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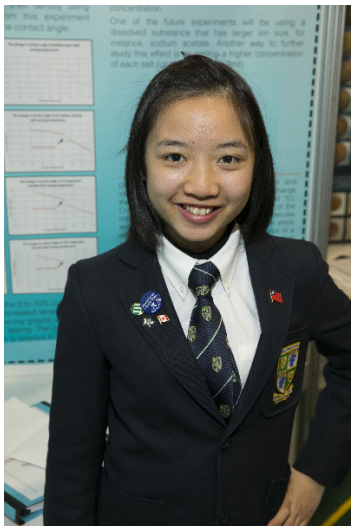

Melody Cheng

A New Phase of Water: Is this measurable with surface tension?

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

Abstract: Recently, scientists discovered a new phase of liquid water, where a difference in hydrogen bonding exists from 40 to 60C. I wanted to know if this phenomenon could be observed in different concentrations of magnesium chloride and sodium chloride. I measured the surface tension of water by analyzing the contact angle in a droplet and was able to measure a variation in the crossover temperature.

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.

Awards	Value
CAP Physics Prize - Intermediate Sponsor: Canadian Association of Physicists	$750
Excellence Award - Intermediate - Bronze Medal Sponsor: Youth Science Canada	
Western University Scholarship Bronze Medallist - $1000 Entrance Scholarship Sponsor: Western University	$1 000
Total	$1 750

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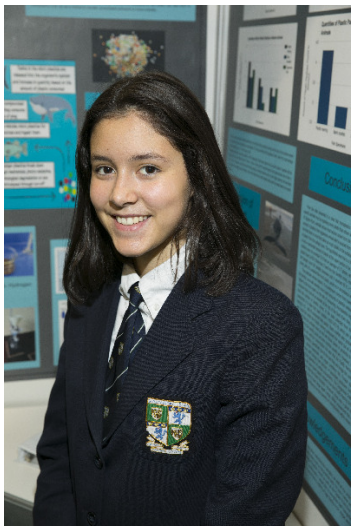

Anastasia Castro

Fluctuation of Oceanic Microplastics at Depth and Effects on Marine Ecosystems

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

Abstract: Samples from various depths in the ocean at Ogden Point in Victoria, BC were collected and tested for traces of microplastics. Additionally, three organisms from three different ocean depths and locations (ex. surface and bottom feeders) were dissected and checked for traces of microplastics to see which animals in the ecosystem have heightened chances of ingesting these particles.

Biography

I generated the idea for my project due to my work with Surfrider, a worldwide organization that focuses on protecting the oceans, including from plastics. Since I do a lot of work talking to various municipalities about banning single use plastic bags I used this as an opportunity to further my knowledge about the local circumstances of microplastics. And as such for my career I would like to join my interest in science with my love of environmentalism. I have a great love of the outdoors, hiking as well as indoor rock climbing, which I pursue avidly and have competed in. If given the opportunity to further my project I would most likely focus on the chemical content in microplastics as well as the effect they have on marine animals. In terms of advice to others who wish to start their own science fair project I would recommend choosing a topic you are passionate about, this makes the project so much more engaging and interesting!

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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Annie McLeod

Marine Brown Algae Extracted Fucoxanthin and Phlorotannin in DSSC

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

Abstract: For my project, I decided to investigate the use of marine brown algae in dye-sensitized solar cells. Marine brown algae was selected for use due to the presence of phlorotannin and fucoxanthin; two pigments that contribute to the UV and visible light absorbance of dyes extracted from the algae. The cells created in this project were able to produce up to 197 mV of electricity.

Biography
My name is Annie McLeod and I am a Grade 10 student at Glenlyon Norfolk School in Victoria, British Columbia. The inspiration for my project came from a kayak trip that I participated in through my school's Marine Adventure Program. During the trip, our guide suggested that we pop the bulbous tips of the rockweed and use the liquid inside as a hand sanitizer. Naturally, I thought this suggestion was bizarre so I decided to put the seaweed's antibacterial properties to the test. Upon researching the antibacterial effects of fucus distichus, I learned about a compound called a phlorotannin and its suggested UV absorption properties. This led me to studying dye sensitized solar cells. Applications of this work could be in creating blinds for windows that absorb UV and produce electricity for your home. My advice for other students is to start working early and persevere through challenges that come up. It is worth the effort!

