

# Innovatis

Ernest C. Manning Awards Foundation

2009 Young Canadians Issue

Volume 10, Issue 3, August 2009

*Profiling the Winners:*

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## The Young Canadian Innovation Awards

### *Homegrown Innovators Starting Early*

The Young Canadian Program makes a point to recognize Canada's own up and coming young innovators. Introduced in 1992 by the Ernest C. Manning Awards Foundation, these awards reach out to Canada's youth to promote innovation by putting a spotlight on their ideas and simultaneously motivating them to continue on in their quest for answers.

Every year at the Canada-Wide Science Fair, a team of special awards judges is provided an opportunity to witness Canada's brightest ideas emerging from every field. Awards to be distributed include eight \$500 Manning Innovation Achievement Awards. From these eight, four are singled out to receive an additional \$4000, the Young Canadian Innovation Award, and an invitation to attend the Foundation's annual Awards Dinner and Ceremony. There they will be surrounded by leading Canadian innovators and sanctioned laureates whose work has been praised and celebrated.

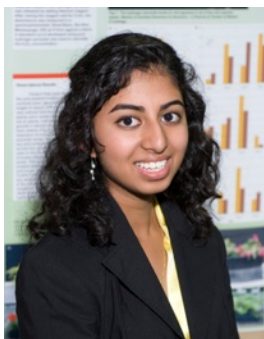
Our film crew interviews winner Ryan Peng for a "Manning Moment" video (*right*); all student winners of Young Canadian Innovation Awards and Achievement Awards (*below*).



"At the dinners, you get to meet innovators, inventors, scientific researchers, and other Young Canadians – it's a great group of people,"

*Sri Chaudhuri, Young Canadian Winner of 1994*

## Young Canadian Innovation Awards



### Supriya Nilam

*St. Catharines, ON*

- Mayor's Youth Council Advisory Member
- A musician who enjoys tutoring & volunteering



### Ryan Peng

*Saskatoon, SK*

- 6-time National Champion as an international math competitor
- A musician who enjoys tutoring and volunteering
- Enjoys piano, tennis, & chess

These students were chosen to attend the Manning Innovation Awards Gala on September 18, 2009 in Vancouver, where they will receive \$4000 from the Foundation for their innovative projects.

## People and Plants: Not So Different After All...

Media-saturated as we are, most of us have heard at one point that anti-oxidants are great for our bodies and many products out there are now advertising that they contain them. With this idea in mind, Supriya Nilam decided to expand on this knowledge to see if these same anti-oxidants benefited plant life as well. Testing six types of

ornamental plants, she meticulously cared for them while she treated some with anti-oxidants and the rest without over the course of three months. She found that the

plants treated with anti-oxidants had a large increase in growth and biomass. This increased growth means that anti-oxidants could perhaps be used to augment fertilizers. Such a discovery could influence research in finding ways to deal with food shortages or for developing bio-fuels. Aware of the impact of such an idea, Supriya has already applied for a patent.



## FLASH, Can You See Me Now?

Compact digital cameras are easy to use and their small size makes them ultra convenient to tow around. However their accuracy is not always as precise as a consumer, one in particular, would desire. Ryan Peng knew that the quality of a picture is determined by the rapidity of the speed of the flash in relation to the shutter speed. To take clear photographs of say a tennis game which is one of Ryan's hobbies, a quick, bright flash is necessary. So Peng tapped into his mathematical brilliance to upgrade the camera to solve this problem. He first developed a mathematical model for the clipped flash output and then validated it through experimental data. This knowledge allowed the use of flash predictably. In this way he could use the camera to measure the flash that was developed by using a grey card and by allowing the use of external flash at shutter speeds higher than the maximum sync speed. To help others who encountered the same problem to calculate the exact flash exposure necessary, he created a computer program that can determine settings for correct exposure when using flash with a shutter speed set higher than 1/250 second. Future tourists and amateur photographers will have Ryan Peng to thank when his innovation comes to light.

Two Awards  
Sponsored by  
Petro-Canada





### Annie Wang (left)

Calgary, AB

- Volunteers and plays piano for seniors
- In NASA club, debate club, and model UN club

### Julie Xu (right)

Calgary, AB

- Member of the swim team and yearbook club
- Involved in research at the U of C



### Caitlin Martin Newnham

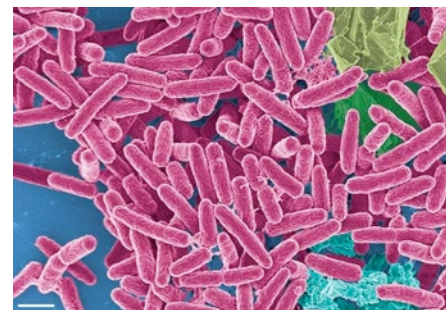
London, ON

- Volunteers and is a member of many academic extra-curricular activities
- Enjoys snowboarding, acting, and photography

