BIOBEAT

Newsletter of the Western Greater Toronto Area Convergence Centre

February 2007, Issue 2 Volume 1

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WGTACC-YORKbiotech

Breakfast Seminar

Location: Faculty Club, University of Toronto, Mississauga
Date: Tuesday, March 27, 2007
Time: 7:30 am – 9:30 am
For more information, please contact: bcip@utm.utoronto.ca

In This Issue...

Message from the Chair


Dr. Ulrich Krull

The activities of the Western Greater Toronto Area Convergence Centre have now been available in our community for the better part of two years, and some of the outcomes are becoming apparent, and internationally acknowledged. The mandate supports networking and enhancement of opportunities for business connectivity, education to support technology industries, and research to support technology development and societal interests. This is accomplished through three activities:

"The Accelerator": An entrepreneurial and business support organization that works with industry, government and academic partners to promote the creation, adoption and commercialization of knowledge.

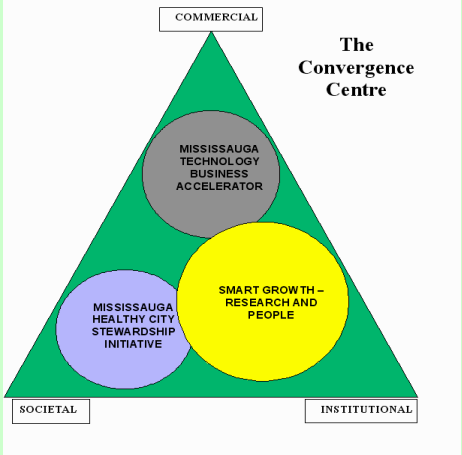
"**Healthy City Stewardship Centre**": Based on the "Mississauga Model" of the World Health Organization's "Healthy City" program, the WGTACC assists in the further development of regional social system research, educational, recreational and employment/volunteer opportunities and services. The World Health Organization provides for international marketing exposure of the region as an exceptional place to do business because of the quality of life.

"Smart Growth – Research and People": The WGTACC fosters partnering and alignment for scientific research and academic programming by academic institutions and community hospitals. This initiative serves to move research creativity into business development and provides a pipeline for industry to access institutional resources.

And what are the outcomes? In short, it is worth the effort. As examples, we can point to success in:

- A major international award recognizing the Healthy City Stewardship Centre (see side bar)
- The development of the new Academy of Medicine as a partnership between the Credit Valley and Trillium hospitals and the University of Toronto at Mississauga
- The creation of a new professional graduate program focusing on Management of Innovation
- The creation of a centre for research and graduate education in forensic sciences with the Province of Ontario and local industry

We are on a roll, and more good news is around the corner.



Mississauga's Healthy City Initiative Wins World Leadership Award

The City of Mississauga won the 2006 World Leadership Award in the category of "health" for its Healthy City Stewardship Centre (HCSC) initiative in a ceremony held in the Royal Courts of Justice in London, England. The announcement was made before a number of guests including His Excellency Mr. James R. Wright, High Commissioner for Canada to the United Kingdom and other distinguished guests.

Mississauga Mayor Hazel McCallion, City Manager and CAO Janice Baker and Vice-President and Principal of the University of Toronto Mississauga (UTM) Ian Orchard presented the Stewardship Centre initiative before a panel of judges from the health sector including Professor Rod Griffiths, President, Faculty of Public Health in the U.K. The City of Mississauga competed against Madrid, Spain and Lima, Peru to win the health category award.

The awards were sponsored by The World Leadership Forum, a not-for-profit organization which promotes leadership internationally by spotlighting the work of exceptional leaders and achievers in 15 disciplines ranging from architecture and civil engineering, culture and the arts, to health, science and technology.

According to the World Leadership Forum, the purpose of the World Leadership Awards is to identify exceptional leadership in cities across the world, and to use that leadership as an example and inspiration to other cities facing similar problems. Cities were judged on the criteria such as quality of leadership displayed, difficulties or obstacles that the city has overcome, and the degree of inspiration that the city may give to others.

Presented annually in London, the World Leadership Awards celebrate the very best in modern city leadership. The City of Mississauga was among 400 cities across the world asked to submit projects in a wide range of activities.

Ministry of
Small Business and
Entrepreneurship

Ministère des
Petites Entreprises
et de l'Entrepreneuriat

Ontario

A MESSAGE FROM
THE HONOURABLE HARINDER S. TAKHAR

As Minister of Small Business and Entrepreneurship, I am pleased to extend greetings to readers of the BIOBEAT Newsletter and to members of the Western GTA Convergence Centre.

My ministry was launched in May of 2006. The mandate of the Ministry of Small Business and Entrepreneurship is to create a climate that stimulates small business growth in Ontario. It's our goal to make it easier for the approximate 340,000 small firms operating provincewide to reach prosperity. These small businesses are the backbone of Ontario's economy.

The Government of Ontario has developed a strategy to transform ideas and research into products and services. Led by the Ministry of Research and Innovation, the $160 million "Ideas to Market Strategy" forms the basis for fostering a culture of innovation.

The Ideas to Market Strategy is underpinned by 3 components. A $46 million Market Readiness Program provides high-potential innovative companies in Ontario with early-stage financial support and management expertise to help them get off the ground, and attract investment from other sources. The $24 million Innovation Demonstration Fund supports innovative companies at the pilot or demonstration stage. This fund will encourage the development and commercialization of new bio-based, environmental and alternative energy technologies. Lastly, the $90 million Risk Capital Fund will provide support for innovative early stage companies in partnership with venture capital funds, pension funds and the federal government.

These initiatives provide the impetus for entrepreneurs and innovators to move research from the laboratory and into the marketplace so that Ontario may continue to develop leading edge companies and offer high value employment opportunities.

Within the context of a government commitment to the commercialization of research and ideas, the Ministry of Small Business and Entrepreneurship will act as an enabler to the entrepreneurial community. Through 44 Small Business Enterprise Centres and 12 Business Advisory Service offices, entrepreneurs are provided access to business consulting services and information, as well as resources related to management, marketing, technology and financing.

I would like to extend my appreciation for the efforts the Western Greater Toronto Area Convergence Centre has made to establish a Life Science and Technology cluster within the Western GTA. These efforts intertwine with the Government of Ontario's commitment to fostering a culture of innovation and creating high paying jobs.

Harinder S. Takhar
Minister of Small Business and Entrepreneurship

The Challenge of Creating Wealth from Technological Innovations

By Jagdish Yadav

Ontario has an excellent knowledge infrastructure for the creation of technological innovations. It has a large number of universities and affiliated research institutions with world-class state-of-the-art research infrastructure and a large pool of talented researchers who do advanced cutting-edge work. Traditionally, the universities have focused mostly on basic research without much concern about the application of research results. The commercial exploitation of research from the universities was mostly left to the judgment and interest of industry.

The situation has, however, dramatically changed particularly after the enactment of Bayh-Dole Act in 1980 in US. The universities have become more proactive towards commercialization of their technological creations. One of the significant results of this shift is an increased emphasis on applied research. According to the Small Business Administration, "all the most successful regional economies in the US are built on a foundation of technology transfer." In an increasingly mobile and competitive world, innovation and its translation to wealth are the key differentiating factors for competitive success of countries, especially for advanced economies such as Canada. The universities consider the commercialization of their innovations as a revenue generating vehicle for stimulating further research. Moreover, individual incentives have fired the spirit of entrepreneurship amongst the researchers.

Almost all the major universities in Ontario have established Technology Transfer Offices (TTOs) to facilitate translation of their innovations into commercial products. The number of disclosures has steadily increased since the creation of TTOs; and there is a dramatic increase in number of patents based on university research. In North America, since 1980 the licenses from academic institutions resulted in the creation of 712 start-ups up to 2004. The TTOs generated approximately $1.6 billion in revenues in 2004.

