BASEF 2018

Presented by

ArcelorMittal

DOFASCO | HAMILTON

58th Annual Bay Area Science & Engineering Fair
@Mohawk College
March 21 – March 27, 2018

Big ideas.
Infinite possibilities.

Diamond Sponsors
Leggat Auto Group
Mohawk College
Primary Fluid Systems

Platinum Sponsors
HAND
The Hamilton Spectator
McMaster University
Nikola Tesla Educational Corporation
Welcome to the 2018 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. McKeerlie
President,
Mohawk College
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Cover image is the Frame from a simulation of the merger of two black holes and the resulting emission of gravitational radiation (colored fields). Christopher E. Henze (NASA Ames Research Center): Animator
NASA/Goddard Space Flight Center, [https://svs.gsfc.nasa.gov/11086](https://svs.gsfc.nasa.gov/11086)

**BASEF 2018 Official Program printed courtesy of ArcelorMittal Dofasco G.P.**

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A MESSAGE FROM THE 2018 BASEF CO-CHAIRS

Congratulations to all the participants competing at the 2018 Bay Area Science and Engineering Fair, presented by ArcelorMittal Dofasco, BASEF’s 58th 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 discovery of an Earth-sized exoplanet; the cloning of Dolly the sheep and the first human-human heart transplant; the detection of gravitational waves; the invention of the cellular phone and the internet; and the first experimental evidence of the Big Bang theory … just to name a few. What discoveries will be made in the next 58 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 designed to promote additional interest and participation in the Fair.

ArcelorMittal Dofasco has returned for their twelfth year as BASEF’s Title Sponsor. We are thankful for their generous funding and ongoing commitment to science, engineering, technology and mathematics. BASEF 2018 presented by ArcelorMittal Dofasco would not be possible without this support.

Our three 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.

● Leggat Auto Group returns for their third year. In addition to generous monetary support, this sponsorship provides BASEF with media expertise and support to help promote science, technology, and engineering in youth.

Together with over 50 other sponsors, benefactors and Special Award donors, our premier sponsors make it possible for BASEF’s students to excel in STEM, and for BASEF to inspire young people to change the world through science, technology, engineering and mathematics (part of our Mission Statement).

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 BASEF 2018 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, March 27th at 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
BASEF ORGANIZING COMMITTEE

MOHAWK COLLEGE, 2018 HOST
President, Ron Mc Kerlie
V.P. Academic, Paul Armstrong

CO-CHAIRS
Dan Bowman, Ingrid Munson

PAST CHAIR
Helen Barton

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

REGISTRAR
George Geczy; Assistant: Rob Lenjosek

JUDGE IN CHIEF
Neil Manmohan
Assistants: Donna Stack-Durward, George Geczy

SCIENTIFIC REVIEW
Neil Manmohan (Judge in Chief)
Dan Bowman (Co-Chair), George Geczy (Co-Chair)
Donna Stack-Durward (Co-Chair), Dana Bee
Dr. Robert Brown, Allison Boyd, Ming Chong
Cathy Hayman, Rob Lenjosek

SPECIAL AWARDS COORDINATION
Jim Casey, Roslynne Crawford, Eleanor O’Flynn

SAFETY
Neil Manmohan

CANADA-WIDE & INTERNATIONAL CHAPERONES
CWSF: Dan Bowman (Lead), George Geczy, Ingrid Munson, Donna Stack-Durward
IISEF: Dana Bee (Fair Director), Ming Chong

INFORMATION SYSTEMS
Gerard Chiasson, George Geczy

BASEF BURSARY PROGRAM
Linda Hazelden (Chair), Dan Bowman,
George Geczy, Ingrid Munson, Eleanor O’Flynn

STUDENT ADVISORS
Arielle Ainabe, Jack Mogus

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

STUDENT ACTIVITIES
Kevin Hunt

PHOTOGRAPHY & GRAPHICS
Wayne Bowdish

MARKETING AND MEDIA
Roslynne Crawford, Christopher Ainabe
Wayne Bowdish, George Geczy

MOHAWK COLLEGE LIAISON
Dana Jacobs

SPONSOR REPRESENTATIVE
Sandy Walker

FACILITIES
David Reed, Dana Bee

CHAMPIONS OF BASEF
Ola Lunyk Child (Chair), Linda Hazelden
Ingrid Munson

OUTREACH
Roslynne Crawford, George Geczy,
Linda Hazelden, Michelle Lafontaine, Jack Mogus

VOLUNTEER RECRUITMENT AND COORDINATION
Dana Bee, Michelle Lafontaine

OFFICIAL FAIR PROGRAM
Katie Cummings, Susan Olynyk

FOOD PLANNING
Dan Prowse

DISTRICT SCHOOL BOARD ADVISORS
HCDSB: Rachel Muvin, Lorraine Boulos
HDSB: Ingrid Munson
HWCDSB: Morris Hucal, Greg Tabone
HWDSB: Sandra Chow
Six Nations (INAC): Alex Randall
GENERAL FUNDING SPONSORS – 2018

TITLE $25,000 +
ArcelorMittal Dofasco

DIAMOND $10,000 +
Leggat Auto Group
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
McMaster University
The Hamilton Spectator
Nikola Tesla Education Corporation

GOLD $2,500 +
Interprovincial Corrosion Control Co.
Lifetouch
Masters Insurance
McMaster Innovation Park
Taylor Leibow Accountants & Advisors
Union Gas Ltd.

SILVER $1,000+
Appleby College
City of Hamilton Economic Development Dept.
Canadian Linen & Uniform Service
Halton District School Board
Halton Catholic District School Board
Hamilton Police Senior Officers Ass’n
Hamilton-Wentworth District School Board
Hamilton-Wentworth Catholic DSB
Hillfield Strathallan College
John Deere Canada ULC
King- KPM Industries
Magna International
Ontario Power Generation
Posner Metals

BRONZE $500 +
AT McLaren
Battlegoat
D.E.N.M. Engineering
Hamilton Amateur Astronomers
Hamilton Community Awareness and Emergency Response
Hamilton Chamber of Commerce
Judy Marsales Real Estate
Lanhack Consultants
Optimist Club of Stoney Creek
Rotary Club of Hamilton AM
Rotary Club of Waterdown
Society of Tribologists & Lubrication Engineers
Triple M Metals - Hamilton Section
Viziya

FRIENDS $250+
Conservation Halton
Electrical Construction Association of Hamilton
NewAE Technology
Talkit.ca

Congratulates all the Student Exhibitors at BASEF 2018

120 King Street West
Plaza Level Suite 507
Hamilton ON L8P 4V2
Ph. (905)522-1151
E-mail: hcc@hamiltonchamber.ca
BENEFACTORS – 2018

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
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.

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

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
Linda Millar
Dr. Nicola Simmons

Jo-Anne Connery
Wayne Schaefer

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, 2017, the endowment fund had grown to just over $37,000. In February 2018, BASEF received a distribution from the fund in the amount of $2,516.

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.
# BASEF 2018 SCHEDULE OF EVENTS

All at Mohawk College Fennell Campus  
Gymnasium - David Braley Athletic Centre (DBARC)  
Theatre – McIntyre Performing Arts Centre

## Wednesday, March 21 – On-Site Project Setup/Safety Check

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>4:00 – 8:00 pm</td>
<td>Registration, set-up and safety checks</td>
<td>Gym</td>
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</tbody>
</table>

## Thursday, March 22 - Student Activity Morning & Judging of Projects

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 8:30 – 9:30 am | BASEF students arrive for Morning Activity  
(Theatre Doors Open at 8:30 am) | Theatre |
| 9:00 – 9:10 am | Introduction – Kevin Hunt  
Welcome from Mohawk College – Ron McKerlie, President | Theatre |
| 9:10 – 9:45 am | Tesla Motors  
Tyler Ustrzycki, Design Engineer | Theatre |
| 9:45 – 10:25 am | Astronomy Presentation  
John Gauvreau, Hamilton Amateur Astronomers | Theatre |
| 10:25 – 11:10 am | “Electricity Comes to Hamilton”  
Nikola Tesla Educational Corporation | Theatre |
| 11:10 am – Noon | McMaster University Chemistry Show  
Professors Randy Dumont and Paul Harrison | 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. | Gym |
| 1:00 – 4:00 pm | Judging interviews for BASEF students (BASEF participants must remain at their projects during judging) | Gym |

## Friday, March 23 – *Fair not open to the public or students*

## Saturday, March 24 - Public Viewing

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
</table>
| 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 *must* be removed by 12:15pm | Gym |

## Tuesday, March 27 - Awards Ceremony

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 5:15 – 6:30 pm | Champions of BASEF Dinner  
By Invitation Mohawk | Theatre |
| 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

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):
  o Disperse... do not congregate in open areas
  o Exit the building or go to a room or area where you feel safe to enter
• If Exit is Not Possible:
  o Enter or stay in a room or area where you feel safe
  o Close and secure doors if possible
  o Turn out lights
  o Cover windows and/or stay away from windows
  o Silence cell phones/use text messaging only
  o Stay alert, quiet and out of sight
  o Disregard fire alarm signal unless in immediate danger
  o 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
Wednesday March 21
Project setup in the Gym
4:00 pm to 8:00 pm

Student drop off at lot P7
Enter Gym via Fair Entrance
(1 hour complimentary parking between 4:00pm and 9:00pm in lot P7 only)

Thursday March 22
Activity morning in the Theatre
Students arrive 8:30 am to 9:00 am
Bus dropoff: Main Entrance
Bus pickup: H-Wing
Student car drop off at Main Entrance
Project judging: 1:00pm - 4:00pm in Gym
Parking in lot P7 (complimentary parking 4:00pm to 5:00pm in lot P7 only)

Saturday March 24
Public viewing in the Gym
9:00 am to 12:00 pm
Project takedown:
12:00 noon to 12:15
Complimentary parking in lot P7

Tuesday March 27
Awards Ceremony in the Theatre
7:00 pm to 9:30 pm
Doors open at 6:00 pm
Complimentary parking in lot P7 after 4:00 pm
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 - and with the official BASEF “goody” bag.

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 (IISEF).

**Location of Events:** Mohawk College

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

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.

**Parking for Registration and Project Setup:** There will be signs directing you to the Science Fair as you enter the College from Fennell Avenue or West 5th Street entrance. Parents are instructed to please **park in Lot P7** and walk to the DBARC gymnasium with your projects. Parking is free during project setup – but remember, only Lot P7 will be free for an hour. The traffic circle at the entrance to DBARC is a main thoroughfare and a fire route, so project drop-offs will not be allowed at the DBARC entrance.

**Parking for Activity Day, Public Viewing and the Awards Ceremony:** There will be signs directing you to the event locations as you enter the College from Fennell Avenue or West 5th Street entrance. Parents are instructed to please **park in Lot P7**. There will be complimentary parking in **Lot P7** for student pick up from 4pm - 5pm on Thursday, March 22nd.

**Regular parking fees apply during Activity Morning/Judging Day:** Parents can buy a Pay-and-Display ticket for Activity Morning and afternoon judging for $5/hour, for a maximum of $15/day at the parking machines at Mohawk.

**Event parking fees apply for Awards Ceremony:** There will be complimentary parking in **Lot P7** after 4:00pm for awards on Tuesday evening, March 27th.

