Saluting Canadian Innovation

INNOVATIS

Dr. Lorne Tyrrell

Edmonton Researcher Earns $100,000 EnCana Principal Award

Dr. Lorne Tyrrell's scientific curiosity about a harmful virus led to his discovery of the world's first effective oral medication for hepatitis B, a life-threatening viral disease that has infected about two billion people.

Research by Dr. Tyrrell, his colleagues and students at the University of Alberta, which led to development of the patented anti-viral drug lamivudine for the treatment of chronic hepatitis B (HBV) infection, has won this year's top prize from the Ernest C. Manning Awards Foundation – the $100,000 EnCana Principal Award, sponsored by EnCana Corporation.

Since 1998, lamivudine has been licensed in more than 120 countries for treatment of chronic HBV infection; its sales last year were over Cdn $300 million. The drug, marketed by pharmaceutical firm GlaxoSmithKline, dramatically suppresses the virus's ability to reproduce in the body.

"There's no doubt that the drug markedly decreases the rate at which people develop cirrhosis and liver cancer, the consequences of chronic HBV infection," says Dr. Tyrrell, Professor at the U of A and holder of the GlaxoSmithKline Endowed Chair in Virology in the Department of Medical Microbiology and Immunology. Lamivudine has also reopened the door for HBV-infected patients with advanced liver disease to receive and benefit from liver transplants.

> ***"There's no doubt that the drug markedly decreases the rate at which people develop cirrhosis and liver cancer"***

Dr. Tyrrell recognized, while teaching a graduate course in virology, that the structure of HBV and the unique way it replicates itself in liver cells in ducks could be used to develop a drug that would block the virus from reproducing in liver cells in people.

...continued on page 4

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Inside this issue:

Charlottetown Inventor Wins $25,000 Award of Distinction

Wayd McNally
Award of Distinction Recipient

Wayd McNally's encounter with a bruised potato inspired him to invent a wireless technology that detects and reports damage, waste, safety problems and other environmental conditions in the bulk processing, handling and transportation of foodstuffs and other consumer goods.

Charlottetown, PEI-based Sensor Wireless Inc.'s patented wireless diagnostic and risk-management tools, including Smart Spud, CrackLess Egg, Produce Wizard, Smart Bottle and Agent QC, are improving the entire supply chain management of foodstuffs and other consumer goods.

McNally, President and CEO of Sensor Wireless, has won this year's $25,000 Manning Award of Distinction, sponsored by CanWest Global Communications Corp., for his innovation now being used in more than 20 countries around the world.

Raised on a farm, McNally got his bright idea when he was just 21, lying on his back in a field, looking up at a potato-harvesting machine that was bruising too many potatoes, reducing their market value. He developed and patented a wireless "electronic potato" – dubbed the Smart Spud – designed to mimic the look and movement of a potato travelling with real potatoes through the harvesting equipment. McNally then went on to develop industry-specific devices for monitoring mass-production of eggs, produce and beverage containers as well as consumer goods-in-transit.

"We have a real-time, wireless application, which enables us to transmit the data and translate it into some useful information that tells the customer the magnitude of the problem and where it's located, so the problem can be quickly fixed," he says.

The company's tools enable up to 11 different parameters on the condition of the product – including mechanical forces acting on the object and temperature – to be recorded in real time and transmitted simultaneously back to users on a handheld Palm or desktop computer.

McNally, named one of Atlantic Canada's Top 50 CEOs by Atlantic Business Magazine, formed his own consulting firm after graduating from agricultural college. He started Sensor Wireless in 2002 by cashing in his RRSPs, getting a loan from his mother, and refinancing his property.

Today, his company has 10 employees, over $1 million in annual revenue, and is an IBM Business Partner. Its products are being used by North American companies such as Campbell's Soup, McCain Foods Canada, Coors Breweries, Dole and Del Monte, Abbott Laboratories and Cal-Maine Foods, and internationally by such firms as Carlsberg and Tuborg Breweries of Denmark and Kirin Breweries of Japan.

Edmonton Plumber's Unique Valve "Unlocks" $10,000

Edmonton plumber and gasfitter Gabe Coscarella revolutionized the plumbing industry with his invention. It is a valve that's installed in the main sewer line of a home, commercial building or industrial plant to prevent sewer backup and flood damage.

