Queen's researchers receive $1.3 million in federal funding

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Six Queen’s researchers with projects ranging from improving treatment for Parkinson’s disease, to preventing work-related injuries are receiving $1.3 million from the Canada Foundation for Innovation (CFI).

“The CFI, through the Leaders Opportunity Fund (LOF), has provided us with an excellent mechanism for attracting and retaining top-flight researchers,” says Vice-Principal (Research) Steven Liss. “As a result of this competition, six Queen’s researchers will receive the funding required to develop innovative infrastructure that will provide the enriched research training environments necessary for leading-edge research.”

Linda Booij of the Department of Psychology is developing a biological test to identify people at risk for major depressions and aggression. The goal of Dr. Booij’s research program is to understand how early stressors, in combination with genes can affect brain development and the risk for mental disorders. We already know that low levels of the brain chemical serotonin combined with early life stressors can increase the risk for many mental health problems, in particular depression and aggression. But how this specifically occurs is not known.

Research from Dr. Booij as well as other research groups has shown that, in addition to genes themselves, the environment may change the expression of serotonin genes critical for brain and behavioral development through a process called DNA methylation (also referred to as epigenetics). This can be done by increasing or decreasing the amount of methyl groups, chemical compounds regularly linked to DNA. Recent findings by Dr. Booij suggest it may be possible to use DNA methylation, assessed in blood or saliva, as a noninvasive biomarker for low serotonin in the human brain, prompting further exploration for its use in determining associated risk for mental illness. With her CFI funding, Dr. Booij is planning to set up her lab in the Psychology Department at Queen’s University to do studies testing such a possibility. Such a test may help to identify a need for early treatment options among individuals with disorders in which the neurochemical serotonin plays a major role.

Other researchers that received LOF funding are:
Ron Levy (Surgery) – With a goal of improving treatment for Parkinson’s disease, Dr. Levy studies changes in the brain attributed to the disease. He is using his funding to purchase new equipment for his lab, including a high performance computer, and to hire a computer technician.

Steven Fischer (School of Kinesiology and Health Studies) – With a focus on creating a healthier Canada, Dr. Fischer is using his grant to open a Movement for Performance Biomechanics and Ergonomics Laboratory at Queen’s. He will use human movement research to reduce and prevent work-related injuries.

Jean-Michel Nunzi (Chemistry/Physics) – To help alleviate the burden of rising health care budgets, Dr. Nunzi is developing a new point-of-care (POC) device that can be applied to a wide range of medical testing applications. Currently, POC devices are used for one type of testing, like a blood glucose meter for patients with diabetes. The new device will be able to analyze two different properties of the blood, increasing the power of the POC to provide more information.

Alberto Neder (School of Medicine) – Dr. Neder’s lab is the first in the world to study the entire oxygen pathway through the body during exercise. He will use the funding to purchase new laboratory infrastructure to expand his research program. He aims to develop new rehabilitative strategies for patients with age-related diseases including chronic heart failure and chronic obstructive pulmonary disease.

Michael Rauh (Pathology and Molecular Medicine) – Dr. Rauh will explore next-generation technologies that will allow earlier detection of blood cancer which causes debilitating and life-threatening fatigue, bleeding, infections and can progress to leukemia. The funding is being used to create a blood cancer research laboratory at Queen’s.