There is a 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.
**Day by Day - Parent Responsibilities**

**Day 1 – Registration and Set-up, Wednesday, March 21, 2018 @ 4:00 pm - 8:00 pm**

Project set up for the fair occurs **ONLY** on Wednesday, March 21, 2018 from 4:00 – 8:00 pm at Mohawk College DBARC Athletic Centre. Parking in Lot P7 is free 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. **Be sure all of the safety rules and regulations regarding project size, display materials and ethical guidelines with respect to human and animal testing have been followed.** Complete details are available on the official website: [basef.ca](http://basef.ca)

**Day 2 - Student Activity Morning, Thursday, March 22, 2018 @ 8:30 am – 12:00 noon**

Students should be dropped off at the Main Entrance at Mohawk and proceed directly to the theatre. They 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. Program details can be found on the BASEF website at: [basef.ca/activities](http://basef.ca/activities)

**Day 2 - Lunch - Thursday, March 22, 2018 @ 12:00 noon - 12:45 pm**

BASEF student exhibitors will be escorted from the McIntyre Theatre to the DBARC Athletic Centre. **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, Thursday, March 22, 2018 @ 12:45 pm – 4:00 pm**

Students are required to be at their projects for judging between 1:00 pm – 4:00 pm. **Teachers and parents are not permitted on the gym floor after 12:45 pm** 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 pm, parents may **park free in Lot P7 for 1 hour.** Other parking lots will have parking enforcement present. Do not wait along the roadway at the DBARC Athletic Centre entrance; this is a fire route.

**Day 2 & 3 - Evening, after 4pm and Friday, March 23, 2018**

The Fair is **NOT** open to students on Thursday evening or on Friday, March 23rd. The Fair Committee will be busy compiling results, writing cheques, engraving trophies and preparing for the awards ceremony.

**Day 4 - Public Viewing, Saturday, March 24, 2018**

Park in **Lot P7** as there is complimentary parking.

We ask that your children be at their projects in the gymnasium for Public Viewing from 9:00 am - 12:00 noon. At noon the students will be asked 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 12:15pm. After this time, projects will be removed from the gymnasium as the volunteer staff will need to pack up the gymnasium.

The Awards Ceremony – Tuesday, March 27, 2018 7:00 pm – 9:30 pm

Park in Lot P7 for complimentary parking after 4:00pm.

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 pm sharp. It is recommended to come early, as seating is limited. Doors will open to the theatre at 6:00 pm. If the theater reaches capacity, alternate seating or viewing opportunities will be provided. Details will be announced in the lobby if necessary. 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.

Encourages each BASEF2018 exhibitor to follow your dreams. Congratulations on your projects and all your hard work.

KPM Industries Ltd.
3385 Harvester Road  P.O. Box 699
Burlington, Ontario  L7R 3Y5
Phone: 905-639-2993
Fax: 905-333-3730
Toll Free: 1-800-461-0566
www.kpmindustries.com
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. “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 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.

In 2017, BASEF introduced the following initiatives for our students:

- The TECHSEED program offers 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 included in the student “goody bag”

Students, teachers and parents can access help directly from BASEF by emailing us at 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. 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’s 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.

Project-based science, as promoted by science fairs, is one of the best ways to engage young people in a longer term, 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 or visit our website at 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 at-risk students to participate in project-based science.

This year the bursary garnered testimonials from teachers:

“Thank you so much for considering my students. I told them that I had nominated them for this bursary and that alone gave them a boost of confidence.”

“This is a great program to show that equal opportunities are given to all regardless of your socio-economic background! Seeing that our marginalized students are being recognized and are given these amazing opportunities will just boost their confidence and that confidence will stretch into so many domains in their academic and extra-curricular endeavours! Great Job!!! Thanks!!!!”
2018 BASEF Champion Teacher

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

Faiza El-Hales
Al-Falah Islamic School

“She is always encouraging her students to do new and innovative science experiments, and always encouraging them…”

“Ms. El-Hales has constantly been a champion of academia and student success. I have never seen a teacher work as tirelessly as she does and it is an inspiration for me and our school.”

“She deserves the recognition and award because of her excellent teaching and amazing care and compassion towards her students.”

“Ms El-Hales has been actively supporting students and their science fair experiments, and always pushes students to apply to the BASEF science fair.”

CONGRATULATIONS TO THE 2018 BASEF CHAMPION TEACHER!

The Champion Teacher Recognition Award for 2018 includes induction into the BASEF Champion Teacher Hall of Fame, a plaque 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 BASEF 2018 VOLUNTEERS!

Volunteers
Alaa Abdel Karim
Avinil Paul
Brenda Sloane
Carleigh Clarke
Courtney Andrews
Dalia Sciullo
David Vidican
Ed Gilis
Eldhose Alias
Greg McFarlane
Harbir Dyer
Imogen Ames
Jacqueline Cote
Jessica Dekker
Johann Maurice Caagbay
Linfeng Zhou
Katiana Adao-Velasquez
Lu Wang
Mary Helen Gilis
Matthew DiVittorio
Michele Joch
Michelia Alba
Neil Beasley
Razan Mohamed
Reed Silva-Manmohan
Ruth Masilya
Rutul Bhavsar
Sa’ida Shdaifat
Samantha Williams
Simiat Salami
Tom Crawford
Tomislav Brkic
Trevor Hayhurst
Zoey Vu

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Nancy Carter
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Alta Technology Ltd
Nigel Birch

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Derek Brisson
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Stephanie Drywood
David Starr
Jonah Szajman
Jane Wood
Shayne Yeaman
Garly Sett

AVAR Environmental
Justin Lewis

Brock University
Kayla Doucette
Christine Hentridge
Nicole Keizerwaard
Dimitri Mavridis
Ayda Ghaffari

Canadian Cancer Research Alliance
Louisa Salemi

Canadian Red Cross
Nelson Ruiz Blanco

CanChild Centre for Childhood Disability Research
Rachal Bolger

Canmet MATERIALS
Kumar Sadayappan

Casconn Consulting Inc.
Jennifer Cao

ComFree
Glenn Sheils

Consultant
Dr. Jila Mahalec

Dana Canada Corp
Andrea Aylward

EngOL Inc.
Gino Niro

Environment and Climate Change Canada
Patty Gillis

General Motors
Wayne Schaefer

Government of Ontario
Val Kim

Hamilton Academy of Dentistry
Frank Stechey

Hamilton Health Sciences
Jill Boreyko
Tricia Jarvie
Linda Mattina Salvo
Billie Tuinema

Hatch
Robyn Korenic

HCDSB
Matt Kovacs

HWCDSB
Laura Pellizzari

Kinectrics Inc.
Boguslaw Bochenski

L3 WESCAM
Andy Czebe

LHS Engineering
Dave Howard

McMaster Innovation Park
Mark Stewart

McMaster University
Anita Acai
Alexandria Afonso
Shehryar Ahmad
Shruthi Alapatt
Amjad Arrabi
Puja Bagri
Mark Bortolus
Brittany Bulbrook
Tsz Wing Cheung
Savannah Colameco
Braeden Cowbrough
Jennifer Cui
Danielle De Rango
John DeBackere
Srinivas Dharavath
Benjamin Dyer
Yosef Ellenbogen
Joshua Feather
Allison Felker
MERIT AWARD JUDGES (continued)

McMaster University (continued)
Cassandra Francella
Kezhuang Gu
Alice Guan
Esther Hutten
Varsha Jayasankar
Peter Jonasson
Portia Kalun
Mohammed Karodia
Adree Khondker
Melodie Kim
Frances Lasowski
Nicole Last
Ola Lunyk Child
Avijit Mallick
Sam Marchetti
Katherine Marczenko
Alexander Mastrolonardo
Gabriella Mattina
Siddharth Nath
Light Nozomi
Kenneth Rachwalski
Malavan Ragulojan
Cory Richman
Jacqueline Roberts
Roma Sehmi
Shabnam Shoaebargh
Kanwaldeep Singh
Anastasiya Slyepchenko
Lauren Smail
Margot Smith
Shawna Thompson
Chris Thomsen
Madeline Tong
Elena Tonti
Natalie Wagner
Jocelyn Wessels
Chenchen Xu
Yu Fan Zeng
Linfeng Zhou
Metrolinx
Scott McLaren
Mississauga Hospital
Preet Kaur

Mohawk College
John Holloway
Ian MacMillan
George Miltenburg
Brian Minaji
Brian Stefanchuk
Shantal Woolsey
Niagara Health System
Leanne Macsai
Oakville
David Fisher
OCE
Padraic Foley
Ontario Power Generation
Erica Burton
Aleksandra Jeremic
OUM
Khatija Ali
Peto MacCallum Ltd Consulting Engineers
Sean Denham
Petro-Canada
Nikola Lukenda
Region of Peel
Steve Lonz
ReproLabels
Rebecca Smith
Retired
Maureen Crane
Jim Garrett
Eric Harrison
Marilyn Hollick
Paul-Benoît Latour
Ramani Leanage
Paul Martin
Mike McNally
(Dr) Aadu Pilt
Mike Sheehy
Jo-Anne Teoh
Paul Wehrle
Norman Young
Beverly Shepard
Lynda Bowen
**MERIT AWARD JUDGES (continued)**

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Set up 2017

Photo ID 2017
SPECIAL AWARD JUDGES

Alectra Utilities Corporation Awards
Charles Howell, Chris Jolie

ArcelorMittal Dofasco Awards
Adam Aglipay, Karen Bell, Dana Buckingham, Shannon Clark, Monica Dias, Marina Ghtas, Samiya Jahan, Rade Kuruc, Craig McGinlay, Greg Pipe, Paul Sagarika, Graham Stephen, Jonah Szajman, Kyle Waite

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 MacConnachie, Michael Tucker

Chemical Institute of Canada- Hamilton Section Awards
Don Barclay, Tom Sutton, Dragan Vuckovic

Doris Casey and Gwen Nicolls Disability Solutions Awards
Jim Casey, Al Nicolls

Dillon Consulting Limited
Chris Gibbons, Trevor Goulet

Electrical Construction Association of Hamilton Award
Chris Cahill, Mark Hopkins, Joe Kurpe

Gowling WLG Innovation Awards
Alex Ross

Hamilton Academy of Dentistry Awards
Frank Stechey

Hamilton Amateur Astronomers Award
Ann Tekatch, Bernie Venasse, Denise White

Hamilton Association for the Advancement of Literature, Science & Art
Peter Banting, Tony Petric, Ludvik Prevec

Hamilton Chamber of Commerce Innovation Awards
Paul Hawkins
SPECIAL AWARD JUDGES (Continued)

Hamilton Wentworth Occasional Teacher Awards
Barry Naidoo, Nguyen Trang

Hillfield Strathallan College Awards of Excellence
Chris Dawn, Marc Edgar

Hillfield Strathallan College Entrance Scholarship Award
Chris Dawn, Marc Edgar

John W. Howard Materials Research Award
Dr. Nicola Simmons

Indigenous Peoples of Canada Scientific Study Awards
David Reed

IEEE (Institute of Electrical and Electronic Engineers) Hamilton Section Awards
Blair MacCuish, Leyden Martinez Fonte

International Science & Engineering Affiliated Fair Awards
Samna Aziz, Ming Chong, Cathy Hayman, Varsha Jayasankar, Jack Mogus, Dan Mogilny, Emma Mogus, Lucas Penny
SPECIAL AWARD JUDGES (Continued)

Laurentian Chapter of SETAC Award
Oana Birceanu, Sunny Choi, Scott Hepditch, Gerald Tetreault

Dr. Colin J.L. Lock Memorial Chemistry Award
Dr. Nicola Simmons

McMaster University Department of Chemistry and Chemical Biology Award
Ryan Wylie

McMaster University Dept. of Chemical Engineering & Chemical Engineering Club
Ryan LaRue

McMaster University Faculty of Engineering Entrance Awards
Lindsay Bolan, Alaine Coschi

McMaster University LEAP Award of Innovation
Victoria Anderson, Steph Elder

McMaster University School of Geography and Earth Sciences Awards
Maureen Padden

McMaster University Venture Award of Innovation
Victoria Anderson, Steph Elder

McMaster University Women in Engineering Entrance Awards
Lindsay Bolan, Alaine Coschi

Mechanical Contractors Association of Hamilton Award
Dave Crawford

Michael G. DeGroote Institute for Infectious Disease Research Internship Award
Dr. Allison Kennedy

Mohawk College Building & Construction Sciences Awards
Dan Havercroft, Sean Nix

Mohawk College Computer Science & Information Technology Excellence Award
Stephen Adams, Simon Galton

Mohawk College Electrical Engineering Technology Awards
Richard Ma, Brian Stefanchuk

Mohawk College Mathematics Awards
Nasr Bistawrous, John Keyzs, Frosina Stojanovska-Pocuca

Nelson Steel Awards
Shannon Clark

Nikola Tesla Innovation Awards
Dr. Colin Campbell, Vic Djurdjevic, Angelina Ivetic, Branko Lukic, Ratko Pijanovic, Alex Stojanovic
SPECIAL AWARD JUDGES (Continued)

Oakvillegreen Conservation Association Award for the Environment
Karen Brock, Denise Brennan-Rieder

Primary Fluid Systems Awards
Sandy Walker

Procor Engineering Awards
Craig Rioux

Professional Engineers of Ontario-Hamilton/Burlington Chapter Awards
Michelle Chin, Gary Closson, David Dean, Erika Kadar, Jim Sweetman

The Research Institute at St. Joe’s Hamilton, Health Research Awards
Laura Garrick, Samantha Tibshirani

Royal Botanical Gardens Award
Karin Davidson-Taylor

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

Society of Tribologists & Lubrication Engineers - Hamilton Section Awards
Richard Schrama, Navdeep Swach

SPIE - The International Society for Optics & Photonics Awards
Marjan Razani
BASEF Alumni Project

Attention all BASEF Participants! We Want YOU!