## Fighting Bacteria for a Breath

Sponsored by  
the Dave Mitchell Family

In Caucasians, Cystic Fibrosis (CF) is the most common genetically inherited disease and there is currently no cure, though if the machinations of Julie Xu and Annie Wang have anything to do with it, this won't be for long. It is known that *Pseudomonas aeruginosa* is a bacteria that causes the infections that lead to CF but recent research also identified that a bacteria called *Prevotella* is also a possible cause. Taking off from today's forefront of research developments, Julie and Annie decided to develop a method to co-culture the two bacteria types with the hope of better understanding how these bacterium can co-exist in the lungs of CV patients. The results showed interspecies interaction between the two types of bacteria and Julie and Annie reflected that bacteria like *Prevotella* needs to be targeted in the lungs of the patients. It is clear that further research is needed and the pair has already brainstormed other possible topics of research to aid in the investigation to better understanding the disease so that it can be cured.



## Hot Peppers as an Organic Pain Killer

Sponsored by  
the Jim McEwen Family

Twenty years of watching her mother suffer from back and neck pain caused by a car accident and Caitlin Martin Newnham was convinced that there had to be a better way. A way that was pain free to administer and that didn't involve any negative side-effects. It seemed that medication was not the answer and so she went looking for a compound that was. She stumbled upon Capsaicin, the oil found in hot peppers that causes a burning sensation and numbs pain. As a natural substance it was easy to obtain and caused no harmful side-effects for the body. The next step was for Caitlin to see if it could be administered successfully as a pain-killer. As testing the degree of pain on lab rats is considered unethical because they feel pain, Caitlin was faced with the new challenge of finding a better subject. In came the

leeches, invertebrates that don't feel pain but only respond to it and whose neuron structures are similar to humans.

Testing the effects of Capsaicin on leeches, the results indicated that leeches could be used as a model for pain research and that Capsaicin is an efficient pain killer that doesn't cause pain going in and doesn't leave painful side effects going out.

Caitlin had discovered an organic alternative method to existing pain medications and to continue the development on this subject, she plans to publish her findings.



## Manning Innovation Achievement Awards

Save the Date!

This year's Manning  
Innovation Awards  
Gala will take place  
on September 18<sup>th</sup>,  
2009 in Vancouver.



THANKS TO OUR PARTNERS:



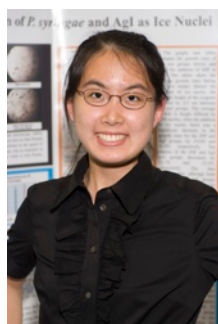
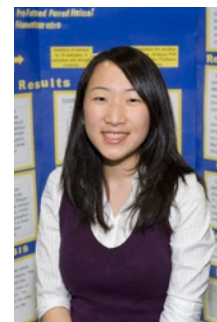
Arthur J.E. Child Foundation  
The Jim McEwen Family  
The Dave Mitchell Family  
Friends & Laureates of  
the Foundation

These students were awarded \$500 as winners of the Manning Innovation Achievement Awards at this year's Canada-Wide Science Fair

### Linda Liu: "Rhubarb to the Rescue!"

*Surrey, BC*

Testing rhubarb extracts on Tau proteins (part of the cause of Alzheimer's disease) to see if it would inhibit its aggregation and stop them from forming. The results showed that the extract did indeed do so due to compounds such as anthraquinones and tannins. Further testing could lead to better treatment of the disease and one day perhaps even a cure.



### Mary Zhao: "Grasping Water"

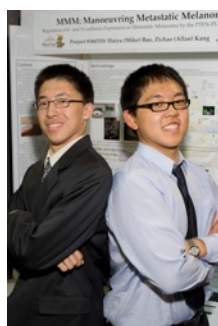
*Vancouver, BC*

Zhao went about proving that Ice Nucleating Protein (INP) is more environmentally friendly and commercially viable for cloud seeding than silver iodides (Agi). It was tested on ryegrass to observe the results that INP was just as good as Agi at making water freeze for cloud seeding but unlike Agi, it did not inhibit the growth of plants or damage the soil ecosystem.

### Susie Pan & Hillary Dawkins: "Extending the Operational Lifespan of Dye Sensitized Solar Cells"

*Waterloo & Wellington, ON*

The pair attempted to extend the operational lifespan of Dye Sensitized Solar Cells which are less costly and much better for the environment to create than the Silicon based ones. Benzoic Acid (a food preservative) was used to prevent bacterial growth and sealing agents were used to prevent evaporation of liquid electrolytes. The effects examined proved positive and showed that these cells hold a promising future in power technology.



### Mike Bao & Allan Kang: "Maneuvering Metastatic Melanoma"

*Edmonton, AB*

Their research was conducted on the molecular mechanisms of melanoma. Looking at the effects of a tumour suppressor protein, PTEN on E-cadherin production, they were able to visualize PTEN and E-cadherin cells. It was gleaned that adding PTEN to cancer cells in a culture dish could bring back E-cadherin production and reverse the cancerous properties of the cells.