EVENT NEWS

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Northern Lights Aero Foundation
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IT'S TIME WE ACT
Ontario Society of Professional Engineers
Ottawa, ON | **Oct. 10th, 2018**

IDEAS IN MOTION
Future, Innovation, Technology, Creativity
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PHOTO CREDIT: BRANDON Y LEE

WOMEN IN STEM

Canadian women have led 400 years of progress in the natural sciences. Read more on **PG 6**

Q&A WITH ANN MAKOSINSKI

A global influencer and inventor at only 20 years old, Ann Makosinski talks to us about inventing, STEAM, and advice for future innovators

Mediaplanet ***What sparked your interest in inventing?***

Ann Makosinski I wasn't given many toys as a child, but I was provided with a hot glue gun and glue sticks. I used them, along with the trash I collected from around the house, to piece together "inventions." I was also given old computers and printers to take apart and would spend many hours admiring the electronics inside.

I believe all children are inherently creative, but when they're given passive entertainment, they become accustomed to being entertained rather than creating something to entertain themselves. I was lucky enough to have good examples at home, with my dad always on his workbench after dinner and my mom sculpting with clay.

MP ***What is STEAM, and why is it important for you to be involved in this field?***

AM STEAM stands for science, technology, engineering, arts, and mathematics. Usually we hear about STEM, which is everything listed previously, minus the arts. I'm passionate about the usually overlooked, but crucial, combination of science and art which I believe more schools should be promoting. All technology is a mixture of science and art. We need the technology to work properly — which is the science part — but we also expect products to be aesthetically pleasing — that's attributed to art. Most of the time we look at science as a career and art as a hobby, but I think it's important to tell youth that when science and art come together, great things happen.

Continued on page 4

What Does a Scientist Look Like?

Not all heroes wear capes, and not all scientists wear lab coats. Astronomers don't typically wear lab coats, and as the staff astronomer at the Ontario Science Centre, I want to help change perceptions about what a scientist can look like. I know first-hand what it is like to train as a scientist in the largely male-dominated field of computational astrophysics.

Diversity is strength — for humans and for the biodiversity of ecosystems. It helps life thrive. To that point, science needs women.

Gender diversity is limited in science, technology, engineering, and math (STEM), but I've learned much about what we can do to support budding science enthusiasts. Recognize biases. Self-reflect. Amplify the voices of those who are less heard.

Canada needs, and wants, increased science literacy. According to our Science Literacy Survey, 81 percent of Canadians don't understand the impact of science on their everyday lives, yet 83 percent want to learn more about science and how it affects our world.

Rachel Ward-Maxwell, Ph.D.
Researcher-Programmer, Astronomy & Space Sciences, Ontario Science Centre

STEM studies should be for everyone, not just for those who plan to become scientists. Studying science is a workout for your brain. It strengthens critical thinking and problem-solving skills, and helps you to become more open-minded. Scientific knowledge can even open doors to careers and be important for many jobs outside of STEM.

The responsibility rests on all of us to encourage women and other underrepresented groups in STEM in an effort to create a more science-literate nation. You don't need a cape to be a hero to someone — you can use your voice.

Rachel Ward-Maxwell

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Guiding and Empowering Girls in Science and Technology

As more jobs open up in the science, technology, engineering, and mathematics (STEM) fields, Girl Guides of Canada is incorporating more STEM activities into its programming. "We want to help support girls in making career decisions and not shy away from the STEM industry, given the barriers and gender inequalities girls face in pursuing STEM in school and professionally," says Rochelle Strauss, Senior Manager of Programming at the Girl Guides of Canada National Office. Plus, the girls, their families and Guiders are requesting it. "They've all told us they want more STEM opportunities, so it's at the forefront of their thoughts," says Strauss.

Integrating STEM into programming and planning

The Girl Guides' STEM-focused programming aligns with the organization's vision of "a better world by girls" and its mission "to be a catalyst for girls empowering girls." The program aims to provide a safe and supportive space for girls to explore new activities, ask questions, and do hands-on experiments on STEM-related topics — something they may not feel as comfortable with in a school setting. "We know that when girls participate in STEM, they find it fun and engaging, and are then more likely to remain interested in the fields as they get older," Strauss says.