Awards	Value
Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada	$250
Western University Scholarship Gold Medallist - $4000 Entrance Scholarship Sponsor: Western University	$4 000
Total	$4 250

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Ella Chan

Oral Infections: Does lactoferrin inhibit the bactericidal action of eugenol?

Challenge: Health
Category: Senior
Region: Vancouver Island
City: Victoria, BC
School: Glenlyon Norfolk School

Abstract: I tested the bactericidal action of eugenol on oral bacteria with and without the presence of lactoferrin. Through doing this I was able to determine if lactoferrin (a protein present in saliva) inhibits the effect of eugenol. Functional group changes in eugenol were also tested to determine which substituents were responsible for the bactericidal action.

Biography
I am currently a Grade 11 student at Glenlyon Norfolk School in Victoria, BC. I have been running an educational science YouTube Channel called "Sci-Files" (youtube.com/scifiles) for four years now and produce monthly science videos. I have also produced a children's book set called "STEM Files" that contains five books that promote STEM Subjects and revolves around female STEM contributors. In the future I plan on pursuing pharmacology; this inspired my project as it was a way for me to explore a non-antibiotic treatment for a disease. I plan on continuing my project by testing more components of saliva alongside eugenol, as well as other similar compounds such as catechol. In my future career, I hope to study treatments for diseases such as nephrotic syndrome, a kidney disease which one of my brothers has. I also plan on continuing to promote STEM education and outreach through my videos. My advice for students thinking about Science Fair is to never doubt your ability to create an interesting project!

Awards	Value
Excellence Award - Senior - Bronze Medal Sponsor: Youth Science Canada	
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	$2 000

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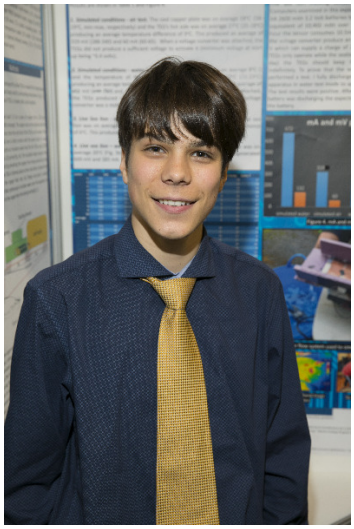

Nattan Telmer

Powering Animal Trackers With Thermal Electric Generators (TEGs)

Challenge: Innovation
Category: Intermediate
Region: Vancouver Island
City: Victoria, BC
School: Arbutus Middle School
Abstract: This project uses thermal electric generator (TEG) technology to extend the operational life of tracking sensors that provide key information about sea lion life history, which is needed for conservation efforts. The TEGs exploit the temperature differential between a sea lion's body and the surrounding air or water to generate sufficient electricity to operate the sensors indefinitely.

Biography

My name is Nattan Telmer, I am a grade eight student at Arbutus Global Middle School in Victoria, BC. I speak English, French, and Portuguese. I speak Portuguese because part of my family is from Brazil where I was born. I go there every year and live in a rural fisherman's village on the north eastern coast where there are beaches and coral reefs and manatees. I play competitive soccer, racket sports, ski in BC's amazing mountains, sail with the racing team in Victoria, and of course surf and skim board in Brazil's warm waters. Brazil is where I first learned to love the outdoors and sports and where I became incredibly curious about nature and science, including about how to generate electricity because the power there often fails. I have won several awards in different competitions including in music and creative endeavors in and outside of school. I have participated in science and math fairs since grade four. I was very happy to win first overall in the science fair this year and love the topic of electricity.

