UNIVERSITY OF DELAWARE

BIOMEDICAL ENGINEERING SEMINAR

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VIRGINIA TECH UNIVERSITY

CHRONIC ACTIVATION OF GLIA FOLLOWING BLAST EXPOSURE CONTRIBUTES TO BEHAVIORAL AND COGNITIVE OUTCOMES

Blast-induced neurotrauma is characterized by persistent inflammation which manifests as a multitude of neurobehavioral deficits. Glial activation causes morphological and functional changes within the cells which effect the neural-glial and glial-glial interactions. This response can cause dysfunction of synaptic connections, imbalances of neurotransmitter homeostasis, and potential axonal degeneration and neuronal death, ultimately leading to functional impairment. Having a better understanding of the cellular and molecular mechanisms resulting in chronic glia reactivity following blast may provide clues to mitigate chronic behavioral deficits. Our research thrust focuses on elucidating the signaling pathways within glia which leads to chronic activation to identify targets for novel therapeutic discoveries.

BIOSKETCH

Dr. Pamela VandeVord is a Professor and Interim Department Head of the Department of Biomedical Engineering and Mechanics at Virginia Tech University (VT) and a Research Health Scientist at the Salem VAMC. Her research and educational platforms focus on the complex mechanisms of injury to the brain, with a thrust to understand the persistent neurobehavioral and neuropathological consequences of this traumatic event. She has been studying the fundamental questions concerning the mode of energy transfer to the brain during traumatic injuries as well as the consequent damage or disruptive mechanisms at the cellular and molecular levels. Dr. VandeVord received a Presidential Early Career Award for Scientists and Engineers (PECASE) for her blast-related initiatives and she was elected as a fellow into the American Institute for Medical and Biological Engineering (AIMBE) in 2017. Her work provides mechanistic insight for outcomes such as elevated anxiety, cognitive deficits and fear triggered by the traumatic event. These efforts will help the community understand how the brain becomes injured from traumatic events and will provide a platform to design and test novel strategies to protect from, identify and treat the injury and alleviate the negative behavioral outcomes.

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