Girls are exposed to the four disciplines through unit meetings, camps, conferences, and workshops. The organization also works to identify and showcase Canadian and international female role models in STEM fields. "It's a chance for those women to inspire and motivate the girls, share great stories, and show them what they can become," says Strauss. Girl Guides is launching their new Girls First program this fall, which will feature STEM programming that includes robotics, engineering biology, physics, and financial literacy, with new content to be added yearly.

Rochelle Strauss
Senior Manager of Programming, Girl Guides of Canada

Being a Girl Guide gives each girl the opportunity to be everything she wants to be. Help your daughter explore her potential with Girl Guides.

Anne Papmehl

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Girl Guides

Q&A WITH DARLENE AND KELLY

Darlene Sly McKechnie
Commercial Pilot

Kelly Batten Hender
Geoscientist

A Brownie at age seven and a Guider since age 18, Darlene Sly McKechnie is a commercial pilot for Air Canada, flying the airline's Boeing Triple 7 jet on international routes

Mediaplanet ***What's the most valuable experience you had as a Girl Guide?***

Darlene Sly McKechnie The opportunity to explore a wide variety of different opportunities that we weren't exposed to in the school system or through our parents was fantastic.

MP ***How did Girl Guides help you get to where you are now?***

DM When I was 16, I was chosen to go to Switzerland — my first international travel experience. It put the travel bug in my head. When it came to thinking about a career, travel was right up there along with math and science, so becoming a pilot gave me a challenging, dynamic career that also allowed me to travel the world.

MP ***What's your career advice to today's Girl Guides?***

DM Try everything, and if you don't like it, give it at least six months before giving up. That's served me well in life.

A Brownie since age seven and a Guider since age 19, Kelly Batten Hender holds a Ph.D. in geology and works as a geoscientist with an oil and gas regulator in eastern Canada

Mediaplanet ***What's the most valuable experience you had as a Girl Guide?***

Kelly Batten Hender The most valuable thing was the exposure to the outdoors and cultivating an appreciation of the natural world through camping, tenting, and backpacking.

MP ***How did Girl Guides help you get to where you are now?***

KH The teamwork skills I developed really helped me when I did my graduate fieldwork, as I was working with other people in remote locations under adverse conditions. It even helps now in an office setting.

MP ***What's your career advice for today's Girl Guides?***

KH Expose yourself to all the different options out there! Don't approach your career as though you know what the end result is going to be.

IMAGE COURTESY: TRANSPORT SCOTLAND

Inclusion and Diversity: The Keys to Unlocking Great Ideas

Queensferry Crossing in Edinburgh, Scotland.

Clever engineering is designed to connect — whether invisibly, like pipes running underground through a city or openly inviting, like a bridge stretching across a river.

Today's complex issues require creativity and ingenuity. Leading professional services firm Jacobs values inclusion and diversity at its core and believes the best ideas are realized through smart recruiting and inclusivity. The company actively welcomes and respects the different backgrounds, skills, and experiences of its employees, industry partners, and clients around the world.

With global expertise in fields as varied as energy, mobility, security, infrastructure, water, and exploration, Jacobs teams are behind solution-driven projects such as Toronto's Basement Flooding Protection Program (BFPP), the light rail in Los Angeles, and Scotland's Queensferry Crossing, which is the world's longest cable-stayed bridge.

This same collaborative culture is what attracted civil engineer Laurel Murphy to the company. As one of a handful of women in her university engineering classes, Murphy said she immediately noticed the number of women in leadership roles at Jacobs. "It was substantially more than anywhere else I've worked," she says.

Good ideas always win

Despite improvements within the industry, the overall proportion of women working in STEM — science, technology, engineering, and math — remains less than one in four. According to the Natural Sciences and Engineering Research Council of Canada, women represent only 23 percent of the natural science and engineering workforce.

