

OFFICIAL PROGRAM

# BASEF 2019

Presented by



ArcelorMittal  
DOFASCO | HAMILTON

59th Annual Bay Area  
Science & Engineering Fair  
@Mohawk College  
March 28 – April 2, 2019

$$r = ae^{b\theta}$$

$$x = r \cos \theta = a \cos \theta e^{b\theta}$$

$$y = r \sin \theta = a \sin \theta e^{b\theta}$$

Diamond Sponsors  
Mohawk College  
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Platinum Sponsors  
HAND  
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**BASEF**

Big ideas.  
Infinite possibilities.



# Mohawk College Proud Host of the Annual Bay Area Science and Engineering Fair



**Welcome to the  
2019 Bay Area  
Science and  
Engineering Fair.**

Congratulations to all of the students who have worked hard to be part of this year's Bay Area Science and Engineering Fair. This is one of Canada's largest and longest running science and engineering fairs. Many students who've competed in this fair have gone on to win national and international competitions and are now making their mark in the world.

I also want to commend the sponsors, judges, volunteers, parents and teachers who make BASEF such a resounding success and showcase for remarkable young talent. Your support and mentorship encourages students to dream bigger, aim higher and exceed all expectations.

Mohawk is committed to providing students with an excellent education and a great college experience.

As a college with a reputation for academic excellence in health and technology, we are proud to once again host the Bay Area Science and Engineering Fair.

Congratulations again to all of the students participating in this year's fair. You have represented your schools well and you should be very proud of what you've accomplished.

Good luck!



Ron J. McKerlie  
President,  
Mohawk College

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Cover image is the Spiral Aloe. See, [https://commons.wikimedia.org/wiki/File:Spiral\\_Aloe\\_from\\_above.JPG](https://commons.wikimedia.org/wiki/File:Spiral_Aloe_from_above.JPG)

The curve overlaying the image is a Logarithmic Spiral, often found in nature. See [https://en.wikipedia.org/wiki/Logarithmic\\_spiral](https://en.wikipedia.org/wiki/Logarithmic_spiral) for examples of natural logarithmic spirals.

## **BASEF2019 Official Program printed courtesy of ArcelorMittal Dofasco G.P.**

Funding for BASEF2019 presented by ArcelorMittal Dofasco is donated by ArcelorMittal Dofasco's Corporate Community Investment Fund. The views and opinions expressed in this publication do not necessarily reflect those of ArcelorMittal Dofasco G.P.

Bay Area Science and Engineering Fair  
c/o Mohawk College  
135 Fennell Ave West, Room F175  
Hamilton, Ontario L9C 0E5

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web site: [www.basef.ca](http://www.basef.ca)

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**BASEF OFFICE PHONE NUMBER**  
**(905) 575-1212 ext 4364**  
Noon March 28 to 1:00 pm March 30  
ONLY

## **A MESSAGE FROM THE 2019 BASEF CO-CHAIRS**

Congratulations to all the participants competing at the 2019 Bay Area Science and Engineering Fair, presented by ArcelorMittal Dofasco, BASEF's 59th year of operation. This is an opportunity for students to showcase their projects, ideas, dedication and tenacity and to discover themselves as promising scientists and engineers.



What does our motto "Big Ideas... Infinite Possibilities" mean to the students, and to the judges, parents, sponsors, and visitors to our fair? Since BASEF's inception in the 1960's, the scientific community has witnessed the moon landing and the discovery of the merger in gravitational waves and electromagnetic radiation; the cloning of Dolly the sheep and the first human face transplant; the invention of the global positioning system and the invention and production of the first all-electric car; the invention of barcode technology; and the first experimental evidence of the Big Bang theory ... just to name a few. What discoveries will be made in the next 59 years that our students could be a part of?

We are grateful for the essential support from our many community sponsors and benefactors, and supporters of special student awards that are designed to promote additional interest and participation in the Fair.



ArcelorMittal Dofasco has returned for their thirteenth year as BASEF's Presenting Sponsor. We are thankful for their generous funding and ongoing commitment to science, engineering, technology and mathematics. BASEF2019 presented by ArcelorMittal Dofasco would not be possible without this support.

Our two Diamond Level sponsors are also key to the success of this year's Fair:

- Primary Fluid Systems Inc. has sponsored BASEF at the Diamond level for many years. Primary Fluid Systems Merit Award Certificates will be given to all Gold, Silver, and Bronze merit award winners.
- Mohawk College is again hosting BASEF in its state of the art David Braley Athletic and Recreation Centre. On behalf of the Organizing Committee, we extend a special thank you to Mohawk College and its staff and students, who are very generous with their time, resources and enthusiastic support.

Together with over 50 other sponsors and benefactors, and over 50 Special Awards donors, our premier sponsors make it possible for BASEF's students to showcase their innovations and discoveries and inspire young people to change the world through science, technology, engineering and mathematics.

This year the total value of merit awards, special awards, scholarships and trip awards is expected to top \$300,000.

BASEF is a volunteer-driven registered charity. We acknowledge with thanks the huge efforts of this year's Organizing Committee members who have dedicated countless hours toward making BASEF2019 a success. Our thanks also to the over 300 volunteer Merit and Special Awards Judges and to the more than 100 other volunteers who help run registration, safety, and other fair activities.

Be sure to attend the BASEF awards ceremony on Tuesday, April 2nd 7:00 pm in the McIntyre Performing Arts Centre at Mohawk College to celebrate our students' successes.

We hope this year's student exhibitors meet new friends, enjoy their experience, and capture the science fair passion that leads to new research and the discoveries of tomorrow. We congratulate the participants on a job well done and wish them the best of luck in their future endeavours.

**Dan Bowman and Ingrid Munson/Scully**



## **BASEF ORGANIZING COMMITTEE**

### **MOHAWK COLLEGE, 2019 HOST**

President, Ron McKerlie  
V.P. Academic, Paul Armstrong

### **CO-CHAIRS**

Dan Bowman and Ingrid Munson/Scully

### **FINANCE**

Treasurer: Eleanor O'Flynn, C.P.A., C.A.  
Susan Olynyk

### **REGISTRAR**

George Geczy (Chair), Marc Trotta, Maria Trotta

### **JUDGE IN CHIEF**

Donna Stack-Durward,  
Assistants: George Geczy, Neil Manmohan

### **SCIENTIFIC REVIEW**

Donna Stack-Durward (Judge in Chief), Dan Bowman (Co-Chair), George Geczy (Co-Chair), Dana Bee (Co-Chair), Neil Manmohan (Co-Chair), David Reed (Co-Chair), Debbie Ciotti-Bowman RN, Dr. Robert Brown, Allison Boyd, Marc Trotta

### **SPECIAL AWARDS COORDINATION**

Roslynn Crawford (Chair), Jim Casey, Eleanor O'Flynn

### **SAFETY**

Neil Manmohan

### **CANADA-WIDE & INTERNATIONAL CHAPERONES**

CWSF: Dan Bowman (Lead), George Geczy, Ingrid Munson/Scully, Donna Stack-Durward  
IISF: Dana Bee (Lead), David Reed

### **INFORMATION SYSTEMS**

Gerard Chiasson, George Geczy

### **BASEF BURSARY PROGRAM**

Linda Hazelden (Chair), Dan Bowman, George Geczy, Ingrid Munson/Scully, Eleanor O'Flynn

### **STUDENT ADVISORS**

Arielle Ainabe, Karim Faltas, Anika Gupta, Anne Jing

### **FUNDRAISING**

Sue Olynyk (Chair), Mike McNally, Renato De Tina

### **STUDENT ACTIVITIES**

Kevin Hunt (Chair), Daniel Hoeksema

### **PHOTOGRAPHY & GRAPHICS**

Wayne Bowdish

### **MARKETING AND PUBLICITY**

Roslynn Crawford (Chair), Christopher Ainabe, Mark Mindorff, Meg Miller, Wayne Bowdish

### **MOHAWK COLLEGE LIAISON**

Jamie Bennett

### **MOHAWK STUDENT ASSOCIATION LIAISON**

Jessica Martin

### **DAVID BRALEY ATHLETIC CENTRE LIAISON**

Kat Clewley

### **SPONSOR REPRESENTATIVE**

Sandy Walker

### **FACILITIES**

David Reed, Dana Bee

### **CHAMPIONS OF BASEF**

Daxon Flynn, Linda Hazelden, Ola Lunyk Child, Ingrid Munson/Scully

### **OUTREACH**

Mark Mindorff (Chair), Roslynn Crawford, George Geczy, Linda Hazelden, Michelle Lafontaine

### **VOLUNTEER RECRUITMENT AND COORDINATION**

Dana Bee, Michelle Lafontaine, Meg Miller

### **OFFICIAL FAIR PROGRAM**

Katie Cummings (Chair), Roslynn Crawford, Eleanor O'Flynn, Sue Olynyk

### **FOOD PLANNING**

Dan Prowse

### **ALUMNI PROGRAM**

Denise Brennan-Rieder

### **DISTRICT SCHOOL BOARD ADVISORS**

BHNCDSB: Jasmine Vorkapic  
GEDSB: Valerie Slawich  
HCDSB: Rachel Muvrin  
HDSB: Ingrid Munson/Scully  
HWCDSD: Judith Eaton  
HWDSB: Sandra Chow  
Six Nations (INAC): Alex Randall

### **MEMBERS AT LARGE**

Varsha Jayasankar, Amanda Kako, Andrea Stevenson, Lu Wang

## **GENERAL FUNDING SPONSORS – 2019**

### **PRESENTING \$25,000 +**

ArcelorMittal Dofasco

### **DIAMOND \$10,000 +**

Mohawk College

Primary Fluid Systems

### **PLATINUM \$5,000 +**

HAND Association of Sewer, Watermain  
and Road Contractors, operating as the  
Hamilton & District Heavy Construction Ass'n

Imperial Oil Nanticoke Refinery

Masters Insurance

McMaster University

The Hamilton Spectator

### **GOLD \$2,500 +**

Alectra Utilities

Bay Area Health Trust

Bennett Mechanical Installations

Interprovincial Corrosion Control Co.

Lifetouch

McMaster Innovation Park

Taylor Leibow Accountants & Advisors

### **SILVER \$1,000+**

Appleby College

Canadian Linen & Uniform Service

City of Hamilton Economic Development Dept.

Halton District School Board

Hamilton-Wentworth District School Board

Hamilton-Wentworth Catholic DSB

Hillfield Strathallan College

King- KPM Industries

Nikola Tesla Educational Corporation

NSERC

Ontario Power Generation

Posner Metals

### **BRONZE \$500 +**

AT McLaren

D.E.N.M. Engineering

Halton Catholic District School Board

Hamilton Amateur Astronomers

Hamilton Community Awareness and Emergency  
Response

Hamilton Chamber of Commerce

Hamilton Police Senior Officers Association

Judy Marsales Real Estate

Lanhack Consultants

Optimist Club of Stoney Creek

Rotary Club of Waterdown

Society of Tribologists & Lubrication Engineers

Viziya

### **FRIENDS \$250+**

McMaster University Department of Materials Science  
and Engineering

Conservation Halton

Electrical Construction Association of Hamilton

Hamilton Police Retirees Association

NewAE Technology

Talkit.ca

**hamilton**  
**chamber of commerce**  
your voice in business

Congratulations to all the  
**Student Exhibitors at BASEF**



[hamiltonchamber.ca](http://hamiltonchamber.ca)

905-522-1151

120 King St. West  
Plaza Level  
Hamilton, Ontario  
L8P 4V2





## **BENEFACTORS – 2019**

Through personal donations, individuals can support BASEF.  
BASEF Benefactor Levels celebrate famous Canadian scientists and engineers.



### **Banting and Best Benefactors (\$1,000+)**

*Sir Frederick Banting and Dr. Charles Best were the co-discoverers of insulin used in the treatment of diabetes. In 1923, Dr. Banting was awarded the Nobel Prize in Medicine.*

Mike & Sue McNally  
David Walker

Michael Taylor

### **Bondar Benefactors (\$500+)**

*Dr. Roberta Bondar was the first Canadian woman to have flown in space as an international astronaut on board the Space Shuttle Discovery. Dr. Bondar is a trained physician, scientist, astronaut and photographer.*

Cathy & Steve Hayman

Susan & Peter Olynyk

### **Polanyi Benefactors (\$200+)**

*John Charles Polanyi won the 1986 Nobel Prize for chemistry for using chemiluminescence of molecules to explain energy relationships in chemical reactions.*

Helen Barton  
Kathy & Steven Brent  
Renato & Enza DeTina  
Dr. Nicola Simmons

Dan & Debbie Bowman  
Roslynne & Tom Crawford  
Eleanor & John O'Flynn

### **McGill Benefactors (\$50+)**

*Elsie McGill was Canada's first woman graduate in electrical engineering. She also held a master's degree in aeronautical engineering. She is considered the first woman to be a designer of airplanes. During World War II her primary responsibility was the production of the Hawker Hurricane fighter aircraft.*

Jim Casey  
Jo-Anne Connery  
Jason Legg

Linda Millar  
Brandi Kehoe

*In addition, BASEF has received donations from a number of individuals who wish to remain anonymous.*



## BASEF'S ENDOWMENT FUND

### THE BAY AREA SCIENCE AND ENGINEERING FAIR FUND



In June 2012, BASEF established an endowment fund with the Hamilton Community Foundation (HCF) under their Agency Endowment Program. Contributions are invested by HCF and the income earned, net of management fees, is made available for BASEF to support BASEF's mission and goals. As at August 31, 2018, the endowment fund had grown to just over \$38,000. In October 2018, BASEF received a distribution from the fund in the amount of \$1,434.

**Please consider the BASEF Endowment Fund as part of your charitable giving. You may send a cheque designated for the BASEF Endowment Fund to BASEF, or send your donation directly to the HCF.**



# BAY AREA HEALTH TRUST

293 Wellington Street North, Unit 106  
Hamilton, Ontario L8L 8E7 Canada  
Tel. 905-521-2248  
[bayareahealthtrust.com](http://bayareahealthtrust.com)



At the intersection of **health, life sciences** and **business**, Bay Area Health Trust is an example of a successful partnership between hospitals and the for-profit private sector. Leveraging its unique affiliation with Hamilton Health Sciences, McMaster University and other members of the Synapse Life Science Consortium, Bay Area Health Trust promotes **entrepreneurship** and invests in **growth oriented** businesses to support patient care.



**BENEFICIARIES:**

 Hamilton Health Sciences

 Hamilton Health Sciences Foundation

 McMaster University

**MEMBER OF:**

 **synapse**

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## **BASEF2019 SCHEDULE OF EVENTS**

**All at Mohawk College Fennell Campus**

Gym - David Braley Athletic Centre (DBARC)

Theatre – McIntyre Performing Arts Centre



### **Thursday, March 28 – On-Site Project Setup/Safety Check**

4:00 – 8:00 pm	Registration, set-up and safety checks	Gym
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### **Friday, March 29 - Student Activity Morning & Judging of Projects**

8:30 – 9:30 am	BASEF Student Drop Off - Proceed to Main Auditorium <i>Notes: Theatre Doors Open at 8:30 am, some schools may be arriving up to 9:30 am based on busing schedules</i>	Theatre
9:00 – 9:10 am	Kevin Hunt, BASEF Activity Day Coordinator Welcome from Mohawk College -President Ron McKerlie	Theatre
9:10 – 9:30 am	Bats and Conservation BRIGHT Eco Team – Kathy Zadvorny	Theatre
9:30 – 9:45 am	Eco Pen, The Forge at McMaster Innovation Park Ali Awais Amin and Rucha Kolte – ecopencanada.com	Theatre
9:45 – 10:25 am	Return to Astronomy, Hamilton Amateur Astronomers John Gauvreau – amateurastronomy.org	Theatre
10:25 – 11:10 am	Tesla and the DeCew Power Station Nikola Tesla Educational Corporation Dr.Colin Campbell, Vic Djurdjevic	Theatre
11:10 – Noon	McMaster University Chemistry Show Professor Randy Dumont, Paul Harrison, Gillian Goward	Theatre
Noon – 1:00 pm	BASEF students to bring their own bagged lunches. Students are not permitted to go elsewhere for lunch and must remain at their projects in the gym. There will be <b>no food or drink</b> in the theatre.	Gym
1:00 – 4:00 pm	Judging interviews for BASEF students (BASEF participants must remain at their projects during judging)	Gym

### **Saturday, March 30 - Public Viewing**

9:00 am – Noon	Public Viewing Projects are to remain in place until end of Public Viewing	Gym
Noon – 12:15 pm	Project take-down. All projects <b>must</b> be removed by 12:15pm	Gym

### **Tuesday, April 2 - Awards Ceremony**

5:15 – 6:30 pm	Champions of BASEF Dinner	By Invitation
6:00 pm	Awards Ceremony seating opens	Theatre
7:00 - 9:30 pm	Awards Ceremony	Theatre
9:30 - 10:00 pm	Meeting with chaperones for trip winners and their parents	Theatre

## **EMERGENCY PROCEDURES WHILE AT MOHAWK COLLEGE**

### **Emergency Situations:**

Main Security Desk	Dial 55 on College phones or press the Emergency button on Bell pay phones, or press the button on the intercom
Police/Fire/Ambulance	Dial 9-911 on College phone or 911 on Bell pay phones

### **Non-Emergency Situations:**

Main Security Desk	Dial 2003 on College phones Dial 905-575-2003 or 905-575-2316 on other phones
--------------------	--

### **Emergency Evacuation**

(Reference Procedure ERP 805)

#### **Upon Discovery of Fire:**

- Leave fire area immediately and close doors behind you
- Pull the nearest fire alarm
- Evacuate the building via the nearest exit
- Call Security at 55, or call 9-911 on college phones or 911 on Bell pay phones

#### **Upon Activation of the Fire Alarm:**

- Go to the nearest exit and leave the building
- Close doors behind you

#### **Note:**

- Do not use elevators or chair lifts
- Use an alternative exit if you encounter smoke
- If a person with a disability cannot be evacuated, assist them to a fire rated room such as an office or classroom that is away from smoke or fire, as close as possible to an exit. Preference should be given to rooms with two exits and a telephone or intercom.
- Notify Security and/or the Fire Department of their specific location.
- Do not re-enter the building until authorized by the Fire Department, Security, Staff or Fire Wardens

### **Emergency Lockdown**

(Reference Procedure ERP 809)

#### **Threat Inside the Building:**

Upon Hearing the Voice Message Advising Lockdown:

- Exit all Common and Open Areas (including Library and Cafeteria):
  - Disperse... do not congregate in open areas
  - Exit the building or go to a room or area where you feel safe to enter
- If Exit is Not Possible:
  - Enter or stay in a room or area where you feel safe
  - Close and secure doors if possible
  - Turn out lights
  - Cover windows and/or stay away from windows
  - Silence cell phones/use text messaging only
  - Stay alert, quiet and out of sight
  - Disregard fire alarm signal unless in immediate danger
  - Do Not Exit Until "All Clear" Signal is heard

End of Lockdown:

- A recorded announcement of an "all clear" signal will be given to indicate the end of lockdown. Emergency Officials or College Security will conduct a door-to-door confirmation of this announcement.

#### **Threat Outside the Building:**

Hold and Secure:

- The threat is outside and everyone remains inside the building.
- Notification will be communicated by a voice message.

For more detailed information, please visit

<https://www.mohawkcollege.ca/about-mohawk/security-and-emergency-management/emergency-procedures>

**Parents:** You must pay for parking at the **Pay To Park** \$ machines



## **THE PARENT PAGES (OR HOW TO SURVIVE SCIENCE FAIR!)**

### ***Congratulations on your decision to support your child's participation in BASEF!***

All BASEF student participants are rewarded with an enriching experience, participating both in Activity Morning and Judging. Along with a certificate of participation, students will come away with the experience of meeting new people - both judges and other top students.

