## 49<sup>th</sup> Annual And an and a start of a **Bay Area Science & Engineering Fair**

**BASEF 2009** 

Mohawk College of **Applied Arts and Technology** March 25 to March 28, 2009

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**OFFICIAL PROGRAM** 

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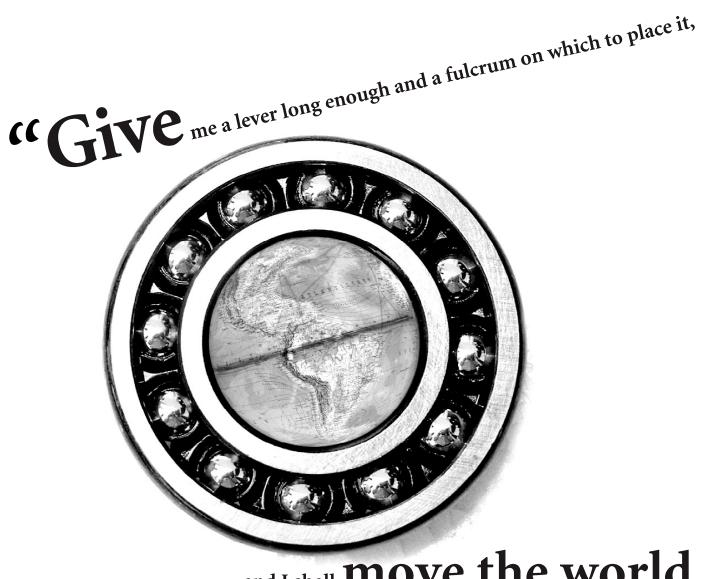
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## **Big ideas.** Infinite possibilities.

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# THE HAMILTON SPECTATOR



...and I shall move the world."

-Archimedes

## **Congratulations to all BASEF participants.**

Be innovative. Be creative. Make things move. You are the future and we salute you.

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Bay Area Science and Engineering Fair c/o McMaster University 1280 Main Street West, DTC-125 Hamilton, ON, Canada L8S 4L8

basef@basef.ca mail: web site: www.basef.ca

Registered Charity: BN 11895 1565 RR0001



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# COLLEGE OF APPLIED ARTS AND TECHNOLOGY

## TECHNOLOGY AT ITS FINEST!

Mohawk College's vision of excellence in technology is clear. We offer the finest in technology education and training.

## MOHAWK COLLEGE is pleased to welcome you to the Annual Bay Area Science and Engineering Fair.

# Best Wishes to all participants!





## A MESSAGE FROM THE BASEF CHAIR Ray Kranyak

This is the 49<sup>th</sup> consecutive year of operation for the Bay Area Science and Engineering Fair (BASEF). The organizing committee members have changed through the years, but the mission remains the same: 'to encourage young people in science and engineering'.

BASEF is a registered charity that is completely volunteer driven. I would like to acknowledge the tremendous efforts of this year's Organizing Committee members. They have met every month since September and have spent many more hours working individually on their own

tasks. Many will have taken a week of holidays from their own full time jobs for this week of the Fair. No wonder BASEF is Canada's #1 Regional Science Fair. They are all amazing volunteers. Please thank them whenever you get the chance.

A very sincere thank-you to our Honourary Co-Chairs, Joyce Savoline, Member of Provincial Parliament, Burlington, and Education Critic, and Hamilton Mayor Fred Eisenberger who continue the tradition of community support to our cause and promote our students whenever they get the opportunity to do so.

A special thank-you is given to the over 200 professionals who served as this year's Merit and Special Awards Judges. These dedicated individuals devoted a full day of their time to meet, encourage and speak with the student exhibitors about their projects.

We are extremely proud to say that ArcelorMittal Dofasco has taken up the challenge in these economic times to continue being the fair's title sponsor for this their third year. I would also like to thank the 5 new sponsors and over 25 returning sponsors who make it possible for BASEF's students to excel in science and engineering. Please support our sponsors wherever possible. Thank you also to our Special Awards donors. This year over the total value of merit awards, special awards, scholarships and trip awards is expected to top \$165,000.

Every year the host site for BASEF plays a critical role in our success. I must extend a very special thank you to the staff at Mohawk. It has taken the better part of a year to plan and stage BASEF 2009. Mohawk has been with the organizing committee making every step of the journey easier and for this we are truly grateful.

Last but certainly not least, I thank the day-to-day volunteers, nearly 60 in total, who help us with duties such as project registration, safety checks and chaperoning Activity Morning that occur over the four days of the Fair.

Students, (along with your parents, teachers and mentors) please recognize and enjoy the results of your hard work. Meet new friends, share this unique experience, and above all, capture the passion that will lead you to new research and discoveries of tomorrow. This small planet, Earth, which we call home, is counting on you. I congratulate each and every one of you all on a job well done and sincerely wish you all the best of luck.

Raymond T. Kranyak, Chairman, BASEF 2009

## **FREE PARKING!**

Thanks to Mohawk College, BASEF will have free parking in Lots P10 and P13 (Fennell Campus) for the duration of the fair (March 25-28, 2009).



#### A MESSAGE FROM HONOURARY CO-CHAIR Burlington MPP Joyce Savoline



Congratulations to the participants in the Bay Area Science & Engineering Fair. You have dedicated your time and effort to this event and I look forward to seeing the fruits of your labour. I would also like to take this opportunity to thank all of the people who make this event possible each year; the BASEF committee members, the volunteers, the teachers, and the parents of the participants who together contribute to success of this event.

Now more than ever, science and technological advancements are key to Ontario's future success in a competitive global marketplace. The BASEF provides a wonderful opportunity for students to test their

ideas and push the limits of the chosen field with ideas and projects that may one day change the world.

The BASEF event provides and excellent showcase for the talents of Ontario students and offers them a unique opportunity to realize success on a national and international level. I applaud the efforts of each entrant and I wish you every success today and in your future endeavors.

Kind regards,

Voyce Savoline

MPP -Burlington Co-Chair BASEF

**Constituency Office:** 44 -760 Brant Street Room 440, Burlington ON L7R 4B7 Tel: 905-639-7924 Fax: 905-639-3284 Queens Park Office: Main Legislative Building Toronto ON M7A 1A8 Tel: 416-325-5362 Fax: 416-325-5357

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Lineary.



### A MESSAGE FROM HONOURARY CO-CHAIR Hamilton Mayor Fred Eisenberger

It is with great pleasure that I extend my warmest greetings on behalf of the City of Hamilton and to welcome you to the 49th Annual Bay Area Science and Engineering Fair (BASEF).

It is a privilege for me to continue as Honourary Co-Chair for this exciting and creative educational event.

Our youth represents the future and I want to congratulate the organizers of BASEF for providing these students with the opportunity to showcase their scientific and engineering interests and innovations.

I would also like to acknowledge the dedicated hard work of the many parents, teachers, judges, organizers, volunteers and sponsors who have helped to make BASEF the success that it is.

To everyone involved in this year's science and engineering fair I applaud your commitment and dedication and wish you continued success in the future.

Sincerely,

Fred Eisenberger Mayor





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For more information contact: McMaster University • 905-525-9140 ext. 27270 • www.mcmaster.ca City of Hamilton 905-546-4222 • www.hamilton.ca

## **BASEF 2009 SCHEDULE OF EVENTS**

#### Wednesday, March 25 - Project Setup

4:00-8:00 p.m.	Registration, set-up and safety checks	Gymnasium
Thursday, March 26 -	Student Activities	
8:30-9:00 a.m.	Students Arrive for Activity Morning	McIntyre Theatre Drop off students at I-Wing
9:00 a.mnoon	Activity Morning	McIntyre Theatre
Noon – 12:45 p.m.	Students will eat lunch in the Mohawk Cafeteria. We encourage students to bring a lunch from home. Students will NOT be permitted to go elsewhere for lunch.	Mohawk Cafeteria
12:45–1:00 p.m.	Students leave Cafeteria and go to their projects in the Gym for afternoon judging.	
1:00-4:00 p.m.	Students to be at their projects for judging	Gymnasium
4:00-4:30 p.m.	Goodie Bags distributed and departure	Gymnasium Student pick-up at I-Wing
Friday, March 27 – Cl	osed to the Public	

#### • /

#### Saturday, March 28 - Public Viewing & Awards Ceremony

9:00 a.mnoon	Public viewing.	Gymnasium
11:30 a.m1:00 p.m.	VIP Luncheon (by invitation only)	Faculty and Staff Dining Room
noon	Gym closes. (Projects must remain set up in gym until after the awards ceremony)	
1:00 p.m.	McIntyre Theatre opens for Awards Ceremony	McIntyre Theatre
1:30-3:30 p.m.	Awards Ceremony	McIntyre Theatre
3:30 p.m.	Project take-down begins.	Gymnasium
3:30-5:00 p.m.	Trip winners and their parents/guardians meet with chaperones immediately after ceremony.	Gymnasium

#### Fair Office during the event will be MCACES Conference Room F116 Fair Phone Number to be posted during days of the fair





Students & learning are at the heart of all we do.

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## **EMERGENCY EVACUATION**

AT THE SOUND OF THE ALARM: Go quickly and calmly to the nearest exit.

#### EVACUATION PROCEDURES:

- At the sound of the alarm, go immediately to the nearest exit.
- Leave the building by the most direct route.
- Follow the instructions by Security, staff and/or Fire Wardens.
- Do not use the Elevator as a power failure will interrupt service.
- Take a position away from the buildings so as not to interfere with emergency personnel.
- Ensure that any person with a disability is assisted to a place of safety, as close as safely possible to an exit door, elevator and or intercom, or if possible, to a secure location outside the building.

#### EXTENDED EVACUATION

- You will be directed by College Security, staff and/or Fire Wardens to a sheltered location.
- If instructed, please move quickly and calmly to the designated assembly point.

#### **RETURNING TO FACILITIES**

 Remain outside or in the sheltered area until an ALL CLEAR has been given by Emergency Officials, College Security, staff and/or Fire Wardens.



## **EMERGENCY LOCKDOWN**

## If threat is viewed or perceived: CALL SECURITY AT 55 OR CALL 911

**INTERNAL LOCKDOWN:** A full lockdown where everyone moves to a safe location.

**SOUND:** Recorded announcement of a lockdown. (A lockdown drill will ALWAYS be preceded by an announcement 5 minutes in advance of the drill. If no announcement precedes a lockdown drill – it is real.) **ACTION:** 

- If you are in a classroom or office, remain there.
- If you are in a hallway, move to a room or other place of safety immediately.