The provincial government has been actively encouraging the universities in their efforts to commercialize innovations. It has supported the establishment of a number facilitating organizations such as Regional Innovation Networks, MaRS and Ontario Centres of Excellence. Financial incentives are made available through special programs such as market-ready fund and Ideas-to-Innovation to meet the needs of capital at various stages in the commercialization process.

The institutional changes and governmental programs have resulted in creating a positive movement and attitudinal change towards knowledge creation and its translation to wealth. The commercialization of innovations at the Canadian universities must now address how to improve performance.

The Concerns

The Canadian Licensing Survey FY 2004 by the Association of University Technology Managers (AUTM) indicates that start-up growth has been up in US but not in the same measure in Canada inspite of the presence of top quality R&D activity in Canada. Although the broader GTA region ranks second only to Boston in terms of science and engineering publications, the same is not true with commercialization.

The performance of TTOs is increasingly seen through a magnifying glass. The number of invention disclosures has gone up without a corresponding increase in the number of licenses and/or start-ups. One is apt to believe in what Ed Silverman says, "No one keeps data on the number of opportunities that die on the vine…" (Trouble With Tech Transfer, *The Scientist*, Vol 21, February 2007) in reference to the opportunities available to TTOs

John Wilkinson
MPP Perth-Middlesex
Parliamentary Assistant to the
Minister of Research and Innovation

~ Opinion ~

- Government's major role is to create right conditions for innovation and growth
- Government has identified the weak link, the 'valley of death' (money is there at the beginning as well as at the end of the commercialization spectrum) in the process of commercialization of technology
- We have devised programs to fill the gap, and make money available to help start-ups and for innovation demonstration; we are challenging the investing community to join us
- Premier says, "it is about the fast overtaking the slow," government has become quicker
- We have to change our culture in government to be open and supportive
- One can't discount the benefits of publicly funded institutions
- Diversity and highly educated workforce are Ontario's strengths

Tim McTiernan
Executive Director
Innovations at University of Toronto
&
Assistant Vice-President, Research

~ Opinion ~

- Commercialization in Canada tends to be benchmarked against US
- In US, culture of innovation has been a fertile ground for the growth, and the VC sector and tax regimes have been supportive earlier than Canada
- University-industry relationship has several dimensions, all intertwined, results and IP opportunities are there for industry to exploit
- Teaching, scholarship and research are at the core of university mission, our major role is a high value addition
- Many aspects of university functions have economic value, but may not have commercial value
- Impact is substantial, we haven't found a way to measure it well; we need to look at the broad array of performance measures that captures the full benefits that result from university such as student experience, excellent educational quality, industry relations, etc.

in Universities. It is true that "only about one in four disclosures offer some realistic commercial potential. Of these, about one half will actually result in a commercial application, and of those that are commercialized only about one in fifty will provide annual commercial income in excess of one million dollars" (http://ieeexplore.ieee.org/iel4/4876/13450/00653720.pdf?arnumber=653720).

In terms of gross commercialization revenue, the Canadian universities are far behind some of the universities in the United States. For instance, the average gross commercialization revenue of the universities of Wisconsin-Madison, Washington, McGill and Toronto were $47.57, $40.33, $4.50 and $4.33 million respectively in the years 2001-2003.

Once a scientist owns a patent and starts behaving like an entrepreneur, there is the potential for distraction from basic research. The question that arises is how to maintain the quality of basic research from the "entrepreneurial academics." Distraction from basic research is viewed by some as a worrisome development.

Staff turn-over in the TTOs is relatively high. The non-continuity of staff for a longer period in office is a cause of concern in terms of relationship building with stakeholders, risk of change in priorities midway for a project in pipeline and meeting deadlines.

In comparison to the number of disclosures and patents, the industry demand for university technologies does not seem very high.

The Reasons

A number of reasons, outlined below, have been identified to explain why so many disclosures fail to take off for commercialization or move to other jurisdictions.

Competition and offshoring: Global competition in the world's economy poses many challenges. Offshore manufacturing costs, uninterrupted flow of information and capital, and other factors lead to shift of manufacturing base to less-costly jurisdictions. Also, the industry is increasingly scouring new technologies from all over the world. Many of the big corporations have set-up their R&D centres overseas, thus providing them opportunities for a wider choice of technologies. The offshoring possibility puts a competitive pressure on the uptake of technologies coming out from local institutions.

Flight of intellectual property: There are numerous instances where the knowledge created in Canadian universities was commercialized in other jurisdictions through sale or licensing because the other jurisdictions were offering favourable conditions.. If that happens then the benefit of commercialization to the local economy is not fully available.

Investors' perceptions: Many investors, being in the risky business tend to be non-receptive to new ideas. They generally take a traditional approach to organizational structures, e.g., strong management teams consisting of certain constituents. They treat new approaches and styles, including new technologies, with a degree of skepticism.

Inability to demonstrate value: The technology creators put great emphasis on technology - its features, uniqueness and advancement. The value of such a technology to a customer is not proactively considered before its development. A lack of customer focus makes a product or start-up unsuccessful, even though it is based on advanced expertise and technology.

Inadequate networking: Generally, the scientific community does not network adequately with other stakeholders involved in the process of commercialization. Similar is the case with the top management of established big companies. By not interacting with each other on a frequent basis, they miss great opportunities to understand each others' perceptions and constraints.

Lack of senior management skills: There is a general shortage of experienced technology and business managers in Canada. Academically qualified people are there but those with experience "in the heat of the work place are not many." Hiring from outside is challenging because of the salary gap and the availability of opportunities for lateral or vertical movement.

Capital chasm: Funding is generally available for knowledge creation in the form of research dollars primarily from government, and also for manufacturing and marketing of a final product mainly from big companies. However, there is not enough money for the "most risky stage" sandwiched between the knowledge creation and manufacturing of final product. Although some efforts have been made recently by government to finance activities at this stage, it is not sufficient.

Regulatory barriers: The product approval takes longer in Canada then other jurisdictions. For instance, new biologics take six months two years longer to be introduced in Canada than in the US (http://www.biotech.ca/media.php?mid=1121). According to the Canadian Animal Health Institute, the Veterinary Drugs Directorate takes 808 days on average to review a new drug submission while in the US, the review time is 420 days in the US (http://www.innovationstrategy.gc.ca/gol/innovation/site.nsf/en/in02248.html)

Competence of TTOs: Apparently, the TTOs suffer from a high attrition rate. There is a need to understand whether the TTOs are adequately equipped to handle the complexities of technology commercialization. Is the staff in these offices adequately experienced and trained? Or is it something related to the salary structure or the operational complexities? What are the hurdles in hiring and retaining quality staff? "There is schizophrenia in university TTOs: sometimes required to do public good; sometimes required to make money," points out Kevin Cullen in a report (http://www.universitas21.com/DDOGSNotes%20from%202004.pdf).

The Solutions

"**Technology Forecasting**": A technology developed on actual needs of society stands a better chance of acceptance and success. It reinforces the idea of promoting networking among researchers, industry, market-research agencies and distributors. The innovator-marketer networking helps scientists to understand how to "maximize fit with customer requirements" and to "have a clear sense of which features customers value the most." It becomes easier for the manufacturing sector to absorb technologies which provide value to the customer.

"**Technology bundling**": One of the ways of making the process of commercialization more effective is to offer suites of complementary technologies. In this situation many researchers work together to put together related technologies in one selling package. It helps in faster product development in a cost-effective manner. The entrepreneur does not have to knock at as many doors.