BASEF awards cash prizes, awards and scholarships. The top winners have the chance to win an expense paid trip to either the national (CWSF) or international science fair (IISF).

### **Location of Events: Mohawk College**

**Science Fair projects will be located in the David Braley Athletic and Recreation Centre (DBARC) gym.**

**Activity Morning and the BASEF Awards Ceremony will be in the McIntyre Performing Arts Centre.**

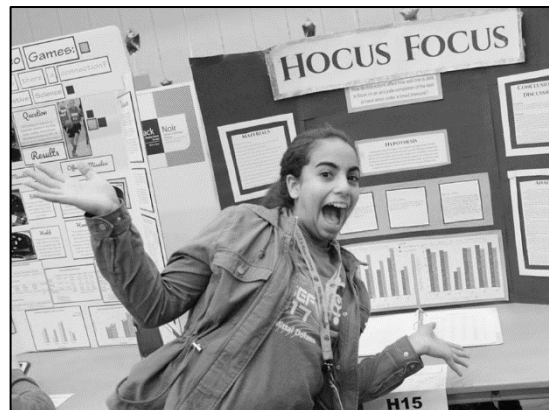
**Any changes or revisions to the plan will be posted on the BASEF website and will be announced at the fair.**

See the campus map, included on the previous page of this program.

### **Miscellaneous Information**

**Dress code:** We suggest neat and casual, with the emphasis on neat.

**Food Allergies and Medical Issues:** We ask that you remind the BASEF volunteers at the Registration Desk and throughout the fair of any food allergies or special medical issues that pertain to your children. BASEF should be considered a public facility regarding food allergies.



## **THE PARENT PAGES (OR HOW TO SURVIVE SCIENCE FAIR!)** (Continued)

### **Day by Day - Parent Responsibilities**

#### **Day 1 – Registration and Set-up, Thursday, March 28, 2019 @ 4:00 p.m. - 8:00 p.m.**

**Project set up** for the fair occurs **ONLY** on **Thursday, March 28, 2018** from **4:00 – 8:00 p.m.** at **Mohawk College DBARC Athletic Centre. Parking in Lot P7 is complimentary for an hour. Park, then carry your child's project into the Gym.** Projects not set up by 8:00 pm will be deemed as "no shows" and deleted from the judging process. Your child will visit a registration desk and find out their assigned display area in the gym. They will have their photograph taken for an ID badge and receive their goody bag. After the project is set up, one of our many safety inspectors will ensure that the project meets all safety guidelines. **Students cannot leave until their project has passed their safety check.** The registration process and project set-up usually take less than an hour.

#### **Day 2 - Student Activity Morning, Friday, March 29, 2019 @ 8:30 a.m. – 12:00 noon**

Students will be welcomed by volunteers at the McIntyre Performing Arts Centre beginning at 8:30 am. The Activity Morning event starts at 9:00 am.

#### **Day 2 - Lunch - Friday, March 29, 2019 @ 12:00 noon - 12:45 p.m.**

BASEF student exhibitors will be escorted from the McIntyre Theatre to the DBARC gym. **Students must bring their own lunch** and eat in the gym. There are no cafeteria facilities available to the students. Students will **not** be allowed to buy food from any of the College vendors.

#### **Day 2 – Afternoon Judging, Friday, March 29, 2019 @ 12:45 p.m. – 4:00 p.m.**

Students are required to be at their projects for judging between 1:00 p.m. – 4:00 p.m. **Teachers and parents are not permitted on the gym floor after 12:45 p.m.** in preparation for judging, which starts promptly at 1:00 pm. Typically, each student will be interviewed by at least four judges. Regular parking rates apply during the day.

When picking students up after Judging at 4 p.m., parents have **1 hour complimentary parking in Lot P7.** Other parking lots will have parking enforcement present. Do not wait along the roadway at the DBARC gym entrance; this is a fire route.

#### **Day 2- Evening, after 4 p.m. Friday, March 29, 2019**

The Fair is NOT open to students or the public in the evening on Friday, March 29.

#### **Day 3 - Public Viewing, Saturday, March 30, 2019**

There is complimentary parking in Lots P5, P6, P7, and P8.

We ask that your children be at their projects in the gym for Public Viewing from 9:00 a.m. - 12:00 noon. At noon the students will be given 15 minutes to remove their projects. **Students may not remove their projects until after the Public Viewing.**

We strongly recommend that you attend the public viewing with your child. It will give you an opportunity to view all of the great projects on display, and to see your own child doing presentations for visitors.

Students are asked to pick up their project between 12 noon and 12:15 p.m. After this time, projects will be removed by the volunteer staff.

## **THE PARENT PAGES (OR HOW TO SURVIVE SCIENCE FAIR!)** (Continued)

### **The Awards Ceremony – Tuesday, April 2, 2019 7:00 p.m. – 9:30 p.m.**


Evening parking for the Awards Ceremony is a flat rate of \$6 from 5:00 p.m. to 3 a.m.

The award ceremony is the culmination of the Fair and where the hard work of the students is recognized. The awards ceremony will begin at 7:00 p.m. sharp. It is recommended to come early, as seating is limited. Doors will open to the theatre at 6:00 p.m. Students will be asked to sit near the front of the theater.

**Note:** Our trip award winners and a parent are required to attend an information meeting immediately after the Awards Ceremony (approximately one hour).

**There! Wasn't that easy? Congratulations to you and your young scientists and engineers! Be sure to visit the BASEF website (basef.ca) throughout the year. You'll find project pictures and abstracts from last year's fair, resource materials and important information about the next fair. Also follow the BASEF winners at basef.ca as they compete at the national and international science fairs. Their progress can be found in "Team BASEF", with links to Facebook and Twitter.**



  
**GOAL: EDUCATE ➡ INSPIRE ➡ INNOVATE**


Accomplished via: Presentation, Awards & \$10,000 Scholarship

Nikola Tesla Educational Corp (NTEC) is proud, for the 5th year to be a sponsor for BASEF, where we **recognize** our youth who will **INNOVATE** for the future. Contact us to arrange a **FREE** demonstration/presentation in your school. Guaranteed to inspire.


Nikola Tesla, changed society for ever. His inventions defined the second industrial revolution. More importantly, Nikola Tesla personally approved of Hamilton plans to bring power to City. Join NTEC as we celebrate the 121<sup>st</sup> anniversary of the arrival of hydroelectric power.

Tesla Electric City Festival will be held at the Hamilton Museum of Steam & Technology on Sunday September 29<sup>th</sup>, 2019 10:00 AM – 5:00PM. Admission is **FREE**. Family event, fun for all.

NTEC will be hosting the Tesla Science Fair at the Festival for grades 6 - 12. Come and show off your project that is rooted in Tesla technology or is Tesla inspired. Projects will be judged for prizes.



**TESLA SCIENCE FAIR  
REGISTRATION**



**TESLA**

**<https://goo.gl/17EjD4>**

For more information visit our website/Facebook or drop us an email.

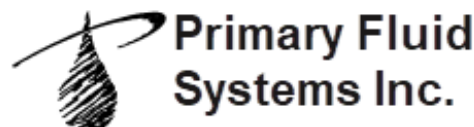
[www.teslaeducational.ca](http://www.teslaeducational.ca)[www.facebook.com/teslaeducational](https://www.facebook.com/teslaeducational)contact: [info@teslaeducational.ca](mailto:info@teslaeducational.ca)



# BASEF thanks its 2019 sponsors



**ArcelorMittal**  
DOFASCO | HAMILTON



\$10,000

\$10,000



\$5,000

\$5,000



\$2,500

\$2,500



Hillfield Strathallan College  
Learn with Joy. Live with Purpose.



\$1,000

\$1,000



\$500

\$500

**Friends of the Fair**



Dept. of Materials Science & Engineering  
McMaster University

## BASEF Outreach: Resources Available to Students, Teachers, and Parents

The Bay Area Science and Engineering Fair offers students the opportunity to explore problems that matter to them using a longer term project-based approach. BASEF offers a wide range of resources to help students conduct their research; from help getting started, to technical considerations such as how to design a project display, or finding answers to ethical and safety questions. We also offer help to parents and teachers working in support of young researchers.

The main portal for this help is our website. If you only have time to explore one resource, a definitive guide called "Science Success" is a good place to start. It is available at [www.basef.ca/outreach](http://www.basef.ca/outreach). "Science Success" consists of 4 parts: a guide for teachers, a student workbook, and two slide presentations useful for groups of students, teachers or parents. The teacher guide and student workbook are available in both English and French.

The page [www.basef.ca/resources](http://www.basef.ca/resources) contains a large number of links to a **range of resources**, with detailed descriptions. To see what a typical BASEF project looks like, **visit our project archives** at [www.basef.ca/pastresults](http://www.basef.ca/pastresults)

The following initiatives, first introduced in 2017, are still available for our students

- The **TECHSEED** program offered a free computer electronics kit to qualifying students who want to explore the use of an Arduino computer in a project. **Mentors** are available to assist students with the kits and answer questions.
- A **PATENT** information booklet and workbook was developed in collaboration with Gowling WLG, a long-time special awards sponsor. This booklet transforms the legalese into understandable information for students whose project might benefit from patent protection or intellectual property laws. These are provided to our trip award winners and all high school projects. These booklets are also available on our website.

Students, teachers and parents can access help directly from BASEF by emailing us at [outreach@basef.ca](mailto:outreach@basef.ca). Experienced science fair veterans, professional scientists, engineers and educators are available to provide **chalk-talks or workshops**. This is particularly valuable for students attending schools not supportive of science fairs in the BASEF catchment area. **Mentors** can be arranged on request by emailing [outreach@basef.ca](mailto:outreach@basef.ca). The BASEF Outreach program can also help you assemble a team of **judges** for your school fair, and provide help on how to organize the judging and evaluate the results.

**Teacher Activity Day** is an all-day seminar for teachers covering everything you wanted to know about science fair projects, including the application process for students entering BASEF, safety, judging, and how to avoid the most common pitfalls encountered during registration. This course can be booked by emailing [outreach@basef.ca](mailto:outreach@basef.ca)

Project-based science, as promoted by science fairs, is one of the best ways to engage young people in a focused initiative where they can explore their own interests, exercise their curiosity, and experience the thrill of discovery. BASEF provides a friendly competition to encourage this in-depth exploration of new ideas. We at BASEF Outreach are here to help you get started with your project. **Need help?** Email [outreach@basef.ca](mailto:outreach@basef.ca) or visit our website at [www.basef.ca](http://www.basef.ca).

### The BASEF Bursary Program

The BASEF Bursary Program was once again offered this year to assist students in grades 7-12 who were in need of financial assistance to complete a science fair project. Based on teacher recommendations, up to 40 students in the BASEF catchment area were eligible for a \$30.00 bursary. The projects could be a classroom activity or be entered into BASEF; we asked only that the students undertake and complete a science project to the satisfaction of their teachers. The goal of the program is to make it easier for students in need to participate in project-based science.

This year the program awarded 35 bursaries to students nominated by over twenty-one teachers, representing five area school boards. Eighteen of the teachers were first-time participants.



## 2019 BASEF Champion Teacher

The Organizing Committee  
of the Bay Area Science and Engineering Fair congratulates:

### **Susan Bouwer** **North Park Collegiate and Vocational School** **Grand Erie District School Board**



### **CONGRATULATIONS TO THE 2019 BASEF CHAMPION TEACHER!**

The nominators comments:

"Many students want to participate in BASEF because of their genuine desire to learn and participate in practical applications of their knowledge, but also because of how accepting and interesting the community of science is at North Park Collegiate, a community which Ms. Bouwer has played a large part in creating"

"Ms. Bouwer made science fun and interesting, memorable, challenging and rewarding yet doable, increasing confidence in the sciences for many students"



"She has enriched my high school science experience and given me support to learn skills I will carry throughout my career and life."

"Mrs. Bouwer is an absolute champion of BASEF. Each year she takes on multiple projects as a teacher advisor and dedicates her time, money and energy into helping the students achieve and reach their own potential."

The Champion Teacher Recognition Award for 2019 includes induction into the BASEF Champion Teacher Hall of Fame, a trophy and \$250 for use in the classroom of each winning teacher. A panel of BASEF Organizing Committee members selects the Champion Teacher Recognition Award winners from among those nominated online by their peers, parents and students.

This award recognizes a science and technology teacher who displays a remarkable ability to empower and excite student interest in science and who actively promotes the Bay Area Science and Engineering Fair.



## THANKS TO BASEF2019 VOLUNTEERS!

### Volunteers

Adina Fatima  
Anastasia Drakos  
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### Registration Team

Marc Trotta  
Maria Trotta  
Katie Brent

Congratulations to all Science Fair participants  
In the 59<sup>th</sup> Annual  
Bay Area Science & Engineering Fair



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### **City of Toronto**

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### **Conestoga College**

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### **Fort Erie School of Music**

Janet Schaefer

### **Government of Ontario**

Val Kim

### **Green Venture**

Erinn Todd

### **Halton Catholic District School Board**

Matt Kovacs, Michaela Yan, Stephanie Thompson

### **Hamilton General Hospital**

Pamela Pagunsan

### **Hamilton Health Sciences**

Jill Boreyko, Tracy Carrier, Linda Mattina Salvo

### **IT Force**

Scott Putman

## **MERIT AWARD JUDGES** (Continued)

### **Humber College**

Luana Sciuillo

### **HWDSB**

Dr Shushmita Gupta

### **IT Force**

Adam Freeman

### **Kinectrics Inc.**

Boguslaw Bochenski

### **McMaster Immunology Research Centre**

Hannah Stacey

### **McMaster University**

Abdullah Abdullah, Taranah Adli, Nazli Alizadeh-Tabrizi, Sara Andres, Krysta Andrews, Amjad Arrabi, Liz Balint, Arinjay Banerjee, Isobel Bicket, Nikhila Butani, Laura Calvert, Lindsey Carfrae, Bri Conn, Halley Desai, Mirela Dragomir, Lucas Eckert, Sophie Geffros, Sharonna Greenberg, Joanne Hammill, Bushra Haque, Meliha Horzum, Iva Hossain, Bushra Ilyas, Mathy Jeyanathan, Laura Jin, Peter Jonasson, Nalini Khaloo, Adree Khondker, Shannon Killip, Vickram Lakhian, Lucy Lan, Shamir Malik, Avijit Mallick, Jonathan Mapletoft, Julianna Marfisi, Gabriella Mattina, Simon McNamee, Karen-Anne McVey Neufeld, Sakshi Mehta, Aadil Merali Juma, Lateef Muhammed, Anisha Nandy, Humaira Niazi, Light Nozomi, Rachel Pillsworth, Angela Pollinzi, Kenneth Rachwalski, Malavan Ragulojan, Caitlin Reintjes, Danielle Sexton, Shabnam Shoaebargh, Peter Summers, Chris Thomsen, Devinne Thrasher, Troy Umolac, Nardine Wasef, Kevin Wyszatko, Yufan Zeng, Xiafei Zhang, Ali Zhang, Juliet Zhu, Pranipa Ernest, Gabrielle Foran, Natalie Wilson, Tali Fedorovsky, Jessica Breznik, Felix Croteau, Homayra Ahmed, Chelsea Aristone, Rachel Badzioch, Natalie Ciancone, Sara Evans, Amanda Kako, David Speicher, Caressa Tsai, Asfia Soomro, Jayson Chaykowski, Armaghan Dabbagh, Craig MacNair, Teena Surujdin, Madeline Tong, Abdullah Haroon

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Victoria Flaxman, Bruce Young, Adam Prieur

### **St.Elizabeth Seton – HCDSB**

Matthew Stodolak



## MERIT AWARD JUDGES (Continued)

### STG Engineering Inc.

Elena Surovtsev

### Stiris Research

Annie Ptolemy

### Student

Julie Inglis, Emma Mulholland, Vidhi Patel, Neethu Pavithran, Kaesavan Selvakumaran, Alexander Mastrolonardo, Monica Takahashi, Wardah Shaikh, Benjamin Dyer, Kian Yousefi Kousha, Hira Shaikh, Andrea Jansen, Caroline Mahut, Maria Romano, Mary Anne Schoenhardt, Sophia Zhang, Arjuna Maharaj, Annica Freytag, Heather O'Grady, Kasia Tywonek, Andrea Piitz, Chen Chen, Jasrita Singh, Mogageethana Mathuralingam, Katie Brent, Hiba Shareefdeen, Erica DeJong

### Tarjan Management Inc.

Michael Tarjan

### Thermo Fisher Scientific

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### Total Canada Inc.

Pierre Barras

### University of Guelph

Jack Mogus

### University of Toronto

John DeBackere, Calvin Rieder, Ian Summers

### WRDSB

Soula Kritikos

### York University

Melissa Galicia

### Other

Ye Lwin, Pamela Chang, Joshua Lomonaco, Bill Johnston, Robert Balaam, Nelson Ruiz Blanco

## BASEF Alumni Project



Since 1960, the Bay Area Science and Engineering Fair (BASEF)\* has been one of the largest and most successful regional science fairs in Canada. More than 20,000 students have participated over the years. The mission of the fair is to encourage and support young people in carrying out scientific research and presenting their findings to others. Many successful careers have been launched from science fairs and from BASEF in particular.

As we approach our 60th anniversary in 2020, we are in the process of launching a BASEF Alumni Network. The purpose of this initiative is to enable alumni to share their stories, to connect with each other and to support our current fair participants in a variety of ways.

A network of alumni has no precedent in regional science fairs and we feel such an initiative will add to the prestige of our already outstanding science fair. If you are interested in being part of the BASEF Alumni Network, please email us at [alumni@basef.ca](mailto:alumni@basef.ca). We look forward to hearing from you!

\*Also known previously as the Hamilton Science Fair, Hamilton District Science Fair, Hamilton & District Science & Engineering Fair and the Hamilton Wentworth Halton Science & Engineering Fair.

