



# INNOVATIS

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Innovation Awards



Volume 4 Issue 3  
June 2003

## Inside this issue:

<b>Brain Clock Yields Clues</b>	<b>Page 2</b>
<b>Detecting Heavy Metals</b>	<b>Page 2</b>
<b>Aquaculture Pollution Control</b>	<b>Page 3</b>
<b>Rehabilitating Flooded Mines</b>	<b>Page 3</b>
<b>\$500 Achievement Award Winners</b>	<b>Page 4</b>



**CWSF  
2003 -  
Calgary**

## Foundation Co-Sponsors Session on Patents at the 2003 Science Fair

This year, the Canada-Wide Science Fair was held in Calgary from May 12-17, 2003.

The event's many volunteers and well-organized executive committee followed the lead of hardworking co-chairs Terry Allen and Fraser Head to make the fair a success.

As a result, Dick Wilson, Senior Advisor to the President of EnCana Corporation, described this science fair as "innovative in many organizational aspects, setting a new standard for future national gatherings." EnCana Corporation is a major sponsor of the Canada-Wide and the Youth Science Foundation, Canada.

In conjunction with the Ernest C. Manning Awards Foundation, EnCana Corporation also sponsored a breakout ses-

sion during the fair for senior participants.

Entitled, "Intellectual Property and the Patent Process," the students received expert answers to their many questions about patents.

The breakout panel included 1994 CWSF Gold Medal and Manning Young Canadian Innovation Award winners Paul Brown and Anie Miner, who discussed their patented invention the 'Green Walkman.' Paul and Anie shared the many steps taken and issues encountered on the road to securing a patent.

Martin Kratz, head of the Technology Practice group for national legal firm Bennett Jones, opened the panel discussion with an address entitled, "Key Intellectual Property Considerations."

Adriana Ieraci, Tech-

nology Manager with the University of Toronto's Innovation Foundation, rounded out the panel with her presentation, "From Bright Idea to Product."

Students were delighted with the interactive format of the panel, since many will soon be involved in the patent process themselves.

The interest shown in the patent process and the success of this first-time session will assure a further presentation at the Canada-Wide Science Fair in St. John's, Newfoundland, May 2004.



# Brain Clock Yields Clues



‘We Got Rhythm’ was the name of the winning project submitted by **Adrian Maler**, a Grade 12 North Dundas High School student from Crysler, Ontario.

Maler’s goal was to simulate the brain’s ‘time-keeper’ (circadian clock) by utilizing mathematical equations as well as new information about mammalian circadian clocks.

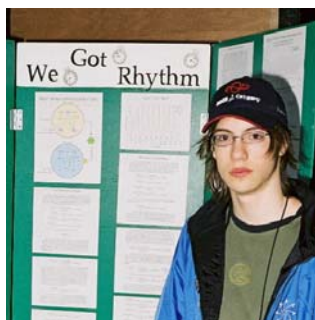
His project, ‘We Got Rhythm,’ accurately rep-

licated biological circadian behaviour which enabled predictions about the effects of certain drugs.

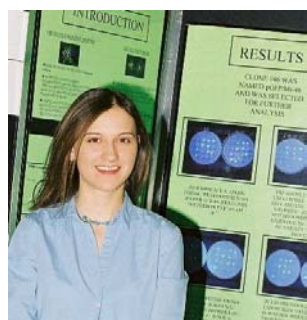
For example, Maler’s simulation predicted that Valium would have a negative impact on the circadian clock.

“This has many applications in medicine and in industry, especially concerning shift work, jet lag and the use of tranquilizer drugs,” says Maler.

Maler also noted that more research is needed to develop a clearer understanding of the molecular biology behind the circadian clock.



**Adrian Maler**  
\$4,500 Manning  
Young Canadian  
Innovation Award  
Winner



**Ildiko Beres**  
\$4,500 Manning  
Young Canadian  
Innovation Award  
Winner

# Detecting Heavy Metals

**Ildiko Beres**, a student from Kennedy High School in Windsor, Ontario, earned her Manning Innovation Award for her ‘Go Green’ project.

“I developed a bacterial bio-reporting system for the detection of heavy metal ion contamination,” explains Beres.

Engineered by plasmid construction, Beres used a green fluorescent protein found in jellyfish and a metal sensitive metallothionein promoter to test her theories.

To ensure that the results were effective, the behaviour of the reconstructed plasmid was tested using heavy metal ions from zinc, cobalt,

and magnesium. “Some applications for this bio-reporting system include the testing of contaminated water and waste sites,” says Beres.

Layers of lake sediment and bodies of water could be tested for heavy metal pollution, ultimately leading to the clean-up of valuable ecosystems.

One could also determine heavy metal ion concentration in soil near industrial waste sites.



