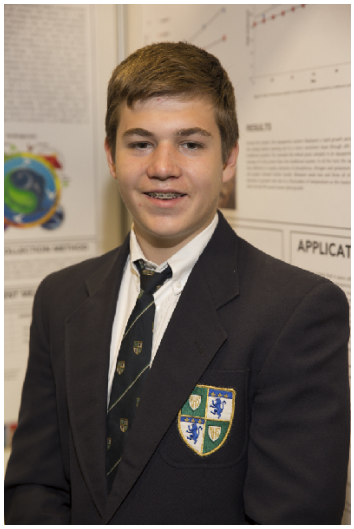
CWSF 2016 - Montreal, Quebec



Bjorn Svorkdal

Barrel-ponics: Is it an improvement over traditional farming?

Challenge: Resources
Category: Intermediate
Region: Vancouver Island
City: Saanichton, BC
School: Glenlyon Norfolk School
Abstract: For my science fair project I tested an barrel-style aquaponics system that uses ideas from hydroponics and aquaculture to grow food. Aquaponics uses fish waste and ammonium that is cycled through the system and processed by nitrifying bacteria to be used as plant nutrients. In my project I tested the height of lettuce and the weight of wheat grass in both systems.

Biography

I was inspired to do my aquaponics project when visiting Sweden in 2013. Our family friends had just heard about aquaponics and this inspired me to investigate this idea further. I plan to do further research and see how I can improve the pre-existing system by making it an easy put together system and adding a place with surface area for bacteria to grow on. This project was a hard project and can be done if your willing and eager to put in the time. I also participate in competitive weightlifting, I have also participated in 4H poultry and competitive rowing.

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

CWSF 2016 - Montreal, Quebec

Nicolas Fedrigo

Core Temperature Control Glove

Challenge: Innovation
Category: Intermediate
Region: Vancouver Island
City: Victoria, BC
School: Claremont Secondary School
Abstract: The Core Temperature Control Glove is a revolutionary method of rapidly cooling core body temperature for physical performance benefits. This does so by assisting in the thermoregulation process. By applying low temperature and high pressure to the palm of the hand, the cooling glove encourages heat exchange through the specialized capillaries. By decreasing the core body temperature, the athlete has a faster recovery time.

Biography

I was inspired to design my Core Temperature Control Glove since I am a competitive swimmer interested in medical sciences. When athletes compete in a warmer pool, heat exhaustion and a slower recovery time becomes apparent. This is why I engineered my core body temperature regulator to create "colder pool" conditions for various sports. It does so by accelerating the thermoregulation process in the palm of the hand. There are multiple applications I plan on expanding my core Temperature control glove. It can be used with hot water to warm people with hypothermia, as well as athletes in cold weather sports. It could also decrease fevers by lowering the core temperature, or assist labour intensive employees in a hot environment through cooling. Finally, this device can help to treat a broken bone, sprain or post-operation ACL surgery by applying pressure with a combination of hot and cold circulating water to reduce swelling, and therefore decrease recovery time. This glove can remarkably enhance one's physical abilities. I did this project as a result of an inquiry I had, and so I would urge potential investigators to study what they have a passion for.

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

CWSF 2016 - Montreal, Quebec

Natasha Grimard

Entomonoodles: An Exploration Of Entomophagy's Applications To Refugee Nutriti

Challenge: Innovation
Category: Senior
Region: Vancouver Island
City: Victoria , BC
School:
Abstract: This research and innovation demonstrated that entomophagy could be a possible solution for refugee nutritional needs. This was shown by creating an "entomonoodle" made of termites targeted towards adults in long-term Subsaharan African refugee camps and subsequently demonstrating both its' nutritional optimality and the physical creation of it with transglutaminase. This provides a foundation for future optimization of entomophagy-based nutrition and applications in resource-stricken

Biography

My name is Natasha Grimard. When I started my project, I lived in the Ottawa region; I did the bulk of my research in Tanzania, where I lived for a year, and competed this year in BC, as I currently attend Pearson College UWC in Victoria. I got very interested in entomophagy (the field of study of eating insects) a year prior to starting my research because my father brought home a leaflet from a seminar which he had attended by chance on the topic. As it lies at the intersection of several of my passions (gastronomy, sustainability, anthropology, international development and humanitarian aid), I was immediately fascinated with the field as a whole. In my project, I demonstrated that it was possible to create insect food products that are nutritionally balanced for refugee populations; my next goal is to make this into a reality. To do so, I aim to collaborate with other researchers and businesspeople to create a plan to apply this in a real refugee camp setting. The advice that I have for other young scientists- particularly young innovators- is "Go for it, and if someone tells you it's not possible, go for it even more."

