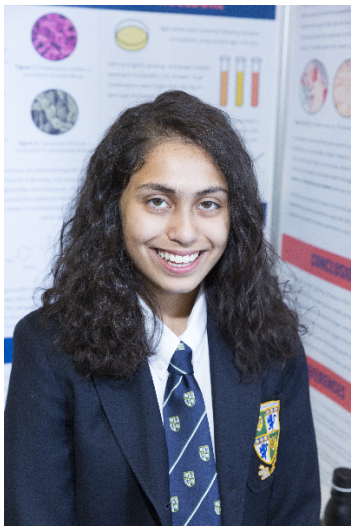
CWSF 2018 - Ottawa, Ontario



Riya Gandhi

A Cure for What ?Ails' You: A Study of the Antibacterial Effects of Garlic

Challenge: Health
Category: Intermediate
Region: Vancouver Island
City: Victoria, BC
School: Glenlyon Norfolk School
Abstract: I tested the antibacterial effects of ginger, ginseng, and garlic against common oral. After discovering that ginseng worked best in preventing the growth of oral bacteria, I extracted a compound called allicin from garlic, to determine why it did not perform as well. Results are currently progressing. This research looks to create a dissolvable tablet for the teeth that prevents the growth of harmful bacteria.

Biography
My name is Riya Gandhi, and I am in Grade 9 at Glenlyon Norfolk School. The inspiration for my project came from my grandmother, who would always tell me to use natural ingredients to cure my illnesses. Naturally, was skeptical, so I decided to test the antibacterial effects of garlic, ginseng and ginger (common ingredients found in naturopathic remedies). Later, I extracted allicin, an organosulfur compound from garlic to further determine it's effects on oral bacteria. For further investigations, I would like to test the effects of S-allyl-L-cysteine sulfoxide (found in garlic) against a carcinoma squamous-cell to discover the potential reduction effects. I would encourage other students to participate in Science Fair, as it is extremely fun and an amazing learning opportunity! I am involved in dance (jazz, hip hop, contemporary, bahratnatyam and bollywood), Model UN, Piano, and Debate. As well, I love to do volunteer work for local projects in my community. Science Fair has been an amazing opportunity, and I hope to participate again next year!

Awards	Value
Excellence Award - Intermediate - Bronze Medal Sponsor: Youth Science Canada	
Western University Scholarship Bronze Medallist - $1000 Entrance Scholarship Sponsor: Western University	$1 000
Total	$1 000

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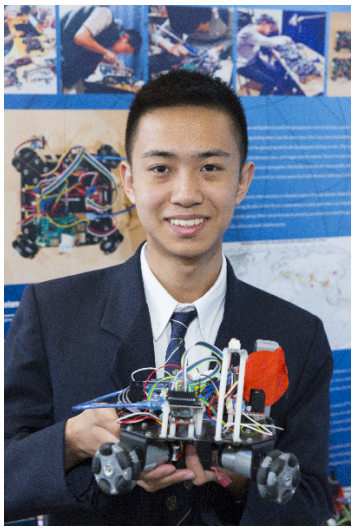

Albert Yang

Control for Groups of Robots - Collaborative Search and Rescue

Challenge: Innovation
Category: Senior
Region: Vancouver Island
City: Vancouver, BC
School: Glenlyon Norfolk School
Abstract: In this project, I designed a group of robots to do collaborative search and rescue in ruins caused by natural disasters or in extreme environments. The robots can communicate and make decisions independently, dividing a rescue mission into sub-missions for everyone in the group. Once the target is found, the robot will send a message to inform others that the mission has been completed.

Biography

I am a grade 11 student at Glenlyon Norfolk School in Victoria, BC. I initially developed my interest in robotics in my childhood. I remember my mother buying me some Lego when I was 4, and since then robotics has become my passion. Robotics has provided me so much happiness. As I grew older, I have started learning about more complicated robots. On May 12th, 2008, a moment that I would never forget, was when the first great Wenchuan earthquake occurred. My grandparents were in Sichuan, a place very near to the epicenter of the earthquake. I remembered the suffocating feeling when I first saw the news, where rescuers were working as groups in the hazardous environment, trying their best to save more victims. I thought if robots could do the job for humans, both safety and efficiency of completing the task could be significantly increased. I plan to do further investigations on optimizing the algorithms for the robot group to increase their analytical abilities in changing environments. Doing a project requires ones' passion and perseverance. Be bold and creative. Believe in yourself and do what you love.

