IBBR Awarded $6 Million NIH Grant for Structure-Based Design of a Hepatitis C Vaccine

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(Rockville, MD, June 12, 2017) University of Maryland’s Institute for Bioscience and Biotechnology Research (IBBR) has been awarded a $6.0 million grant entitled, “Structure-Based Vaccine Design for Hepatitis C Virus”, to develop a novel prophylactic vaccine to prevent hepatitis C virus (HCV) infection. The grant is funded by the National Institutes of Health (NIH) and the research will take place over a five-year period.

There are currently no approved vaccines for HCV, a highly variable RNA virus that currently infects 185 million worldwide, adds 3-4 million new infections each year, and is associated with severe liver diseases and cancer. Moreover, HCV infection is responsible for more U.S. deaths than HIV and all other infectious diseases combined. Although FDA approved direct-acting antiviral drugs (DAAs) are available and shown to be safe and effective, access is limited due to the very high cost of treatment, and DAAs are largely unaffordable in developing nations. Furthermore, DAA treatment-induced cure does not prevent re-infection and other potential underlying medical conditions associated with a primary infection, making a prophylactic HCV vaccine an urgent, unmet medical need.

The lead principal investigator on this new NIH award is Thomas Fuerst, PhD, Director of IBBR, Professor, University of Maryland, Department of Cell Biology and Molecular Genetics, and head of IBBR’s Structure-based Vaccine Design (SBVD) team. The SBVD team, working in conjunction with Steven Foung, MD, Professor of Pathology, Stanford University School of Medicine, who also will serve as a principal investigator on this award, will be studying the efficacy of immune responses in animal models of its HCV vaccine candidates to determine which candidates will protect against the majority of HCV genotypes.

IBBR's integrated SBVD team is a multi-disciplinary group located at IBBR consisting of scientists from both the University of Maryland, College Park (UMCP), and the University of Maryland, Baltimore (UMB). The team includes experts in vaccinology, structural biology, computational modeling, protein engineering, and immunoadjuvant and formulation chemistry necessary to shepherd the HCV vaccine project from preclinical development into an optimally designed lead vaccine candidate for clinical development.

This project was initially seeded with funds from the MPowering the State initiative. “MPower” is a strategic partnership between UMCP and UMB. The initiative is designed to expand research collaborations, promote innovation and impact, and leverage the research strengths across the campuses to develop novel, multidisciplinary solutions to major unmet medical and public health needs.

“We are proud to see results from MPower’s investments in multiple, high-impact projects at IBBR. As the premier translational science institute for the University of Maryland, IBBR’s mission focuses on excellence in science and engineering that provides solutions to global medical and public health needs. Bringing together both UMCP and
UMB faculty is the sine qua non of research excellence and its application, and these efforts facilitate commercialization and economic development for the State of Maryland”, said Mary Ann Rankin, PhD, Senior Vice President and Provost, UMCP, and co-leader of MPower.

“IBBR’s mission is to conduct ground-breaking research that provides solutions to major medical problems important to society through interdisciplinary collaboration. The SBVD team is one example of several programs at the Institute engaged in novel vaccine development, next generation protein therapeutics, and macromolecular drug delivery technologies that have done an excellent job in working together across the scientific disciplines and campuses. This is a perfect example of our mission and what we are trying to accomplish at IBBR. We are thankful to the NIH and MPower for their continued support to the Institute and its translational mission”, said Thomas Fuerst.

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About IBBR

IBBR is a University System of Maryland joint research enterprise among the University of Maryland College Park, the University of Maryland Baltimore, and the National Institute of Standards and Technology. The Institute serves as the nexus between academic research and commercial application, bringing together all of the critical elements necessary to pursue solutions for major scientific and medical challenges. Through collaboration and interaction among academia, government and industry, IBBR focuses on structure-based design, characterization and testing of proteins and nucleic acids, and conducting groundbreaking research to develop innovative translational applications. IBBR’s leverages its unique infrastructure and capabilities to advance projects and innovations towards commercialization in real world applications. The Institute also serves to expand the economic base of science and technology in the state of Maryland and at the national level.