## Aquaculture Pollution Control



**Kara Barfett**  
\$4,500 Manning  
Young Canadian  
Innovation Award  
Winner

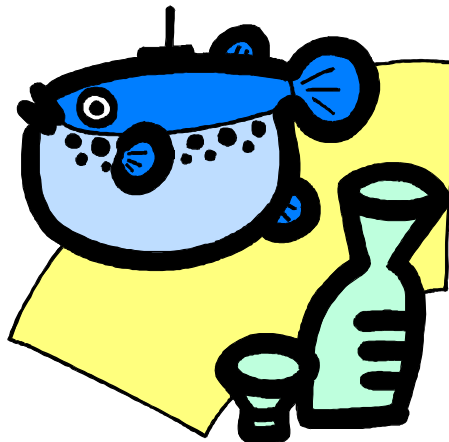


**Spencer Hughes**  
\$4,500 Manning  
Young Canadian  
Innovation Award  
Winner

**Kara Barfett**, who attends St. Thomas Aquinas School in London, Ontario, focused her project on ‘artificial cells as a feed additive for pollution control in aquaculture.’

“My fish feed additive converts ammonia, nitrite, and nitrate into harmless byproducts,” explained Barfett.

Barfett’s project accomplishes this by using *Nitrosomonas europa*, and other microorganisms immobilized



in calcium alginate and pectin artificial cells.

The resulting bio-filter innovation outperforms other technologies currently used in the

aquaculture industry and at a lower price.

In addition, its role in aquaculture represents a biotechnology solution that’s aimed at lessening global hunger and pollution.

Today, aquaculture is strengthen-

ing the North American economy as well as bringing industry to underdeveloped areas in Africa, South America and India.

## Rehabilitating Flooded Mines

**Spencer Hughes**, a Grade 11 Timmins, Ontario high school student, decided to combine recent technological advances with his own entrepreneurial spirit to create his project, ‘LED<sup>2</sup> Mining.’

His research led to the development of a multi-faceted innovation that removes pollution, limits subsidence and harvests metals, electricity and heat from flooded underground mines.

Hughes’ project is

based on the idea that flooded underground mines could provide a source of environmentally-responsible energy by working as thermionic bioreactors.

“This would provide energy for municipal lighting, heating and sewage treatment services and would allow the creation of new businesses in my community,” explains Hughes.

In the Timmins area alone, there are more than 50 abandoned mines



that could be considered for this application.

Most of those mines are filled with groundwater and exhibit the characteristics of land subsi-



## Meet Our \$500 Manning Innovation Achievement Award Winners

The team of **Dane Grand-Maison** and **Catherine Flynn** from Chicoutimi, Quebec, earned their Manning Innovation Achievement Award for a science project that investigated the feasibility of producing ethanol by treating waste wood products from the forestry industry.

“While ethanol is viewed as a more environmentally friendly automotive fuel additive, the lack of cost-efficient and sufficient supply sources keeps it out of the reach of the massive consumer market,” says Don Park, Executive Director of the Manning Innovation Awards.

**Vincenzo Marcovecchio** of St. Leonard, Quebec, was also named a Manning Award Winner for his work in developing a new computer software system for use in Internet cafes.

“This new system, ‘Your wwWEB,’ will improve the end-user experience in many ways,” says Marcovecchio.

“Security will be enhanced by using ‘smartcards,’ more user personalization will be possible and localization subroutines will make it usable globally,” he added.

**Gibson Gervais**, from Amherstburg,

Ontario, is a second-time Manning Award Winner. Gibson, from Sandwich Secondary, earned his award this year for his work in developing a biomass pretreatment protocol (STEXHAP) — a process that includes bio-ethanol production for use in bio-refineries.

“I designed and constructed a research steam-exploder and then performed pre-commercial experimental trials using wheat straw feedstock,” explains Gibson.

As a result, he has US/PCT patents pending for his development of STEXHAP.

**Alicia Unrau**, a student from Adam Scott Collegiate, in Lakefield, Ontario, created an award-winning project that investigated the visual field in humans.

“I prepared original drawings containing hidden images. These were used to study the processing of the visual field in people,” says Unrau.

“I found that differences exist in scanning patterns, and that certain parts of a visual field are seen and remembered significantly more often.”

“These results should impact on education and advertising,” explained Alicia.

**"Discovery consists of seeing what everyone else has seen and thinking what no one else has thought."**

**Albert Szent-Gyorgi**

**The Manning Innovation Awards**, named in honour of the late Ernest C. Manning, former Alberta Premier and Canadian Senator, was incorporated as a not-for-profit society in 1980 to stimulate, encourage and reward deserving Canadian innovators for their personal accomplishments that have widespread social and economic benefit to Canada.

**We're On The Web**  
[www.manningawards.ca](http://www.manningawards.ca)

The annual program continues today with a \$100,000 Principal Award, a \$25,000 Award of Distinction, two \$10,000 Innovation Awards and the \$20,000 Young Canadian Innovation Awards program, shared among eight exhibits selected from entries in the senior division of the Canada-Wide Science Fair.

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