Congratulations on your participation in BASEF. We hope you will return and do more exciting projects in the years to come! You are now a BASEF Alumnus and we want to stay in touch with you. We would love to know what you are doing as you go to University or College and beyond or wherever life takes you.

Coming soon, we will have a "BASEF Alumni Network" where you can keep in touch and find out what your fellow Alumni are doing too.

Did you know that this regional science fair is now 58 years old? Did you know that BASEF has not always been known as that?

Over the years, our previous fairs have been called the Hamilton Science Fair, the Hamilton District Science Fair, the Hamilton District Science and Engineering Fair and the Hamilton and Wentworth Science and Engineering Fair. Engineering projects were allowed in first when the fair was 10 years old! The fair has been going so long you may have had parents or even grandparents who have also participated in it! We have had fairs in different venues also - at the Armoury in downtown Hamilton, at McMaster University, and at Sheridan College as well as at Mohawk College.

We have seen thousands of students just like you. The fair has been going so long that over 20,000 students have participated in it since it started way back in 1960! These were students just like you who are interested in everything about science, technology, engineering and math! Wouldn't it be interesting to learn about the marvelous and wondrous things they are doing now? We will be inviting them to join the BASEF Alumni Network also!!!

Go to our website, basef.ca, and register as an Alumnus.

Then, stay tuned for more information about the coming BASEF Alumni Network where there will be exciting initiatives for and about BASEF Alumni.

Perhaps you know someone who is a former BASEF participant. Would you connect with them and tell them about our Alumni Project and ask them to register? We would really appreciate it!

Stay Connected
Facebook.com/teambasef
Flickr.com/team-basef
Instagram.com/basef
Twitter.com/basef
Youtube.com/TeamBASEF
The David Braley Athletic and Recreation Centre (DBARC)
BASEF Student Boundaries
Thursday, March 22 - 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.
## EXHIBITOR INDEX

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<td>Thomas, Hanajahawi</td>
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<td>Thomas, Hasena</td>
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<td>Thomas, Sydnie</td>
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<td>Timpany, Brooke</td>
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<td>Tran, Alyssa</td>
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<td>Tran, Jaylan</td>
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<td>Trikoupis, Jonathan</td>
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<td>Usmani, Suha</td>
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<td>Valliant, Diana</td>
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<td>Van Doodewaard, Ryan</td>
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<td>Van Es, Zac</td>
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<td>Van Trip, Joshua</td>
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<tr>
<td>Vanevery, Quincy</td>
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<tr>
<td>Vashishta, Tanisha</td>
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</tbody>
</table>

31
PROJECT LISTING

A01 Which recovery drink has the most electrolytes?  
Grace Beer  
Junior 7/8 Life Sciences Non-Human  
Appleby College, IND

A02 How well do cleaning products actually work?  
Amreen Dhillon, Kara Spence  
Junior 7/8 Life Sciences Non-Human  
Sunningdale Public School, HDSB

A03 The Effects of Wi-Fi on Bacteria  
Julia Savaglio  
Junior 7/8 Life Sciences Non-Human  
St. Mary Elementary School, HDSB

A04 Chemical or Natural: a decision that could change your life!  
Harsimranjeet Singh  
Intermediate 9/10 Life Sciences Non-Human  
North Park Collegiate and Vocational School, GEDSB

A05 Bacteria balm  
Isabella Lukic  
Junior 7/8 Life Sciences Non-Human  
St. Paul, HWCD

A06 Plants vs. Microwaves  
Mya Pellegrini, Natalia Szczepaniak  
Junior 7/8 Life Sciences Non-Human  
Alexander’s Public School, HDSB

A07 To Grow or Not to Grow  
Joseph Putrone  
Junior 7/8 Life Sciences Non-Human  
St. Augustine, HWCD

A08 Can Jurassic Park Come To Life?  
Daniel Lee, Ruben Palacios Coca  
Junior 7/8 Life Sciences Non-Human  
St. Mary Elementary School, HCDSB

A09 Does the Evolution Theory Require Updating?  
Zachary Shapardanis  
Senior 11/12 Life Sciences Non-Human  
Assumption College School, BHNCD

A10 Sunlight Grows your Plants, but What Else Does?  
Jade Beaudry  
Junior 7/8 Life Sciences Non-Human  
St. Mary Elementary School, HCDSB

A11 Tasty Corn  
Syndie Thomas  
Junior 7/8 Life Sciences Non-Human  
J. C. Hill Elementary, SNS

A12 Conditions for Enzymes to be Zippy  
Sungwon Jung  
Intermediate 9/10 Life Sciences Non-Human  
North Park Collegiate and Vocational School, GEDSB

A13 Contrary Dairy  
Isra Bashir, Rya Adronov  
Junior 7/8 Life Sciences Non-Human  
Sir William Osler, HWDSB

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  
Andrée Grebenc  
Chair of the Board

TOGETHER we inspire every student to learn, grow, succeed.
14 What is the activation energy (EA kJmol-1) of the decomposition of concentrated (0.01moldm-3) hydrog
Muhammad Bajwa
Senior 11/12 Life Sciences
White Oaks Secondary School, HDSB

15 Food Deterioration
Ahsen Syed
Junior 7/8 Life Sciences Non-Human Ancaster Meadow, HWDSB

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

17 How does Wifi affect plant growth?
Kyana Cheng, Graeme Laverance
Junior 7/8 Life Sciences Non-Human Sir William Osler, HWDSB

18 Where the Wild Things Grow
Michael Horvat
Junior 7/8 Life Sciences Non-Human St. Paul, HWCD

B01 Determining the Effects of Gender on the Ability to Detect Lies
Chloe Comeau
Junior 7/8 Health Sciences Human
Appleby College, IND

B02 Lung Capacity
Laura De Simone
Junior 7/8 Health Sciences Human St. Vincent de Paul, HWCD

B03 Can spices keep raw meat from spoiling
Matthew Lawford
Junior 7/8 Life Sciences Non-Human Alexander’s Public School, HDSB

B04 Effects of Radiation on Basil Growth
Taylor Stanford
Junior 7/8 Life Sciences Non-Human Appleby College, IND

B05 The Effect Of Petri Dish Environment On The Growth Of Probiotics Applied In Fermented Products
Tianyang Gao
Senior 11/12 Life Sciences Non-Human King’s Christian Collegiate, IND

B06 How do different pH levels of liquids affect the enzymatic browning of apples?
Abdullah Bajwa
Junior 7/8 Life Sciences Non-Human Al-Falah Islamic School, IND

B07 The 5 Second Rule
Nathan Martin, Nathan Sweezey-Munroe
Junior 7/8 Life Sciences Non-Human Ancaster Meadow, HWDSB

B08 The Power of pH
Michael Meleka, Jacob Meleka
Senior 11/12 Life Sciences Non-Human North Park Collegiate and Vocational School, GEDSB
B09 The Effect of Caffeine on Plant Growth
Alexander Cagampan, Coen Foster
Junior 7/8 Life Sciences Non-Human
Ancaster Meadow, HWDSB

B10 Is the 5 second rule true?
Jamila Turkstra
Junior 7/8 Life Sciences Non-Human
Sir William Osler, HWDSB

B11 Growing Bacteria
Payton Miller, Kayla Scott
Junior 7/8 Life Sciences Non-Human
Oliver M. Smith Kawennio:io, SNS

B12 Using Math and Chemistry to Investigate Biology
Hanna Gamelin, Karmanjeet Phangura
Senior 11/12 Life Sciences Non-Human
North Park Collegiate and Vocational School, GEDSB

B13 The Five Second Rule - Fact or Fiction
Aiden Cardoso
Junior 7/8 Life Sciences Non-Human
Glenn Arbour Academy, IND

B14 DI-grey or DI-no
Lisa He
Junior 7/8 Life Sciences Non-Human
Appleby College, IND

B15 Do Different Proteins Denature at the Same Temperature?
Zainab Al-Rammahi
Junior 7/8 Life Sciences Non-Human
Ancaster Meadow, HWDSB

B16 The Effect of Green Tea on the Growth of Mung Beans Exposed to Varying Concentrations of Salinity
Vidthiya Jeyanathan
Senior 11/12 Life Sciences Non-Human
Westdale Secondary School, HWDSB

B17 Quantifying Lung Macrophages to Understand Increased Susceptibility to Bacterial Pneumonia with Age
Anika Gupta
Intermediate 9/10 Life Sciences Non-Human
Westdale Secondary School, HWDSB

B18 Does electromagnetic radiation (EMR) from cell phones impact plant growth?
Matthew Broglio
Junior 7/8 Life Sciences Non-Human
St. Mary Elementary School, HCDSB

C01 Effects Beverages Have On Your Teeth
Karim Faltas
Intermediate 9/10 Health Sciences Human
Hillfield Strathallan College, IND

C02 Pop Does What?
Joshua Hagan
Junior 7/8 Health Sciences Human
Blessed Sacrament, HWCD

C03 Impact of Stereovision on Fine eye Coordination
Katelyn Matsumoto
Intermediate 9/10 Health Sciences Human
Hillfield Strathallan College, IND

C04 Music To My Ears
Lizzie McClemont
Junior 7/8 Health Sciences Human
Ancaster Meadow, HWDSB

C05 The Impact of the Digital World on Kids Aged 10-15
Yassin Reda
Junior 7/8 Health Sciences Human
Appleby College, IND

C06 The effects of refined sugar on the human body
Jasmin Davies, Chiara Calitri
Junior 7/8 Health Sciences Human
Forest Trail Public School, HDSB

C07 Use It or Lose It!
Riley Bennett, Harri Lara
Senior 11/12 Health Sciences Human
Dundas Valley Secondary School, HWDSB

C08 Coffee VS Energy Drinks
Noor Al-bander
Junior 7/8 Health Sciences Human
Sir Ernest Macmillan Public School, HDSB

C09 Feeling Frustrated Yet?
Abby Maas
Junior 7/8 Health Sciences Human
Tiger Jeet Singh Public School, HDSB

C10 Happy Humans
Haram Akram, Jathusa Balamurali
Junior 7/8 Health Sciences Human
Tiger Jeet Singh Public School, HDSB

C11 Henoch - Schonlein Purpura (HSP)
Ashwin Unnithan
Intermediate 9/10 Health Sciences Human
Orchard Park Secondary School, HWDSB

