The Alberta Indigenous Mentorship in Health Innovation (AIM-HI) Network
2021 Undergraduate Summer Student Stipend: Supervisor & Project List

Students: This is a list of potential supervisors and projects that you can apply to for the AIM-HI Network 2021 Undergraduate Summer Student Stipend (4 months = May 1-August 31). If you are interested in any of these opportunities, please contact the supervisor directly to discuss the opportunity of you working together over the summer of 2021. Once there is an agreement between you and the supervisor to proceed, please apply here.
If you have any questions and/or need support with contacting a supervisor, please email aimhi@ucalgary.ca

The deadline to apply for this funding opportunity is March 17, 2021 at 5:00 pm (MST).

Supervisor Information	Project Information	Skills Desired
Dr. Shelby Yamamoto, PhD Assistant Professor, School of Public Health, U of A shelby.yamamoto@ualberta.ca **Dr. Allyson Jones, PhD** Associate Professor, Dept. of Physical Therapy, U of A cajones@ualberta.ca	Extreme weather and air pollution threaten the health of all populations, but some are at greater risk. The objectives of this project will be to revise a tool (photo exhibit) targeted to vulnerable populations in Edmonton that help them adapt to the health effects of climate change. The goal is to promote community resilience and reduce health risks. Activities will involve refining an existing tool and piloting it in communities.	
Dr. Richard Oster, PhD Research Associate / Adjunct Professor, Faculty of Agricultural, Life & Environmental Sciences, University of Alberta roster@ualberta.ca	Title: Indigenous component of the Healthy Life Trajectories Initiative (I-HeLTI) Timeframe: 4 months Description: Indigenous component of the Healthy Life Trajectories Initiative (I-HeLTI) study is jointly led by the Alberta First Nations Information Governance Centre and University of Alberta researchers, who are leading research on the development, implementation, testing and evaluation of Indigenous-focused early interventions (preconception, pregnancy, infancy and early childhood) designed to improve health outcomes for Indigenous communities in Alberta. Activities: Summer student will assist with community surveys and interviews, community engagement activities (virtual sharing circles, advisory meetings, etc.), support community report writing, and possibly data analysis in Maskwacis and/or communities in the Wood Buffalo area.	General research skills and abilities (data collection, analysis, report writing, Indigenous methodologies and approaches to research, knowledge of OCAP principles)

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Wendy Hutchins, MLT, PhD IndigeSTEAM treasurer / Adj Assist Prof, MIID, CSM, U of C whutchins@indigesteam.ca **Deanna Burgart, P.Eng, CET** IndigeSTEAM president / Sr Instructor, Schulich School of Engineering, U of C deanna.burgart1@ucalgary.ca	Title: Power to Choose Topic Bundle development Timeline: Summer 2021 flexible start and end dates. Description: IndigeSTEAM provides STEM/STEAM programming that is Indigenous led and with respect for culture to support Indigenous youth success. We have programs for youth, families/communities and events. We also support our Indigenous STEM mentors who have to walk in two worlds. Power to Choose is seeking to create new workshops that can be provided in many different formats: virtually, small and large group workshops, camps, powwows, etc. The topics need a topic coordinator/contributor who will work on content, find content experts to contribute, develop hands-on activities, consult with Indigenous teachers and Elders for appropriate ages and content for Indigenous groups as well as non-Indigenous public engagement. The project we have can be tailored to an applicant's topic interests with the chance to learn Science Communication and teaching skills. It is expected that the interested candidate will present the topic at least 1 time to a group of youth and/or teachers for feedback and the opportunity may include additional presentations in multiple locations. Another aspect of the project can be a contribution to the development of an AISES professional chapter for Western Canada.	- Good communication skills both written and oral. - Ability to use MSOffice software. - Artistic skills, Photoshop or video/editing skills are an asset.
Dr. David C. Hall, DVM, PhD Professor, Veterinary Medicine Dept. Ecosystem and Public Health), U of C dchall@ucalgary.ca	Title: Options for health management of wood bison with community participation. Timeframe: 4 months Description: Wood Buffalo National Park (WBNP, in AB and NWT) contains a large proportion of the few remaining wood bison in the world. The survival of these bison is limited by disease, including tuberculosis and brucellosis, which can spread to livestock and people. Wood bison recovery and sustainable management in WBNP requires a cooperative approach addressing stakeholder attitudes, beliefs, and cultures. Stakeholders in this problem include ranchers, First Nations and Métis communities, environmentalists, and regional and federal governments. Parks Canada has funded a two year project to investigate this problem. An undergraduate student is invited to join our project for the summer of 2021 to assist with liaising with First Nations and Métis community members near WBNP. The purpose will be to inform those communities of the project and gather information relating to their opinions regarding their values and attitudes, and interest in involvement and engagement with a solution to managing bison health in WBNP. Activities will include assisting with development and implementation of a questionnaire, facilitating a stakeholder workshop to discuss that process and data gathered, and developing knowledge transfer materials (e.g., website updates, project summaries, project poster) for communication and community outreach.	There are no specific skills required of a university student to participate in this project. This is a multi-disciplinary project that relies on numerous fields of study, including animal health, anthropology, behavioural science, ecology, economics, geography, and wildlife biology. As such, a student with particular interest in one or some of those disciplines may benefit most from the summer experience.
Dr. Johnathan Canton, PhD Assistant Professor, Dept. of Comparative Biology and Experimental Medicine, U of C Johnathan.canton@ucalgary.ca	Title: Exploring the biology of newly identified Multiple Sclerosis susceptibility factors Timeframe: 4 months Description: Multiple sclerosis (MS) is a potentially debilitating disorder affecting the central nervous system. With one of the highest rates in the world, it represents a significant societal and economic burden to Canada. State-of-the-art large-scale studies have identified specific genetic variations that render some people more susceptible to developing MS. This project will study how one of those newly identified genetic variations might contribute to the onset of disease. The knowledge acquired, coupled with the ability to readily detect those genetic variations in the clinic, opens up the possibility for new and personalized approaches to preventing and treating MS.	Cell culture, gel electrophoresis, molecular cloning, microscopy.

