



Youth Science Canada  
Sciences jeunesse Canada



**YOUTH SCIENCE CANADA**

# **2019-2020 ANNUAL REPORT**

*Fueling the curiosity of Canadian youth through STEM projects,  
adapting to the times.*

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## BOARD OF DIRECTORS

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**COVER PHOTO:** Members of Team Canada-ISEF 2015 hoist Raymond Wang, winner of the Gordon E. Moore Award—the \$75,000 top prize at the International Science and Engineering Fair (ISEF). Team Canada-ISEF 2015 member Nicole Ticea won one of the two \$50,000 runner-up awards making it Canada's best year ever. The event welcomes 1,800 finalists from 80 countries.  
*Cover photo by Intel/Kathy Wolfe.*

Youth Science Canada is a registered charity—Canada Revenue Agency, Reg. No. 888909645



# MESSAGE FROM THE EXECUTIVE DIRECTOR

In his classic dialogue, *The Republic*, Plato summed it up nicely: ‘Necessity is the mother of invention’. Midway into our 2019-2020 fiscal year, the global COVID-19 pandemic forced those who work in education to invest new energy into the virtual space. Through our strategic plan, we had already begun development of an online platform to support youth STEM projects; the pandemic accelerated the timeline and modified the requirements. Inspired by students and teachers from coast to coast to coast, and with the support of our sponsors, partners and national network, we pivoted quickly to enable inquisitive young Canadians to showcase their incredible work online.

For the first time since 1962, we made the difficult decision to cancel the Canada-Wide Science Fair but that is by no means the headline story for the year. Instead, we launched the YSC Online STEM Fair just 37 days after announcing it in late March. The program drew widespread interest—more than 600 projects from 67 regions, 11 provinces and territories; 10,000 site visits and more than 31,000 students registered by teachers and parents to use the student and teacher guides. The YSC Online STEM fair was selected as one of the 104 global finalists in the science engagement category for the Falling Walls Science Breakthroughs of the Year Award.

Despite unprecedented challenges, we continued to see the passion and commitment Canadian youth have for STEM and innovation. The dedication, creativity and enthusiasm students have demonstrated, as well as the countless parents and educators who support them, is nothing short of inspirational. We will be there in 2021 to continue encouraging them to invest in STEM inquiry and projects.

Behind the YSC Online STEM Fair and the achievements listed throughout this Annual Report is the unwavering support of leaders from our corporate and public sponsors—organizations like NSERC, Intact and Cenovus Energy, as well as those listed on page 11 that believe in our mission and the role of STEM education in the development of future leaders. Their dedication plays a vital role in the future of Canadian STEM and our country’s continued prosperity.

A sincere thank you to all of our partners, supporters and volunteers, as well as you, for taking an interest in this important mission. Who knows what exciting innovations and breakthroughs lie before us.

Reni Barlow, Executive Director

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# ABOUT YOUTH SCIENCE CANADA

Youth Science Canada exists to enable Canadian youth to investigate scientific questions and develop innovative solutions related to current and future challenges.

Our goal is to ensure that Canadian youth:

- Have the inspiration, resources and opportunities that enable them to complete STEM projects, regardless of cultural background, socioeconomic status or geographic location
- Are able to share their discoveries and innovations publicly at the local, national and international levels

We are grateful for the generous support of our partners in the private and public sectors, individual donors and the work of more than 8,000 volunteers.

We believe this is one of the most important causes in our world today: formative and affirmative STEM experiences for today's youth, leading to a better and more innovative tomorrow for all.

