



Annual Report 2024

Developing Canada's capacity for high-quality research in science, technology and engineering since 1974

The diligence of our community's young researchers is astonishing! Many young people work very hard to put their best foot forward, and my goodness, do they ever! Please continue your support.

Every year we conduct an environmental education program for our junior exhibitors. The notion is to introduce our community's young researchers to environmental topics by exploring something they won't experience in school. This year our theme was *Water Flows Through Our Community*. They travelled to 3 'water' sites. The focus was the Montgomery Creek Restoration Project. They learned about hydrological engineering.

Back at Bingeman's, we directed our multi-year introduction to the UN Sustainable Development Goals on ways in which water supports development.

Meanwhile, our secondary school exhibitors were introduced to some of the possibilities for further study at UWaterloo. We visit a university each year.

Upon their return to Bingeman's, they were treated to an update on new ideas in physics, presented by Dr. Pope of the Perimeter Institute.

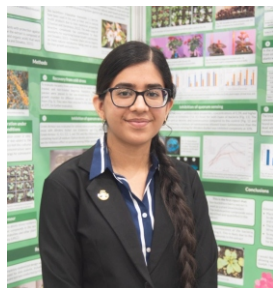
This summer Ashish and Anupam Chettimada were accepted for the London International Youth Science Fortnight, but Ashish received a generous award from the Masason Foundation that interceded. Ashish is the third former WWSEF exhibitor to be accepted.

In May, nine exceptional youth and two WWSEF members travelled to Ottawa for the 61st Canada-Wide Science Fair. All finalists received university entrance scholarship offers. See inside.



A highlight of the Canada-Wide Science Fair was being hosted in the House of Commons by the Honourable Bardish Chagger.

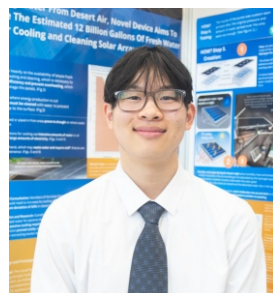
Canada-Wide Science Fair 2024 - Ottawa



Roocha Shukla - *Green-Armour: A Novel Plant Biostimulant*

Roocha developed and tested sea buckthorn berry extract to enhance plant growth and protection from cold stress. The extract also showed antimicrobial properties and helped control aphids. The application would be beneficial in both fields or greenhouses.

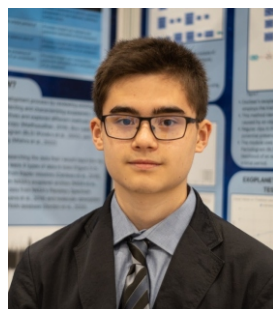
Senior Excellence Award - GOLD, Challenge Award: Agriculture, Fisheries, and Food, Youth Can Innovate Award \$1000, Youth Can Innovate Grand Award \$7000



Casper Dong - *Novel Cooling and Cleaning of Solar Panels Utilizing Hydrogels*

Casper found a novel way to collect water vapor in a desert environment. Water is needed to clean and cool solar arrays in the desert where water is a scarce commodity.

Senior Excellence Award - GOLD, Challenge Award Natural Resources, Special Award: S.M. Blair Family Foundation for patentable innovation.



Tristan Butcher - *ExoSeer: A Comprehensive Algorithm for Exoplanet Analysis*

Tristan created an algorithm to analyze properties of exoplanets – detection, orbit period and detection of molecules in the atmosphere. Techniques included machine learning to interpret a large variety of different data such as light curves and spectral data.

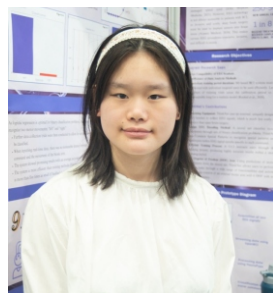
Senior Excellence Award – GOLD



Ameila Pletsch - *Life on Mars: Germinating Edible Plants in Martian Regolith*

Amelia tested germination rates of vegetables in several mixtures of simulated Martian regolith and black earth. On its own, regolith did not support plant growth. Hence colonization of Mars will need something if future colonists are going to grow their own food.

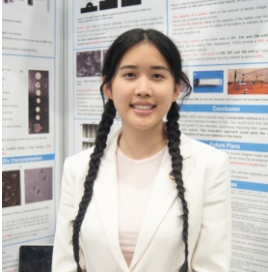
Junior Excellence Award - SILVER, Challenge Award: Aerospace



Abigail Chan - *Decoding Brain Waves using Electroencephalography (EEG)*

Abigail investigated using electroencephalogram waves (EEG) and a brain computer interface to provide control to a six-degrees of freedom bionic arm. She used a small training dataset to develop a system that was affordable, accessible and non-invasive.

Intermediate Excellence Award - SILVER, Youth Can Innovate Award \$750



Anna Chen - *Graphene Quantum Dots for Dendrite Free Zinc-Ion Batteries*

Anna's project developed graphene quantum dots, tiny particles, and coated them onto the anodes of zinc-ion batteries. The dots inhibited the growth of zinc dendrites, improving battery performance.