Awards	Value
Excellence Award - Senior - Bronze Medal Sponsor: Youth Science Canada	
Carleton University Entrance Award Senior Bronze Medallist - $1,000 Entrance Award Sponsor: Carleton University	$1 000
University of Ottawa Entrance Scholarship Senior Bronze Medallist - $1000 Entrance Scholarship Sponsor: University of Ottawa	$1 000
Western University Scholarship Bronze Medallist - $1000 Entrance Scholarship Sponsor: Western University	$1 000
Total	$3 000

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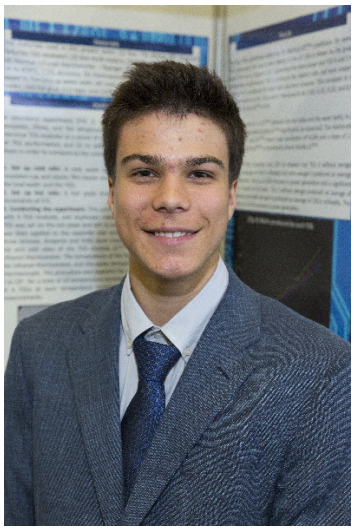

Nattan Telmer

Defining Characteristics of Bismuth Telluride TEGs

Challenge: Innovation
Category: Intermediate
Region: Vancouver Island
City: Victoria, BC
School: Mount Douglas Secondary
Abstract: My project is about determining the faults with Thermo-Electric Generators (devices that turn a heat difference into electrical power). And then by analyzing these faults determine a way to improve the device. In my case I insulated them with Aerogel, a material which has half the conduction rate of air. By doing this I increased their output power therefore making them a more viable technology.

Biography

My name is Nattan Telmer. I'm a grade 10 student attending Mount Douglas Secondary School. Currently I am a competitive rower and spend a large portion of my time training. In the future I plan on entering an engineering school and becoming a material or chemical engineer. My inspiration for this years project came from my previous projects as they utilize the same devices. This experience allowed me to identify some problems which I could solve. I am very excited to continue my work and already have multiple ideas on what I can do to further improve Thermo-Electric Generators. I think that anyone who wants to work on a science fair project should start thinking about a concept long before the fair and write down all of their ideas because at least one of them will most likely be pretty good.

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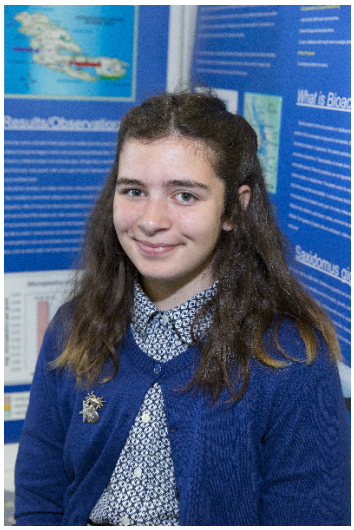

Lauren Grace Ohnona

Microplastics in Our Local Shellfish

Challenge: Environment
Category: Junior
Region: Vancouver Island
City: Pender Island, BC
School: Pender Islands Elem-Secondary

Abstract: For this project, I tested three beaches on Pender Island, in search of microplastics in the clams. This is an important topic because these tiny plastics work their way up the food chain, harming animals and poisoning our oceans. I wanted to get an idea of just how much of these microscopic plastics were accumulating inside these shellfish.

Biography

I am a grade 8 student from Pender Island, B.C. where I attend an ecological school program. Playing violin, singing, drawing and movie making are some of my hobbies. Because I live on a small island, it's no surprise that I love the ocean. I have been inspired to focus the last two years of scientific research on the subject of microplastics in the ocean. Last year, I studied how synthetic microfibers were being released into the ocean via our washing machines. This year, I wanted to see if microfibres were making their way into the local food chain. I collected and analyzed clams from three beaches and processed them in a lab setting. My results showed that microfibers are in the clams I analyzed. Synthetic microfibers are becoming a huge problem for our oceans and I am very worried. In the next months I will be thinking about how I can dive into this subject further. I'd like to start educating the public and begin studying possible solutions. I am also interested in contacting washing machine manufacturers, and maybe even start a petition asking that governments and legislation address the matter of microfiber pollution.

Awards	Value
Excellence Award - Junior - Silver Medal Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - $2000 Entrance Scholarship Sponsor: Western University	$2 000
Total	$2 000

CWSF 2018 - Ottawa, Ontario

Arlo Watts

Oven in an Envelope: Reflections on Parabolas & Solar Energy

Challenge: Energy
Category: Junior
Region: Vancouver Island
City: Victoria, BC
School: Central Middle School

Abstract: A parabola is a mathematical curve that can be calculated using a simple mathematical equation. All the light that hits a parabola's surface from directly above will be reflected towards a specific focal point. This makes parabolas very good at focusing light and concentrating energy. I experimented with three different parabolic curves, all with the same properties, to see which one focused the most light.

Biography

I was inspired to do this project when I first learned that there is an infinite number of possible, calculable, parabolic, curves. During the experimentation I also designed a cheap solar oven using only cardboard and reflective paper, which can all be recycled or composted. The solar ovens can be taken apart and put into a medium sized envelope, hence the project name, Oven in an Envelope. I plan to do additional experiments with my parabolic solar ovens to test their capabilities in different climates and places. I am extremely interested in physical and mathematical sciences, but I also very much enjoy programming games on the website Scratch and building Lego models.During the seasons, I play volleyball on the school team, gymnastics at Victoria Gymnastics and Hockey at the Oak Bay Recreation Center. As advice to other students thinking about doing a project, do it. It is really fun to explain your passions to the public and even if you don't win any prizes, it will definitely still leave you with good memories. But if you are keen on winning prizes, projects that are related to protecting the environment are heavily favored.

