

Chez nous

MCH EMPLOYEE NEWSLETTER

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Montreal Children's
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Taking one step at a time

Young boy relearns to walk and talk after fluke accident



By Stephanie Tsirgiotis



► (l. to r.) Isabelle Chamberland, son Victor and daughter Laura.

In May 2017, Victor Léveillé was finally allowed to stay home alone after school. Like every young boy, he got excited when he saw his friends playing outside and ran towards the front door to join them, but he tripped over his schoolbag and hit his head on a wall. When his parents, Isabelle Chamberland and Hugo Léveillé, got home a few minutes later, Victor was sitting on the couch icing his head. “He seemed okay, he just had a minor headache,” recalls Isabelle, and within an hour, he was back playing outside with his sister, Laura.

EVERY SECOND COUNTS

When his headache hadn’t subsided by 10:00 p.m., Isabelle decided to bring him to their local emergency department.

“We thought he had a minor concussion,” she says. After being examined by a triage nurse, Victor was sent home because he showed no signs of a head injury, but a few hours later they were back at the hospital. Victor had started to vomit. “At this point, they decided to do a CT scan and they discovered something horrible,” recalls his mother. A blood vessel had ruptured during his fall and blood was collecting between his dura, the tough outer membrane covering the brain, and his skull. Victor was suffering from an epidural hematoma.

An epidural hematoma is often identified by the loss of consciousness after an accident, followed by a period of alertness. The hematoma can put pressure on the brain and cause it to

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Editor: Stephanie Tsirgiotis
Contributors: Maureen McCarthy
Julie Robert
Graphic design: Vincenzo Comm
Design inc.
Photography: Owen Egan
Natacha Rousseau
Stephanie Tsirgiotis
French translation: Joanne Lavallée

To submit story ideas or texts to *Chez nous*, contact the Public Relations and Communications office at ext. 24307 or send an email to mchpr@muhc.mcgill.ca.

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*On the cover: Victor Léveillé and
Dr. Jean-Pierre Farmer.*

Cover photo: Owen Egan

swell and shift. "Never in a million years did we think that his brain was being filled with blood," says Isabelle. "He just had a little bump on the left side of his head." The hospital immediately contacted the Montreal Children's Hospital and prepared Victor for transport. He was intubated and put into an artificial coma. "Everything felt so surreal. I wasn't sure if I'd ever see my son again," she says.

At the Children's, emergency department physician Dr. Sasha Dubrovsky got the call and mobilized the trauma team. "Every second counts when dealing with the brain so we knew we had to work fast," he says. Dr. Brett Burstein was the trauma team leader that night. Once the "10/10" was called—a code used to identify the most severe type of trauma case—Dr. Burstein immediately jumped into action and coordinated the nursing team and made sure the OR was able to get neurosurgeon Dr. Jean-Pierre Farmer on site as quickly as possible. But while Victor was en route, things went from bad to worse. "He went from being a sick kid to a completely unstable one," says Dr. Burstein.

One of Victor's pupils had "blown," a term used when a person's pupil becomes very dilated and unreactive to light stimulus; it's a sign that surgery is required immediately. "Victor's blood was pushing his brain down into his neck, basically



► Emergency department physician Dr. Sasha Dubrovsky (right) got the call and mobilized the trauma team on the night of Victor's accident. Dr. Brett Burstein (left) was the trauma team leader. *continued >>*

Taking one step... (cont'd)

suffocating his brain," says Dr. Dubrovsky. When Victor arrived at the Children's he was 10 to 15 minutes away from dying. "Every additional minute we would have waited around would have led to more and more brain damage," he says. Upon his arrival, the team quickly gave him medication to decrease the swelling in his brain and he was immediately transported to the OR. "If the emergency department wasn't so well prepared, my son wouldn't be here today," says Isabelle.



► Victor's nurse Julie Brouillard checks his baclofen pump. The pump needs to be refilled every five months and the dosage and pump rate can easily be reprogrammed at every hospital visit.

RELEARNING TO WALK, TALK AND EAT

Once in the OR, Dr. Farmer had to perform an emergency craniotomy on Victor. "With this type of surgery, timing is everything, especially since both of his pupils were dilated by then," he says. Dr. Farmer's team quickly removed part of Victor's skull to stop the pressure on his brain, and searched for the bleeding blood vessels. He then performed an ultrasound to make sure the deeper structures were not injured. "After the surgery we looked at his eyes and we knew his nerves weren't damaged, because his pupils were no longer dilated," he says. "But it takes several days for the brain to return to its normal position."