Senior Excellence Award - BRONZE



Ayesha Abubakr - *AnaLung: A Novel Approach to Lung Cancer Diagnosis*

Ayesha's project was about the development and testing of a low-cost, portable, non-invasive device capable of early detection of lung cancer. It is built on an alkane-based chemiresistor that reacts with harmful gases in the breath of lung cancer patients.

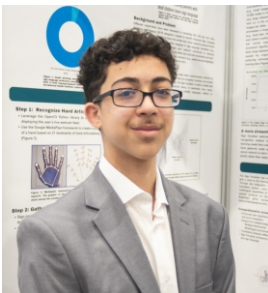
Intermediate Excellence Award – SILVER



Ananth Arunkumar – *RipeNet*

Ananth's project provides a useful tool to the millions of people with colour vision deficiency (CVD). Specifically, people with CVD can have difficulty determining if fruit is ripe. A single image from a cell phone camera can help determine the fruit's true colour, and hence, ripeness.

Junior Excellence Award – SILVER



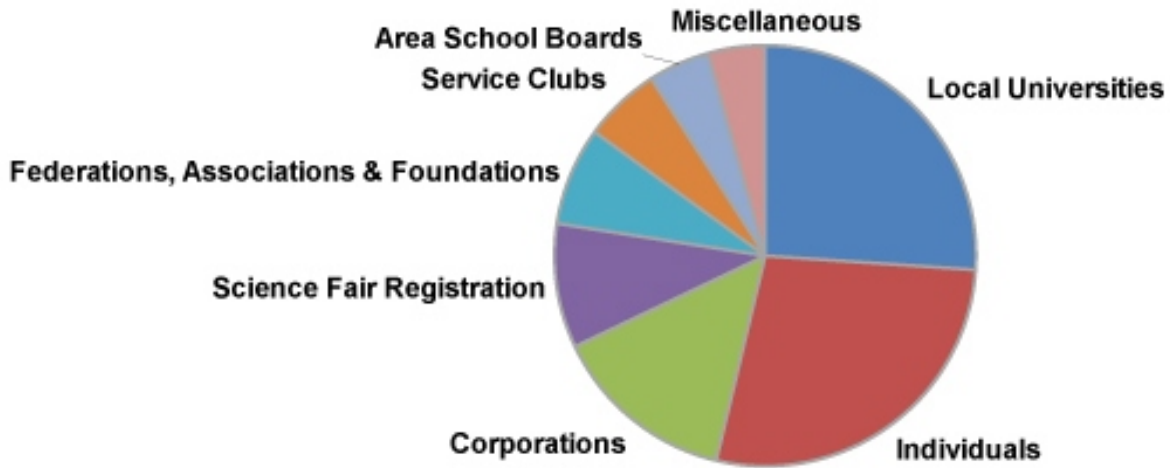
Sammy Hawari - *Sign Vocalizer: Elevating Non-verbal Communication*

Sammy's project used AI to recognize, translate and vocalize American Sign Language based on lettering. This innovation can significantly improve inclusion and communication for people with hearing and speaking impairments.

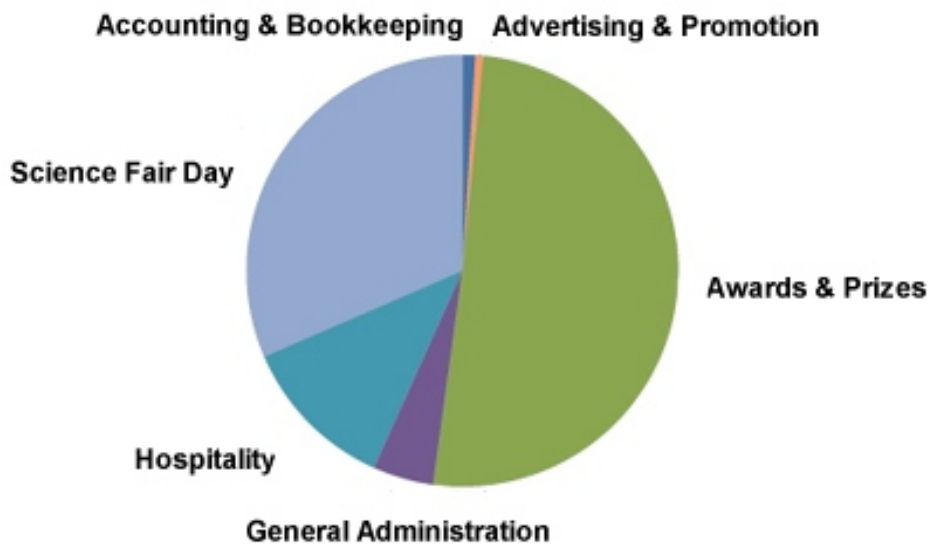
Intermediate Excellence Award - BRONZE

2024 Financials

2024 REVENUE



2024 EXPENSES



Distinguished Service Award Winners

There are about 100 regional science fairs in Canada, involving about 8000 volunteers as committee members, judges, chaperones and more. Each year, Youth Science Canada awards 8 to 10 of them with their Distinguished Service Award for long and impactful service to the young researchers. This year, Lois Anne Peterson and Wendy Shaw received this award. They have both been involved with WWSEF for about 40 years, and both have taken youth to the Canada-Wide Science Fair multiple times. Wendy and Lois are the 12th and 13th WWSEF members to receive this recognition.