• Provide assistance, where required, to individuals with a disability or language barriers.

- Secure doors if possible, turn out lights, cover windows or pull shades if possible.
- Remain quiet and out of sight. Stay away from all windows and doors.
- Turn off all cell phones, to protect emergency communications.
- Staff members or volunteers should record names of persons present.

• Stay quiet and await instructions. Lockdowns can last a considerable time.

• Do not open the door under any circumstances.

• Do not evacuate if a fire alarm sounds, unless identifiable emergency officials knock on your door and advise evacuation or unless you are certain that there is a need to evacuate.

#### For open area such as Cafeteria, Library or Gymnasium

• Generally follow the same steps as those listed above.

• If there are no doors that can be locked or barricaded, take shelter under desks, tables, chairs or behind bookcases or other furniture or equipment.

**<u>EXTERNAL LOCKDOWN</u>**: A partial lockdown where everyone remains inside the building.

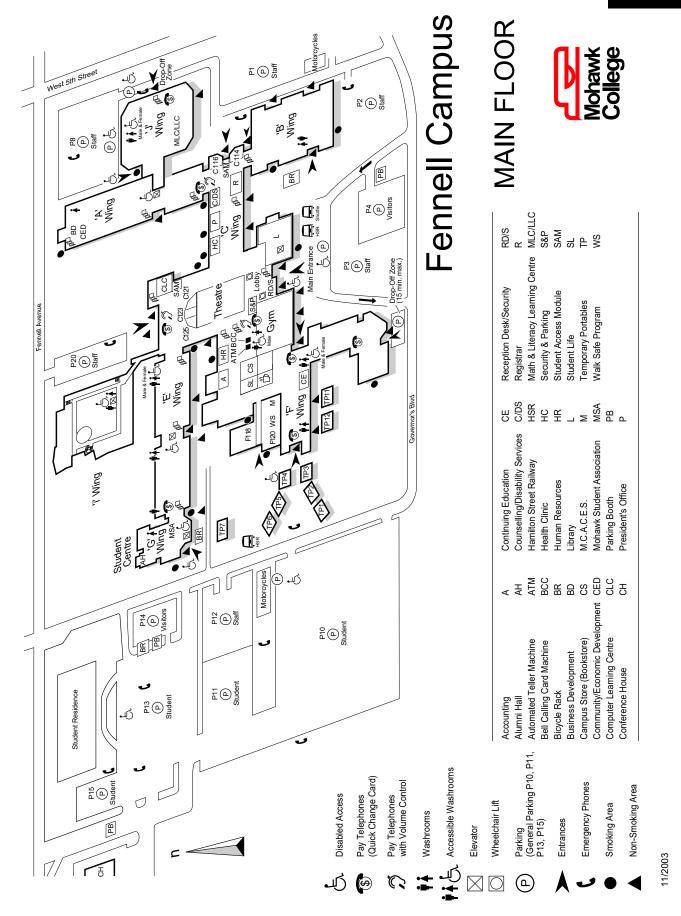
SOUND: recorded announcement of an external lockdown.

**END OF LOCKDOWNS**: 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 at this announcement.

### THANKS TO BASEF 2009 VOLUNTEERS

Victoria Caron Sally Chopp Safa Elgamal Trixie Ellithorne Beth Heska Linda Kennedy Rafal Lawski Shari Mercer Megan Morningstar Tom Nguyen Pam Penny Brittanie Pinder Carolyn Rollins Vanessa Scanga Brenda Sloane

Tobias Williams Marilyn Young Norman Young Steve Zerebny



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### 10

### **ORGANIZING COMMITTEE**

#### HONOURARY CO-CHAIRS

Joyce Savoline, MPP (Burlington) Fred Eisenberger, Mayor, City of Hamilton

#### CHAIR

Ray Kranyak

#### ASSISTANT TO CHAIR Nelson Ruiz Blanco

SECRETARY Tom Crawford

TREASURER Eleanor O'Flynn, C.A.

RECORDING SECRETARY Roslynne Crawford

FUNDRAISING Sue Olynyk

#### JUDGING

Tom Crawford, Roslynne Crawford, Cathy Hamilton, Nelson Ruiz Blanco, Shannon Clark, George Geczy, Clive Shepherd

#### SCIENTIFIC REVIEW

Tom Crawford, Dr. Michael Coughlin, Dr. Elizabeth O'Brien, Steve Procyszyn, Donna Stack-Durward, Wuchow Than, Vanessa Scanga

#### REGISTRATION

Steve Procyszyn, Ray Cemka, Rob Lenjosek, Lino Pin, Janice Rocchi, Christine Rowthorn, Morris Hucal, Michael Laskowski, Domenic LaBianca, Wuchow Than, Michael Goffredo, Kevin MacIsaac, Zenon Holadyk SITE

Michelle Harkness, Cherish Gibson

STUDENT ACTIVITIES Kevin Hunt, George Geczy

AWARDS AND CEREMONY Gerard Chiasson, Jim Hamilton, Wayne Bowdish, MC's: Peter Olynyk, Cathy Collins

FOOD CO-ORDINATION Mimi Spearing

VIP RELATIONS Mary Querques

SPECIAL AWARDS Cathy Hamilton, Cathy Collins

#### INFORMATION SYSTEMS Ken Moyle, Gerard Chiasson

OUTREACH Wuchow Than

VOLUNTEER RECRUITING AND SCREENING Sunny Buskermolen, Ola Lunyk Child

PHOTOGRAPHY AND GRAPHICS Wayne Bowdish, Jim Hamilton

MARKETING AND PUBLICITY Marnie Jadon

PROGRAM Alinamaria Rodriguez

#### PROGRAM REVIEW SUB-COMMITTEE

Alinamaria Rodriguez, Sue Olynyk, Roslynne Crawford, Cathy Hamilton, Eleanor O'Flynn

COMMITTEE AT LARGE Barbara Takasaki, Carolynn Reid, Dan Bowman

#### **TRIP CHAPERONES**

IISEF: Cathy Collins (lead), Ray Kranyak CSWF: Roslynne Crawford (lead), Tom Crawford, George Geczy, Cathy Hamilton

#### HOST- BASEF 2009 Michelle Harkness

**SAFETY** Nelson Ruiz Blanco

FACILITIES Ray Kranyak

Susan Masten

SPONSOR REPRESENTATIVE Sandy Walker

#### SCHOOL BOARD ADVISORS

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Hamilton Wentworth DSB: Klaas Walma, Heather Gardner Six Nations DSB (INAC): Anne Noyes

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# **BASEF** Trip Award Winners

## Thanks to our sponsors we're going places!



Images courtesy of Lifetouch Canada

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

## **ACTIVITY MORNING - Sponsored by Bell Canada**

Activity Morning 2009 will be held at Mohawk College on the morning of Thursday, March 26, 2009 in the McIntyre Theatre.

#### Special Notes:

- 1. Student drop off will be at Fennell entrance I-Wing.
- 2. There will be no food or drink in the auditorium.
- 3. Mohawk College does not have the capacity in the cafeteria to handle additional students from classes attending Activity Morning. Classes must exit the college after the Activity Morning presentations.
- 4. Classes will not be allowed into the gym to see the BASEF projects. (Public viewing of projects will be Saturday Morning 9 a.m. to Noon. All are welcome to come.)
- 5. BASEF registered students are expected to bring their own lunch.

#### Activity Morning Schedule

#### Build a Windmill Session (room TBA)

9:00 – Noon: A special breakaway session where ten groups of pre-registered students will compete to build a working model windmill from provided "kits" of materials.

#### Main Auditorium

- 9:00 10:00 am McMaster Engineering Fireball Show
- 10:00 10:30 am McMaster Fireball 101 Question and Answer Period
- 10:30 11:00 am Niagara Windpower Local Alternative Energy Applications
- 11:00 11:45 am COOI- CHe-m CaBaReT McMaster Chemistry
- 11:45 am Noon Science Fair SuperStar Ben Gulak

#### Presentations by:

#### McMaster Fireball Show

The Fireball Show is an educational and entertaining travelling show utilizing both science demonstrations and multimedia to increase students' awareness of and interest in engineering programs, careers, and related futures. The one-hour show highlights the wonder and relevance of engineering and applied science, as well as outlining how a future in the applied sciences is of benefit to society as a whole. The second major theme throughout the show is related to skills, strengths, and abilities that future scientists and engineers will need to possess. http://www.eng.mcmaster.ca/fireball/

#### Niagara Windpower

http://www.niagarawindpower.com/about\_us.htm

#### McMaster Chemistry - COOI- CHe-m CaBaReT

The world of atoms and molecules moves very fast. We experience this motion as chemical reactions or physical processes. This show highlights the dance of the atoms with explosions - we make water from a hovering balloon; colors - we see metal atoms in flames; and electricity - we drive a chemical reaction backwards with an electric current. Even if we slow the dance to -200 degrees Celsius, interesting things can happen.

Professor Randy Dumont has taught first year chemistry for many years. Though his research is in the area of theory of molecular dynamics, and involves only numerical experiments in the cpu of a computer, he enjoys being reminded that chemistry deals with the real world of stuff around us when he does wet chemistry demonstrations for students of all ages.

http://www.chemistry.mcmaster.ca/



#### **BASEF 2009**

### MERIT AWARD JUDGES

Jacobs, Shelley

Kretz, Colin

ArcelorMittal Dofasco Crane, Maureen Harschnitz, Lesley Prowse, Dan Sheppard, Guy Wood, Jane Casey, Jim (retired)

Manmohan, Neil ASECO Integrated Systems

Lewis, Justin AVAR Environmental Inc.

Edward, Valerie Ballagh & Edward LLP

Wolfsgruber, Richard Bombardier Transportation

Gulak, Benjamin BPG inc. Themeles, Tom Brock University

Shinkoda, Pamela CertainTeed Gypsum

Lawlor, Daniel City Of Hamilton

Santarelli, Greg Concurrent Education Student

Hazelden, Linda Crossroads Christian Communications Inc.

Jacobs, Stephen Dufferin-Peel Catholic DSB

Ritz, Derek ecGroup Inc.