"At Jacobs, we have female senior mentors and leaders, and this encourages younger female employees to grow into these kinds of roles," says

Azita Azarnejad
Senior Structural Engineer, Jacobs

Laurel Murphy
Canadian Director of Solutions and Technology Buildings, Infrastructure and Advanced Facilities (BIAF), Jacobs

Murphy, who is now working in the company's Toronto office as the Canadian Director of Solutions and Technology for the company's Buildings, Infrastructure, and Advanced Facilities (BIAF) line of business. "Good ideas always win, and they don't need to come from the highest person in the organizational chart," she says.

For example, a recent project brainstorming session was dedicated to the design of construction access to a sewer in a heavily wooded area. It was a recent graduate who came up with an innovative solution to address the challenging problem.

When a local team requires additional support, they reach out to the extended global network for advice. As the Canadian liaison in a group of global experts, Murphy can connect with her colleagues and seek advice for a biogas treatment facility design, for instance, receiving input within minutes. This kind of collaboration means the company can always find a route to success."We're never reinventing the wheel," she said. "We are always getting better, every time."

From punch cards to 3D modelling

When Senior Structural Engineer Azita Azarnejad started her education in Iran, only 10 of the 100 students in her classes were women.When she arrived in Edmonton for her Ph.D. studies, there were only two women in her class.

"When I came to Canada, I expected to see more women, but that wasn't the case," Azarnejad says. The students, however, were from diverse backgrounds. That continues today at Jacobs, where everyone on Azarnejad's team has a different origin. "In the workplace, we have very good diversity," she says.

When Azarnejad started her studies, many calculations were still done by hand, and computer programming required punch cards. Today, the same design considerations are captured by 3D modelling, and engineering projects now include digital data maintenance for municipalities.

What hasn't changed, however, is how good, sustainable design affects everyone. While Azarnejad loves the intellectual challenge of a complex bridge design, she's thrilled by the community impact of a project.

For example, the completion of bridges in areas with traffic congestion means motorists on a city's busiest thoroughfares can finally get to work on time. "People were actually cheering and clapping," Azarnejad says, recalling her interaction with community residents at one of her bridge projects in Calgary. "In my work, you see the outcome."

Zoe Davey

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Turning Talk into Action: How Can Employers Break Down Barriers in STEM?

Kathy Lerette
Breaking Barriers Project Leader & Sr. Vice President Business Transformation, Alectra Utilities

Shelly Deitner, P.Eng.
Board Director & Chair, Women in Engineering Advocacy Champions Task Force, OSPE

Determined to do their part to help retain more women in the engineering field, the Ontario Society of Professional Engineers (OSPE) launched its Let's Break Barriers in STEM project, thanks to funding from Status of Women Canada.

OSPE's project aims to identify systemic barriers that contribute to the underrepresentation of women in STEM, and to increase the participation of women in STEM careers. To this end, OSPE conducted focus groups and surveyed over 3,000 men and women in STEM fields. The survey found that women face various obstacles, including pay inequities, discrimination, harassment and/or bullying, the underutilization of technical ability, and a lack of mentorship or role models.

According to Shelly Deitner, P.Eng., Board Director and Chair of OSPE's Women in Engineering Advocacy Champions Task Force, the benefits associated with diversity in the workplace are clear. "However, employers need to take decisive action to ensure that women entering STEM workplaces are supported and are not set up to fail," Deitner notes.

> "Women account for 12.8 percent of practicing professional engineers in Canada, and for 20 percent of total enrolment in accredited undergraduate engineering programs at Canadian post-secondary institutions."

Retaining women in STEM

Based on the data from OSPE's 2018 report *Calling all STEM Employers*, offering flexible work arrangements, mentorship opportunities, and parental leave to both men and women, as well as instituting strong harassment and discrimination policies, are just a few ways employers can attract, retain, and advance women in STEM industries.

It's also a good idea for organizations to have a champion among the leadership team to encourage inclusivity and diversity in the workforce.

"Our recent surveys and focus groups have confirmed that barriers to women in the STEM workplace still exist," says Kathy Lerette, Breaking Barriers Project Leader and Senior Vice-President of Business Transformation at Alectra Utilities. "We're going to help employers improve the culture in the workplace by introducing a commitment to change, and tools–including a new digital app to help facilitate that change."

Catherine Roberts

Download the report and learn more about the app for employers at **letsbreakbarriers.ca**.