After his surgery, Victor was in a coma for 10 days, but when he finally woke up, he could only move one eye. "He learned to communicate with his eyes by opening and closing them for yes and no," says his mother. He started to move little by little every day. He spent 17 days in the Pediatric Intensive Care Unit (PICU) at the Children's and by the time he left the hospital he was able to say yes or no, make different noises, and smile. For the next couple of months, he lived at the Centre de réadaptation Marie Enfant where he underwent intense rehabilitation. Victor had to relearn how to walk, talk and feed himself.

A major milestone happened in June when he woke up one day and could talk. "It was the best phone call ever," says Isabelle.



► Victor and his sister Laura love to make each other laugh.

continued >>



► Neurosurgeon Dr. Jean-Pierre Farmer performed an emergency craniotomy on Victor and implanted the baclofen pump.

“He basically went from grunting different noises to talking in full sentences overnight.” Doctors explained to her that Victor’s brain was no longer swollen and he had regained his ability to speak. “His speech neurons were stunned, but not dead,” explains Dr. Farmer. Eventually he also began to feed himself and drink again, but it was a challenging process because his parents had to watch him closely to make sure he didn’t choke. But through it all, Victor remained patient and determined to get better.

DEALING WITH SPASTICITY

Upper and lower limb spasticity was another side effect of Victor’s brain injury that led to difficulties after his accident. Spasticity can cause muscles to tighten uncontrollably because of disrupted signals from the brain. The muscles contract and are not able to relax or stretch properly, making it difficult to walk. In Victor’s case, he was able to overcome the spasticity in his hands and eventually began to write again, but he was still having problems walking.

To help with his spasticity, Victor had Botox injected into his leg muscles, a known treatment to help muscle stiffness in people suffering from upper and lower limb spasticity. “It looked promising at first, but stopped working after a couple of tries,” says his mother. The next step was to surgically implant a baclofen pump, a programmable pump and catheter used to help people with severe spasticity by sending a medication, called baclofen, directly to the spinal cord. “We are the only pediatric hospital in Quebec to implant these types of pumps,” explains Dr. Farmer. “It’s important for us to not only save lives, but to improve children’s quality of life too.”

The baclofen pump needs to be refilled every five months and the dosage and pump rate can easily be reprogrammed at every hospital visit. “Victor will likely have this pump for life,” says his mom. “He was upset about it at first, but I told him that if this accident had happened 30 years ago, he probably wouldn’t be here today. Who knows what kind of technology they’ll have another 30 years from now?” *continued >>*

Taking one step... (cont'd)

On April 19, Victor had the pump implanted at the Children's by Dr. Farmer; his family noticed big changes almost immediately. "On most days, he is able to walk with a walker or crutches," says Isabelle. "He sometimes has to use a wheelchair, because of the tendonitis in his knees or when he gets tired. The energy it takes him to take one step is the same amount of energy we use to take 15 steps." Victor's goal is to be able to walk unassisted by next year, and he would love to be able to play soccer again. "He most definitely has the potential to walk again," says Dr. Farmer. "A young boy like Victor has all his life ahead of him. The more independence we can help him achieve, the better."

Dr. Burstein also finds Victor's recovery remarkable. "It's a testament to every person involved in his care; from his parents recognizing that something just wasn't right, to the emergency and trauma teams, the surgeons and anesthesiologists, the intensivists and nurses, the physiatrists and physiotherapists, and of course, Victor himself," he says.

Remarkably, Victor did not lose any cognitive function and he is scheduled to graduate from elementary school this year. His family knows how lucky they are to have him alive and healthy. "It's hard not to see him run in the streets with his friends, but at least we still have him with us," says his mom. "We're climbing a mountain, all of us, one day at a time." ■