Maintain "product-to-market timelines": Competitive pressure requires that the "product-to-market timelines" are maintained or made more efficient. It is imperative to expedite the process of bringing a new product into the market as quickly as possible because customers may become accustomed to another similar product coming earlier into the market place. It is, therefore, critical to remove all unnecessary barriers and make the administrative and bureaucratic processes efficient. Different types of technologies need different sets of development and management prescriptions as "one size does not fit all." For example, the invention to market time for a software product may not be more than six months, while in case of biopharmaceuticals, it is 10 – 12 years. An efficient regulatory system will have a positive impact on faster introduction of new products into market.

Meet social and environmental standards: View the greater picture and make customer's needs a top priority. Ask in advance: Can the consumer meet the price? Do the technologies meet socially and environmentally relevant parameters such as cultural alignment, animal rights, etc?

Collaboration with multinational corporations: Another factor which can help in commercialization is planning ahead for marketing of the end product. The start-ups are not obviously in a position to reach global markets. The start-up companies can benefit from partnerships with large multinational firms. They can benefit from large firm's competencies such as capital, regulatory experience, manufacturing expertise, market and distribution channels.

Promote networking: There is value in working together. The researchers and TTOs alike can benefit from the collective and global knowledge of networks. The ratio of innovations that move to start-up can considerably improve if

Gord Surgeoner
President
Ontario Agri-Food Technologies

~ Opinion ~

- Though innovation and discovery are in continuum, they are separate things, scientists are generally not a good fit in the role of management
- In academics the impression is that much discovered is commercial, commercialization process to the end use product is much more than the discovery; a scientist is committed to discovery whereas an entrepreneur is committed to commercialization
- Quoting an angel, "When their mother-in-law has invested in a company, then the faculty members are committed to drive a company to completion," if an academic is not personally committed to invest in a company, then it is not a good message
- The problem is big lump-sum upfront, get successful first then get a smaller piece of a bigger pie later on
- Money is not a big issue, the biggest fault is the hands-off between academia and the private sector; failure to recognize that most of the commercial value is created after the discovery

Neil Fraser
President
Medtronic of Canada

~ Opinion ~

Issue
Engineers should not think of medical devices as gadgets but as therapies, the focus must remain on meeting needs (e.g., patient health, clinical safety and efficacy, care, usability); there is a need to bridge the gap between the engineers and the researchers.

Constraints in commercialization of innovations in Canada

- Small size of market
- High cost of product development and manufacturing; the range of medical devices is huge and requires millions of dollars to bring to market
- Highly regulated environment creates huge, upfront hurdles for start-up companies in particular (Canada similar to US, Australia, Japan)
- Comparatively lower incentives to industry than some locations; the value of tax incentives is huge; if somebody locates an industry in a jurisdiction (such as Ireland, Switzerland, Puerto Rico, Southern Holland), everybody then starts doing the same because of the economic advantage and momentum it creates; industries like medical devices do not get the same attention as others such as automobiles because of employment potential
- Reimbursement policy of healthcare system is a challenge for the development of new technology

Even so, new ideas coming out in Canada end up being successful at the global scene. e.g., development of "Reveal" – an implantable loop-recorder, an idea from Dr. George J. Klein. This cardiologist at London Health Sciences Centre created a technology that was developed by Medtronic of Canada, is manufactured in the Netherlands and marketed around the world. Basic original pacemaker was invented in Canada but commercialized in US.

Positive developments

- Establishment of regional innovation networks (such as Western GTA Convergence Centre), Incubators (such as MaRS) and coordination of activities with IEEE, MEDEC, etc. will be helpful in forging connection among industry, engineers, physicians, other scientists, business people and investors
- Need more conducive IP management and orientation towards commercialization from different stakeholders

Looking forward

- Various stakeholders have to understand and play their respective roles and come together
- Partnerships with multinational corporations (such as Medtronic operating in over 120 countries) is advantageous as they provide immediate access to world market; they have the talent and experienced employees, who can even be active at some point to start new ventures; increasingly multinationals are looking around the world for new ideas
- Recognition of concentration of health related organization in GTA as a very useful platform to integrate different components of commercialization from idea to end product

Message

- Canada is a very fertile ground for new ideas, with first-rate, world class physicians and researchers; leading physicians, engineers and business people should work together; engineers need to learn how to sell, how to be persuasive; scientific community needs to network more vigorously with industry to find opportunities to partner
- Competition is a hard truth and we need to be ahead in the game of innovations (two-third of Medtronic's products introduced in the last two years)
- Medical technology is one of the most exciting industries to be in, now and in the future. Health care has tremendous opportunity for innovation. Innovations need to be looked as part and parcel of growth economy

researchers develop better understanding about customer needs and the nitty-gritty of commercialization through networks and entrepreneurial trainings.

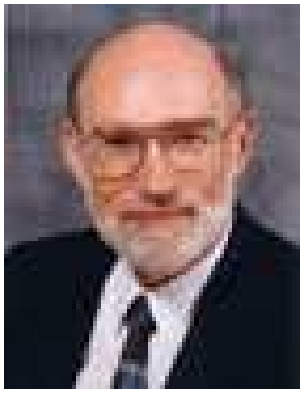
Capital availability: The financial incentives from government need to be continued in the foreseeable future. Also, there is a need to find ways to increase the involvement of the investor community.

In the pursuit of commercialization, it should not, however, be forgotten that the universities have the mandate of creating social, economic and environmental values beyond the economic contribution. Is it right for a patent-owning scientist to behave like a company or as an entrepreneur? What is the implication of this shift on basic research? These questions are worthy of discussion amongst policy makers, scientists and society. New models of creating innovations and then transfer are required in order to make use of the opportunities available from university-entrepreneur alignments.

Jagdish Yadav is Business Development Officer, International Research Development at the University of Toronto. He is also the Editor of BioBEAT.

Understanding Technology Transfer
Commercialization of Technology at IUT

By Cyril Gibbons, Ph.D.



Technology Transfer is defined by the Association of University Technology Managers as "a formal transfer of rights to use and commercialize new discoveries and innovations resulting from scientific research to another party". In practice, commercialization of university technology is a very complex process involving many areas of knowledge, facilities and skill sets usually achieved through broad experience. The formal transfer of rights is just one aspect of the commercialization process.

When an Invention Disclosure is made to the university, it is often only the basis for a commercial product and the first duty of the Commercialization Manager is to identify how, and if, the technology can be turned into a saleable product. The next step is to identify and quantify the market for such a product. The Commercialization Manager at Innovations at University of Toronto (IUT) investigates the patentability of the invention and freedom to operate it in view of existing patents. Finally, the stage of development of the technology is considered, and the cost to develop a marketable product. If the potential market justifies the investment of resources to realize the benefit, IUT will offer to take on the challenge.

Finding money to finance product development is often the first requirement. IUT is well connected to funding agencies like Ontario Centres of Excellence and Natural Sciences and Engineering Research Council, and has a high success rate in grant awards. We monitor the work, and when the product has reached a stage where it can be attractive to business, we identify companies and make a sales pitch. When we find a company with the interest and ability to move the product to the next stage, we negotiate the terms and create the agreements necessary to transfer the rights. Thus transferring the rights is the culmination of months or even years of work to build the foundation. We refer to the whole spectrum of activities as Technology Commercialization.

The simplest form of commercialization is to license the right to use the technology to an established company. This has some appeal, because the established company will have the technical and financial capability to develop the product and manufacture it, and the marketing and distribution capability to get it to the consumer. But the more effort and cost the licensee will have to commit, the less they are willing to pay in royalties.

