



CWSF 2009 - Winnipeg, Manitoba



Jody Maclsaac, Tabaitha Brett

Cold Snaps

Division: Engineering / None

Category: Junior

Region: Wood Buffalo

City: Fort McMurray, AB

School: Fr M Beaugard Education Community Centre

Abstract: In our project "Cold Snaps" we tested different types of batteries to see which one would last the longest in cold weather. We got our idea from when we go skidoing or doing other outdoor winter activities and when we try to take pictures the batteries always die in our camera. So we tested to see which would last longest.

Biographies

Jody - Hi, my name is Jody Maclsaac. I am 13 years old. I have been going to Father Beaugard all of my life. My favorite things to do are play with my friends, play my saxophone and do outdoor activities. I have recently been awarded Honors with Distinction and the Spirit of Beau Award. I am honored to be a part of the National Science Fair and be able to go to Winnipeg, MB.

Tabaitha - Hi. My name is Tabaitha Brett. I am 13 years old. I go to Father Beaugard school. I enjoy playing with friends, going to the movies, doing outdoor activities, playing with my dog and reading. I am honored to go to Winnipeg as a finalist of Wood Buffalo. I am very excited and I am hoping to have a great time.





Youth Science Canada
Sciences jeunesse Canada

CONNECTING STUDENTS WITH POLAR SCIENCE

- Encourage your students to submit a research proposal for a \$500 research grant!
- Have your students ever been to the Poles? Here is their opportunity!

SERIOUS FUN!

In this Issue:

- Youth Science Month: Serious? Yes. Fun? You know it!
- Polar Education Week: The Polar Experience is in the Classroom! Grab Your Mittens!
- Celebrating Canada's Young Scientists: 3 Outstanding Talents!



March is Youth Science Month

Nurturing Curiosity and Scientific Impulse Through Project-based Science

Did you know that every year over 500,000 Canadian students participate in science-based projects? That's the same number as are registered in minor hockey!

Youth Science Canada aims to spark the science bug in students from coast-to-coast. Over 100 local, regional and provincial organizations affiliated with Youth Science Canada will host science fairs over the next few weeks. Nearly 500 young scientists will be selected to present their work and compete nationally at Youth Science Canada's **Canada-Wide Science Fair in Winnipeg, May 9 to 17**. Youth Science Canada is grateful to the **Province**

of Ontario's Ministry of Research and Innovation for its generous support of Youth Science Month in Ontario.

Thanks to the commitment and support of sponsors, volunteers, teachers, parents and scientists, Youth Science Canada helps Canadian youth have serious fun through project-based science.

Unfreeze Lesson Plans!

Youth Science Canada Brings Polar Education Resources to Teachers' Fingertips.

Global warming is a hot topic of debate internationally and is hitting Canada extremely close to home. The Arctic Ocean ice is rapidly disappearing. By 2040 this region may have a completely ice-free summer. Indigenous species, plant life and northern cultures are already suffering and will continue to be impacted by the effects of global warming. Now is the time to educate our students about all the poles have to offer: **YSC presents Polar Innovation Week!**

Polar Innovation Week will take place **March 21-29, 2009** with the intent of educating Canadian students on the exciting and largely unfamiliar polar regions!

Youth Science Canada needs **YOUR** help! As teachers of Canada's young scientists, you are among Youth Science Canada's greatest resources, so the **Polar Innovation Week Educator Resource Site** has been created to assist you and your students in uncovering the mystery of these remote regions.

Youth Science Canada has created a teacher-oriented website, **Polar Innovation Week Educator Resource Site, www.polarinnovationweek.ca**. It is the one-stop-shop for all your polar-based education tools. The website will provide an interactive and communicative engine to assist you in engaging your students in polar-based science activities with **lesson plans, in-class activities, podcasts, research websites and video!**

2008 ENGANA PLATINUM AWARD, SENIOR AND BEST IN FAIR AWARD \$57,825 IN AWARDS

Plastic Not Fantastic

Daniel Burd, with an extra-curricular schedule so full it can make one's head spin, is not your typical grade 11 student. Daniel is a member of Student Council, Charity Controller, Environment Club, Norse Star newspaper and four sports teams. He is a peer tutor, volunteers at the Kitchener-Waterloo Science and Technology Children's Museum and helps organize heritage events in Kitchener-Waterloo. He also runs a not-for-profit neighborhood dog-walking service for people with disabilities!

Since Daniel's first science experiment at the age of six, his fascination with the way things work has caused him to pose the many questions he has considered in science fair projects over the years.

Approximately 500 billion plastic bags are used annually worldwide and billions of those are dumped into the oceans. Countless wildlife, including

sea lions, whales, birds and turtles ingest the plastic bags and die every year. Daniel's empathy towards this growing international concern led him to a scientific breakthrough that may help reduce the detrimental effects of plastic on the environment.

Daniel hypothesized that if polyethylene-degrading microorganisms did exist in nature, then it would be possible to isolate them and use them for degradation of plastic bags. Daniel's hypothesis proved to be correct!

He exposed a variety of bacteria commonly found in the environment to tiny pieces of polyethylene – the material used to produce plastic shopping bags. Daniel found that one strain of bacteria was highly efficient at using the plastic as a source of essential nutrients. Combining two microbial strains of *Sphingomonas* and *Pseudomonas* achieved the highest rate of degradation.



Daniel Burd
Waterloo Collegiate Institute
Waterloo, Ontario

Daniel's project could be an important step towards investigating the potential for industrial scale biodegradation of plastic bags, which could save countless wildlife while reducing the amount of polyethylene in landfills.