Awards	Value
S.M. Blair Family Foundation Award - Intermediate Sponsor: S.M. Blair Family Foundation	$750
Youth Can Innovate Awards - Intermediate Sponsor: The Gwyn Morgan and Patricia Trottier Foundation	$750
Excellence Award - Intermediate - Silver Medal Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - $2000 Entrance Scholarship Sponsor: Western University	$2 000
Total	$3 500

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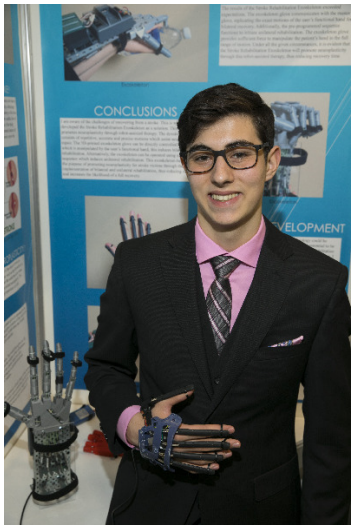

Nicolas Fedrigo

Stroke Rehabilitation Exoskeleton

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

Abstract: The Stroke Rehabilitation Exoskeleton was designed to induce neuroplasticity in stroke survivors. The use of an exoskeleton glove and master glove allow for both unilateral and bilateral rehabilitation. This activates more regions of your brain for increased neuroplastic benefits. Engaging in this unique robotic-assisted therapy reduces the amount of time required for stroke recovery while increasing the likelihood of a full recovery.

Biography

My name is Nicolas Fedrigo and I am a Grade 10 student from Claremont Secondary School. This is my second time attending the Canada-Wide Science Fair and my project is the Stroke Rehabilitation Exoskeleton. My grandfather previously dealt with the difficulties of post-stroke recovery, and so I was inspired to engineer a solution. This robotic-assisted therapy glove reduces the amount of time required for stroke recovery, while also increasing the likelihood of a full recovery. In the future, I would like to implement the concept of the Stroke Rehabilitation Exoskeleton for the use of therapies for ALS and MS. This science fair project taught me about the field of biomedical engineering and I am now inspired to pursue a career in this field. The Stroke Rehabilitation Exoskeleton 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 for elementary school children for over two years now.

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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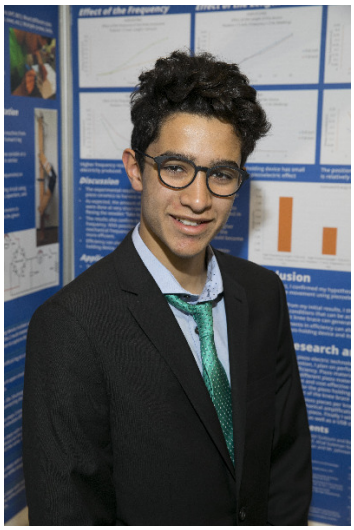

Yassin Guitouni

The KNEEd for Power: Harvesting Biomechanical Energy

Challenge: Innovation
Category: Intermediate
Region: Vancouver Island
City: Victoria, BC
School: Mount Douglas Secondary

Abstract: In my project, I tried to harvest energy from human motion. I did this by building a knee brace that uses piezoelectric elements and the force of the knee to generate electricity. Then, I made some adjustments to the speed of movement as well as to the knee brace and measured the energy produced. I built a wooden leg to conduct my experiments.

Biography

My name is Yassin Guitouni, I am 14 years old and a grade 9 student at Mount Douglas Secondary School in Victoria, BC. I am born in Quebec City, but my parents are both from Tunisia. I speak French, English and Arabic fluently. When I was in grade 6, I lived in Tunisia for 6 months where I attended the International School of Carthage and experienced a European-style schooling system. I love travel and discovering new cultures. I enjoy participating in math competitions such as the Gauss and Pascale. I am also very athletic and active person. I play soccer and track and field competitively, and enjoy basketball, football, snowboarding and other sports for fun. Also, up until last year I swam competitively (reaching provincials) with Pacific Coast Swimming club, Provincial champions for the last 5 years. I have been doing science fair on my own initiative for 4 years now and I really enjoy doing it. It is my passion for sports that inspired me to explore ways to harvest energy from the human body movements. This is going to be my first trip to Canada Wide Science Fair and I hope it will not be my last.

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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