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## **SPECIAL AWARD JUDGES**

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Shannon Clark, Adam Aglipay, Sidique Baksh, Alex Barsan, Alex Bernal, Kristen Bloom, Rachel Choon, Josh Freer, Andrew Kraus, Cameron Mitchell, Corinne Mullen, Ana Opulencia, Dan Papalazarou, Sagarika Paul, Phillip Principato, Hayley Scott, Jonah Szajman, Chantal Ulyett

### **Artistically Inspired Display Awards**

Cathy Hamilton, Cathy Hayman

### **Association for Iron & Steel Technology Northern Chapter Awards**

Shannon Clark

### **Canadian Institute of Mining, Metallurgy and Petroleum (Hamilton Branch) Awards**

Shannon Clark

### **Canadian Nuclear Society (Golden Horseshoe Branch) Awards**

Elizabeth McConnachie, Garik Patterson

### **Chemical Institute of Canada- Hamilton Section Awards**

Don Barclay, Tom Sutton, Dragan Vuckovic

### **Dillon Consulting Awards**

Chris Gibbons, Trevor Goulet

### **Dr. Colin J.L. Lock Memorial Chemistry Award**

Dr. Nicola Simmons, Gord Simmons

### **Dr. Nicola Simmons Award in Cognition Studies**

Dr. Nicola Simmons, Gord Simmons

### **Doris Casey and Gwen Nicolls Disability Solutions Awards**

Jim Casey, Al Nicolls

### **Electrical Construction Association of Hamilton Award**

Joe Kurpe

### **Environmental Inspiration Award**

Isabella O'Brien

### **Gowling WLG Innovation Awards**

Alex Ross

### **Hamilton Academy of Dentistry Awards**

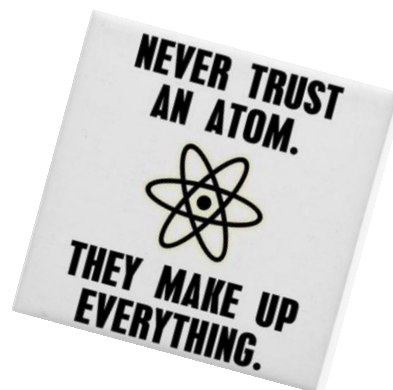
Frank Stechey

### **Hamilton Association da Vinci Award**

Tony Petric, Ken Chin, Jim Garrett, Ludvic Previc, Isobel Bicket

### **Hamilton Wentworth Occasional Teacher Awards**

Barry Naidoo, Nguyen Trang



## **SPECIAL AWARD JUDGES (CONTINUED)**

### **Hillfield Strathallan College Awards of Excellence**

Dr. Lara De Lazarri, Marc Edgar

### **Hillfield Strathallan College Entrance Scholarship Award**

Dr. Lara De Lazarri, Marc Edgar

### **Indigenous Peoples of Canada Scientific Study Awards**

David Reed

### **International Science & Engineering Affiliated Fair Awards**

Tyler Collins, Cathy Hayman, Varsha Jayasankar, Radhika Khanna, Adree Khondker

### **James A. Winger Award, sponsored by the Hamilton Amateur Astronomers**

Rowan Dee, Gary Sutton, Bernie Venasse

### **John W. Howard Materials Research Award**

Dr. Nicola Simmons, Gord Simmons

### **Laurentian Chapter of SETAC Award**

Oana Birceanu, Gerald Tetreault

### **Mahut-Brent Award for Women in Science and Engineering**

Katie Brent

### **McMaster University Awards**

#### **Department of Chemistry and Chemical Biology Award**

Gillian Goward

#### **Department of Chemical Engineering & Chemical Engineering Club**

Patrick Morkus

#### **Department of Materials Science and Engineering Awards**

Danielle De Rango, Beth McNally

#### **Faculty of Engineering Entrance Awards**

Alaine Coschi

#### **LEAP Academy Female Award of Innovation**

Andrew Berriault, Sandun Thilak Aarachci

#### **School of Geography and Earth Sciences**

Jeremy Gabriel, Rebecca Moumblow, Nick Riddick, Maureen Padden

#### **Venture Award of Innovation**

Andrew Berriault, Sandun Thilak Aarachci

#### **Women in Engineering Entrance Awards**

Alaine Coschi

### **Mechanical Contractors Association of Hamilton Award**

Dave Crawford

### **Michael G. DeGroote Institute for Infectious Disease Research Internship Award**

Luke Yaeger, Tori Marko





## Memories of Recent Fairs







## **SPECIAL AWARD JUDGES (CONTINUED)**

### **Mohawk College Awards**

#### **Building & Construction Sciences Awards**

Nathaniel Adie, Dan Havercroft

#### **Computer Science & Information Technology Excellence Award**

Sharon Scollard, Joseph Varasso

#### **Electrical Engineering Technology Awards**

Richard Ma, Brian Stefanchuk

#### **Mathematics Awards**

Frosina Stojanovska-Pocuca, Kathryn Vrhovnik

### **Nelson Steel Awards**

Shannon Clark

### **Nikola Tesla Innovation Awards**

Vic Djurdjevic, Dr. Colin Campbell, Branko Lukic, Mike Popovic, Alex Stojanovic, Samuel Symbaluk

### **Oakvillegreen Conservation Association Award for the Environment**

Karen Brock

### **Primary Fluid Systems Awards**

Sandy Walker

### **Procor Engineering Awards**

Edmund Lee

### **Professional Engineers of Ontario-Hamilton/Burlington Chapter Awards**

Michelle Chin, Gary Closson, David Dean, Erika Kadar, Jim Sweetman

### **Professional Engineers Ontario - Oakville Chapter Awards**

Fred Dattoo, Hazel Hezhi Fan, Viet Le-The

### **The Research Institute at St. Joe's Hamilton, Health Research Awards**

Laura Garrick, Dr. Gail Martin, Adam Weerdenburg

### **Royal Botanical Gardens Award**

Karin Davidson-Taylor

### **Society of Tribologists & Lubrication Engineers - Hamilton Section Awards**

Richard Schrama

### **Water Environment Association of Ontario Award**

Dean Iamarino



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Kim, Yujin	Q16	Law, Addison	L18	Main, Stephanie	L18
Kippers, Amy	A03	Lawford, Matthew	P16	Maina, Mahassin	M07



## Best Wishes to BASEF Participants

The Halton District School Board would like to congratulate all participating students in the Bay Area Science and Engineering Fair.

**Best wishes for continued success!**

Stuart Miller  
Director of Education

Andréa Grebenc  
Chair of the Board





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**Congratulations  
to all of the BASEF  
Participants!**

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## PROJECT LISTINGS

### **A01 Bacteria In The Classroom**

Maryanna Orah, Alice Fan  
Jr 7/8 Life Sciences Non-Human  
St. Michael, HWCDSB

### **A02 Little Waves, Big Impact**

Isabella Colia, Isabella Petrocelli  
Jr 7/8 Life Sciences Non-Human  
St. Andrew Elementary School,  
HCDSB

### **A03 Is Your Dog's Mouth Cleaner Than Yours?**

Katelyn Teeuwsen, Amy Kippers  
Jr 7/8 Life Sciences Non-Human  
Calvin Christian School (Hamilton),  
IND

### **A04 Haricot!**

Lilyanne Lavoie, Émilie Gagnon  
Jr 7/8 Life Sciences Non-Human  
École Secondaire Georges-P.-Vanier,  
CSV

### **A05 Bacteria Growth on Bread Past Different Expiration Dates**

Nicole Zhang  
Jr 7/8 Life Sciences Non-Human  
Appleby College, IND

### **A06 Coloring Plant**

Edward Wang  
Jr 7/8 Life Sciences Non-Human  
Maple Grove Public School, HDSB

### **A07 Traumatic Effects**

Adriana Salerno, Sophia Fiorucci  
Jr 7/8 Life Sciences Non-Human  
Sts. Peter & Paul, HWCDSB

### **A08 Will It Eggspire?**

Beatrice Faber  
Jr 7/8 Life Sciences Non-Human  
Trinity Christian School, IND

### **A09 Would You Still Eat It? Testing the '5-Second Rule'**

Rachel Vos  
Jr 7/8 Life Sciences Non-Human  
Trinity Christian School, IND

### **A10 Proteolytic Effect of Fruit Enzyme Homogenate on Beef with Varying Degrees of Doneness**

Ethan Chiang  
Jr 7/8 Life Sciences Non-Human  
St. Andrew Elementary School,  
HCDSB

### **A11 Testing if there are there dangerous bacteria on your food.**

Jack Burian  
Jr 7/8 Life Sciences Non-Human  
Appleby College, IND

### **A12 Arabinose: An On/Off Switch for Gene Expression**

Lina Elsaadi  
Sr 11/12 Life Sciences Non-Human  
North Park Collegiate and Vocational  
School, GEDSB

### **A13 Geronimo Stilton's Worst Nightmare**

Grace Scott  
Jr 7/8 Life Sciences Non-Human  
Trinity Christian School, IND

### **A14 Honey Preserving Meat**

Jumana Ismail  
Jr 7/8 Life Sciences Non-Human  
Maple Grove Public School, HDSB

### **A15 Shake That Thang**

Sofia Anunciacao  
Jr 7/8 Life Sciences Non-Human  
Oakville Christian School, IND

### **A16 Project B.E.A.N**

Holly Jansen, Jordan Thompson  
Jr 7/8 Life Sciences Non-Human  
Balaclava, HWDSB

### **A17 The Effects of Garlic, Ginger and Honey on Bacterial Colonies**

Sterling Wu  
Jr 7/8 Life Sciences Non-Human  
Appleby College, IND

### **A18 5 Second Rule**

Agnes Lau  
Jr 7/8 Life Sciences Non-Human  
Maple Grove Public School, HDSB

### **B01 Analysis of the Concentration of Acids in Popular Drinks**

Jiayi Deng  
Sr 11/12 Phys & Math Sci  
King's Christian Collegiate, IND

### **B02 Sleeve Bracelet**

Fadheelah Zito  
Jr 7/8 Eng & Comp Sci  
St. Michael, HWCDSB

### **B03 The Connection Between the Lunar Cycle and the Behaviour of Canines**

Hillary Hamilton, Jacob Van Groningen  
Sr 11/12 Life Sciences Non-Human  
Ancaster High, HWDSB

### **B04 The impacts of eco-friendly fertilizing alternatives on green beans from seed to early growth**

Tori Vincent  
Jr 7/8 Biotechnology  
Pilgrim Wood Public School, HDSB

### **B05 Investigating the Effects of Waves and Grounding on Plants Over a Period of Four Weeks**

Alp Tlabar  
Jr 7/8 Life Sciences Non-Human  
Appleby College, IND

### **B06 Fountain of Bacteria: Purveyor of Pathogens**

Katelyn Johnson  
Jr 7/8 Life Sciences Non-Human  
Guy B. Brown, HWDSB

### **B07 How Permanent is 'Permanent'?**

Alora Lavalley, Amy Shi  
Jr 7/8 Phys & Math Sci  
Tiger Jeet Singh Public School,  
HDSB



## PROJECT LISTINGS (CONTINUED)

### **B08 Rainbow Tomatoes**

Caitlyn Wong, Isabelle Healey  
Jr 7/8 Life Sciences Non-Human  
Oakville Christian School, IND

### **B09 'Ketchup and fries' grafting efficient experiment**

Bronwen Robinson, Lexi Ross  
Jr 7/8 Life Sciences Non-Human  
Sir William Osler, HWDSB

### **B10 Soiless Part 2**

Darrus Skye, Quincy Vanevery  
Jr 7/8 Life Sciences Non-Human  
J. C. Hill Elementary, SNS

### **B11 Is It Worth It? Expensive VS Homemade Cleaning Supplies**

Hannah Lavallee, Julia Bakes  
Jr 7/8 Life Sciences Non-Human  
Tiger Jeet Singh Public School, HDSB

### **B12 Quelle est la meilleur quantité d'engrais pour faire croître une plante?**

Malak Chaar, Sarah al Amine  
Jr 7/8 Life Sciences Non-Human  
École Secondaire Georges-P.-Vanier, CSV

### **B13 How Dirty Is My School?**

Sofia Koehnen  
Jr 7/8 Life Sciences Non-Human  
Maple Grove Public School, HDSB

### **B14 Canine DNA**

Amelia Stanley  
Jr 7/8 Life Sciences Non-Human  
Escarpment View Public School, HDSB

### **B15 What Types of Video Games Are The Most Addictive**

Jonah Sloomweg, Ryan Ahn  
Jr 7/8 Health Sci. Human  
Calvin Christian School (Hamilton), IND

### **B16 Zero Cals or Gut Fails**

Carol Koubaesh  
Sr 11/12 Life Sciences Non-Human  
King's Christian Collegiate, IND

### **B17 NO DIRT**

Lucas Martin  
Jr 7/8 Life Sciences Non-Human  
J. C. Hill Elementary, SNS

### **B18 The replacement of antibiotics**

Tristan Hofstee  
Jr 7/8 Life Sciences Non-Human  
Guy B. Brown, HWDSB

### **C01 The Proof is in the Prints**

Sydney Cao, Zara Kazi  
Jr 7/8 Health Sci. Human  
Joshua Creek Public School, HDSB

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## PROJECT LISTINGS (CONTINUED)

### **C02 The Effect of Colour on Reaction Time**

Devyanee Mehta, Winni Situ  
Sr 11/12 Health Sci. Human  
North Park Collegiate and Vocational  
School, GEDSB

### **C03 The Golden Spice: Increasing the Bioavailability of Curcumin**

Arianna Mastrodonardo  
Int 9/10 Health Sci. Human  
King's Christian Collegiate, IND

### **C04 The Power of One: A Study of Self-Esteem**

Matteo Romano  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **C05 Tame the Video Game**

Kaylan Sandhu  
Jr 7/8 Health Sci. Human  
St. Joachim, HWCSB

### **C06 Synesthesia affects 1-4% of the population. Do you have it?**

Olivia Nowak, Gisela Toito Neto  
Jr 7/8 Health Sci. Human  
St. Andrew Elementary School, HCDSB

### **C07 The Effects Of Music On Students**

Stephanie Hrynkiw  
Jr 7/8 Health Sci. Human  
Balaclava, HWDSB

### **C08 What's In Your Water? (filtering microplastics from bottled water)**

Kylie DeVries, Isabelle Faulkner  
Jr 7/8 Eng & Comp Sci  
Burlington Christian Academy, IND

### **C09 Therapeutic effects of a synthetic CDK5 inhibitor as a drug towards models of Parkinson's disease**

Anika Gupta  
Sr 11/12 Health Sci. Human  
Westdale Secondary School, HWDSB

### **C10 Left or Right? A comparative analysis of hemispheric activation**

Mark Abdelshaheed, Lucas Monter  
Jr 7/8 Health Sci. Human  
St. Elizabeth Seton Elementary School, HCDSB

### **C11 Hungry?**

Hope Van Voorst  
Jr 7/8 Health Sci. Human  
Calvin Christian School (Hamilton), IND

### **C12 How do rises in body temperature through physical activity affect mental processing?**

Aahan Madhok, Mohid Farooqi  
Jr 7/8 Health Sci. Human  
Tiger Jeet Singh Public School, HDSB



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## PROJECT LISTINGS

### (CONTINUED)

#### **C13 Heads Up: Reducing the Risk of Concussions in Girls' Hockey Through Root Cause Analysis**

Maya Clapperton  
Int 9/10 Health Sci. Human  
Westdale Secondary School,  
HWDSB

#### **C14 Tackling Concussions Head On**

Angeline Redford  
Sr 11/12 Health Sci. Human  
Saltfleet District Secondary School,  
HWDSB

#### **C15 Are Fingerprints Inherited?**

Ellie Bourke  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **C16 How Neurolinguistic Programming in Media Affects Consumers**

Evan Shvetsov  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **C17 The PEP Project | Point System Educational Puzzles**

Joshua Middleton  
Jr 7/8 Health Sci. Human  
Alexander's Public School, HDSB

#### **C18 Stabilizing Effect of Exercise and Type of Carbohydrate on Postprandial Blood Glucose Level in T2D**

Nidhi Sarkar  
Int 9/10 Health Sci. Human  
Dundas Valley Secondary School,  
HWDSB

#### **D01 Perception of Time**

Brianna Nicholson  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

#### **D02 What's in your helmet?**

Devan Tassé, Ethan Shannon  
Jr 7/8 Health Sci. Human  
St. Luke, HWCDSB

#### **D03 Diet vs Regular Soft Drinks**

Jennifer Hayman  
Jr 7/8 Health Sci. Human  
Alexander's Public School, HDSB

#### **D04 Do You See What I See?**

Ellie Garry-Jones  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **D05 Great Minds Think Alike...Or Do They?**

Elizabeth White, Sydney Elder  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **D06 Types of Twins**

Emily Vrsaljko, Rebecca Vrsaljko  
Jr 7/8 Health Sci. Human  
St. Luke, HWCDSB

#### **D07 Does different types music help more while studying**

Ali Reda  
Jr 7/8 Health Sci. Human  
Appleby College, IND

#### **D08 Out of Focus**

Katelyn Ritskes, Ada Cook  
Jr 7/8 Health Sci. Human  
Calvin Christian School (Hamilton),  
IND

#### **D09 Emotions... Do They Change What We See?**

Elizabeth Sienna  
Jr 7/8 Health Sci. Human  
St. Augustine, HWCDSB

#### **D10 Developed Brains vs Developing Brains and the Stroop Effect**

Kelly Situ, Kyra Moruzi  
Jr 7/8 Health Sci. Human  
Sir William Osler, HWDSB

#### **D11 Does exercise improve memory**

Omer Ahmed  
Jr 7/8 Health Sci. Human  
Al-Falah Islamic School, IND

#### **D12 Biologically Emotional**

Samantha Guay, Teaghan Kay  
Jr 7/8 Health Sci. Human  
St. Augustine, HWCDSB

#### **D13 The effect of different mouthwash on oral bacteria**

Talha Rauf  
Jr 7/8 Health Sci. Human  
Al-Falah Islamic School, IND

#### **D14 It's no joke to smoke**

Anita Iluobe  
Jr 7/8 Health Sci. Human  
St. Vincent de Paul, HWCDSB

#### **D15 Potential side affects of bypassin g PD-1 inhibitors during cancer treatment processes.**

Allan Yin  
Int 9/10 Health Sci. Human  
White Oaks Secondary School,  
HDSB

#### **D16 Is Sugar Really That Sweet**

Emaad Qazi, Samar Karim  
Jr 7/8 Health Sci. Human  
Tiger Jeet Singh Public School,  
HDSB

#### **D17 Age vs. Tongue Sensitivity**

Maya Borg, Sophie Taylor  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

#### **D18 VR Decision Making**

Isabel Ieluzzi  
Jr 7/8 Health Sci. Human  
St. Joachim, HWCDSB

#### **E01 The Effects of Classical Music on The Brain**

Kaitlyn Rebecca Powell  
Jr 7/8 Health Sci. Human  
Appleby College, IND

## PROJECT LISTINGS (CONTINUED)

### **E02 Interestimulants**

Riya Jain, Kenzie North  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **E03 Your Brain on Colour**

Rachel Stelpstra  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

### **E04 What are the effects of Aspartame on the teenage body?**

Caleb Frigo  
Jr 7/8 Health Sci. Human  
Appleby College, IND

### **E05 Do You Remember?**

Matthew Hanna, Evan Ostafin  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

### **E06 Analyzing Money for Harmful Bacteria and Exploring Natural Antibiotic Solutions**

Paolo Ramelli  
Jr 7/8 Life Sciences Non-Human  
St. David, HWCDSB

### **E07 Think Before Choosing Pink**

Avery Bosma  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

### **E08 Observing Your Outer Optics**

Olivia Mostacci  
Jr 7/8 Health Sci. Human  
St. John Paul II, HWCDSB

### **E09 The Stroop Effect: What Colour Do You See?**

Chantelle Guorgui  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

### **E10 Hearts Beat With Music**

Habiba Omer  
Jr 7/8 Health Sci. Human  
Joshua Creek Public School, HDSB

### **E11 Balance in Dance**

Tatum Armstrong  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **E12 Birth Battles**

Cadence Jamieson, Goga Jamieson  
Jr 7/8 Health Sci. Human  
J. C. Hill Elementary, SNS

### **E13 The Science of SAD: Seasonal Affective Disorder**

Julia Stephen  
Jr 7/8 Health Sci. Human  
Alexander's Public School, HDSB

### **E14 Positive or Negative**

Irene Park  
Jr 7/8 Health Sci. Human  
Calvin Christian School (Hamilton), IND

### **E15 21st Century Testing or Old School: Which is the Way to Go?**

Radley Pyle  
Jr 7/8 Health Sci. Human  
Our Lady of Mount Carmel, HWCDSB

### **E16 How the Brain copes with Muddles – The Stroop Effect.**

Sandhya Dath  
Jr 7/8 Health Sci. Human  
Balaclava, HWDSB

### **E17 TO SPURN THE HEARTBURN**

John Eric Rivas-Gonzalez  
Jr 7/8 Health Sci. Human  
St. John Paul II, HWCDSB

### **E18 Best Science Fair Ever? \*Not Clickbait\***

Tobin Davis, Sophie Nguyen  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **F01 How does the use of electronics affect your vision and brain function?**

