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Manning Awards Foundation names its top 10 Canadian innovators for 2015

Adult and student winners, from Quebec, Ontario, Manitoba and Alberta, share $175,000 in prizes

CALGARY, AB (October 1, 2015) – The Ernest C. Manning Awards Foundation today announced the winners of its 2015 Innovation Awards and Young Canadian Innovator awards. The ten recipients will share $175,000 in prize money for successfully developing innovations that are improving the lives of Canadians and others worldwide.

“The Foundation is helping build a culture of innovation in Canada by recognizing Canadian innovators and rewarding them for the value they are adding to our provincial and national economies by creating jobs and wealth, and positioning our country as a global competitor. We consider them Canada’s most valuable resource,” said Foundation President Jennifer Diakiw.

The Ernest C. Manning Awards Foundation presents prizes annually to outstanding Canadian innovators. Manning Innovation Award winners are selected by a Canada-wide, independent selection committee, of established leaders and authorities from various disciplines. The Young Canadian Innovator Award winners were selected by a team of judges at the 2015 Canada-Wide Science Fair in May. All the winners will be honoured at the Foundation’s 34th Innovation Awards Gala in Saskatoon on October 2, 2015.

This year’s Ernest C. Manning Innovation Award winners are:

Dr. Mark Torchia and Richard Tyc, P.Eng, of Winnipeg, MB **$100,000 Principal Award** for developing and successfully commercializing the **NeuroBlate,** a unique medical laser device that is helping surgeons to successfully treat patients with brain lesions previously considered inoperable.

Matthew Sheridan, of Hamilton, ON, **$25,000 David E. Mitchell Award of Distinction**, for developing and successfully commercializing the **Nix Color Sensor**, a handheld device to accurately measure the colour of any object instantly, making colour management easier and more cost-effective for textiles, cosmetics, commercial paints, graphic design and other industries.

Dr. Vito Forte, of Toronto, ON, **$10,000 Manning Innovation Award** for developing and successfully commercializing the **OtoSim**, a simulated silicone ear teaching tool that is helping medical students worldwide learn how to more accurately diagnose ear conditions before they practice on patients.

Fabrizio Chiacchia and Iwain Lam, of Calgary, AB, **$10,000 Manning Innovation Award** for developing and successfully commercializing the **CleanPatch**, an adhesive material to repair tears in hospital beds, preventing the spread of infection while saving healthcare facilities money to replace damaged equipment.

The 2015 Young Canadian Innovator Award winners are:

Dan Alferov, 18, of **London, ON**, **$7,500** for developing an image-based test for determining how the brain reads facial expressions to help health professionals diagnose mood disorders and other mental illnesses, especially in young people.

Sandrine Bayard, 17, of **Quebec City, QC, $7,500** for developing a bandage bacteria monitor – or “thinking

bandage" – that can detect infection in chronic wounds without being removed.

Gayashan Tennakoon, 18, of **Ottawa**, **ON, $7,500** for developing a simple, cost-effective way to test drinking water by "drying" it on-site to detect trace elements that cause kidney disease and other health problems, especially in remote populations.

Samna Aziz, 17, of **Hamilton, ON, $7,500** for developing a non-toxic, biodegradable bone cement that has potential to replace the current generation of cements used to repair bone fractures.

The Ernest C. Manning Awards Foundation was established in 1980 by Alberta Energy Company CEO David Mitchell. Working with former Alberta premier Ernest C. Manning and others, he built the foundation to recognize and celebrate Canadian innovators of all ages and across all disciplines. Since then, the Foundation has built a national network of 3,000 young and adult innovators who are leaders in technology, business, engineering, and social innovation advancement. It has awarded innovation prizes to 255 Canadians who have demonstrated innovative talent in developing and successfully marketing a new concept, process or procedure. ***For more information, including the full list of 2015 Innovation Award winners, visit: www.manningawards.ca.***

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BACKGROUNDER: INFORMATION ON 2015 MANNING AWARD WINNERS

Principal Award: $100,000
Dr. Mark Torchia and Richard Tyc, P.Eng
NeuroBlate™ Medical Laser Technology
Winnipeg, Manitoba

For patients diagnosed with brain lesions, surgery is often the recommended treatment option, but some are too difficult or risky for surgeons to reach, rendering them inoperable.

The NeuroBlate System enables neurosurgeons to access and coagulate brain tumours and other intracranial lesions. The NeuroBlate System uses novel side-firing or diffusing tip laser-probes that can be inserted into a small incision in the skull to heat and kill tumour cells. The minimally invasive procedure is conducted with continuous MRI guidance, enabling surgeons to plan, steer and adjust the laser continuously as it is delivered. This increases precision in ablating the lesion and lessens the likelihood of damaging surrounding healthy brain tissue.