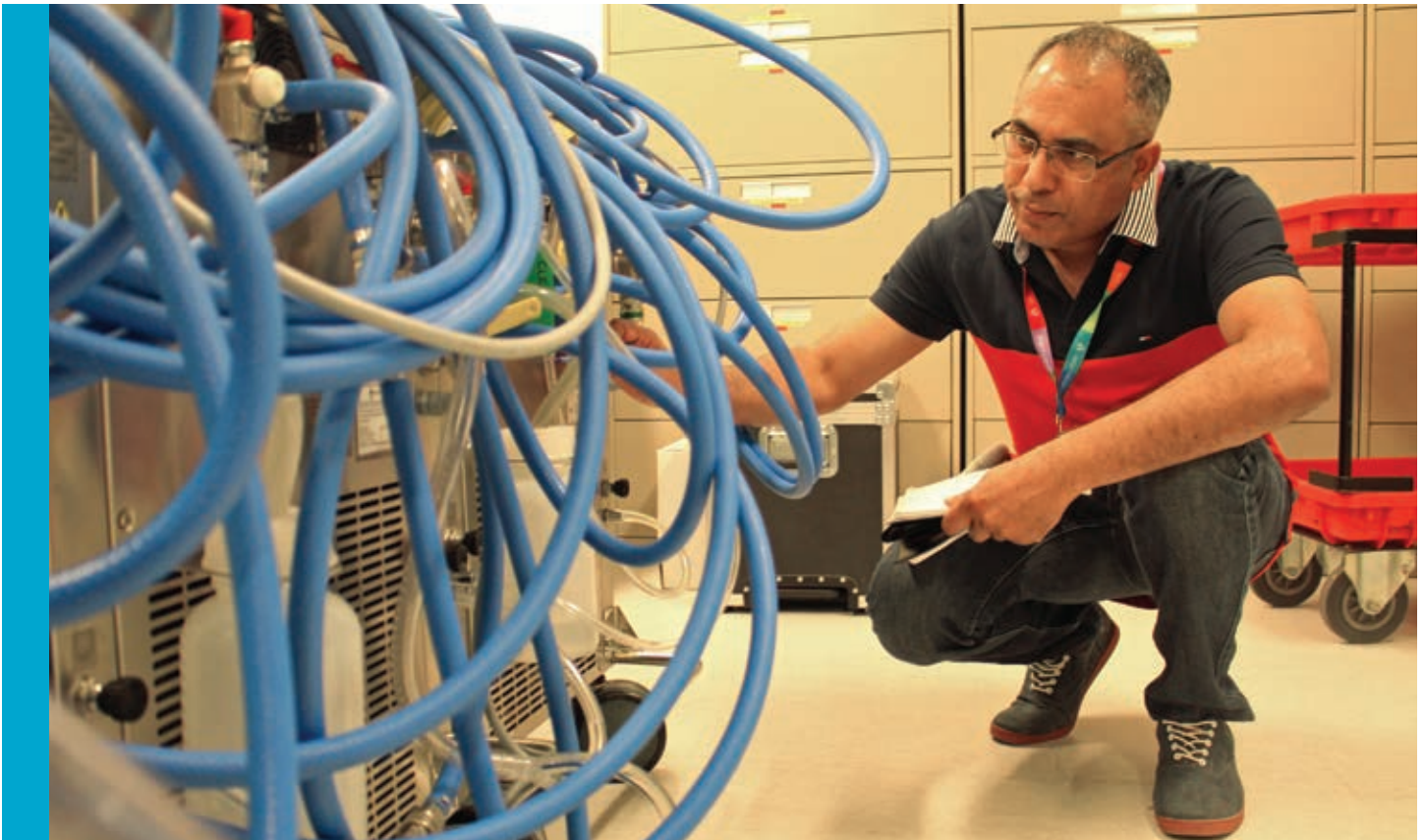
► Physiotherapist Melissa Turner works with Victor to evaluate the spasticity in his legs. Victor's goal is to be able to walk unassisted by next year.

A day in the life of a ...biomedical engineering specialist



Chez nous meets Chetanand Gopaul, the Children's go-to biomedical specialist

By Stephanie Tsirgiotis



► Based at the Glen site, Gopaul's work involves replacing and buying new pieces of equipment for the Montreal Children's Hospital.

When asked what makes him great at his job, Chetanand Gopaul proudly answers, "I'm a good listener." Originally from Mauritius, Gopaul has been working for the McGill University Health Centre (MUHC) for over 10 years. After graduating with an electronic engineering degree from the Polytechnic of North London, Gopaul returned home to pursue a career as a consultant for an engineering firm. "I enjoyed my job, but my brother-in-law came by my house every day to tell me they were hiring engineers at the local hospital," he recalls. "After weeks of brushing him off, I decided to go see what all the fuss was about."

After meeting with the head of the biomedical engineering department, Gopaul was offered a job on the spot but with one drawback: the salary was half his current pay. "The biomedical director told me he couldn't offer me more, but that it would be the best decision I'd ever make," he says. Undecided, Gopaul left the hospital and returned to work, but had a change of heart on his way home. "I still don't know what came over me, but I decided to take the job. It was definitely the best decision I ever made."

continued >>

A day in the life... (cont'd)

Fast-forward 20 years and Gopaul still loves the field of biomedical engineering; in fact he even went back to school to complete a post-graduate degree in biomedical engineering at Keele University in London, England. "My work impacts the amazing care we offer our patients," he says. "I get to be part of something very special." Based at the Glen site, Gopaul's work involves replacing and buying new pieces of equipment for the Montreal Children's Hospital. "I work on different projects every day for the hospital and the Children's Foundation, like doing research for the procurement of new medical equipment," he says. On average, the MUHC orders approximately 5,000 new pieces of equipment every year. "On a daily basis, seven new pieces of equipment come through our doors at the Glen," Gopaul says.