Emma Li, Sarah Al-tamimi  
Jr 7/8 Health Sci. Human  
Forest Trail Public School, HDSB

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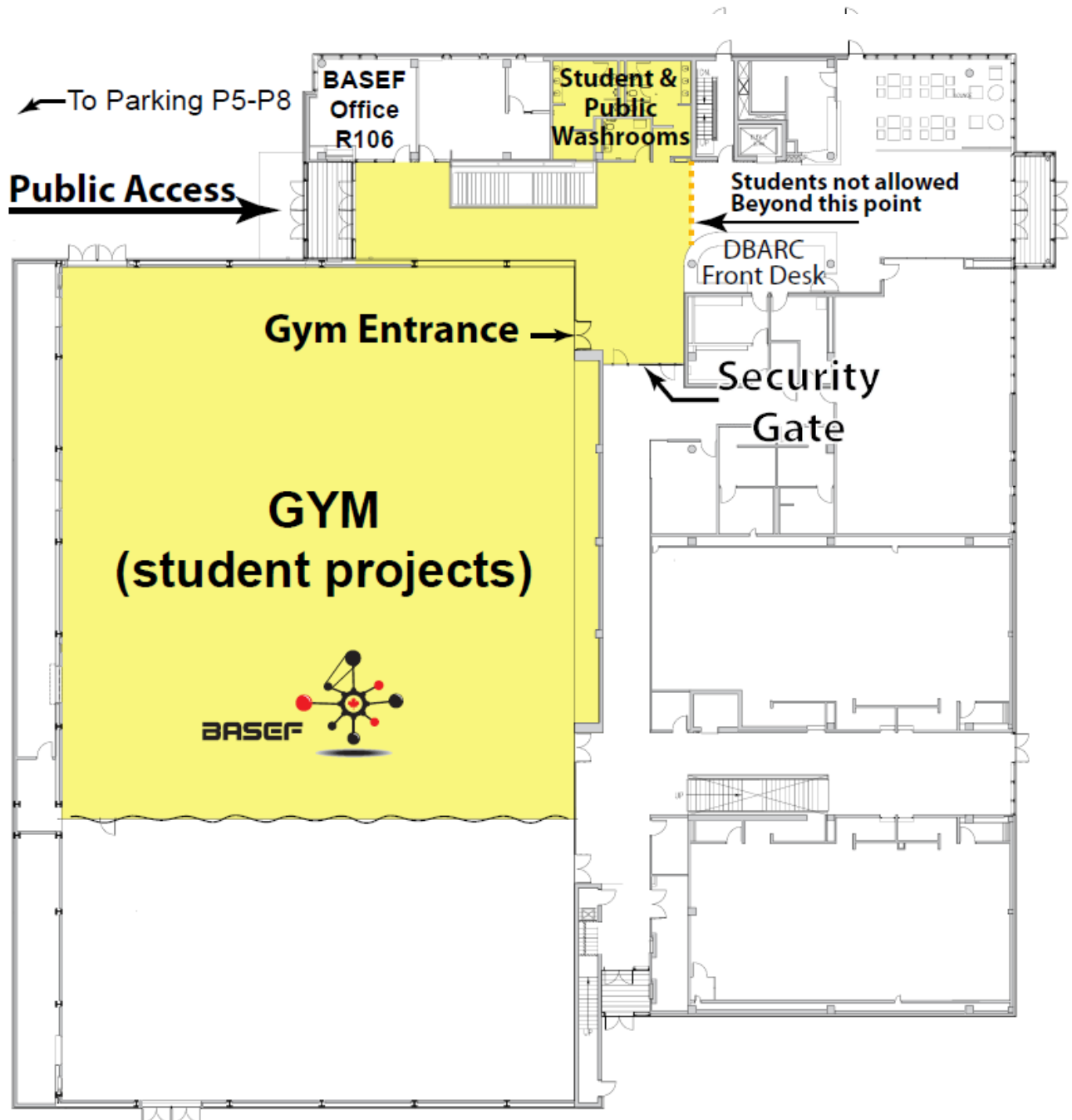


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**BASEF Student Boundaries**

**Friday, March 29 - 12 noon to 4 pm.**

Students are expected to stay at their projects during lunch and the afternoon judging period.  
Mohawk College and BASEF ask that all students stay within the highlighted areas.



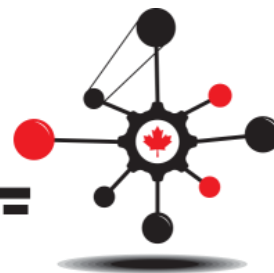


# BAY AREA SCIENCE & ENGINEERING FAIR

## PROJECT FLOOR LAYOUT

David Braley Athletic Centre  
Mohawk College, Hamilton, ON  
March 28 to March 30, 2019

**BASEF**



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## PROJECT LISTINGS

### (CONTINUED)

#### **C13 Heads Up: Reducing the Risk of Concussions in Girls' Hockey Through Root Cause Analysis**

Maya Clapperton  
Int 9/10 Health Sci. Human  
Westdale Secondary School,  
HWDSB

#### **C14 Tackling Concussions Head On**

Angeline Redford  
Sr 11/12 Health Sci. Human  
Saltfleet District Secondary School,  
HWDSB

#### **C15 Are Fingerprints Inherited?**

Ellie Bourke  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **C16 How Neurolinguistic Programming in Media Affects Consumers**

Evan Shvetsov  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **C17 The PEP Project | Point System Educational Puzzles**

Joshua Middleton  
Jr 7/8 Health Sci. Human  
Alexander's Public School, HDSB

#### **C18 Stabilizing Effect of Exercise and Type of Carbohydrate on Postprandial Blood Glucose Level in T2D**

Nidhi Sarkar  
Int 9/10 Health Sci. Human  
Dundas Valley Secondary School,  
HWDSB

#### **D01 Perception of Time**

Brianna Nicholson  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

#### **D02 What's in your helmet?**

Devan Tassé, Ethan Shannon  
Jr 7/8 Health Sci. Human  
St. Luke, HWCDSB

#### **D03 Diet vs Regular Soft Drinks**

Jennifer Hayman  
Jr 7/8 Health Sci. Human  
Alexander's Public School, HDSB

#### **D04 Do You See What I See?**

Ellie Garry-Jones  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **D05 Great Minds Think Alike...Or Do They?**

Elizabeth White, Sydney Elder  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **D06 Types of Twins**

Emily Vrsaljko, Rebecca Vrsaljko  
Jr 7/8 Health Sci. Human  
St. Luke, HWCDSB

#### **D07 Does different types music help more while studying**

Ali Reda  
Jr 7/8 Health Sci. Human  
Appleby College, IND

#### **D08 Out of Focus**

Katelyn Ritskes, Ada Cook  
Jr 7/8 Health Sci. Human  
Calvin Christian School (Hamilton),  
IND

#### **D09 Emotions... Do They Change What We See?**

Elizabeth Sienna  
Jr 7/8 Health Sci. Human  
St. Augustine, HWCDSB

#### **D10 Developed Brains vs Developing Brains and the Stroop Effect**

Kelly Situ, Kyra Moruzi  
Jr 7/8 Health Sci. Human  
Sir William Osler, HWDSB

#### **D11 Does exercise improve memory**

Omer Ahmed  
Jr 7/8 Health Sci. Human  
Al-Falah Islamic School, IND

#### **D12 Biologically Emotional**

Samantha Guay, Teaghan Kay  
Jr 7/8 Health Sci. Human  
St. Augustine, HWCDSB

#### **D13 The effect of different mouthwash on oral bacteria**

Talha Rauf  
Jr 7/8 Health Sci. Human  
Al-Falah Islamic School, IND

#### **D14 It's no joke to smoke**

Anita Iluobe  
Jr 7/8 Health Sci. Human  
St. Vincent de Paul, HWCDSB

#### **D15 Potential side affects of bypassin g PD-1 inhibitors during cancer treatment processes.**

Allan Yin  
Int 9/10 Health Sci. Human  
White Oaks Secondary School,  
HDSB

#### **D16 Is Sugar Really That Sweet**

Emaad Qazi, Samar Karim  
Jr 7/8 Health Sci. Human  
Tiger Jeet Singh Public School,  
HDSB

#### **D17 Age vs. Tongue Sensitivity**

Maya Borg, Sophie Taylor  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

#### **D18 VR Decision Making**

Isabel Ieluzzi  
Jr 7/8 Health Sci. Human  
St. Joachim, HWCDSB

#### **E01 The Effects of Classical Music on The Brain**

Kaitlyn Rebecca Powell  
Jr 7/8 Health Sci. Human  
Appleby College, IND

## PROJECT LISTINGS (CONTINUED)

### **E02 Interestimulants**

Riya Jain, Kenzie North  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **E03 Your Brain on Colour**

Rachel Stelpstra  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

### **E04 What are the effects of Aspartame on the teenage body?**

Caleb Frigo  
Jr 7/8 Health Sci. Human  
Appleby College, IND

### **E05 Do You Remember?**

Matthew Hanna, Evan Ostafin  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

### **E06 Analyzing Money for Harmful Bacteria and Exploring Natural Antibiotic Solutions**

Paolo Ramelli  
Jr 7/8 Life Sciences Non-Human  
St. David, HWCDSB

### **E07 Think Before Choosing Pink**

Avery Bosma  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

### **E08 Observing Your Outer Optics**

Olivia Mostacci  
Jr 7/8 Health Sci. Human  
St. John Paul II, HWCDSB

### **E09 The Stroop Effect: What Colour Do You See?**

Chantelle Guorgui  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

### **E10 Hearts Beat With Music**

Habiba Omer  
Jr 7/8 Health Sci. Human  
Joshua Creek Public School, HDSB

### **E11 Balance in Dance**

Tatum Armstrong  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **E12 Birth Battles**

Cadence Jamieson, Goga Jamieson  
Jr 7/8 Health Sci. Human  
J. C. Hill Elementary, SNS

### **E13 The Science of SAD: Seasonal Affective Disorder**

Julia Stephen  
Jr 7/8 Health Sci. Human  
Alexander's Public School, HDSB

### **E14 Positive or Negative**

Irene Park  
Jr 7/8 Health Sci. Human  
Calvin Christian School (Hamilton), IND

### **E15 21st Century Testing or Old School: Which is the Way to Go?**

Radley Pyle  
Jr 7/8 Health Sci. Human  
Our Lady of Mount Carmel, HWCDSB

### **E16 How the Brain copes with Muddles – The Stroop Effect.**

Sandhya Dath  
Jr 7/8 Health Sci. Human  
Balaclava, HWDSB

### **E17 TO SPURN THE HEARTBURN**

John Eric Rivas-Gonzalez  
Jr 7/8 Health Sci. Human  
St. John Paul II, HWCDSB

### **E18 Best Science Fair Ever? \*Not Clickbait\***

Tobin Davis, Sophie Nguyen  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **F01 How does the use of electronics affect your vision and brain function?**

Emma Li, Sarah Al-tamimi  
Jr 7/8 Health Sci. Human  
Forest Trail Public School, HDSB



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## PROJECT LISTINGS (CONTINUED)

### **F02 Which facial cleanser is a flip or flop?**

Kate Millar, Cassie Crawford  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

### **F03 How can we "KINECT" with KINESTHETIC learners?**

Sofia Silva  
Jr 7/8 Health Sci. Human  
St. Mary Elementary School, HCDSB

### **F04 Haudenosaunee Roots: Preventing Diabetes with Indigenous Methods**

Aleena Skye  
Jr 7/8 Health Sci. Human  
J. C. Hill Elementary, SNS

### **F05 The Cardiovascular System**

Joud Kassim, Julia Kacarevic  
Jr 7/8 Health Sci. Human  
Joshua Creek Public School, HDSB

### **F06 A rainbow of emotions**

Daya Grewal, Jumana Al khudhairi  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

### **F07 Using Trojan horse Microbubbles and Ultrasound to Effectively Treat Alzheimer's Disease**

Zainab Al-Rammahi  
Jr 7/8 Health Sci. Human  
Ancaster Meadow, HWDSB

### **F08 U.S.G - Ultrasonic, Sensor, Glasses**

Colby Warren, Jacob Schooley  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB

### **F09 The Truth Behind Sport Drinks**

Jared Moore, Griffin Moore  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

### **F10 Henoch-Schonlein purpura (HSP)- Causes, Diagnosis, Treatments and Prevention**

Ashwin Unnithan  
Int 9/10 Health Sci. Human  
Orchard Park Secondary School, HWDSB

### **F11 Sensitive much?**

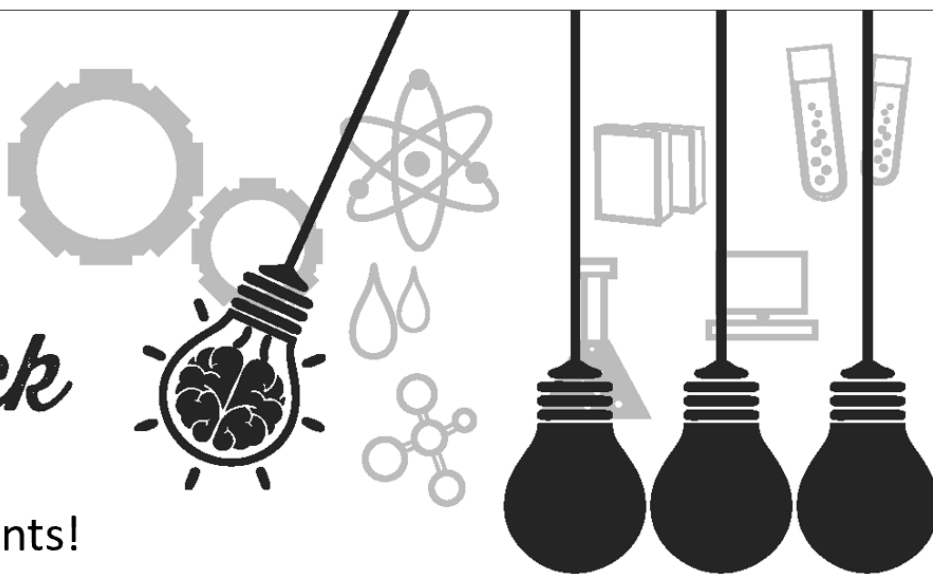
Emily Ieluzzi, Theodora Centritto  
Jr 7/8 Health Sci. Human  
St. Joachim, HWCDSB

### **F12 To Eat Or Not To Eat That Is The Question**

Kasia Watkin, Isabela Gauch Gomes Viana  
Jr 7/8 Health Sci. Human  
St. John Paul II, HWCDSB



*Good luck*  
to all the 2019  
BASEF participants!



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## PROJECT LISTINGS (CONTINUED)

### **F13 A Walk Through Life: A Patient's Journey**

Raisa Allarakhia  
Jr 7/8 Health Sci. Human  
W. H. Morden Public School, HDSB

### **F14 Magic Massager**

Elizabeth Bighiu  
Jr 7/8 Health Sci. Human  
Rotherglen School (Oakville), IND

### **F15 The Effects of a Student's Learning Style on Their Success at School**

David Amm  
Jr 7/8 Health Sci. Human  
Appleby College, IND

### **F16 Chinese Food Syndrome: Fact or Fiction?**

Lily Gomez  
Jr 7/8 Health Sci. Human  
John William Boich Public School, HDSB

### **F17 Antibiotics: the solution or the problem**

Justyna Labib, David Towadros  
Int 9/10 Health Sci.  
Human  
King's Christian Collegiate, IND

### **F18 Are You Being Watched?**

Joyce Lee  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

### **G01 Heartbeats for Health**

Bohmie Song  
Jr 7/8 Health Sci. Human  
Sir William Osler, HWDSB

### **G02 Do You See What Eye See: Using technology to create reliable and efficient vision exams**

Cindy Wang  
Jr 7/8 Eng & Comp Sci  
W. H. Morden Public School, HDSB

### **G03 Fingerprints: Inherited or not?**

Katherine Lepischak, Taran Kang  
Jr 7/8 Health Sci. Human  
Dalewood, HWDSB

### **G04 Analyzing Assumptions: A Study of Societal Stereotypes**

Nicole Chan, Rebecca Salai  
Jr 7/8 Health Sci. Human  
John William Boich Public School, HDSB

### **G05 The Stroop Effect & Music**

Anjali Shah  
Jr 7/8 Health Sci. Human  
Joshua Creek Public School, HDSB

### **G06 Musical Memory**

Eileen Panicker, Maddy Perri  
Jr 7/8 Health Sci. Human  
St. Joachim, HWDSB





## PROJECT LISTINGS

### (CONTINUED)

#### **G07 Do You Need a Hand?**

Kristine Fabro, Yoanna Nasir  
Jr 7/8 Eng & Comp Sci  
St. Michael, HWCDSB

#### **G08 Put Me In Coach!**

William Jeneway  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

#### **G09 What Factors Affect Lung Capacity?**

Derek Foo  
Jr 7/8 Health Sci. Human  
Joshua Creek Public School, HDSB

#### **G10 Our teeth are important**

Claudia Brooks, Camila Rabia  
Jr 7/8 Health Sci. Human  
École secondaire Georges-P.-Vanier,  
CSV

#### **G11 BCC Gone**

Teagan Gray  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB

#### **G12 Breathable Knee Brace**

Ema Bauder  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB

#### **G13 Are females smarter than males?**

Afia Ahmed, Humaad Ali  
Jr 7/8 Health Sci. Human  
Tiger Jeet Singh Public School,  
HDSB

#### **G14 How can background noise effect your concentration**

Sofija Harris  
Jr 7/8 Health Sci. Human  
Tiger Jeet Singh Public School,  
HDSB

#### **G15 How Time Pressure Affects the Performance and Judgment of Either Genders**

Ammie Dai  
Jr 7/8 Health Sci. Human  
Appleby College, IND

#### **G16 Human Emotion**

Julianna Sacha, Jessica Mcleish  
Jr 7/8 Health Sci. Human  
Maple Grove Public School, HDSB

#### **G17 Naptime!: Solutions for Sleep Deprivation in School**

Areeba Qureshi  
Int 9/10 Health Sci. Human  
Westmount Secondary School,  
HWDSB

#### **G18 A Tune To Remember**

Adelia Parvinchi  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

#### **H01 Food of the Future**

Jacob Colatosti  
Int 9/10 Biotechnology  
Bishop Ryan Secondary School,  
HWCDSB

#### **H02 Doo Your Duty**

Lauren Paredes, Larissa Colatosti  
Jr 7/8 Biotechnology  
St. Luke, HWCDSB

#### **H03 EDEN-ISS - Future of Food in Space**

Kasia Pontet-DaSilva  
Jr 7/8 Biotechnology  
St. Mary Elementary School, HCDSB

#### **H04 Ti-Dye Energy: Natural Dye Combinations in Dye-Sensitized Solar Cells**

Rya Adronov  
Jr 7/8 Phys & Math Sci  
Sir William Osler, HWDSB

#### **H05 Identifying Cross-Resistance between the Antiseptic Chlorhexidine and Clinically-Used Antibiotics**

Neha Gupta  
Int 9/10 Biotechnology  
Westdale Secondary School,  
HWDSB

#### **H06 Keeping It Fresh: A Natural Alternative for Synthetic Food Preservatives**

Gabrielle Buckley, Anita Chander  
Sr 11/12 Biotechnology  
King's Christian Collegiate, IND

