Fighting Acne: A New Approach Sourced From Viruses

IBBR researchers receive funding to explore the use of viral proteins against the bacteria that cause acne

(Rockville, MD, February 4, 2020) Over 80% of adolescents and an increasing number of adults are affected by acne vulgaris—commonly known as “acne”—a skin condition caused by the Cutibacterium acnes bacteria (formerly Propionibacterium acnes). The Institute for Bioscience and Biotechnology Research (IBBR) recently received a Technology Assessment award from the Maryland Innovation Initiative (MII), as part of the Innovation Commercialization Program at TEDCO, to support work on a new approach to targeting C. acnes. IBBR Fellow Dr. Daniel Nelson (Associate Professor, Department of Veterinary Medicine, University of Maryland, College Park) will lead the project.

For decades, acne sufferers have relied on topical treatments containing drying agents and/or antibiotics despite a host of side effects ranging from skin irritation to the promotion of antibiotic resistance. Nelson is an expert in the biology of bacteriophage, viruses that infect and kill bacteria. He plans to apply his phage-based technology platform toward the development of an acne treatment with a novel mechanism of action.
Phage produce proteins called endolysins that cleave the protective cell wall of their bacterial hosts. Nelson has shown that purified endolysins can puncture the cell wall and kill bacteria in seconds upon contact, making endolysins a particularly attractive platform for topical applications.

“Endolysins represent an exciting new technology with the potential to offer a potent and safe treatment for acne, with minimal side effects and low risk of inducing drug resistance,” said Nelson.

The MII funding will support Nelson’s work to characterize \textit{C. acnes}-specific endolysins in the laboratory, develop and test delivery formulas, and begin to assess safety and efficacy in various model systems. The goal is to develop the first direct-lytic agent (DLA) against \textit{C. acnes} as a new, easy-to-use, topical treatment modality for acne.

“Pursuing translational research that brings innovative science to the market is an important part of IBBR’s mission,” says IBBR Director Tom Fuerst. “The MII program provides critical funding that helps bridge the gap between basic research funding and commercialization.”

\textbf{About IBBR}

IBBR is a joint research enterprise of the University of Maryland, College Park, the University of Maryland, Baltimore, and the National Institute of Standards and Technology. IBBR is also financially supported in part by the University of Maryland Strategic Partnership: \textit{MPowering the State}, an initiative designed to achieve innovation and impact through collaboration. The Institute sits at the nexus of academic research and commercial application, bringing together critical elements necessary to inspire transformative discoveries in the field of biotechnology that provide innovative solutions to major scientific and engineering challenges important to society. IBBR researchers seek to advance the fields of disease pathways and biomolecular targets, biomolecular measurement sciences, and biomolecular engineering, including structure-based design of vaccines and therapeutics. The Institute also serves to expand the economic base of science and technology in the state of Maryland. For more information, visit \url{https://www.ibbr.umd.edu/}.

\textbf{About TEDCO}

TEDCO enhances economic development growth through the fostering of an inclusive entrepreneurial and innovation ecosystem. TEDCO discovers, invests in, and helps build great Maryland-based technology and life science companies.

\textbf{For more information and collaborative opportunities at IBBR, contact:}

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