

# **BASER 2015**

Annual Report

**Bay Area Science and Engineering Fair  
Sponsored by ArcelorMittal Dofasco**



ArcelorMittal

**Big ideas ...  
Infinite possibilities**

Cover image: An inflammatory macrophage magnified 8000 times,  
courtesy of Kyle Novakowski, PhD Candidate, Bowdish lab, McMaster University



## About BASEF

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The Bay Area Science and Engineering Fair (BASEF) is the regional fair for the City of Hamilton, Region of Halton, Six Nations, and the counties of Brant, Haldimand and Norfolk. BASEF is open to over 100,000 students from grades 7 to 12 attending public, separate, independent, private and home schools. BASEF is a registered charity\* run by a diverse group of volunteers from business, education, industry and the community.

### Mission

To promote project based science and encourage youth to conduct research in areas of science, technology, engineering, and mathematics (STEM), utilizing the scientific method or engineering design process.

We believe all students should be given the opportunity to participate in science fairs. Students learn invaluable academic and life skills through researching, experimenting, displaying and presenting their projects. The judging process and public viewing components allow students to practice their people and communication skills and gain self-confidence and a sense of accomplishment for a job well done.

### Goals

Our goal at BASEF is to make science fair participation a rewarding and enjoyable experience. Students may not win big in their first or even second science fair competition, however they gain the tremendous opportunity to meet other students interested in science and engineering, and get a chance to meet and learn from some of our successful science fair veterans.

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\* BASEF is a registered charity 118951565RR0001

## Major Activities

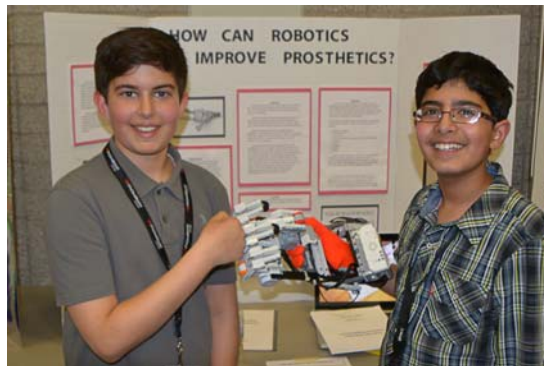
BASEF volunteers organized and staged the 55<sup>th</sup> Annual Regional Fair, March 25-31, 2015, at Mohawk College in Hamilton. The administration and staff of the college gave excellent support, cooperation and assistance to BASEF and provided a warm welcome to our students, volunteers, and visitors.

BASEF continues to provide Activity Morning during the fair for both BASEF participants and classes of Grade 7-8 students. The Activity Morning show is filled to capacity each year with many schools on a waiting list to attend.

Teacher's Activity Day workshop is now available as a full day of training by BASEF's very experienced former Chief Judge, Tom Crawford.

**Science Success!** Materials developed by BASEF continue to be used at the regional, national and international level.

BASEF committee members regularly volunteer their time to assist teachers through judging at school science fairs, mentoring students, and easing newcomers through the regulations, rules, and scientific review requirements.



## Fair Highlights

Over **\$204,000** in cash, prizes, trips, scholarships and participation awards.

**220 students** received Merit Awards



sponsored by Primary Fluid Systems. Total value \$11,820. All Merit Award winners received merit scholarships provided by Mohawk College and Sheridan College. Total value \$110,000.



172 special awards, rewarding projects of specific interest to the award donors, were presented to students, totaling \$24,680 in cash, \$9,500 in scholarships and one internship valued at \$2,200. In addition, cash prizes of \$250 were awarded to two Champion Teachers, and two outstanding new schools.



**Three high school students** advanced to compete in the Intel International Science & Engineering Fair (ISEF) in Pittsburgh, Pennsylvania, May 10 to 15, 2015.

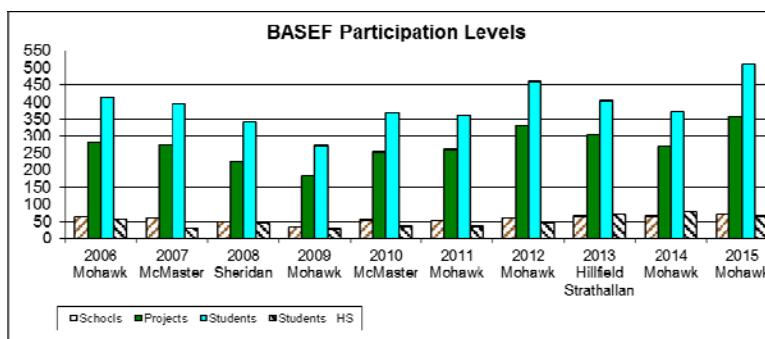
**16 students** advanced to compete in the Canada Wide Science



Fair (CWSF) in Fredericton, New Brunswick, May 9 to May 16, 2015.