#### **H07 Gold Nanostructured Biosensor to Detect Pathogens**

Camila Moran-Hidalgo  
Sr 11/12 Biotechnology  
Westdale Secondary School,  
HWDSB

#### **H08 From Gene Editing to Mutations**

Shahd Al Hamadneh, Sondos Al Hamadneh  
Jr 7/8 Biotechnology  
Escarpment View Public School,  
HDSB

#### **H09 Factors that Affect Antimicrobial Efficacy in Topical Bacterial Infections**

Maya Morcos  
Sr 11/12 Biotechnology  
King's Christian Collegiate, IND

#### **H10 Vicks VapoRub Bath Bombs**

Gabriella Miklavcic, Alyssa Rocha  
Jr 7/8 Biotechnology  
St. Michael, HWCDSB

#### **H11 Can bioprinting help with clinical complexities?**

Noora Janvekar  
Jr 7/8 Biotechnology  
Joshua Creek Public School, HDSB

#### **H12 The Future of Food**

Haylee Sim  
Jr 7/8 Biotechnology  
Joshua Creek Public School, HDSB

#### **H14 Studying Stats**

Capri Czekaj, Denver Donnelly  
Jr 7/8 Health Sci. Human  
St. Joachim, HWCDSB

## PROJECT LISTINGS (CONTINUED)

### **H15 Le slime avec Orbis, est-ce meilleur?**

Sarra Chaouach  
Jr 7/8 Health Sci. Human  
École secondaire Georges-P.-Vanier,  
CSV

### **H16 Fat Calories**

Jose Calouro  
Jr 7/8 Health Sci. Human  
Cathy Wever, HWDSB

### **H17 Stretch to Your Limit**

Elyse Mostacci  
Jr 7/8 Health Sci. Human  
St. John Paul II, HWCDSB

### **H18 The Stroop Effect**

Hannah Lewin  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

### **J01 The Marangoni Effect in liquid environments**

Maria Chzhen  
Jr 7/8 Phys & Math Sci  
Dalewood, HWDSB

### **J02 Carbohydrate Rush**

Kalina Carr, Chelsea White-Marquard  
Jr 7/8 Phys & Math Sci  
Cathy Wever, HWDSB

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## PROJECT LISTINGS (CONTINUED)

### **J03 Magnetic Movements**

Michael Kalampalikis  
Jr 7/8 Phys & Math Sci  
St. Joachim, HWCDSB

### **J04 THINK FAST- athletes vs gamer**

Jessica Lavender, Megan McClymont  
Jr 7/8 Health Sci. Human  
Balaclava, HWDSB

### **J05 The Science Behind The Classic Cookie**

Avery Edl  
Jr 7/8 Phys & Math Sci  
Balaclava, HWDSB

### **J06 Meilleur gel pour cheveux**

Dadie Musavyi, Mariana Aguilar Serrano  
Jr 7/8 Phys & Math Sci  
École secondaire Georges-P.-Vanier, CSV

### **J07 RezLax**

Domenic Hill  
Jr 7/8 Phys & Math Sci  
J. C. Hill Elementary, SNS

### **J08 How do salinity and temperature affect the density of water?**

Madeeha Naqvi  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **J09 Les moteurs homopolaires: C'est pas sorcier!**

Kader Traoré, Saleh Hagggar  
Jr 7/8 Phys & Math Sci  
École secondaire Georges-P.-Vanier, CSV

### **J10 To Flex or Not to Flex**

Jackson Armitage  
Jr 7/8 Phys & Math Sci  
Trinity Christian School, IND

### **J11 Sports Dynamics**

Devin Racco  
Jr 7/8 Phys & Math Sci  
St. Andrew Elementary School, HCDSB

### **J12 The Mpemba Effect: Can Hot Water Freeze Faster Than Cold Water?**

Emaan Kotwal  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **J13 'I want to drink this coffee cold', said no one ever.**

Abby Horn  
Jr 7/8 Phys & Math Sci  
Rotherglen School (Oakville), IND

### **J14 Organic Batteries**

Kailey Ruitter  
Jr 7/8 Phys & Math Sci  
Cathy Wever, HWDSB

### **J15 The Effect of Corrosion on Water Distribution Pipes**

Hafsah Binte Raheel  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **J16 MARS- SEEK SIGNS OF LIFE**

Joshua Paul  
Jr 7/8 Phys & Math Sci  
St. Mary Elementary School, HCDSB

### **J17 Synthetic Oil, Worth the cost**

Levi Fox  
Jr 7/8 Phys & Math Sci  
Trinity Christian School, IND

### **J18 Divine Intelligence**

Cynthia Coleman  
Jr 7/8 Phys & Math Sci  
St. Vincent de Paul, HWCDSB

### **J19 Battle of the Diapers: Super Absorbent Polymers**

Jannah Khaja  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **K01 Seeing Beyond the Human Eye**

Ben Theron  
Jr 7/8 Phys & Math Sci  
Oakville Christian School, IND

### **K02 Free Energy (Tesla's Powerful Touch)**

Kevin Sos-Medeiros  
Int 9/10 Eng & Comp Sci  
Bishop Ryan Secondary School, HWCDSB

### **K03 Estimation of the acceleration due to gravity (g) using a simple pendulum**

Khanya Ndiweni  
Jr 7/8 Phys & Math Sci  
St. Mary Elementary School, HCDSB

### **K04 Preventing Apple Oxidation**

Yusuf Qadri  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **K05 The Unknown Variables of the Universe**

Iuliya Tryguba, Ashley Stevenson  
Jr 7/8 Phys & Math Sci  
St. Andrew Elementary School, HCDSB

### **K06 Can't touch this**

Sarah Samadi, Laken Harrison  
Jr 7/8 Phys & Math Sci  
Rotherglen School (Oakville), IND

### **K07 How to turn your egg from zero to hero**

Shernee Pencil, Mya Wong  
Jr 7/8 Phys & Math Sci  
Forest Trail Public School, HDSB

### **K08 You Go First**

Kyle Renaud  
Jr 7/8 Phys & Math Sci  
John William Boich Public School, HDSB

### **K09 Musical Emotions**

Rachel Agro  
Jr 7/8 Health Sci. Human  
St. Augustine, HWCDSB

### **K10 Predictability of Double Pendulum**

Jason Ruetas  
Jr 7/8 Phys & Math Sci  
St. Elizabeth Seton Elementary School, HCDSB

### **K11 Batteries of the Future**

Ali Darwish  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **K12 Conserving Momentum with MMDs**

Paul Kyum Lee  
Jr 7/8 Phys & Math Sci  
Dalewood, HWDSB

## PROJECT LISTINGS (CONTINUED)

### **K13 Temperature change the Quality of Liquid**

Han Wei  
Jr 7/8 Phys & Math Sci  
Maple Grove Public School, HDSB

### **K14 Rocketology**

Sam Vossoughi, Nolan Goranson  
Jr 7/8 Phys & Math Sci  
Joshua Creek Public School, HDSB

### **K15 How to know when you need a new sail**

Arbutus Fricker  
Jr 7/8 Phys & Math Sci  
Dalewood, HWDSB

### **K16 Using a Non-Newtonian Fluid as Helmet Padding to Reduce the Risk of**

Julian Alfano  
Jr 7/8 Phys & Math Sci  
St. Margaret Mary, HWCDDB

### **K17 Tee It High and Let It Fly**

Patrick Short, James Cheeranji  
Jr 7/8 Phys & Math Sci  
St. Joachim, HWCDDB

### **K18 Sound Insulation. What Works?**

Suraj Singh, Maanav Parikh  
Jr 7/8 Phys & Math Sci  
Joshua Creek Public School, HDSB

### **K19 Spherification**

Julian Ballentyne  
Jr 7/8 Phys & Math Sci  
Oliver M. Smith Kawennio:io, SNS

### **L01 E-Waste of Printed Circuit Boards**

Brian Machado  
Sr 11/12 Phys & Math Sci  
King's Christian Collegiate, IND

### **L02 Put Your Water To Work: Using Hydro Power To Lift A Load**

Haroon Khan  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **L03 Blasting Off for greatness**

Jakub Hoferica, Matthew Becze  
Jr 7/8 Phys & Math Sci  
St. Andrew Elementary School, HCDSB

### **L04 Little time or lots of time**

Taylor Hill  
Jr 7/8 Phys & Math Sci  
J. C. Hill Elementary, SNS

### **L05 Thermochromic slime**

Yahya Syed  
Jr 7/8 Phys & Math Sci  
Al-Falah Islamic School, IND

### **L06 Sustainable advancements in tire rubber using discarded Biomass**

Vesa Barileva  
Jr 7/8 Phys & Math Sci  
Pilgrim Wood Public School, HDSB

### **L07 Freezing Solutions**

Micah Brouwer, Ben Brouwer  
Jr 7/8 Phys & Math Sci  
Calvin Christian School (Hamilton), IND

### **L08 The best man made creation**

Andrey Martchenko  
Int 9/10 Phys & Math Sci  
Guy B. Brown, HWDSB

### **L09 Heat It Up!**

Melissa Lee, Gheed Khekani  
Jr 7/8 Phys & Math Sci  
Oxford Learning Academy, IND

### **L10 Duracell Quantum vs Coppertop vs Rechargeable Which One?**

Madhav Parekh, Praneel Spolia  
Jr 7/8 Phys & Math Sci  
Ancaster Meadow, HWDSB

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#### **L11 Digital Quill**

Edwin Vlasics, Kareem Fahmi  
Jr 7/8 Eng & Comp Sci  
W. H. Morden Public School, HDSB

#### **L12 Multi Use Dispenser**

Bradley Smith, Tommy Madgett  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB

#### **L13 A Better Metal Detector**

Luke Misa  
Jr 7/8 Eng & Comp Sci  
W. H. Morden Public School, HDSB

#### **L14 Sensorbot**

Owen Paulson, Shuvam Pathak  
Jr 7/8 Eng & Comp Sci  
Oxford Learning Academy, IND

#### **L15 Out of the Blue**

Savannah Koshurba, Thanaa Al-Kaisy  
Jr 7/8 Eng & Comp Sci  
Oxford Learning Academy, IND

#### **L16 Saving the Environment, One Spoon at a Time**

Kallista O'Keefe  
Sr 11/12 Eng & Comp Sci  
King's Christian Collegiate, IND

#### **L17 Can UV light save lives?**

David Vidican  
Int 9/10 Eng & Comp Sci  
St. Thomas Aquinas Secondary School, HCDSB

#### **L18 The Puzzle Pal**

Stephanie Main, Addison Law  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB

#### **L19 The Interphalangeal Joint Flexibility Test: Exploring Joint Flexibility with Piezoelectricity**

Satyam Singh  
Int 9/10 Eng & Comp Sci  
King's Christian Collegiate, IND

#### **M01 Egg-cellent flipper**

Ryan Brouwer, Isaiah Peters  
Jr 7/8 Eng & Comp Sci  
Calvin Christian School (Hamilton), IND

#### **M02 SAS - Software Auto Signout**

Noah Correia  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB

#### **M03 Aero-Tronics: A High Pressure Aeroponics System for Sustainable Indoor Agriculture**

Mitchell Clapperton  
Jr 7/8 Eng & Comp Sci  
Guy B. Brown, HWDSB

#### **M04 Teaching the Artificially Intelligent**

Maria Al Sawadi, Arsema Mulugeta  
Jr 7/8 Eng & Comp Sci  
Cathy Wever, HWDSB

#### **M05 Earmergency**

Rebecca Hu, Fiona Higham  
Jr 7/8 Eng & Comp Sci  
Joshua Creek Public School, HDSB

#### **M06 Testing Battery Voltage**

Maddison Brisson  
Jr 7/8 Phys & Math Sci  
St. Martin of Tours, HWCDSD

#### **M07 Tremblement de terre moins dangereux**

Mahassin Maina, Ava Sassanelli  
Jr 7/8 Eng & Comp Sci  
École secondaire Georges-P.-Vanier, CSV

#### **M08 Application of Silver Nanoparticle Polyurethane Foam Filters**

Mai Lee Ngo  
Sr 11/12 Eng & Comp Sci  
King's Christian Collegiate, IND

#### **M09 Investigation of Slum Housing and Using Elements of Design to Improve Upon it**

Douglas Gulliford  
Jr 7/8 Eng & Comp Sci  
Appleby College, IND

#### **M10 Kermit's Cars**

Aayan Shaikh, Ahmad Abdul-Jabbar  
Jr 7/8 Eng & Comp Sci  
Oxford Learning Academy, IND

#### **M11 iMemory: Independence For Dementia Patients**

Rachel Main, Maja Bizic  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB

#### **M12 Power on the GO**

Kaylee Zhang  
Jr 7/8 Eng & Comp Sci  
Norwood Park, HWDSB

#### **M13 Rust in Piece: The Corrosive Effects on Steel, Aluminum and Galvanized Steel**

Evan Cotter  
Jr 7/8 Eng & Comp Sci  
St. Augustine, HWCDSD

#### **M14 Homopolar Motors**

Brian Yin  
Jr 7/8 Eng & Comp Sci  
St. Andrew Elementary School, HCDSB

#### **M15 Lift A Load With Syringes**

Jyot Sangha  
Jr 7/8 Eng & Comp Sci  
Oxford Learning Academy, IND

#### **M16 Charging The Future**

Zain Mun, Michael Xu  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB



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### (CONTINUED)

**M17 Project ATTIS: An Assistive Aid for Parkinson's Patients.**

Anne Jing  
Sr 11/12 Eng & Comp Sci  
Assumption College School, BHNC

**M18 The LaunchPad™**

Naila Noormohamed  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB

**M19 Eave 3.0: An Autonomous Robotic Eavestrough Cleaner using Artificial Intelligence**

Anthony Saturnino  
Jr 7/8 Eng & Comp Sci  
St. Margaret Mary, HWCDSB

**N01 Jerry's Great Escape**

Jennah Khalil, Mohid Bukhari  
Jr 7/8 Phys & Math Sci  
Oxford Learning Academy, IND

**N02 The Force - How to make a Hand Gesture Controlled Robot**

Ethan Rajack, Jake Peters  
Jr 7/8 Eng & Comp Sci  
St. Joachim, HWCDSB

**N03 Waste Water To Wash Water**

Evan Romachyk  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB

**N04 Investigation on the best method to design and build an innovative magnetic levitation train.**

Josh Mou  
Jr 7/8 Eng & Comp Sci  
Appleby College, IND

**N05 Suspension vs Beam**

Kieran Collins  
Jr 7/8 Eng & Comp Sci  
Sir William Osler, HWDSB

**N06 Perpetual Motion Machines: Lighting Our World Without Touching a Button**

Gladys Kozyra, Audrey Bisson  
Jr 7/8 Eng & Comp Sci  
St. Joseph, HWCDSB

**N07 Wireless Energy and the Spark Sender**

Sydney Eichenberg, Alex Karachok  
Jr 7/8 Eng & Comp Sci  
St. Andrew Elementary School, HCDSB

**N08 Refuel Sidekick**

Phillip Kim, Connor Beaupre  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB

**N09 Advanced Autonomous Shingling Robot**

Joseph Saturnino  
Int 9/10 Eng & Comp Sci  
Bishop Ryan Secondary School, HWCDSB

**N10 Cold Cure**

Keith Allan  
Jr 7/8 Eng & Comp Sci  
Oakville Christian School, IND

**N11 Development of an Intravenous Fluid Delivery System (IV FDS) for use in Developing Countries**

Christopher Lamont  
Jr 7/8 Eng & Comp Sci  
St. Margaret Mary, HWCDSB

**N12 Shocking Humidity**

Uzayr Hussaini, Haris Cheema  
Jr 7/8 Phys & Math Sci  
Tiger Jeet Singh Public School, HDSB

**N13 Convolutional Neural Network to Detect Eyes with Early Stages of Visual Impairment**

Lily Smales  
Jr 7/8 Eng & Comp Sci  
W. H. Morden Public School, HDSB

**N14 C programming -- Password Encryption**

Cindy Zhao  
Jr 7/8 Eng & Comp Sci  
Maple Grove Public School, HDSB

**N15 Is Magnesium best**

Jordan Milnthorpe  
Jr 7/8 Eng & Comp Sci  
John William Boich Public School, HDSB

**N16 Motor Windings**

Moses Lei  
Jr 7/8 Phys & Math Sci  
Cathy Wever, HWDSB

**N17 Bridges to the Breaking Point**

Ada Loveless  
Jr 7/8 Eng & Comp Sci  
Trinity Christian School, IND

**N18 CODIA Mark II**

Ellie Xu  
Sr 11/12 Eng & Comp Sci  
Garth Webb Secondary School, HDSB

**N19 The Greenhouse Effect**

Laaibah Suhail  
Jr 7/8 Earth & Env Sci  
Al-Falah Islamic School, IND

**P01 Natural Pools**

Natalie Guay  
Jr 7/8 Earth & Env Sci  
St. Augustine, HWCDSB

**P02 Rain or tap**

Emma-Grace Zantingh  
Jr 7/8 Life Sciences Non-Human  
Calvin Christian School (Hamilton), IND

**P03 Saving On a Rainy Day: Building a Mini Electric Turbine**

Demi Otubaga, Fola Ayibiowu  
Int 9/10 Eng & Comp Sci  
Hillfield Strathallan College, IND

## PROJECT LISTINGS (CONTINUED)

### **P04 The chemistry of cleaning**

Evan Skye, Alyssa Lickers  
Jr 7/8 Earth & Env Sci  
J. C. Hill Elementary, SNS

### **P05 The Effect Of Different Solvents on The Freezing Point of Water**

Zunaira Ali  
Jr 7/8 Earth & Env Sci  
Al-Falah Islamic School, IND

### **P06 Does Environmentally Friendly Equal Effective?**

Bassant Ali  
Jr 7/8 Phys & Math Sci  
Alexander's Public School, HDSB

### **P07 No Water.....No Problem! A study on the effect of watering plants with laundry detergent.**

Cale Symons  
Jr 7/8 Life Sciences Non-Human  
Trinity Christian School, IND

### **P08 How Wi-Fi Signals Affect Plant Growth**

Owen Luongo  
Jr 7/8 Earth & Env Sci  
Pilgrim Wood Public School, HDSB

### **P09 Do plants talk?**

Jack Kessig  
Jr 7/8 Life Sciences Non-Human  
W. H. Morden Public School, HDSB

### **P10 Its Getting Hot In Here (How do different natural surfaces affect atmospheric temperatures)**

Brielle Clause  
Jr 7/8 Earth & Env Sci  
Emily C. General Elementary School, SNS

### **P11 Edible pop**

Colin Ott, Abraham Julien  
Jr 7/8 Earth & Env Sci  
Calvin Christian School (Hamilton), IND

### **P12 Are Eco-Friendly Detergents Less Toxic Than Regular, Everyday Detergents?**

Aimen Shaikh, Areeb Iqbal  
Sr 11/12 Earth & Env Sci  
Glendale, HWDSB

### **P13 Mars**

Kaysee Mitchell, Krysten Killen  
Jr 7/8 Phys & Math Sci  
Forest Trail Public School, HDSB

### **P14 The Effect of Different Ionic Compounds on Water Electrolysis**

Simran Matharu  
Jr 7/8 Phys & Math Sci  
Ancaster Meadow, HWDSB

### **P15 Electric cars**

Dhruv Patel, Marcus Jafrabad  
Jr 7/8 Phys & Math Sci  
Forest Trail Public School, HDSB

### **P16 Using food scraps to enrich soil and promote plant growth**

Matthew Lawford, Zaid Dabbour  
Jr 7/8 Earth & Env Sci  
Alexander's Public School, HDSB

