


Patrick Cossette: Canadian Leader in Neurology

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The Canadian Leaders in Neurology series is an initiative of the Canadian Neurological Society whose objective is to showcase exceptional accomplishments by Canadian neurologists who are leaders in their respective fields. In this segment of the series, Dr. Joel Neves Briard, a neurology resident at the Université de Montréal, interviews Dr. Patrick Cossette, the third recipient of this distinction (Figure 1).

Dr. Cossette is a neurologist and epileptologist based at the Centre hospitalier de l'Université de Montréal (CHUM). Since 2004, he is also a principal scientist in the neuroscience division of the CHUM Research Centre, where he pilots a busy research program on the genetics and molecular mechanisms of pharmacoresistant epilepsy. Among many other discoveries, he identified the first gene associated with autosomal dominant juvenile myoclonic epilepsy (GABRA1). Dr. Cossette holds a Canada Research Chair (tier 1) in Genomics of Epilepsy. He was the 2009 recipient of the CIHR Genetics Institute's Maud Menten Prize for the excellence of his contribution to clinical research.

Joel Neves Briard (JNB): Dr. Cossette, please tell about your path into neurology and neuroscience.

Patrick Cossette (PC): As a young student, my interest for science was already very palpable. I knew I wanted to dedicate my career to research. I therefore fell in love with neuroscience prior to discovering medicine. However, studying medicine provided me with the best available training in the basic sciences, which have been fundamental in both my clinical and research work. As time went by, I realized that becoming a clinician-scientist in neuroscience was the ideal way for me to bring together my passions. To this day, my research program greatly benefits from this synergy. Studying the medical history and genetic background of our hereditary epileptic syndromes cohort, second largest in the world of its kind, we have identified several gene mutations associated with epileptic syndromes and other neurodevelopmental diseases, such as autism. To be able to apply this in real life by providing genetic counseling to families closes the loop for me and is a great source of motivation.

JNB: In addition to your busy schedule as a clinician-scientist, you are also Chief of Neurology at the CHUM and Chair of the Department of Neuroscience at Université de Montréal. Why is it important for physicians to be involved in administrative roles?

PC: I did not wake up one morning with the ambition to hold those positions. In fact, I saw these responsibilities as an

opportunity to give back to the university and institutions that have helped shape the dream career that I now have. Through my experience and training as a clinician-scientist, I try to contribute to the university's mission of preparing today's neurology and neuroscience students for the world of tomorrow. For instance, computational neuroscience and artificial intelligence are rapidly creating new tools for neuroscientists to address their research questions. Job openings currently outnumber the number of qualified candidates in these fields; to be able to work on the issue of how to best train the next generation of neuroscientists is a real source of motivation. All in all, these administrative roles have provided me with different challenges that I truly enjoy managing.

JNB: Mentoring students seems to be one of your priorities. Who has influenced you as a mentor and what did you most appreciate from them?

PC: I was lucky to have several mentors, first of which was my master's supervisor, Dr. Laurent Descarries. He was a very diligent and thorough communicator. To this day, I employ the communication skills Dr. Descarries instilled in me for research and administrative purposes. Dr. Guy Rouleau, my PhD supervisor, was instrumental in my training as a scientist. He showed me how to properly plan and execute a research project, as well as how to develop international collaborations. I am also endowed to Dr. Jean-Marc Saint-Hilaire, founder of the epilepsy unit of Notre-Dame Hospital, for his mentorship in clinical epilepsy. He was a formidable clinician who mastered the art of history taking, critical to patient care in neurology and epilepsy. In all cases, I learned from observing and interacting with my mentors, obtaining skills that cannot be learned in class and building networks that have served me my entire career.

JNB: What are some of the most significant challenges you have faced in your career?

PC: I think a major challenge for any clinician-scientist is to defend research-protected time. I was lucky to join a group of neurologists that values academic work and therefore encourages

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Figure 1: Dr. Patrick Cossette.

me and other clinician-scientists in our projects. When I submit a research proposal for a major grant, I am competing with very successful scientists who dedicate all their professional time to research. When I see a patient, it is my duty as a neurologist to provide high-level, impeccable care, regardless of the fact that I am also a researcher. I may split my time between clinical neurology and fundamental neuroscience, but I mentally hold myself to the standard of being 100% a clinician and 100% a scientist.

JNB: In your opinion, what discoveries and challenges await clinical neurology in the near future?

PC: When I compare today's neurology to that practiced not long ago when I was a resident, I am fascinated by how far we have come. We have lived through revolutions in the treatment of multiple sclerosis and most recently, acute stroke. The paradigm in neurology has changed, and we are called upon to rethink how to organize our practice in order to adapt to the growing interventional dimension of our specialty. In epilepsy, whereas our therapeutic arsenal has definitely increased, we still employ for the vast majority of cases a trial-and-error basis to guide

management. I am hopeful that we are approaching an era where pharmacogenomics will help us predict an epileptic patient's response to specific antiepileptics regimens, allowing us to propose more precise patient-tailored treatment.

JNB: Do you have any particular passions outside work that help you keep a balanced lifestyle?

PC: I love learning new things in all dimensions of life, especially sports and music. I am particularly fond of the guitar, which I learned to play by ear. More recently, I started reading music and have challenged myself to learn to play the piano. Music is easy to fit into my schedule, which varies a lot week to week. It is a wonderful way to relax and liberate the mind.

JNB: If you could offer a piece of advice to 20-year-old Patrick Cossette, what would it be?

PC: I am particularly fond of the message Julie Payette shared when she became Governor General of Canada: "Anyone can accomplish anything and rise to the challenge as long as they are willing to work with others, to let go of the personal agenda, to reach a higher goal and to do what is right for the common good." I interpret her message as a call to action, to dare to dream, to invest effort and energy into our projects and our community. We will all bump into challenges and experience limitations along the road, but let us not be their source by failing to dream. This applies to our career as well as to our lives outside the hospital and the lab. Without passion, there is no hope for personal realization to our fullest potential.

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Dr. JNB has nothing to disclose.