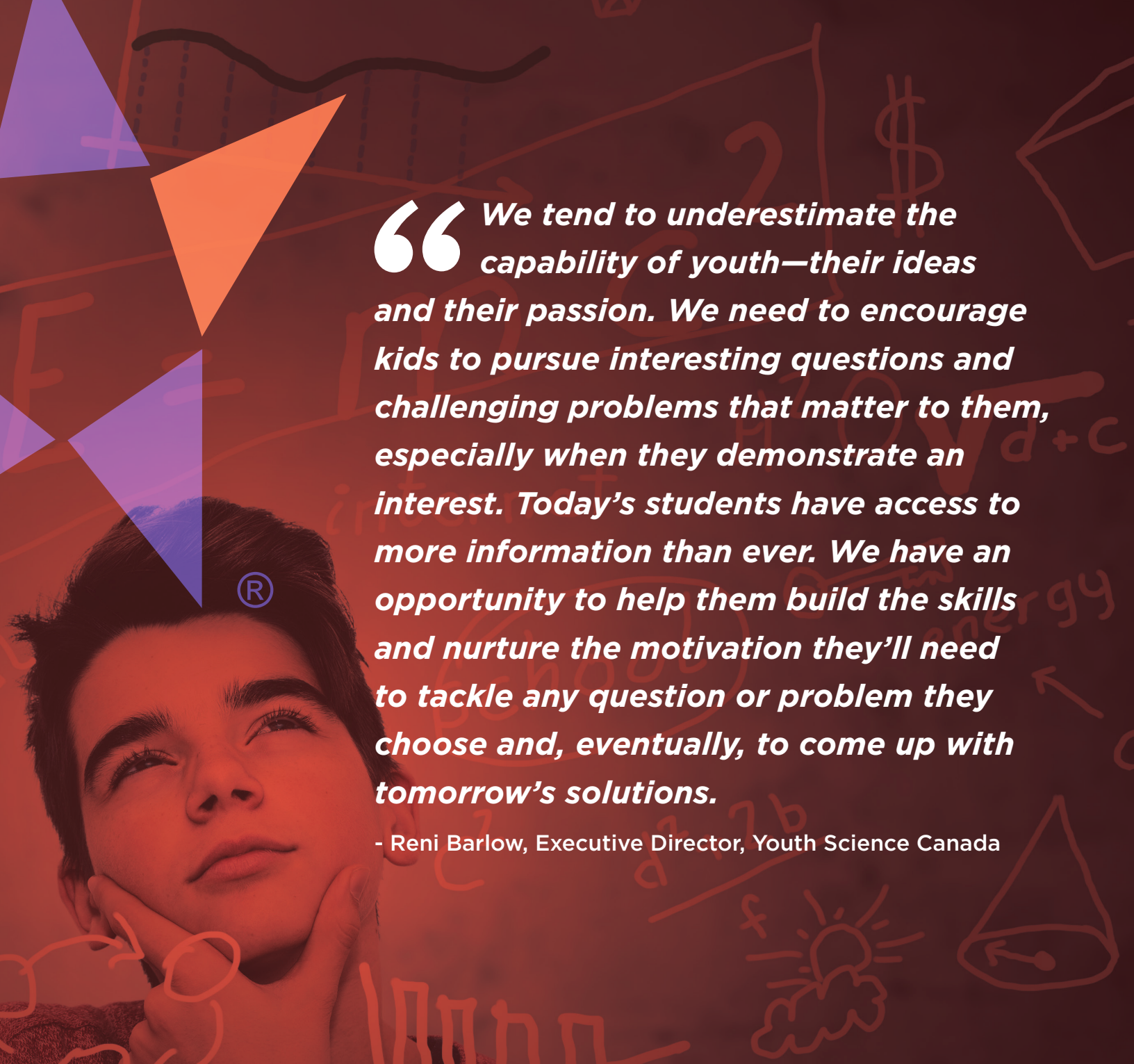
Youth Science Canada is accredited under Imagine Canada's national Standards program, a credential awarded to charities that demonstrate excellence in five key areas: board governance, financial accountability and transparency, fundraising, staff management and volunteer involvement.



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***“ We tend to underestimate the capability of youth—their ideas and their passion. We need to encourage kids to pursue interesting questions and challenging problems that matter to them, especially when they demonstrate an interest. Today’s students have access to more information than ever. We have an opportunity to help them build the skills and nurture the motivation they’ll need to tackle any question or problem they choose and, eventually, to come up with tomorrow’s solutions.***

- Reni Barlow, Executive Director, Youth Science Canada

## **OUR MISSION ...**

Youth Science Canada creates value for Canada by fueling the curiosity of Canadian youth through science, technology, engineering and mathematics (STEM) projects.