Awards	Value
The Manning Innovation Achievement Award - Senior Sponsor: Ernest C. Manning Awards Foundation	$500
Excellence Award - Senior - Silver Medal Sponsor: Youth Science Canada	
Dalhousie University Faculty of Science Entrance Scholarship Senior Silver Medallist - $2500 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	$2 500
UBC Science (Vancouver) Entrance Award Senior Silver Medallist - $2000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	$2 000
University of Ottawa Entrance Scholarship Senior Silver Medallist - $2000 Entrance Scholarship Sponsor: University of Ottawa	$2 000
Western University Scholarship Silver Medallist - $2000 Entrance Scholarship Sponsor: Western University	$2 000
Total	$9 000

CWSF 2016 - Montreal, Quebec

Colette Reimer

Fuel Vapour: An enhanced method for fuel efficiency

Challenge: Energy
Category: Intermediate
Region: Vancouver Island
City: Victoria, BC
School: St Margaret's
Abstract: My project was to demonstrate if an engine could run on fuel vapor alone. I hypothesized that if an engine can run on fuel vapour alone, than the engine could run more fuel efficient, and with less emissions. After completing several, tests I proved my hypothesis to be true, and my results showed fuel vapor to be a minimum of 25% more efficient.

Biography
My name is Colette Reimer, and I am a Grade 9 student at St. Margaret's school in Victoria, British Columbia. For my project I designed a system that allowed a small engine to run on fuel vapor alone. I tested if the system would allow the small engine to run for a longer period of time. If I were to do this experiment again I would like to test larger engines running on more power. This project interested me, as I will soon be sixteen, and I know that gas can be very costly when driving. Not only am I very passionate about science, but I have also been involved in competitive triathlon for over 3 years. This year I am excited to have received a spot to travel to the 2016 B.C. Summer Games for triathlon. After I finish Grade 12, I am interested in continuing my education in health-sciences. One of the jobs I am attracted to is becoming a nurse anesthesiologist. The advice I would give to students doing a science fair project would be to pick a topic you are interested in, as it makes the experience more valuable.

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

CWSF 2016 - Montreal, Quebec

Alec Krawciw

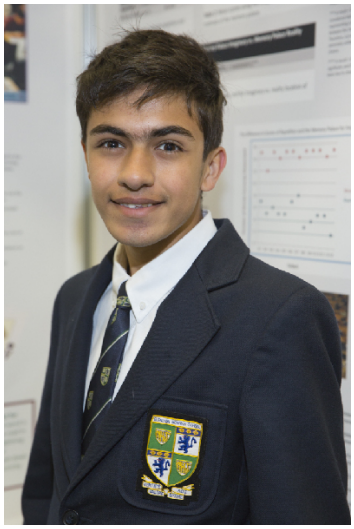
Graphene: The Next Generation of Printed Circuits

Challenge: Innovation
Category: Senior
Region: Vancouver Island
City: Victoria, BC
School: Mount Douglas Secondary
Abstract: Graphene was discovered in 2004 and has since been actively researched due to its strength and conductive properties. In this project, the conductive, and capacitive effects of this material are explored using a less expensive method of fabrication: graphene oxide laser reduction.

Biography
My name is Alec Krawciw and I am a Grade 11 student at Mount Douglas Secondary in Victoria, BC. I have been involved in science fair since Grade 6. I have done various projects relating to energy and engineering. I am also very involved in robotics through FIRST Tech Challenge. My team has qualified for the world championships for two tears in a row. Outside of science, I also play the piano and the viola and I play in a string quintet. I was inspired to do this project because of the recent flood of new discoveries related to graphene. I want to continue researching graphene and reduced graphene oxide to continue trying to make printed circuits. Some advice I would give those doing a project next year would be to keep experimenting with your project even if what you discover is not exactly what you set out to do.

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

CWSF 2016 - Montreal, Quebec



Eli Ramraj

Improving Memory: Spatial vs. Rote Memory

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

Abstract: This study compares different mnemonic techniques to improve memory, repetition (rote) and the memory palace (spatial). Participants who used the memory palace memorized more words than when using rote memory. Exploring the use of a physical versus a mental environment for the memory palace, it was found that there is no difference between results. The memory palace does not rely on especially creative people.

Biography

I am a Grade 9 student with a wide variety of passions. The inspiration for my project on improving memory came from my grandfather, who has Parkinson's, which interferes with his memory ? I wanted to find a way to increase the power of memory, and unlock the potential of the human mind. This experiment focused on developing minds, in adolescents, but I would like to progress with trying to help the elderly, using the findings I have discovered here. In testing rote memory against the memory palace, not only did I confirm that it was a superior method, but when I tested my own developments on the environment in which the technique is used, imagination or reality, I concluded that this technique will work for people no matter how creative you are. Other passions of mine include debating, having won the Vancouver Island regionals two years in a row, and this year advancing to nationals. I also do wall climbing, badminton, and ultimate frisbee. Over the last five years I have self published four novels, focusing on science-fiction/fantasy, which I enjoy immensely.

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

CWSF 2016 - Montreal, Quebec

Nattan Telmer

Thermo-electric generators to charge electronic devices in the wilderness

Challenge: Innovation
Category: Junior
Region: Vancouver Island
City: Victoria, BC
School: Arbutus Middle School
Abstract: A device was designed to use thermal electric generators (TEGs) to exploit the temperature difference between natural waters and ambient air to charge batteries in the wilderness. It was tested under three climatic conditions, subtropical, temperate, and nordic. It performed best in summertime nordic conditions but can be further designed and upscaled to output significant power in most natural environments.

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
Challenge Award - Innovation - Junior Sponsor: Youth Science Canada	
Excellence Award - Junior - Gold Medal Sponsor: Youth Science Canada	$250
Western University Scholarship Gold Medallist - $4000 Entrance Scholarship Sponsor: Western University	$4 000
Total	$4 250