Michell, Brad Emco Wheaton

Niro, Gino EngOL Inc. Swanson, Daren EnviroDiamond Technologies

Stevens, Jo-Anne G. Essential Wellness Centre

Sheehy, Mike Gunn Metal Stamping

Hamilton Health Sciences Billeci, Mena Carrier, Tracy Kafka, Jennine E. Nardini, Mary Young, Bruce

Freeman, Viola Hamilton Health Sciences/MUMC

Walsh, Steven Hamilton Public Health Services

Tiley, John Hatch HDSB, Georgetown District HS Howarth, Jillian MacDougall, Stephen Michalopoulos, Olga

Ouwehand, Anna HDSB

Shepherd, Clive HWDSB

Bombardieri, Aldonna HWDSB St. Charles

Stiller, Sajah HWDSB, Lisgar Public School

Orton, Geoff HWDSB, Westdale Secondary

Twyford, Darren JNE Automation Ltd.

Teoh, Jo-Anne K. H. T. Teoh Medicine Professional Corp.

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### *Congratulations to all BASEF 2009 participants!*

At Horne LLP, we care about your vision, your future and your success.

### MERIT AWARD JUDGES Continued...

L-3 Wescam Buggeln, Adam Effinger, Daniel McAnanama, James Paquette, Michel

Szabo, Eva McMaster Stem Cell and Cancer Research Inst.

McMaster University Bowdish, Dawn Conroy, Leigh Crawford, Travis Davis, Linda Garrett, Jim Homenick, Christa Jonasson, Peter Nastos, Stash Paschos, Athanasios Prieur, Adam Procwat, Ray Raditsis, Annie Smith, Greg Summers, Peter Webber, Brandon Weretilnyk, Elizabeth Wilson, Leigh Shepard, Beverly (retired) Ryan, Patrick (Emeritus)

Rutherford, Alan McMaster University Medical Centre

McMaster University MILO Martin, Gail Yuyitung, Gay

Ellithorn, Trixie Medical Technologist (retired)

French, Craig Mitel Networks

Mohawk College Minaji, Brian Stefanchuk, Brian Vanderzwet, Lory

McAnanama, Leslie Ontario Power Generation Lonz, Steve Region of Peel

Singh, Robindra Retired

Wehrle, Paul Retired

Galvin, Norine J. Retired HS teacher

Giancarlo, Luciano Retired Principal

Johnson, Warren Retired, HS teacher

Tod, Jeff Rockwell Automation Johnson, Ross Sandwell Consulting Engineers Ltd.

Maxymuik, Peter Self employed

Sheridan College Institute of Technology Zander, Otto Stratford, Graham (retired)

Shanishchara, Ketan SNC-Lavalin Inc

Thompson, Matthew Spectrum Educational Supplies Ltd. Stevens, Donald St. Joseph's Hospital (retired)

Lafferty, Kathryn St.Joseph's Hospital

Petozzi, Joseph Stelco (retired)

Scanga, Vanessa University of Toronto

Rashid, Ferid William Osler Health Centre

Coombs, Dylan With the Grain Bakery and Cafe

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#### **BASEF 2009**

### SPECIAL AWARD JUDGES

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Peter Milne Pippa Lock Rian McLaughlin Robert Brown Ron Speranzini Roslynne Crawford Sandy Walker Shannon Clark Spencer Smith Susan Olynyk Tom Crawford Tom Sutton Victor Srarecky Wuchow Than



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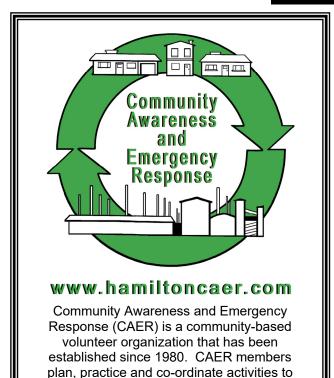
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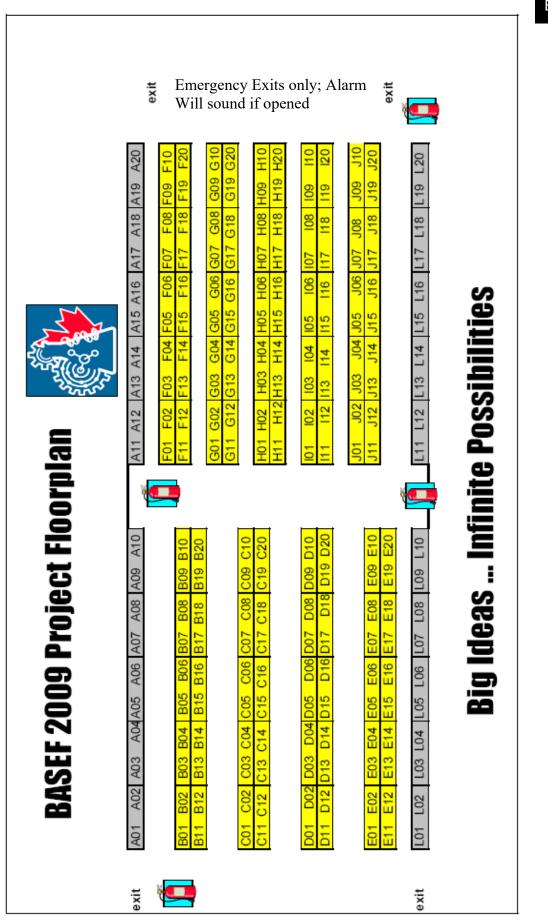
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### **EXHIBITOR LISTING**

## A01, Does the same type of mold grow on all types of bread?

Iman Munier, J 7-8, Life Sciences Al-Falah Islamic School, Independent

#### A02, Observing Polarized Light through a Crystal Solution Sofia Qasim,

J 7-8, Physical Sciences & Math Al-Falah Islamic School, Independent

#### A03, Every Bit Counts: Harnessing Hidden Energies

Stephen Hogg, J 7-8, Engineering and Computing Ancaster Senior, HWDSB

#### A04, Better Than Gold?

Inga Muser, J 7-8, Health Sciences Appleby College, Independent

#### A05, Whats in your tank -ecofriendly fuels?

David Sampson, J 7-8, Earth and Environmental Appleby College, Independent

#### A06, An Alternative Lighting Solution

Andrew Rossignol, Alexandru Stan S 11-12, Engineering and Computing Cardinal Newman, HWCDSB

#### A07, Tap Into Power

Andy Wang, J 7-8, Engineering and Computing Dalewood, HWDSB

#### A08, Magnetic-Fueled Wheelchair

Nishaant Bhambra, Edward Holden J 7-8, Engineering and Computing Eastview Public School, HDSB

#### A09, Robots Don't Sunburn

Jacob Weaver, I 9-10, Physical Sciences & Math Highland, HWDSB

#### A10, Wii r XBOX surgeons....P/S u can b 2 Rachael Smith,

J 7-8, Health Sciences Hillfield Strathallan College, Independent

#### A11, Real time radiation dose deviations not configured by a brachytherapy treatment planning system used in cancer treatment Romita Sur,

S 11-12, Health Sciences Hillfield Strathallan College, Independent

#### A12, The Wheel of Sun and Fun

Haley Bowie, Isabella Calandrino J 7-8, Physical Sciences & Math St. Ann (Ancaster), HWCDSB

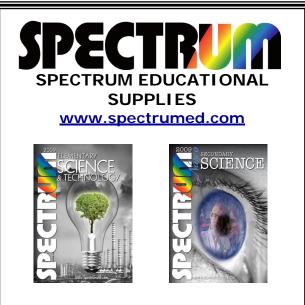
#### A13, Windmills In The City Benjamin Dyer, J 7-8, Earth and Environmental

Home Schooling, Independent

#### A14, We're Still Not Plastic Bags: Perfecting the Perfect Plastic Gillian Walczak, Sophia Coulter

English I 9-10, Earth and Environmental Notre Dame, HCDSB





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#### A15, Wind Assisted Electric Car: Is It Better? Liam Armstrong,

J 7-8, Engineering and Computing Oakville Christian School, Independent

#### A16, Building a Plug-In Hybrid Car

Sarah Pang, Emma Hosien J 7-8, Engineering and Computing Oakville Christian School, Independent

#### A17, The Power of The Sun

Caroline Gobran, J 7-8, Earth and Environmental Oakville Christian School, Independent

## A18, 1-bit binary adder by a 2-bit scientist

Yiquan Lok, J 7-8, Engineering and Computing Rotherglen School (Oakville), Independent

### A19, Cutaneous Voltage of

Forearm Muscle Contraction Yixiong Lok, J 7-8, Health Sciences Rotherglen School (Oakville), Independent **B01, Holograms** Ahmad Kamal, J 7-8, Physical Sciences & Math Al-Falah Islamic School, Independent

#### **B02, Which Disinfectant is Best in Protecting Against Bacteria** Aisha Malik, J 7-8, Health Sciences Al-Falah Islamic School, Independent

**B03, What melts ice faster?** Mina Rashid, J 7-8, Physical Sciences & Math Al-Falah Islamic School, Independent

#### **B04, Multitasking: Brain Drain or Boost in Efficiency?** Nesa Huda, J 7-8, Health Sciences Al-Falah Islamic School, Independent

#### B05, Environment Friendly or not? Shereen Abbas,

J 7-8, Earth and Environmental Al-Falah Islamic School, Independent

#### **B06, What do you drink to energize yourself ?** El-Sadig Ahmed, J 7-8, Health Sciences

Al-Falah Islamic School, Independent

## B07, How does Cholesterol affect your body?

Komal Javed, J 7-8, Health Sciences Al-Falah Islamic School, Independent

## B08, Do Acids and Bases Affect Plants

Imaad Ali-Mohammed, J 7-8, Earth and Environmental Al-Falah Islamic School, Independent

#### **B09, Which set of water will split faster into 2 chemical gases?** Maryam Sajeed, J 7-8, Physical Sciences & Math

Al-Falah Islamic School, Independent



**B10, Homeopathy** Sina Mohammadi, J 7-8, Health Sciences Al-Falah Islamic School, Independent

#### B11, GO GREEN- BUY BULK, TRUTH OR MYTH? Erik Bercik.

J 7-8, Earth and Environmental Ancaster Senior, HWDSB

#### B12, Beware! Of Potatoes

Ryan Ramos, J 7-8, Life Sciences Appleby College, Independent

#### B13, Paving The Way

Simon Harris, J 7-8, Engineering and Computing Appleby College, Independent

## B14, Speed vs. Magnet What will rein supreme?

Kate MacArthur, J 7-8, Physical Sciences & Math Appleby College, Independent

#### B15, Memory Games

David Di Natale, J 7-8, Health Sciences Appleby College, Independent

#### **B16, Bio-Indicators. Bush Bean Versus Philodndron.** Stephanie Mumford, J 7-8, Earth and Environmental Appleby College, Independent

