

**Rya Adronov**  
Best in fair

# 2020 ANNUAL REPORT



**Bay Area Science and  
Engineering Fair**



# A Challenging Year

This year, the Bay Area Science and Engineering Fair (BASEF) celebrated its 60<sup>th</sup> anniversary! Since 1961, the fair has provided a platform for tens of thousands of grade 7-12 (13) students to showcase their passion for science, technology, engineering, and mathematics. Many have become world-class researchers, doctors, engineers, and successful business owners in their pursuits of excellence!

The fair this year was exceptionally exciting and challenging. Due to the COVID-19 pandemic, BASEF decided to prioritize community safety and not hold a physical fair just weeks before the scheduled start. This required developing an online format for the first time.

The fair was not what was envisioned for our 60<sup>th</sup> Anniversary, but in some ways will be even more memorable. We've had many positive comments from students, judges, and donors. Thank you!

*Students: "Thanks to BASEF for allowing us to present out projects and compete for prizes."*

*Special Award Donor, Alex Ross of Gowling: "I know how hard these students have worked, and it is important to do whatever we can do to reward their initiative in these difficult times. These are the very students whose innovations will help to prevent this sort of thing in the future... Current scientists are former students."*

*Judge, Dr. Gail Martin, The Research Institute at St. Joe's Hamilton: "We are grateful for the actions you are taking to ensure the Fair can proceed in some form at this difficult time."*

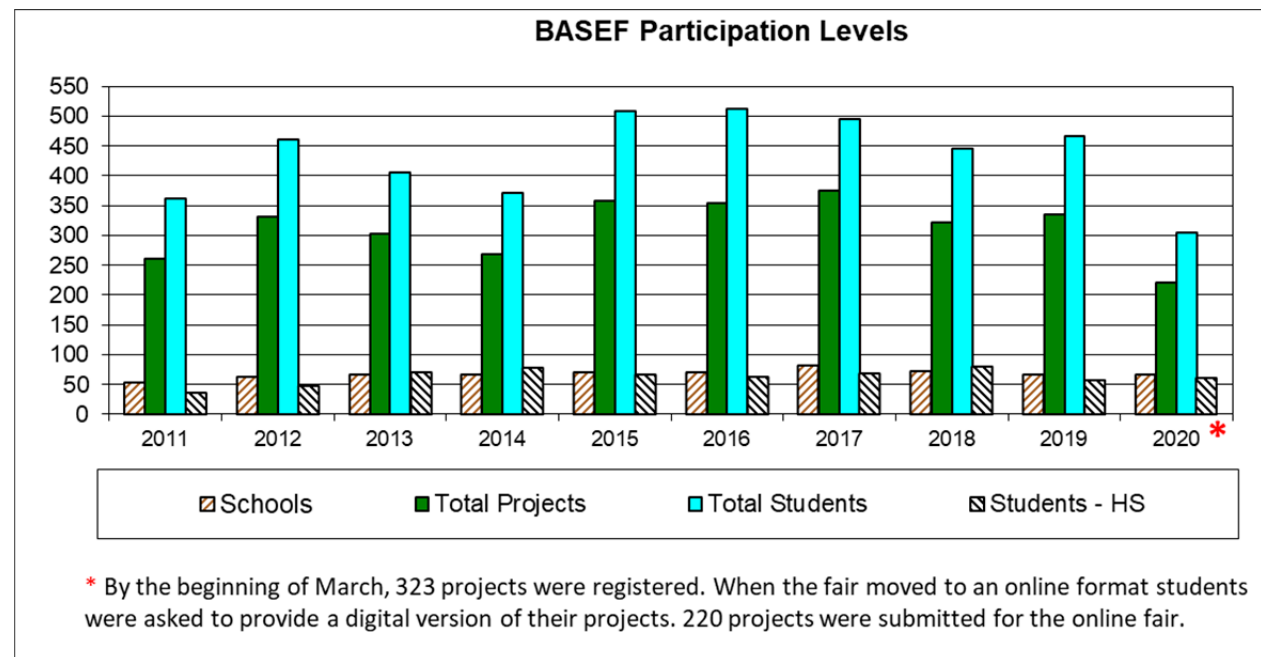
Other science fairs across Canada are now looking to us for guidance and help should there need to be online fairs again in the future. We were one of the only regional science fair across Canada to hold a fully competitive online science fair and it was a huge success.