Dr. Mark Torchia, an associate professor of surgery in the University of Manitoba's Faculty of Medicine, conceived the idea for NeuroBlate in 1990 while working at Winnipeg's St. Boniface Hospital. He brought Mr. Richard Tyc on board in 1999 to help develop the technology application and turn the concept into a viable commercial product. The pair later founded Monteris Medical Inc. to manufacture and distribute the NeuroBlate System. It is now being used in more than 30 hospitals across the U.S. and Canada.

Dr. Mark G. Torchia, Ph.D. is Chief Scientific Officer and Member of Medical & Scientific Advisors at Monteris Medical Inc. He serves as a Principal Investigator at St. Boniface Hospital Research Centre and the Director of Development, Department of Surgery, Faculty of Medicine at the University of Manitoba where he is also Professor of Surgery in the Faculty of Medicine and Assistant Professor of Surgery and Anatomy and Cell Sciences. Dr. Torchia serves as the Director of Advanced Technology of the Winnipeg Regional Health Authority. He holds both MSc and PhD degrees from the University of Manitoba.

Richard Tyc, P.Eng is Vice President, Technology and Advanced Development for Monteris Medical. He is a Professional Engineer with a Masters degree in mechanical and industrial engineering. Prior to working on the development of NeuroBlate, he worked in the fields of pharmaceutical automation, industrial automation and the prosthetic device industry.

The David E. Mitchell Award of Distinction, $25,000
Matthew Sheridan
Nix Color Sensor™
Hamilton, Ontario

The ability to match, formulate, correct and control the quality of colour is a vital function in many industries including textiles, cosmetics, computer imaging, commercial paints and graphic design. Traditionally, every colour measurement method, from spectrophotometers to fans of paint colours, has been costly, difficult to transport and largely inaccurate due to varying light conditions and human error.

Matthew Sheridan came up with the idea for a ping pong ball-sized colour sensor after watching friends in the interior design industry hauling around heavy, expensive paint decks. He put his engineering knowledge to work to develop a prototype, with support from former solar-car teammates from McMaster University and the Hamilton-based Innovation Factory, and funding from a Kickstarter campaign that raised $70,000.

The result was the Nix Color Sensor, the first hand-held colour sensor designed to be a smartphone accessory. Using Bluetooth low energy technology, the device can scan surfaces to quickly get a colour reading, save colours for future reference or sharing, test colour quality by comparing scanned colours to known values, and convert between any colour system in the world. Nix Sensor Ltd. has sold over 1,000 units to colour professionals in 31 countries. Realizing the potential of technology, Matthew is exploring niche projects worldwide with partners in a range of industries.

Matthew Sheridan holds a Bachelor of Mechatronics Engineering and Management from McMaster University in Hamilton. He founded Nix Sensor Ltd. In 2012 and serves as CEO.

Manning Innovation Award: $10,000
Dr. Vito Forte
OtoSim™ Medical Training Tool
Toronto, Ontario

As in his many years teaching at the University of Toronto's Department of Otolaryngology, Dr. Vito Forte with his colleague Dr. Paolo Campisi, watched medical students struggle to learn how to accurately diagnose ear conditions. It became clear that students needed more practice time to develop the ability to correctly perform an otoscopy, or ear exam, and avoid over-prescribing antibiotics and unnecessary referrals to specialists, which contribute to the overall burden on the healthcare system.

Working with a multi-disciplinary team of clinicians, educators, and engineers, Dr. Forte put his teaching experience, as well as his expertise as a surgeon at Toronto's Hospital for Sick Children, to work to create the OtoSim. The computer-based medical teaching tool consists of a silicone ear made to scale with an integrated computer display of images of the ear canal and eardrum exhibiting a full range of medical conditions. Students use it to mimic the experience of looking into an ear with an otoscope.

OtoSim training units can be networked in sets, allowing instructors to share images with groups of students in class, or remotely via Internet. Results show that medical students trained with OtoSim increase their diagnostic accuracy by 44 percent. To date, the training tool has been purchased by more than 100 institutions in over a dozen countries.

Dr. Vito Forte is Otolaryngologist in Chief at The Hospital for Sick Children in Toronto and a full Professor in the Department of Otolaryngology, Faculty of Medicine at the University of Toronto. He maintains a full time broad based practice in pediatric otolaryngology. His clinical and academic focus is almost exclusively on airway-head and neck surgery in children. He also is a consultant for the Neonatal Intensive Care Units at the Mount Sinai and Sunnybrook-Women's College Hospitals. He is a past recipient of the HSC Robert Salter Humanitarian award and the University's Department of Otolaryngology Teacher of the Year award.

Manning Innovation Award: $10,000
Fabrizio Chiacchia and Iwain Lam
CleanPatch™
Calgary, Alberta

An estimated 220,000 Canadians a year pick up infections at healthcare facilities, with hospital-acquired infections (HAI) identified as the cause of up to 12,000 deaths and $1 billion in health-care costs annually. Typically, hospitals and clinics have approached this challenge by investing in more staff and supplies to keep surfaces clean. Fabrizio and Iwain's pioneering approach involves developing products to prevent hospital beds, stretchers and other surfaces from becoming contaminated and spreading disease.