### **P17 Look What We've Done**

Emmalea Thomas  
Jr 7/8 Earth & Env Sci  
J. C. Hill Elementary, SNS

### **P18 One Snip At A Time**

Aiden Scheben, Steven Higgins  
Jr 7/8 Earth & Env Sci  
St. Augustine, HWCDSD

### **P19 Eco-Friendly Rusting Solutions through Redox Reactions Regarding Economic Sustainability**

Christina Hanna  
Sr 11/12 Phys & Math Sci  
King's Christian Collegiate, IND

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### **Q01 Liquids Becoming Gases - How Much Gas Does Your Favourite Beverage Produce?**

Kirstyn Bax, Julie Reitsma  
Jr 7/8 Phys & Math Sci  
Calvin Christian School (Hamilton),  
IND

### **Q02 Planet or Plastic**

Aashi Chaubey  
Jr 7/8 Earth & Env Sci  
W. H. Morden Public School, HDSB

### **Q03 Fertilizer and Algae: Mass Murderers**

Rose Galante  
Jr 7/8 Earth & Env Sci  
Dalewood, HWDSB

### **Q04 Urine-Tricity**

Jasalyn Jolly  
Jr 7/8 Earth & Env Sci  
Alexander's Public School, HDSB

### **Q05 Tectonic Plates**

Josie Frasson  
Jr 7/8 Earth & Env Sci  
St. Augustine, HWCDSD

### **Q06 Edible Water Bottles**

Sydney Daez  
Jr 7/8 Phys & Math Sci  
St. Joachim, HWCDSD

### **Q07 Water Savors**

Lily Hill, Alison Greene  
Jr 7/8 Earth & Env Sci  
J. C. Hill Elementary, SNS

### **Q08 Will It Be Clean**

Luke Hinca, Jacob Hanna  
Jr 7/8 Earth & Env Sci  
St. Andrew Elementary School,  
HCDSB

### **Q09 The Effect of Different Sweeteners Substitutes in Baking**

Tori Bakker  
Jr 7/8 Phys & Math Sci  
Calvin Christian School (Hamilton),  
IND

### **Q10 Filter This!**

Zander Wythe, Mason Jamieson  
Jr 7/8 Earth & Env Sci  
J. C. Hill Elementary, SNS

### **Q11 Here Comes the Sun**

Caitlyn Gratton, Ayla White  
Jr 7/8 Phys & Math Sci  
St. Joachim, HWCDSD

### **Q12 The Effect of Oil Spills on Aquatic Plants**

Haris Bajwa  
Jr 7/8 Earth & Env Sci  
Al-Falah Islamic School, IND

### **Q13 Testing the Biodegradability of Bioplastics**

Kristin Ellerbeck  
Sr 11/12 Earth & Env Sci  
King's Christian Collegiate, IND

### **Q14 Solar Ovens - A Hot Topic**

Claire Babineau, Maya Kasprzyk  
Jr 7/8 Phys & Math Sci  
St. Joachim, HWCDSD

### **Q15 Plastic Delicacies**

Mohammed Torkmani, Raphael Xu  
Jr 7/8 Earth & Env Sci  
Maple Grove Public School, HDSB

### **Q16 The Effects of Acid and Salt Pollutants on Plant Growth**

Zainab Inam, Yujin Kim  
Sr 11/12 Earth & Env Sci  
Glendale, HWDSB

### **Q17 Oil Spills Cleaner Water Faster**

Hannah McDonald, Monika  
Lekarczyk  
Jr 7/8 Earth & Env Sci  
Our Lady of Mount Carmel,  
HWCDSD



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## PROJECT LISTINGS (CONTINUED)

### **Q18 Kinetic Highways**

Alexandru Atanasoaei, William Tremblay  
Jr 7/8 Phys & Math Sci  
Sts. Peter & Paul, HWCDSB

### **Q19 The Best Cleaning for The Environment.**

John Ecclestone, Jack Guillemette  
Jr 7/8 Earth & Env Sci  
Pilgrim Wood Public School, HDSB

### **R02 One Bucket Of Oil Burned Is One Glacier Melted**

Aleeza Wasi, Mahnoor Fazal  
Jr 7/8 Earth & Env Sci  
Escarpment View Public School, HDSB

### **R03 Can Mealworms Eat Styrofoam and Help Save the Environment?**

Luka Cepuran, Thomas Satosek  
Jr 7/8 Earth & Env Sci  
St. Martin of Tours, HWCDSB

### **R04 Water Without a Bottle**

Nour Hanna  
Sr 11/12 Phys & Math Sci  
King's Christian Collegiate, IND

### **R05 The Future of Cleaner Cars**

Téa Hope, Beth Dieroff  
Jr 7/8 Earth & Env Sci  
Aldershot Elementary, HDSB

### **R06 The Effects Of Green Roofs on The Environment**

Lacey Swamy  
Jr 7/8 Earth & Env Sci  
Appleby College, IND

### **R07 Quicksand**

Stephanie Buturajac, Nolan Olszewski  
Jr 7/8 Earth & Env Sci  
St. Luke, HWCDSB

### **R08 Sun In, Salt Out**

Ryan Van Doodewaard, Matthew Karens  
Jr 7/8 Eng & Comp Sci  
Oakville Christian School, IND

### **R09 Cooking with the Sun**

Nahor Debesay  
Jr 7/8 Earth & Env Sci  
St. Margaret Mary, HWCDSB

### **R10 Biodegradable Plastic**

Rabia Ikram, Shahla Eslami  
Jr 7/8 Phys & Math Sci  
Ancaster Meadow, HWDSB

### **R11 IKO: Constructing an environmentally-friendly solar powered phone charger**

Isra Bashir  
Jr 7/8 Eng & Comp Sci  
Sir William Osler, HWDSB

### **R12 Carbon Footprint: China Imported Steel vs. Canadian Produced Steel**

Ruhan Soni  
Jr 7/8 Earth & Env Sci  
Hillfield Strathallan College, IND

### **R13 Plants VS Oil: Can Plants Clean Up Oil Spills?**

Shehwar Khan  
Jr 7/8 Earth & Env Sci  
Al-Falah Islamic School, IND

### **R14 The Acceleration of the Degradation of Polypropylene**

Julia Xu  
Int 9/10 Earth & Env Sci  
White Oaks Secondary School, HDSB



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### (CONTINUED)

#### **R15 Sure It's Pure?**

Kathryn Whetstone  
Jr 7/8 Earth & Env Sci  
Calvin Christian School (Hamilton),  
IND

#### **R16 Enhancing Schools With Efficient Eco-Technology**

Soujanya Kumar, Julie Ward  
Jr 7/8 Earth & Env Sci  
John William Boich Public School,  
HDSB

#### **R17 The Electrical capability of a Homemade Wind Turbine When Met with Various wind sources**

Luke Tesser  
Jr 7/8 Eng & Comp Sci  
Appleby College, IND

#### **R18 Where's The Proof?**

Deborah-Peace Dada  
Jr 7/8 Life Sciences Non-Human  
Calvin Christian School (Hamilton),  
IND

#### **R19 Plant Growth VS. Classical Music**

Shivani Sivagurunathan  
Jr 7/8 Life Sciences Non-Human  
Tiger Jeet Singh Public School,  
HDSB

#### **S01 Photo-Spinach-Sis**

Nathan Klosay, Rowan Burghall  
Jr 7/8 Life Sciences Non-Human  
Cathy Wever, HWDSB

#### **S02 Germs at school: The Hidden Truth!**

Aleesa Rizwan, Hana Gharib  
Jr 7/8 Life Sciences Non-Human  
Escarment View Public School,  
HDSB

#### **S03 Glitching Growth**

Maya Popowich, Alyssa Bashari  
Jr 7/8 Life Sciences Non-Human  
St. Mark Elementary School, HCDSB

#### **S04 The Effect of Technology on Attention Span**

Abigail Ruhland  
Sr 11/12 Health Sci.  
Human  
North Park Collegiate and Vocational  
School, GEDSB

#### **S05 Are girls really smarter than boys?**

Aman Ghauri, Manal Aquib  
Jr 7/8 Health Sci. Human  
Tiger Jeet Singh Public School,  
HDSB

#### **S06 Don't Just Sit There! Start Cellular Respiration!**

Maria Akhtar, Aliza Saeed  
Jr 7/8 Health Sci. Human  
Escarment View Public School,  
HDSB

#### **S07 Are Essential Oils Safe**

Aydin Virani  
Jr 7/8 Health Sci. Human  
Escarment View Public School,  
HDSB

#### **S08 Make a Joyful Noise - Music Therapy for Children with Down Syndrome**

Maggie Wilson  
Jr 7/8 Health Sci. Human  
Oakville Christian School, IND

#### **S09 LauCorail Sunscreen**

Laura Busque  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB

#### **S10 Do adults and children differ in their ability to detect genuine and fake smiles?**

Priya Dath  
Int 9/10 Health Sci. Human  
Waterdown District Secondary  
School, HWDSB

#### **S11 What is the most dangerous form of Distracted Driving?**

Nyle Ahmad, Nikhil Khosla  
Jr 7/8 Health Sci. Human  
Joshua Creek Public School, HDSB

#### **S12 The Science Behind Bath Bombs**

Ashley Zhao, Eileen Yan  
Jr 7/8 Health Sci. Human  
Escarment View Public School,  
HDSB

#### **S13 Cannabis: helpful or harmful?**

Jumana Ali, Ruchir Lalwani  
Jr 7/8 Health Sci. Human  
Escarment View Public School,  
HDSB

#### **S14 Farm of the future!**

Abraham Durrani  
Jr 7/8 Biotechnology  
Joshua Creek Public School, HDSB

#### **S15 Potato Battery - Can We Run The World on Spuds?**

Sophie Mari, Diego Cuan-Celis  
Jr 7/8 Phys & Math Sci  
St. Elizabeth Seton Elementary  
School, HCDSB

#### **S16 Électrolyse**

Yvana Mougou, Alexis Flores  
Jr 7/8 Phys & Math Sci  
École secondaire Georges-P.-Vanier,  
CSV

#### **S17 Collisions Using Bernoulli's Principle**

Min-A Jung, Nathan Lee  
Jr 7/8 Phys & Math Sci  
St. Andrew Elementary School,  
HCDSB

#### **S18 Be EMF Safe**

Aarush Chawla  
Jr 7/8 Phys & Math Sci  
Joshua Creek Public School, HDSB

#### **S19 Glowing Pickle**

Tyton Jayne  
Jr 7/8 Phys & Math Sci  
Oliver M. Smith Kawennio:io, SNS

#### **S20 The Solar Step**

Tavian Augustus  
Jr 7/8 Phys & Math Sci  
St. Augustine, HWCDSD

## PROJECT LISTINGS (CONTINUED)

### **T01 Elevator to Everywhere**

Monica Mahut  
Sr 11/12 Eng & Comp Sci  
M. M. Robinson High School, HDSB

### **T02 Artificial Intelligence is the future**

Caleb Jung, Affan Abdin  
Jr 7/8 Eng & Comp Sci  
Escarpment View Public School, HDSB

### **T03 A New App To Improve The Charging Efficiency Of Mobile Devices**

Chen Qing  
Int 9/10 Eng & Comp Sci  
Hillfield Strathallan College, IND

### **T04 Keeping Roofs Road Safety One Snowflake At A Time**

Andrew Probert  
Int 9/10 Eng & Comp Sci  
Oakville Trafalgar High School, HDSB

### **T05 Ultra hydrophobic materials**

Valentina Rueda, Isabella Hernandez  
Jr 7/8 Eng & Comp Sci  
Forest Trail Public School, HDSB

### **T06 Roller Coaster Physics**

Abdurrahman Faisal, Ammar Faisal  
Jr 7/8 Eng & Comp Sci  
Escarpment View Public School, HDSB

### **T07 Coin Detection and Recognition in Images**

Matthew Aharonian  
Jr 7/8 Eng & Comp Sci  
St. Andrew Elementary School, HCDSB

### **T08 How Secure is Your Password?**

Hans-Martin Krishnan  
Jr 7/8 Eng & Comp Sci  
Oakville Christian School, IND



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### **T09 The Smart Windmill**

Ojas Suras, Danyal Yousuf  
Jr 7/8 Eng & Comp Sci  
Escarpment View Public School,  
HDSB

### **T10 The All 'n One Pot 4 Plants**

Jaden Campbell, Patryk Kopacz  
Jr 7/8 Eng & Comp Sci  
Sts. Peter & Paul, HWCDSB

### **T11 Secure !?! Are You Sure ?!?**

Spencer Korol  
Jr 7/8 Health Sci. Human  
Trinity Christian School, IND

### **T12 Holograms**

Misimi Sanni  
Jr 7/8 Phys & Math Sci  
Oakville Christian School, IND

### **T13 Artificial Intelligence & IoT to Reimagine the White Cane**

Riya Karumanchi  
Int 9/10 Eng & Comp Sci  
White Oaks Secondary School,  
HDSB

### **T14 Automatic Attendance Using Facial Recognition**

Mahir Sabharwal  
Jr 7/8 Eng & Comp Sci  
Joshua Creek Public School, HDSB

### **T15 S.I.B.S.**

Daniella Iannuzzi, Alissa Guagliano  
Jr 7/8 Eng & Comp Sci  
St. Clare of Assisi, HWCDSB

### **T16 The Electric solenoid motor**

Kristijan Maletic  
Jr 7/8 Eng & Comp Sci  
St. Andrew Elementary School,  
HCDSB

### **T17 Liar Liar Pants On Fire: Measuring Galvanic Skin Response**

Katie Cosgriffe  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB

### **T18 RADbotics**

Amara Damji, Jahnavi Malhotra  
Jr 7/8 Eng & Comp Sci  
Escarpment View Public School,  
HDSB

### **T19 Vision processing for astronomical applications**

Tyler O'Dell  
Sr 11/12 Eng & Comp Sci  
Dr. Frank J. Hayden Secondary  
School, HDSB

### **T20 You 2.0**

William Schwartz  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB

### **T21 The School Bus Of Infinite Possibilities**

Fawz Mehfil, Daniel Zhao  
Jr 7/8 Eng & Comp Sci  
Escarpment View Public School,  
HDSB



# KING

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**Encourages each  
BASEF2019  
exhibitor  
to follow your  
dreams.**

**Congratulations  
on your projects  
and all your hard  
work.**



## PROJECT LISTINGS (CONTINUED)

### **T22 FeelSafe**

Arjun Sarao, Jerron Zhang  
Int 9/10 Eng & Comp Sci  
Westdale Secondary School,  
HWDSB

### **T23 Tardigrade Mech: Using Boron Nitride Nanotubes for Space Radiation Protection**

Arielle Ainabe  
Sr 11/12 Phys & Math Sci  
Garth Webb Secondary School,  
HDSB

### **T24 Plastic Bottles or Plastic Water?**

Ananya Dhillon  
Jr 7/8 Phys & Math Sci  
Escarpment View Public School,  
HDSB

### **T25 Magnetic Levitation**

Hailey Israel  
Jr 7/8 Phys & Math Sci  
St. Mary Elementary School, HCDSB

### **U02 Need some TLC? Tigernut Liquid Coagulant: An undiscovered biocoagulant for water turbidity reduction**

Sabrina Mogus  
Int 9/10 Earth & Env Sci  
White Oaks Secondary School,  
HDSB

### **U03 Humidity VS Wood**

Joanna Wang  
Jr 7/8 Earth & Env Sci  
Dalewood, HWDSB

### **U04 Salt Water: The Solution to Pollution**

Claire Jung, Sun Min Choi  
Jr 7/8 Eng & Comp Sci  
Forest Trail Public School, HDSB

### **U05 The Water Battery**

Rohan Naik  
Jr 7/8 Eng & Comp Sci  
W. H. Morden Public School, HDSB

### **U06 Bioplastic**

Ryedan Annett, Charles Williams  
Jr 7/8 Earth & Env Sci  
Emily C. General Elementary School,  
SNS

### **U07 Can we combine Flying Wing and Machine Learning Technology for quicker emergencies response?**

Gyu Tae Bae  
Int 9/10 Eng & Comp Sci  
White Oaks Secondary School,  
HDSB

### **U08 HealthNet: Revolutionizing Health Care with Data Aggregation and Convolutional Neural Networks**

Jacob Meleka  
Sr 11/12 Eng & Comp Sci  
North Park Collegiate and Vocational  
School, GEDSB

### **U09 An app that can help diagnose, monitor, reduce or find help for those dealing with depression.**

Alicia Ruetas  
Int 9/10 Eng & Comp Sci  
Robert Bateman High School, HDSB

### **U10 Using B.C.I. And A.I. For Emotion Detection For Mental Health Applications**

Jeffrey Klinck  
Jr 7/8 Eng & Comp Sci  
W. H. Morden Public School, HDSB

### **U11 What are Proximity Sensors?**

Hannah Lee  
Jr 7/8 Eng & Comp Sci  
Oakville Christian School, IND

### **U12 Hot is Cool**

Stefanie Mahut  
Int 9/10 Eng & Comp Sci  
M. M. Robinson High School, HDSB

### **U13 Light Up Silent Lives**

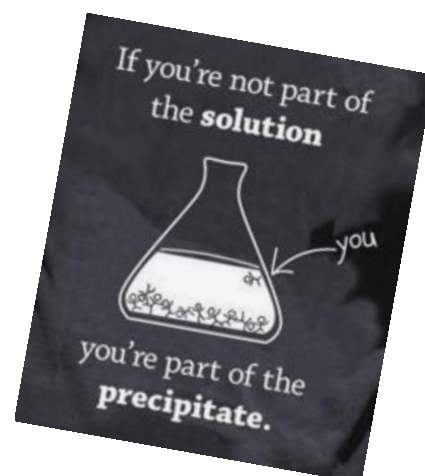
Anajanaa Vimalathas, Molly Jin  
Jr 7/8 Eng & Comp Sci  
Tiger Jeet Singh Public School,  
HDSB

### **U14 Episodic Future Thinking (EFT) App**

Justin Semelhago, Hassaan Inayatali  
Sr 11/12 Eng & Comp Sci  
Hillfield Strathallan College, IND

### **U15 Smart Shower**

Shrijah Narendiran  
Jr 7/8 Eng & Comp Sci  
Alexander's Public School, HDSB



## **SPECIAL AWARDS – 2019**

*Special Awards are given by organizations and groups to recognize deserving projects that deal with topics of interest to the donor.*



### **ArcelorMittal Dofasco Awards**

#### ***Central Trades & Services Department Award***

Prize: \$100

Criteria: Project that best displays the use of scientific principles in applying technology for the betterment of people or machines.

#### ***Chemical Testing Award***

Prize: \$100

Criteria: Use of chemical testing and/or chemical principles to solve a technical problem.

#### ***Commercial Department Award***

Prize: \$100

Criteria: Commercial and business planning tools in developing a potentially new or improved commercial product.

#### ***Engineering Award***

Prize: \$100

Criteria: Engineering & Maintenance Technology principles and design to solve a technical problem.

#### ***Environment Award***

Prize: \$100

Criteria: Physics, chemistry, or engineering to explore or solve a technical problem associated with environmental issues.

#### ***Global R&D Hamilton Award for Outstanding Research***

Prize: \$100

Criteria: Project that best displays investigative research & scientific principles to explore or solve a technical problem.

#### ***Global R&D Hamilton Award for Technology Application***

Prize: \$100

Criteria: Project that best displays the innovative application of materials, products, processes or design principles.

#### ***Hot Mill Award***

Prize: \$100

Criteria: Creative principles and design to solve a manufacturing or process problem.

