 countries around the world. For more information, please visit <http://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](http://www.novartis.com/news/media-library)  
For questions about the site or required registration, please contact [media.relations@novartis.com](mailto:media.relations@novartis.com)

### **References**

1. Banini BA, et al. Abstract #46. Presented at: American College of Gastroenterology Annual Scientific Meeting; Oct. 14-19, 2016; Las Vegas, NV.
2. Vernon G, Baranova A, Younossi ZM. Systematic review: the epidemiology and natural history of non-alcoholic fatty liver disease and non-alcoholic steatohepatitis in adults. *Aliment Pharmacol Ther.* 2011;34(3):274-85.
3. Charlton MR, Burns JM, Pedersen RA, Watt KD, Heimbach JK, Dierkhising RA. Frequency and Outcomes of Liver Transplantation for Nonalcoholic Steatohepatitis in the United States. *Gastroenterology*; 2011;141 (4):e22-e23.

###

### **Novartis Media Relations**

Central media line: +41 61 324 2200  
E-mail: [media.relations@novartis.com](mailto:media.relations@novartis.com)

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

Bhavin Vaid  
Novartis Global Pharma Communications  
+41 61 324 8175 (direct)  
+41 79 792 7510 (mobile)  
[bhavin.vaid@novartis.com](mailto:bhavin.vaid@novartis.com)

### **Novartis Investor Relations**

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