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Bergan, Irschick, Grosse, Umberger Receive Armstrong Fund Awards

April 19, 2017

The Armstrong Fund for Science has announced its awards for 2017, which will grant \$30,000 each to two projects over the next two years to encourage transformative research on campus that introduces new ways of thinking about pressing scientific or technical challenges.

Joseph Bergan, assistant professor in psychological and brain sciences, will receive \$20,000 the first year and \$10,000 the second year to support his project, “Molecular profiling of intact biological tissues through accelerated antibody staining.” He hopes to develop a new strategy for preparing tissue samples with antibodies for microscopy so individual proteins and biomolecules can be studied by microscopy “where they reside,” without the need for thin sectioning and time-consuming antibody staining. “Through a series of recent advances in tissue histology and microscopy it is now possible to render large intact tissue samples transparent while preserving the architecture of biomolecules. Thus, fine structures can be precisely imaged deep inside tissue samples without the need for sectioned tissue,” he notes.

Bergan adds, “If successful, this technique will have broad implications for fields like neuroscience and cancer research where the function of individual molecules is determined over a wide range (nanometers to centimeters) of scales.”

The team of **Duncan Irschick**, biology, **Ian Grosse**, mechanical engineering, and **Brian Umberger**, kinesiology, which will receive \$30,000 over two years, is involved in a project titled “Creation of a 3D motion freezer to understand human and animal locomotion.”

They plan to create a new three-dimensional (3D) “motion freezer” that will allow them to construct 3D models of humans and animals in motion, and to raise their team’s profile in the field, opening new pathways for funding further research. Irschick and colleagues write that this technique, which builds on recent advances in 4K video technology, “will allow us to



Joseph Bergan



Duncan Irschick

study locomotion in a much more comprehensive way than current methods” increasingly used for medical, health and cosmetic applications.

Vice Chancellor for Research and Engagement Michael Malone administers Armstrong grants in a competitive proposal process. Benefactors John and Elizabeth Armstrong established their Fund for Science in 2006 to identify and support promising research directions that do not yet have enough data available for the principals to apply to standard funding channels.

John Armstrong has said, “Elizabeth and I want to promote major scientific advances in society by supporting researchers with bold vision, documented credentials and a passion for results.”



Ian Grosse



Brian Umberger

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