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Dr. Brielle Rosa, DVM, PhD Assistant Professor of Veterinary Pharmacology Faculty of Veterinary Medicine U of C brielle.rosa@ucalgary.ca	Title: A study of zoopharmacognosy in feral horses in Alberta Timeframe: 3-4 months (May/June-August) Description: This study is an investigation of zoopharmacognosy (self-medication by animals). We will be examining the interactions of feral horses in Alberta with local medicinal plant species and the potential ability of these plants to decrease intestinal parasite burdens in horses. We will be guided in our targeting of plants of interest by indigenous knowledge of local medicinal plant species through collaborations with traditional knowledge keepers and indigenous elders to identify plants that have historically been used for their antiparasitic properties. The study itself will involve a combination of field and laboratory work including field-observations and sample collection, microscopic determination of parasite burdens, and benchtop laboratory techniques. The student will also be expected to conduct a review of the zoopharmacognosy literature and to consider the challenges in identifying potential new medicinal compounds. Training in medicinal plant identification will be provided and students may be asked to assist with some medicinal plant cultivation. There may be the possibility for the student to participate in a 3-week indigenous equestrian/outdoor skills training session in late May/early June organized through Painted Warriors Ranch. Interested students should be available from May/June through late August 2021 and equally excited by laboratory science, outdoor adventure, and veterinary medicine!	
Dr. Jared R Fletcher, PhD Dept. of Health and Physical Education, MRU jfletcher@mtroyal.ca	Title: How do muscles and tendons influence metabolic cost and exercise tolerance in hypermobile Ehlers-Danlos Syndrome? Timeframe: 4 months Description: Chronic pain and fatigue/exercise intolerance is a major complaint in individuals living with hypermobile EDS (hEDS) and may have a severe impact on quality of life and activities of daily living. Despite this huge clinical problem, it is currently not known how or why these symptoms may arise or how they can be treated effectively. Lower limb tendon stiffness is reduced in EDS, which we hypothesize is the reason for reported feelings of pain and fatigue during walking in these individuals. Importantly, there is a widespread notion that exercise for these individuals should generally be avoided, due to the fear of joint dislocations, and increased extensibility of the tendons; however, evidence for this statement is lacking. This project will compare muscle-tendon properties of hEDS and healthy-controls and evaluate the impact of these properties on energy expenditure, subjective pain, fatigue and exercise (in)tolerance. We will examine the impact of exercise training on these properties. We hope to inform treatment plans for individuals living with hEDS to reduce fatigue, safely engage in physical activity and improve their quality of life.	- Familiarity with the use of biomechanical and exercise physiology laboratory equipment. - A keen desire to pursue research in the applied and/or clinical setting. - Ability to work in a collaborative research environment - Completion of undergraduate courses in exercise physiology and/or biomechanics is preferred, but not required. - Experience with quantitative data collection and analysis preferred, but not required.