# Results

## 2020 Participation

220 projects	304 students	66 schools
243 grades 7 & 8	32 grades 9 & 10	29 grades 11 & 12
193 female students	111 male students	



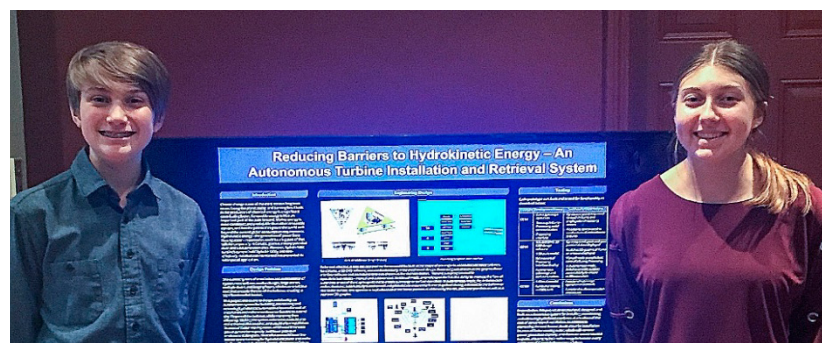
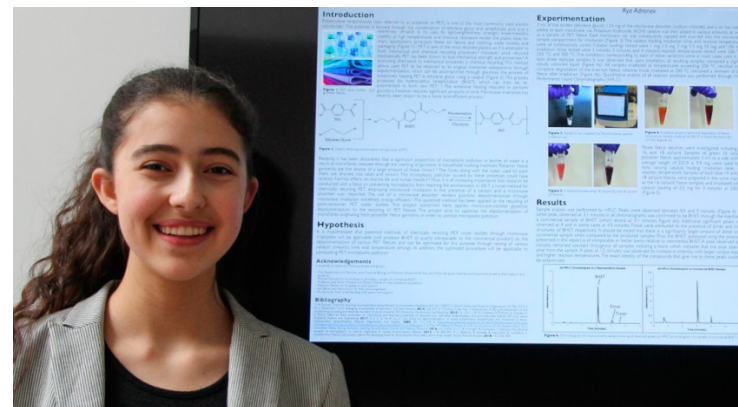


# Awards Best In Fair

## FIRST - Rya Adronov

Optimizing the Depolymerization of PET Fleece Microplastics through Microwave Irradiation

Westdale Secondary School  
Hamilton-Wentworth District School Board



## SECOND - Mitchell & Maya Clapperton

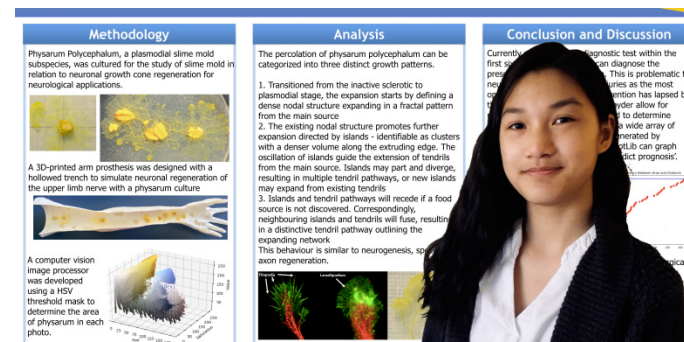
Reducing Barriers to Hydrokinetic Energy - An Autonomous Turbine Installation and Retrieval System

Westdale Secondary School  
Hamilton-Wentworth District School Board

## THIRD - Caroline Huang

Computing Neuroregeneration: Simulating Cognitive Function with Physarum AI

Abbey Park High School  
Halton District School Board



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# Awards Merit and Special

## Merit Awards

Sponsored by Primary Fluid Systems Inc.