# PROGRAMS 2019-2020

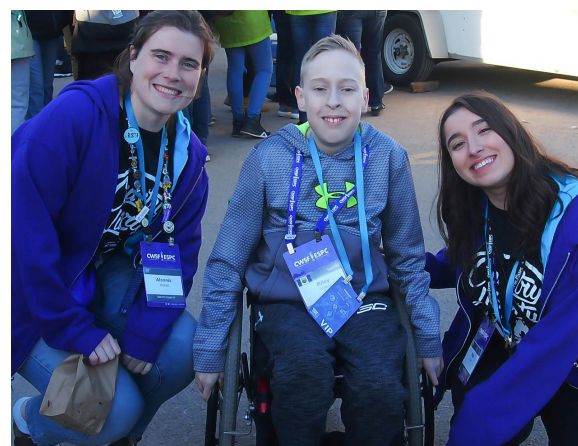
We're all born curious. Encouraging young people to harness their natural inquisitiveness through problem-solving and STEM projects is a great act of education and mentorship. It also helps them to develop essential skills and life-long interests that are worth investing in.

In 2019-2020, we continued challenging Canadian youth to engage their curiosity and transform their questions and ideas into projects that tackle current and future issues including agriculture, fisheries and food; digital technology; disease and illness; energy; environment and climate change; health and wellness; and natural resources.

The results are astounding.

**“** *The YSC Online STEM Fair was a great way for me to communicate my ideas and my project. By participating, I was able to look at other projects and look at new ideas and ask questions on topics I didn't know much about. Thank you for the great opportunity and guidance!*

*- Tanmay Shah, Calgary - 2020 Online STEM Fair participant*







# NATIONAL SCIENCE FAIR NETWORK

In 2019, approximately 500,000 K-12 students undertook a STEM project and, from among those, some 25,000 participated in regional science fairs. In 2020, despite COVID-19, the number of students doing projects was likely about the same, as most projects are completed before March.

With the introduction and expansion of COVID-19 restrictions, the vast majority of regional fairs were forced to cancel their 2020 events. A total of nine regional fairs went along as planned prior to the full implementation of restrictions; five were able to migrate their fairs to an online platform in 2020.

Without the opportunity to gather in person, the YSC Online STEM fair arrived just in time to give

Canadian youth and regional fair communities a new platform through which to gather. Many of our network members actively participated in and promoted the YSC Online STEM Fair among teachers, parents and students. Within a few weeks, a total of 638 projects from 67 YSC-affiliated regions in 11 provinces and territories were on display.

## By the numbers:

- 23 students from nine regions were selected to participate in CWSF 2020 (pre-cancellation)
- These students have been invited to participate in the 2021 Virtual CWSF (in addition to their region's 2021 finalists)



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## ONLINE STEM FAIR 2020

Prior to the pandemic, YSC had been working to develop a new online platform to support youth STEM projects, regional fairs and our programs. The plan included offering an online STEM project showcase in a later phase. The sudden restrictions brought on by COVID-19 motivated us to fast track the launch of the YSC Online STEM Fair harnessing the scalability and features of the ProjectBoard platform.

ProjectBoard offers a superb online space for remote, project-based learning and student engagement. In May 2020, YSC partnered with engineering.com to host the first ever Online STEM Fair. Students from all over Canada posted their projects and the online interaction between them was astonishing.

On May 5, we opened the site [projectboard.world/ysc](https://projectboard.world/ysc) for Canadian students in grades 7 to 12 (secondary 1 to Cégep in Quebec), to post their STEM project. Project challenge areas included: agriculture, fisheries and food; curiosity and ingenuity; digital technology; disease and illness, energy, environment and climate change, health and wellness; and natural resources. Each project featured a one-minute video, images and brief text segments explaining their work. On May 21, we opened the site for public viewing with 638 projects.

**“** *Thank you to everyone who organized this event for us, it made me very happy to be able to showcase my project and see what others were up to after my regional fair got cancelled. Thank you so much!*

*- Sophia Yang, BC, YSC Online STEM Fair participant*



## VIRTUAL STEM EXPO

Youth Science Canada's STEM Expo—the nation's largest youth STEM outreach and promotion event—also made the shift to a virtual format with a dedicated section for STEM-related companies, organizations, agencies and institutions to engage with students, teachers and the public. The event offered visitors a unique opportunity to learn more about today's STEM leaders and enhance their overall experience at the YSC Online STEM Fair. A total of 31 private and public organizations invested in a virtual exhibit.



