Saluting Young Canadian Innovation

INNOVATIS

"Science is an imaginative adventure of the mind seeking truth in a world of mystery."

—Sir Cyril Hinshelwood (1897-1967) English chemist and 1956 Nobel prize winner

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Inside this issue:

St. John's City of Legends

Hosts Best Science Fair Yet!

The 2004 Canada-Wide Science Fair in St. John's, Newfoundland, was classified by many as the "best fair yet."

With outstanding exhibitor facilities on the campus of Memorial University, the institution's finely tuned organization and the friendly Newfoundland atmosphere combined to make this fair a most memorable event.

This year's fair featured 375 science projects involving 483 students from every province and territory.

Over 75 senior high school students competed for the most sought after Manning prizes, co-sponsored by Petro-Canada and EnCana Corporation.

Newfoundland's famous Cabot Tower on Signal Hill

Details about the 10 winners and their eight exciting projects are featured on the following pages of Innovatis.

A project of the Youth Science Foundation of Canada, the Canada-Wide Science Fair is hosted by cities selected in a competitive bid process.

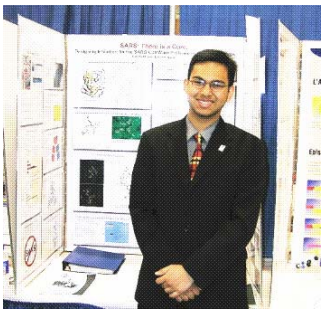
This annual fair is held the week prior to the Victoria Day holiday in May and will be in Vancouver, B.C., in 2005, Chicoutimi, Quebec in 2006 and Truro, Nova Scotia in 2007.

Congratulations and best wishes to all our current winners!

PETRO-CANADA

ENCANA

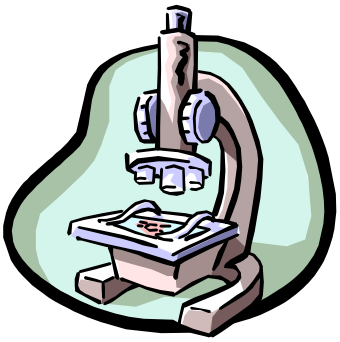
SARS: There is a Cure!



Hamza Bari
$4,500 Young Canadian Winner

Hamza Bari, 17, a Grade 11 student at Wagar High School, St. Laurent, Quebec, became one of four Manning Young Canadian Innovators to be singled out for a $4,500 cash award that will be presented this fall at the annual Awards Dinner.

The Manning Award was among his project's numerous honours which included the Gold Medal and $1,500 in the senior Biotechnology Division, and two scholarships – a $10,000 grant to attend the University of Saskatchewan and a $2,000 entrance scholarship at the University of Western Ontario.



Bari's project 'SARS: There is a cure!' was in collaboration with teammate **Arif Awan**, but represented by Bari at the science fair.

The project investigated ways to design inhibitors (compounds or peptides which are chains of proteins) for the SARS virus using computational structure based techniques.

The project concluded that two of the 10 compounds they selected as having potential as proficient inhibitors would be more potent and specific than the current inhibitors used to control this virus.

Bari said they hoped to be able to fully publish this groundbreaking work this fall.

Proud Sponsor of the Manning Young Canadian Innovation Awards

PETRO-CANADA

Sensing the Eye

Pencilla Lang
$4,500 Young Canadian Winner

Pencilla Lang, a Grade 12 student at London, Ontario's A.B. Lucas Secondary School, was named one of four Manning Young Canadian Innovators.

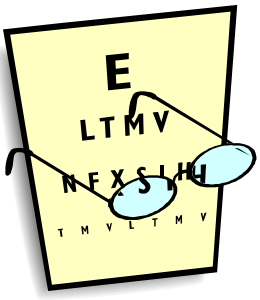
Lang, 16, was recognized for her efforts in the development of an 'Optical Tactile Sensor for Medical Palpation.'

Her science research was also recognized with a Silver Medal ($700) in the senior Engineering Division, a $750 Environment and Plastics Industry Council Award, and a $2,000 scholarship at the University of Western Ontario where she plans to continue her post-secondary education.

Pencilla Lang's prototype optical tactile sensor shares many engineering goals with industrial sensors, but involves two new concepts in tactile sensing: deformability and vision-based sensing.

The ultimate product is envisioned as a ballpoint pen-sized probe featuring a pliable silicone shell featuring a pre-printed visual pattern that would deform on contact with tissue.

Computer software would combine the visual pattern deformation with a mathematical model of the shell to calculate applied forces and re-create the surface being sensed. Lang's prototype required her to develop the hardware (probe and silicone tip) and write the interpretive software for the digital imaging system.

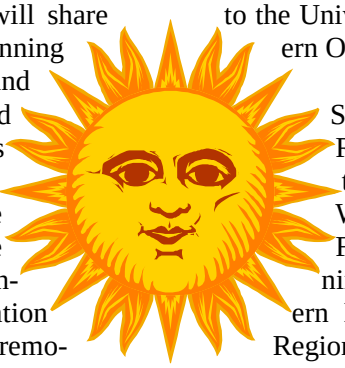


Lang says future work will likely include 3D tracking of image features and modeling of the material response.

Blocking Out the Sun

Sarah Small and Ronan MacParland
$4,500 Young Canadian Winners

Sarah Small and **Ronan MacParland,** both from St. John's, Newfoundland, will share a $4,500 Manning cash award and will be asked to travel this fall to Vancouver, the site of the national Manning Innovation Awards Ceremonies.