If there is no obvious licensee, or if the invention has sufficient value to justify the investment of more time and effort to advance it to the next stage, the decision may be made to create a new company, sometimes referred to as a spin-off or start-up. While the legal cost of creating a new company is not great, funds must be found to pay for the company's expenses for the first few years of operation, including management, product development, manufacturing, and marketing/distribution. While there are many venture capital firms which have money to invest, they need to understand and control their risk, so they will look for competent management teams with a proven track record, a well advanced product program, and realistic expectations on the part of the inventors. Often venture capitalists will want to see a company with revenue from sales before they invest. So the job of the Commercialization Manager is to find the sources of funds that make this all possible. This is usually done through hard work, repeated presentations, and much negotiation. With luck the right parties can be brought together to accomplish a favorable result.

One successful outcome of commercialization efforts by IUT is Biox Corporation. Biox was created to develop and commercialize an improved process for making biodiesel fuel – diesel fuel from vegetable oils and waste oils and fats. The fuel is more environmentally friendly than petroleum diesel, and can use renewable materials or waste as feedstock. After several years of research by Professor David Boocock in Chemical Engineering, IUT (then UTIF) identified patentable aspects and filed for patent protection. A business plan was written, after a year's effort by IUT, an interested investor was identified to invest the first capital to engage competent management and engineering to scale up the process. Over six more years and with further investment, the technology was proven, refined and a process plant was designed, engineered and built. Biox is now operating with a production capacity of 60 million litres per year, and has attracted investment to expand across the globe. This is a business and environmental success, in which IUT is pleased to have played a part.

The role of IUT is to bring together the various parties who are needed in the commercialization process – the inventor, legal support for patents and contracts, investors, and business managers. This enables an inventor to focus on his research and teaching responsibilities, while the business is managed and rolled out by people with the experience needed to take it through commercialization. At the University of Toronto, an inventor may take personal ownership of his invention, if he/she wishes to assume the responsibility for all these activities. The role of IUT is to make the job easier, to provide business experience, and to make it more effective and rewarding. Seeing your invention embodied in a product in the marketplace can be very satisfying.

Cyril Gibbons is the Director, Commercialization, Physical Sciences and Engineering at Innovations at University of Toronto.

The IT Commercialization Challenge

Doing it Right and Getting to Market, Fast

By Lino DeFacendis

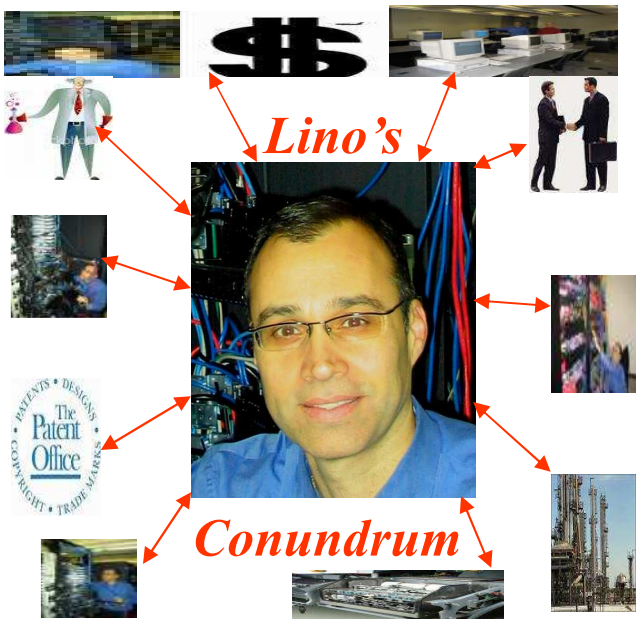
Yes, believe it or not, we live in a wonderful time. With the on-going Information Technology (IT) revolution, opportunities abound with ever greater, mind-boggling advances in processing power, memory capacity, virtually infinite bandwidth, a wealth of value-added applications, reach of the world wide web and ever cheaper connectivity options for a globally connected community.

Thanks to Moore's Law, IT's building blocks are continually getting vastly more powerful yet orders of magnitude cheaper at the same time - an explosive combination offering tremendous opportunities for those who have the vision, and courage to reach the next plateau. And with countless fortunes being made in relatively short periods of time, many tech-heads and entrepreneurs have their sights focused on becoming the next youtube (see www.youtube.com). For those who may have been hibernating over the last few months, youtube, a no frills video-download site, was bought by Google in October last year for $1.65B. Not bad for a 21 month old start-up!

Ok, so you 'get it' and are ready to rock. So what's next? Let me offer a few high-level tips to ensure you're pointed in the right direction.

Just Get Started

Business plans are a definite must have, especially when you're ready to approach a few Angel Investors for your first round of financing … but shelve the detailed 30 page business plan until later. If you've got a cool new concept, and an innovative business model for getting to market AND making money, my advice is just get going with developing that concept-level demo so you can start getting some real-world feedback on how to best evolve your concept prototype into a finished product that people will actually want, use and love. And using a snazzy demo is also a great way to woo potential developers, marketing types and entrepreneurs to buy into what you've got and help take it forward. Sure beats trying to do it with a powerpoint presentation and a bit of smoke and mirrors.



Finding Financing

If you're lucky enough to be a researcher affiliated with a Canadian university or research institution, you have the BIG benefit of being able to leverage federal and/or provincial grant money (typically with little or no strings attached) to take your venture forward. Your institution's Technology Transfer office is available to help take your project forward, and can provide you with more details about specific funding programs. For starters, the Natural Sciences and Engineering Research Council of Canada (NSERC) has a number of grant programs to help get you going. For more info, go to http://www.nserc-crsng.gc.ca/. In Ontario, the Ministry of Research and Innovation (http://www.mri.gov.on.ca/english/default.asp) and Ontario Centres of Excellance (http://www.oce-ontario.org) are also available to help.

So what if I'm not a researcher at a university or college, or my research institution doesn't have a Technology Transfer office - how am I supposed to eat while trying to get my venture off the ground? Although there are still government sources of funding available to you (for example, the National Research Council Industrial Research and Assistance Program http://irap-pari.nrc-cnrc.gc.ca/), the harsh reality is, many new IT ventures start-out in basements, garages, etc. with founders burning the midnight oil while workin' the day job. As you've probably already figured out, this comes as no surprise. In case you're wondering, this also applies to researchers at universities and colleges, since government grant money can really only get you so far. One other bit of important advice: if you can afford to hire a good consultant with commercialization expertise, this will likely be very helpful. If you can't afford to pay her/him cash, consider offering an equity stake in your start-up.

When the founders are ready to make a serious go of it and venture out on their own full time, a common scenario is for these daring souls to scrape together enough initial working capital from savings, friends, family etc. to get the ball rolling. As early as possible, start working your people network to spread the word and get some introductions to potential Angel Investors – typically high-wealth individuals with good experience and track record of success in specific business and technology areas. Note however, that unlike the late 1990's, angel investors today will typically want to see some tangible proof of market readiness and customer acceptance before investing a penny. So when you've got that prototype developed and can show you're starting to get some real interest from some key customers, go for it. Organizations like the National Angel Organization (http://www.angelinvestor.ca/splash.asp) can also help identify potential sources of early stage seed capital, typically well before a larger tier Venture Capital firm would have any interest.