#### B17, Slip Sliding Away: The Comparative Efficacy of Anti-Slip Products

Sarah Rich, J 7-8, Physical Sciences & Math Appleby College, Independent

**B18, Measuring Membranes** Michal Panna, J 7-8, Physical Sciences & Math Bennetto, HWDSB

#### **B19, Detecting BDNF in CSF using Western Blotting** Natalie Michalski, S 11-12, Health Sciences Bishop Ryan, HWCDSB

**B20, SMILE!** Asimah Mahmood, J 7-8, Physical Sciences & Math Cardinal Heights, HWDSB

#### **C01, The Consumption Assumption** Lisa-Marie Assenza, I 9-10, Health Sciences Cardinal Newman, HWCDSB

#### C02, Multi-Tasking -" Brain Drain or Boost"?? Chelsea Reid,

J 7-8, Health Sciences Corpus Christi, HWCDSB

#### **C03, Are You "Dying" For A Tan** Katie Kastelic, J 7-8, Physical Sciences & Math Corpus Christi, HWCDSB

#### C04, A Truly Rotten Idea

Alex Smith, J 7-8, Earth and Environmental Dalewood, HWDSB

#### C05, How Competitive Can You Get? Mohtaseem Rahman.

J 7-8, Life Sciences Dalewood, HWDSB

## C06, Saving our lakes one boat at a time

Michelle Sulewski, J 7-8, Earth and Environmental Dalewood, HWDSB

#### **C07, A Battery In You** Emily Thomson, J 7-8, Health Sciences

Dalewood, HWDSB



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**C08, Oxymoronic Killer - A Exploration for Beneficial Virus** Jason Fan, J 7-8, Health Sciences Dalewood, HWDSB

#### **C09, Stay Away From Our Food Melamine?!** Tian Duo Wang,

J 7-8, Health Sciences Dalewood, HWDSB

#### C10, Which Way Is North?

Sylvie Bronsard, Emily Agar J 7-8, Physical Sciences & Math Dalewood, HWDSB

## C11, Sunscreen Effects On Potatoes

Emma Bayliss, Laura Choi J 7-8, Life Sciences Eastview Public School, HDSB

### C12, magnet powered vehicial

Jack Schoner, J 7-8, Engineering and Computing Eastview Public School, HDSB

#### C13, Energy Efficient Home Design

Emily Hunt, Madison Leeson J 7-8, Earth and Environmental Eastview Public School, HDSB

#### C14, Plant Organic Growth Formula

Komal Aryal, Radha Paleja J 7-8, Earth and Environmental Eastview Public School, HDSB

#### C15, Solar Powered boat

Robert Paccione, J 7-8, Earth and Environmental Eastview Public School, HDSB

#### **C16, Gender Determines Health Behaviour in Adolescents** Mariam Mobasher, S 11-12, Health Sciences Highland, HWDSB

### **C17, Don't Panic, It's Organic** Lauren Sehdev,

J 7-8, Life Sciences Hillfield Strathallan College, Independent

## C18, WHAT'S IN YOUR SALAD BOWL?

Beth Castle, Rachel Demers I 9-10, Earth and Environmental Hillfield Strathallan College, Independent

#### C19, Even Cleaner Even Greener

Hannah Morris-Patterson, Madison Dobrovolskis I 9-10, Physical Sciences & Math Hillfield Strathallan College, Independent

#### C20, Factors Affecting Enzyme Reaction Rates

Ramya Kancherla, I 9-10, Physical Sciences & Math Hillfield Strathallan College, Independent

#### D01, A Sweet Poison

Christina Joynt, I 9-10, Health Sciences Hillfield Strathallan College, Independent

#### **D02, DIABETICS "C" THE POINT!** Meaghan Tremblay,

I 9-10, Health Sciences Hillfield Strathallan College, Independent

# **Edward Oldham** Patent and Trademark Agent

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### D03, How Idle Are You ?

Jacob Wain-Lowe, J 7-8, Earth and Environmental Hillfield Strathallan College, Independent

#### D04, IM the Best

Kai Jones. J 7-8, Health Sciences Hillfield Strathallan College, Independent

#### D05, Judge Me

Adele Heagle, I 9-10, Health Sciences Hillfield Strathallan College, Independent

#### **D06, Clarifying Cancer Patient Outcomes and Predictors of Those Outcomes**

Sharaya Jones, S 11-12, Health Sciences Hillfield Strathallan College, Independent

#### D07, Just Say No

Kathleen Lloyd, J 7-8, Health Sciences Hillfield Strathallan College, Independent

### D08, Need for Speed

Matthew Vivolo. J 7-8, Physical Sciences & Math Hillfield Strathallan College, Independent

#### D09, The effects of music on the blood pressure and heart rate of grade 7 students Julia Roglich,

J 7-8, Health Sciences Holy Spirit, HWCDSB

#### **D10, ENERGY TO BURN**

Adelia Spytkowsky, J 7-8, Physical Sciences & Math Holy Spirit, HWCDSB

#### **D11, DOES GREEN REALLY** CLEAN?

J 7-8, Earth and Environmental

Myra Hucal,

### Holy Spirit, HWCDSB **D12, FOOD ALLERGIES**

Paula Bochnak. J 7-8. Health Sciences Holy Spirit, HWCDSB

#### D14. The Alka-Rocket

Kana Gazaz. J 7-8, Physical Sciences & Math Lisgar, HWDSB

#### D15, Splitting Water with Electrolysis

Roberto Temelkovski, J 7-8, Physical Sciences & Math Lisgar, HWDSB

#### D16, Tasty Volts

Matthew Simmons, Joshua **Bovchuck** J 7-8, Physical Sciences & Math Lisgar, HWDSB

#### D17, Waterproof Matches

William Redgate, J 7-8, Physical Sciences & Math Lisgar, HWDSB

#### D18, Human Response Times to Stimuli

Christian Grou. J 7-8. Health Sciences Lisgar, HWDSB

#### **D19, Wind Turbines**

Eric Blain. J 7-8, Engineering and Computing Lisgar, HWDSB

#### E01, Power of The Bill

Nadwa Elbadri, Brontie Hladysh S 11-12, Earth and Environmental North Park Collegiate and Vocational School, GEDSB

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#### E02, It Will or Walnut Grow

Hilary Mann, Shivon Azwim I 9-10, Earth and Environmental North Park Collegiate and Vocational School, GEDSB

## E03, The Genome Sizes of Land Plants

Mitchell Keene, S 11-12, Life Sciences North Park Collegiate and Vocational School, GEDSB

#### E04, Different Environments. Different Populations

Sara Abu Obaid, Ream Elbadri I 9-10, Earth and Environmental North Park Collegiate and Vocational School, GEDSB

## E05, Salting the Food Web: A Decision to Flea or Fight

Meaghen Rollins, Leah O'Shea S 11-12, Earth and Environmental North Park Collegiate and Vocational School, GEDSB

## E06, What Gives You The Power to Perform?

Dean Correia, Chris Luongo J 7-8, Health Sciences Oakville Christian School, Independent

## E07, Mirror, Mirror... Who's the Most Renewable of Them All?

Brittany Smrke, J 7-8, Earth and Environmental Oakville Christian School, Independent

## E08, Fuel Effeciency - The Road to a Greener World

Steven Cloudt, Mitchell Osborne J 7-8, Earth and Environmental Oakville Christian School, Independent

## E09, To Build With or Not to Build With

Jacqueline Taylor, Maddie Fyfe J 7-8, Engineering and Computing Oakville Christian School, Independent

## E10, Vaccines and Autism: Is There a Link?

Jordy Verasamy, J 7-8, Health Sciences Oakville Christian School, Independent

#### E11, I drank your smoothie! Jokes on you that was water Nathan Greene, J 7-8, Earth and Environmental Oakville Christian School, Independent

#### E12, A GAS-LES\$ CAR

John Ivanco, J 7-8, Earth and Environmental Oakville Christian School, Independent

#### E13, Make No BONES About It!

Sarah Medeiros, J 7-8, Health Sciences Oakville Christian School, Independent

#### E14, Cheluong

Chelsea Dayrit, Tuong Kuwabong J 7-8, Engineering and Computing Regina Mundi, HWCDSB

#### E15, Break Those Bricks

Alessia Di Carlo, Linda-Marie Palo J 7-8, Engineering and Computing Rotherglen School (Oakville), Independent

#### E16, Foundation Determination

Noah Djurfeldt, Mark Martone J 7-8, Engineering and Computing Rotherglen School (Oakville), Independent

#### E17, Insulation for the Nation

Joseph Laferriere, Keenan Lutzko J 7-8, Engineering and Computing Rotherglen School (Oakville), Independent

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Congratulations to all participants for their commitment to inquiry and discovery.





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#### E18, Bac Off !