### Highlights

- 269 virtual ribbons awarded to outstanding projects
- 31,000 students registered to use the YSC Online STEM Fair Student Guide for home learning
- 15,686 unique visitors to the YSC Online STEM Fair, as of June 30, 2020
- 8,273 project comments and 865 community chat messages, as of June 30, 2020

This quick pivot could not have been attained without the help of dedicated volunteers from our regional science fair organizations across the country and the support of generous partners including the Natural Sciences and Engineering Research Council of Canada (NSERC), Intact Foundation, Cenovus Energy, Rogers Communications, Youth Can Innovate and engineering.com.

## SMARTER SCIENCE



Smarter Science is a framework for teaching and learning K-12 science that emphasizes the investigative, creative and social nature of STEM. Our Smarter Science professional development workshops and resources offer a simple and effective way for teachers to successfully implement scientific inquiry and problem solving in their classroom—and prepare students for STEM projects.

In collaboration with schools, school boards/divisions and ministries/departments of education, Youth Science Canada has trained thousands of teachers, in every grade.

### Highlights

- Recent revisions to the K-12 STEM curriculum in New Brunswick will incorporate the YSC Smarter Science framework (expansion in September 2021)
- Workshops have been delivered in Alberta, British Columbia, Manitoba, New Brunswick, Ontario, Prince Edward Island, Quebec and Saskatchewan. YSC will continue to offer workshops and add provinces in 2021.



## TEAM CANADA

Each year, Youth Science Canada selects students and their STEM projects to represent the country at renowned international youth STEM competitions. With the generous support of Youth Can Innovate, a program of the Gwyn Morgan and Patricia Trottier Foundation, Youth Science Canada covers all registration, travel, accommodation and other costs for selected students. In addition, team members receive coaching to help them prepare for world-class judging and refine their presentation skills.

### Highlights

- Team Canada participated for the first time in the China Adolescents Science Technology Innovation Contest (CASTIC) in Macau from July 20-26, 2019, where **Kai Leong** and **Peter (Danmeng) Zhu** each won a gold medal and a special award.
- After winning top honours at the 2019 Canada-Wide Science Fair, **Bhavya Mohan** and **Manning Whitby** represented the country at the 31st European Union Contest for Young Scientists (EUCYS) in Sofia, Bulgaria, September 13-18, 2019. Manning won a special EUROfusion award.
- **Forty-five youth from across the country** embarked on a journey to Abu Dhabi, United Arab Emirates, September 22-28, 2019 to represent Canada at MILSET's Expo-Sciences International (ESI)—a STEM project showcase focused on encouraging scientific culture among youth.
- **Kai Leong** represented Canada at the ninth International Swiss Talent Forum (ISTF) in Nottwil, Switzerland, February 5-8, 2020.
- **Eight members of Team Canada-ISEF 2020** participated in the non-competitive Virtual Regeneron International Science and Engineering Fair in May.
- **Islay Graham** represented Canada at the virtual 2020 Broadcom MASTERS International event held in parallel with the Regeneron International Science and Engineering Fair.



## ALUMNI SPOTLIGHT

**Nicholas Johnson (CWSF 2011 Bronze Medalist)** was nominated as the first Black valedictorian in Princeton's 247-year history

**Catharine Bowman (CWSF 2013 Gold Medalist)** was featured in Calgary Avenue's "Top 40 under 40" as she works to complete her undergraduate degree in health sciences

Six CWSF alumni were among the 50 top students to receive the Schulich Leadership Scholarship – the largest STEM scholarship in Canada. The recipients include **Allison Guthrie (CWSF 2019)**, **Caleb Lammers (CWSF 2017)**, **Samuel Lefrançois (CWSF 2017 & 2019)**, **Cyril Mani (CWSF 2019)**, **Aidan Mundle (CWSF 2018)**, **Marin Schultz (CWSF 2014, 2015, 2016 & 2017)**

## OTHER HIGHLIGHTS

Nineteen students attended the STEM Entrepreneurship Virtual Bootcamp, August 11-16, organized by York University Bergeron's Entrepreneurs in Science and Technology (BEST) program, where they met with fellow entrepreneurs and experienced the process of transforming their project into a viable business.