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ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

BEHIND EVERY GREAT ENGINEER.

WOMEN IN STEM
CHALLENGES AND FUTURE OPPORTUNITIES

Women across all STEM workplaces face common challenges, however these challenges decrease when the number of females in STEM roles in their workplace increases. Unfortunately, the challenges for women remain significant across all career stages and many face discrimination based on gender and age.

TOP CHALLENGES WOMEN FACE

1 in 2
Feel disrespected by managers, co-workers, clients

1 in 3
Experience pay inequity and have difficulty balancing work and family obligations

1 in 4
Face discrimination, harassment, or bullying

IN THE WORKPLACE

25% A quarter of women in STEM feel they are not using their STEM skills to their full capacity

30% Engineers Canada suggests that a thirty percent ratio of women in engineering is the tipping point for changing workplace culture

35% Approximately thirty-five percent of women feel they are paid less than their male colleagues for the same work

RECOMMENDATIONS FOR EMPLOYERS

1. Appoint a Champion in your leadership team
2. Assess your workplace culture
3. Address unconscious bias
4. Actively sponsor and mentor
5. Appraise company policies and practices

Source: *Calling all STEM Employers*, Ontario Society of Professional Engineers, 2018

A Unique Approach to Fostering STEM Appreciation

How one organization is trying to make the sciences more inclusive

Today, about 22 percent of those working in science, technology, engineering, and math (STEM) are female. Over the past 25 years, Let's Talk Science has progressively seen a change of inclusivity in the sciences and is working towards ensuring that percentage continues to grow in the future.

"We have 3,500 volunteers across Canada, 65 percent of whom are women. They are students, teachers, and industry professionals who are helping to change perceptions about the sciences," says Dr. Bonnie Schmidt, President and Founder of Let's Talk Science.

Let's Talk Science volunteers visit classrooms across the country, providing a positive representation of women in science, and are excellent role models for all students. "The issues we face in our world today will be solved in large part through STEM-based innovation," says Dr. Schmidt. "That's why we are showing the relevance of the sciences beyond the school environment — young people see this from our volunteers."

Overall, students are seeking meaningful relationships that support their learning and help them explore career options. Last year, more than 1,000 Canadian youth took part in Canada 2067, a national initiative to shape the future of STEM learning. When asked to imagine a team of mentors, students talked about wanting to be supported by kind, understanding, non-judgmental peers or adults who have ample time for them online or in person.

Dr. Bonnie Schmidt
President & Founder,
Let's Talk Science

Share your expertise in STEM

Society needs more real-life examples for students to see themselves in different STEM roles. Let's Talk Science is looking for industry professionals — women and men — to share their expertise with youth across Canada and inspire them towards STEM studies and career options.

As volunteers, experts share their knowledge, inspire, and engage students. "It's incredible to see our volunteers give back and to share the importance of science and how it impacts our daily lives," Dr. Schmidt says. "We're always looking for more."

Explore ways that you can be a role model in your own community, as part of the Let's Talk Science team.

Ken Donohue

Learn more about volunteering at **letstalkscience.ca/volunteers**.