Situated on BS2, the department is home to five biomedical specialists, also known as professionals, and 20 technicians, but there are also biomed teams at the Montreal General, Lachine and Montreal Neurological hospitals. "Working for a teaching hospital has major benefits, because we always ask for and recommend the best biomedical technology available," he says. "It makes for an exciting work environment because technology is constantly evolving and it's being used more and more in patient care."

When a piece of equipment breaks down, and no longer performs at a high standard, or is beyond economical repairs



► Gopaul keeps himself up-to-date by constantly reading and researching new products.



► If equipment is still functional, but no longer meets the MUHC's standards, it is offered to other organizations free of charge.

—meaning it makes more sense financially to replace it than to repair it—the END user, which is the name given to the person requesting the equipment, fills out a biomedical request form. The project is then assigned to one of the biomedical specialists. "I prepare the technical specifications based on the END user's request. This is the time when I begin my research," he says. "I look at the latest technology available and determine what fits our needs and what's the best value for our money."

Technicians, also known as bench workers, maintain, repair, and calibrate the medical equipment. Mobile pieces of equipment are wheeled down to their office space for repairs, while non-mobile fixtures, such as a microscope mounted to a ceiling, are fixed on-site. Each technician is assigned to a different area of the hospital. Some work for specific specialties, while others are assigned to support entire departments. If something cannot be repaired or is beyond economical repair, the technicians will advise the END user to fill out an equipment request form for replacement. In other cases, if a product can be repaired but is beyond their expertise, it goes back to the manufacturer.

"Our department is about teamwork. As professionals we wouldn't be able to do our job properly without the technicians,

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▶ Gopaul has been working for the McGill University Health Centre for over 10 years.

and vice versa,” says Gopaul. If equipment is still functional, but no longer meets the MUHC’s standards, it is offered to other organizations free of charge. “They either send it to other hospitals in Quebec or countries where there’s a need for it or to CEGEPs for training purposes.”

Over the last 10 years, Gopaul says the biomedical industry has changed tremendously. Through research and competition, biomed companies are now able to supply high-quality, cutting-edge technology at a reasonable price. “The market has become so competitive over the last few years. In the past, we used to deal with one manufacturer who had complete monopoly over the entire market,” he says. “Now we’re able to get better value for our money. In some cases we’re now paying \$25,000 instead of \$60,000 for the same piece of equipment. These companies are constantly outdoing each other. It’s impressive to see.”

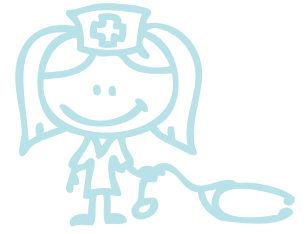
One piece of biomed equipment that truly impressed him recently is the MCH’s operating microscope for cranio-surgery. “This microscope does all the calculations by itself!” he says. With all these new technologies on the market, Gopaul keeps himself up-to-date by constantly reading and researching new products. “If I come across an interesting piece of equipment that I think we could benefit from, I will approach an END user and suggest they look into it.”



▶ Biomedical engineering technician Theodore Patrinos fixes a bed computer, while Gopaul checks to see if its warranty is still valid.

“I love my job because when I look around this place I know I’ve worked hard at making sure we get to work with the best technology available. I wouldn’t want to be doing anything else.” ■

The Caring for Kids Radiothon raises \$1,315,000 for the Children's



On May 31, the Montreal Children's Hospital Foundation and radio stations **CJAD 800**, **95.9 Virgin Radio**, **CHOM 97.7** and **TSN Radio 690**, helped raise \$1,315,000 for the Montreal Children's Hospital.

Nineteen patients and their families shared their stories live in the P.K. Subban Atrium and over a dozen staff members also participated. In 15 years, more than \$23 million has been raised for the Children's thanks to these radio stations.

All funds raised go to the Healthy Kids Fund to meet the most urgent needs of the hospital, which include medical and surgical equipment and funding for innovative projects.

