

BioNTech and the University of Pennsylvania Enter into Strategic Research Collaboration to Develop mRNA Vaccine Candidates Against Various Infectious Diseases

New research program between BioNTech and the University of Pennsylvania

Joining forces to advance mRNA-based vaccine development for ten infectious disease indications

Further step to rapidly expand BioNTech's new infectious disease franchise

Mainz, Germany, November 5, 2018 – BioNTech AG, a rapidly growing biotechnology company focused on the development of immunotherapies for the precise and individualized treatment of cancer and prevention of infectious diseases and the University of Pennsylvania (Penn), Philadelphia, USA, today announced that they have entered into a strategic research collaboration. The goal of the exclusive, multi-year partnership is to develop novel nucleoside-modified mRNA vaccine candidates for the prevention and treatment of various infectious diseases.

Under the terms of the agreement, BioNTech and the lab of Drew Weissman, MD, PhD, at Penn will exchange their in-depth knowledge and experience in mRNA research and development to advance the discovery of novel vaccine candidates. Penn will be responsible for a dedicated preclinical research program from discovery through to the completion of IND-enabling studies in up to ten infectious disease indications. BioNTech will be eligible to receive an exclusive worldwide license to further develop and commercialize product candidates arising from the research collaboration. If proprietary Penn technology is part of a new mRNA-based vaccine, the university will be eligible to receive additional milestone payments and royalties from BioNTech. Detailed financial terms were not disclosed.

“The collaboration with Drew Weissman’s research group is a further step that we are taking at BioNTech to rapidly expand our R&D presence in infectious diseases and thereby build a global immunotherapy company addressing a broad range of infectious diseases and cancers,” said **Professor Dr. Ugur Sahin, MD, Co-Founder and CEO of BioNTech**. “Drew and his research group are spearheading truly novel vaccine concepts for the prevention of infectious diseases. The collaboration fits perfectly into our innovation-focused strategy to develop effective compounds that address unmet medical need.”

“Nucleoside-modified mRNA vaccines offer promising advantages over conventional vaccines: They have the potential to encode any antigen for almost any pathogen, allow for higher levels of neutralization and durability of the response and have the capacity for faster production at potentially lower cost,” said **Drew Weissman, MD, PhD, a professor of Medicine in the division of Infectious Diseases in the Perelman School of Medicine at the University of Pennsylvania**. “Combining Penn’s strengths in immunotherapy, molecular biology and mRNA expertise with BioNTech’s innovative technology platforms could lead to the development of highly flexible vaccines that provide protections against a wide-ranging list of infectious diseases.”

About mRNA-based vaccines

mRNA-based vaccines may represent a novel opportunity to surpass conventional vaccine approaches because of their capacity for rapid development and their potential for low-cost manufacture and potentially safe administration. Especially in the field of infectious diseases, recent research results¹ published by a group led by Professor Drew Weissman and BioNTech's Vice President Professor Katalin Karikó, PhD, has demonstrated the potential of nucleoside-modified mRNA to elicit potent immune responses against pathogens, making it a viable and attractive platform for vaccine development.

About BioNTech

BioNTech is Europe's largest privately-held biopharmaceutical company pioneering the development of more precise and individualized therapies for cancer and the prevention of infectious diseases. The Company combines all building blocks for more precise and individualized immunotherapies under one roof – from diagnostics and drug development to manufacturing. Its cutting-edge technologies range from individualized mRNA-based product candidates through innovative chimeric antigen receptors and T-cell receptor-based compounds to novel checkpoint immunomodulators and small molecules. BioNTech's commercial approach is validated by six top-tier corporate partnerships with Genentech, Pfizer, Genmab, Eli Lilly, Sanofi and Bayer Animal Health and its scientific approach through over 60 peer-reviewed scientific publications, including five publications in Nature journals. Founded in 2008, BioNTech's financial shareholders include the Struengmann Family Office as its majority shareholder, Fidelity Management & Research Company, Invus, Janus Henderson Investors, MIG Fonds, Redmile Group, Salvia and several European family offices. www.biontech.de.

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¹ Pardi et al. Zika virus protection by a single low-dose nucleoside-modified mRNA vaccination. *Nature* **543**, 248-251, 2017 <https://www.nature.com/articles/nature21428>

Pardi et al. Nucleoside-modified mRNA vaccines induce potent T follicular helper and germinal center B cell responses. *J Exp Med* **215**, 1571-1588, 2018 <http://jem.rupress.org/content/early/2018/05/07/jem.20171450>

Pardi et al. Nucleoside-modified mRNA immunization elicits influenza virus hemagglutinin stalk-specific antibodies. *Nature Communications* 9, 3361, 2018 <https://www.nature.com/articles/s41467-018-05482-0>