Dicerna Announces Roche's Initiation of GalXC™ RNAi Candidate RG6346 in Phase 2 Combination Trial for Treatment of Chronic Hepatitis B Virus Infection

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– Phase 2 Initiation Triggers $25 Million Milestone to Dicerna –

LEXINGTON, Mass.--(BUSINESS WIRE)--Mar. 4, 2021-- Dicerna Pharmaceuticals, Inc. (Nasdaq: DRNA) (the "Company" or "Dicerna"), a leading developer of investigational ribonucleic acid interference (RNAi) therapeutics, announced today that Roche has initiated RG6346 in a Roche-sponsored Phase 2 combination trial for the treatment of chronic hepatitis B virus (HBV) infection. RG6346 is an investigational GalXC™ RNAi therapeutic that Dicerna is developing in collaboration with Roche as part of the companies' worldwide collaboration and licensing agreement for chronic HBV treatments. The Phase 2 platform trial will evaluate the efficacy and safety of RG6346 in combination with multiple additional agents with different mechanisms of action. Dicerna has earned a $25 million milestone in connection with the initiation of RG6346 in the Phase 2 combination trial.

"Currently available therapies fall short of the ultimate goal of providing patients with a functional cure for chronic HBV, which claims the lives of more than 880,000 people worldwide each year," said Shreeram Aradhye, M.D., Executive Vice President and Chief Medical Officer at Dicerna. "To date, data have shown that RG6346's novel GalXC RNAi gene silencing mechanism has resulted in deep and durable reductions in hepatitis B surface antigen up to one year from last dose, suggesting the potential for strong synergy as part of a combination treatment regimen. Roche's Phase 2 platform trial is the first of its kind to assess five different combinations including RG6346. We believe that a multi-modality approach that includes RG6346 holds significant promise for a functional cure for people living with HBV."

"We are very encouraged by the results from the Phase 1 trial of RG6346, which have shown a strong and sustained reduction in the levels of hepatitis B surface antigen," commented John Young, Global Head of Infectious Diseases at Roche Pharmaceutical Research and Early Development. "By including RG6346 along with other agents with novel mechanisms, we are confident that we have designed a Phase 2 study that will advance understanding of the disease pathways that underlie HBV infection and bring us closer to a potentially curative regimen."

The Roche Phase 2 trial (NCT04225715) is a randomized, adaptive, open-label platform trial designed to evaluate the safety, tolerability and efficacy of multiple combinations of novel agents in patients infected with chronic HBV against a common control, allowing rapid inclusion of additional treatment arms as needed. A combination of Roche's novel investigational TLR7 agonist and core protein allosteric modulator (CpAM) inhibitor is currently already running within this study. In March 2021, RG6346 (also known as RO7445482) RNAi treatment arms have been initiated in combination with standard of care nucleos(t)ide (NUC) therapy and in triple combinations with pegylated interferon alfa-2a, Roche's CpAM inhibitor or Roche's TLR7 agonist. The primary endpoint of the study is the percentage of participants with hepatitis B surface antigen (HBsAg) loss at 24 weeks after the end of the 48-week treatment period.

About Chronic Hepatitis B Virus (HBV) Infection

Hepatitis B virus (HBV) is the world's most common serious liver infection and affects an estimated 292 million people worldwide. [1] According to the Hepatitis B Foundation, 30 million people become newly infected with HBV each year, and it is estimated that more than 880,000 people die annually from hepatitis B and related complications such as liver cancer.[2]

About RG6346

RG6346 is an investigational GalXC™ RNAi therapeutic candidate in development in collaboration with Roche for the treatment of chronic hepatitis B virus (HBV) infection. Current therapies for HBV, such as nucleos(t)ide analogs, can provide long-term viral suppression if taken continuously, but they rarely lead to long-term functional cures, as measured by the clearance of HBV surface antigen (HBsAg) and sustained HBV deoxyribonucleic acid (DNA) suppression in patient plasma or blood. By contrast, RG6346 is designed to employ RNAi to knock down selectively HBsAg messenger RNA (mRNA) and protein expression in hepatocytes, which is required for the HBV virus lifecycle. Preclinical data have demonstrated greater than 99.9% reduction in circulating HBsAg, as observed in mouse models of HBV infection. Results from a Phase 1 trial of RG6346 demonstrated that four monthly doses of RG6346 treatment resulted in substantial and durable reductions in HBsAg levels lasting up to one year following the last dose. We believe RG6346 has the potential to deliver a functional cure as part of a combination regimen for patients living with chronic HBV.

