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Life on MaRS

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CHARLA JONES/TORONTO STAR

Toronto Star reporter Judy Steed has been living on MaRS for the past month, to capture some of the people, ideas and extraordinary developments in commercializing leading edge research at Toronto's Medical and Related Sciences Centre, which celebrates its first anniversary tomorrow. First of two reports.

When the Medical and Related Sciences (MaRS) Centre was struggling into existence, in the early 2000s, not a developer could be found to partner on the construction project.

Indeed, the only interest generated in the site — the historic, crumbling, yellow-brick Toronto General Hospital building on College St. just east of University Ave. — was for condominiums.

Seed money was begged and borrowed from friends of John Evans and the band of early supporters he rounded up. (Evans, former chair of Torstar Corp.'s board, founder of McMaster University's innovative medical school, is the current chair of MaRS.)

That was then, this is now.

One year after the MaRS palace of technology opened — in a monumental renovation and construction project that encompasses 700,000 square feet of state-of-the-art offices, incubators and research labs — developers have lined up to participate in phase two, one million more square feet hugging the corner of University and College. And there's a long waiting list of companies eager to become tenants, to participate in this dynamic marriage of scientific depth, management expertise, collaboration and inspiration.

Tomorrow, as MaRS chief executive Ilse Treurnicht celebrates the centre's first anniversary, the magnitude of its mission — to transform innovative research into viable, Canadian based companies — is starting to emerge.

But telling the MaRS story is a bit like connecting the dots of a massive creature — an octopus, maybe? — whose reach extends far beyond the walls of the institution, linking not only to Toronto's vast network of teaching hospitals and universities but to every corner of the planet.

From empty, echoing corridors a year ago, to 1,500 post docs, scientists and burgeoning entrepreneurs at work at 65 tenant-organizations, including 25 incubator firms, sparks are flying as Treurnicht and her team sharpen their focus on the hot spots of global technology:

- Regenerative medicine (of great interest to aging baby boomers), including stem cell research, which could lead to a cure for spinal cord injuries, Parkinson's and Alzheimer's Disease.

- Detection systems for infectious diseases and pollutants.

- Diagnostics, including imaging (a highly competitive space in which Canadian scientists have a world-class reputation); pre-natal and molecular diagnostics. (The latter refers to examining people's DNA, doing scans to show efficacy of particular treatments — such as Herceptin, which mobilizes the patient's immune system to kill a certain type of breast cancer cell.)

- Collaborative software (enabling people around the world to work on the same files).

- Nano technology and its three main applications: biomedical, advanced materials and energy, including solar. Huge growth is anticipated in biomaterials — using human cells to create or mimic human tissue, rebuilding cartilage, harvesting the body's own molecules to stimulate the body to rebuild itself.

Walk along the corridors and you'll bump into everything from "virtual colonoscopies" to code that loads BlackBerries with every conceivable form of emergency information plus subway maps for every city in the world. There's a global health group with funding from the Gates Foundation to help redress inequities in health care in developing nations. And there are seasoned hands, "gray hairs," ready to nurture and grow the great ideas into viable companies.

It's an old story in the annals of Canadian R&D: we do great fundamental science "up here" but the best ideas end up "down there." The Americans are "the most avaricious competitors," as Evans puts it. Masters at commercializing new products, they overwhelmed Canadian scientists who lacked the business know-how to develop their businesses in this country.

An absence of strong industrial policies resulted, Evans says, in "the hollowing out of industry in Canada," while we are "lulled into complacency by the natural resources that are carrying us through at the present time."

That is unlike Sweden, a nation of only nine million people that just the same has its Karolinska Institute, "one of the best neuroscience research facilities in Europe," according to the U.S. National Institutes of Health. A model for the creation of MaRS, Karolinska is a driving force for the economy of Sweden and the Stockholm area (where the Institute is based).

As MaRS should be, for Toronto.

For Treurnicht, a South African-raised scientist, the first challenge at MaRS was to grow an "innovation food chain, from small to large companies," based on a tenanting strategy that promotes diversity. "We're not just an incubator or a commercial real estate park for technology," she says.

Treurnicht manages the concept of innovation "very broadly," Evans notes. "We're not just trying to build new small companies; it's about stimulating the type of R&D that will change the nature of commerce. Ilse understands the big picture, and she's done it all — she's worked on the venture capital side, she's run a tech start-up, she has a PhD in the sciences, and she's a prodigious worker."

And she believes in the synergies sparked by collaboration.

A big part of MaRS is the opportunity for networking and learning. "Entrepreneurship 101" was flooded with applicants last fall, drawing 400 post docs and other researchers. "There hadn't been any training for scientists in how to build their own companies," Treurnicht says. In addition to the basics, "we're giving them `deeper dives' on developing management teams, marketing plans and dealing with regulatory issues."

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Claron hires from the

global workforce

Up the glass-walled elevator to the incubator space — small offices filled with people seated at computers — one notices all the different accents and faces drawn from diverse cultures.

