

Queen's students honoured with Vanier Scholarships

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Five Queen's University students have earned Vanier Canada Graduate Scholarships (CGS), designed to attract and retain world-class doctoral students. Areas of studies include natural sciences and engineering, social sciences and humanities, or health sciences.

The winners receive a scholarship worth \$50,000 each year for the next three years.

Emma Dargie (Psychology) is researching a chronic pain condition that impacts millions of women - vulvodynia (chronic vulvar pain). For many women, this pain is severe, interfering with quality of life, mental health, relationships, and the ability to work.

"In the past, the medical community often categorized this pain as psychological, which meant that women were frequently blamed for their pain," says Ms Dargie, "Therefore, the treatment available to these women, if any, largely consisted of psychological support. Today we know that vulvodynia is a pain condition, similar to chronic back pain or chronic headaches, and should be treated as such. My goal is to explore the physiological nature of this pain from a multidisciplinary perspective."

Through her research, Ms Dargie will also develop a diagnostic tool for physicians to improve diagnosis and treatment outcomes.

Jay Jantz (Neuroscience) is researching how key brain regions interact to control behavior, and how these regions can be subsequently targeted to improve Parkinson's disease treatment.

"Parkinson's disease is thought to be caused by deficits in specific brain regions called basal ganglia. However, we do not know exactly how these regions interact to control behavior in either the healthy brain or in Parkinson's. Our lack of knowledge is a major obstacle to improving treatment options," says Mr. Jantz. "Humans and many animals continually make fast eye movements called saccades to gather visual information. The saccade system is an excellent model for examining changes in the brain, as it is well-defined, and has been adopted in the clinic as a simple neurological test. We are now able to use this solid scientific framework to answer questions about neurodegenerative disease."

His research ultimately aims to address current obstacles to new Parkinson's treatment options by recording interactions between specific areas of the healthy brain which can be involved in Parkinson's disease, recording changes in key brain regions in a saccade model of Parkinson's, and determining what brain changes take place during current Parkinson's treatment options. Mr. Jantz is part of the MUNOZ lab in the Centre for Neuroscience Studies.

Ms Dargie and Mr. Jantz are receiving Vanier CGSs from Canadian Institutes for Health Research.

Yingli Rao (Chemistry) is researching new strategies and materials for reducing energy consumption based on photo-responsive compounds, with applications focusing on highly energy efficient lighting devices and smart windows.

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"As an international student, I feel enormously fortunate and grateful to be able to receive such an honor from Canada," says Ms Rao. "The Vanier award relieved all my financial stress. I could completely focus on my research. I am able to attend international conferences, and learn from different accomplished scholars in related research areas. The Vanier award could greatly broaden my research view and enlighten the way of my research."

Smart windows change color from colorless to dark colors upon irradiation by sunlight, thus providing an excellent shield for sunlight/UV light. They can reduce energy consumption due to heat generation in the summer.

Shane McIntosh (School of Computing) is investigating methods for reducing software development overhead generated by maintenance of the build system, one of the most important tools used during software development.

"Maintenance of the build system is a nuisance for software developers, with up to 27 per cent of new features and bug fixes requiring accompanying build system maintenance work," says Mr. McIntosh.

The build system is often responsible for translating application code into deliverable software, executing automated tests that check the built software for bugs, and bundling software with product documentation for easy installation.

However, just as application code requires careful maintenance to fix bugs and add new features, so too does the software build system.

Ms Rao and Mr. McIntosh are receiving a Vanier CGS from the National Sciences and Engineering Research Council.

Kerri Froc's (Law) research proposes a new tool to ensure women's equal access to constitutional rights, section 28 of the Canadian Charter of Rights and Freedoms, guaranteeing rights and freedoms equally to men and women.

With a view to reinstating section 28 as a fully functional, effective constitutional provision, her doctoral research will carry out the first comprehensive examination of its history, interpretation, and potential application.

"Although little-used and unappreciated by the courts, the section could fundamentally reshape how Charter claims are adjudicated by requiring that rights be interpreted through a gender lens," says Ms Froc. "I am pleased the Vanier Canada Graduate Scholarships Program is recognizing the constitutional rights of women and girls in Canada as an important and urgent area of study, and am extremely honoured that it has placed its confidence in me to undertake comprehensive research on an aspect that has not yet received sustained scholarly or judicial attention."

Women have made comparatively few successful Charter claims, and many women's claims have failed because the courts have relied on traditional interpretations of rights that give priority to male perspectives.

Ms Froc is receiving a Vanier CGS provided by the Social Sciences and Health Research Council of Canada.

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