Mainline Backflow Products Inc.'s patented Fullport Backwater Valve has eliminated the need to install several sewer line valves in one building. "There's no need to protect any of the sewer branch lines anymore. Our one valve protects the entire building," Coscarella says.

Coscarella, President of Mainline Backflow Products, has won this year's $10,000 Manning Innovation Award, sponsored by Falconbridge Limited, for his innovation.

Gabe Coscarella has revolutionized the plumbing industry

He got the idea for his valve while working as a plumbing contractor for the City of Edmonton and repairing sewer backups, seeing first-hand the damage to a home that can occur.

Coscarella's valve, which is normally open in the installed position on the main sewer line, allows for the air circulation required under Canada's national plumbing code. The valve includes a gate, hinged on the bottom, that is normally kept open by gravity. This gate is fitted with tiny, water-proof floats. When the sewer starts to back up, water rises in the body of the valve and the gate starts to float or lift, being pushed by the flow of water into the closed position in the main sewer line, thus protecting the entire building.

The injection-molded valve has a built-in main sewer cleanout for easy cleaning and a rugged, transparent lid for visual inspection.

There are now more than 130,000 Mainline Fullport Backwater Valves installed in North America, Coscarella says. "Our valve goes into about 95 per cent of the new homes in western Canada."

Manning Innovation Awards

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Established in 1980, the Ernest C. Manning Awards Foundation was named in honour of, and under the patronage of, a statesman whose own innovative ideas provided much inspiration during half a century of public service.

Calgary Physicist Captures $10,000 for Digital X-Ray System

Robin Winsor
Innovation Award Recipient

Robin Winsor left the oilpatch in Calgary to develop the world's first digital X-ray imaging technology, advancing light-years ahead of how medical X-rays were made using conventional film-based systems.

Imaging Dynamics Company's (IDC) patented Xplorer™ Direct Capture technology produces affordable, safer, high-quality X-ray images in only seconds, compared with several minutes for systems using photographic film.

Winsor, IDC's Chief Technical Officer, has won this year's $10,000 Manning Innovation Award, sponsored by the Arthur J. E. Child Foundation, for his innovation now being used in clinics and hospitals, big and small, throughout North America and increasingly abroad.

"The big advantage of our digital system is that it's much faster," says Winsor, who was trained in geophysics and built his digital radiography (DR) system prototype in his wife Elaine's veterinary clinic.

His system uses a cost-efficient Charge Coupled Device camera – technology similar to that in your digital camera and to the system NASA uses to capture visually sharp images from the farthest reaches of space.

For significantly less cost than competing digital systems, IDC's technology eliminates the need for film and chemicals (including storage and disposal), cassette-based computer radiography systems, and expensive imaging plates. The company's systems also enhance safety, because patients typically require only one exposure to ionizing radiation to obtain a high-quality X-ray image.

Since installing its first DR imaging system in a chiropractic clinic in Calgary in 2000, IDC has grown to about 75 employees at its Calgary headquarters and manufacturing facility. More than 100 of its systems are installed in clinics and prestigious hospitals in Ottawa, Vancouver, New York, Los Angeles, Washington and Philadelphia, as well as in Germany, China and Korea.

The Arthur J. E. Child Foundation

Proud sponsor of the $10,000 Manning Innovation Award

...continued from page 1

Working with then-U of A chemist Dr. Morris Robins (now at Brigham Young University in Utah), Dr. Tyrrell and his team developed a system to test chemical compounds called nucleoside analogues, some of which kept HBV from replicating. First with ducks, then with chimpanzees, and finally with people in clinical trials, Dr. Tyrrell's pioneering work showed that oral doses of lamivudine dramatically reduced the levels of hepatitis B virus in their blood.

Winning the EnCana Principal Award is "extremely important," Dr. Tyrrell says. "This is the highest award for innovation in Canada, and I can't think of a nicer award to recognize the importance of basic research and its eventual applications to help patients."

Dr. Tyrrell is currently leader of the U of A's Centre of Excellence for Viral Hepatitis. A gifted teacher, he continues to teach virology to students and to pursue research on both hepatitis B and hepatitis C, with the ultimate goal of curing these diseases.

We're on the web:
www.manningawards.ca