Kristina Milisavljevic, Zunaira Tarique J 7-8, Life Sciences Sir Wilfrid Laurier, HWDSB

## E19, The Little Bug With The Big Heart

Jovana Zelenovic, Katarina Tatomir J 7-8, Life Sciences Sir Wilfrid Laurier, HWDSB

#### E20, PEPSID ... Just One And Heartburn's Done!

Andjela Japalak, Aqsa Arshad J 7-8, Physical Sciences & Math Sir Wilfrid Laurier, HWDSB

#### **F01, NOTHING BUT NET**

Moez Shahzad, Ali Paul J 7-8, Physical Sciences & Math Sir Wilfrid Laurier, HWDSB

#### **F02, The Quicker Picker-Upper** Erin Kyle, Monica Phonthaphanh J 7-8, Life Sciences

Sir Wilfrid Laurier, HWDSB

#### F03, Read All About It ... Again

Edina Mustedanagic, Eden Minhas J 7-8, Earth and Environmental Sir Wilfrid Laurier, HWDSB

#### F04, Scentsational!

Rebecca Greenhalgh, Andjela Janosevic J 7-8, Physical Sciences & Math Sir Wilfrid Laurier, HWDSB

#### F05, Batteries: The Best, The

Worst and Which One To Buy Meghan Peirce, Alexandra Bangs J 7-8, Earth and Environmental Sir William Osler, HWDSB

#### F06, One Crappy Project

Teaghan Lerner, Kayla Steadman J 7-8, Earth and Environmental Sir William Osler, HWDSB

## F07, What's Black, White and Red All Over?

Ian McArthur, Jamie Ennis J 7-8, Earth and Environmental Sir William Osler, HWDSB

#### F08, X Radiation Lindsay Boyle, J 7-8, Physical Sciences & Math St. Agnes, HWCDSB

#### F09, Electromagnets

Samantha Cumerlato, J 7-8, Physical Sciences & Math St. Agnes, HWCDSB

#### **F10, Disinfect to Protect** Fiorella Villanueva, J 7-8. Life Sciences

St. Agnes, HWCDSB

#### **F11, Don't Look Twice** Geena Gentilotti, J 7-8, Health Sciences St. Agnes, HWCDSB

F12, Fantastic Plastic Sabine Andrisevich, I 9-10, Biotechnology St. Agnes, HWCDSB

#### F13, Back Breaking Backpacks Natalie Di Giandomenico, Katie Kobernyk J 7-8, Health Sciences St. Agnes, HWCDSB

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#### F14, Laundry Detergent

Alexandra Da Silva, Katelyn Boss J 7-8, Physical Sciences & Math St. Agnes, HWCDSB

#### F15, Static Voltage

Daniel Fascione, Munashe Muneka J 7-8, Physical Sciences & Math St. Agnes, HWCDSB

#### F16, Dominant Edges

Nicholas Dozzi, J 7-8, Physical Sciences & Math St. Agnes, HWCDSB

#### F17, Rough Ride

Joseph Nguyen, J 7-8, Physical Sciences & Math St. Agnes, HWCDSB

#### F18, snowllution

Andrea Petrina, J 7-8, Earth and Environmental St. Agnes, HWCDSB

#### F19, The Nose Knows

Arden Baboth-Toth, Katie Nelson J 7-8, Health Sciences St. Ann (Ancaster), HWCDSB

#### F20, Hydraulics How can small cranes lift so much Dorian Sciamanna, J 7-8, Engineering and Computing St. Ann (Ancaster), HWCDSB

**G01, The Hydrophobic Effect** Dawson Lucier, Matthew Palango J 7-8, Physical Sciences & Math St. Ann (Ancaster), HWCDSB

**G02, Mind over Matter** Madeline Balardo, Diana Bago J 7-8, Health Sciences St. Ann (Ancaster), HWCDSB

#### G03, Food Frenzy

Caroline Ferrie, Julia Boccadoro J 7-8, Health Sciences St. Ann (Ancaster), HWCDSB

#### G04, Does Playing Violent Video Games Desensitize You To Violence?

Tyler Sartor, Matt Mongeon J 7-8, Health Sciences St. Ann (Ancaster), HWCDSB

#### G05, Solid Fact?

Kyran McGillion, J 7-8, Health Sciences <u>St. Ann (Ancaster), HWCD</u>SB



#### G06, Noise Induced Hearing Loss

Ashley Attard, Myra Kohler J 7-8, Health Sciences St. Anthony of Padua, HCDSB

#### G07, Music on the Mind

Hubert Maliszewski, J 7-8, Health Sciences St. Anthony of Padua, HCDSB

#### G08, Will They Remember?

Sandra Lecki, J 7-8, Health Sciences St. Anthony of Padua, HCDSB

#### G09, Hovercraft and

**Transportation** Danjuma Mba, Ilia Chtcherbakov J 7-8, Engineering and Computing St. Anthony of Padua, HCDSB

#### G10, Exploring Plants

Rachel Whichelo, Avery Jans J 7-8, Earth and Environmental St. Anthony of Padua, HCDSB

**G11, Acidity Increase!** Tracey Elasmar, J 7-8, Health Sciences St. Anthony of Padua, HCDSB

#### G12, Vitamin J

Aidan Hamelin, John Muirhead J 7-8, Engineering and Computing St. Anthony of Padua, HCDSB

## G13, THE POWER OF CONCENTRATION

Hayden Truman, J 7-8, Engineering and Computing St. Augustine, HWCDSB

**G14, Pump It Louder** Heather Wild, J 7-8, Health Sciences St. Augustine, HWCDSB

#### G15, iSpy: A Biometric Solution to iPod Theft Maggie Hunter, 17-8 Engineering and Computing

J 7-8, Engineering and Computing St. Augustine, HWCDSB

**G16, The Dominator** Deanna Khes- Grabiec, Meg Sharpley J 7-8, Health Sciences St. Augustine, HWCDSB

**G17, How Coloured Light Effects Plant Growth** Ryan Arsenault, J 7-8, Life Sciences St. Augustine, HWCDSB

#### G18, Paper-R-Us

Laura Orlando, Monica Caterini J 7-8, Earth and Environmental St. Augustine, HWCDSB

## **G19, What makes a better alfalfa sprout?** Matthew Furlong, Issac Bohm J 7-8, Biotechnology

St. Augustine, HWCDSB

## G20, Pollution-Rising to New Heights

David Bowman, J 7-8, Earth and Environmental St. Augustine, HWCDSB

### H01, Do You "ExCell" on a Cell?

Gabriela Caterini, J 7-8, Health Sciences St. Augustine, HWCDSB

#### H02, Hardest Hold

Julia Agostino, J 7-8, Physical Sciences & Math St. Augustine, HWCDSB

#### H03, The Sweet Smell of Success Paige Kellner, J 7-8, Physical Sciences & Math St. Augustine, HWCDSB

H04, Under Pressure Rebecca Conti, J 7-8, Health Sciences St. David, HWCDSB

#### H06, Go Green Stay Clean!

Crystal Sulaiman, Amanda Bruzzese J 7-8, Earth and Environmental St. David, HWCDSB

#### H07, McGoodness or McDeadly Jessica Maltese, J 7-8, Life Sciences St. David, HWCDSB

#### H08, The Pulse On Music

Danielle Burnison, Julia Cuicani J 7-8, Health Sciences St. David, HWCDSB

#### H09, Got Enough Sleep?

Reno Fernandes, Christopher Marfisi J 7-8, Health Sciences St. David, HWCDSB

#### H10, A Burning Question

Niko Fernandes, Andrew Breckenridge J 7-8, Physical Sciences & Math St. David, HWCDSB

#### H11, Now That's Repelling Sarah Tompa, J 7-8, Physical Sciences & Math St. David, HWCDSB

H12, Think Fast Jasmine Ellis, J 7-8, Health Sciences St. David, HWCDSB

H13, Pump Up The Wi-Fi Anthony Tam, J 7-8, Physical Sciences & Math St. David, HWCDSB

H14, Flushed Away Claire Kemp, J 7-8, Physical Sciences & Math St. David, HWCDSB

#### H15, High Gear, Low Gear Mitchell Bossert, J 7-8, Engineering and Computing St. Elizabeth Seton, HCDSB

#### H16, It's Gotta Be Hot To Freeze First: The Mpemba Effect Elton Schiott,

J 7-8, Physical Sciences & Math St. Elizabeth Seton, HCDSB

#### H17, Catch the Light Mitchell Langley, J 7-8, Engineering and Computing St. Elizabeth Seton, HCDSB

### H18, The Future Generator

Michael Scolaro, J 7-8, Engineering and Computing St. Elizabeth Seton, HCDSB

H19, Logos: Identifiers or Mind Control Devices? Zachary Kowalsky, Jacob Rynn J 7-8, Health Sciences St. Elizabeth Seton, HCDSB

**H20, To Ski or not to Ski** Chris Cachia, J 7-8, Health Sciences St. Elizabeth Seton, HCDSB

**I01, What's the buzz about?** Nicholas Bennett, J 7-8, Engineering and Computing St. Jerome, HWCDSB

#### I02, Transforming Waste Into Energy Camilla Michalski,

J 7-8, Earth and Environmental St. Mark, HWCDSB **I03, Filthy Rich** Devon Savelli, J 7-8, Life Sciences St. Paul, HWCDSB

#### **104, Geez, Don't Freeze** Bianca Cisternino, Alaina Filice J 7-8, Physical Sciences & Math St. Therese of Lisieux, HWCDSB

**105, Can you read it ?** Alexandra Pugliesi, Melissa Tinebra J 7-8, Health Sciences St. Therese of Lisieux, HWCDSB

#### 106, Mind of Music

Alaina Tedeschi, J 7-8, Health Sciences St. Therese of Lisieux, HWCDSB

#### 107, Solar Power

Joshua Gabriele, Nicco Torres J 7-8, Physical Sciences & Math St. Therese of Lisieux, HWCDSB

#### 108, Meniere's Disease

Desiree Restivo, J 7-8, Health Sciences St. Therese of Lisieux, HWCDSB

#### 109, Can you concentrate ?

Britney Barnard, Ashley Leger J 7-8, Health Sciences St. Therese of Lisieux, HWCDSB

#### I10, Pump it up !!

Eric Chovance, James Medeiros J 7-8, Health Sciences St. Therese of Lisieux, HWCDSB

#### I11, Multitasking: Marvel or Menace

Julie Hesson, J 7-8, Health Sciences St. Therese of Lisieux, HWCDSB

112, Melt Away - Ice, Ice, Baby

Victoria Petruccelli, J 7-8, Physical Sciences & Math St. Therese of Lisieux, HWCDSB

#### I13, Comparing the effectiveness of Store Brand Soaps to Our homemade soaps.

Jody Lee, Stephanie Patterson J 7-8, Physical Sciences & Math Sunningdale Public School, HDSB

#### I14, Triboluminescence in Sugar Crystals

Miles Little, Brenton Heyburgh J 7-8, Physical Sciences & Math Sunningdale Public School, HDSB

## I15, Do you trust the water you drink?

Marcus Tutert, Justin Crawford J 7-8, Physical Sciences & Math Sunningdale Public School, HDSB

#### I16, The Unknown Culprit

Steph Walsh, J 7-8, Earth and Environmental Trinity Christian School, Independent

#### I17, Astounding Artemia

Ryan Dorsman, J 7-8, Life Sciences Trinity Christian School, Independent

#### I18, The CO2 Culprit

Brittany Barnes, J 7-8, Earth and Environmental Trinity Christian School, Independent

