



THE UNIVERSITY OF IDAHO
NEUROPHYSIOLOGICAL IMAGING AND
MODELING LABORATORY

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M.S. or Ph.D. Student Position – Research Assistant (RA)

Focus: *Quantification of Ocular Biomechanics in Astronauts Using MRI (NASA Sponsored Research)*

The Neurophysiological Imaging and Modeling Laboratory (NIML) within the Department of Biological Engineering at the University of Idaho is dedicated to advancing the health and well-being of millions of people affected by central nervous system (CNS) diseases and disorders including: Chiari malformation, syringomyelia, hydrocephalus, amyotrophic lateral sclerosis (ALS), Friedreich's Ataxia, glioblastoma and others. The NIML seeks highly motivated and critical-thinking students who wish to participate in a dynamic multi-disciplinary research team that makes new discoveries about CNS disorders using state-of-the-art medical imaging and modeling techniques. To learn more about the NIML research program and team members visit www.niml.org.

Project Supervisor

Dr. Bryn Martin, Assistant Professor, Department of Biological Engineering

The PhD Committee

Your studies will be supervised by experts from within the University of Idaho Department of Biological Engineering, Mechanical Engineering, Neuroscience and NASA Johnson Space Center (Houston, Texas). They will evaluate your progress and provide you with constant support and supervision. The candidate's degree will be granted in Biological Engineering.

Position

An M.S. or Ph.D. student position is offered from August 10th, 2016 with \$21,000 salary (tuition and fees and insurance covered in addition to base salary). ***You must be a current U.S. citizen to be eligible for this position.***

Deadline for submission

Accepting applicants until position is filled.

Project description

NASA has a goal for humans to one day live and work on Mars. However, getting there will be very difficult for many technical reasons including the known adverse human health impacts of life in zero gravity. In specific, ophthalmic evaluations of astronauts after their 6-month missions to the International Space Station (ISS) revealed unexpected vision problems. The proposed research will quantify alterations in ocular biomechanics due to space flight. Ocular biomechanics will be quantified based on non-invasive MRI measurements obtained for pre- and post-space flight astronauts (n=10). We will establish baseline values for ocular biomechanics in astronauts and determine if space flight alters ocular biomechanics.

This research will be completed in collaboration with NASA researchers and aligns with NASA's Strategic Goals set forth in the Human Research Program Risk of Spaceflight-Induced Intracranial Hypertension/Vision Alterations (research Gaps, VIIP1 and VIIP3). This research will provide the M.S.

or Ph.D. student with opportunity for internship with NASA and related government subcontractors. The successful applicant will benefit from interaction with both academic and NASA-based supervisors. This is a unique opportunity to apply engineering to biological problems and receive excellent training in clinical-translational research that includes innovative MR imaging protocols collected in vivo on astronauts.

Qualifications

Applicants must be a current U.S. citizen and will be subject to standard background check. Applicants should hold a B.S. or M.S in Biomedical, Biological, Mechanical or Chemical Engineering or related engineering discipline and have experience in image processing techniques and software (MATLAB, 3D Slicer, ITK-snap, voxel based morphometry, atlas-based morphometrics, neuroanatomical segmentation). Experience with MRI data segmentation algorithms helpful. Expertise in solid mechanics and finite element modeling is preferred (ANSYS, COMSOL). Excellent English communication skills (written and oral) and ability to work in a team is expected. Applicants should be enthusiastic to conduct innovative research.

The University of Idaho

The University of Idaho (UI) is a top-choice for students and aspiring leaders from around the globe and is ranked by U.S. News & World Report as 85th in the nations public universities. UI annual research expenditure in 2011 was nearly 100 million dollars. The National Institutes of Health awarded UI \$10.6M in 2015 to support creation of the Center for Modeling Complex Interactions and has also created the Integrated Research and Innovation Center for interdisciplinary research across a broad spectrum of science and engineering. UI boasts several unique research resources including the NSF funded big-STEM supercomputer with 8TB of RAM, the Bioinformatics and Computational Biology core, Genomics resources core among many others. It is located in Moscow, Idaho surrounded by the idyllic rolling Palouse hills. Moscow has 24,000 residents and was selected as one of the nations five best places to live among college towns with art galleries, coffee shops, pubs and outdoor activities.

Submission of the application

To apply, please send a cover letter with a short personal statement outlining your research and technical background, CV, copies of your degree transcripts and references to: brynm@uidaho.edu

Applications of disabled persons with the same professional and personal qualification will be treated preferentially. Please indicate a handicap in the cover letter and enclose the relevant certificate.

UI promotes equal opportunities. Applications of female candidates are expressly encouraged and will be treated preferably in case of equal qualifications and suitability.

Further information

For further information, please email Dr. Bryn Martin, brynm@uidaho.edu.