Fabrizio's initial research found that, at any given time, 30 to 50 per cent of hospital mattresses in circulation are damaged and a number of them have bacterial growth at the damage site which, 20 per cent of the time, is pathogenic. He formed Surface Medical Inc. with several partners to address the problem and hired Iwain to help with product development.

The pair drew on their shared backgrounds in biomedical product development and business to work through hundreds of prototypes of varying materials to come up with CleanPatch, an adhesive film designed as an early-stage maintenance tool that can be easily applied, much like a Band-Aid, to torn surfaces on hospital equipment to extend their use and prevent contamination.

The CleanPatch, marketed through Surface Medical Inc., is proving to be a cost-effective way to help reduce HAI. Priced at roughly a twentieth of the cost of a new mattress, it is now in use in in 350 hospitals in seven countries.

Fabrizio Chiacchia holds a BSc and Master's in biomedical technology from the University of Calgary and an MBA from Queens University. **Iwain Lam** studied molecular genetics at the University of Alberta and holds a Master of biomedical technology from the University of Calgary.

Dan Alferov
It's All in the Face! Using the Perception of Facial Emotions To Aid in Diagnosing Mood Disorders
London, Ontario

Dan Alferov, 17, has been studying faces for years to better understand how facial expressions can help diagnose mood disorders, especially in young people. Mental illness affects 1.8 billion people globally and mood disorders are the hardest to diagnose and the most frequently misdiagnosed. Currently, standard clinical practices, such as written tests used to diagnose Autism Spectrum Disorder (ASD), Bipolar Disorder, schizophrenia and other mood disorders are time consuming, subjective and sometimes inconclusive. Dan has developed an image-based binocular rivalry test, using conflicting images, that could be used to determine how the brain perceives facial expressions. With his initial findings already published, Dan's test could help medical professionals diagnose how healthy people process facial images as a point of comparison in detecting disorders such as autism and schizophrenia which have specific deficits in facial recognition.

Dan Alferov is a graduate of A.B. Lucas Secondary School and has started his studies at the University of Toronto this fall.

Sandrine Bayard
The Bandage That Thinks | Le pansement qui pense
Sept-Îles, Quebec
Sandrine Bayard, 17, was inspired to improve the quality of life for patients with chronic wounds after watching her grandmother suffer through painful dressing changes to heal a burn. While major advancements have been made in treating people with chronic wounds, using materials that can be left on for a longer term, almost like an artificial skin, there is still no method for early detection of bacterial infection underneath bandages. Sandrine has developed a bandage bacteria monitor – or bandage that thinks – that can help detect bacteria in chronic wounds without being removed. It contains all the protective benefits of an artificial skin, but incorporates a graphene layer that can detect the presence of a bacterial infection. This will allow patients to know exactly when to change their dressings, leading to faster healing.

Sandrine Bayard is a graduate of Cégep de Sept-Îles in Quebec.

Gayashan Tennakoon
A Novel Approach for Environmental Trace Elemental Analysis
Ottawa, Ontario
Gayashan Tennakoon, 18, wanted to find a better way to test drinking water after learning about chronic kidney disease – a global health epidemic and has hit developing countries like his homeland, Sri Lanka, particularly hard. Gayashan is working to improve environmental monitoring systems to keep track of drinking water sources, especially for those in remote areas around the world. He has developed a simple, cost-effective approach to detecting low levels of trace elements, such as Cadmium, Lead and Arsenic, that may be contaminating drinking water samples. His "dry" approach to water testing involves adding a carrier (a solid substance) to water samples, and then using heat to dry the sample and the wash the elements off the carrier. Initial testing has resulted in 100 percent recovery of elements of interest in the sample. It is a method that has huge implications for detecting trace elements that are normally undetectable and very costly and difficult to measure.

Gayashan Tennakoon is a graduate of Colonel By Secondary School in Ottawa and has started his studies at the University of Ottawa this fall.

Samna Aziz
A better bone cement to help mend fractures
Hamilton, Ontario

A three-hour visit to the clinic visit after wrenching her knee triggered Samna Aziz's quest to invent a better, safer cement bonding material to mend bones. Nearly one out of every 10 Canadians over the age of 40 suffers from osteoporosis and related fractures. While bone cements have been used since the 1940s to fill the gaps between orthopedic implants and bones, there is growing concern they may contain toxins that can be released into the body. They can also cause additional damage to the body because they are harder than the bone around them. Aziz has developed a new bone cement alternative – a calcium phosphate-based cement mixture that is biocompatible, non-toxic, and has a similar tensile strength to human bone – to help prevent additional fractures and damage to surrounding tissues. It is also completely degradable, allowing the body to **eliminate** the cement when fully recovered. Aziz hopes to replace existing bone cement with her novel calcium phosphate cement, which could become a reality when her innovative product soon enters into clinical trials.

Samna Aziz is a student at Westmount Secondary School in Hamilton.