CAMPUS

Of Erudition and Scholarship: What UPEI Grad students do when they're NOT watching YouTube

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Ask a layperson what image is accompanied by the term 'Grad Student', and you'll probably get an answer like this: An underpaid, underfed, over-worked youth running precarious experiments in the basement of some ancient, dilapidated building. Such stereotypes are common for grad students, and surprisingly aren't always an inaccurate a depiction of the Truth.

But something is certainly not right with this picture. What on earth motivates bright, intelligent, promising young scholars to subject themselves to a lifestyle that requires caffeine to be consumed as a necessary food group, and ibuprofen as an essential vitamin? [Hint: you're wrong if you thought it was the money!]

Most people cannot answer this puzzling paradox; and because I myself am a grad student, (and therefore hopelessly intrigued by the trivial and the inane), it is my self-appointed task to solve this systemic mystery of academia.

In the strictest tradition of graduate work, I have volunteered myself to complete an obscure task of bringing the seemingly enigmatical activities of UPEI graduate students out from the forgotten recesses of the library and into the light of modern life. This task will be neither easy nor straightforward—which makes it a project most well-suited for a graduate student.

We'll begin our exploration of graduate work at UPEI by traveling to the basement of the Memorial Building, where Melissa Burt conducts innovative and exciting behavioural research on perhaps the most common and ubiquitous research model: that of the lab rat.

Burt works in the Behavioural Neuroscience Laboratory under the supervision of Dr. Tracy Doucette of the Biology Department and Dr. Cathy Ryan of the Psychology Department. As many of you have likely heard, a U.S. patent has recently been awarded to Dr Doucette, Dr Ryan, Dr Andy Tasker of the Department of Biomedical Sciences, Dr Henriette Husum Bak-Jensen of Copenhagen, and former UPEI graduate student Melissa Perry, for an innovative rodent model of epilepsy that they designed. It is this very same rodent model that Melissa uses in her research, though her focus is not on epilepsy, but is rather on schizophrenia.

Like most Master's projects, Melissa's work focuses on one small aspect of a large research question. For many psychological disorders including schizophrenia, the research question pertains to whether or not a relevant animal model of the disease exists. In other words, is it possible to detect a disease for which the symptoms are hallucinations and impaired thought processes, in an animal that cannot communicate its experiences?

A plethora of animal models exist for diseases such as cancer, heart disease, and diabetes, where the symptoms of disease are manifest in blood and tissue and therefore need not be necessarily described by the patient. But inherent to diseases of the mind is the need to communicate symptoms that are not easily detected by physical means. It is this particular quandary that is at the crux of Melissa's research.

But like any graduate project, Melissa's work focuses on a very specific, very defined aspect of this large research problem. In particular, Melissa's work focuses on how insults to the brain that occur during development can affect adult brain structures, and in turn, adult behaviours.

To avoid any confusion on this subject, we'll use a simple example of how a developmental brain insult can affect adult brain function. The example is Fetal Alcohol Syndrome (FAS). We all know that if a mother drinks alcohol during pregnancy, her child can suffer physical and cognitive deficits that persist throughout adulthood. But alcohol is not the only chemical that can cause permanent brain damage if exposure occurs prenatally – and FAS is not the only disease that results from these types of exposures. It has recently been hypothesized that schizophrenia, like FAS, may also occur as a result of environmental insults incurred around the time of birth.

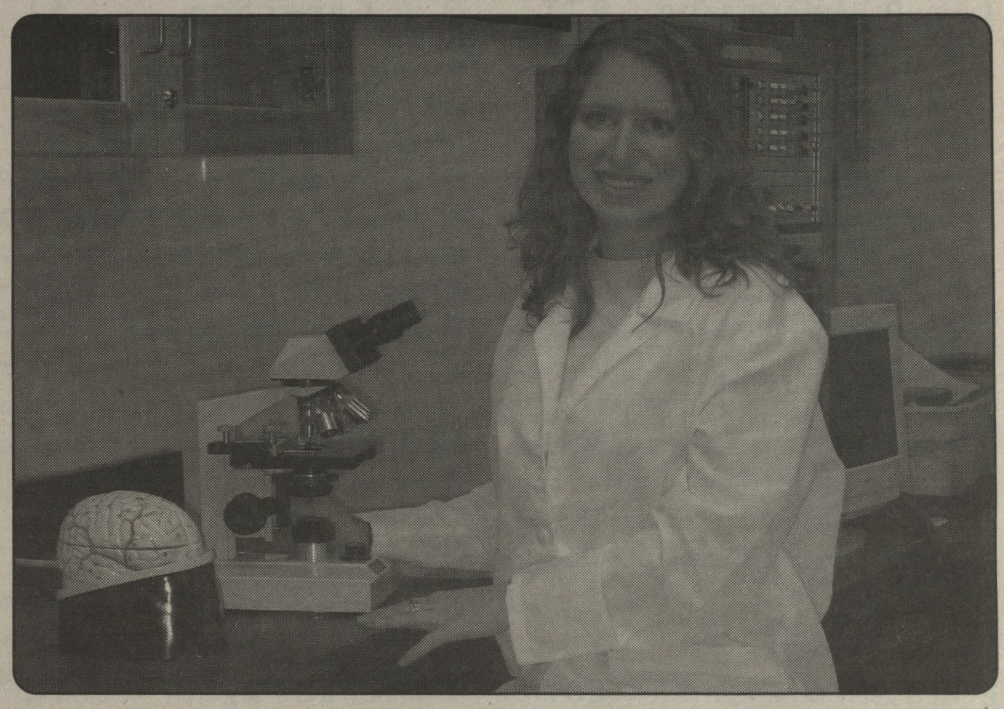

Photo: Colleen MacDougall

Melissa Burt conducting innovative and exciting behavioural research

But herein lies a major problem: you can't simply expose a pregnant woman to an environmental insult and then monitor her child for signs and symptoms of schizophrenia. It just isn't ethical. So—you guessed it: This is where the notorious Lab Rat makes its grand appearance.

But again we have a problem: How do you know if a rat has schizophrenia? It can't tell you whether or not it hears voices, or experiences hallucinations, or has disjointed thought processes.

However, although it may be true that a rat cannot communicate its symptoms directly, there do exist certain ways (ie behavioural testing) of figuring these things out indirectly. And this is why Melissa conducts behavioural research: it is a sensitive method of determining whether or not alterations in brain chemistry have occurred. It is furthermore easy to relate to human models of disease. Believe it or not, humans share a lot of basic behaviours with other mammals such as rats, and it is these behaviours that are often targeted in animal research.