The Montreal Children's Hospital Foundation thanks the **Bell Media** radio stations as well as their Official Partner **Dormez-vous?** and **Miracle Hour** sponsors **Air Canada Foundation**, **A Bunch of Moms**, **Larente Baksh & Associates-TD Group**, **Otsuka**, **Revolution Textiles & Home Decor**, **SNC-Lavalin** and the **Tenaquip Foundation**. Thank you also to the dozens of volunteers who answered phones helping to ensure the event's success. ■



Unravelling the genetic code of brain tumours to better combat them

By Julie Robert

It all started around Christmas, in 2011. Simon-Luc, then 14, was starting to see signs of a health problem. While playing the banjo at school, he found it difficult to use his left hand because it felt weaker. And then there was a short trip to Washington where his father found Simon-Luc had an unusual lack of balance on his scooter.

After undergoing an MRI a few days later, Simon-Luc received a devastating diagnosis: a ganglioglioma. He had a benign tumour lodged in his brainstem, the part of the brain that controls breathing and motor skills, a place that is usually difficult to operate. Two weeks later, he started chemotherapy and radiotherapy treatments at the Montreal Children's Hospital. Unfortunately, they were not enough to overcome the tumour. Simon-Luc then agreed to try an experimental treatment.

Hematologist-oncologist Dr. Nada Jabado's research team developed a targeted treatment by analyzing and dissecting the genetic code of Simon-Luc's tumour. In order to fight it, they needed to find out how the tumour was growing. The treatment was successful and reduced the tumour by more than 75 per cent.



► Dr. Nada Jabado



► Simon-Luc

Dr. Jabado, also a scientist in the Child Health and Human Development Program at the Research Institute of the MUHC, was already recognized as an expert in pediatric brain tumours. Her team made a breakthrough in 2013 by showing that when the mechanisms that protect our genetic information malfunction, it can lead to cancer and possibly other diseases. It was a revolutionary finding in the world of personalized medicine because it finally explained why certain tumours resist traditional treatments.

"When you want to treat someone, you have to understand what that person has; we cannot treat tumours blindly. And to understand that, you have to look," says Dr. Jabado, who received \$13 million in funding from Genome Canada* this year to continue studying brain tumours in children and young adults with her colleagues Jacek Majewski from McGill University and the Genome Quebec Innovation centre and Dr. Michael Taylor from SickKids in Toronto. ■

**Dr. Nada Jabado is one of four researchers in Quebec who won Genome Canada's 2017 Large-Scale Applied Research Project Competition: Genomics and Precision Health.*

Q & A with CSCA chair Sylvia Morin

By Stephanie Tsirgiotis



► Sylvia Morin

Since 1997, the Montreal Children's Hospital Council for Services to Children and Adolescents (CSCA) has worked to ensure that the pediatric mission is maintained and well understood within the McGill University Health Centre (MUHC) in terms of care, research and education. The advisory council is made up of 21 members representing the Children's, McGill University, the Research Institute, the MCH Foundation and the community.

Chez nous sat down with the CSCA's new chair, Sylvia Morin, to learn more about her involvement with the hospital and the council.

Q. WHY DID YOU CHOOSE TO BE PART OF THE CSCA?

A. A past chair of the CSCA who thought I'd be a good addition to the council because of my skill set in management, strategic communications and governance approached me in 2014 about joining. Over the last few years, the CSCA has become more active in terms of advocating for the Children's on a number of issues. Even though the CSCA does not have a formal seat

on the MUHC Board, we do have the responsibility to report to the Board. We make sure the voice of the Children's is heard at that level.

Q. WHY IS IT IMPORTANT FOR YOU TO GIVE BACK TO THE CHILDREN'S?

A. Over the last few years I have learned so much about the Children's. The institution as a whole is very inspiring and I am in complete awe of the staff here. I don't have any children of my own, so my emotional connection to the hospital is to the people who make it the outstanding institution it is. Every physician, surgeon, nurse, allied health professional, researcher, and manager I've met over the last few years has reinforced that connection. I have rarely met such dedicated and selfless people. The same goes for the quality of people who work with me on the CSCA.

Q. DO YOU HAVE A MEMORABLE MCH MOMENT?

A. The day P.K. Subban announced that he would be donating to the Children's! I will never forget that day. I was also really proud when Dr. Jean-Pierre Farmer won *La Presse's* "Personnalité de la semaine" for a brain surgery he performed on a newborn baby. The Children's has such deep expertise and it was wonderful to see the tremendous skill of one of our surgeons recognized in such a way.

Q. TELL US A LITTLE ABOUT YOURSELF.

A. I am a consultant and work on mandates where strategic communications and governance advice are critical success factors. As for downtime, I love the outdoors and spending time at my cottage in the Eastern Townships with my two dogs. Getting out on my bike (without my dogs!) is a favourite pastime: I love challenging myself on the hills in the Townships and Vermont. I've done longer trips too, and once biked 133 kilometres from La Malbaie to Lac St-Jean. I guess you could say I love hills! ■