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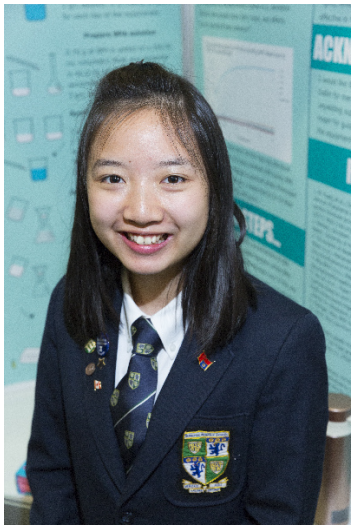

Melody Cheng

Purifying Water: Using Beta-CD-CA Polymer to Remove Bisphenol A

Challenge: Environment
Category: Intermediate
Region: Vancouver Island
City: Victoria, BC
School: Glenlyon Norfolk School

Abstract: I studied the polymer called beta-cyclodextrin cross-linked with citric acid in order to filter bisphenol A out of aqueous solutions. Research suggested bisphenol A is an endocrine-disrupting chemical that has the potential to cause chronic diseases, for instance, cancer, diabetes etc. There are currently no regulations in Canada to ban the use of bisphenol A in bottled water and usable plastic containers.

Biography

I wanted to expand my knowledge about water since there are still many things about water that are a mystery to us. I was inspired to do my project when I read about scientists that found evidence of a new phase of water (published in November 2016). I hope in the future we as human beings will have the opportunity to explore and understand the topic fully. In my opinion, the essential thing when it comes to doing a science project is an open, passionate heart towards the subject. There may be failures along the way but learning how to not let these burdens pull you down will lead to you an astonishing experience. In my spare time, I am a member of the Model United Nations team at my high school and I also run a TEDx club.

Awards	Value
Excellence Award - Intermediate - Silver Medal Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - $2000 Entrance Scholarship Sponsor: Western University	$2 000
Total	$2 000

Youth Science Canada
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Nicolas Fedrigo

Spinal Fusions: Redesigning the Pedicle Probe to Prevent Vertebral Breaches

Challenge: Innovation
Category: Senior
Region: Vancouver Island
City: Victoria, BC
School: Claremont Secondary School

Abstract: Twenty-nine percent of patients who undergo spinal fusions suffer from vertebral breaches which cause complications such as infection and paralysis. I addressed this through developing the first pedicle probe that uses tissue-type density gradient analysis to prevent breaches. Additionally, this technology is the first to incorporate guided, personalized procedures in spinal fusions allowing for those with complications such as osteoporosis to receive this treatment.

Biography

My name is Nicolas Fedrigo and I am a Grade 11 student from Claremont Secondary School. This is my third time attending the Canada-Wide Science Fair. My inspiration for this year's project is that twenty-nine percent of patients who undergo spinal fusions suffer from vertebral breaches which cause complications such as infection and paralysis. I addressed this through developing the first pedicle probe that uses tissue-type density gradient analysis to prevent breaches. Additionally, this technology is the first to incorporate guided, personalized procedures in spinal fusions allowing for those with complications such as osteoporosis to receive this treatment. My experiences in science fairs taught me about the field of biomedical engineering and I am inspired to pursue a career in this field. The improved pedicle probe was the result of an inquiry I had, and so I urge science fair participants to study what they have a passion for. In my spare time, I am president and founder of the Claremont Secondary Science and Engineering Club, along with other volunteering experiences. I have also been a swim instructor at a local recreation centre for elementary school children for over three years now.

Awards	Value
European Union Contest for Young Scientists - Trip to EUCYS Sponsor: The Gwyn Morgan and Patricia Trottier Foundation	$2 000
University of Toronto Engineering Award - Senior Sponsor: University of Toronto, Faculty of Applied Science & Engineering	
Challenge Award - Innovation - Senior Sponsor: Youth Science Canada	
Excellence Award - Senior - Gold Medal Sponsor: Youth Science Canada	
Carleton University Entrance Award Senior Gold Medallist - $4,000 Entrance Award Sponsor: Carleton University	$4 000
Dalhousie University Faculty of Science Entrance Scholarship Senior Gold Medallist - $5000 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	$5 000
UBC Science (Vancouver) Entrance Award Senior Gold Medallist - $4000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	$4 000
University of Manitoba Entrance Scholarship Senior Gold Medallist - $5000 Entrance Scholarship Sponsor: University of Manitoba	$5 000
University of Ottawa Entrance Scholarship Senior Gold Medallist - $4,000 Entrance Scholarship Sponsor: University of Ottawa	$4 000
Western University Scholarship Gold Medallist - $4000 Entrance Scholarship Sponsor: Western University	$4 000
Platinum Award - Best Senior Project Sponsor: Youth Science Canada	$1 000
Total	$29 000

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