SMP I will be able to keep in touch with everyone, and perhaps be able to assist with research again.

TRADUCTION PAR SARINA LALLA

En tant qu’étudiant du secondaire, c’était difficile de trouver la motivation pour étudier, et je manquais de la passion pour mes matières. J’avais des ambitions pour devenir médecin, mais j’avais perdu ma direction. En secondaire 5, j’ai entendu parler du Programme de Mentorat (SP) à l’Université de Toronto. J’ai découvert que programme offrait aux minorités et aux étudiants aboriginaux une introduction au programme de Sciences de la Santé. J’ai donc investi toute mon énergie dans mon admission et j’ai été sélectionnée. Tout à coup, le succès que j’ai ressenti a déclenché une passion chez moi qui m’a poussé à travailler fort. Ma compréhension culturelle s’est approfondie et j’ai commencé à croire que devenir un médecin était possible. SMP m’a donné beaucoup de chances d’élargir mes horizons avec le programme de Recherche et d’Avancement Étudiant (StAR) et Découvrir la Santé Publique (DPH).

Travailler avec le programme StAR m’a donné la chance de faire beaucoup d’activités académiques. J’ai appris la valeur de l’esprit d’équipe et l’importance de me brancher avec mes coéquipiers dans le laboratoire et par StAR. À travers le programme StAR, j’ai travaillé un projet dans le laboratoire qui m’a poussé à apprendre comment utiliser PubMed. Tous les articles que j’ai trouvés avec PubMed étaient très intéressants et j’ai beaucoup appris à propos de la tuberculose pédiatrique, ce qui était mon sujet de recherche. Je ne comprenais jamais pourquoi quand je faisais des tests de tuberculose, ils revenaient positifs. Je n’avais aucune idée que ceci était relié à ma naissance à Luxembourg. Luxembourg est un pays qui a vacciné tous ses bébés contre la tuberculose avec le vaccin de BCG. Même si ce n’est pas prouvé que le BCG prévient la tuberculose, ceci explique pourquoi j’avais un résultat positif même si je n’avais pas de TB. En bref, j’ai adoré mon expérience avec StAR et je vais vraiment m’ennuyer d’elle quand je quitte. Heureusement, grâce au réseau que j’ai appris à SMP, je vais être capable de rester en contact avec tous, et peut-être pouvoir aider à faire de la recherche à nouveau.

EXPERIENCES OF AN ABORIGINAL YOUTH

Tonya-Leah Watts (Peterborough, Ontario)

This article is designed to inspire youth to pursue their dreams. Spoken from a first person narrative, Tonya-Leah Watts highlights her time at the Summer Mentorship Program (SMP) at the University of Toronto, her experience of being featured in a documentary series, and her research internship as a part of the Student Advancement Research (StAR) Program at the Hospital for Sick Children (SickKids). During her time at SMP in the summer of 2014, Tonya-Leah participated in various talks and activities that were designed to prepare her for post-secondary education. She also had the opportunity to shadow a dermatologist and write a review paper on type-2 diabetes mellitus among Aboriginal populations in Canada. Later that summer she was featured on a show called Dream Big in which she had another opportunity to shadow a dermatologist. The research skills that she acquired from SMP combined with her newly gained inspiration from the Dream Big experience helped her get a research internship at SickKids for the summer of 2015. During her time there, she learned various techniques and concepts while contributing to three studies at the hospital. The purpose of this article is to encourage youth to take control of their future.