Merit awards recognize the tremendous amount of thought and effort that has gone into the projects entered into BASEF. They are a result of an extensive judging process undertaken by over 139 volunteer merit judges who have come from educational institutions, local governments, business and industry in our regions.

All participants in BASEF were eligible to win Merit Awards. Each merit award winner receives a cash prize and a \$1,000 entrance scholarship that may be used toward first year tuition at either Mohawk College or Sheridan College.



Merit awards were worth \$9,920:

Gold – 12 projects, 17 students

Silver – 67 projects, 80 students

Bronze – 56 projects, 80 students

## Special Awards

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

47 Special Award donors

179 special awards

\$27,920 in prize money

Scholarships worth \$14,500

## Total awards given out in excess of \$240,000

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# International Fair Team



As an affiliated fair, BASEF may send five high school projects to the Regeneron International Science and Engineering Fair (ISEF). Congratulations to the BASEF 2020 Regeneron ISEF Team. This year ISEF was cancelled, so instead of the trip each Team member received a \$500 cash award from BASEF and recognition as a BASEF International Fair Award Alumni.

Rya Adronov	Optimizing the Depolymerization of PET Fleece Microplastics through Microwave Irradiation	Westdale Secondary School HWDSB
Maya Clapperton & Mitchell Clapperton	Reducing Barriers to Hydrokinetic Energy - An Autonomous Turbine Installation and Retrieval System	Westdale Secondary School HWDSB
Faith Hoang	Tomato's Vitamin C and Antioxidant properties	King's Christian Collegiate Independent
Caroline Huang	Computing Neuroregeneration: Simulating Cognitive Function with Physarum AI	Abbey Park High School HDSB
Lily Smales	Using Machine Learning to Determine the Composition of New Vaccines for Novel Viruses	Oakville Trafalgar High School HDSB

# National Fair Team



Thanks to the generous support of its sponsors, each year BASEF selects students to represent our region at the Canada-Wide Science and Engineering Fair. Unfortunately, this year's event was cancelled. Despite this, there were many excellent projects that deserved this recognition. Congratulations to the following students who were announced as the BASEF 2020 CWSF Team. Each team member received a \$500 cash award from BASEF and recognition as a BASEF CWSF Alumni.

Om Agarwal	Doc-Typ "Standardizing & Augmenting Clinical Psychiatric Diagnostics through Deep Learning & NLP"	Home Schooling Independent
Vesa Barileva	Transforming industrial food waste into biodegradable food packaging films	Abbey Park High School HDSB
Ciara Chorney & Tessa Sigi	Shining The Light On Bacteria	Blessed Sacrament HWCDSB
Christina Hanna	Treatment of Heavy Metal Contaminated Water using Reverse Osmosis Membranes	King's Christian Collegiate Independent
Gurnimal Kaur	The RLX-Glove: A Tool for Managing Stress	North Park Collegiate and Vocational School GEDSB
Max Maccarrone & Demilade Olawunmi	Rise Up! - (A study of how different airfoil shapes affect lift and airflow in a wind tunnel)	Oakville Christian School Independent
Zara Maccarrone & Oceana Stephan	Let's Get Crackin'	Oakville Christian School Independent
Morgan McCourt	Pooch Power	Oakville Christian School Independent
Kibo Nagasaki	Underwater Communication With Blue Light	Oakville Christian School Independent
Ethan Robinson & Ethan Morden	What can Humans hear...And does it last forever?	Our Lady of Lourdes HWCDSB
Misimi Sanni	The Painting Robot	Oakville Christian School Independent
Anthony Saturnino & Joseph Saturnino	ISO-PAN MRK 8: An Advanced A.I. Medical/Social Isolation Robot	Bishop Ryan Secondary School HWCDSB





# Comments from the Judge-In-Chief

BASEF 2020 was certainly an extraordinary event!

