INNOVATION CENTRES

Ontario invests $2.25-million to nurture bright ideas

Funds announced at inventors fair showcasing new technology in fields from dentistry to diagnostics to energy

IAN MERRINGER

Glen Murray, Ontario's Minister of Research and Innovation, sees big changes coming to dentistry.

"All the sadists are going to have to get out of the business," he said, pointing to a demonstration display of a new diagnostic laser tool that could render dentist drills obsolete.

Mr. Murray was attending an innovation fair at MaRS Discovery District in Toronto on Wednesday to announce $2.25-million in funding over three years to establish a network of regional innovation centres, with MaRS being the biggest. Called ONE, the Ontario Network of Excellence is made up of 14 centres where entrepreneurs can go to find support – including technical expertise, research resources and business advice – to help them turn innovations into businesses.

It's not just dentistry that will see changes. The program is further acknowledgment that Ontario's economy has shifted away from manufacturing.

"When I was born in 1957, two-thirds of us made things for a living," Mr. Murray said. "Now in 80 per cent of our jobs we use imagination to discover, create and design things."

Tom Rand, a lead adviser at MaRS Discovery District, agrees that the new economy runs on ideas, not assembly lines. He says for Ontario to keep and create jobs it will have to actively nurture and incubate globally competitive innovations, whatever the field. He sees the new funding as "an expression of long-term support for what we do here."

On hand Wednesday were 14 clients of MaRS with innovations currently moving toward the new marketplace. They include:

Stephen Abrams, left, and Josh Silvertown demonstrate the Canary System, a new approach to treating tooth decay, at the MaRS building in Toronto Wednesday. Dr. Abrams and a patient, Andreas Mandelis, started a company to develop and market the technology. KEVIN VAN PAASSEN/THE GLOBE AND MAIL

Martin Duerr of Sustainable Energy Technologies shows off one of the company's low-voltage inverters. KEVIN VAN PAASSEN/THE GLOBE AND MAIL

A hand-held diagnostic testing device is being developed by start-up Xagenic. KEVIN VAN PAASSEN/THE GLOBE AND MAIL

New laser detects tooth decay before it's drill time

Eleven years ago, Stephen Abrams was complaining to a patient in his dentist chair. There were few tools, Dr. Abrams said, to detect tooth decay until after it was too late to reverse it. X-rays were inaccurate, not to mention radioactive, and the picks he used to probe for enamel weakness often aggravated the problem.

In the chair that day was Andreas Mandelis, a mechanical engineer at the University of Toronto who used lasers to test for weaknesses in metals. Why not develop a laser probe for teeth, he suggested. The company the two men started, Quantum Dental Technologies, is ready to start making museum pieces out of dentist drills next month when it releases the Canary System.

Using a light hand-held instrument, the dentist shoots a pulsing laser at a tooth. The information that comes back tells the dentist whether any tooth decay has started, down to a depth of half a centimetre below the surface. If the tooth is in the early stages of decay, something a dentist could scarcely have known about before, there are many topical treatment options available, none of which involve the sound of tooth enamel being ground away.

Space-age diagnostics for STDs

Gadgets that doctors merely wave near a patient to get a diagnosis have long been the stuff of *Star Trek* scripts. As a big step toward *Star Trek* and away from growing and testing cultures in a laboratory, start-up Xagenic is developing a hand-held device that will confirm a diagnosis for ailments such as STDs, urinary tract infections and strep throat while a patient waits.

The doctor takes a sample swab from a patient and inserts it into the device. The device sends an electrical current through the sample to burst any bacteria, scattering nucleic acid. Within the device are nano-electrical sensors that will bind to certain types of nucleic acid. When the electrodes sense a complementary nucleic acid, the device spits out a confirmation of which bacteria are causing the infection, all before the patient has picked out a magazine in the waiting room.

Squeezing more energy from the sun

Collecting energy from rooftop solar panels might be the brightest idea humans have ever come up with, but it's not without its difficulties. As the industry has gotten off the ground, most of the systems featured series, not parallel, wiring. Anyone who knows the frustrations of working with old-style, series-wired Christmas tree lights knows that when you have a problem with one bulb you have a problem with all of them.

To avoid the inefficiencies of series wiring, Sustainable Energy Technologies developed a low-voltage inverter that has been specifically designed for solar systems with parallel wiring. Now when one panel is shaded or snow-covered, the other panels don't suffer. Overall, energy efficiency increases from 10 to 25 per cent. Given the greater returns plus cheaper installation and upkeep, it's no surprise that in four years the percentage of solar systems with parallel wiring has jumped from zero to 15 per cent.

The company has just moved its headquarters from Calgary to Toronto to take advantage of Ontario's feed-in tariff – which pays a premium to property owners for installing solar panels that feed electricity into the grid – and to stage a foray into the United States. It is considering moving its research and development division as well, but wants to see that the Liberals' feed-in tariff will survive the next election.

Special to The Globe and Mail

DOWNTOWN SYNERGY

"Space matters," says MaRS adviser Tom Rand, explaining why the business nursery for burgeoning tech-based ventures chose to squeeze itself in among Toronto's downtown teaching hospitals, universities and bank towers.

Collaboration between different sectors is an important goal of the centre, and this was the perfect place to encourage scientists, entrepreneurs and financiers to rub elbows.

Since the not-for-profit started five years ago, it has helped more than 1,100 clients develop innovations and ready them for global commercial markets.

It currently has 50 volunteer advisers, 11 part-time advisers and nine full-time advisers shepherding companies in the fields of technology, life sciences, clean tech and information technology.

More than two-thirds of its funding is from private capital, and it has had more than a third of a million people attend events since 2006.

Ian Merringer

TRANSPORTATION SAFETY BOARD

Inquiry finds 16 separate problems in fatal helicopter crash off Newfoundland

OLIVER MOORE

The pilot of a helicopter that crashed off Newfoundland, killing 17, was "approaching task their escalating situation. The report also painted a vivid picture of the tense moments before the crash, concluding that the pilot took on an "excessive ple, after the flight crew became fixated on a minor problem.

"You tend to take your focus off what is important and not even realize it," explained Will aircraft to a safe landing," he said. "They didn't have, from what I can gather, the correct information to make the right assessment."

Sikorsky spokesman Paul Jackson said they "recognize the great effort" that went into the TSB report.

"The loss of Cougar Flight 491