TRADUCTION PAR AMIT SCHEER

Cet article est conçu pour inspirer les jeunes à poursuivre leurs rêves. Écrit à la première personne, Tonya-Leah Watts souligne son temps à la Programme de mentorat d’été (SMP, Summer Mentorship Program) à l’Université de Toronto, son expérience d’être dans une série documentaire et son stage de recherche comme partie du Programme de recherche pour l’avancement des étudiants (StAR, Student Advancement Research Program) à l’Hôpital pour les enfants malades (SickKids, Hospital for Sick Children). Durant son temps à la SMP durant l’été 2014, Tonya-Leah a participé en diverses activités conçus pour la préparer pour l’éducation post-secondaire. Elle a aussi eu l’occasion de suivre un dermatologue et d’écrire une revue sur le diabète sucré de type II parmi les populations aborigènes au Canada. Plus tard cet été elle a été présentée sur
INTRODUCTION

My name is Tonya-Leah Watts and I am 18 years old. I am originally from Wikwemikong Unceded Indian Reserve on Manitoulin Island, but currently live in Peterborough, Ontario. I recently graduated from Thomas A. Stewart Secondary School and have hopes of becoming a physician. With this goal in mind, I undertook some opportunities to learn about the field of medicine. Last summer, I attended the Summer Mentorship Program (SMP) run by the Faculty of Medicine at the University of Toronto (UofT). After I completed the program, I was featured on a new show called Dream Big, which focused on how youth can take advantage of career opportunities. This summer, I participated in a six week research internship at the Hospital for Sick Children (SickKids) in Toronto, Ontario. I will be attending Trent University for Biochemistry and Molecular Biology in the fall, where I hope to further my goals of going into medicine. This article will detail my experiences in both of the summer programs and the show, as well as some advice on taking advantage of the opportunities around you.

MY TIME AT THE SUMMER MENTORSHIP PROGRAM 2014

In spring 2014, I received an email from a family friend alerting me of an opportunity at the UofT. The SMP is a program designed to give students of Indigenous and African ancestry a chance to explore careers in the health sciences and receive insight on their preparation for post-secondary education. The application process required submission of my transcripts and an application form, followed by an in-person interview. Since I lived out of town, they kindly set up a Skype interview with me so that I didn’t have to travel into Toronto. I was overjoyed a few weeks later when I was notified of my acceptance into the program.

In order to accommodate as many people as possible, the program offers Aboriginal students a chance to live on-campus at the UofT. This allowed for many more Aboriginal students from isolated reserves in Ontario to be a part of this program. Although I live relatively close to Toronto, this was still a great opportunity because it saved a lot of travel costs and allowed me to experience campus life. I arrived on a Saturday to get settled into my dorm and to meet with the other students who would also be living in residence. There were 11 of us and I quickly made new friends.

I was overwhelmed on the first day of the program the following Monday. There were 59 students, as well as numerous coordinators and teachers. Our orientation provided us with a good idea of what was to come. When I obtained my schedule, my eyes grew at the sight of packed month. Each day consisted of various activities, such as talks by professors from the UofT, speaking panels with university students, and visits to different health science faculties like pharmacy, nursing, and social work.

Some of my most memorable experiences include shadowing a dermatologist and learning how to write a research paper. I chose dermatology because I was intrigued by this branch of medicine. My day started at 9:30 AM, and from the moment the doctor walked in, it was a whirlwind of patients, information, and documentation. I had no idea how much went into running a clinic; it takes a lot of teamwork and coordination. I admired the doctor’s ability to stay in control, and how she wouldn’t let anything interfere with the quality of care that she delivered to each patient. It was an enriching experience that strengthened my resolve to pursue a career in dermatology.

We were required to write a research paper on a topic of our choice. My research experience was quite limited at that point, but throughout the month we were given several talks about research methods to help prepare me for my paper. I learned how to use PubMed, which is an online peer reviewed research hub that contained articles that I could use for my research project. By the end of the program, I was able to navigate PubMed comfortably and find any type of article I needed. In doing so, I put together an insightful review paper entitled Type II Diabetes Mellitus among Aboriginal Populations in Canada. The information that I learned really changed my
outlook on the issues that Aboriginal people are facing today. For instance, I learned that during colonization, Aboriginal people were forced to live on reserves with insufficient land for growing crops or hunting, causing a shift in diet high in artificial foods. This diet change was too abrupt for their bodies to adapt, so they developed many conditions as a result of this, including diabetes. To this day, access to proper nutrition and health information is limited for those living in isolated reserves, resulting in a high prevalence of health care issues, particularly type II diabetes. The statistics for Aboriginal people in Canada health wise is quite concerning, and the process of writing this paper really brought this issue to my attention.