We went from planning our normal in-person judging to a totally on-line judging event within three months. Every effort was made to keep the judging consistent and comparable to previous years. The major exception was that the judges did not have an opportunity to talk with the students. Students submitted their projects through a secure portal. Each project was judged a minimum of four times. Once again, we were able to provide the French students with French speaking judges.

Going with an online format necessitated several changes – a video replaced the traditional interview, photos of the backboard, journal, abstract and final report were all sent as PDF files. The Merit Judging Form was modified to reflect these changes. Also new this year, the judges were invited to submit comments on the projects which were then collated and shared with the students.

This year we had 126 experienced merit judges that were supported by 13 category chairs. Everyone involved with the judging process did an exceptional job in these unusual times especially the BASEF Registrar, George Geczy and his assistants.

I want to sincerely thank each of the merit judges and category chairs for their support and willingness to take on the challenges of this year's judging.

I congratulate all the students for their outstanding projects, dedication to science fairs and ability to adapt and meet the challenges faced in 2020. You are all winners!

Donna Stack-Durward  
BASEF Judge-In-Chief



# Student Advisors

Every year, students apply to volunteer as student advisors to our BASEF Organizing Committee. We thank this year's student advisors for all their input:



Rya Adronov

Sabrina Mogus

Lily Smales

# Bursary Program

BASEF provided twenty-two bursaries to students in financial need who were nominated by their teachers. This program encourages students to participate in project-based science and to complete a project.

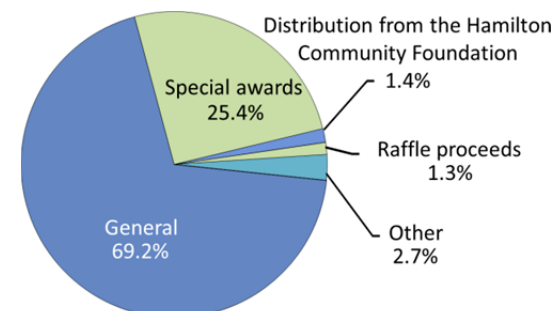
*"This is a great program to show that equal opportunities are given to all regardless of your socio-economic background! Seeing that our marginalized students are being recognized and are given these amazing opportunities will just boost their confidence and that confidence will stretch into so many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

Helena Porco,  
St Lawrence Elementary, HWCDSB

# Financial Summary

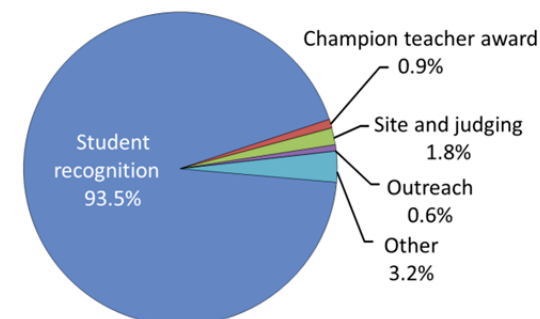
For the year ended August 31, 2020 (unaudited)

Revenue	2020	2019
General	\$ 69,793	\$ 103,455
Special awards	25,670	30,900
Distribution from the Hamilton Community Foundation	1,442	1,434
Raffle proceeds	1,285	2,640
Other	2,726	2,432
	<u>\$ 100,916</u>	<u>\$ 139,987</u>



## Summary of Expenses

Student recognition	\$ 63,597	\$ 104,996
Champion teacher award	610	606
Site and judging	1,192	15,788
Outreach	431	364
Other	2,178	10,368
	<u>\$ 68,008</u>	<u>\$ 132,122</u>
Excess of Revenue Over Expenses	<u>\$ 32,908</u>	<u>\$ 8,739</u>