C12 Food Against Cancer
Tanvi Manku
Junior 7/8 Health Sciences Human
Joshua Creek Public School, HDSB

C13 Tackling Pseudomonas aeruginosa Biofilm Resistance: Synergy of Bacteriophage & Grapeseed Phenolics
Krish Joshi
Intermediate 9/10 Health Sciences Human
Robert Bateman High School, HDSB

C14 How Rap vs Classical music affects your short term memory
Diella Sulejmanovski, Marwa Elkadri
Junior 7/8 Health Sciences Human
Tiger Jeet Singh Public School, HDSB
C15   The effect if music on blood pressure
Julie Ward, Soujanya Kumar
Junior 7/8 Health Sciences Human
John William Boich Public School, HDSB

C16   Why are autoimmune diseases so hard to cure?
Tanisha Vashishtha
Junior 7/8 Health Sciences Human
Joshua Creek Public School, HDSB

C17   Germ Wars
Noah Singh
Junior 7/8 Health Sciences Human
Holy Name of Mary, HWCD

C18   How Your Immune System Uses Its Memory
Hya Tawil
Junior 7/8 Health Sciences Human
Al-Falah Islamic School, IND

D01   Blue? or Blue?
Madeline Ivkovic, Felicia Ferro
Junior 7/8 Health Sciences Human
St. Mark, HWCD

D02   TOUCHDOWN?
Nichole Fajardo
Junior 7/8 Health Sciences Human
St. Joseph, HWCD

D03   Sad and Greased
Karissa Williams
Junior 7/8 Health Sciences Human
J. C. Hill Elementary, SNS

D04   Does Blood Pressure Effect Mental Capability
Zain Syed, Mahad Mudassar
Junior 7/8 Health Sciences Human
Escarpmont View Public School, HDSB

D05   Does eye colour affect the way you receive things in different lightings, such as light or dark?
Molly Jin, Anajanaa Vimalathas
Junior 7/8 Health Sciences Human
Tiger Jeet Singh Public School, HDSB

D06   Vaping Vs Smoking
Sofia Agostino
Junior 7/8 Health Sciences Human
St. Therese of Lisieux, HWCD

D07   The Effect Of Genetically Modified T-Cells On Cancer Cells
Abdur Rehman Butt
Junior 7/8 Health Sciences Human
Al-Falah Islamic School, IND

D08   Think Fast!
Matthew Gilbreath
Junior 7/8 Health Sciences Human
St. Augustine, HWCD

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PROJECT LISTINGS
(Continued)

D09  Simple At-Home Eye Test for Communities with Low Access to Doctors
Lily Smales
Junior 7/8 Health Sciences Human
W. H. Morden Public School, HDSB

D10  Are We Equal?
Carys Washchuk, Isabella Golda
Junior 7/8 Health Sciences Human
Hillfield Strathallan College, IND

D11  The influences of different colours short-term memory
Niharik Srivatsa, Joy Yang
Intermediate 9/10 Health Sciences Human
Waterdown District Secondary School, HWDSB

D12  Insulin in Pills?
Alissa Guagliano, Daniella Iannuzzi
Junior 7/8 Health Sciences Human
St. Clare of Assisi, HWCD

D13  EYE TRICKED YOU
Esteban Jimenez, Daniel Rico
Junior 7/8 Health Sciences Human
St. Vincent de Paul, HWCD

D14  Forgot Me Not
Jadan Ascencio-Arriola
Junior 7/8 Health Sciences Human
St. Paul, HWCD

D15  Can music affect your heart rate?
Karma Mentuh, Ashani Panchal
Junior 7/8 Health Sciences Human
Escarpment View Public School, HDSB

D16  The study of Choroideremia
Bailey Gardien, Jessica Gareau
Senior 11/12 Health Sciences Human
Assumption College School, BHNCD

D17  Illusion
Haiqa Aaqil, Samiyah Khan
Junior 7/8 Health Sciences Human
Escarpment View Public School, HDSB

D18  Nail Polish: Beware The Toxic Trio
Ema Bauder
Junior 7/8 Health Sciences Human
Alexander's Public School, HDSB

E01  Water You Drinking?
Hiba Khan
Junior 7/8 Health Sciences Human
Hillfield Strathallan College, IND

E02  Concussion Discussion
Giovanni Cuda
Junior 7/8 Health Sciences Human
Immaculate Heart of Mary, HWCD

E03  The Study of Schizophrenia
Charlotte Bloor
Junior 7/8 Health Sciences Human
St. Mary Elementary School, HCDSB

E04  Memory mnemonics
Kyeriah Maracle, Ella Bomberry
Junior 7/8 Health Sciences Human
Oliver M. Smith Kawennio:io, SNS

E05  WEAR
Jelena Pavic, Rachel Mcissac
Junior 7/8 Health Sciences Human
John William Boich Public School, HDSB

Congratulations to all Science Fair participants
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Email: economicdevelopment@hamilton.ca

Hamilton's Economic Development Office is the central point of contact for business assistance. Its services are geared to serve new start-up companies, corporate relocations, and the expansion and retention of existing business.
E06  µChip Implant In Human  
Phoebe Bernardo  
Junior 7/8 Health Sciences Human  
Oakville Christian School, IND

E07  The power of music  
Lucas Vincze  
Junior 7/8 Health Sciences Human  
Joshua Creek Public School, HDSB

E08  Memory Lane  
Sahara Ahmad  
Junior 7/8 Health Sciences Human  
W. H. Morden Public School, HDSB

E09  Split Decisions: To Cut or Not to Cut  
Ella Herrington  
Junior 7/8 Health Sciences Human  
Dalewood, HWDSB

E10  Strawberry Goodness  
Taylin Bomberry  
Junior 7/8 Health Sciences Human  
J. C. Hill Elementary, SNS

E11  How do cancer cells become resistant to cisplatin?  
Yaser Nossibeh, Aayan Naqui  
Junior 7/8 Health Sciences Human  
Joshua Creek Public School, HDSB

E12  The Taste of Your Tongue  
Manvendra Jani  
Junior 7/8 Health Sciences Human  
Ancaster Meadow, HWDSB

E13  Facial Differences  
Kayla Banach, Aahana Bagga  
Junior 7/8 Health Sciences Human  
Ancaster School, HWDSB

E14  RADIATION DOMINATION  
Sierra Cordeiro  
Junior 7/8 Health Sciences Human  
Canadian Martyrs', HWCD

E15  Does weather affect mood?  
Enya Maher, Karen Situ  
Junior 7/8 Health Sciences Human  
Sir William Osler, HWDSB

E16  Protein VS Carbs  
AdeshMehta, Akash Mehta  
Intermediate 9/10 Health Sciences Human  
Hillfield Strathallan College, IND

E17  The Phone Case  
Oyinoluwa Aderibigbe, Sophia Osborne  
Intermediate 9/10 Health Sciences Human  
Hillfield Strathallan College, IND

E18  Diseases Vs. Health  
Shivanshi Patel, Caitlin Cao  
Junior 7/8 Health Sciences Human  
W. H. Morden Public School, HDSB

F01  Your biological clock is ticking  
Danyaal Abbas  
Junior 7/8 Health Sciences Human  
W. H. Morden Public School, HDSB

F02  Short term Memory As The Brain Matures  
Livy Barbisan, Nick Weston  
Junior 7/8 Health Sciences Human  
John William Boich Public School, HDSB

F03  Colour Vibes  
Hanajahawi Thomas  
Junior 7/8 Health Sciences Human  
I. L. Thomas Odadrahonyanta, SNS

F04  The Science of Lying  
Hillary Hamilton, Hannah Raymond  
Senior 11/12 Health Sciences Human  
Ancaster High, HWDSB

F05  Which plant-based flavour compounds are most effective in killing oral bacteria?  
Vesa Barileva  
Junior 7/8 Health Sciences Human  
Pilgrim Wood Public School, HDSB

F06  Distractions affecting memory.  
Ava Eterno, Amanda Rankin  
Junior 7/8 Health Sciences Human  
St. Paul, HWCD

F07  Willpower Challenge  
Talia Ventura, Emily Hilton  
Junior 7/8 Health Sciences Human  
Tiger Jeet Singh Public School, HDSB

F08  Identifying the ability of Amylase to digest Resistant Starches  
Karen Sidhom  
Senior 11/12 Health Sciences Human  
King's Christian Collegiate, IND

F09  Antioxidant Activity of Pomegranate Juice, Blueberry Juice and Lemon Juice and Baking Soda Mixture  
Madison Perry  
Senior 11/12 Health Sciences Human  
King's Christian Collegiate, IND

F10  Handedness and Brain Lateralization are they connected?  
Julia Lupton  
Junior 7/8 Health Sciences Human  
St. Mary Elementary School, HCDSB

F11  Be smart dont start  
Tilia Skye, Marissa Skye  
Junior 7/8 Health Sciences Human  
J. C. Hill Elementary, SNS

F12  Taste Bud Testers  
Mary O'Brien, Leah Fraser  
Junior 7/8 Health Sciences Human  
St. Margaret Mary, HWCD

F13  Medicines In Time  
Alison Greene  
Junior 7/8 Health Sciences Human  
J. C. Hill Elementary, SNS

F14  FINGERPRINTS  
Steven Sigouin  
Junior 7/8 Health Sciences Human  
St. Martin of Tours, HWCD

F15  Brainstorm  
Aidan Parvinchi  
Junior 7/8 Health Sciences Human  
Oakville Christian School, IND
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F16  Can You Out-Lie Us?
Gurisha Sahni, Emily Chan
Junior 7/8 Health Sciences Human
Joshua Creek Public School, HDSB

F17  Does Sugar Affect your Short Term Memory?
Matteo Suta, Ryan Rahman
Junior 7/8 Health Sciences Human
Tiger Jeet Singh Public School, HDSB

F18  Natures Weapon Against Cancer
Masooma Naqvi
Junior 7/8 Health Sciences Human
Escarpenment View Public School, HDSB

G01  Eating in Space: Food for Thought
Emma Scoble
Junior 7/8 Health Sciences Human
W. H. Morden Public School, HDSB

G02  Lucid Dream
Joshua Van Trip
Junior 7/8 Health Sciences Human
St. Mary Elementary School, HCDSB

G03  The Summation Sensation
Gabriel Serafino
Junior 7/8 Health Sciences Human
Immaculate Heart of Mary, HWCD

G04  Mind The Time
Nicolas Landers
Junior 7/8 Health Sciences Human
St. Bernadette, HWCD

G05  The Dreamscape
Emily Singh
Junior 7/8 Health Sciences Human
Tiger Jeet Singh Public School, HDSB

G06  Telomere Shortening-Effects and Projections
Lipika Abbareddy
Senior 11/12 Health Sciences Human
Assumption College School, BHNCD

G07  Does Flavored Gum Affect Short-Term Memory?
Mary Youkhana, Alishba Imran
Junior 7/8 Health Sciences Human
Tiger Jeet Singh Public School, HDSB

G08  Think Fast!
Ella Capretta, Giselle Palakumar
Junior 7/8 Health Sciences Human
St. Therese of Lisieux, HWCD

G09  Antibacterial effects of Bromelain from the A. comosus plant on the S. mutans cariogenic bacteria
Lilian Raphael
Senior 11/12 Health Sciences Human
King’s Christian Collegiate, IND

G10  Balancing Act
Alessandro Bozzo
Junior 7/8 Health Sciences Human
Immaculate Heart of Mary, HWCD

G11  Visual, Auditory, Tactile-OH MY!
Illyria Volcansek, Faith Pagunsan
Junior 7/8 Health Sciences Human
St. Martin of Tours, HWCD

G12  The Heart of the Matter
Adriana Bozzo
Junior 7/8 Health Sciences Human
Immaculate Conception, HWCD

G13  Colour vs Memory
Sarah Jeddy, Laiba Ali
Junior 7/8 Health Sciences Human
Sts. Peter & Paul, HWCD