We also had the opportunity to attend workshops on time management and university preparation, which gave me useful study tips that I used during my final year of high school, such as study sectioning and note summarizing.

At the end of the program, we presented the knowledge we gained on poster presentation day, where I learned a very important lesson: don’t chew gum during a presentation! I would have gotten a perfect score had it not been for my nerves, which drove me to chew gum (I forgot to get rid of it once the judge approached me).

I was fortunate enough to be elected Co-President of SMP 2014 and I am very confident to say that this experience gave me a better outlook on my future. My experience at the University of Toronto’s Summer Mentorship Program was extremely positive, and I’d recommend the program to anyone looking to pursue a post secondary education (even if it’s not related to the health sciences) because it gave me a lot of valuable skills that I will continue to apply as I continue to pursue my career dreams.

MY DREAM BIG EXPERIENCE
After SMP, I had the opportunity to further my interest in dermatology through a TV program called Dream Big, which a new documentary series on the Aboriginal Peoples Television Network (APTN) that inspires youth to pursue their goals. In 2013, I heard about the show from a friend, who told me to submit a short video about myself and what I want to be when I grow up. A few months after I submitted the video, I got a phone call letting me know that I was going to be featured on one of the episodes!

The film crew met my family and I the day before shooting. On the first day, they filmed an ordinary day in my life. It was slightly awkward talking to a camera and being hooked up to a sound system, but I got used to it after a while. The following morning, I met the dermatologist that I would be shadowing for the day: Dr. Gooderham. She was very kind and ran her own practice in Peterborough. Once the camera was on, the day officially commenced, and similar to my shadowing experience at SMP, we were seeing one patient after another. The doctor’s patient (excuse the pun) demeanor was commendable, and she was able to answer all of my questions about her career and practice. My day ended around noon once the camera crew had acquired a sufficient amount of footage, but my journey did not stop there.

I had a really awesome summer thanks to my time at SMP and the filming experience for Dream Big. My inspiration for becoming a dermatologist was what led me to my next opportunity at SickKids, which gave me the chance to apply my new research skills from SMP and continue to explore my interests in the health sciences.

MY TIME AT THE STAR PROGRAM 2015
The Student Advancement Research (StAR) Program is a six-week paid internship at the Hospital of Sick Children (SickKids) in Toronto, designed to give youth an opportunity to experience research in the health field and to get a sense of the current research in the hospital. My experience at the StAR program was possible due to one of the coordinators from the SMP contacting me (and for that I am extremely grateful). I went through the application process, which was similar to the application process of SMP, with the exception of submitting an essay discussing the importance of research to me. This is where I highlighted my passion for learning and discovery, and that SMP had inspired me to continue looking into research. A few weeks later, I was invited to an interview at SickKids, and in March I received my offer.

There were 15 students in the program, and we were all assigned to our labs on the first day. I was fortunate be assigned to a neuroscience and mental health lab run by Dr. Donald Mabbott, a Senior Scientist and Associate
Chief at the hospital. The lab is currently investigating the properties and dynamics of white matter in children treated with radiation for brain tumours. Due to the complexity of the research going on, I did not take on a personal project like some of the other StAR students. Instead, I was given the chance to contribute to three studies that are currently underway. The majority of my first week in the lab was dedicated to studying the protocols of conducting research. This gave me a strong sense of the importance of patient protection, confidentiality, and sensitivity, as well as how to assure maximum efficiency while conducting research.

**Study #1: Investigating the development of U-fibers in healthy children and adolescents**

One of the projects that I contributed dealt with short-range white matter tracts or U-fibers. This was an undergraduate summer research project looking at the development of these tracts in healthy children and adolescents. U-fibers are short white matter tracts that connect adjacent folds (gyri) in the brain. It is thought that they are responsible for local information communication around the brain (Oyefiade et al., 2015). These structures are called U-fibers because they form a ‘U’ shape as they connect gyri in the brain (Figure 1). Results from this project could give insight on how U-fibers develop in different parts of the brain as well as their significance. Figures 2 and 3 are graphs from the project that illustrate how these tracts develop over time in healthy children and adolescents.