The team of Small and MacParland also earned other honours which included the Silver Medal and $700 in the senior Health Sciences Division, a $1,000 Quality of Life Student Research Award, and a $2,000 entrance scholarship to the University of Western Ontario.

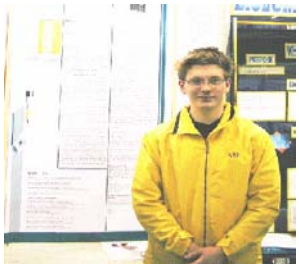
Initially, Sarah and Ronan entered the Canada-Wide Science Fair after winning in the Eastern Newfoundland Regional fair with their project Tea-riffic Skin, which comprised three different extraction processes to obtain the molecular compounds in green tea known for potential anti-aging and anti-oxidant properties and to incorporate those properties into a topical cream.

"While carrying out our experimental procedures, we came across many exciting results which led us to ponder our future applications," says the duo.

"The results from the ultraviolet tests led us to the idea of developing a green tea-based sun screen," they add.

"Our green tea extracts, even when diluted, proved to be 100 per cent UV absorbing," the team told judges during the week.

Improving Plastic Breakdown

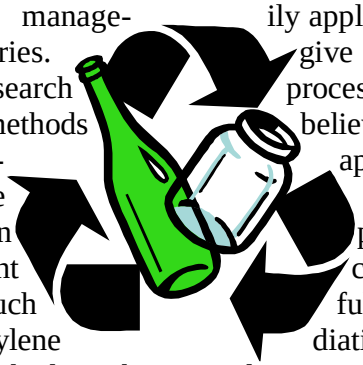


Vlad Lavrovsky
$4,500 Young Canadian Winner

Calgary's Queen Elizabeth Senior High School student **Vlad Lavrovsky** was also named a Manning Young Canadian Innovation Award $4,500 winner.

Lavrovsky, 17, also earned a Bronze Medal ($300) in the senior Biotechnology Division; $1,500 in other cash awards, as well as the opportunity to attend a summer program of the Weizmann Institute of Science in Israel, and a $2,000 entrance scholarship at the University of Western Ontario.

Lavrovsky's project, 'Directed Evolution of Hydrocarbon Utilizing Bacteria for High Molecular Weight Substrates,' will be of particular interest to Canada's plastics and environmental management industries.



His research addresses methods of accelerating the breakdown of persistent plastics such as polyethylene and other hydrocarbon-like compounds which place great demands on the environment.

Lavrovsky suggests that, although microbial bioremediation of these products has been intensively researched over two decades, those processes have not been readily applied and might give way to other processes which he believes can be applied.

Such applications could be helpful with remediation of plastics and pesticides compounds as well as remediation of groundwater and industrial effluent.

Meet Our Manning $500 Achievement Award Winners

Manning Innovation Achievement Award winners each receive $500 for their outstanding science fair projects.

Justin Tan, 17, from Westmount, Quebec, a Grade 11 student at Selwyn House School, focused his efforts on a project entitled 'Vitrification: Eggs and Embryos.'

Tan's project addressed the ability to cryopreserve oocytes (eggs) and embryos through vitrification, which is the solidification of a solution without crystallization.

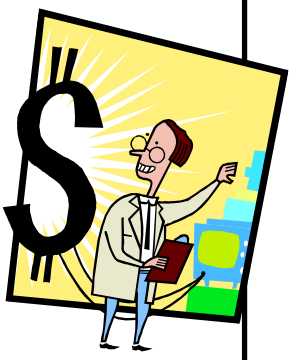
Vitrification is viewed to be critical to the continued development of assisted reproductive technologies for the treatment of infertility, a field of research that can have far reaching impacts for many hopeful couples.

Gina Gallant, 17, from Kelly Road Secondary School in Prince George, B.C. and **Keri Williams**, 16, from Merritt Secondary School in Merritt, B.C., were each awarded a $500 Manning Achievement Award.

Gina Gallant's project is a continuation of an earlier initiative — a revolutionary paving material that incorporates the recycling of landfill plastic in its formulation based on a unique hydrocarbon bonding process.

The resulting PAR (PolyAggreRoad) material not only reduces noise levels compared to more traditional pavements, but also provides an additional environmental benefit by reducing the levels of plastics from landfills.

PAR also can be recycled when that asphalt is used to re-pave roads.



The winning project by **Keri Williams** investigated three pathways related to the destructive biological chain of reaction that occurs within the human body after exposure to 2,3,7,8 Tetrachlorodibenzo-p-dioxin (TCDD), a widespread toxin in the environment.

Williams' extensive cause and effect research also triggered her creation of a manual for medical practitioners and research scientists to better understand, treat and research the impact of TCDD, since no manual currently exists.

Last but not least, a team from Ontario Science Centre High School, Grade 12 students **Nimmy Thakolkaran** and **Shirley Ho**, shared a $500 award for their project, 'Inducing Resistance in Peas against Mycosphaerella Pinodes,' a virulent fungus strain that causes one of the most serious diseases affecting the field pea in western Canada. This team's work could hold significant benefit to Canada's agricultural community.

"When I am in the company of scientists, I feel like a shabby curate who has strayed by mistake into a drawing room full of dukes."

—-W.H Auden
American Poet

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

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.

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