#### I19, Stealthy Stuff

Samuel Kim, J 7-8, Physical Sciences & Math Trinity Christian School, Independent

#### I20, Fire and Fumes

Amber Schenk, J 7-8, Earth and Environmental Trinity Christian School, Independent

#### J01, Lasers and critacal angle

Joshua Verduyn, J 7-8, Physical Sciences & Math Trinity Christian School, Independent

#### J02, The Mozart Effect?

Shannon VanderWoerd, J 7-8, Health Sciences Trinity Christian School, Independent

#### J03, Wastewater Electricity Generator

Eric Stretton, J 7-8, Engineering and Computing Trinity Christian School, Independent

#### J04, A Chemilumic Curiosity Anika Bosua.

J 7-8, Physical Sciences & Math Trinity Christian School, Independent

#### **J05, A Question of Strength** Emma Hansen, J 7-8, Earth and Environmental

Trinity Christian School, Independent

#### J06, Why is there no life in Morrison Creek: A Look at Potential Contaminants Daniel Allen, Tristan Walker

J 7-8, Earth and Environmental W. H. Morden Public School, HDSB

#### J07, Back Off Bacteria

Declan McMullan, Connor Lawless J 7-8, Life Sciences W. H. Morden Public School, HDSB

### J08, Take the IgE out of Allergies Eisha Ahmed,

J 7-8, Health Sciences W. H. Morden Public School, HDSB

## J09, If It's Not Disintfecting It's Not Protecting

Carmen Kruk, Courtney Udall J 7-8, Life Sciences W. H. Morden Public School, HDSB

#### J10, Spill Something?

Kira Foreman-Tran, Emily Droppo J 7-8, Earth and Environmental W. H. Morden Public School, HDSB

J11, Forces and BALListics Dennis Xu, Manjot Sangha J 7-8, Physical Sciences & Math W. H. Morden Public School, HDSB

#### J12, Just Think About It Jhameila Austin, Ember Pepper-Dawes J 7-8, Health Sciences

W. H. Morden Public School, HDSB

#### J13, A Growing Attraction Vicky Mendonca, Connor Challis J 7-8, Life Sciences W. H. Morden Public School, HDSB

#### J14, The BikeBrella

Tyler Collins, J 7-8, Engineering and Computing W. H. Morden Public School, HDSB

#### J15, Gravity Car

Tina Antic, J 7-8, Earth and Environmental W. H. Morden Public School, HDSB

#### **J16, Quit Buggin' II** Wardah Nasir, I 9-10, Earth and Environmental Westmount, HWDSB

**J17, Planet or Plastic? 2** Joy Liu, I 9-10, Engineering and Computing Westmount, HWDSB

### L01, From Compost to Cuisine

Andrew Dziuba, Randy Nguyen J 7-8, Biotechnology Sir Wilfrid Laurier, HWDSB

#### L02, Making Waves

Justine Williams, J 7-8, Physical Sciences & Math Sir William Osler, HWDSB

#### L03, The Earthship

Julia Stender, Nurefsan Davulcu J 7-8, Earth and Environmental Sir William Osler, HWDSB

## L04, Spins, Twirls What Makes Us Dizzy

Nicole King, Gabriela Dominguez J 7-8, Health Sciences Sir William Osler, HWDSB

#### L05, Altering pH Levels

Filip Susic, J 7-8, Physical Sciences & Math St. Agnes, HWCDSB

#### L06, Go With The Flow

Patrick Wilusz, Daniel Mascia J 7-8, Engineering and Computing St. David, HWCDSB

## L07, Star Power, the Great Guitar Gadget

Quentin Simms, J 7-8, Engineering and Computing St. Elizabeth Seton, HCDSB

#### L09, Eco Glo - The Green Light

Matthew Tudball, Christopher Walker I 9-10, Engineering and Computing T. A. Blakelock, HDSB

### L10, The Battle of the Bulbs

Simon Lammers, J 7-8, Physical Sciences & Math Trinity Christian School, Independent

#### L11, Sweat It Out

Sierra Stewart, J 7-8, Health Sciences Trinity Christian School, Independent

#### L12, Money Down The Drain - A Comparison Of Drain Water Heat Exchangers

Andrew Allen, J 7-8, Earth and Environmental W. H. Morden Public School, HDSB

### L13, Mans Best Friend

Ana Stosic, Julie Smithers J 7-8, Life Sciences W. H. Morden Public School, HDSB

## SPECIAL AWARDS

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

#### City of Hamilton Mayor's Award

Prize: 1st: \$500, 2nd: \$300, 3rd: \$200

Criteria: Deserving projects by Hamilton students in the Biotechnology division.

#### Acquired Brain Injury Awards

Prize: 1st: \$75, 2nd: \$25

Criteria: Two projects relating to the brain, especially acquired brain injuries, their causes, or therapies.

### American Society for Quality (ASQ) – Hamilton Section Award

Prize: One cash prize of \$100

Criteria: Best project demonstrating the use of quality tools and principles.

#### ArcelorMittal Dofasco Chemical Testing Award

Prize: \$50

Criteria: Project that best displays the use of chemical testing and/or chemical principles to solve a technical problem.

#### ArcelorMittal Dofasco Commercial Award

Prize: \$50

Criteria: Project which best displays, the use of commercial and business planning tools in developing a potentially new or improved commercial product

#### ArcelorMittal Dofasco Engineering & Maintenance Technology Award

Prize: \$50

Criteria: Deserving project that best displays the use of Engineering & Maintenance Technology principles and design to solve a technical problem.

#### ArcelorMittal Dofasco Environment Award

Prize: \$50

Criteria: Project that best displays the use of physics, chemistry or engineering to explore or solve a technical problem associated with environmental issues.



Sci-Tech Ontario promotes and celebrates participation, excellence and innovation in science and technology by Ontario youth.

## Sci-Tech Ontario is a proud supporter of the Bay Area Science & Engineering Fair

Today's young scientists need and deserve our encouragement and support

## SPECIAL AWARDS Continued ...

Prize: \$50

Criteria: Project that best displays the use of creative principles and design to solve a manufacturing or process problem.

#### ArcelorMittal Dofasco Human Resources Training and Development Award

Prize: \$50

Criteria: Project that best displays the use of teaching and training techniques in explaining or exploring a technical program.

#### ArcelorMittal Dofasco Information Systems Award

Prize: \$50

Criteria: Deserving project that uses Information Systems and design to solve a technical problem.

#### ArcelorMittal Dofasco Product Research & Automotive Applications Award

Prize: \$50

Criteria: Project that best displays the innovative application of materials, products, processes or design principles.

#### ArcelorMittal Dofasco Medical Department Award

#### Prize: \$50

Criteria: Project that best displays the use of scientific principles in exploring or solving a problem related to human health issues.

#### ArcelorMittal Dofasco Product Development Business Process Award

#### Prize: \$50

Criteria: Project that best displays the use of Product Development principles and design in developing a new consumer product with commercial potential.

#### ArcelorMittal Dofasco Quality Systems Award

Prize: \$50

Criteria: Project that best displays the use of Quality Systems principles and design to solve a technical problem.

#### ArcelorMittal Dofasco Research and Development Award

Prize: \$50

Criteria: Project that displays the best use of investigative research and scientific principles to explore or solve a technical problem.

#### ArcelorMittal Dofasco Steelmaking Award

Prize: \$50

Criteria: Project that best displays the use of Engineering and Materials Science principles to solve a technical problem.

#### Artistically Inspired Display Award

Prize: Two awards of \$50 each

Criteria: To the most artistically inspired display

#### Bell Computer and Communications Awards

Prize: 1st: \$150; 2nd: \$100.

Criteria: For projects regarding communication between people, between machines, or between people and machines.

#### Canadian Institute of Mining & Metallurgy Hamilton Branch Awards

Prize: Two cash prizes of \$100 each.

Criteria: For projects relating to mining, petroleum and metallurgy.

#### Canadian Nuclear Society (Sheridan Park Branch) Awards

Prize: Two awards at the intermediate or senior levels for \$125 each & two at the junior level for \$75 each.

Criteria: Cash & certificate awards for outstanding projects related to Mining, Metallurgy, and petroleum, any level

### Cancer Assistance Program Awards

Prize: Three awards

Criteria: For outstanding projects on topics related to cancer prevention.

### Chemical Institute of Canada, Hamilton Section Award

Prize: Three cash prizes of \$100 each.

Criteria: Projects related to chemistry, chemical engineering, or chemical technology.

### BASEF 2009

## SPECIAL AWARDS Continued ...

#### **Conservation Halton Environmental Sciences Award**

Prize: \$100 each to two projects

Criteria: Best and second best Environmental Projects done by Halton Student(s)

#### D.E.N.M. Mining & Mineral Processing Awards

Prize: Three cash awards of 1<sup>st</sup> prize \$125, 2<sup>nd</sup> prize \$75, and 3<sup>rd</sup> prize \$50

Criteria: Outstanding engineering, physical sciences or environmental sciences projects (any level) with a preference to projects relating to Mining and Mineral processing

#### Edward H. Oldham Patent Award

Prize: One (1) gift-in-kind US Provisional Patent Application, there will be two runner ups to this award Criteria: Assistance in preparation of a US Provisional Patent. The winner will be the "best" patentable entry at BASEF.

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

Prize: \$100

Criteria: Project demonstrating the best application of chemistry.

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

#### Prize: \$100

Criteria: An exemplary project in cognition studies.

#### Dr. Leonard Harris Award in Health Sciences or Environment

Prize: \$100 to each of two projects

Criteria: Awarded to the most interesting projects which involve an experiment relating to human biology, health or disease.

#### Dr. Odette Tunks Awards

Prize: Two awards of \$100 each

Criteria: Two awards for the most creative or innovative project, any level.

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

#### Prize: \$250

Criteria: A project displaying the best, safest use of electricity in a creative manner.

#### EnviroExpo Special Award sponsored by Via Rail Canada

#### Prize: One award of \$100

Criteria: An outstanding project that applies the combined skill and science to address a pressing environmental issue. In addition to traditional science content, the project must incorporate an artistic discipline and fall into one of the seven areas of environmental focus: Renewable Energy, Sustainable Development, Resource Management, Environmental Influences on Health, Culture Society and the Environment, the Greening of Products and Services or Biodiversity. The EnviroExpo Special Award is open to all students, grades 7-12

#### **Gowlings Innovation Award**

#### Prize: \$250

Criteria: The award will be given in any category for a project that exploits multiple areas of intellectual property protection, namely trademarks, patents, industrial design and copyright. The prize includes a complimentary consultation with a patent or trademark agent at the Gowlings Hamilton office.