\$10,200 IN AWARDS – 2008 ENCANA PLATINUM AWARD, INTERMEDIATE

Voice-Activated Navigation for the Blind

Nirusan Jayaranjan is no stranger to the Canada-Wide Science Fair, as the 2008 competition in Ottawa was his third! He enjoys practicing his alto saxophone and playing soccer, basketball and football with his friends, but his true passion is mechanics.

Nirusan was concerned upon hearing that in Canada there are over 68,000 blind individuals and 319,000 visually impaired people, and an estimated 45 million blind individuals worldwide. Nirusan decided it was his time to do something about it. His compassion turned into persistence and finally success!

The visually impaired have traditionally navigated using the symbolic white cane. Nirusan decided to revolutionize the white cane by using radio frequency

identification (RFID) technology, PBASIC stamp (a microcontroller version of high-level computer programming), infrared sensors and a transceiver. He succeeded in creating and programming a voice-activated system that would allow the visually impaired to navigate homes and buildings independently! Pretty impressive for such a young scientist!

Nirusan hopes that his technology can be used with motorized wheelchairs to help users navigate nursing homes and hospitals thereby improving the lives of the visually impaired.

As a host committee member, Nirusan is looking forward to welcoming fellow young scientists to Canada-Wide Science Fair 2009 in Manitoba this May.



Nirusan Jayaranjan
Sturgeon Heights Collegiate
Winnipeg, Manitoba

\$8,500 IN AWARDS – 2008 ENCANA PLATINUM AWARD, JUNIOR

Garlic's Potential as a Biological Seed Treatment

Brent Murphy developed and tested an environmentally friendly seed treatment that can increase a farmer's yield of wheat, soybean and peas. So just how did this grade eight student make such a discovery? Curiosity and great entrepreneurial skills!

When not busy reading, playing badminton or running, this young scientist is growing garlic at his family farm to sell in the market with his brother. Brent began to wonder what reasons he could provide to his clients to encourage them to purchase more garlic. Knowing that garlic contains anti-fungal components, it dawned on him...

"I think that garlic could be a potential seed treatment for crop plants."

Brent put his hypothesis to the test. He planted spring wheat and peas and soybeans (both treated and untreated) in carefully planned and randomized test plots on farms in Fort Whyte and St Adolphe, Manitoba. Additionally, Brent planted all three seed types (both treated and untreated) in a laboratory to do controlled testing at 20°C and at 5°C.

Success! The anti-fungal agents in garlic increased the seed vigour! The treated wheat, soybean and peas planted in the farm plots showed higher crop yields. Similarly, garlic-treated seeds at both temperatures in the laboratory also produced higher yield. Not only did Brent identify an environmentally friendly alternative seed treatment – which earned him \$8,500 in awards – but he also



Brent Murphy
Arthur A. Leach Junior High School
Winnipeg, Manitoba

developed a new market for his garlic! Where does this ambitious thirteen-year-old see himself in the future? "I plan to become a food scientist and run my own food product development company by the time I am 30!"

Thanks to New NWMO Sponsorship

Youth Science Canada to Field a Larger Team Canada-MILSET

A significant new sponsorship from the **Nuclear Waste Management Organization (NWMO)** to Youth Science Canada will help 44 students from Ontario, Québec, New Brunswick and Saskatchewan to participate in the **2009 Team Canada-MILSET Expo-Sciences International (ESI) in Tunisia July 23 to 29**. Held every two years, this non-competitive event, which brings together young people from over 75 countries to exchange ideas and compare projects, aims to instill a culture of science by fostering networking and international collaboration.

The NWMO's investment, together with funding from the **Province of Ontario, Hydro-Québec** and **The Canadian Commission for UNESCO**, will allow Youth Science Canada to field a much larger Team Canada and to expand its participation. For the first

time, Saskatchewan, Ontario and New Brunswick will select students from their Canada-Wide Science Fair teams.

"As an organization with a strong science and public engagement program, the NWMO is committed to inter-generational learning. We support youth efforts to advance scientific knowledge and help apply it in a way that matters to people," said **Ken Nash, NWMO's President and CEO**.

2007 Team Canada-MILSET ESI participant Haley Robinson, who travelled to Durban, South Africa, knows the value of this rare opportunity. "I do not think anything can reproduce this first hand experience. The people I talked to, the sights I saw and the connections I made, have all contributed to my development."

Based in Toronto, the **Nuclear Waste Management Organization** was established in 2002 by Ontario Power Generation Inc., Hydro-Québec and



Haley Robinson of La Ronge, Saskatchewan
2007 Team Canada-MILSET ESI Participant

New Brunswick Power Corporation in accordance with the Nuclear Fuel Waste Act to assume responsibility for the long-term management of Canada's used nuclear fuel.

Polar Innovation Week Engages Canadian Students!

Students can apply for a polar research grant or expedition!

Sparking interest is sometimes all it takes to inspire young minds to accomplish great things. **Canada-Wide Science Fair** competitors will have the opportunity to engage in an interactive discussion panel with a polar research expert. **Youth Science Canada** is also inviting young scientists in grades 7-12 to submit a research proposal for a chance to be awarded a **\$500 scholarship grant** to carry out their research.

What better way to learn about the Arctic than to travel there? That is why **Youth Science Canada** is offering thirteen students a chance to **participate in an Arctic expedition** – by land or sea – to experience Canada's north first-hand and conduct hands-on research alongside

polar scientists. For further information regarding student research grants and the Arctic expedition and to access the resources and lesson plans, please visit www.polarinnovationweek.ca