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let's talk science

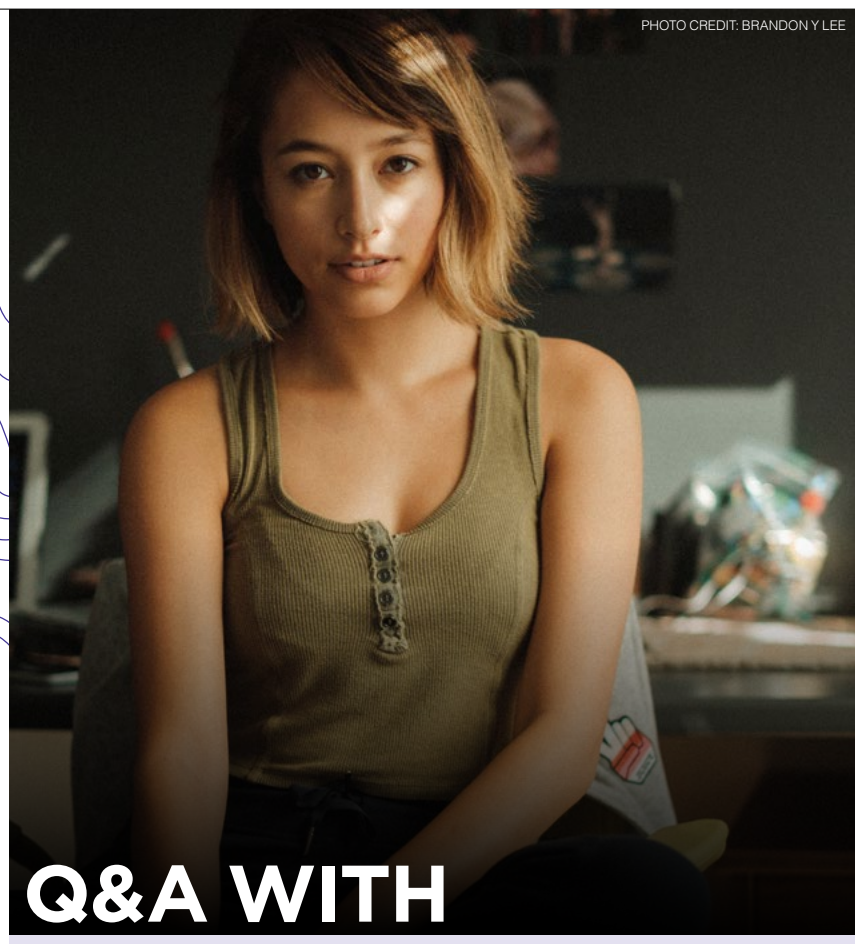

PHOTO CREDIT: BRANDON Y LEE

Q&A WITH ANN MAKOSINSKI

continued from page 1

Mediaplanet ***What excites you most about the STEAM field?***

AM One thing that gets me really excited about STEAM is the potential it has for young students and future innovators. I think students would respond positively to learning about math and science if it didn't always involve a textbook and dull lab work. Using art to teach more logic-oriented subjects like math and science has already been proven to produce better results with students.

MP ***Why is it important for young Canadians to think outside the box when it comes to their career paths, specifically as it relates to STEAM?***

AM Youth shouldn't be afraid to pursue passions in both the sciences and the arts, as they complement each other and make you well-versed in multiple areas. We need to help preserve the Earth and discover more ways to reduce our ecological footprint, we can do this by getting kids to think outside the box and combine their skills in the arts and sciences.

MP ***What advice do you have for young girls who are interested in STEM, but don't have many female role models in the field?***

AM There have always been many female role models in STEM — they just haven't been mentioned or documented very much. My advice is for girls to read about female role models, find one whose life really inspires you, and let that inspiration carry you through your journey in STEM or STEAM. Be inspired by their dedication, passion, hard work, and positive thinking.

Exciting Career Opportunities for Women in Web Development

As a child, Preeti Raman was curious about the world around her. "While many of my early experiments in the kitchen failed, I learned to love science," she says. "I also discovered that math was everywhere, from shopping to baking." Raman's love for science and math eventually led her to become a computer science engineer and a leading web development specialist.

Raman credits her success in the male-dominated science, technology, engineering, and mathematics (STEM) field to her inquisitive nature, positive attitude, and nurturing support from her parents, teachers, peers, and colleagues. "I was always in an environment where I could try new things, take on new challenges, and try to solve problems," she says.

Today, as Founder and Managing Director of ADDITY Inc., a research-based math teaching school, Raman is inspiring future female STEM leaders in a similar way. "I founded ADDITY to create the same type of environment I had for younger generations — one that's inclusive and fosters growth in students of all abilities," she says.

Women and web development a great fit

Raman is also an Advisory Council Member for the new Full-Stack Web Development program at the York University School of Continuing Studies, where she leads the program's curriculum development. Full-stack web development — which includes building websites end-to-end, taking them apart, and fixing issues as required — is the fastest-growing job in the web development field.

It should come as no surprise that Raman is a strong advocate for having more female full-stack web developers in the workforce. "I think it's a great career choice, because it involves critical thinking, collaboration, and problem-solving — things that women inherently excel at," she says.