## Activity Morning

BASEF Activity Morning is a major STEM outreach event for both BASEF participants and local Grade 7- 8 students. The morning is designed to engage students in BASEF. Approximately 600 students from eight schools and nearly 500 BASEF students attended this sold out show. This year's key note speaker was Craig Brookhouse of the Canadian Warplane Heritage who captivated the students with his story of travelling to Europe and back as the technical officer on a Lancaster Bomber. His story was truly an example of using STEM skills to allow a historic wartime aircraft to complete a mission far beyond its design expectations. Hamilton Amateur Astronomers once again captivated the audience with a new presentation aimed towards today's unmanned space exploration. The coming reality of human powered SkySMART monorails in Niagara Falls was presented by SWHEEB Canada. To end the morning, the McMaster Chemistry professors provided examples of chemistry in action.



## National & International Competition Results

Twenty of the top students won trips to the Canada Wide Science Fair (CWSF) in Fredericton, New Brunswick, or to the Intel International Science and Engineering Fair (IISEF) in Pittsburgh, Pennsylvania.



### National Competition Results - Canada Wide Science Fair

<b>Caroline Mahut</b> M.M. Robinson High School, Burlington	Project - Taking the Flyway <b>Gold Medal</b> <b>Discovery Challenge Award Innovation - Intermediate Level</b>
<b>Katie Brent</b> Notre Dame Secondary School, Burlington	EMMA: ElectroMyographically Manipulated Arm - The Future of Prosthetics <b>Silver Medal</b>
<b>Aaron Gomes</b> King's Christian Collegiate, Oakville	Microwave Assisted Extraction of Polyphenols from Cocoa Powder <b>Silver Medal</b>
<b>Claire Hunter</b> St. Augustine Catholic Elementary School, Dundas	Silent Music: A Novel Approach to Anxiety Reduction Using Tactile Sound <b>Silver Medal</b>
<b>Michael Wolfe</b> Trinity Christian School, Burlington	Wi-Tricity <b>Silver Medal</b>
<b>Samna Aziz</b> Westmount Secondary School, Hamilton	Investigating Ceramic Calcium Phosphate Cements as Bone Replacing Material <b>Bronze Medal</b> <b>Canadian Association of Clinical Chemists Special Award</b> <b>Manning Young Canadian Innovation Award</b>
<b>Anika Gupta</b> Sir William Osler Elementary School, Dundas	The Effects of Pesticides and Neuroprotective Agents on Dopaminergic Neurons <b>Bronze Medal</b>
<b>Jack Mogus</b> White Oaks Secondary School, Oakville	A Novel Investigation Using Engineered Technologies to Reduce Tank Car Incidents <b>Bronze Medal</b>
<b>Maggie Williams</b> Ancaster High School, Ancaster	Filtering Estrogenic Substances from Liquid Waste at the Household Level <b>Bronze Medal</b>

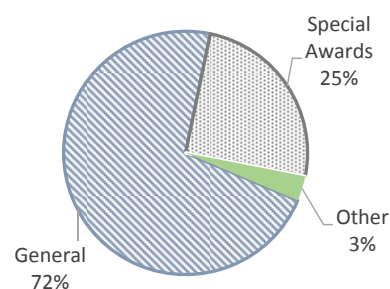
### International Competition Results - Intel International Science and Engineering Fair

<b>Catharine Bowman</b> St. Mary Catholic Secondary School, Hamilton	The Pharmacological Potential of Apigenin and Diosmetin as a Novel Treatment for Chronic Lymphedema <b>IISEF Grand Award (Fourth) Biomedical and Health Sciences</b>	
<b>Adree Khondker</b> Westdale Secondary School, Hamilton	Measuring Membranes: Quantifying Cortisone Interactions through X-Ray Diffraction <b>Spectroscopy Society of Pittsburgh Award (Third)</b>	
<b>Samuel Han</b> Abbey Park High School, Oakville	Identification of Therapeutic Compounds for Treating Huntington's Disease: High Content Screening of Small Molecules for Modulating N17 Phosphorylation of Mutant Huntingtin <b>American Association of Pharmaceutical Scientists Award (Second)</b>	