"Silicon Valley was largely an immigrant-driven phenomenon," says Veronika Litinski, PhD, MBA. The Moscow University graduate spent two years at the University of California, Berkeley (as a research scientist in DNA repair and cancer biology) and worked with investment banks (in venture finance) in the U.S. before becoming the director of MaRS's Venture Group.

MaRS is similarly immigrant-driven, she says, attracting top scientists from around the world. But it's no cakewalk to get in.

Litinski is working with 110 life sciences and information technology enterprises — only two dozen are tenants in the building — but before they're accepted into the Venture Group, she's blunt with them about their "great ideas."

"How do you think you're going to make money?" she asks. "Who else thinks it's such a great idea?" She helps them investigate "the patent space, the competitive space, market trends," to determine if there are already five people in the world ahead of them developing the same concept.

On average, "out of every 100 companies with potentially attractive technologies, less than 10 per cent grow into successful enterprises," she says. "We will hopefully improve that ratio and encourage people to pursue big opportunities."

Take Claron Technology: When computer engineers Doron Dekel (from Israel) and Claudio Gautti (from Italy) moved into MaRS last August, "Claron was just the two of us and the building was under construction," says Dekel, 49. "Now we're 10 people, moving up to a larger space on the fourth floor. It's a huge advantage, being here."

Dekel, a graduate of Israel's Technion, Institute of Technology, came to Canada in 1988 when he landed a job at Mississauga-based Cedara Software (then called ISG Technologies). Cedara was an early provider of 3D imaging technology and algorithms that could be integrated into clients' own programs. (Algorithms are mathematical recipes that the computer can execute to solve problems.)

In a CT scan, Dekel explains, 3D technology compresses thousands of images into a three dimensional picture of the human body that can be rotated and "examined" on screen, for diagnostic purposes.

Dekel — now a Canadian citizen — became head of development at Cedara, and hired Gautti out of Milan in the early 1990s. They joined forces, leaving Cedara in the late 1990s, and worked on a few start-ups before forming Claron Technology in 2001.

Specializing in software for 3D imaging, they had a prize client: Philips Medical Systems, a division of the Netherlands-based Royal Philips Electronics empire, which had sales of 30.4 billion euros in 2005.

Claron's big breakthrough was the MicronTracker, a camera that functions "as a GPS (global positioning system) for surgeons," explains Gautti, 41. "It gives them the capacity to navigate for `keyhole surgery' with as little damage to the patient as possible."

Dekel demonstrates, wielding a pointer, placing it on a model of a human head, and aiming the

MicronTracker at black and white chequered markers, called "Xpoints," on the pointer. The camera transmits an image, in real time, to the computer screen, enabling the surgeon, with precision accuracy, to "see into" the patient's brain and excise the tumour.

Claron has sold 80 cameras around the world, from North America to China and Japan. (The camera costs $10,000 and is manufactured in British Columbia.)

In the meantime, Dekel, head of Claron's algorithmics division, came up with a better way to do a "virtual colonoscopy" based on a CT scan. The data is processed and visualized — as if slicing vertically through the colon and flattening it out — enabling doctors to detect polyps that could lead to cancer.

It's a quick, non-invasive procedure compared to a traditional colonoscopy. Claron's "virtual" method of unfolding the colon wall and detecting polyps is fast and effective.

The firm's main focus is improving efficiencies in the health-care system by reducing the time radiologists spend reviewing data from CT scans. Claron can eliminate (or mask out) images of bones, enabling radiologists to focus on blood vessels — to detect blockages, for instance — and to read scans faster.

"It used to be that there weren't enough CT scanners," Dekel says. "Now we've got the scanners but there's more and more data and not enough radiologists to interpret the data." With Claron's new software, radiologists can read data two to four times faster than under the old method, "enabling two to four times more patients to get CT scans," for certain types of examinations.

What did MaRS do for Claron?

Says Dekel: "MaRS helped us do market studies. We thought we should raise money; they gave us feedback about our business plans, and we decided we had enough cash."

Says Litinski: "They elucidated their own strengths and ultimately developed new products of their own."

As a result, "Claron is much stronger today," Dekel says. "Our revenues are increasing and we can get quite far ahead without having to give away the company."

Typical of many of the enterprises at MaRS, Claron hires from the global workforce — posting jobs online, often conducting interviews by email, using "trick" math questions to assess potential hires' ability to think creatively and deal with frustration.

Dekel introduces a few members of the Claron team: Vlaldimir Rochlin, 46, a physicist, educated in the Ukraine, worked for Philips in Haifa. Dan Matei**,** 34, robotics specialist from Romania. Iryna Gordon, 28, computer scientist from the Ukraine with a masters degree from UBC. Monowar Hossain, 28, from Bangladesh, a computer scientist who did his masters at York University.

"We tolerate everything except intolerance," Dekel says.

Tomorrow: How MaRS reaches out to the world.

Additional articles by Judy Steed