A flexible and inclusive program

Learning the required skills for this career, however, has typically meant spending a lot of money and taking time off to attend web development boot camps, which is not a realistic option for many people. But that's changing. Through its innovative Certificate in Full-Stack Web Development program starting this fall, York University is making the field more accessible to everyone, regardless of gender or economic situation.

Preeti Raman,
Founder & Managing Director, ADDITY Inc.
Advisory Council Member, York University School of Continuing Studies

The program's part-time format allows students to work and study while helping to remove financial and scheduling barriers. Students receive intensive training within a relaxed schedule with the lowest weekly time commitment, compared to other programs in Canada. Students are also able to work with employers on live web development programs to get real-world experience, hone their business and communications skills, and build their portfolios.

Diversity and inclusion is prominent in the program's mandate. "The program is guided by a diverse group of leaders in the web development field, with equal gender representation," says Raman.

Upon completion of the 12-month program, students come away with the ability to create end-to-end websites that meet specific business requirements, to discern and effectively communicate the overall architecture of any given website, and to use creative problem solving to troubleshoot issues and debug broken code, among other skills.

Best of all, with classes held during the evenings and weekends, the program accommodates the unique needs of women balancing work, family, and social commitments, making the prospect of pursuing a fulfilling STEM career in a short time more realistic than ever.

Anne Papmehl

To learn more about how York University is empowering women to succeed in web development and other STEM careers, visit **yorku.ca/continue**.


PHOTO CREDIT: INGENIUM - CANADA'S MUSEUMS OF SCIENCE AND INNOVATION

Ingenium Celebrates Women in Science and Technology

Having more women in the science, technology, engineering, and math (STEM) fields is critical to Canada's economic future. Ingenium — which oversees three national museums dedicated to telling the stories of those who dared to think differently — is striving to inspire the next generation of innovators and address issues of gender inequality that impact girls and young women in the field through its Women in STEM initiative. "The multi-platform initiative aims to celebrate women's achievements in these fields, foster conversations around gender equity, promote careers for women in STEM, and ultimately, inspire young Canadians," says Christina Tessier, President and CEO of Ingenium - Canada's Museums of Science and Innovation.

Sharing inspiring stories

Increasing the number of women in STEM is a goal for a lot of organizations, although few take a creative approach to rolling it into their public programs. "We wanted to explore how we could be a part of the conversations to raise awareness about what's happening and maybe catalyze actions to effect change," says Sandra Corbeil, Ingenium's Director of Strategic Partnerships and Networks.

Ingenium started by reaching out to diverse groups of people to build a catalogue of stories about trailblazers in the field. "We knew we needed to talk not just to women and girls but also to their parents, teachers, and people in their communities," Corbeil says. These conversations helped to inform how these stories were told. "They're pretty inspirational stories that highlight the contributions of women in STEM," she says. The pieces play a dual role, as they also raise awareness of the barriers, biases, and challenges women have faced in contributing to the field.

A key piece of their programming for this initiative features downloadable posters of women who have had a noteworthy impact on the STEM field, designed to serve as easily accessible educational tools for classrooms, community centres, or workplaces. The online poster series will be complemented by a display available to travel later this year, in hopes of engaging with audiences across Canada. The display has been designed to relay more in-depth stories and further showcase how women are, and always have been, important contributors to STEM. "We're hoping to engage students and their families in thinking about how gender equity benefits us all," Corbeil says.

A role for all us

Another way Ingenium is sharing the Women in STEM story is through collaboration with community partners. "These partnerships are really key to us being part of the community that cares and wants to make a change," Corbeil says. A recent example is a fellowship opportunity created with the University of Ottawa for students interested in gender, science, and technology. "For us, it's an opportunity to bring in dedicated scholars, gain a perspective on the relationship between gender and technology, and address our museums' research and collecting gaps," she says. "It also gives students the chance to explore their research area within a collections or museum setting." Looking to the future, Ingenium plans to promote diversity and equity in STEM through specialized programs and events online and at its three museums.

Ingenium's future goals are also focused on working with community members to explore ways to add more women to the STEM pipeline. A key challenge to doing so is determining the factors behind higher attrition rates of women in STEM-centric academic programs. "We need to really think about whether we're creating an open system for STEM contributions or whether there are barriers and biases that discourage these women from going further," Corbeil says.