About Dicerna's GalXC™ RNAi Technology Platform

Dicerna's proprietary GalXC™ RNA interference (RNAi) platform aims to advance the development of next-generation RNAi-based therapies designed to silence genes implicated in disease. Investigational therapeutics developed using our flagship GalXC technology utilize a proprietary *N*-acetyl-D-galactosamine (GalNAc)-mediated structure of double-stranded RNA molecules that are designed to bind specifically to receptors on liver cells, leading to selective hepatocyte internalization and access to the RNAi machinery within the cells. Dicerna is continuously innovating and exploring new applications for RNAi technology beyond GalNAc-mediated delivery to the liver, including alternative RNA structures and fully synthetic ligands that target other tissues and enable new therapeutic applications, referred to as GalXC-Plus™.

About Dicerna Pharmaceuticals, Inc.

Dicerna Pharmaceuticals, Inc. (Nasdaq: DRNA) is a biopharmaceutical company focused on discovering, developing and commercializing medicines that are designed to leverage ribonucleic acid interference (RNAi) to silence selectively genes that cause or contribute to disease. Using our proprietary RNAi technologies, GalXC™ and GalXC-Plus™, Dicerna is committed to developing RNAi-based therapies with the potential to treat both rare and more prevalent diseases. By silencing disease-causing genes in the liver, Dicerna's GalXC platform has the potential to address conditions that are difficult to treat with other modalities. Dicerna has continued to innovate and is exploring new applications of its RNAi technology beyond specific hepatocytes, targeting additional tissues and enabling new therapeutic applications with GalXC-Plus. In addition to our own pipeline of core

discovery and clinical candidates, Dicerna has established collaborative relationships with some of the world's leading pharmaceutical companies, including Novo Nordisk A/S, Roche, Eli Lilly and Company, Alexion Pharmaceuticals, Inc., Boehringer Ingelheim International GmbH and Alnylam Pharmaceuticals, Inc. Between Dicerna and our collaborative partners, we currently have more than 20 active discovery, preclinical or clinical programs focused on rare, cardiometabolic, viral, chronic liver and complement-mediated diseases, as well as neurodegenerative diseases and pain. At Dicerna, our mission is to interfere – to silence genes, to fight disease, to restore health. For more information, please visit www.dicerna.com.

Cautionary Note on Forward-Looking Statements

This press release includes forward-looking statements. Such forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied in such statements. Examples of forward-looking statements include, among others, statements we make regarding the collaboration agreement with Roche and the potential of RG6346 to result in a functional cure for chronic hepatitis B virus infection in combination with other agents with different mechanisms. The process by which investigational therapies could potentially lead to an approved product is long and subject to highly significant risks. Applicable risks and uncertainties include those relating to Dicerna's clinical research and other risks identified under the heading "Risk Factors" included in the Company's most recent filings on Forms 10-K and 10-Q and in other future filings with the Securities and Exchange Commission. These risks and uncertainties include, among others, the cost, timing and results of preclinical studies and clinical trials and other development activities by us and our collaborative partners; the likelihood of Dicerna's clinical programs being executed on timelines provided and reliance on the Company's contract research organizations and predictability of timely enrollment of subjects and patients to advance Dicerna's clinical trials; the reliance of Dicerna on contract manufacturers to supply its products for research and development and the risk of supply interruption from a contract manufacturer; the potential for future data to alter initial and preliminary results of early-stage clinical trials; the impact of the ongoing COVID-19 pandemic on our business operations, including the conduct of our research and development activities; the unpredictability of the duration and results of the regulatory review of Investigational New Drug applications (INDs) and Clinical Trial Applications (CTAs) that are necessary to continue to advance and progress the Company's clinical programs and the regulatory review of INDs and CTAs; the timing, plans and reviews by regulatory authorities of marketing applications such as New Drug Applications (NDAs) and comparable foreign applications for one or more of Dicerna's product candidates; the ability to secure, maintain and realize the intended benefits of collaborations with partners; market acceptance for approved products and innovative therapeutic treatments; competition; the possible impairment of, inability to obtain, and costs to obtain intellectual property rights; possible safety or efficacy concerns that could emerge as new data are generated in R&D; and general business, financial, and accounting risks and litigation. The forward-looking statements contained in this press release reflect Dicerna's current views with respect to future events, and Dicerna does not undertake and specifically disclaims any obligation to update any forward-looking statements.

[1] Polaris Observatory Collaborators. Global prevalence, treatment, and prevention of hepatitis B virus infection in 2016: a modelling study. *The Lancet Gastroenterology and Hepatology*. 2018;3(6):383-403.

[2] Hepatitis B Foundation. Facts and Figures. Available at: http://www.hepb.org/what-is-hepatitis-b/what-is-hepb/facts-and-figures/. Accessed on Jan. 14, 2021.

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