#### Hamilton Association daVinci Award

Sponsored by the Hamilton Association for the Advancement of Literature, Science & the Arts Prize: \$300, honourary membership in the Association and an invitation to attend meetings Criteria: The best candidate combination of personal initiative with the use of the scientific method.

#### Hamilton Clean & Green Award

Prize: One cash award of \$500

Criteria: The entry that best addresses the effect on the environment of littering, dumping, and defacing property and/or processes and systems to effectively remediate, contain and prevent litter and graffiti.

#### Hamilton Wentworth Occasional Teacher Local - Environment and Education Award

#### Prize: \$50 and certificate

Criteria: Junior project which most effectively educates others about an environmental issue

#### Hamilton Wentworth Occasional Teacher Local - Healthy Lifestyles Award

#### Prize: \$ 50 and certificate

Criteria: Junior project which most effectively educates others regarding the role of nutrition and/or exercise in maintaining a healthy lifestyle.

### SPECIAL AWARDS Continued ...

#### Hamilton Wentworth Occasional Teacher Local - Presentation and Aesthetics Award

Prize: \$50 and certificate

Criteria: Junior project which demonstrates a high level of visual appeal, creativity and overall quality of Presentation.

#### Helen Crawford Memorial Award

#### Prize: \$100

Criteria: A deserving project in Health Sciences, with preference given to projects related to the causes or treatment of cancer

#### Hillfield Strathallan College Awards of Excellence

#### **Design and Engineering**

Prize: One cash award of \$100

Criteria: Senior project that best displays innovation in identifying an ergonomic design problem

#### **Environmental Sciences**

Prize: One cash award of \$100

Criteria: Junior or Intermediate project that best displays innovation in identifying an environmental problem **Health Sciences** 

Prize: One cash award of \$100

Criteria: Intermediate project that best displays excellence in sampling design in a health science project

#### Horizon Utilities Corporation Award

Prize: Three awards of \$300 each

Criteria: Project that best demonstrate the production of electrical energy from "green sources", or new, viable approaches to using electrical energy more efficiently

#### Hydro One Energy Ambassador Award

Prize: One award of \$100, to be sent after the fair.

Criteria: For a project at any level, with outstanding scientific quality and whose primary focus is the distribution, supply management, use or conservation of electrical energy (or alternatively, other forms of energy if suitable projects relating to electrical energy are not available)

#### IEEE Hamilton Section Awards

Prize: Two prizes of \$100 each

Criteria: Two projects which shows the best use of Electronics in a science or engineering project, any level.

### Investigative Science Awards

Prize: Two cash prizes; 1<sup>st</sup> prize \$200, 2<sup>nd</sup> prize \$100

Criteria: Two projects showing the best application of creative problem solving, any project, any level.

#### The James A. Winger Award sponsored by Hamilton Amateur Astronomers

#### Prize: \$100 award plus an Astronomy book

Criteria: Best project in demonstrating and understanding of a topic related to astronomy or physics

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

Prize: \$100

Criteria: A project demonstrating innovation in engineering materials, especially concrete.

#### Laurentian Chapter of SETAC Award

#### Prize: One cash prize of \$200

Criteria: Best project and presentation on a topic related to Environmental toxicology, chemistry, pollution, contamination, remediation or environmental protection.

#### McMaster University Department of Chemistry Award

Prize: \$100 plus certificate

Criteria: An outstanding senior or intermediate project connected to chemistry

#### McMaster Engineering Society Award

Prize: \$250

Criteria: Best junior engineering project.

#### McMaster University Faculties of Science & Engineering Tuition Awards

Prize: Five \$500 tuition awards, to be redeemed upon acceptance of successful admission to either of the Faculties of Science or Engineering.

Criteria: Excellent science or engineering projects.

#### McMaster University, The Venture Science and Engineering Innovation Award

Prize: Free registration to Venture Engineering Science Camp on June 29-July 3rd, 2009 or August 4th-August 7th, 2009 and a plaque to the winning project

Criteria: Is presented to one junior project that demonstrates creativity and originality.

### SPECIAL AWARDS Continued ...

#### Mechanical Contractors Association of Hamilton Award

Prize: \$250

Criteria: Best intermediate or senior engineering project.

#### Mohawk College School of Engineering Technology Awards

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

Prize: \$50

Criteria: deserving project related to any branch of civil engineering, any category, any level. Prize: \$50

Criteria: deserving project related to planning, design, operation of any transportation mode or facility, any category, any level.

#### Prize: \$50

Criteria: deserving project related to building sciences, building materials, energy conservation in structures, any category, any level.

#### Chemical and Environmental Engineering Technology Awards

Prize: \$100

Criteria: One deserving intermediate or senior project related to applied chemistry.

Prize: \$50

Criteria: One deserving junior project in environmental studies.

#### Computer Science & Information Technology - Computer Excellence Award Prize: \$50

Criteria: Project which demonstrates thorough understanding of computer applications and design in today's world.

#### Electrotechnology Engineering Award

Prize: Two cash awards of \$50 each

Criteria: One award for \$50 to a deserving junior project in engineering studies. Second award for \$50 to a deserving project in engineering studies

#### Mechanical & Industrial Engineering Technology Awards

Prize: \$100

Criteria: Outstanding project related to industrial engineering or manufacturing, any level

#### Mathematics Awards

#### Prize: \$75 to each of two projects

Criteria: Deserving projects in the mathematics division, or any project from any division demonstrating a thorough understanding of statistics, any level.



#### BASEF 2009

### SPECIAL AWARDS Continued ...

#### National Science & Engineering Research Council (NSERC) Awards

Prize: \$250 to each of two projects.

Criteria: Deserving projects demonstrating innovative and creative research by the student.

#### Nelson Steel Awards

Prize: Two prizes of \$50 in each of the following fields - steel or environmental or chemistry Criteria: \$50 cash award for an outstanding projects related to one of the following fields, steel, environmental and chemistry. Preference given to junior levels

#### Nipissing University Regional Science Fair Award

Prize: One scholarship award of \$1000

Criteria: To a senior project, any category to be paid out upon registration at Nipissing University

#### Ontario Association of Medical Laboratories

Prize: One award of \$100, to be sent after the fair Criteria: Outstanding project at any level in disciplines such as biochemistry, chemistry, microbiology, toxicology, and forensic science, and incorporating analytical laboratory techniques or physical methods of analysis, for example a spectrometer or chromatograph.

#### Primary Fluid Systems Awards

Junior or Intermediate Engineering Awards Two prizes each of : \$250, \$150, \$100 Criteria: Deserving projects in junior or intermediate engineering. Junior or Intermediate Physical Sciences Awards Two prizes each of : \$125, \$75, \$50 Criteria: Deserving projects in junior or intermediate physical sciences. Junior or Intermediate Earth & Environmental Awards Two prizes each of: \$125, \$75, \$50 Criteria: Deserving projects in junior or intermediate earth & environmental Awards

#### Professional Engineers Ontario (Hamilton-Burlington Chapter) Awards

Prize: 1st: \$250, 2nd: \$150, 3rd: \$100 Criteria: To the top three outstanding Engineering Project Exhibitors at any level.

## The Hamilton Clean City Liaison Committee

congratulates all participants

in the

## Bay Area Science & Engineering Fair



# 

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## Congratulations to all BASEF participants!

#### SPECIAL AWARDS Continued ...

#### Professional Engineers Ontario (Oakville Chapter) Engineering Awards

Prize: Two awards of \$100 each

Criteria: To two deserving engineering projects.

#### Safety Management Systems Software Award

Prize: \$100 and a plaque

Criteria: A project that incorporates the most innovative integration of programming code to analyze data or to operate a piece of equipment.

#### **SPIE Optics and Photonics Science Fair Award**

Prize: Three cash awards (in US Funds) 1st: \$250, 2<sup>nd</sup>: \$150, 3<sup>rd</sup>: \$100, any level

Criteria: For the best project in optics or photonics where student(s) apply optics or photonics

technology, techniques or principles to his and her project.

#### Weirdest Project Award

Prize: UFO Detector Device & Nikula Tesla Library

Criteria: The unusual, strangest, or subject matter that goes beyond the reality of scientific explanation.

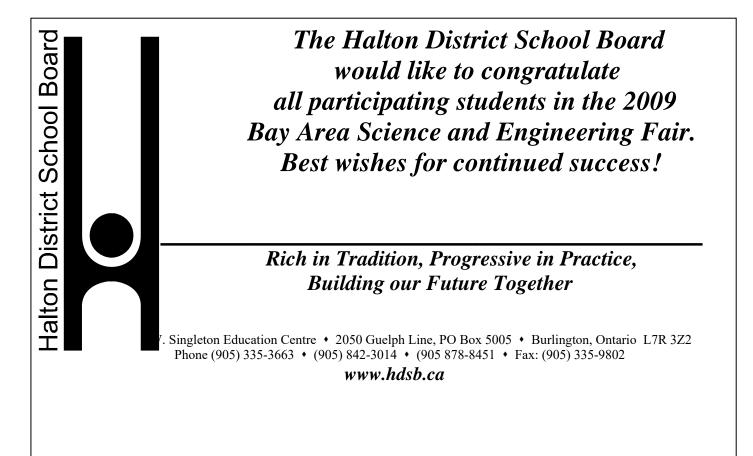
#### University of Ontario Institute of Technology Innovation Award

Prize: Two Awards of \$100 each, to be sent after the fair and one award must go to a junior project. Criteria: Outstanding projects demonstrating the most innovative development, adaptation, or use of technology in any subject area.

#### University of Ottawa Admission Scholarship

Prize: \$1000 admission scholarship (or two \$500 scholarship for a pair project) toward tuition fees upon being accepted into and registration in an undergraduate program in the faculties of Engineering, Science or Health Sciences at the University of Ottawa.

Criteria: The most deserving senior project.