#### ***Human Resources Training & Development Award***

Prize: \$100

Criteria: Teaching and training techniques in explaining or exploring a technical problem.

#### ***Information Systems Award***

Prize: \$100

Criteria: Information Systems and design to solve a technical problem.

#### ***Ironmaking Award***

Prize: \$100

Criteria: Project that best displays the use of metallurgical or material science principles to solve a technical problem.

#### ***Material Handling & Logistics Department Award***

Prize: \$100

Criteria: Project that best displays the use of scientific principles in exploring or solving a problem related to material conveyance, transportation or logistics.

#### ***Medical Department Award***

Prize: \$100

Criteria: Scientific principles in exploring or solving a problem related to human health issues.

## **SPECIAL AWARDS (Continued)**

### **ArcelorMittal Dofasco Awards (continued)**

#### ***Process Automation Award***

Prize: \$100

Criteria: Project best displaying the use of process automation principles and design to solve a technical problem.

#### ***Product Development Business Process Award***

Prize: \$100

Criteria: Product Development principles and design in developing a new consumer product with commercial potential.

#### ***Quality Systems Award***

Prize: \$100

Criteria: Quality Systems principles and design to solve a technical problem.

#### ***Steelmaking Award***

Prize: \$100

Criteria: Engineering and Materials Science principles to solve a technical problem.

#### ***Transforming Tomorrow Award***

Prize: \$1,000

Criteria: A project displaying rigorous scientific or engineering methods that investigates steelmaking processes or steel products.

### **Artistically Inspired Display Awards**

Prize: Two awards of \$50 each

Criteria: To the most artistically inspired display.

### **Association for Iron & Steel Technology Northern Chapter Awards**

Prize: Two awards of \$100 each

Criteria: For outstanding projects related to one of the following fields: metallurgy, materials science, chemical, electrical, mechanical, industrial, environmental, civil and computer engineering.

### **Canadian Institute of Mining, Metallurgy and Petroleum (Hamilton Branch) Awards**

Prize: Two awards of \$100 each

Criteria: Outstanding projects relating to mining, metallurgy and petroleum, any level.

### **Canadian Nuclear Society (Golden Horseshoe Branch) Awards**

Prize: Two awards of \$125 each for intermediate or senior projects and two awards of \$75 each for junior projects.

Criteria: Projects relating to nuclear science and engineering, energy research, or climate sciences.

### **Chairman's Award**

Prize: \$100

Criteria: A project that exhibits good scientific, engineering or mathematical thought, but did not receive a merit award or any special awards.

### **Chemical Institute of Canada - Hamilton Section Awards**

Prize: Three awards of \$100 each

Criteria: Projects relating to chemistry, chemical engineering, or chemical technology.

### **Conservation Halton Awards**

Prize: Two awards of \$100 each

Criteria: Projects that contribute to environmental research, protection, conservation, restoration or awareness by Halton students.

## **SPECIAL AWARDS (Continued)**

### **Dillon Consulting Awards**

#### ***Science and Engineering Award***

Prize: \$250

Criteria: Project showing excellence in science and/or engineering.

#### ***Biological Sciences Award***

Prize: \$250

Criteria: Project showing excellence in biological sciences.

### **Dr. Colin J.L. Lock Memorial Chemistry Award**

Prize: \$100

Criteria: A project demonstrating the best application of chemistry.

### **Dr. Laura Blew Social Sciences Awards**

Prize: Two awards of \$50 each

Criteria: Best two social science based projects.

### **Dr. M. Doyle Biology Award**

Prize: \$250, a plaque, and a trophy for the winner's school

Criteria: Best biology project.

### **Dr. Nicola Simmons Award in Cognition Studies**

Prize: \$100

Criteria: An exemplary project in cognition studies.

### **Doris Casey and Gwen Nicolls Disability Solutions Awards**

Prize: Two awards of \$100 each

Criteria: Most innovative and creative technical solutions focused on assisting individuals to overcome or compensate for physical or cognitive disabilities.

### **Electrical Construction Association of Hamilton Awards**

Prize: Two awards of \$250 each

Criteria: Projects displaying the best and safest use of electricity in the most creative manner.

### **Environmental Inspiration Award**

Prize: \$250

Criteria: The best environmental project that addresses an environmental problem in an inspirational/innovative way.

### **Farncombe Family Digestive Health Research Awards**

Prize: Two awards of \$250 each

Criteria: Projects that explore digestive health, related diseases or general family nutrition through experimentation or in depth literature.

### **Gowling WLG Innovation Awards**

#### ***Grand Winner***

Prize: \$300 and a complimentary consultation with a patent or trademark agent at the Gowling WLG Hamilton office.

Criteria: Best project demonstrating potentially patentable subject matter.

#### ***Runner Up***

Prize: \$200

Criteria: An excellent project demonstrating potentially patentable subject matter.

### **Hamilton Academy of Dentistry Awards**

Prize: 1<sup>st</sup> \$250, 2<sup>nd</sup> \$150, 3<sup>rd</sup> 100

Criteria: Intermediate or senior projects related to dentistry in general; to one specific area of dentistry; or related to oral hard & soft tissues specifically; to some aspect of the delivery of dentistry to the general (or specific) population; or an aspect related to prevention of dental disease.

## **SPECIAL AWARDS (Continued)**

### **Hamilton Association da Vinci Award**

Prize: \$250

Criteria: Project that best combines personal initiative and creativity with a sound, demonstrated understanding of the scientific method.

### **Hamilton Chamber of Commerce Innovation Awards**

Prize: 1<sup>st</sup> \$250, 2<sup>nd</sup> \$150, 3<sup>rd</sup> \$100

Criteria: The most deserving projects by students from Hamilton with potential commercial applications focused on improving our local environment, communities or quality of life.

### **Hamilton Wentworth Occasional Teacher Awards**

#### ***Environment and Education Award***

Prize: \$50

Criteria: Junior project that most effectively educates others about an environmental issue.

#### ***Healthy Lifestyles Award***

Prize: \$50

Criteria: Junior project that most effectively educates others regarding the role of nutrition and/or exercise in maintaining a healthy lifestyle.

#### ***Presentation and Aesthetics Award***

Prize: \$50

Criteria: Junior project that demonstrates a high level of visual appeal, creativity, and overall quality of presentation.

### **Hillfield Strathallan College Awards of Excellence**

#### ***Life Sciences Award***

Prize: \$100

Criteria: Junior project that best displays excellence in life sciences.

#### ***Physical Sciences Award***

Prize: \$100

Criteria: Intermediate project that best demonstrates an understanding of the scientific process in the physical sciences.

#### ***Innovation Award***

Prize: \$100

Criteria: Senior project that best displays innovation related to environmental sciences or biotechnology.

### **Indigenous Peoples of Canada Scientific Study Awards**

Prize: 1<sup>st</sup> \$140, 2<sup>nd</sup> \$80, 3<sup>rd</sup> \$80

Criteria: Projects demonstrating the application of established scientific methods to topics relevant to the culture, heritage or issues of the indigenous peoples of Canada.

### **IEEE (Institute of Electrical and Electronic Engineers) Hamilton Section Awards**

Prize: Two awards of \$100 each

Criteria: Best use of electronics in a science or engineering project.

TAKE ALL THE BAD  
SCIENCE JOKES  
AND  
BARIUM



## **SPECIAL AWARDS (Continued)**

### **International Science & Engineering Affiliated Fair Awards**

Prize: Certificates

Criteria: Deserving intermediate or senior projects related to topics of interest to the following organizations:

#### ***American Meteorological Society***

2 awards for creative scientific endeavour in the areas of atmospheric and related oceanic and hydrologic sciences.

#### ***American Psychological Association***

Outstanding research in psychological science in the category of behavioural and social sciences or any category related to psychology.

#### ***ASM Materials Education Foundation Award***

The best materials engineering project.

#### ***Association for Women Geoscientists***

A project by female(s) exemplifying a high standard of innovation and scientific excellence in the geosciences.

#### ***Intel Excellence in Computer Science***

Additional Award: US\$200

Best project in computer science.

#### ***MU Alpha Theta***

Most challenging, original, thorough and creative investigation of a problem involving mathematics.

#### ***Ricoh USA, Inc.***

Outstanding project that addresses issues of environmental responsibility and sustainable development.

#### ***Society for In Vitro Biology***

Most outstanding Grade 11 project exhibiting in the areas of plant or animal in vitro biology or tissue culture.

#### ***Yale Science & Engineering Association***

Most outstanding Grade 11 project in computer science, engineering, physics or chemistry.

### **James A Winger Award, sponsored by the Hamilton Amateur Astronomers**

Prize: \$200

Criteria: Best project in demonstrating an understanding of a topic related to astronomy or physics.

### **John W. Howard Materials Research Award**

Prize: \$100

Criteria: A project demonstrating innovation in engineering materials, especially concrete.

### **Laurentian Chapter of SETAC Award**

Prize: Two awards of \$100 each

Criteria: Best projects and presentations on a topic related to environmental toxicology, chemistry, pollution, contamination, remediation or environmental protection.

### **Mahut-Brent Award for Women in Science and Engineering**

Prize: \$100 and a certificate

Criteria: An outstanding project by a female student that demonstrates an excellent application of scientific thought and creativity towards a subject matter that the participant is passionate about.

## **SPECIAL AWARDS (Continued)**

### **McMaster University Awards**

#### **Department of Chemistry and Chemical Biology Award**

Prize: \$100

Criteria: An outstanding intermediate or senior project connected to chemistry or chemical biology.

#### **Department of Chemical Engineering & Chemical Engineering Club Award**

Prize: \$250

Criteria: An outstanding intermediate or senior project demonstrating aspects of chemical engineering, particularly in the fields of biomaterials, polymer science, process systems design, or water and energy systems.

#### **Department of Materials Science and Engineering**

Prize: \$100 and a trophy

Criteria: Three awards, one at each level, to projects displaying the best innovative use, design, or testing of materials.

#### **LEAP Academy Female Award of Innovation**

Prize: Free registration to LEAP summer program for one session (July 2-12, 2019) valued at \$750.

Criteria: An intermediate project of a female participant that demonstrates creativity and originality. Prize must be claimed by April 15, 2019.

#### **School of Geography and Earth Sciences Awards**

##### ***Earth and Environmental Sciences Award***

Prize: \$100

Criteria: Outstanding project in earth science or environmental science.

##### ***Geography Award***

Prize: \$100

Criteria: Outstanding project in geography or social science.

#### **Venture Award of Innovation**

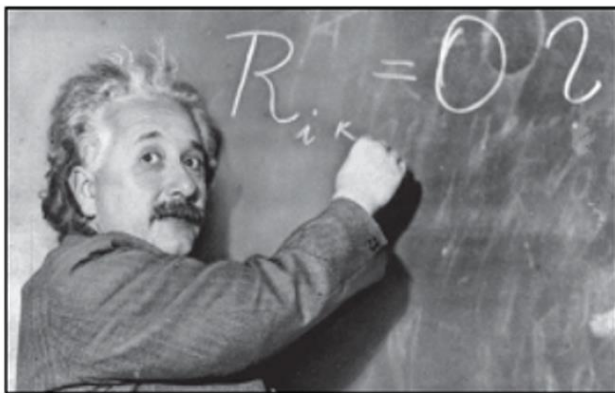
Prize: Free registration to Engineering & Science Week 1 (July 2-5, 2019) valued at \$270.

Criteria: A project by a female grade 7 participant that demonstrates creativity and originality. Prize must be claimed by April 15, 2019.



**Hamilton-Wentworth Catholic Schools**

*150+ years of 'Believing, Achieving, Serving'*



**"Science without religion is lame; religion without science is blind."**

*~ Albert Einstein*

**Congratulations BASEF  
59 years  
of  
Science Success!**

**Thank you to all the participants  
& volunteers  
who make it happen.**

**Patrick J. Daly, Chairperson of the Board  
David Hansen, Director of Education**

**[www.hwcdsb.ca](http://www.hwcdsb.ca)**

## **SPECIAL AWARDS (Continued)**

### **Mechanical Contractors Association of Hamilton Niagara Award**

Prize: \$250

Criteria: Best engineering project at the intermediate or senior level.

### **Mohawk College Awards**

#### **Building & Construction Sciences Awards**

##### ***Building Sciences Award***

Prize: \$50

Criteria: Project related to building sciences, building materials, or energy conservation in structures.

##### ***Civil Engineering Award***

Prize: \$50

Criteria: Project related to the field of civil engineering.

##### ***Transportation Engineering Award***

Prize: \$50

Criteria: Project related to planning, design, or operation of any transportation mode or facility.

#### **Computer Science & Information Technology Excellence Awards**

Prize: Three awards of \$50 each

Criteria: Projects that demonstrate a thorough understanding of computer application and design in today's world.

#### **Electrical Engineering Technology Awards**

##### ***Computer Engineering Technology Award***

Prize: \$50

Criteria: A deserving project in computer engineering technology.

##### ***Electrical Engineering Award***

Prize: \$50

Criteria: A deserving project in electrical engineering studies.

##### ***Energy Systems Award***

Prize: \$50

Criteria: A deserving project in energy systems.

#### **Mathematics Awards**

Prize: Two awards of \$50 each, one at the junior level and one at the senior level.

Criteria: Deserving projects in the category of mathematics or statistics.

#### **Nelson Steel Awards**

Prize: Two awards of \$100 each

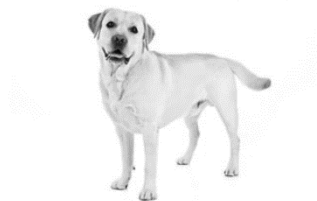
Criteria: Outstanding junior projects related to two of the following fields: steel, environmental or chemistry.

#### **New Health Scientist Award**

Prize: \$50

Criteria: A worthy junior project showing good potential for improving the health of our community.

What kind of dog does  
a Chemist have?



A Lab!

## **SPECIAL AWARDS (Continued)**

### **Nikola Tesla Innovation Awards**

Prize: Gold \$250, Silver \$150, Bronze \$100

Criteria: Projects that best display the most innovative application of the body of knowledge associated with Nikola Tesla's work, and/or acknowledgement in the display of Nikola Tesla's contribution by way of his work and inventions.

### ***Nikola Tesla Honourable Mention Awards***

Prize: Twenty awards of \$50 each

Criteria: Projects with electricity as a key element.

### **Oakville Green Conservation Association Award for the Environment**

Prize: \$100

Criteria: A project that best promotes understanding and stewardship of the environment.

### **Primary Fluid Systems Awards**

Prize: Twenty awards of \$100 each

Criteria: Outstanding projects in earth and environmental, engineering or physical sciences.

### **Procor Engineering Awards**

Prize: Junior \$50, Intermediate \$100, Senior \$150

Criteria: Excellent engineering projects.

### **Professional Engineers of Ontario - Hamilton/Burlington Chapter Awards**

Prize: 1<sup>st</sup> \$250, 2<sup>nd</sup> \$150, 3<sup>rd</sup> \$100

Criteria: Deserving, exceptional, outstanding projects in engineering at any level.

### **Professional Engineers Ontario - Oakville Chapter Awards**

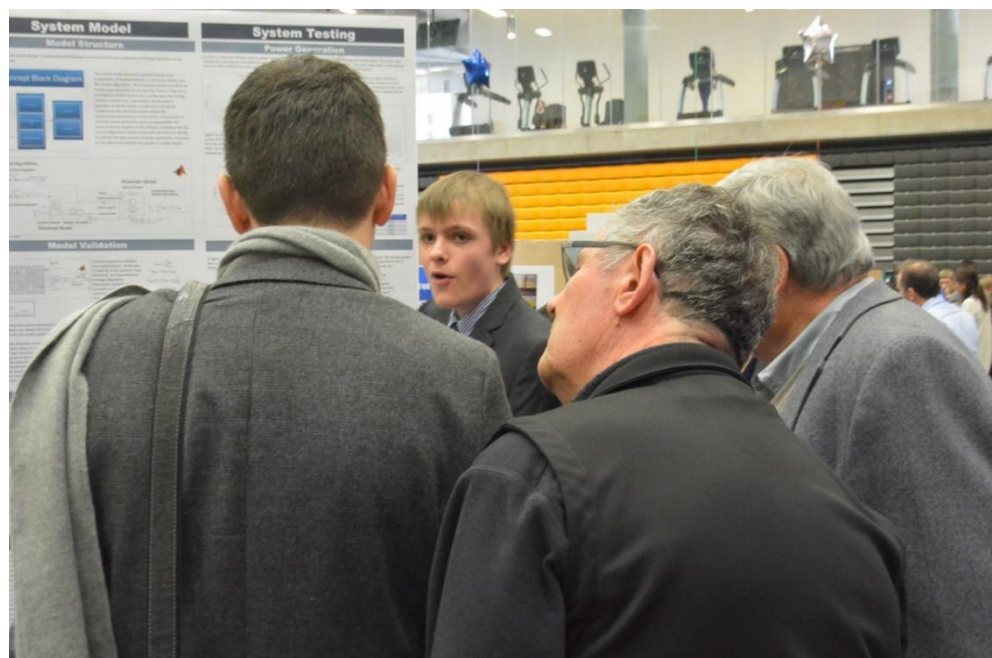
Prize: Three awards of \$200 each

Criteria: Deserving engineering projects - one at each level.

### **The Research Institute at St. Joe's Hamilton, Health Research Awards**

Prize: Two \$100 awards at the intermediate level, and two \$50 awards at the junior level

Criteria: Outstanding projects that use strong scientific principles in exploring or solving a problem related to human health issues and communicate the results through an effective visual display.



## **SPECIAL AWARDS (Continued)**

### **Rotary Club of Hamilton-East Wentworth Awards**

Prize: 1<sup>st</sup> \$250, 2<sup>nd</sup> \$150, 3<sup>rd</sup> \$100

Criteria: Best three projects from schools situated in the Hamilton core displaying high academic achievement and striving to excel in science and technology.

### **Royal Botanical Gardens Award**

Prize: \$100 gift certificate from the RBG shop plus a 1-year RBG family membership

Criteria: Best project in plant or environmental sciences.

### **Society of Tribologists & Lubrication Engineers – Hamilton Chapter**

Prize: Two awards of \$250 each

Criteria: Projects that utilize the principles of tribology, (friction, wear and lubrication), to solve a technical problem.

### **SPIE - The International Society for Optics & Photonics Awards**

Prize: 1<sup>st</sup> US\$250, 2<sup>nd</sup>: US\$150, 3<sup>rd</sup> US\$100; prize to be requested by the winners after the fair

Criteria: Best projects in optics or photonics where students apply optics or photonics technology, techniques or principles to his/her project.

### **Talkit.ca Computer Engineering Awards**

Prize: 1<sup>st</sup> \$100, 2<sup>nd</sup> \$50

Criteria: For outstanding projects using computer electronics or software.

### **Ted Rogers Innovation Award**

Prize: \$100, a T-Shirt and a certificate

Criteria: For a project that best demonstrates commercial potential.

### **Water Environment Association of Ontario Award**

Prize: \$100

Criteria: For a project focused on innovative ideas for preserving and/or enhancing Ontario's water environment.



# stle

**Society of Tribologists  
and Lubrication Engineers  
Hamilton Section**

**To all Participants and  
Award Winners  
of BASEF**

**Well done!**

#### **What is tribology?**

Tribology is the study of science and engineering of interacting surfaces in relative motion. It includes the study and application of the principles of friction, lubrication and wear. Tribology is a branch of mechanical engineering and materials science.