## Financial Highlights – Statement of Operations

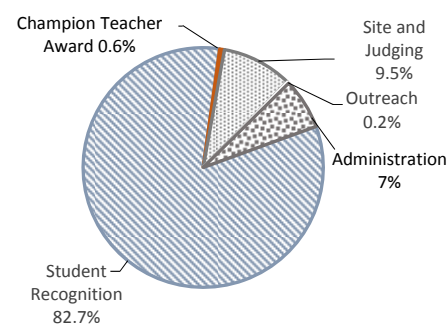
For the year ended August 31, 2015 (unaudited)

Revenue	2015	2014
General	\$ 70,980	\$ 60,413
Special Awards	24,530	23,550
Ontario MRI Grant	-	1,393
Other	3,251	1,912
	<u>\$ 98,761</u>	<u>\$ 87,268</u>



### Summary of Expenses

Student Recognition	\$ 88,358	\$ 79,508
Champion Teacher Award	685	406
Site and Judging	10,171	11,769
Outreach	250	250
Administration	7,320	6,617
	<u>\$106,784</u>	<u>\$ 98,550</u>



Excess of Expenses over Revenue	<u>\$ (8,023)</u>	<u>\$ (11,282)</u>
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### Disbursements to Students

Participation awards	3,515	4.0%
Trophies and medals	2,294	2.6%
Photography and audio visual	393	0.4%
Merit awards	11,530	13.1%
Special awards	23,880	27.0%
Canada Wide Science Fair	35,017	39.6%
Intel International Science and Engineering Fair	11,729	13.3%
	<u>\$88,358</u>	<u>100.0%</u>

### Administration Expenses

Administrative	2,192	29.9%
Registration	699	9.6%
Fundraising	757	10.3%
Bank charges and interest	525	7.2%
Volunteers	943	12.9%
Raffle expenses	88	1.2%
Ceremony and sponsor recognition	2,116	28.9%
	<u>\$7,320</u>	<u>100.0%</u>

## Sponsorship

Title Sponsor			
 <b>ArcelorMittal</b> DOFASCO   HAMILTON			
Diamond (\$10,000+)	Platinum (\$5,000+)		Gold (\$2,500+)
 <b>MOHAWK</b> COLLEGE   <b>Primary Fluid Systems Inc.</b>	 <b>THE HAMILTON SPECTATOR</b> <small>thespec.com</small>   <b>McMaster University</b>  	Lifetouch McMaster Innovation Park TaylorLeibow Accountants Union Gas Limited	
Silver (\$1,000+)	Bronze (\$500+)		
Air Canada Canadian Linen & Uniform Service Halton Catholic District School Board Halton District School Board Hamilton Chamber of Commerce Hamilton Economic Development Hamilton-Wentworth Catholic District School Board Hamilton-Wentworth District School Board Hillfield Strathallan College John Deere Canada ULC LiUNA Local 837 Masters Insurance Ontario Power Generation	BattleGoat Studios D.E.N.M. Engineering Ltd Dufferin Construction GM BluePlan Engineering Hamilton Amateur Astronomers	Hamilton Community Awareness & Emergency Response MMM Group Omicron Machining	
	Friends		
	Conservation Halton Electrical Construction Association Hamilton Hamilton Wentworth Occasional Teachers	IEEE Hamilton Section NewAE Technology Nikola Tesla Educational Corporation Optimist Club of Stoney Creek Partners in Research	
Benefactors			
Banting & Best Level (\$1000+)	Bondar Level (\$500+)*	Polanyi Level (\$200+)	McGill Level (\$50+)
Mr. Mike & Mrs. Sue McNally Mr. David Walker	Mr. George Geczy Mr. Steve and Mrs. Cathy Hayman Mr. Peter & Mrs. Susan Olynyk	Mr. Dan and Mrs. Debbie Bowman Mr. John & Mrs. Eleanor O'Flynn	Mr. Jim Casey Ms. Cathy Hamilton Ms. Joy Liu Ms. Nicola Simmons Mr. Norman Young Ms. Jodi Younger
* In addition to the donors listed, BASEF has donors who wish to remain anonymous.			

Sponsors donating in-kind services continued to help us provide an exceptional experience for BASEF participants. Key donations included: printing, posters, newspaper advertising, trip winners' jackets, photo ID tags, accounting, air baggage fees, and web hosting.