## Disbursements to Students

Bursaries	\$ 180
CWSF awards	11,270
ISEF awards	5,657
Merit awards	9,810
Participation awards	5,289
Prize expenses	4,022
Special awards	27,369
	<u>\$ 63,597</u>

## Other Expenses



Administrative	\$ 1,401
Bank charges	204
Marketing & publicity	418
Raffle expenses	144
Volunteers	11
	<u>\$ 2,178</u>

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# Sponsors

Diamond (\$10,000+)	Platinum (\$5,000+)	Gold (\$2,500+)	
  <b>Primary Fluid Systems Inc.</b>	Enbridge Hamilton & District Heavy Construction (HAND) Association The Hamilton Spectator McMaster University	Interprovincial Corrosion Control Taylor Leibow Accountants & Advisors	
Silver (\$1,000+)	Bronze (\$500+)		
Appleby College Bay Area Health Trust Burlington Hydro City of Hamilton Economic Development Department Distinctive Engineering Inc. Halton Catholic DSB Halton DSB Hamilton-Wentworth Catholic DSB Hamilton-Wentworth DSB Hillfield Strathallan College John Deere Canada ULC King – KPM Industries Masters Insurance (Hamilton) Nikola Tesla Educational Corporation Ontario Power Generation Posner Metals	A.T. McLaren Limited D.E.N.M. Engineering Hamilton Amateur Astronomers Hamilton Chamber of Commerce Hamilton Community Awareness and Emergency Response (CAER) Hamilton Pakistani Physicians Association Hamilton Police Retirees Association	Hamilton Police Senior Officers Association Judy Marsales Real Estate Lanhack Consultants Inc. Optimist Club of Stoney Creek Rotary Club of Hamilton AM Rotary Club of Waterdown Society of Tribologists & Lubrication Engineers – Hamilton Chapter Vizyia Corp.	
	Friends (\$250+)		
	Conservation Halton Electrical Construction Association of Hamilton Hamilton Association for the Advancement of Literature, Science and the Arts	NewAE Technology Inc. Talkit.ca Inc.	
Benefactors*			
Banting & Best Level (\$1000+)	Bondar Level (\$500+)	Polanyi Level (\$200+)	McGill Level (\$50+)
Mike and Sue McNally Michael Taylor	Steve and Cathy Hayman Peter and Susan Olynyk Tom and Roslynne Crawford	Helen Barton Dan and Debbie Bowman Steven and Kathy Brent Renato and Enza DeTina John and Eleanor O'Flynn Dr. Nicola Simmons	Jim Casey Dr. Minna Damani Michelle Lafontaine Linda Millar Beverly Shepard Norman Young
* In addition to the donors listed, BASEF also has donors who wish to remain anonymous.			

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Note: Sponsors donating in-kind services help us provide an exceptional experience for BASEF participants. Key in-kind donations included: Printing, posters, newspaper advertising, accounting, and web hosting.

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**Big ideas ...  
Infinite possibilities**

**Bay Area Science and  
Engineering Fair**

c/o  
143 Hyde Park Ave.,  
Hamilton ON,  
L8P 4M8

basef@basef.ca  
<https://www.basef.ca/>

Registered Charity #  
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## OUR MISSION:

*BASEF inspires young people to positively impact the world through science, technology, engineering and mathematics. BASEF provides opportunities for students to showcase their innovations and discoveries.*

2020 has been a trying time for everybody. Research shows that, in trying times, smiling and laughing have positive effects on overall wellbeing. So, using an evidence-based approach ...

Did you hear the joke about the germ?  
Never mind, I don't want to spread it around.

Why do they call it the novel coronavirus? It's a long story....

The quality of these jokes is strictly the responsibility of the editors.  
BASEF assumes no responsibility for the quality or accuracy of the jokes.



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