G14  Fingerprints in Families
Cecilia Eaton, Jaiden Mulé
Junior 7/8 Health Sciences Human
Sts. Peter & Paul, HWCD

G15  Pearly whites
Juliana Comisso, Cristina Suarez
Junior 7/8 Health Sciences Human
Immaculate Heart of Mary, HWCD

G16  Fingerprints - Correlation or Not?
Hailey Jones, Alyssa Tran
Junior 7/8 Health Sciences Human
Joshua Creek Public School, HDSB

G17  It's Basically Ginger
Antonia Giannini, Sara Legault
Junior 7/8 Health Sciences Human
Immaculate Heart of Mary, HWCD

G18  Insects Protein Of The Future
Madeleine Paul
Junior 7/8 Biotechnology
St. Mary Elementary School, HCDSB

H01  Feeling Hot, Hot, Hot
Demi Otubaga
Junior 7/8 Phys & Math Sci
Oakville Christian School, IND

H02  How permanent is permanent marker?
Crystal Ren, Vivian Pillobossian
Junior 7/8 Phys & Math Sci
Forest Trail Public School, HDSB

H03  Which Stat Relates Best To Team Success?
Ryan Barker
Junior 7/8 Phys & Math Sci
Joshua Creek Public School, HDSB

H04  Apple: The Silent Killer!
Sahib Dhanoa, Davis Parsons
Intermediate 9/10 Phys & Math Sci
Hillfield Strathallan College, IND

H05  A Hydrogen Fuel Cell as a Renewable Energy Source Using Water Electrolysis
Neha Gupta
Junior 7/8 Phys & Math Sci
Sir William Osler, HWDSB

H06  To Float Or Not To Float
Timothy Khan, Ahmed Tariq
Junior 7/8 Phys & Math Sci
Tiger Jeet Singh Public School, HDSB
PROJECT LISTINGS (Continued)

H07  Dry ice vs manufactured carbonation
Ritaj Aboumar, Sharan Banwait
Junior 7/8 Phys & Math Sci
Joshua Creek Public School, HDSB

H08  The Future of Energy
Shrijah Narendiran
Junior 7/8 Biotechnology
Alexander’s Public School, HDSB

H09  Helpful or Harmful, The Effects of Hydrogen Peroxide on Seed Germination
Mustafa Mirza, Adyan Tanver
Junior 7/8 Biotechnology
Al-Falah Islamic School, IND

H10  Dissolution Rates of Different Pain Pills in the Normal Acidity Levels of Stomach
Ghufran Al-Bander
Senior 11/12 Biotechnology
Robert Bateman High School, HDSB

H11  Determining Whether the Vitamin C in in Yellow Peppers is Affected by Microwaves
Kalina Morrison
Senior 11/12 Biotechnology
King’s Christian Collegiate, IND

H12  Nice Rice
Angela Cen
Junior 7/8 Biotechnology
W. H. Morden Public School, HDSB

H13  Utilizing H2O2 and Iodine in crystal form to eliminate algae in the water
Gyu Tae Bae
Intermediate 9/10 Biotechnology
White Oaks Secondary School, HDSB

H14  What's the Best Way to Wash your Produce?
Sabrina Mateen, Areeba Hayat
Junior 7/8 Biotechnology
Escarpment View Public School, HDSB

H15  Shine to Save
Suraj Samineni
Intermediate 9/10 Biotechnology
Hillfield Strathallan College, IND

H16  Can Nanomedicine Cure Cancer?
Lubna Al-shamari, Manav Patel
Junior 7/8 Biotechnology
Escarpment View Public School, HDSB

H17  Biomass-The Future of Our Waste
Aleander Chung, Tao Shen
Junior 7/8 Biotechnology
W. H. Morden Public School, HDSB

H18  Investigating the Antibacterial Properties of Silver Nanoparticles on Staphylococcus Epidermidis
Evlyn Sun
Senior 11/12 Biotechnology
King’s Christian Collegiate, IND

Good luck to all the 2018 BASEF participants!

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<table>
<thead>
<tr>
<th>Project Number</th>
<th>Title</th>
<th>Author</th>
<th>Grade</th>
<th>Subject</th>
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</thead>
<tbody>
<tr>
<td>J01</td>
<td>Cool Attraction</td>
<td>Alexandra Farkas</td>
<td>Junior 7/8</td>
<td>Phys &amp; Math Sci</td>
<td>St. Augustine, HWCD</td>
</tr>
<tr>
<td>J03</td>
<td>The Impossible Sound</td>
<td>George Pentchev</td>
<td>Junior 7/8</td>
<td>Phys &amp; Math Sci</td>
<td>W. H. Morden Public School, HDSB</td>
</tr>
<tr>
<td>J04</td>
<td>Determining Which Mixture of Ethanol Will Produce the Most Energy</td>
<td>Jake Little</td>
<td>Senior 11/12</td>
<td>Phys &amp; Math Sci</td>
<td>King’s Christian Collegiate, IND</td>
</tr>
<tr>
<td>J05</td>
<td>Freezing Point Depression of Different Salts in Varying Concentrations in Solution</td>
<td>Kailas Chari</td>
<td>Junior 7/8</td>
<td>Phys &amp; Math Sci</td>
<td>Maple Grove Public School, HDSB</td>
</tr>
<tr>
<td>J06</td>
<td>Deflate-Gate</td>
<td>Ethan Restauri, Christopher Ptaszek</td>
<td>Junior 7/8</td>
<td>Phys &amp; Math Sci</td>
<td>St. Augustine, HWCD</td>
</tr>
<tr>
<td>J08</td>
<td>UV Spectrophotometric Analysis of Caffeinated Beverages</td>
<td>Mai Ngo</td>
<td>Senior 11/12</td>
<td>Phys &amp; Math Sci</td>
<td>King’s Christian Collegiate, IND</td>
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<tr>
<td>J09</td>
<td>Static Sparks</td>
<td>Owen Belbeck</td>
<td>Junior 7/8</td>
<td>Phys &amp; Math Sci</td>
<td>St. Augustine, HWCD</td>
</tr>
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</table>

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Good luck to all competitors

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## PROJECT LISTINGS

(Continued)

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Student Names</th>
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<tbody>
<tr>
<td>J17 Gravitational Wave Astronomy</td>
<td>Arya Pisharody</td>
<td>7/8</td>
<td>John William Boich Public School, HDSB</td>
</tr>
<tr>
<td>J18 Rusting of Metal</td>
<td>Anuraj Shah</td>
<td>7/8</td>
<td>Joshua Creek Public School, HDSB</td>
</tr>
<tr>
<td>K01 Harnessing the Power of Ocean Waves</td>
<td>Zainab Itikhar</td>
<td>9/10</td>
<td>Hillfield Strathallan College, IND</td>
</tr>
<tr>
<td>K02 Tidal Zone Can Tidal Energy Sustain Profitable Return On Investment</td>
<td>Natalia Garbacz</td>
<td>7/8</td>
<td>St. Mary Elementary School, HCDSB</td>
</tr>
<tr>
<td>K03 Big Bang</td>
<td>Michael Oliver, Bryce Sinclair</td>
<td>7/8</td>
<td>St. Augustine, HWCD</td>
</tr>
<tr>
<td>K04 Burning Softly</td>
<td>Abbey Sepa</td>
<td>7/8</td>
<td>St. Augustine, HWCD</td>
</tr>
<tr>
<td>K05 Can you charge a phone using a lemon?</td>
<td>Emily Elliott, Amrit Grewal</td>
<td>7/8</td>
<td>Joshua Creek Public School, HDSB</td>
</tr>
<tr>
<td>K06 The Best Insulator</td>
<td>Ghishawa Ishfaq</td>
<td>7/8</td>
<td>Al-Falah Islamic School, IND</td>
</tr>
<tr>
<td>K07 Radioactivity at Home</td>
<td>Aidan Sibley</td>
<td>9/10</td>
<td>Garth Webb Secondary School, HDSB</td>
</tr>
<tr>
<td>K08 Coat of Steel</td>
<td>Keith Allan</td>
<td>7/8</td>
<td>Oakville Christian School, IND</td>
</tr>
<tr>
<td>K09 Charge it Up!</td>
<td>Alexandra Trojak</td>
<td>7/8</td>
<td>Oakville Christian School, IND</td>
</tr>
<tr>
<td>K10 The Effect Of Acid Rain On Building Materials</td>
<td>Shehwar Khan</td>
<td>7/8</td>
<td>Al-Falah Islamic School, IND</td>
</tr>
<tr>
<td>K11 Quantum Levitation</td>
<td>Ignacio Corral, Calvin Foster</td>
<td>7/8</td>
<td>Burlington Christian Academy, IND</td>
</tr>
<tr>
<td>K12 Hydroelectricity and How it Works</td>
<td>Simran Matharu</td>
<td>7/8</td>
<td>Ancaster Meadow, HWDSB</td>
</tr>
<tr>
<td>K13 Balls of Speed</td>
<td>Oscar Steinhauser, Aly Barakat</td>
<td>7/8</td>
<td>W. H. Morden Public School, HDSB</td>
</tr>
<tr>
<td>K14 Hot or Not? Temperature and Photovoltaic Output</td>
<td>Oliver Brenninkmeijer</td>
<td>7/8</td>
<td>Oakville Christian School, IND</td>
</tr>
<tr>
<td>K15 The Synthesis of Quantum Dots using Hydrocarbons</td>
<td>Anne Jing</td>
<td>11/12</td>
<td>Assumption College School, BHNCD</td>
</tr>
<tr>
<td>K16 Do It Yourself Filter</td>
<td>Eddy Iorio</td>
<td>7/8</td>
<td>Dalewood, HWDSB</td>
</tr>
<tr>
<td>K17 #Take The Challenge</td>
<td>Abbie Doolittle, Ryedan Annett</td>
<td>7/8</td>
<td>Emily C. General Elementary School, SNS</td>
</tr>
<tr>
<td>K18 Crime Solving Chromatography: Comparing Different Types</td>
<td>Hafsah Raheel</td>
<td>7/8</td>
<td>Al-Falah Islamic School, IND</td>
</tr>
<tr>
<td>L01 Shampoo</td>
<td>Julia Meze, Alexandra Pappas</td>
<td>7/8</td>
<td>St. Mary Elementary School, HCDSB</td>
</tr>
<tr>
<td>L02 Eco-friendly solution to destructive road salt</td>
<td>Christina Hanna, Erica Mitton</td>
<td>11/12</td>
<td>King's Christian Collegiate, IND</td>
</tr>
<tr>
<td>L03 Under Pressure!</td>
<td>Dunya Elbarbari</td>
<td>7/8</td>
<td>Oxford Learning Academy, IND</td>
</tr>
<tr>
<td>L04 Going Going Gone!</td>
<td>Devan Lickers, Liam Porter</td>
<td>7/8</td>
<td>J. C. Hill Elementary, SNS</td>
</tr>
<tr>
<td>L05 The Effect of Different Materials on Cell Phone Reception</td>
<td>Jannah Khaja</td>
<td>7/8</td>
<td>Al-Falah Islamic School, IND</td>
</tr>
<tr>
<td>L06 Arrow Dynamics</td>
<td>Andrew Teves</td>
<td>7/8</td>
<td>John William Boich Public School, HDSB</td>
</tr>
<tr>
<td>L07 A Pretty Penny</td>
<td>Carmela Medeiros, Grace Pellegrino</td>
<td>7/8</td>
<td>Immaculate Heart of Mary, HWCD</td>
</tr>
</tbody>
</table>
L08  Friction? Friction.
Jessica Chen
Junior 7/8 Phys & Math Sci
Dalewood, HWDSB

L09  The Effect Of Friction on Efficiency
Moosa Adnan, Emaan Kotwal
Junior 7/8 Phys & Math Sci
Al-Falah Islamic School, IND