## SPONSORS

### INNOVATORS \$100K+



### DEVELOPERS \$50K+



### EXPLORERS \$25K+



### MOTIVATORS \$10K+





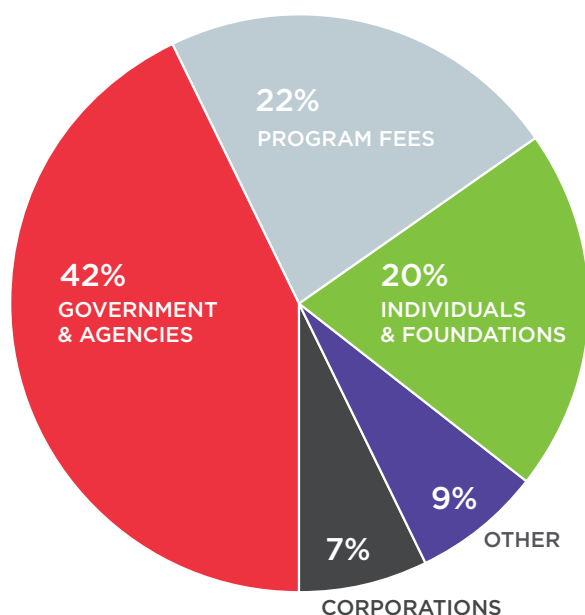
# FINANCIAL SUMMARY

In 2020, Youth Science Canada welcomed Cenovus Energy as a major sponsor, initially to support the CWSF 2020 awards ceremony and banquet. We are thrilled that all our major sponsors enthusiastically supported our transition to virtual operation and the YSC Online STEM Fair. All our CWSF special award sponsors deferred their 2020 support, indicating that they will return for CWSF 2021 – either physical or virtual – where judging will take place for all the usual awards.

The budget for Youth Science Canada in 2020 was \$832,000. This does not include the operating budgets of our 103 National Science Fair Network members.

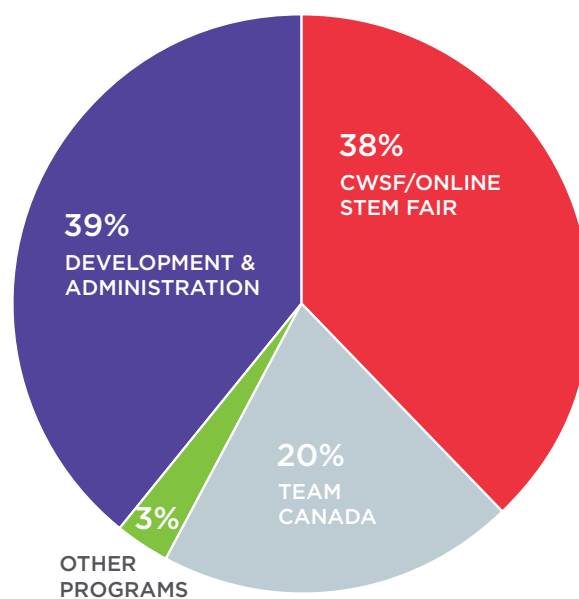
## REVENUE

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## EXPENSES

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# WHAT NEXT ...

## NATIONAL YOUTH STEM PROJECT DEVELOPMENT PROGRAM

Introduced last year, the National Youth STEM Project Development Program will ensure that all middle and high school students working on STEM projects are able to take their projects to the next level.

In the last part of 2019, we conducted an RFP process to select a development partner and awarded the contract to Relish Interactive. Supported by a three-year PromoScience grant from NSERC, the first phase included a new management portal to support youth STEM projects and events at the regional and national levels; a new YSC web site; and a new youth STEM project portal. We expect to launch all three in early 2021.

By June 2020 (the end of this reporting period), we made a commitment to hire our first Youth STEM Project Development director.

For the fourth consecutive year, in August we held the STEM Entrepreneur Bootcamp, generously supported by Rogers Communications and York University's Lassonde School of Engineering. A virtual edition this year, 10 students selected from the YSC Online STEM Fair spent the week examining their projects with a critical eye and learning what it takes to transform their novel ideas into successful businesses. The final pitch competition was won by Dermexplore—the team of Haarini Suntharalingam, Andrew Pun, Teagan Robinson, Ethan Li, and Fahad Faizi.

