

Innovatis

Ernest C. Manning Awards Foundation

VOLUME 9, ISSUE 2, AUGUST 2008

**YOUNG CANADIAN
INNOVATORS ISSUE**

CONTENTS

- 1 A Glimpse into the Future
- 2 The Young Canadian Program
Rebecca Wolfe: *Identifying *Ciona intestinalis* Via COX1 Primers*
- 3 Ai-Quoc Bui: *Dying For A Sleep*
Anthony Brohan:
Improving Predictive Text
Zamir Merali and Ryan Willick:
Go with the Flow
- 4 The 2008 Manning
Innovation Achievement Award
Winners



**Ernest C. Manning
Awards Foundation**

38th floor, 421-7 Avenue SW,
Calgary, AB T2P 4K9
T: 403.645.8277
www.manningawards.ca

Executive Director

Mr. D. K. Bruce Fenwick, M.Sc., P. Geoph.

Executive Assistant

Ms. Marilyn Golding

Canadian Charitable Organization No.
13189 5930 RR0001

A Glimpse into the Future

The Next Generation of Canadian Innovation

Ranging from the impact of invasive species to driver fatigue, the 2008 winners of the Young Canadian Program once again demonstrated the breadth of youth interests and ingenuity.

Selected annually at the Canada-Wide Science Fair, the Young Canadian Program is open to senior students. This year's fair, back in Ottawa for the first time since 1962, featured 478 finalists and 378 projects. Young engineers, environmentalists, medical researchers, physicists and mathematicians vied for nearly \$1 million in cash, scholarships and exclusive science opportunities.

The Manning Young Canadian Award winners included those with unique innovations through to ingenious adaptations of existing technologies. A microbe-based technique that speeds the breakdown of plastic in landfill; a needle-free way to "inject" medication; the redeployment of external airbags developed for space exploration into earth-based cars – all showcased critical thinking, acute observation and a desire to find better answers to old problems.

Energy, the environment, medicine, the automotive sector, surgery and DNA techniques: the diversity of the next generation of Canadian innovation is already evident.



The 2008 Canada-Wide Science Fair kicked off on May 11 with opening ceremonies at the Canadian Museum of Civilization in Ottawa. Past competitors have included astronaut and photographer, Roberta Bondar, and award-winning science journalist, Peter Calamai.

MANNING MOMENTS



Full details on the Young Canadian Award winners are available at www.manningawards.ca/awards/youngcanadians/index.shtml.

Watch for their Manning Moments video on Global TV, our website and YouTube in early October.

LOOK FOR US ON YOUTUBE

Thanks to Casey Banner, winner of the Young Canadian Innovation Award in 2007, many Manning Moments are now up on YouTube.



Rebecca Wolfe, 17, developed a genetic test to identify the vase tunicate: an invasive species threatening PEI and Nova Scotia's aquatic ecosystems.

The Young Canadian Program

In 1992, The Ernest C. Manning Awards Foundation introduced the Young Canadian Program to recognize talented youth with an innovative streak. Open to senior students, grades 10-12 and CEGEP competing at the Canada-Wide Science Fair, it is intended for projects that demonstrate ingenuity, originality, advanced development and potential benefit. In 2008, the program attracted 84 projects – over 70% of all senior participants.

A judging team, led by the Executive Director, with representatives from the Selection Committee, identified eight projects for the Innovation Achievement Award, presented at the CWSF in May. Four of these projects also receive a \$4,000 Young Canadian Innovation Award, to be presented at the Foundation's annual Awards Gala.

As part of its commitment to building a culture of innovation and an awareness of Canadian achievement, the Foundation establishes a direct connection between the four Young Canadian Innovation Award winners – the emerging generation of innovators – with their adult counterparts. Welcomed as full members of the distinguished group of Manning Laureates, they participate fully in the National Awards Celebrations.

Offering a total of \$20,000 in prizes, over the past 16 years, the Young Canadian Program has recognized the work of over 175 young scientists from across the country.

THE 2008 MANNING YOUNG CANADIAN INNOVATION AWARD WINNERS

This year's winners of the Manning Young Canadian Innovation Awards will be featured in Manning Moments videos. Watch for them on Global TV, our website and YouTube in October.

Rebecca Wolfe Summerside, Prince Edward Island

Identifying *Ciona intestinalis* Via COX1 Primers

The troublesome sea squirt, *Ciona intestinalis*, also known as the vase tunicate, is a small, tube-like invertebrate that attaches itself to buoys, harvesting gear, ships' hulls and docks. In Nova Scotia and PEI, far from its natural habitat, it disrupts aquatic eco-systems, wreaking havoc on aquaculture equipment and PEI's mussel growing industry.

Current methods to detect the vase tunicate include suspending plates in the water and waiting – up to four months – for larvae to attach and grow, or directly inspecting water samples for larvae. But distinguishing *C. intestinalis* from other tunicate species at the larval stage is very difficult. Wolfe designed a genetic test, a DNA primer, which matched a gene sequence unique to *C. intestinalis*. The primer can be used with the polymerase chain reaction technique to amplify to identify even minute amounts of the vase tunicate's DNA in water samples.