Continued on page 12

Stimulating Discoveries

Advances in Neuroprostheses

By Milos R. Popovic

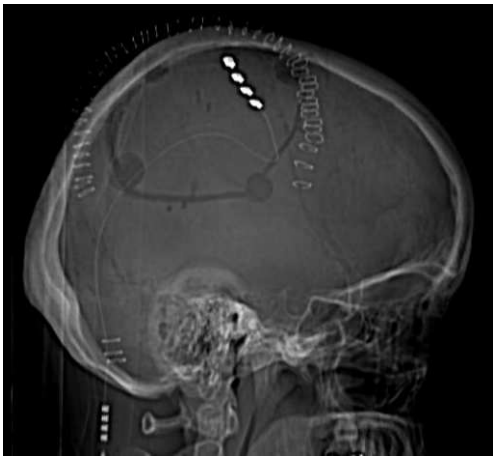
Neuronal engineering is a rapidly expanding field which is undergoing a dramatic transformation similar to the one that occurred almost two centuries ago when electrical engineering emerged as a new scientific discipline. We are discovering exciting new technologies that actually interface with the human body's central and peripheral nervous system, muscles and various sensory receptors. There's already a wide array of early applications of neuronal engineering technology. For example, deep brain stimulation is used to treat people with Parkinson's disease. Cochlear implants allow individuals with profound hearing loss. Bladder stimulators are used for those with lower body paralysis. Neuroprostheses help people to grasp objects, such as utensils.

Technologies like these are already allowing people to live better and more productive lives. However, they represent only the tip of the iceberg.

The Rehabilitation Engineering Laboratory (REL) in the Institute of Biomaterials and Biomedical Engineering at the University of Toronto and the Toronto Rehabilitation Institute are pushing the frontiers of the fast-evolving field of neuronal engineering. One of the key contributions of this clinically-based laboratory is the discovery that neuroprostheses can be used to improve and even restore voluntary reaching, grasping and walking functions in individuals who have suffered a stroke or spinal cord injury. Here's how it works: a neuroprosthetic device is used over a period of several weeks to deliver small bursts of muscle-stimulating electricity. After the simulator is taken away, the person is able to perform the trained task on their own.

This therapy, known as functional electrical stimulation (FES), represents a radical departure from previous applications of neuroprosthesis technology. In the past, neuroprostheses were used to do a task that someone with paralysis could no longer do. The neuroprosthesis was considered to be permanent. We now know that neuroprostheses can be used effectively as a short-term intervention to improve or restore function in people with spinal cord injury or stroke.

Currently, the REL is developing a new generation of neuroprosthetic technologies that promise to take neuronal engineering to even greater heights. For example, the REL's team is actively developing brain-machine interfaces that use recordings from electrodes placed on the brain cortex or are located in deeper subcortical structures of the brain. These devices should be able to identify an individual's intention to perform certain motor tasks based on neuronal activity alone. The REL is among the first research groups worldwide to reliably identify different arm and hand movements using neuronal recordings from only four macro electrodes placed on the motor cortex. This brain-machine interface technology is still in the very early stages of development. However, its potential is huge for people with various levels of paralysis. For example, if this brain-machine interface is coupled with our neuroprosthesis for grasping, it would be possible to create a neuroprosthetic device that is entirely controlled by an individual's brain activity associated with hand opening and hand closing. This would dramatically enhance quality of life, independence and dignity for many people with paralyzed hands.



The REL team is also investigating control mechanisms applied by the central nervous system to regulate various neuromuscular systems in the body. Current research focuses on the development of technologies that will replicate sitting and standing functions in people with paraplegia who cannot sit or stand unassisted. The main thrust of research to date is aimed at fully understanding the biomechanical properties of

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Commercialization Gap

By Veronika Litinski

The problem

Our primary sources of groundbreaking ideas are the academic institutions in our network. However, only when technology is linked with a value-generating business concept, a real cash-flow positive company becomes possible. Think of Google: if not for the ingenious advertising driven revenue model, the world of search engines might've been very different.

The choices made during the crucial steps of commercialization will be amplified over time, making change of course difficult and often costly. Commercialization is an intense and transformative process for inventors: learning about customers, their habits and biases; learning to work within a team of people with varied skill sets and perspectives; learning to speak a new language – of valuations, margins and customer satisfaction.

The technical risks of commercialization are enormous, especially in life sciences. A lack of reliable early predictors for the efficacy and safety of compounds will highlight the importance of choices made at this early stage. While somewhat less costly, product development in ICT industries is under huge time pressure to take new products to market quickly because rarely will a company have more than a 24 month technology lead.

Technologies that provide truly breakthrough solutions to most mature industries – energy, materials – require lengthy validation by the dominant players. These large companies finally decide to incorporate an innovation into their processes once the organization is convinced that the immediate profitability benefits of innovation will far outweigh the potential for disruption.

Company valuations take off once proof of concept is in place: proof from human trials would catch the attention of any pharmaceutical buyer. Once sales people of an established IT firm start hearing from their customers about the new competition, VPs of Corporate Development also become involved. This transition, the space between basic knowledge and a commercial product, is often referred to as the commercialization gap.

Why does the problem exist?

Academic research has the advantage of not being constrained by the linear path of product development. On the leading edge of the discovery process, this flexibility is necessary, but as a result it makes the valuation of any truly novel technology nearly impossible. The cost of capital is driven up by the very real possibilities of never achieving stable cash flow from a new product. However, the perception of risk differs greatly between academia and the world of commerce. Unexpected or negative results do not carry the same consequences in academia as they do in business. Lots of time and money can be spent, with academic freedom, to pursue or abandon projects along the way.

Most researchers are not well equipped to enter into partnering discussions with industry for a variety of reasons, including: working capital constraints, lack of management expertise, inexperience with legal and contract negotiations, or a simple lack of access to commercially viable partners (connections). Financial and specialized human resources are required at critical junctures along the product development path, and these inputs often require new strategic partnerships.

All of these factors combine to form the commercialization gap. Given the uncertainties inherent in the discovery process the supply of capital to these risky ventures is limited, and, understandably, the financiers playing the risky game of commercialization seek high returns.

Who takes this risk and why?

John Wanamaker's famous quip about advertising is also relevant for R&D: he knew that half the money he spent was wasted; he just didn't know which half. R&D spending can seem equally mysterious to the traditional capital providers.

While multiple sources of funding for academic research exist, the funding available for proof-of-principal (POP) projects is limited both in size and scope. The indirect costs of research and very early technology validation are often neglected. The industry liaison offices of universities are essential in providing the early guidance researchers need to efficiently and effectively commercialize their research. There are groups of Angel investors across North America who are prepared to invest in promising early stage opportunities, but there aren't enough experienced and knowledgeable investors who can help grow new knowledge-based companies from the ground up.

Groups like MaRS and OCE exist to offer funding and managerial guidance to help entrepreneurs take their great concept to market. Our role at MaRS is to help innovators bridge this commercialization gap. We provide advisory services, market intelligence and seed funding in conjunction with OCE.

What strategies can help shrink this gap?

The commercialization gap is not a problem exclusive to the academic field. Every leading corporation in the world faces similar challenges in innovation. According to "Smart Spenders: The Global Innovation 1000" by Barry Jaruzelski, Kevin Dehoff, and Rakesh Bordia from Booz Allen Hamilton:

Researchers who study innovation estimate that 70 to 80 percent of the final unit cost of a product (the cost reflected in gross margin) is driven by R&D-based design decisions — for example, product specifications, the number and complexity of features in a device, the choice of standardized or customized parts, or the selec-

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Stimulating Discoveries

various systems, including balance control. The research team has already made considerable advances in identifying mechanisms of the control system used to regulate sitting and standing. Preliminary results are encouraging; they suggest that it is feasible to develop a neuroprostheses for sitting and standing. However, many technical and scientific challenges lie ahead before the first prototypes are developed.

The REL was established in 2001 as a joint venture of the University of Toronto and Toronto Rehabilitation Institute (Toronto Rehab). Currently, the laboratory has more than 35 members and over 20 collaborators who actively contribute to its research program.

