Tom Drysdale

I am Tom Drysdale, and I am here as the Associate Dean for the Graduate & Postdoctoral Studies for the Schulich School of Medicine and Dentistry at Western. It is my great honour to be at the Jonathan and Joshua Annual Golf Tournament to both honour the memory of Jonathan and Joshua, and to thank the participants for their support of mental health research. The funds raised by the Jonathan and Joshua tournament are used to fund scholarships for graduate student studying mental health as part of their thesis. Two of the students, Neil and Esmin, have come along with me to personally thank Bob and the tournament participants for their amazing efforts.

It is hard to believe that this is the 16th tournament, a sign of Bob's and the many volunteers that put on the event's dedication. I first heard about the Jon and Josh several years ago when a colleague who has attended the event Susanne Schmid talked to me about it. Susanne led the Neuroscience program at Western in the not-too-distant past. At that time, the program had about 45 graduate students. This year, the program has over 175 students and is by far the largest graduate program in our faculty. The support provided by the Jonathan and Joshua tournament has helped fuel that growth. Neuroscience at Western is not just about quantity. The quality of the research being done is also of excellent quality. The program is attracting new researchers from many disciplines, including computer sciences and engineering, and that diversity of talent is creating multi-disciplinary teams that can tackle the hard problem of improving mental health.

The funds raised here are a precious resource. Scholarships both support and encourage graduate students in their research. Other funds from your work support travel for the students so they can talk about their work at international meetings. This year, four students were funded by your contributions, including Neil and Esmin. The awards are not just handed out! The four students were chosen from a very competitive applicant pool and as you will see when they speak, they are outstanding young scientists. Most scholarships are for Canadian applicants only. The Jon and Josh awards do not have that restriction. Esmin is our most recent recipient and she has come to Western from Turkey via Cambridge, England and is now doing remarkable imaging work looking for earlier detection methods for mental health.

I am not a Neuroscientist like these students are, but I recognize that they are doing ground-breaking work at Western in an environment that is world class. Even though the funds from the graduate students receive from this event are very generous, it is still a precarious existence. They work long hours for little financial reward and have no guarantee of a future career. Students do it because they love the work and the fact that they might make a real difference in people's lives. I will now let you hear from the students: the real stars of the event. Thanks again for the good you are doing and continue to have fun for the remainder of the night – you deserve it.

Students that were not able to attend.
Hayley Shanks:

Project: Investigating the relationships among age, biological sex and genetics on vulnerable brain regions in Alzheimer's disease

Alzheimer's disease is the major cause of dementia worldwide, with over 22 million people being affected by the disease. In Alzheimer's disease, proteins called amyloid beta and tau build up in the brain, which leads to widespread death of brain cells. This causes significant impairment including memory loss, difficulty solving problems, and eventually an inability to care for oneself. Despite the intensive research efforts into understanding the pathology of Alzheimer's disease over the past few decades, treatment options remain limited.

With the generous funding from the Jonathan and Joshua Memorial Fund Scholarship, my PhD project will address two major limitations in Alzheimer's disease research.

First, many studies do not examine how the combined effects of the major Alzheimer's disease risk factors (age, sex, and genetics) affect Alzheimer's disease progression over time. Second, most studies of Alzheimer's disease are conducted late in the disease, when brain damage is widespread and memory impairment is extensive. Recent evidence shows that a brain region called the basal forebrain is one of the first areas to be affected by amyloid and tau accumulation. In Alzheimer's disease, basal forebrain damage begins before memory loss and predicts later damage to other parts of the brain. However, when basal forebrain damage starts and how it spreads to other parts of the brain is poorly understood. My PhD project addresses these two major shortcomings. I will use novel brain imaging techniques to create a map of the location of the cells in the basal forebrain and their connections in humans. I will then use this map to determine how sex, age and genetic risk factors affect the timing and progression of damage to the basal forebrain and its connected regions in early Alzheimer's disease. This will be accomplished by creating a dataset called the Supergroup of Presymptomatic Alzheimer's disease (SPREAD). SPREAD will be created from three large, open access datasets to provide a supergroup of cognitively normal older adults who have brain imaging, clinical and genetic information collected over several years. I will combine these data to assess Alzheimer's disease risk and track disease progression within these individuals. By tracking Alzheimer's disease from its earliest stages, we will be better equipped to develop biological tests and preventative treatments for Alzheimer's disease which can be applied before the onset of memory impairments.

I would like to thank the Jonathan and Joshua Memorial Fund for supporting my research. I wish I could be in Pickering this evening to express my gratitude in person.

Signed, Hayley Shanks

Alice Zheng:

Alice is a PhD student co-supervised by Dr. Susanne Schmid and Dr. Brian Allman.

Alice works with rats with a mutation in the Cntnap2 gene, which is implicated in autism spectrum disorder in humans. These rats are known to be hypersensitive to sound as measured through the acoustic startle response, meaning that they startle more in response to sudden, loud sounds.

Alice's research is focused on investigating the neural mechanisms underlying this hypersensitivity to sound by using various methods to analyze the brain region that mediates startle.