## CANADA-WIDE SCIENCE FAIR 2021

Youth Science Canada will host Canada-Wide Science Fair 2021 virtually.

Planned for May 17-21, the event will provide unique and novel opportunities for Youth Science Canada to engage participants, visiting students, teachers and the STEM community through an immersive and multi-faceted online experience. STEM Expo will also be returning to connect leaders like Cenovus Energy, Intact Financial Corporation, NSERC and Rogers Communications with students, their families, and members of the education and general community.

In contrast to the 2020 YSC Online STEM Fair, the 2021 Canada-Wide Science Fair will maintain its competitive nature by hosting the top projects selected at regional fairs across Canada. Each project will feature a synopsis and video that will be visible to the general public as well as the 250 STEM academics and professionals who will serve as judges.

**“ These kids are doing something so amazing; the whole world should know about it. I am thrilled to have them on my show anytime!**

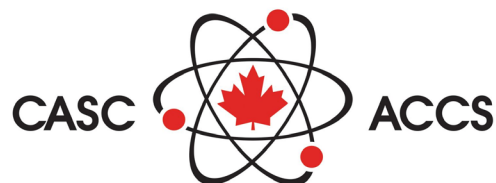
**- Dahlia Kurtz**  
**Host of the Goods with Dahlia Kurtz**



# PROUD MEMBER OF ...

## CANADIAN ASSOCIATION OF SCIENCE CENTRES

CASC is a national platform for Canada's Science Centres/ Museums and informal science engagement. Science Centres/Museums have relevance to all sectors of the population and have become important meeting places for science and society. Research shows that science centres/ Museums demystify science, conveying its beauty, showing its necessity and making it accessible to the general public. Free-choice science learning is the hallmark of the science centre offering.



## IMAGINE CANADA

Youth Science Canada (YSC) has been re-accredited under Imagine Canada's Standards program for five more years. YSC remains part of a community of more than 245 accredited organizations in Canada, all of which are dedicated to operational excellence and setting the standard for corporate philanthropy. The program's goals are to increase organizational excellence and transparency in these areas and to strengthen public trust in individual organizations and the nonprofit sector.



## MILSET

The International Movement for Leisure Activities in Science and Technology (MILSET—Mouvement International pour le Loisir Scientifique et Technique) is a non-governmental, non-profit and politically independent network of youth STEAM organizations, which aims to develop scientific culture among young people through the organization of programs, including science fairs, science camps, congresses and other high quality activities.





# YOUTH SCIENCE CANADA— IN THE NEWS

Youth Science Canada works diligently throughout the year to tell its story through media at the national, regional and local levels.

We strive to reach Canadian students, members of the education community, government and the public through traditional and social media. Together, we're getting the word out that STEM is important and a priority for our education systems and the leaders of tomorrow. In the past fiscal year, the volume of earned media has reached new levels:

- Minimum reach of 24 million impressions
- Minimum of 185 units of coverage
- Minimum of 61 interviews

## Some examples:



Breakfast Television  
(May 14, 2020—  
Reni Barlow interview)  
**842,000 impressions**



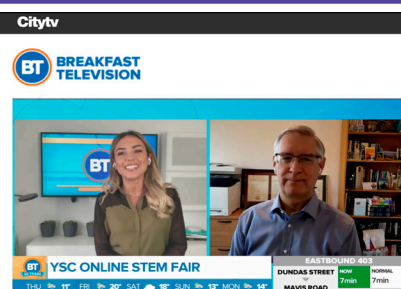
Global News: Making  
a difference (July 29,  
2019—Manning Whitby  
interview)  
**800,000 impressions**



CBC Ottawa: Our  
Ottawa (September 6,  
2019—Bhavya Mohan  
interview)  
**521,000 impressions**



OwlKids (Feb. 20,  
2020—Sam Stuart  
interview)  
**15,000 impressions**





# Youth Science Canada Sciences jeunesse Canada



As a charitable organization registered with Canada Revenue Agency, Reg. No. 888909645, Youth Science Canada counts on the financial support of private and public organizations, foundations and other generous Canadians interested in funding STEM and encouraging the curiosity of Canadian youth. To make a donation, bequest or other gift, please email [info@youthscience.ca](mailto:info@youthscience.ca)

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