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Advances in Personal Protection (PPE) Strategies and Technologies

Dr. Eric Van Gieson, DARPA

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networking!*



Abstract

Chemical and biological threats have become increasingly ubiquitous and diverse. They present a risk to our stability operators in pandemic outbreak scenarios, and our warfighters serving in diverse operating environments. State-of-the-art protective equipment continues to severely limit mobility and performance of the user because of a dependence upon protective garments that are thick, heavy, and cumbersome. The Personalized Protective Biosystem (PPB) program aims to reduce protective equipment needs while increasing protection against existing and future CB threats.

PPB technologies will improve stability and provide flexibility for field-forward individuals operating in austere environments--regardless of threat. This will be achieved with lightweight materials and adaptable, tissue-protective countermeasures acting independently, or as an ensemble, to provide on-demand, broad spectrum, and rapid protection. Most importantly, the

program will leverage molecular components or commensal organisms at key points of vulnerability to remove protective equipment burden from the user. Successful PPB technologies would therefore change how the military and public health communities perform in unpredictable threat environments.

About the speaker

Dr. Eric Van Gieson joined DARPA as a Program Manager in August 2017 with the goal of using host-based methods to mitigate the impacts of emerging disease threats. He is exploring epigenetic and real-time monitoring approaches that can dynamically guide healthcare decisions and therapy, and new methods of increasing patient survival in austere environments using intelligent systems partnered with local care providers.

Throughout his career, Dr. Van Gieson has worked with private and interagency government partners to build diagnostic and healthcare solutions. For example, he leveraged those partnerships to develop a novel patient transport system known as the Containerized BioContainment System, a platform that received an R&D 100 award and is currently in use by the Departments of State and Health and Human Services. He also created a university-based drug development pipeline to accelerate development of therapeutic products for guarding against WMD and emerging disease threats. His work has led to technology that links home-use and point-of-care diagnostics with health surveillance capabilities, especially in resource-limited environments, with the goal of stopping epidemics before they emerge. Dr. Van Gieson has also led technology development and evaluation efforts in diagnostics for the Department of Defense, and has supported major diagnostics acquisition and science and technology programs.

Dr. Van Gieson received his Doctor of Philosophy degree in Biomedical Engineering and a Bachelor of Science degree in Chemical Engineering from the University of Virginia. He has published on topics ranging from genomic analysis to autonomous systems. He served as the chief judge on the Nokia Sensing XChallenge and as a judge on the QualComm Tricorder XChallenge on behalf of the XPrize Foundation.

DATE: Thursday, April 22, 2021

7:00 pm Networking

7:30 pm Presentation

8:15 pm Q&A

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Save the date!

May 4 – Dr. Linda Sapochak, National Science Foundation, on “Trends in Materials Research”
