**Overview of the Project:**

This project will use advanced imaging techniques to examine and compare brain function following both opioid use and exercise. This work will be completed at the Molecular Imaging Institute at Rutgers University. The funding requested for this proposal is for 40 hours of ultrasound and laboratory use, a stipend for my effort and for an undergraduate research assistant, the purchase of mice, drugs, and technical support. All animals for this study will be housed at Rutgers University. Drugs used during this study will be purchased through Rutgers University and kept at the Molecular Imagining Institute.

**HYPOTHESIS:**

Exercise and opioid abuse facilitate similar acute responses both involving the opioid system. My hypothesis is that acute exercise exhibits a similar effect on brain blood flow as acute opioid use.

*Specific Aim 1:* To assess differences in blood flow by use of molecular imaging techniques following

equipment, I co-wrote a grant to the National Institute of Health grant to purchase an upgraded machine for the Cardiovascular Research Institute in the Department of Cell Biology and Molecular at Rutgers Medical School. Further, I helped developed new techniques for advanced data analysis.

**Statement of the procedures/methodology:**

*IACUC Approval:* Animals used in this study will be maintained and all experiments will be performed in accordance with the Guide for the Care and Use of Laboratory Animals (National Research Council, Eighth Edition 2011). Institutional Animal Care and Use Committee (IACUC) approval is currently under review at Rutgers University.

*Timeline:* Brain blood flow measurements for the proposed project will be collected within a three-week period over the summer months. Data analysis for the proposed will be completed in a subsequent 3.1 (o)-4.6 (TJ 0Tw 36