Award sponsored by Petro-Canada



Ai-Quoc Bui, 18: his engineering project also won a silver medal in the CWSF's Automotive division.

Ai-Quoc Bui Windsor, Ontario

Dying For A Sleep

Driver fatigue accounts for about 18 percent of fatal traffic accidents. Over-tired drivers frequently succumb to dangerous two and a half second micro-sleeps. Using MATLAB®, Windsor, Ontario's Ai-Quoc Bui successfully programmed a computerized system connected to a Web cam to interpret signs of drowsiness in a driver's face. For the next phase of his project, he intends to connect his system to an alarm that will alert the driver and prevent fatigue-related traffic accidents.



Award sponsored by Petro-Canada



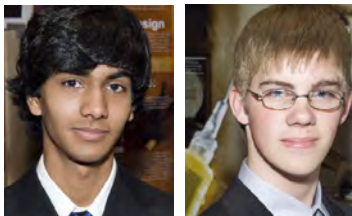
Montreal's Anthony Brohan, 17, also won bronze in the CWSF's Computing and Information Technology division.

Anthony Brohan Montreal, Quebec

Improving Predictive Text

Predictive text, a method for inputting text on cell phones and other wireless messaging devices, allows users to key in just a few letters that make up a word before the device "guesses" at the word, based on its internal dictionary. Brohan developed a program that takes into account the context of ambiguous word choices, making predictive text more accurate. In addition, he created a rudimentary spell-checker. As the bandwidth of mobile phone networks increase, he hopes to run his program on cell phones.

Award sponsored by **The Dave Mitchell Family**



A future without needles? Zamir Merali, 16, and Ryan Willick, 16, who also won bronze in the CWSF's Health Science division, hope so.

Zamir Merali and Ryan Willick North Bay, Ontario

Go With the Flow

While needles can deliver life-saving medication, they can also damage the skin, leaving patients prone to infection. So Zamir Merali and Ryan Willick of North Bay, Ontario, developed a model using electrical pulses that safely create pores between skin cells. Intended particularly for diabetics whose need for frequent insulin injections makes them especially vulnerable to opportunistic infections, it is a technique with numerous medical applications.

Award sponsored by **The McEwen Family**

THE 2008 MANNING INNOVATION ACHIEVEMENT AWARD WINNERS

This year's awards went to . . .



Daniel Burd



David Castelino



Evan Woo



Tony Xiao



Jean-Olivier Lambert

Using materials purchased on eBay, Waterloo, Ontario's **Daniel Burd** (16), turned his mother's kitchen into an impromptu lab – and identified plastic-degrading microbes in landfill soil. He discovered that by combining two types of these bacteria, *Sphingomonas* and *Pseudomonas*, he could achieve 42% degradation of polyethylene, the type of plastic typically used to make plastic bags, in 6 weeks. His project, "Plastic Not Fantastic" also won the prestigious EnCana Best-in-Fair Award, and the EnCana Platinum Senior Award, among others.

David Castelino, (18), of Mississauga, Ontario, demonstrated the efficiency of solar cells using natural plant pigments rather than synthesized dyes to convert light energy to electricity. Using his innovation, he built cost-effective solar tiles that could easily be manufactured in developing countries. "Photonic Boom" also won gold in the Engineering division.

Inspired by the design of the Mars Exploration Rovers, which used ultrasonic sensors to scan the environment, Grade 12 students **Evan Woo** (18) and **Tony Xiao** (19) showed how external air bags could protect both car and driver in low speed traffic collisions. Their project, "Your Life or Your Car?: AirCrumble lets you have both" deploys external air bags prior to impact. Woo and Xiao, from Greater Vancouver, British Columbia, also won awards in the Engineering division, the Computing and Information Technology division and the Petro-Canada Peer Innovation Award for a senior project.

"Opération Simulation," 17-year old **Jean-Olivier Lambert's** project focussed on improving computer simulations, such as those used to train surgeons. A Grade 11 student from Timmins, Ontario, he showed that by matching the virtual camera focal point and tracking motion to that of the human eye, the quality and reality of the animation could be greatly enhanced. Lambert also won medals in the Computing and Information Technology division and Automotive division.

All of the 2008 Innovation Achievement winners also won inaugural NSERC Undergraduate Student Research Awards.

THANKS TO OUR PARTNERS



Arthur J. E. Child Foundation
The McEwen Family
The Dave Mitchell Family

JOIN US IN HALIFAX FOR THE NATIONAL AWARDS GALA

Friday, October 3, 2008,
World Trade and Convention Centre,
Halifax, Nova Scotia.
Contact Marilyn Golding
for more information.

Ernest C. Manning Awards Foundation
National Awards Gala

Halifax '08

Hold the Date
Friday, October 3, 2008, 6 to 10 pm
World Trade and Convention Centre
1800 Argyle Street, Halifax, Nova Scotia

26 years of Manning Innovation Award Laureates
include: Mike Lazaridis, Gary Mousseau,
Dr. Gaetano Sutherland and Dr. Nancy Mathis