Members of the laboratory are biomedical engineers, exercise physiologists, neurophysiologists, aerospace engineers, surgeons, signals processing and automatic control engineers, medical doctors, physiotherapists, occupational therapists, and rehabilitation engineers. The laboratory's location at Toronto Rehab's Lyndhurst Centre – Canada's largest spinal cord rehabilitation program – and the synergy between engineering and medical sciences, have contributed to REL's progress to date. Industrial partners and private clinics are critical players in REL's future success. They will bring expertise that, along with REL's experience and knowledge, can rapidly advance the field of neuronal engineering, helping people everywhere to realize the potential benefits of impressive new technologies.

Dr. Milos Popovic is Associate Professor in the Institute of Biomaterials and Biomedical Engineering at the University of Toronto, and a Scientist at Toronto Rehab. His research interests are in developing neuroprostheses for stroke and spinal cord injury patients, brain-machine interfaces, assistive technology and neurorehabilitation. His work involves collaborations with researchers at Bloorview Kids Rehab, Centre for Studies in Aging at Sunnybrook Health Sciences Centre, and University of Tokyo. He received his PhD in mechanical engineering from the University of Toronto and holds a diploma in electrical engineering from the University of Belgrade. He has published extensively in his areas of specialization.

Continued from page 11

Commercialization Gap

tion of manufacturing processes. This correlation of R&D spending and gross margin shows that in many companies, the R&D silo has succeeded in its narrow goal: creating a lower-cost offering that thus yields a wider margin, or a more differentiated offering for which a higher price can be charged. Unfortunately, for most companies — and for the Global Innovation 1000 overall — the financial value of fatter gross margins is not ultimately captured, presumably because it is eroded in the marketing, sales, operational, and administrative work required to bring the product to market. Success thus requires a cross-functional strategic approach to innovation: building a value chain that integrates R&D more effectively with marketing, sales, operations, and cost management."

Tactics

- Stay within the academic setting as long as possible. Take advantage of all available grants.
- Seek out research collaborations to help validate technologies. Here the potential value generated through collaboration must exceed the intrinsic costs of collaboration, (ie. loss of control over assets). This is a great way to develop one's pipeline on someone else's dime. This is also a good way to gain experience. Choosing collaborators should be more than a cash transaction. Collaborations provide an opportunity to bring on board skill sets that the team may not have. Collaborations can help advance a product further than would have otherwise been possible, and at a lower cost than recruiting the talent.
- Certain industry features provide unique opportunities to shrink the gap. For example, software development is not very capital intensive. Development can be performed in modules/increments, and often IT businesses can finance R&D through revenues from consulting or development work for other vendors.
- In the case of developing advanced materials/products, early revenues can be generated as a catalogue is developed. Established distribution channels are available and these are designed to absorb new products, negating the need for an early sales force.

While some biotechs bootstrap via contract research work, this work can often distract from advancing proprietary products. Barriers to entry are so high due to the shear cost of research and validation through pre-clinical and clinical trails. (On average, the cost of the preclinical studies is $1-2 million). Out-licensing and collaborations are crucial in this industry, but retaining the value is the main challenge. Many biotech companies out-license components of their pipeline in order to develop their most promising candidates to the optimal valuation point. Each deal allows the company to gain the capital and expertise to take future products a step further.

Veronika Litinski is the Director of MaRS Venture Group. For assistance in drafting this article, thanks to Kevin Downing, Associate with MaRS Venture Group.

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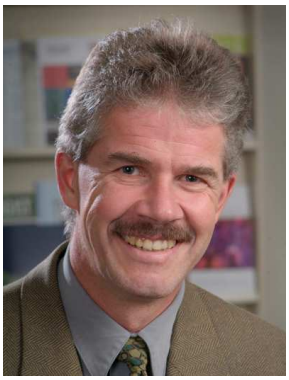
Get to Market, Fast

When it comes to deciding between getting to market with a beta level product that's less than perfect but for the most part good enough, that's a whole lot better than taking much longer to introduce a close-to-perfect version. Why you ask? As a start-up, it's critical to establish market presence and drive towards a dominant position in your market niche before your competitors do. In the IT world, we know (and appreciate!) that windows of market opportunity are tight, hence the need to get there fast. This goes hand-in-hand with the important strategy of getting your forward thinking customers to play with early versions of your product and give you some real-world feedback on how to best evolve it, and of course fix what's not working right, or even what shouldn't be there. Please don't forget: it's all good feedback!

And now that we're pointed in the right direction, let's hopefully remember that the real goal is not just about getting more technological nice-to-haves under the belts of the privileged few, but ensuring these translate into bettering the lives of *all*. Good luck and Godspeed!

***Lino DeFacendis** is Director (Acting) for IT and Communications at Innovations at University of Toronto, with responsibility for commercializing UofT-based research and taking these opportunities to market through licensing and start-up company initiatives. He has over 20 years experience in the high tech industry, where he's held increasingly responsible roles in new product introduction, engineering, project management, sales and marketing, strategic planning, business development, licensing of intellectual property and technology, and start-up company incubation. You can reach Lino at lino.defacendis@utoronto.ca.*

Foods are for More than Just Food



By John Kelly, Ph.D.

When you are told about the compounds resveratrol, anthocyanins, flavonoids, quercetin, isothiocyanates and docosahexaenoic acid, you might think that you were hearing about a list of active ingredients from the pharmaceutical industry. These compounds, found in functional foods, have physiological benefits on health and help in reducing the risk of diseases. The functional foods are consumed similar to conventional food.

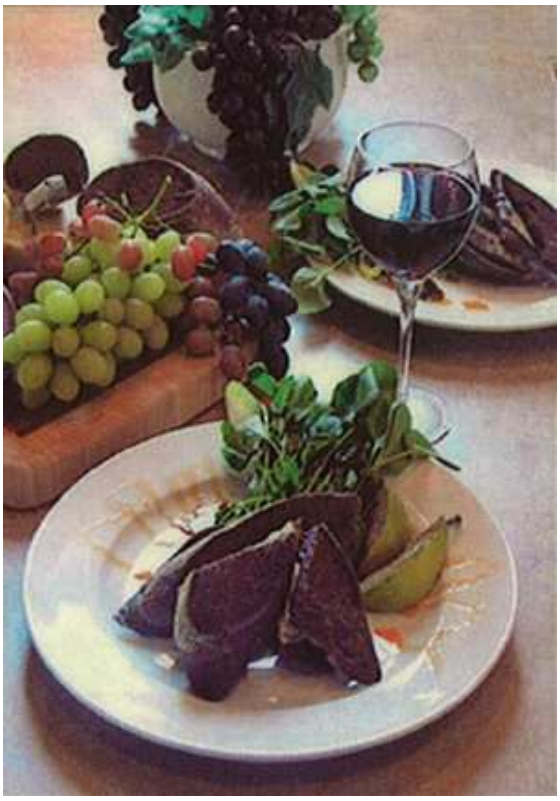
The functional foods are very much a part of agricultural products. For example, resveratrol found in grapes; anthocyanins are found in blueberries; flavonoids are found in soybeans; quercetin (also a flavonoid) is found in apples and onions; and isothiocyanates are found in broccoli, brussels sprouts and wasabi. Fruits and vegetables have been linked to cancer prevention. The presence of naturally occuring flavonoids in them have been suggested as the preventing factor.

The functional foods have a great business potential, particularly for small entrepreneurs. The demand of functional foods and new technologies is all time high.