L10  The Investigation of Technology Within the Game of Golf
Will Missere
Junior 7/8 Phys & Math Sci
Appleby College, IND

L11  Black Hole From Beginning to End
Kimia Hosseinifar
Junior 7/8 Phys & Math Sci
Dalewood, HWDSB

L12  Detecting skin cancer with neural networks
Sean Romel
Senior 11/12 Eng & Comp Sci
North Park Collegiate and Vocational School, GEDSB

L13  Through The Roof
Nicholas Schmalz
Junior 7/8 Eng & Comp Sci
St. Augustine, HWCD

L14  Furniture Transformer to Reduce Costs and Save Space
Kaylee Zhang
Junior 7/8 Eng & Comp Sci
Norwood Park, HWDSB

L15  Deciphering Oobleck: A Non-Newtonian Fluid
Minahil Khawaja
Junior 7/8 Eng & Comp Sci
Al-Falah Islamic School, IND

L16  The Multi Purpose Dog House
Rebecca Evalena de Kleer, Charlotte Clara Rmkema
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

L17  Water Filtration For Desert Communities
Suha Usmani
Junior 7/8 Eng & Comp Sci
Chris Hadfield Public School, HDSB

L18  BinDock
Evan Kong, Hasan Ali
Junior 7/8 Eng & Comp Sci
Ancaster Meadow, HWDSB

M01  Current Thinking
Steven Rowe
Junior 7/8 Eng & Comp Sci
W. H. Morden Public School, HDSB
PROJECT LISTINGS
(Continued)

M02   The E - Case
Amanda Powell, Rebecca Salai
Junior 7/8 Eng & Comp Sci
John William Boich Public School, HDSB

M03   Daily Carbon Reducer
Savannah Baker
Intermediate 9/10 Eng & Comp Sci
Hillfield Strathallan College, IND

M04   What Light Generates
What Watts?
Will Cockwell
Junior 7/8 Eng & Comp Sci
Appleby College, IND

M05   Automated Bottle Opener
Mitchell Clapperton
Junior 7/8 Eng & Comp Sci
Guy B. Brown, HWDSB

M06   Energy On Wheels
Harshini Sujatha Omkar Krishna
Junior 7/8 Eng & Comp Sci
St. Therese of Lisieux, HWCD

M07   The Electricity Generating
Drum: Generating Voltage
using Piezoelectricity
Satyam Singh
Intermediate 9/10 Eng & Comp Sci
King's Christian Collegiate, IND

M08   Sleeping Jacket
Abigail Kaye, Elianna Soh
Junior 7/8 Eng & Comp Sci
John Knox Christian School
(Oakville), IND

M09   Hot Ice: Exothermic
reactions
Malaika Menon
Junior 7/8 Eng & Comp Sci
Al-Falah Islamic School, IND

M10   Can aquaponics make
aquaculture sustainable and
reduce Co2
Vikram Ogale
Junior 7/8 Eng & Comp Sci
John T. Tuck Public School, HDSB

M11   EVERSE: Electric Vehicle
Energy Recovery and Safety
Enhancement
Michael Wolfe
Intermediate 9/10 Eng & Comp Sci
King's Christian Collegiate, IND

M12   Amazing water works
Yashwanth Gunturi
Junior 7/8 Eng & Comp Sci
Escarpment View Public School, HDSB

M13   Central Insulating
Backpacks
Maya Peebles, Carol Gerges
Junior 7/8 Eng & Comp Sci
John Knox Christian School
(Oakville), IND

M14   Gauss Rifle: A Way
Forward
Ryan Van Doodewaard
Junior 7/8 Eng & Comp Sci
Oakville Christian School, IND

CONGRATULATIONS
To all BASEF2018 participants
and
BEST WISHES
For your continued success in all
your endeavours!

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Club of Hamilton AM
PROJECT LISTINGS
(Continued)

M15   JCPS at your fingertips
Jaiden Ratti
Junior 7/8 Eng & Comp Sci
Joshua Creek Public School, HDSB

M16   The Effect of Temperature on the Corrosion of Iron
Amna Siddiqui
Junior 7/8 Eng & Comp Sci
Al-Falah Islamic School, IND

M17   E.G.B. Electricity Generating Bicycle
Katey Brand, Dushan Veljkovic
Junior 7/8 Eng & Comp Sci
Alexander’s Public School, HDSB

M18   Tower Power
Daniel Guay
Junior 7/8 Eng & Comp Sci
St. Augustine, HWCD

N01   Hello Attendo
Eniola Olutunfese
Junior 7/8 Eng & Comp Sci
John William Boich Public School, HDSB

N02   Don’t Freeze!
Joshua Sienna
Junior 7/8 Eng & Comp Sci
St. Augustine, HWCD

N03   C.H.A.R.G.E I.T.
Chidera Uduji
Junior 7/8 Eng & Comp Sci
St. Mary Elementary School, HCDSB

N04   Non-Newtonian to Non-concussion
Kaushihan Ahilan, Jerron Zhang
Junior 7/8 Eng & Comp Sci
Dalewood, HWDSB

N05   Lost In Translation
Jacob Colatosti
Junior 7/8 Eng & Comp Sci
St. Luke, HWCD

N06   Water Water Everywhere Not A Drop To Drink: Desalination of Water Using Solar Power
Darian Ellis
Intermediate 9/10 Eng & Comp Sci
Hillfield Strathallan College, IND

N07   PH 3700
Zac Van Es
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

N08   S.A.S.T.
Malak Al-Ozaibi, Autumn Magill
Junior 7/8 Eng & Comp Sci
John William Boich Public School, HDSB

Best Wishes to all BASEF 2018 Competitors

Proudly outfitting TEAM BASEF at the Canada Wide Science Fair and the Intel International Science & Engineering Fair
PROJECT LISTINGS
(Continued)

N09  Don't Burn It Up, Let's Heat It Up - An Effective Alternative to Non-Renewable Energy: Thermoelectricity
Syed Amman Waheed, Turjo Rafid
Intermediate 9/10 Eng & Comp Sci
Westdale Secondary School, HWDSB

N10  Dew Point
Arnav Sheth
Junior 7/8 Eng & Comp Sci
W. H. Morden Public School, HDSB

N11  Corroding Copper: The Effect of pH Water Levels on Copper Plumbing Systems
Evan Cotter
Junior 7/8 Eng & Comp Sci
St. Augustine, HWCD

N12  PIPS - Patient Indoor Positioning System - UWB and IoT
Joseph Saturnino
Intermediate 9/10 Eng & Comp Sci
Bishop Ryan Secondary School, HWDSB

N13  Pee-Tricity
Connor McCourt
Junior 7/8 Eng & Comp Sci
Oakville Christian School, IND

N14  Resuscitating the CPR Mask
Nyah Kuzmicka, Olivia Drag
Intermediate 9/10 Eng & Comp Sci
Hillfield Strathallan College, IND

N15  The portable cooling Device
Steven Iliev
Junior 7/8 Eng & Comp Sci
Alexander's Public School, HDSB

N16  SpiraLinear: Rethinking Efficiency in Linear Motors
Paul (Kyum) Lee
Junior 7/8 Eng & Comp Sci
Dalewood, HWDSB

N17  Heated Scuba Suit
Ava Kuyvenhoven, Evangeline Bouganim
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

N18  What makes me Crack
Niko Jurincic, Christopher Raab
Junior 7/8 Eng & Comp Sci
St. Paul, HWCD

N19  Dress Up Warm
April Sujeong Lim
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

P01  Replaced by Bioplastics?
Julia Monteith, Andrea Da Re
Junior 7/8 Eng & Comp Sci
Forest Trail Public School, HDSB

P02  Microfibres 4 you?
Ayesha Mehmood, Zainab Mehmood
Intermediate 9/10 Eng & Comp Sci
Robert Bateman High School, HDSB

P03  The Eco Bird Saver
Mani Nabovati
Junior 7/8 Eng & Comp Sci
Alexander's Public School, HDSB

P04  Find My Friend
Jessie Fowler, Nicole Kunzli
Junior 7/8 Eng & Comp Sci
John William Boich Public School, HDSB
PROJECT LISTINGS
( Continued )

P05   Nikola Tesla (Tesla Coil)
Kevin Sos-Medeiros
Junior 7/8 Eng & Comp Sci
St. Luke, HWCD

P06   You Used to Call Me on My Cellphone
Jordon King, Nathan Apara
Junior 7/8 Eng & Comp Sci
Oakville Christian School, IND

P07   Testing of Environmental Friendly Corrison Solutions and Commercial Applications
Alexander Flannery
Intermediate 9/10 Eng & Comp Sci
King's Christian Collegiate, IND

P08   Shine With Solar Energy
Anastasia Anastasakis
Junior 7/8 Eng & Comp Sci
St. Mary Elementary School, HCDSB

P09   High Altitude Balloon
Avyukta Nair
Junior 7/8 Eng & Comp Sci
Halton Waldorf School, IND

P10   Pizza Hot: The Insulating Pizza Box
Mary Saad
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

P11   How to Minimize Heat Gain and Loss in Your House
Dylan Kwan, Carter Willan
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

P12   Solar Air Heater
Jill Svetkoff, Gabriella Wright
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

P13   Natural Filters that Filter Heavy Metals from Contaminated Water
Alice Gales
Intermediate 9/10 Eng & Comp Sci
King's Christian Collegiate, IND

P14   Brace Yourself!
Gillian Ayotte, Peyton Bear
Junior 7/8 Eng & Comp Sci
Hillfield Strathallan College, IND

P15   The Secret to Night Vision
Juliana Zhang, Grace Zhang
Junior 7/8 Eng & Comp Sci
Escarpmont View Public School, HDSB

P16   Can Plastic Help Save Earth's Precious Materials
Aisha Chaudhry
Junior 7/8 Eng & Comp Sci
Al-Falah Islamic School, IND

P17   Automatic Curtains
John Ibrahim
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

P18   HCDPS - Hot Car Death Prevention System
Anthony Saturnino
Junior 7/8 Eng & Comp Sci
St. Margaret Mary, HWCD

P19   Heat House
Simone Beier
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

Q01   Is old better than old?
Evan Skye, Alyssa Lickers
Junior 7/8 Eng & Comp Sci
J. C. Hill Elementary, SNS

Q02   C.O.D.I.A. (Computer operated & delightfully intelligent assistant)
Ellie Xu
Senior 11/12 Eng & Comp Sci
Garth Webb Secondary School, HDSB
Q03 The Dementia Smarthouse
Natasha McIntyre, Brooke Timpany
Junior 7/8 Eng & Comp Sci
Alexander's Public School, HDSB

Q04 Fight The Fertilizer
Jamie Collis, Kyla Romachyk
Junior 7/8 Eng & Comp Sci
John William Boich Public School, HDSB

Q05 The +Pack
Xavier Sang, Matthew Zaki
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

Q06 Four Pourer
Hasena Thomas
Junior 7/8 Eng & Comp Sci
I. L. Thomas Odadrahonyanita, SNS

Q07 Hydrophobic Sand
Sufyaan Kotwal
Junior 7/8 Earth & Env Sci
Al-Falah Islamic School, IND

Q08 Hurricanes vs Tornados
Emmalea Thomas, Aalyha Martin
Junior 7/8 Earth & Env Sci
J. C. Hill Elementary, SNS

Q09 Is the ocean swell?
Kieran Collins
Junior 7/8 Earth & Env Sci
Sir William Osler, HWDSB

Q10 A Study of Environmentally Friendly Alternatives to Grass
Neil Smith
Junior 7/8 Earth & Env Sci
Oakville Christian School, IND

Q11 Underwater Earthquake
Samantha Guay, Teaghan Kay
Junior 7/8 Earth & Env Sci
St. Augustine, HWCD