## THREE YOUNG WOMEN AND THE SCIENCE FAIR THAT CHANGED THEIR LIVES!

*BASEF is pleased to announce the creation of 2 new alumni-sponsored Awards this year!  
Full bio and stories for these alumni are available on our website at [www.basef.ca](http://www.basef.ca).*

### MAHUT-BRENT AWARD FOR WOMEN IN SCIENCE AND ENGINEERING

*Awarded for an outstanding project by a female student that demonstrates an excellent application of scientific thought and creativity towards a subject matter that the participant is passionate about. Prize is \$100, a giant microbe and a certificate.*



**Katie Brent**



**Caroline Mahut**

***These two alumni, who met at BASEF, combined their love of science and engineering into this award to inspire young women to explore science and engineering careers.***

I love BASEF because it gave me the opportunity to grow as a person. There is something very special about getting to share the product of your hard work and passion with others who also value the STEM fields. BASEF is the reason that I am the person I am today—a curious, motivated, ambitious and outgoing engineering and bioanthro university student.

Even when my time as a BASEF student ended, I knew that my journey with BASEF was not over. I have judged projects and now I am so incredibly happy to be co-sponsoring a new Special Award this year with one of my best friends, Caroline Mahut. I was inspired to give back because I know there are girls out there who are much like I was at the advent of *my* science fair career, being incredibly passionate about science, and ready to learn new things. If I could encourage even one girl to keep up the great work in STEM and possibly pursue it as a career, it would be a great honour for me.

My time as a BASEF student was the best six years of my life! – *Katie Brent*

As a 5-time BASEF and Canada-Wide Science Fair participant, I can guarantee you that taking part in a science fair is an opportunity you do not want to miss. The first time you participate in BASEF, you are overwhelmed by the aura of curiosity and discovery about the room.

Over the years during which I prepared projects for BASEF, I noticed astronomical improvements in my writing, presenting, research and problem solving skills. However, the most important thing that BASEF gave me was an amazing community of like-minded students, who live and breathe the STEM lifestyle. This taught me that BASEF is a pathway to a new lifestyle in which everything can be challenged or improved, and no question can go unanswered. It was through working on BASEF projects and meeting various professionals at the fair over the years that contributed to where I am today: a second year Mechanical Engineering student at McMaster University. Katie and I are honoured to be sponsoring this new Special Award together to encourage STEM participation at BASEF of female engineering projects.

BASEF is not just a Science Fair; it is a glimpse into the future of our community.

– *Caroline Mahut*

## ENVIRONMENTAL INSPIRATION AWARD

*Awarded to the best environmental project that addresses an environmental problem in an inspirational/innovative way. Prize: \$250*



**Isabella O'Brien**

*This young woman loves the environment and wants everyone to know it!*

Since primary school, science fair had always fascinated me. When I made it to BASEF in grade 7, I was so excited. It was incredible to be with hundreds of students and see all the brainpower on display from kids just like me. Winning the opportunity to attend the 2014 Canada Wide Science Fair (CWSF) with Team BASEF was the experience of a lifetime. I had the most amazing mentors, and the team members have become lifelong friends. I was incredibly lucky to win a gold at CWSF and the Environment Challenge Award that year. In high school in 2016, I entered BASEF again and that year, much to my surprise, I won the top prize – ArcelorMittal Dofasco Pinnacle Award for Best-in-Fair! A second trip to CWSF, where I won a gold medal and the Environment Challenge award again.

Now as I finish high school and go to university, I felt it was important for me to give back to those who have supported me and my environmental work, and BASEF is at the top of that list. I am excited to be offering my new BASEF Special Award. My hope is that it will ignite a spark in students to consider doing an environmental science fair project that specifically looks at trying to solve an environmental issue. I look forward to seeing and judging these inspiring environmental projects.

What I hadn't realized was how being a part of BASEF and experiencing all the fantastic opportunities offered through BASEF would change my life. – *Isabella O'Brien*



## **Happy 60<sup>th</sup> BASEF!**

**MARK YOUR CALENDARS & SAVE THE DATE**

Next year will be BASEF's 60<sup>th</sup> anniversary!

Please participate, sponsor and join in the celebrations!

Mohawk College March 25-31, 2020

Science Strong since 1960

## **BASEF INSPIRATION AWARDS**

*The "BASEF Inspiration Awards" generate interest and encourage participation in the Fair.*

### **BASEF Inspiration Teacher Awards**

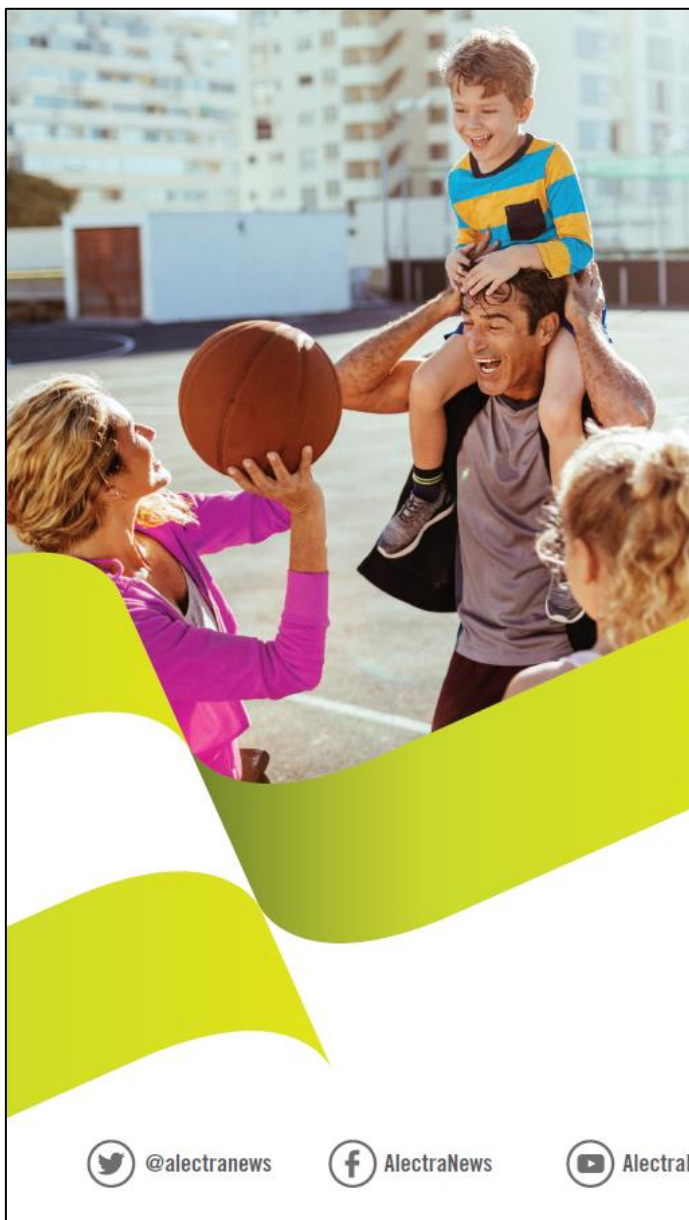
Prize: Up to a maximum of 9 awards of \$500 each

Criteria: For teachers of schools new\* to BASEF. The teacher must have two or more projects displayed and judged at BASEF. The award is to be used in the classroom at the winning teacher's discretion. The cheque will be sent to the teacher after the BASEF Award ceremony.  
\*Schools that have not had projects in BASEF for at least 5 years.

### **BASEF Inspiration Student Awards**

Prize: A minimum of 10 awards of \$500 each

Criteria: Top projects based on merit judging marks that win \$250 or less in other prizes and have not previously won a BASEF 500 award.



### **We're working hard to be your energy ally**

At Alectra Utilities, we're continuously investing in electrical infrastructure improvements that support growth and provide safe, reliable and sustainable power for homes and businesses in the communities we serve.

We're committed to delivering value, service and reliability to you. **Discover the possibilities at [alectrautilities.com](http://alectrautilities.com)**

**alectra**  
utilities

Discover the possibilities



## **SCHOLARSHIPS & INTERNSHIP**

### **SCHOLARSHIPS**

#### **McMaster University Faculty of Engineering Entrance Awards**

- Prize: Five \$1,000 tuition awards, to be redeemed upon acceptance of admission to the Faculty of Engineering. (Pair projects will split the award).
- Criteria: Projects demonstrating excellence in Science, Technology, Engineering or Math.

#### **McMaster University Women in Engineering Entrance Awards**

- Prize: Two \$1,000 tuition awards, to be redeemed upon acceptance of admission to the Faculty of Engineering. (Pair projects will split the award).
- Criteria: Projects led by female students that demonstrate excellence in Science, Technology, Engineering or Math.

#### **University of Ottawa Entrance Scholarship**

- Prize: One \$1,000 entrance scholarship applied to tuition fees upon being accepted into and registered in an undergraduate program in the Faculties of Engineering or Science at the University of Ottawa. (Pair projects will split the award).
- Criteria: The most deserving senior project.

#### **Hillfield Strathallan College Entrance Scholarship Award**

- Prize: One \$5,000 entrance scholarship toward tuition fees, to be redeemed upon acceptance as a full-time senior school student entering Hillfield Strathallan College in any of grades 9 to 11 for the 2019-20 academic year. (Will be awarded to both students in a pair project – maximum \$10,000 value).
- Criteria: The best project demonstrating excellence in scientific learning with joy and purpose.

#### **Mohawk College and Sheridan College – Award of Excellence Tuition Scholarships**

- Prize: Mohawk College and Sheridan College will provide a \$1,000 entrance award. The scholarship may be used toward first year tuition upon the recipients' acceptance and registration in any full-time program at either Mohawk College or Sheridan College. If multiple scholarships are accumulated over more than one year, only one of these scholarships may be used.
- Criteria: All students earning BASEF2019 Merit Award Medals (Gold, Silver, Bronze) will win this scholarship.



### **INTERNSHIP**

#### **Michael G. DeGroote Institute for Infectious Disease Research Internship Award**

- Prize: A 6-week paid summer internship as a research assistant in a laboratory at the Michael G. DeGroote IIDR at McMaster University, valued at \$3,000. Two runner-ups will be identified and given a certificate.
- Criteria: Best senior student project in infectious disease, drug discovery or human health.



## **Discover McMaster**

**Founded in 1887**, McMaster University is one of only four Canadian universities consistently ranked in the Top 100 in the world.

**A medical-doctoral, research-intensive university**, McMaster is dedicated to teaching, learning and service. In the 1960s, we pioneered the problem-based approach to learning that came to be known around the world as "the McMaster model".

**Home to more than 70 research centres and institutes**, McMaster is comprised of six faculties: The DeGroote School of Business, and the Faculties of Engineering, Health Sciences, Humanities, Science, and Social Sciences.

**With a total full-time student population of close to 28,000**, McMaster welcomes students from 98 countries as well as Canada.

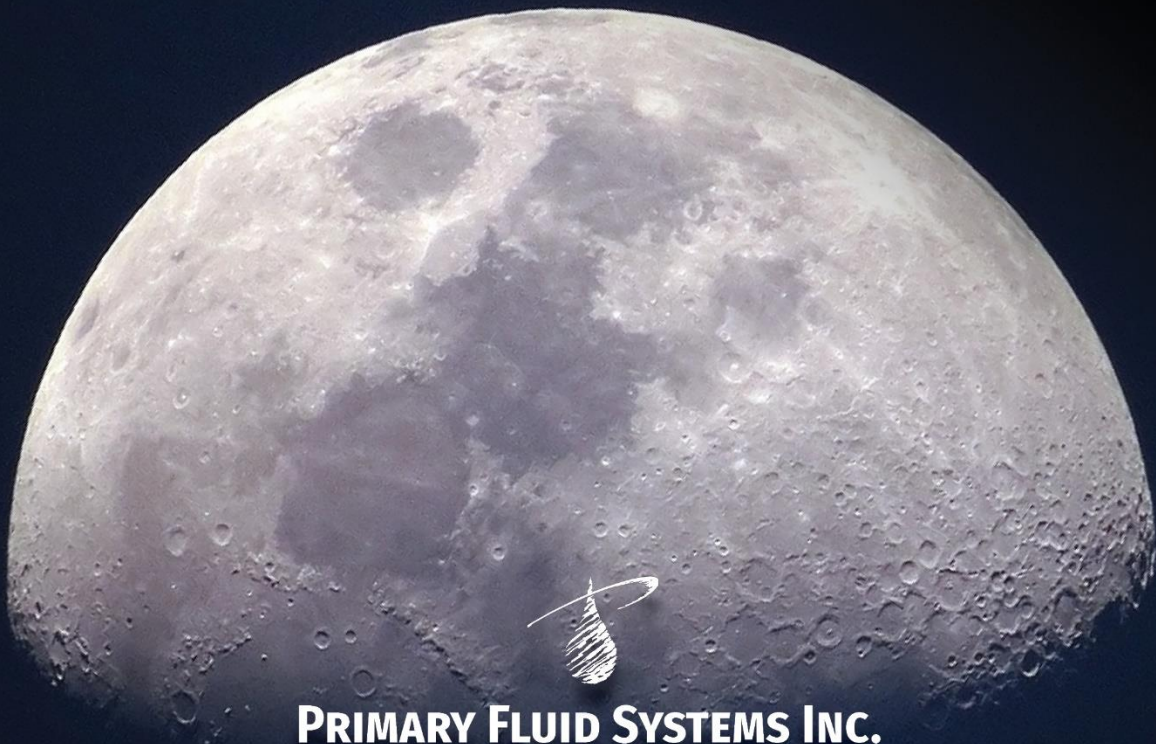
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*Carl Sagan*



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**Proud sponsor of BASEF's Merit Awards since 2004.**

## MERIT AWARDS

*Sponsored by Primary Fluid Systems Inc.*



Merit Awards recognize the tremendous amount of thought and effort that has gone into the projects entered in the Bay Area Science and Engineering Fair. They are the result of an extensive judging process undertaken by over 175 independent judging volunteers who have come forward from educational institutions, local government organizations, business and industry in our regions. All participants in the Bay Area Science and Engineering Fair are eligible to win Merit Awards.

*The Awards are issued to projects that meet the following criteria:*

**For Junior, Intermediate and Senior levels in:**

- Health Sciences (Human)
- Life Sciences (Non-Human)
- Physical and Mathematical Sciences
- Biotechnology
- Engineering and Computing Sciences
- Earth & Environmental Sciences

### **Scoring:**

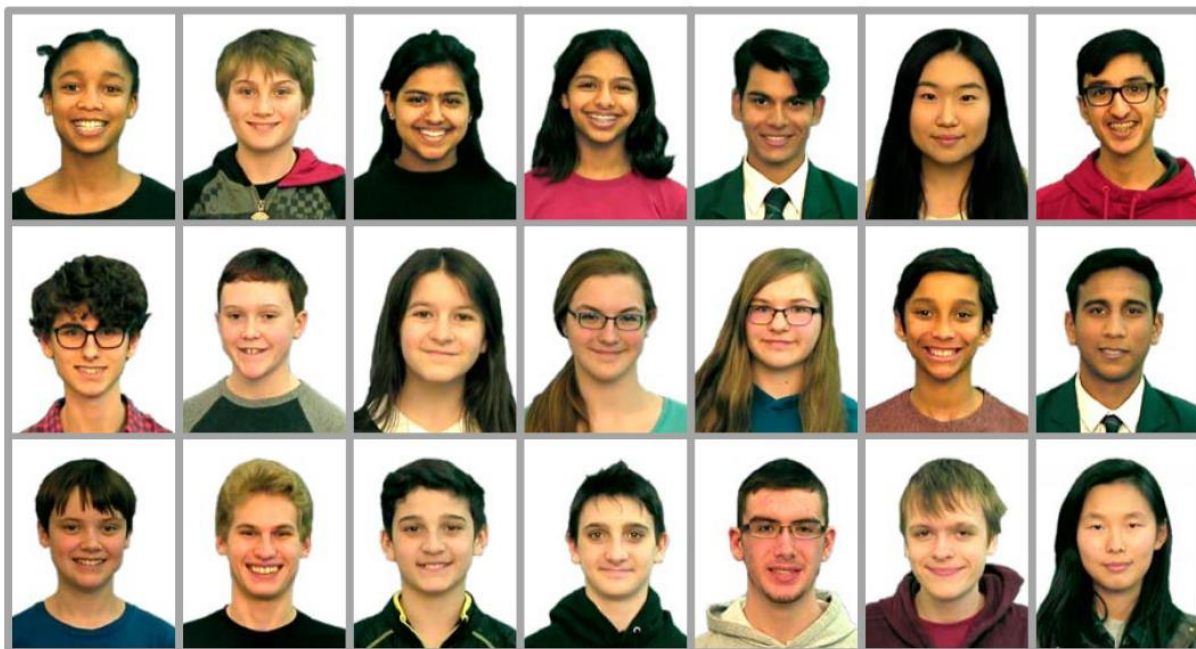
over 90%	earns <b>Gold medal</b> & cash award
over 80%	earns <b>Silver medal</b> & cash award
over 75%	earns <b>Bronze medal</b> & cash award







Thanks to our sponsors we're going places!  
**2018 National & International  
 Science Fair Competitors**



**The BASEF Students and Volunteers gratefully  
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Images courtesy of *Lifetouch Canada*



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**Best Wishes to all BASEF 2019 Participants**



**Proudly outfitting TEAM BASEF at the  
 Canada Wide Science Fair and the Intel International Science & Engineering Fair**

## **GRAND PRIZE AWARDS**



Winners of Grand Awards have designed, researched and presented excellent projects.

### **ARCELORMITTAL DOFASCO PINNACLE AWARDS**

BASEF's Pinnacle Awards are presented to each of the top three projects in the fair. These awards are based on the project's Merit Award score. Each winner receives an engraved plaque; trophies are awarded to the winner's schools.

Best-in-Fair \$1,000



2<sup>nd</sup> Best-in-Fair \$800



3<sup>rd</sup> Best-in-Fair \$500



### **DRS. RANJAN SUR AND MONALISA SUR AWARD**

Best Intermediate or Senior project at the fair, a plaque to the winner's school.



### **ROY MIDDLETON MEMORIAL AWARD**

Best Junior project at the fair, a plaque to the winner's school.



### **HERB GILDEA MEMORIAL TROPHY**

Trophy is awarded to the secondary school accumulating the most points. Points are earned from the number of projects entered from the Intermediate and Senior levels of each school and those projects earning Gold, Silver, Bronze and Honourable Mention Merit Awards.



### **BASEF COMMITTEE TROPHY**

Trophy is awarded to the elementary school accumulating the most points. Points are earned from the number projects entered from the Junior level of each school and those projects earning Gold, Silver, Bronze and Honourable Mention Merit Awards.



## GRAND PRIZE TRIP AWARDS

### INTEL INTERNATIONAL SCIENCE & ENGINEERING FAIR TRIP AWARDS



Phoenix 2019

Advancement to the 2019 Intel International Science & Engineering Fair, to be held in Phoenix, Arizona from May 12 to 17, 2019. All trip expenses paid.

Up to 4 projects (depending on funding level) will be chosen from excellent exhibits at the secondary school (Int & Sr) level.

Winners will be chosen from those high school entrants that declared they were able to travel into the USA (Canadian citizenship or landed immigrant status, with valid passport in-hand) as part of the BASEF registration process.

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### CANADA WIDE SCIENCE FAIR TRIP AWARDS

Advancement to the 2019 Canada Wide Science Fair (all trip expenses paid), to be held in Fredericton, New Brunswick from May 11 to 17, 2019.



Fredericton 2019

Up to 17 students who have presented excellent projects will be chosen (dependent on funding level).

All projects entered in BASEF2019 are eligible.

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**Kathy**  
Mechanical Engineering  
Technology student



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