Traditionally in the wine business, spent grape skin remaining after extraction of juice from grapes were not perceived to have any value and were therefore disposed off. Recently, however, a company in Ontario (Vinifera for Life) has used spent grape skins, which are high in resveratrol, to produce a grape skin product which is added to flour. The flour from the grape skins is a powerful antioxidant with anti cancer and cardiovascular disease impacts, and can be incorporated into many different recipes to add value to an end-use product.

Docosahexaenoic acid, or DHA, is an omega-3 fatty acid which is primarily found in cold water oily fish such as tuna, salmon and sardines. This compound has been shown to have some very positive impacts on human conditions such as cardiovascular disease, neuropathies and retinal development. The American Heart Association recommends consumption of one gram of EPA/DHA every day by patients with documented chronic heart disease. DHA is also now commonly added to infant formulae to promote good brain development. There is however a shortage of DHA due to dwindling fish stocks.

The agricultural industry has responded to this opportunity by creating food products containing DHA. The layer industry has been producing DHA eggs for sale in market now for over 15 years. The consumption of DHA eggs has really grown in the last five years. The dairy industry in Ontario, with the introduction of Dairy-Oh (a Neilson product), has brought DHA milk to the market. This technology developed by the University of Guelph has been on the market for just under two years. The development of chicken and pork enhanced with DHA is also on the horizon.



MaRS Landing facilitates the movement of these types of innovations to the market, taking advantage of the link of agriculture, food and human health. It is through the inventiveness of researchers and developers across Ontario which has allowed the capture of value in a competitive market. By working with scientists and entrepreneurs in pre-commercialization activities and promotion, MaRS Landing has been instrumental in efforts to commercialize new technologies which benefit farmers and the health of Canadian families.

MaRS Landing works to create networks and facilitate commercialization among stakeholders in rural Ontario, the agri-food cluster in Guelph and the Discovery District in Toronto through MaRS. By providing access to reasearch, legal, financial and regulatory information, networks and services, MaRS Landing supports early stage commercialization. Further, through the use of its website, the SaTELLITE newsletter and numerous events, innovations targeting agriculture, food and health are enhanced in Ontario.

Funding for MaRS Landing has been provided in part by Agriculture and Agri-Food Canada and the Ontario Ministry of Agriculture, Food and Rural Affairs under the Agricultural Policy Framework, an agreement among federal, provincial and territorial governments to make Canada's agricultural sector a world leader in science and innovation.

John Kelly is the Executive Director of MaRS landing.

Weathering the Funding Storm with Commercialization

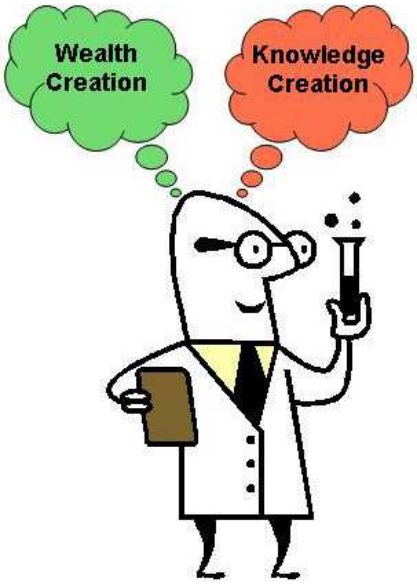
By Derrick E. Rancourt

In today's research funding crisis, scientists need to consider alternative sources of funding to support their research. Many investigators are one grant away from losing key personnel and completely destroying their momentum and productivity. Ten years ago, when a similar phenomenon was occurring, a colleague advised me that the way he steered through the tough times was by forming a spin-off company, which he used to fund his research program during the hard times. In his situation, the spin-off company became a vehicle for ongoing research funding through research contracts awarded to his laboratory by the company.

With government's interest in capitalizing on innovation, national granting agencies are providing catalytic funding to support research with a commercial focus, which makes now a good time to explore a commercial venture. However, research commercialization cannot be for the feint of heart. Technologies and products must be grounded in more than cutting edge science. They must have strong market potential around which a business case can be made. Beyond market, additional partners are needed to strengthen the effort and the perceived value of the enterprise. Hence researchers need to become familiar with the concepts of management, business plans, investment capital and corporate valuation.

Many academic scientists are reluctant to participate in the commercialization of their research efforts. Some view it as defocusing, preventing them for pursuing their important research. For them it is a simple matter of survival. Any effort that is spent learning the "ropes of commercialization" is precious time taken away from building their publication record. Many do not see the importance of capitalizing on their research in order to create wealth (*i.e.* jobs, investment, etc.) for their country. They complain about their academic salaries, but are unwilling to help build an industrial sector, which would not only drive up their salaries but also improve the job prospects of their academic offspring.

To others, commercialization is a dirty word associated with making tremendous amounts of money. They do not understand that 90% of enterprises will not succeed, and that money is not the driver for most entrepreneurial scientists. Nor do they value that created wealth will be reinvested in the research community. Pure scientists feel that it is more important to offer their work to the alter of knowledge creation in order to enable advances to occur more quickly in an "open society". Little do they know that multinational corporations troll off these "open sources", then patent modest improvements and close the open sources that these purists worship. While knowledge creation is an admirable aim, it is the monopoly granted by patents and investment, which drive the economy forward. In order for Canada to succeed in the new economy, knowledge must not be given away, it must be captured. Hence, it is imperative that our scientists become more interested in commercializing their research.



The Ying and Yang of Commercialization

Derrick E. Rancourt is the Director of the University of Calgary's Master of Biomedical Technology, a one year course based MSc that integrates life science and business. He is currently on sabbatical in the MaRS complex

Portable Biorefinery

A portable pyrolysis plant has been developed by a company in Ottawa. The plant can be easily transported to logging sites inside forests where it can be used to make fuel ("green bio-fuel") from leftover branches, leaves and stumps of felled trees.

The portable plant uses "dry distillation" process to make fuel. This green bio-fuel can be used in boilers, turbines and diesel generators to produce heat and power.

Source: http://www.technologyreview.com/read_article.aspx?ch=specialsections&sc=briefcase&id=17298 Advanced Biorefinery's modular pyrolysis system

Outreach Opportunity for Toronto Researchers: 2007 Sanofi-Aventis Biotech Challenge

By Faridah Saadat

Since 1994, the Canadian Biotechnology Education Resource Centre (CBERC) has coordinated the Sanofi-Aventis Biotech Challenge (SABC) in Toronto. SABC is an annual national science competition held in 13 regions across Canada where high school students design research projects with a biotech focus and by collaborating with researchers bring their ideas to fruition in the lab. Students compete for $16,000 in cash prizes, scholarships, summer jobs and a chance to compete nationally.

Each of the student teams is granted $200 to carry out their science experiments alongside a mentor who provides expert advice and access to equipment and supplies. The mentor oversees the team's lab book, advises in the preparation of a poster presentation and final report that is submitted on May 1st and 2nd, which is the day that students present their projects and are judged by their peers and by a panel of prestigious judges. Students not only gain a holistic experience working in a lab, but many who compete go on to pursue careers in biotechnology, healthcare, agriculture, and the environment.

This is a great opportunity for researchers to get involved in a rewarding student outreach endeavour and to be a part of nurturing our young generation's scientific drive.

If your area of expertise lies in any of the listed projects or you are interested in other outreach opportunities please contact us at info@cberc.ca .

For more information on the 2007 Sanofi-Aventis Biotech Challenge and mentoring, please go to our website: www.biotechchallenge.ca.

Faridah Saadat is in her first year in the Master of Biotechnology Program at the University of Toronto at Mississauga. She recently started her internship at the Canadian Biotechnology Education Resource Centre as their Administrative and Program Coordinator

Facilities and Services

By Jiang Zeng

Mississauga Technology Business Accelerator (MTBA) provides a range of facilities and technical services to local businesses.