Q12 Rezscapes
Evie Longboat, Kadence Green
Junior 7/8 Earth & Env Sci
J. C. Hill Elementary, SNS
Q13  Synthetic Soil
Muhammad Khan, Skylar Liang
Senior 11/12 Earth & Env Sci
Glendale, HWDSB

Q14  Extraction of Pineapple
Leaf Fibre and its Strengthening
Abilities on Bioplastic
Mimi Han
Senior 11/12 Earth & Env Sci
King’s Christian Collegiate, IND

Q15  A Determination of the Toxic
Effects of Common Lithium-Ion
Battery Components on Dactylis
Glomerata
Jack McCay
Senior 11/12 Earth & Env Sci
King’s Christian Collegiate, IND

Q16  SURVIVAL WATER FILTER
Zein Shaker, Rand Abdul Jabbar
Junior 7/8 Earth & Env Sci
Tiger Jeet Singh Public School, HDSB

Q17  The Environmental
Dangers of Safe Winter Driving
Rianna Crawford, Joshua Clugston
Senior 11/12 Earth & Env Sci
Brantford Collegiate Institute and Vocational School, GEDSB

Q18  H2O What Are You
Drinkin’?
Jonathan Trikoupis
Junior 7/8 Earth & Env Sci
Ancaster Meadow, HWDSB

Q19  Eco vs artificial dish soap
Malaki Hughes
Junior 7/8 Earth & Env Sci
Ryerson Heights Public School, GEDSB

R01  Is pesticide harmful
Teagan Gray, Michelle Assaad
Junior 7/8 Earth & Env Sci
Alexander’s Public School, HDSB

R02  Rivers of Acid
Areeba Qureshi
Intermediate 9/10 Earth & Env Sci
Westmount Secondary School, HWDSB

R03  Worm Power!
Daniela Spoljar, Vanessa
Mazurkiewicz
Junior 7/8 Earth & Env Sci
St. Paul, HWCD

R04  Composting Biodegradable
and Compostable Materials
Qin Ling Shi
Junior 7/8 Earth & Env Sci
Appleby College, IND

R05  From Droplet to
Snowflake
Nishana Khaloo
Junior 7/8 Earth & Env Sci
Dalewood, HWDSB

R06  The Power of Fluoride in
Water
Ariane Soriano
Senior 11/12 Earth & Env Sci
King’s Christian Collegiate, IND

R07  The Effect of Acid Rain on
the Growth of Green Plants
Florence Rodrigue
Junior 7/8 Earth & Env Sci
Appleby College, IND

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PROJECT LISTINGS
(Continued)

R08  Natural Filtration Works
Kareena Mistry, Maureen Bisutti
Junior 7/8 Earth & Env Sci
Alexander’s Public School, HDSB

R09  Not So Fast!
Michael Chen
Junior 7/8 Earth & Env Sci
Dalewood, HWDSB

R10  Experimenting with Hydropower
Rowan McMichael
Junior 7/8 Earth & Env Sci
Oxford Learning Academy, IND

R11  The Future of Homes
Marko Curgus, Simeon Jeffers
Junior 7/8 Earth & Env Sci
Alexander’s Public School, HDSB

R12  Nanosilver: Are You Wearing Toxic Socks?
Olivia Lanc
Junior 7/8 Earth & Env Sci
St. Paul, HWCD

R13  Utilizing the Limestone Cycle to Reduce Net Atmospheric Carbon Dioxide
Kishore Jaiswal, Rishi Popuri
Intermediate 9/10 Earth & Env Sci
Hillfield Strathallan College, IND

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Community Awareness and Emergency Response

CAER is a community-based volunteer organization whose members represent local industry, service-related businesses and municipal Emergency Response Management and Services and has been in existence since 1980.

Working together, the members of CAER plan, practice and coordinate their activities to enhance safe daily workplace operating practices through risk management, greatly reducing the risk of emergency situations that could threaten the Hamilton Community.

BASEF Committee Trophy 2017
Oakville Christian School
PROJECT LISTINGS
(Continued)

R14  Say No To Snow
Justin Porco
Junior 7/8 Earth & Env Sci
St. Paul, HWCD

R15  How do different variables affect the growth of a plant?
Mahmoud Ahmed, Fareed Farouq
Junior 7/8 Earth & Env Sci
Escarpet View Public School, HDSB

R16  Are solar panels the way to the future?
Hailey Israel, Sofia Silva
Junior 7/8 Earth & Env Sci
St. Mary Elementary School, HCDSB

R17  Hurricane VS Sea Temperature
Zoey Powless, Jewellz Hill
Junior 7/8 Earth & Env Sci
Oliver M. Smith Kawennio:io, SNS

R18  Solar Oven
Aaron Dias, Evan Ostafin
Junior 7/8 Earth & Env Sci
Oakville Christian School, IND

R19  Renewable energy sources. How good are they really?
Rebecca Dods
Intermediate 9/10 Earth & Env Sci
Westmount Secondary School, HWDSB

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S01  Tardigrade Mech: A Biomimetic System for Advanced Radiation Protection in Space
Arielle Ainabe
Senior 11/12 Life Sciences
Garth Webb Secondary School, HDSB

S02  5 Second Rule: Mythbusters Style
Elaine Benny
Junior 7/8 Life Sciences Non-Human
Oakville Christian School, IND

S03  Aquaponics System
Arjun Dhaliwal, Jaylan Tran
Junior 7/8 Life Sciences Non-Human
Joshua Creek Public School, HDSB

S04  Fantanic Forensics
Heather Sutherland
Junior 7/8 Phys and Math Sci
Burlington Christian Academy, IND

S05  Fight Bac
Clara Jonkman, Natasha Lawford
Junior 7/8 Life Sciences Non-Human
Dalewood, HWDSB

S06  Radiation VS Plants: The effect of Radiation on Plants
Halima Qaisar, Shanze Khurram
Junior 7/8 Life Sciences Non-Human
Escarpe View Public School, HDSB

S07  How Our Eyes See Color
Julia Jamroz
Junior 7/8 Health Sciences Human
St. Mary Elementary School, HCDSB

S08  A Gymnast's Brain
Sydney Black
Junior 7/8 Health Sciences Human
Halton Waldorf School, IND

S09  The Eyes are the Windows to your Soul
Stephanie Hua, Alexandra Agyapong
Junior 7/8 Health Sciences Human
Escarpe View Public School, HDSB

S10  Early Diagnosis of Alzheimer’s: Classifier Approach using Structural Features from MRI Brain Images
Sadhana Jeyakumar
Intermediate 9/10 Health Sciences
Westdale Secondary School, HWDSB

S11  Are your thoughts really what you think?
Omar Aboalsoud, Seyon Karunakaran
Junior 7/8 Health Sciences Human
Escarpe View Public School, HDSB

S12  Organic vs Conventional - Do you really know what you’re eating?
Maya Popowich, Macee Popowich
Junior 7/8 Biotechnology
St. Mark Elementary School, HCDSB

S13  How Direct Reprogramming Can Transform One Type of Cell Straight into Another
Yamini Belmonn
Senior 11/12 Biotechnology
White Oaks Secondary School, HDSB

S14  How does WiFi spread?
Cindy Zhao, Helen Wei
Junior 7/8 Phys & Math Sci
Maple Grove Public School, HDSB

S15  Tubular UV
Aden Ramanand, Raunaq Vyas
Junior 7/8 Phys & Math Sci
Joshua Creek Public School, HDSB

S16  Stirling Engines
Jacob Shaidle
Junior 7/8 Phys & Math Sci
Appleby College, IND

S17  Electromagnet Force Vs. Voltage
Hayd'n Dawson
Junior 7/8 Phys & Math Sci
St. Paul, HWCD

S18  Correlation of Coronal Mass Ejections with the Solar Sunspot Cycle
Shayan Nadeem, Ayan Delvi
Junior 7/8 Phys & Math Sci
Escarpe View Public School, HDSB

S19  Do the materials used to insulate a solar oven affect the temperature and how fast the food cooks
Charlotte Craig
Junior 7/8 Phys & Math Sci
Appleby College, IND

S20  A Study of Bernoulli’s Principle
Navid Amin, Hussain Al-Shammari
Junior 7/8 Phys & Math Sci
Tiger Jeet Singh Public School, HDSB

S21  K.A.R.B.P.
Keegan Skye
Junior 7/8 Eng & Comp Sci
I. L. Thomas Odadrahonyanita, SNS

S22  The Development of a Probabilistic Algorithm and Robotic Detection System to Simulate Forest Fires
Abdullah Hadi, Jack Ceroni
Senior 11/12 Eng & Comp Sci
Robert Bateman High School, HDSB

S23  Thermoelectrical energy generator
Lara Dawood
Junior 7/8 Eng & Comp Sci
St. Andrew Elementary School, HCDSB

S24  Creating a React Native mobile app to cultivate compassion
Md Raiyan bin Sayeed
Intermediate 9/10 Eng & Comp Sci
Westdale Secondary School, HWDSB
S25 Dr. Plant
Vivian Song, Canshiya Sasitharan
Junior 7/8 Eng & Comp Sci
Alexander's Public School, HDSB

T01 The Cleaning Benefits of Ultrasound and Microbubbles
Erika Schaible
Junior 7/8 Earth & Env Sci
Ancaster Meadow, HWDSB

T02 The Effect of Music on Plants
Joseph Fuchs
Junior 7/8 Earth & Env Sci
Lakewood, GEDSB

T03 Harness The Fun, Harness The Sun
Mujtaba Rizvi
Junior 7/8 Earth & Env Sci
Escarpenmt View Public School, HDSB

T04 Soil Moisture - Sense It, Don't Guess It!
Ethan Shannon, Devan Tasse
Junior 7/8 Earth & Env Sci
St. Luke, HWCD

T05 Deluxo Brusho
Matteo Comisso, Myles Macpherson
Junior 7/8 Eng & Comp Sci
Alexander's Public School, HDSB

T06 Magnetic Generator
Zuoxi Luo
Intermediate 9/10 Eng & Comp Sci
Hillfield Strathallan College, IND

T07 CANOD: Computer Assisted Navigation and Obstacle Detection
Jeffrey Klinck
Junior 7/8 Eng & Comp Sci
W. H. Morden Public School, HDSB

T08 Use of Technology to Reduce Medical Complications: Development of a Smart Cast
Christopher Lamont
Junior 7/8 Eng & Comp Sci
St. Margaret Mary, HWCD

T09 Wireless Power
Saaahil Sheth
Junior 7/8 Eng & Comp Sci
W. H. Morden Public School, HDSB

T10 Recycling Waste Heat
Roshan Dayananda
Junior 7/8 Eng & Comp Sci
Dalewood, HWDSB

T11 Maglevs
Marco Diaz, Rohit Thirumala
Junior 7/8 Eng & Comp Sci
Tiger Jeet Singh Public School, HDSB

T12 The Echo Belt: Navigation Technology for the Visually Impaired
Markus Kunej
Senior 11/12 Eng & Comp Sci
North Park Collegiate and Vocational School, GEDSB

T13 Smart Home Power Saving System
Faiq Ahmed, Veerash Palanichamy
Senior 11/12 Eng & Comp Sci
Glendale, HWDSB

T14 Encryption... And All That Jazz: Text-to-Music-to-Text Encrypted Communication
Claire Le Donne
Junior 7/8 Eng & Comp Sci
Corpus Christi, HWCD

T15 WATS UP: Water Activated Transportation System Uplifting Physics
Monica Mahut
Intermediate 9/10 Eng & Comp Sci
M. M. Robinson High School, HDSB

T16 Project A.H.H.S.D.
Arjun Sarao
Junior 7/8 Eng & Comp Sci
Dalewood, HWDSB

T17 Recovering Waste Energy from a Car Exhaust using a Thermoelectric Generator
Benjamin Walde
Intermediate 9/10 Eng & Comp Sci
King's Christian Collegiate, IND

T18 Ice and Fan Powered Air Conditioner
Larissa Sonnenberg
Junior 7/8 Eng & Comp Sci
John Knox Christian School (Oakville), IND

T19 Inferno
Evan Popowich
Intermediate 9/10 Eng & Comp Sci
Notre Dame Secondary School, HCDSB

T20 Water from thin air
Pauline Lee, Jessica Liu
Junior 7/8 Eng & Comp Sci
Joshua Creek Public School, HDSB

T21 Performance Optimization of Ice Skating Efficiency (P.O.I.S.E.)
James Patterson, Jack Scholes
Intermediate 9/10 Eng & Comp Sci
Hillfield Strathallan College, IND

T22 Fans of Fans?
Spring Fu, Sherry Tang
Intermediate 9/10 Eng & Comp Sci
Hillfield Strathallan College, IND

T23 TWEET: Torsionally Whirling Environmentally Esthetic Turbine
Stefanie Mahut
Junior 7/8 Eng & Comp Sci
Rolling Meadows Public School, HDSB

T24 Life Band...When Timing Means Everything
Andrew Probert
Junior 7/8 Eng & Comp Sci
Maple Grove Public School, HDSB

T25 Exploring the Development of SFM Photogrammetry Pipelines Through the Use of Automation
Ethan Childerhose, Erik Jezezarov
Senior 11/12 Eng & Comp Sci
Iroquois Ridge High School, HDSB
SPECIAL AWARDS – 2018

Special Awards are given by organizations and groups to recognize deserving projects that deal with topics of interest to the donor.

