

# Inspiring a Future of Women in STEM

Increasing the number of women entering STEM Fields through programs, mentorship and positive reinforcement.

Submitted by: Stephanie Deschenes, Canadian Association of Science Centres in partnership with Ingenium and Research2Reality.

*“One of my goals is to encourage more young women to be curious, to challenge the norm and be fearless in their pursuit of their dreams. Take every exciting opportunity that comes your way. Choose to be curious. Choose science.”*

- The Honourable Kirsty Duncan, Minister of Science

In 2011, women accounted for 39% of university graduates aged 25-34 with a STEM degree, compared with 66% of university graduates in non-STEM programs (Hango, 2013). A recent study by Cheryan, Ziegler, Montoya and Jiang (2017) found that there are several reasons for this lack of gender diversity including a lack of role models with whom girls and young women can identify and negative stereotypes about STEM careers.

With few women teaching STEM subjects, particularly physics, mathematics and computer science, it is harder for girls to envision themselves in these types of roles, with many choosing not to study these subjects as electives, reducing the potential for further education at the post-secondary level (Council of Canadian Academies, 2012).

The negative stereotypes include the perception that women lack math competencies required for some careers (such as computer science, engineering and physics), that the workplaces are masculine, unwelcoming places for women, and that women are paid less and are required to work in more traditionally female activities, like paperwork, planning workplace events, organizing the breakroom, and so on (Cheryan, Ziegler, Montoya, & Jiang, 2017).

It's important to note that the negative stereotypes are perpetuated by both men and women. Typically, programs to increase women in STEM-based careers are targeted at girls and young women. However, the need to create more gender-balanced workplaces must be focused on both genders.

The Canadian Association of Science Centres (CASC), Research2Reality (R2R), and Ingenium are proposing a joint initiative to change the stereotypes and showcase women who work in STEM careers. Over three years, this project will:

- feature women in research at Canadian universities through a series of videos that reach students in their classrooms and on social media,
- highlight innovations in STEM by women through a travelling exhibit and a PSA campaign,

- bring female scientists to science centres and schools across Canada to tell their journey in science, and
- deliver a nation-wide communications campaign that highlights outstanding innovations by Canadian scientists who are women.

With these initiatives, the goal is to reach millions of Canadians to look at women in STEM differently and make girls and young women think again about their futures in Science, Technology, Engineering and Math.

Year 1	Year 2	Year 3	Total
\$4,950,623	3,950,623	\$2,870,623	\$11,771,869

1. Showcasing Canadian Research: R2R has created a platform for demonstrating the positive impact that Canadian researchers are making on our everyday lives. With over 120 videos in place, R2R is focusing its efforts on featuring women scientists and engineers at Canadian universities. The videos will focus on cutting-edge work on health, energy, the environment, space and quantum science.

2. Women in STEM traveling display: Ingenium, Canada’s umbrella organization for the Canada Science and Technology Museum, the Museum of Agriculture and the Aviation Museum, will create a travelling that explores individual stories that illustrate the journey of women in STEM. These stories include many successes, challenges, and failures, and illustrate how persistence, advocacy, and addressing systemic barriers have an impact on women’s experiences in STEM. This will travel nationally and includes a three-part international documentary series. Both of these initiatives will bring authentic stories about real women working in STEM to life and will be enhanced with some of the R2R videos, thereby adding another dimension to the exhibit.

3. Women Scientists in Science Centres: CASC is a national network of 50 science centres, science museums, planetariums and aquariums that bring real scientists into their facilities and outreach venues to talk about cutting edge science. With this program, potential speakers and activities will feature real women working in STEM with opportunities for interaction between the audience and the scientists. These live discussions will be complemented by R2R videos, thereby bringing experts from across the country into the local setting.

4. National Communications Campaign: The nation-wide communications campaign will highlight the work being featured above to a broad audience across the country through both traditional and digital media.

The three partner organizations currently collaborate on sharing information and showcasing the R2R videos through existing networks and connecting university researchers with Canada’s science centres. The organizations are well-suited for collaboration as all are passionate about increasing science literacy, showcasing Canadian innovations and increasing awareness of the advancements by Canadian researchers. Growing the talent pipeline is critical to Canada’s

economic prosperity. Together, we are building curious minds in the children and youth who populate our Science Centres and strengthening their self-confidence and knowledge base of the young adults who engage in R2R's social media channels.

The partners also share an interest in achieving the United Nations' Sustainable Development Goals (United Nations, 2016) with emphasis on the goals that are based in science, like climate change, the atmosphere and clean energy.

### **About the partners:**

The Canadian Association of Science Centres (CASC) creates synergy among Canada's science centres and science museums and provides a national platform for informal science engagement. The association represents more than 40 science centres, museums, aquariums and planetariums across Canada that attract 8 million visitors annually. Ingenium - Canada's Museums of Science and Innovation, is a member of CASC. Its mission is to engage Canadians and foster their STEM literacy.

Research2Reality (R2R) Research2Reality (R2R) shines a spotlight on world-class scientists engaged in innovative & leading-edge research in Canada. R2R celebrates the success and impact of Canadian research. By showcasing researchers who are shaping the frontiers of science they connect and engage audiences with world-class Canadian science and scientists. With over 120 videos published to date, R2R has captured cutting edge ideas on health and medicine, energy, the environment, space and quantum science.

Dr. Molly Shoichet, Canada Research Chair and Professor at the University of Toronto, is co-Founder of R2R, with feature film producer, Mike MacMillan. Dr. Shoichet is the recipient of many prestigious distinctions and the only person to be a Fellow of Canada's National Academies: Canadian Academy of Sciences of the Royal Society of Canada, Canadian Academy of Engineering, and Canadian Academy of Health Sciences. Dr. Shoichet won the L'Oréal-UNESCO For Women in Science Award for North America in 2015.

### **References**

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