UNIVERSITY OF DELAWARE

BIOMEDICAL ENGINEERING SEMINAR

BARCLAY MORRISON

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A NOVEL TREATMENT FOR CEREBRAL EDEMA GROUNDED IN BIOMECHANICS

Brain swelling after traumatic brain injury leads to increased intracranial pressure and is a major determinant of mortality in the neuro-intensive care unit. Current therapies for cereal edema do not target brain pathology, but instead rely on peripheral effects. We have used the concepts of triphasic biomechanics to propose a new theory for cerebral edema, which has also led to the development of novel therapies that target the central mechanism drawing water into the brain. We have tested these therapies to control swelling both in vitro and in vivo with promising results.

BIOGRAPHY

Barclay Morrison, PhD. is a professor of Biomedical Engineering, director of the Neurotrauma and Repair Laboratory, and serves as Vice Dean of Undergraduate Programs for the Engineering School at Columbia University. His research focus is on the biomechanics of traumatic brain injury (TBI) at the tissue level to better prevent brain injuries, as well as on the cellular pathways responsible for post-traumatic cell dysfunction in the search for novel therapies. He has published over 80 peer-reviewed scientific manuscripts, serves as President of the International Research Council on Biomechanics of Injury, and is associate editor for the Journal of Biomechanical Engineering and the Journal of Neurotrauma.

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