#### SPECIAL AWARDS Continued ...

#### **Ontario Ministry of the Environment Award**

Prize: One cash prize of \$100, to be sent after the fair and one award must go to a junior project. Criteria: To an outstanding project in any category which demonstrates a creative approach to an environmental problem that could lead to cleaner air, land or water

#### Royal Botanical Gardens Award

Prize: \$100 gift certificate from RBG shop plus 1 year RBG Family Membership Criteria: Best project in botanical or environmental sciences

#### Zonta Club of Hamilton Awards

Prize: \$300 will be shared by a limited number of projects. Criteria: Outstanding projects by females, any category, any level.





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#### **MERIT AWARDS**



#### Sponsored by Primary Fluid Systems

Merit Awards recognize the tremendous amount of thought and effort that has gone into the projects entered into the BASEF Regional Science Fair. They are the result of an extensive judging process undertaken by up to 150 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:

#### Scoring:

over 90% and ranking in top 7.5% of category: over 80% and next 10% of category: over 75% and next 12.5% of category: over 75% and not in the top 30% of category: earns Gold medal & cash award earns Silver medal & cash award earns Bronze medal & cash award earns Honourable Mention certificate & cash award

#### For Junior, Intermediate, Senior levels in:

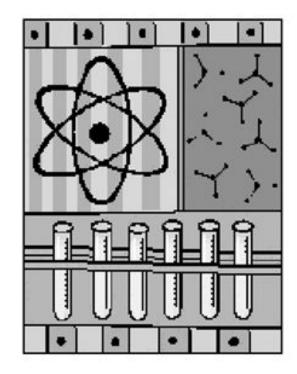
- Health Sciences (Human)
- Life Sciences (Non-human)
- Physical and Mathematical Sciences
- Biotechnology
- Engineering and Computing Sciences
- Earth & Environmental Sciences

#### The Mohawk College & Sheridan Institute Tuition Scholarships

Mohawk College of Applied Arts and Technology & Sheridan Institute of Technology and Advanced Learning will provide \$500 scholarships to ALL BASEF 2009 Merit Award Medal (Gold, Silver, Bronze) winners. The scholarship may be used toward first year tuition upon the recipients' acceptance and registration in any full-time program at either Mohawk or Sheridan. If multiple scholarships are accumulated over more than one year, only one of these scholarships may be used.



# Proud sponsors of BASEF and the 2009 Merit Awards



"Opportunity is missed by most people because it is dressed in overalls and looks like work"

Thomas A. Edison

## Primary Fluid Systems Inc.

Burlington, Ontario www.primaryfluid.com

#### **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 winners' schools.

#### **ROY MIDDLETON AWARD**

For the best Junior level project at the fair, a plaque to the winner's school.

#### SUSAN JOYCE MEMORIAL AWARDS

For the top project in each of the six categories at the Junior level, a keeper trophy for each student.

#### HERB GILDEA MEMORIAL TROPHY

A trophy is awarded to the secondary school accumulating the most points. Points are earned from the number of projects entered from intermediate and senior levels of each school and those projects earning Gold, Silver, Bronze and Honourable Mention Merit Awards.

#### **BASEF COMMITTEE TROPHY**

A trophy is awarded to the elementary school accumulating the most points. Points are earned from the number of projects entered from the junior level of each school and those projects earning Gold, Silver, Bronze and Honourable Mention Merit Awards.





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#### **GRAND PRIZE TRIP AWARDS**

#### INTEL INTERNATIONAL SCIENCE & ENGINEERING FAIR TRIP AWARDS

All expense-paid trips to the 2009 Intel International Science & Engineering Fair, to be held in Reno, Nevada, USA from May 10 to 16, 2009. Chosen from excellent secondary school (Intermediate & Senior

level) projects, up to 4 trips, two singles and a pair project (dependant on funding levels), will be awarded. **NOTE:** Winners must be able to travel into the USA with a valid Canadian Passport (valid for more than 6 months at the time of travel) and/or have Canadian citizenship or landed immigrant status at the time of travel with all paperwork provided.

Sponsors are

- McMaster University
- Mohawk College of Applied Arts and Technology
- Sheridan Institute of Technology and Advanced Learning

#### CANADA WIDE SCIENCE FAIR TRIP AWARDS





All expense-paid trips to the 2009 Canada Wide Science Fair, to be held in Winnipeg, Manitoba, Canada from May 9 to May 17, 2009. Up to 16 trips (dependant on funding levels) will be awarded for excellent projects. All projects entered in BASEF 2009 are eligible.

#### Sponsors are

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- City of Hamilton, Economic Development Department
- Edward Oldham, P.Eng, Patent and Trademark Agent
- Halton Catholic District School Board
- Halton District School Board

named to "Team Sci-Tech Ontario".

- Halton Region, Business Development Department
- Hamilton Halton Construction Association
- Hamilton Wentworth Catholic District School Board
- Hamilton Wentworth District School Board
- Sci-Tech Ontario

**TEAM SCI-TECH ONTARIO** 

Union Gas



Youth Science Foundation Canada

FONDATION SCIENCES JEUNESSE CANADA





Along with all other Ontario CWSF trip winners, BASEF students awarded CWSF trips will be



# Being there when it matters!

Bell is proud to sponsor the 2009 Bay Area Science and Engineering Fair. Good luck to all the participants!



Because we believe in big ideas and infinite possibilities, Arcelor Mittal Dofasco is proud to be a part of the Bay Area Science and Engineering Fair sponsored by Arcelor Mittal Dofasco.





## Addendum to the Official Program

Bay Area Science and Engineering Fair 2009



#### ORGANIZING COMMITTEE

REGISTRAR Steve Procyszyn

#### **ON-SITE REGISTRATION**

Zenon Holadyk Morris Hucal Steve Luby Kevin MacIsaac Lino Pin Mary Procyszyn Christine Rowthorn Wuchow Than Jo-Anne Teoh

#### **TRIP CHAPERONES**

IISEF: Cathy Collins, Ray Kranyak CSWF: Roslynne Price, Tom Crawford

#### VOLUNTEERS

Helen Barton Joy Carson Brooke Crawford Anne-Marie DePape Victoria Flaxman Catalina Gonzalez Kelly Hepworth Paul Janssen Mary Johnston Musaab Maniar Justin Mitchell Sue Reaume Diane Watson Jonathan Yau Samantha Yuill

#### SAFETY INSPECTORS

Jim Garrett Linda Hazelden Stephen Jacobs Kathryn Lafferty **Daniel Lawlor** Justin Lewis Steve Lonz Neil Manmohan Leslie McAnanama Brad Michell Dan Prowse Darren Twyford Steven Walsh Paul Wehrle Elizabeth Weretilnvk Bruce Young

#### THANK YOU DAN BOWMAN, TOM CRAWFORD AND CHRYSLER CANADA!

Last year (2008), one of our committee members, Dan Bowman, arranged for Chrysler Canada, National Fleet division, to loan us a large van (free of charge) for a week in May 2008. BASEF's Judge-in-chief and chaperone, Tom Crawford, drove the van with the winning BASEF 2008 projects to the Canada Wide Science Fair in Ottawa, Ontario. This was a tremendous help to the students, parents and the chaperones.

#### Thank you. We couldn't have done it without you!

#### MERIT AWARD JUDGES

Arcelormittal Dofasco Scardamaglia, Joe Pump, Sonya Spearin, Don Stewart, Ron Seuradge, Marc

Barber, Ian Consultant (retired)

Groen, Karin General Electric

Mejia, Diego Hamilton Police Service

Jeremic, Aleksandra Hatch HWCDSB Coderre, Mary Feltham, Diana -Templemead School Bedi, Amrinder Kaur Occasional Teacher McNair, Eric Retired teacher Peters, Annemaree Sherwood SS

Hiam, John R. LTV Steel (retired)

McMaster University Jeremic, Aleksandar Ryan, Ellen B. (Emeritus) Smith, Spencer Faculty of Eng'g.

Lou, Tenn Pharmaceutical companies Hines, Allan Predictive Service – Canada

Closson, Gary Sheridan College (retired)

Surovtsev, Elena Source Technical Group Inc.

Pacey, Laura University of Toronto

Morin, Shane Xerox

Kritikos, Soula

Ahluwalia, Steve

Smith, Lindsay Alexandra

Yau, Jonathan

#### SPECIAL AWARD JUDGES

Braun, Tom Chin, Stephen Dalrymple, Ron De Meo, Leo De Tina, Renato Donnelly, Sean Eastman, Doug Ersser, Al Fuller, Keith Goetz, Fred

Hackett, John Huynh, Van-Thiet Johnston, Leslie Lee, Deborah Meyer, Larry Mitchell, Cameron O'Reilly, Ian Price, Mike Stirling, Jim Underwood, Mike

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#### SPECIAL AWARDS

### Intel Excellence Awards for regional science fairs affiliated with the Intel International Science & Engineering Fair

Prize: One prize of \$200 (U.S.) each (to be forwarded after the fair.)

Criteria: The top winner of Computer Science category in Intermediate or Senior potential of the fair. International Science & Engineering Affiliated Fair Awards for regional science fairs affiliated with the Intel International Science & Engineering Fair Prize: certificates

Criteria: deserving intermediate and senior projects related to topics of interest to the following organizations

<u>American Meteorological Society</u>: For an Intermediate or Senior project Best ability and creativity in an atmospheric science exhibit.

<u>American Psychological Association:</u> Outstanding research in Psychology under the category of behavioural and social sciences.

ASM Materials: outstanding exhibit in materials science.

Association for Women Geoscientists: Project by female student(s) demonstrating high standards of innovativeness and scientific excellence in the geosciences.

Herbert Hoover Young Engineer Award: Outstanding Engineering Project.

International Society for Optical Engineering: Best project in the area of Optical Science or Engineering. <u>MU Alpha Theta:</u> Intermediate or Senior project demonstrating the most challenging, original, thorough and creative investigation or problem involving mathematics.

<u>Ricoh Sustainable Development Award</u>: Most outstanding project, selected among all the general award categories, whose principles and technical innovations offer the greatest potential for increasing our ability to grow environmentally friendly and socially responsible businesses

<u>Society for In Vitro Biology</u>: 11 grade project exhibiting in the areas of plant or animal in vitro biology or tissue culture

<u>Yale Science & Engineering Association</u>: Most outstanding grade 11 student exhibiting in the areas of Computer Science, Engineering, Physics, or Chemistry.

#### **Procor Engineering Awards**

Prize: \$300 each, one prize each of \$150, \$100, \$50 Criteria: Excellent Engineering projects