My contribution to the U-fibers project was “skull stripping” and creating regions of interest (ROIs), which involve stripping away the skull from magnetic resonance images (MRI) of the brain. Skull stripping is necessary to prevent any registration issues in further steps involved with data extraction of the brain. Creating ROIs produces a guideline which enables us to map U-fibers and make observations about them. Figures 4 and 5 illustrate an MRI image of my own brain before and after it was skull stripped.

**Study #2: Studying Neuronal Function and White Matter in Children with Brain Tumours**

Research has shown that children who are treated with cranial radiation for brain tumours display long-term cognitive deficits (Law et al., 2011). It has also been shown that there is a relationship between cognitive deficits and white matter damage in children with various neurological disorders (Widjaja et al., 2013). The goal of this research project was to understand the ways that the brain—specifically white matter— is affected by radiation, as well as its potential correlation with cognitive deficits. To do this, children who have been treated for brain tumours and agreed to be a part of this research undergo a variety of scans, as well as neurological testing and an autobiographical interview. In order to compare patients’ brains to typically developing children’s brains, this study required healthy controls to be a part of the study too. As it turned out, I met all of the requirements to be a healthy control for this project and I took this opportunity to experience research as a research participant. Figures 6 and 7 are pictures of my experience as a healthy control in the magnetoencephalogram (MEG) and the magnetic resonance imaging (MRI) machine. An MEG helps us to use the magnetic fields produced within the brain to examine brain function. An MRI uses a magnetic field and radio waves to create detailed images of organs and tissues, such as the brain. Both were quite new and exciting experiences, but the MRI was my favourite to use because I got to watch a movie while the imaging took place!

**Study #3: Testing Metformin for brain repair in children treated with radiation for brain tumours**

The Metformin study was the final project that I was able to contribute to. Metformin was originally used as an effective treatment for type II diabetes, but recent animal testing in mice has led to the discovery of Metformin’s unique ability to promote stem cell growth (Wang et al., 2013). The purpose of the research in the Mabbott lab is to see if Metformin is a good method of brain repair for children treated with radiation for brain tumours. This project has the potential to repair the brain from the damage that radiation has caused in children with brain tumours, and possibly in children with other diseases that cause white matter damage. It was quite a coincidence that last summer at the SMP at the University of Toronto, my project was on type II diabetes mellitus among Aboriginal populations in Canada, and then one of the studies that I helped out with involved a drug originally intended for people with diabetes. Testing Metformin for brain repair in children treated with radiation for brain tumours requires a lot of data, so my main contribution was database auditing, a process that entails double-checking all the data previously entered into the...
THE TAKE HOME MESSAGE

Through my experiences, I learned a lot of new skills that will help in the future, such as state-of-the-art computer processes like FSL and tractography. I made...
a lot of new friends and memories during my time at SickKids. For instance, I had the chance to see the Pan American torch carried around the hospital. Additionally, I was fortunate enough to observe a mouse perfusion on my 18th birthday, a procedure in which a mouse’s brain is extracted in order to prepare it for MRI scanning. Finally, I really appreciated the work that everyone did to make sure that I got a broad perspective on both the neuroimaging and psychological research being done in the Mabbott lab. This opportunity has certainly opened doors for my future, and I am very grateful for that! The most valuable concept that I can take away from my time in the SMP and StAR Program is the importance of networking; none of these opportunities would have been possible if I hadn’t met the people that I did. Through a family friend, I was first informed of SMP and Dream Big, while the SMP coordinator notified me of the SickKids’ internship opportunity.

It’s never too early to start pursuing your dreams, because there are so many opportunities out there that are just waiting for people like you who want to take initiative in building their future. The best advice I can give any student is to do what you love and make connections everywhere you go, because you never know where those connections may take you!

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