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Dr. Michael Asmussen, PhD Assistant Professor, Department of Biology, MRU masmussen@mtroyal.ca	Title: Assessment of the Unstable Ankle Timeframe: 4 months Description: Walking is a task of daily living frequently performed by most humans with effortless ease. On occasion, however, individuals may lose the functionality to execute this apparently simple task, which can lead to injury and a loss of mobility. The foot and ankle play an essential role in how we interact with the ground to walk and maintain standing balance. The foot and ankle are vastly complex structures consisting of multiple bones, muscles, and ligaments and therefore, it is quite difficult to understand the role of the foot and ankle in human locomotion. This research will focus on developing a mechanistic understanding of how the foot and ankle contribute to stability of the entire body when humans perform seemingly simple tasks such as walking and develop innovative methods to assess foot-ankle stability. Specifically, we will build a novel device to assess how muscles contribute to stability of the foot and ankle and assess which muscles are most important for stabilizing these structures. Knowledge from this research project will be important for understanding how individuals can enhance stabilization of the foot and ankle or how to recover from ankle joint instabilities.	- Are interested in or have experience in Human Physiology, Biomechanics, Physics, or Kinesiology
Dr. Ranita Manocha, MD, MSc Clinical Assistant Professor, Division of Physical Medicine & Rehabilitation, U of C ranita.manocha@ucalgary.ca	Title: Peripheral nerve injuries associated with walking aids Timeframe: 4 months Description: Walking aids such as canes, crutches, and walkers provide increased balance and stability to patients who experience short- and long-term mobility impairments. However, walking aids may result in compression of a variety of nerves in the upper body. The student will conduct a systematic review, with the assistance of other lab members, to understand: a) the types of peripheral nerve injuries associated with walking aids; b) whether the walking aid type or duration of use influence injury patterns seen; and c) potential treatment and prevention strategies for nerve injuries related to walking aid use. The student will learn how to search medical databases, screen abstracts, and conduct full article reviews. The student will then write a manuscript and present their results at one local meeting during the term and one national meeting after the term. The student will gain skills in conducting a systematic literature review, working in a laboratory team environment, clinical knowledge of nerve injuries, and writing and presenting research results.	- Interest in a career in healthcare (i.e. physical therapy, occupational therapy, athletic therapy, medicine) - Computer skills with Microsoft Excel, Word, and Powerpoint - Completion of undergraduate course(s) in Research Methods, Anatomy, and English - Prior experience with manuscript writing or literature review - TCPS2 CORE training (not mandatory)

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Dr. Ranita Manocha, MD, MSc Clinical Assistant Professor, Division of Physical Medicine & Rehabilitation, U of C ranita.manocha@ucalgary.ca	Title: Assessment of upper extremity kinematics during swing-through crutch gait Timeframe: 4 months Description: Crutches are commonly prescribed after lower body injuries. Despite their benefits, these devices result in repetitive weight-bearing through the upper body, which may result in discomfort or injury. Forearm crutches are used frequently in Europe, but not as much in Canada, where the axillary crutch tends to be used. We have established that if axillary crutches are inappropriately fit this can be detrimental to upper body biomechanics. This project proposes to evaluate the influence of forearm crutch length on upper extremity kinematics (movement patterns). Our gait laboratory has recently evaluated 15 healthy males performing swing-through crutch-assisted gait. The participants used forearm crutches that were fit appropriately, that were lengthened by 5 cm, and that were shortened by 5 cm. Participants performed 15 trials with each crutch length. Optical motion tracking of the upper extremities, torso, and lower extremities were collected. During this proposed project, the student will learn how to use the Cortex, Visual 3D, and Matlab programs in order to process and analyze the collected bilateral upper extremity kinematic data. They will learn basic programming and data processing skills and appreciate the use and limitations of joint coordinate systems. The student will present the results of their work at one local meeting during the term and one national meeting after the term. The results will inform future research on improving crutch design to minimize aberrant upper extremity movement patterns. Dr. Manocha supervises students from a variety of backgrounds including kinesiology, engineering, occupational therapy, and physical therapy. This project will give the student skills in performing biomechanics research, working in a laboratory team environment, and writing and presenting research results.	- Computer skills with Microsoft Excel - Completion of undergraduate course(s) in Research Methods, Anatomy, and Biomechanics - Prior research experience - Prior experience with Cortex, Visual3D, or Matlab (not mandatory) - TCPS2 CORE training (not mandatory)