



Re: Postdoctoral Position in Phillips Lab.

In 2020, the Phillips Lab within the University of Calgary was part of a team that was awarded \$48 million through the DARPA (Defense Advanced Research Projects Agency) Bridging the Gap Plus (BG+) program. This program is intended to develop new approaches for treating spinal cord injury by integrating injury stabilization, regenerative therapy, and functional restoration. To achieve this our team is building implantable and adaptive devices for the treatment of spinal cord injury. This is being done in collaboration with the University of British Columbia (Drs Brian Kwon and Chris West), the Swiss Federal Institute of Technology (Dr. Gregoire Courtine), UC Davis (Dr. Karen Moxon), UCSD (Dr. Mark Tuszynski) and others.

A central focus of the research associated with this position is helping to develop and test a fully-implantable blood pressure sensor (with industry, **Battelle**), and develop a negative pressure vacuum device for manipulating hemodynamics. To realize this vision, the Phillips Lab is seeking a postdoctoral fellow that will be fully funded by DARPA BG+ program. Therefore, we are interested in hearing from motivated individuals with broad experience in neuroscience, and an interest in developing new technology.

**Training Environment:** We have a fully-translational lab that provides training opportunities that span from animal models to clinical trials, that study the autonomic nervous system and its role in regulating hemodynamics. Our research questions revolve around the use of circuit-targeted neurostimulation of sympathetic structures to stabilize hemodynamics after the loss of supraspinal control (i.e., spinal cord injury). Our approaches include but are not limited to electrical stimulation, optogenetics, single-cell transcriptomics, tissue clearing and 3D visualization, high-resolution MR and CT imaging, and full clinical autonomic assessments. We are also involved in developing new technologies including implantable stimulators, closed-loop systems, and implantable sensors. Furthermore, we are undertaking the commercialization process for this technology. Our closed-loop system was developed in animal models and is now licensed to industry and beginning the testing process in humans with clinical trials.

Our lab is well funded by the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council, Wings for Life, and DARPA, amongst others. We work in close collaboration with the core facilities within the Libin Cardiovascular Institute of Alberta and the Hotchkiss Brain Institute and with a multidisciplinary team of scientists and clinicians. As such, the training environment is excellent within the Hotchkiss Brain Institute, and our weekly seminar series features leading international and national neuroscientists. All trainees have access to the REALISE program (<https://hbi.ucalgary.ca/our-education/realise>) which provides professional skills to aid in trainee success. We have strength in autonomic, computational, and electrophysiological techniques within and surrounding our lab. Thus, the successful candidate will have access to a wide variety of techniques and approaches that will provide a unique training experience in systems neuroscience.

Calgary is a lively multicultural city nestled close to the Canadian Rockies and Banff National Park. We are interested in hearing from motivated individuals with broad experience in neuroscience, and an interest in helping develop new technology.

**Who should apply:** We are looking for a highly motivated and energetic individual to conduct independent research validating and testing a new implantable wireless blood pressure measuring device that will be developed in our lab. This research will also include utilizing lower body negative pressure to reduce blood pressure. This will be tested in animal models (mice, rats, pigs). Successful applicants will have good

communication skills, interest, and experience in neuroscience/physiology/engineering. Furthermore, applicants should value working in a highly interactive and multidisciplinary team environment.

The Postdoctoral Scholar will be part of Dr. Aaron Phillips' research group. The research team focuses on understanding the sympathetic nervous system, and how it changes after the loss of supraspinal control (i.e., spinal cord injury). The team then uses this knowledge to conceive and develop new therapeutics, primarily neurotechnology.

**Qualifications:**

- PhD (completed within the last three years) and/or MD in the field of Neuroscience, Biomedical Science, Biomedical engineering, hemodynamics
- Experience in working with spinal cord injury would be an asset
- Engineering: Solid and demonstrated engineering experience is an asset
- Experience with physiological technology development/validations
- Demonstrated excellence in the form of peer-reviewed publications
- Experience with preclinical animal physiological assessments Exemplary critical thinking skills and a demonstrated ability to troubleshoot independently.
- Communication: Fluency in English, both written and oral. Experience presenting to academic audience is required
- Time-management: The applicant must have excellent time management skills and be able to work in a self-directed manner within an interdisciplinary environment
- Supervision: Previous experience mentoring undergraduate and graduate students is an asset

**Application steps:**

- Cover letter describing research background and interests
- CV with complete list of publications
- Names and contact details of three professional references

**Application Timeline:**

As soon as possible

**Please send application materials to:**

Dr. Aaron Phillips  
Hotchkiss Brain Institute, Libin Cardiovascular Institute  
Calgary, Alberta  
Email: [aaron.phillips@ucalgary](mailto:aaron.phillips@ucalgary)