MTBA's 3D imaging facilities are based on three-color laser scanning technology to create digital copies of real world objects. Without the use of the ambient light, this technology precisely records the shape and morphology of an object in three dimensions, as well as its original color. It has wide applications in design, engineering, academic research, museum archiving, and many more. Please contact Dr. Mike Khavkine for details. Contact information can be found at http://www.mtba.ca/contactus.htm.

The MTBA also provides technical services and facilities for businesses in the area of life sciences. We have been providing NMR, HPLC, GC/MS and LC/MS services to pharmaceutical and biotech companies. The MTBA also provides the access to a large number of instruments provided by the University of Toronto at Mississauga. Contact Dr. Jiang Zeng (http://www.mtba.ca/contactus.htm) for instrumentation and technical services. For a full list of the facilities, please visit http://www.mtba.ca/facilities.htm

Dr. Jiang Zeng is Technical Coordinator with the Mississauga Technology Business Accelerator.

Accelteon & WGTACC

Consulting Days

(Free 2-Hour Sessions)

For more information,
Visit: http://www.wgtacc.com/fileadmin/w3wgta/files/Accelteon.pdf.

Upcoming Events

March 4-7, 2007
Federation of American Hospitals Public Policy Conference and Business Exposition - Marriott Wardman Park Hotel, Washington, DC. For more information, visit www.fah.org.

March 4-6, 2007
2007 Canadian Venture Forum - `Where Minds and Money Mingle` - Marriott Eaton Centre Hotel,
525 Bay Street, Toronto. For more information, visit http://www.bioenterprise.ca/calendar.asp?MeetingTimeframe=Upcoming.

March 4-6, 2007
The Premier Canadian Showcase Event for Entrepreneurs - Venture Fair - Marriott Eaton Centre Hotel, Toronto. For more information, visit www.canadianventureforum.ca.

March 5-6, 2007
Healthcare Technology and Devices Forum - St. Andrew's Club and Conference Centre, 150 King Street West, Toronto. For more information, visit http://www.insightinformation.com/Conferences/brochures/brochure.cfm?product_code=HCC07094.

March 6, 2007 - 9:30am-4:30pm
Plan & Launch Your Business – Small Business Enterprise Centre (SBEC), Brampton. To register, call the SBEC at (905) 874-2650.

March 6, 2007 - 5:30pm - 6:30pm
Entrepreneurship 101 - Written tools for building a business - MaRS Centre Auditorium, 101 College
St, Toronto. For more information, visit http://www.marsdd.com/.

March 12, 2007
BioEntrepreneurship - Project management in a start-up biotech environment. For more information, visit www.marsdd.com.

March 13, 2007 - 5:30pm - 6:30pm
Entrepreneurship 101 - Science and business do mix: success story - MaRS Centre Auditorium, 101 College St, Toronto. For more information, visit www.marsdd.com.

March 14, 2007 - 12:30pm - 1:30pm
Mississauga Business Enterprise Centre (MBEC) Business Information Session - Mississauga For more information,
visit http://www.mississauga.ca/portal/business/startingabusinesscalendar?paf_gear_id=12700032&itemId=56600055&viewCal=list&viewMonth=1-2007.

March 17, 2007
Epigenetics - It's a whole new ballgame for the nature vs nurture debate. For more information, visit http://www.cafescientifique.ca/toronto/.

March 20, 2007 - 5:30pm - 6:30pm
Entrepreneurship 101 - Human resources management - MaRS Centre Auditorium, 101 College St, Toronto. For more information, visit http://www.marsdd.com/.

March 20-23, 2007
PACS 2007: Informatics…The Foundation of the Digital Healthcare Enterprise - San Antonio, Texas USA. For more information, visit www.urmc.rochester.edu/pacs2007/.

March 21, 2007
Commercialization of Emerging Technologies for SMEs - 405 The West Mall, Suite 900, Toronto.
For more information, visit http://www.amplifiedcommunications.ca/web/medec/smes/.

March 21-24, 2007
World Congress on Industrial Biotechnology and Bioprocessing - Orlando, Florida USA. For more information, visit http://www.bio.org/worldcongress/.

March 26, 2007 - 4:00pm - 6:00pm
Networking for the New Business Owner - Brampton. Call The Brampton Small Business Enterprise Centre to Register at 905-874-2650.

March 26, 2007
Pharmaceutical & Biotech Regulatory Compliance Summit - Four Seasons Hotel , Toronto. For more information, visit http://www.canadianinstitute.com/Health___Pharmaceutical/Pharmaceutical___Biotech_Regulatory_Compliance.htm.

March 26-27, 2007
IT for Healthcare Wait Times 2007 - Enlisting Technology Solutions to Increase Efficiencies and Reduce Wait Times - Metropolitan Hotel , Toronto, ON. For more information, visit http://www.canadianinstitute.com/Health___Pharmaceutical.htm.

March 27, 2007 - 5:30pm - 6:30pm
Entrepreneurship 101 - The Role of Boards, Advisory Panels, Service Providers - MaRS Centre Auditorium. For
more information, visit http://www.marsdd.com/.

March 27, 2007 - 12:00pm - 2:00pm
Using Patents as a Tool for Competitive Intelligence - McMaster University, 1200 Main Street West, Hamilton. For more information, visit info@ghbn.org.

March 27 - 7:30am-9:30am
WGTACC YORKbiotech Breakfast Seminar – Faculty Club, University of Toronto Mississauga. For more information, contact bcip@utm.utoronto.ca.

March 28, 2007 - 7:45am - 9:00am
Get Connected Networking - Make New Connections the Easy Way - First Canadian Place, Toronto. For more information, visit http://www.bot.com/asp/EventManager/EventSearchDetail.asp?id=587

March 28, 2007 - 12:30pm - 1:30pm
Mississauga Business Enterprise Centre (MBEC) Business Information Session - Mississaug. For more information, visit http://www.mississauga.ca/portal/business/startingabusinesscalendar?paf_gear_id=12700032&itemId=56600055&viewCal=list&viewMonth=1-2007.

March 28-29, 2007
BIOMEDEX – Montreal. For more information, visit http://www.biomedex.ca.

NewsBytes

New ovarian cancer treatment: A surgical implant called POLi has been developed by Professors Micheline Piquette-Miller and Christine Allen at the Leslie Dan Faculty of Pharmacy of the University of Toronto. POLi has been found effective in killing cancer cells. It is "a small hydrogel infused with cancer-killing drugs. It is applied directly to the ovary after the removal of the tumour and steadily releases the drug over a two-month period. The implant is biodegradable and dissolves naturally—it does not have to be surgically removed." (*Source; NEWS@UofT*)

"International Strategic Opportunities Program: Ontario government has launched a new program that will help connect researchers in Ontario with researchers around the world to strengthen the province's economy and build prosperity for Ontario families. The five-year program will provide successful applicatnts with up to $150,000 in funding over three years. Funding will be used to build and manage early-stage partnerships and coordinate the management of research grant proposals and international workshops.

Western GTA Convergence Centre
Website: www.wgtacc.com
Chair
Dr. Ulrich Krull

Program and Commercialization Officer
Tiffany Mah (905 569 4446)

For technical services, please contact
Michael Khavkine (905 569 4295)
Jiang Zeng (905 569 4385)

Management Consultants
Malcolm Jussawalla & Nitin Barzda
www.accelteon.com, 905 326 5377

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fax (905 569 4388).

Editor: Jagdish Yadav
Advisory Committee: Tiffany Mah, Devin Kreuger, Carmen Bryson

Correspondence
3359 Mississauga Road North
Mississauga, Ontario L5L 1C6