If it takes a village to raise a child, it takes an extended community to raise a scientist. Corbeil believes that all of us — parents, extended family, teachers, and friends — can play a role breaking down barriers and eliminating biases.

The Women in STEM initiative is part of Ingenium's ongoing work to preserve and share Canada's stories of scientific and technological heritage. Celebrating the power of ingenuity, Ingenium encompasses three national institutions: the Canada Agriculture and Food Museum, the Canada Aviation and Space Museum, and the Canada Science and Technology Museum. Beyond the physical walls of its museums, Ingenium's engaging digital content and travelling exhibitions serve to educate, entertain, and engage audiences across Canada and around the world.

Anne Papmehl

For more information on Ingenium's Women in STEM initiative, visit **IngeniumCanada.org/womeninstem**.

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Ingenium
Canada's Museums of Science and Innovation
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Making Engineering More Inclusive

"We believe that engineering is for everyone, and that's the mantra we stand by." These words from McMaster University's Faculty of Engineering Dean Ishwar Puri are inspiring in the context of pervasive attitudes towards traditionally male-dominated fields like engineering.

McMaster's mantra is paying off. This fall, 27 percent of first-year engineering students are women, up five percent from 2017. Paired with a 95 percent retention rate for female students in their first year of studies, the Faculty is leading by example when it comes to promoting diversity and inclusion in engineering. "It's ingrained in our culture," says Puri.

Reflection and restructuring

Over the last five years, McMaster Engineering has focused its attention on continuing to build a more positive learning environment for all students. Restructuring welcome week activities to be more inclusive, shifting hiring practices to ensure diversity, and sharing the stories of successful female engineering students, faculty, and alumni have all contributed to a ripple of positive change for women in engineering.

The Faculty is also the host institution of the new Ontario Network of Women in Engineering (ONWiE) Chair, Kim Jones. "McMaster believes in cooperation, not competition," says Jones, who is also a faculty member in the Department of Chemical Engineering. "Everyone is working towards the same end goal."

> "McMaster believes in cooperation, not competition. Everyone is working towards the same end goal."

McMaster has been laser-focused on creating cultural change and paving the way for greater gender diversity and inclusivity within the Faculty. There are more than 30 clubs and teams that students can join, with a number focused on improving diversity, such as the Women in Engineering Society, EngiQueers, and the National Society of Black Engineers.

Last year, the Faculty also established the Integrated Biomedical Engineering and Health Sciences program. The groundbreaking program is a major attractor of female studants and has a 50 percent gender parity ratio.

"This is only the beginning for women in engineering," says Marilyn Lightstone, Chair of the Department of Mechanical Engineering and one of the drivers behind diversifying hiring practices at McMaster. "Our short-term goal was 30 percent of Canadian engineers are women by 2030," says Dean Puri. But the Faculty is working towards surpassing that number even sooner. "As we get closer to gender parity, it will be time to re-evaluate our goals," he says.

Melissa Vekil

Kim Jones
Chair, Ontario Network of Women in Engineering

Q&A WITH KIM JONES

Mediaplanet spoke with Kim Jones about her new role as ONWiE Chair and McMaster's inclusive environment

Mediaplanet ***How does McMaster Engineering promote inclusivity and diversity?***
Kim Jones With the Dean's leadership, the Faculty has made more equitable hiring practices a priority: 41 percent of recently hired faculty are women. That's important because a barrier for women in STEM is a lack of role models. When women are in front of the classroom, female students feel represented, which breeds success.

MP ***Why is McMaster the right environment for you to thrive in your new role?***
KJ McMaster is a role model for broadening diversity in engineering. The Dean, staff, and faculty have provided unprecedented support to ONWiE goals and initiatives.

MP ***What do you hope to achieve as chair of ONWiE?***
KJ My number one goal is to bring knowledge, focus, and time to our efforts in improving the number of female applicants in engineering programs at Ontario universities.