Alectra Utilities Corporation Awards
Prize: Three awards of $300 each
Criteria: Projects that best demonstrate the production of electrical energy from "green sources" or new, viable approaches to using electrical energy more efficiently.

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.

Environmental Award
Prize: $100
Criteria: Physics, chemistry, or engineering to explore or solve a technical problem associated with environmental issues.

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.

Process Automation Award
Prize: $100
Criteria: Project best displaying the use of process automation principles and design to solve a technical problem.
SPECIAL AWARDS (Continued)

ArcelorMittal Dofasco Awards (continued)

Product Development Business Process Award
Prize: $100
Criteria: Product Development principles and design in developing a new consumer product with commercial potential.

Market Development and Product Applications Award
Prize: $100
Criteria: Project that best displays the innovative application of materials, products, processes or design principles.

Quality Systems Award
Prize: $100
Criteria: Quality Systems principles and design to solve a technical problem.

Research and Development Award
Prize: $100
Criteria: Project that best displays investigative research & scientific principles to explore or 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.
SPECIAL AWARDS (Continued)

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.

BASEF 500 Awards
Prize: Eighteen awards of $500 each
Criteria: The top 18 projects that win $250 or less in other prizes. Winners must be first time recipients.

New School Awards
Prize: Two awards of $250 each for classroom use
Criteria: Two new schools with the best project scores.

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.

Taylor Leibow’s Specializations
Go Beyond Bean Counting.

- Auto Dealerships
- Personal Bankruptcy
- Real Estate
- Family Dispute Resolution
- Not-For-Profit
- Professional Corporations
- US Tax Services
- International Services DFK
- Transportation and Logistics

ACCOUNTING, AUDIT, TAX, BUSINESS VALUATIONS, INSOLVENCY & BUSINESS ADVISORY SERVICES.
SPECIAL AWARDS (Continued)

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.

Dillon Consulting Limited
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.

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

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: $200, a plaque, and a trophy for the winner’s school
Criteria: Best biology project.

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.

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: 1st $250, 2nd $150, 3rd $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 Amateur Astronomers Award
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.

Hamilton Association for the Advancement of Literature, Science & Art 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: 1st $250, 2nd $150, 3rd $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 Amateur Astronomers
Canada’s largest independent astronomy club
Meetings second Friday monthly
7:30 pm. Spectator, 44 Frid St.
Free intro astronomy course
Observing, outings & workshops
Events, outreach & newsletter
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www.amateurastonomy.org
info@amateurastonomy.org

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SPECIAL AWARDS (Continued)

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.

Congratulations to all of the BASEF Participants!

www.mcmasterinnovationpark.ca
SPECIAL AWARDS (Continued)

John W. Howard Materials Research Award
Prize: $100
Criteria: A project demonstrating innovation in engineering materials, especially concrete.

Indigenous Peoples of Canada Scientific Study Awards
Prize: 1st $140, 2nd $80, 3rd $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.

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)
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.

Association for Women Geoscientists
Project done by a female(s) exemplifying a high standard of innovation and scientific excellence in the geosciences.

ASU Walton Sustainability Solutions Initiative (2 awards)
Projects that seek innovative solutions to humanity's most challenging problems. Projects must convey intent to solve a complex problem that involves social justice, environmental and economic prosperity. Recognized students will also be nominated to enter for a Grand Prize $500 cash award.

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.

Laurentian Chapter of SETAC Award
Prize: Two awards of $100 each
Criteria: For projects on a topic related to environmental toxicology, chemistry, pollution, contamination, remediation or environmental protection.

Dr. Colin J.L. Lock Memorial Chemistry Award
Prize: $100
Criteria: A project demonstrating the best application of chemistry.

McMaster University Department of Chemistry and Chemical Biology Award
Prize: $100
Criteria: An outstanding senior or intermediate project connected to chemistry or chemical biology.
**SPECIAL AWARDS (Continued)**

**McMaster University 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.

**McMaster University LEAP Award of Innovation**
- **Prize:** Free registration to LEAP summer program for one session (July 3-13 or July 16-27 or July 30-August 10, 2018) valued at $750-$775.
- **Criteria:** An Intermediate or Senior project of a female participant that demonstrates creativity and originality. Prize must be claimed by April 19, 2018.

**McMaster University 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.

**McMaster University Venture Award of Innovation**
- **Prize:** Free registration to Engineering & Science Week 1 (July 3-6, 2018) valued at $255.
- **Criteria:** A Junior project of a female participant that demonstrates creativity and originality. Prize must be claimed by April 19, 2018.

**Mechanical Contractors Association of Hamilton Award**
- **Prize:** $250
- **Criteria:** Best engineering project at the intermediate or senior level.
SPECIAL AWARDS (Continued)

Mohawk College Building & Construction Sciences Awards

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.

Building Sciences Award
Prize: $50
Criteria: Project related to building sciences, building materials, or energy conservation in structures.

Mohawk College 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.

Mohawk College Electrical Engineering Technology Awards

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.

Computer Engineering Technology Award
Prize: $50
Criteria: A deserving project in computer engineering technology.

Congratulations
To all BASEF 2018 participants

Best Wishes
for your continued success in all your endeavours!

From the Halton Catholic District School Board – committed to developing inquiring minds, which will create solutions to tomorrow’s challenges

Achieving Believing Belonging

Diane Rabenda
Chair of the Board

Paula Dawson
Director of Education

Serving the Catholic Communities of Burlington, Halton Hills, Milton and Oakville
SPECIAL AWARDS (Continued)

Mohawk College Mathematics Awards
Prize: Two awards of $50 each, one at the Junior 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 projects at the junior level related to two of the following fields: steel, environmental or chemistry.

New Health Scientist Award
Prize: $50
Criteria: A worthy project at the Junior level showing good potential for improving the health of our community.

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.

Oakvillegreen 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, any level.

Procor Engineering Awards
Prize: Junior $50, Intermediate $100, Senior $150
Criteria: Excellent engineering projects.

Professional Engineers of Ontario - Hamilton/Burlington Chapter Awards
Prize: 1st $250, 2nd $150, 3rd $100
Criteria: Deserving, exceptional, outstanding projects in engineering at any level.

National Engineering Month Prize for Exceptional Engineering Innovation
Prize: $500
Criteria: Project that best exemplifies innovation in engineering applied to scientific discovery.

Professional Engineers of Ontario - Oakville Chapter Awards
Prize: 3 awards of $100 each
Criteria: Deserving engineering projects – one at each level
GOAL:

**EDUCATE ➔ INSPIRE ➔ INNOVATE**

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

Nikola Tesla Educational Corp (NTEC) is proud, for the 4th year to be a sponsor for BASEF, where we recognize our youth who will INNOVATE for the future.

Nikola Tesla, with his 315 patents changed society for ever. His inventions defined the second industrial revolution. More importantly, Nikola Tesla personally approved the Five Johns’ plans for the DeCew Power Generation Station that has been delivering power to Hamilton since 1898. The plans for the plant were based on Tesla’s AC system of generators and transformers.

This is the 120th Anniversary of the arrival of power to Hamilton. Join NTEC, the City of Hamilton, and Ontario Power Generation for the celebrations. Check NTEC website & Facebook for further details. Save the dates, October 7th & 13th, 2018. Visit DeCew PGS.

**Student, parents/guardians, educators, & community members, this is your opportunity to have a say.**

To voice your support for Nikola Tesla Secondary School:

- Sign petition [https://goo.gl/SbQZkf](https://goo.gl/SbQZkf)
- Take HWDSB survey [https://goo.gl/NQBJSz](https://goo.gl/NQBJSz)
- Write a letter of support and provide your reasons for supporting the name. (email to [info@teslaeductional.ca](mailto:info@teslaeductional.ca))
- Contact your school board trustee.

www.teslaeductional.ca  www.facebook.com/teslaeductional  contact: [info@teslaeductional.ca](mailto:info@teslaeductional.ca)
SPECIAL AWARDS (Continued)

The Research Institute at St. Joe’s Hamilton, Health Research Award
Prize: One $100 award at the intermediate level, and one $50 award at the junior level
Criteria: Outstanding projects that use strong scientific principles in exploring or solving a problem related to human health issues and communicates the results of their project through an effective visual display.

Rotary Club of Hamilton-East Wentworth Awards
Prize: 1st $250, 2nd $150, 3rd $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.

Dr. Nicola Simmons Award in Cognition Studies
Prize: $100
Criteria: An exemplary project in cognition studies.

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: 1st US$250, 2nd US$150, 3rd US$100; to be requested by 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: 1st $100, 2nd $50
Criteria: For outstanding projects using computer electronics or software that do not win a trip award.

Society of Tribologists and Lubrication Engineers
Hamilton Section

To all Participants and Award Winners of BASEF 2018

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.
SCHOLARSHIPS & INTERNSHIPS

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.
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 2018-19 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 BASEF 2018 Merit Award Medals (Gold, Silver, Bronze) will win this scholarship.

INTERNSHIPS

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 $2,000. 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.

Come.. Discover us at
www.mcmaster.ca
“Somewhere, something incredible is waiting to be known”

Carl Sagan

Primary Fluid Systems Inc.
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Proud sponsor of BASEF’s Merit Awards since 2004.
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 Gold medal & cash award
- over 80% earns Silver medal & cash award
- over 75% earns Bronze medal & cash award
Thanks to our sponsors we’re going places!

2017 National & International Science Fair Competitors

BASEF 2017 International Team
BASEF 2017 National Team

The BASEF Students and Volunteers gratefully acknowledge the support of all of our sponsors

Emma Mogus, 2017 Best in Fair Winner receives trophy from Leo DeMeo of ArcelorMittal Dofasco. Co-Chairs Dan Bowman and Ingrid Munson applaud.
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  
2nd Best-in-Fair $800  
3rd 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

Advancement to the 2018 Intel International Science & Engineering Fair, to be held in Pittsburgh, Pennsylvania from May 13 to 18, 2018. All trip expenses paid.

Up to 5 projects (depending on funding level) will be chosen from excellent exhibits at the secondary school (Intermediate & Senior) 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.

Sponsored by

CANADA WIDE SCIENCE FAIR TRIP AWARDS

Advancement to the 2018 Canada Wide Science Fair (all trip expenses paid), to be held in Ottawa, Ontario from May 12 to May 19, 2018.

Up to 16 students who have presented excellent projects will be chosen (dependent on funding level).

All projects entered in BASEF 2018 are eligible.

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