Canadian Women in Science: 400 Years of Breaking Barriers

CREDIT: CANADA SCIENCE AND TECHNOLOGY MUSEUM, A19489

Phyllis Wilhem working in an animal-nutrition lab at Ottawa's Central Experimental Farm in 1948.

Two centuries ago, most women couldn't work outside the home — and until several decades ago, marriage could end a woman's career. Yet those barriers didn't stop several remarkable Canadian women from pursuing a passion in the natural sciences and a new exhibit at the Canadian Museum of Nature brings some of these forgotten stories out of the vault.

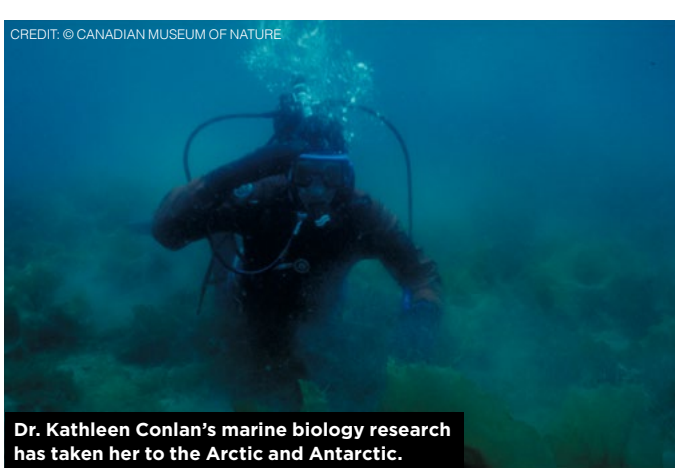
Courage and Passion: Canadian Women in Natural Sciences will be on display in Ottawa until March 2019. The exhibit highlights the contributions of trailblazers in botany, zoology, geology, agriculture, physics, paleontology, and early medicine.

"We celebrate Canadian women who fought against cultural norms and turned their passion for science into exciting careers," says Nicole Dupuis, the exhibit's Content Developer. "Their contribution to our understanding of the natural world is immeasurable."

In the Victorian era, botany was viewed as "suitably feminine," and a small opening for women interested in science was made available. One of the celebrated herbarium books of early botanist and settler Catharine Parr Traill is on display as archives from that time. So too are 17th-century apothecary tools of nuns who used to prepare herbal medicines, and ran the Hôtel-Dieu de Montréal, one of the first hospitals in Canada.

The Champions of Equality section of the exhibit covers the period from 1950 to 1979 where new advances, such as the advent of computers and the discovery of DNA, created new career opportunities.

Nicole Dupuis
Content Developer, Courage and Passion Exhibit, Canadian Museum of Nature



CREDIT: © CANADIAN MUSEUM OF NATURE

Dr. Kathleen Conlan's marine biology research has taken her to the Arctic and Antarctic.

The exhibit also features a mounted giraffe skeleton highlighting the work of Anne Innis Dagg, a feminist and zoologist, who became the first Western scientist to study them in the wild at 24-years old in the 1950s.

Gender barriers, then and now

Other artefacts at the exhibit — sponsored by Enbridge, Lundin Mining, and Sherritt International — include glass physics equipment from the turn of the last century, archaic clerical machines from the 1950s to the 1970s, and a reproduction of a letter issued by the Privy Council Office officially banning married women from full-time work in the federal government in the 1920s. In the context of a society with such arcane and sexist rules, the achievements of Harriet Brooks in physics seem even more outstanding. Her experiments led to new discoveries in radioactivity, but she was forced to retire by McGill University administrators at age 31 in 1907 when she got married.

Unlike the scientific artefacts and specimens on display, gender barriers aren't relics of the past. "Today, women have access to full professionalization in science," Dupuis says. "They are awarded important research grants, lead field trips, head university departments, and drive research. Still, they make up only 22 percent of the current STEM workforce in Canada," says Dupuis.

To encourage young women and girls to consider the field, visitors can view contemporary videos of women scientists at work and participate in experiments through digital interactives. Dupuis hopes visitors take home a simple but powerful message, unthinkable just decades ago: girls and women belong in STEM.

The Canadian Museum of Nature is located at 240 McLeod Street in Ottawa. Visit **nature.ca** for fees and hours.

Zoe Davey

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