

THE EDGE EFFECT



Paul Paolatto,
Executive Director

Five years ago, leaders from Western University, Robarts Research Institute and Lawson Health Research Institute elected to combine each of their respective business development offices, mandates and resources under one banner called **WORLDiscoveries®**. Five years later, the intended outcomes from what some considered a bold experiment have been largely realized and in many cases exceeded; outcomes that we affectionately call **“The Edge Effect”**.

Dear WORLDiscoveries® Clients, Partners, Stakeholders and Friends

Five years ago, leaders from Western University, Robarts Research Institute and Lawson Health Research Institute elected to combine each of their respective business development offices, mandates and resources under one banner called WORLDiscoveries®. The newly branded business unit was established to materially improve the institution's relationship with (i) industry seeking new knowledge-based applications and opportunities, (ii) researchers seeking better commercialization prospects and returns, and (iii) all levels of government seeking to generate greater economic and social value from its publicly-funded research investments.

Commensurate with the launch of WORLDiscoveries®, the newly combined business unit began an aggressive new virtual marketing campaign entitled “Find Your Edge” to help better link industry with our research community and their inventions. At the time, both the merger and the edgy marketing approach were considered quite bold. Rarely had organizations with such divergent business development practices, policies and cultures successfully unified under a single brand and a single purpose in such a short period of time.

Yet, five years later, the intended outcomes from this modest experiment have been largely realized and in many cases exceeded; outcomes that we affectionately call “The Edge Effect”. WORLDiscoveries® is one of the leading business development offices in Canada, routinely ranking in the top 5 nationwide across every material commercialization measure and annually generating one of the highest commercial returns per research dollar invested anywhere in the country.

Even more impressive is the number of spin-off companies created. Since 2008, WORLDiscoveries® has contributed to the creation, financing and maturation of 18 new spin-off companies, one of the largest concentrations of new spin-off clusters anywhere in Canada over that same period.

WORLDiscoveries® can point to other noteworthy achievements, including the establishment of WORLDiscoveries® Inc, a new holding company to help manage deal flow from foreign based affiliate offices; and WORLDiscoveries® Asia, the first foreign-based commercialization centre ever established in China by a Canadian or US-based technology transfer office. WORLDiscoveries® Asia has completed eight material deals to date that collectively have generated nearly \$4 million in research and spin-off company investment in London.

WORLDiscoveries® also led the adoption of a new Intellectual Property (IP) ownership practice entitled “Inventor’s Choice”. The policy allows the inventor to utilize WORLDiscoveries® services and adhere to the current split formula from any revenues earned, or proceed on their own, with no investment from WORLDiscoveries® and the home institution. It is worth noting that of the approximately 400-plus disclosures WORLDiscoveries® has received over the past five years, only five inventors have elected to proceed on their own, which is

testimony to the quality of our staff and the work that they do on our client's behalf.

Finally, WORLDiscoveries® has now successfully compiled and electronically catalogued the massive amount of Intellectual Property contained within the three partner institutions so that it is properly protected yet easily accessible to industry partners and researchers alike.

The success of this new organization can be attributed to a number of positive influences, including;

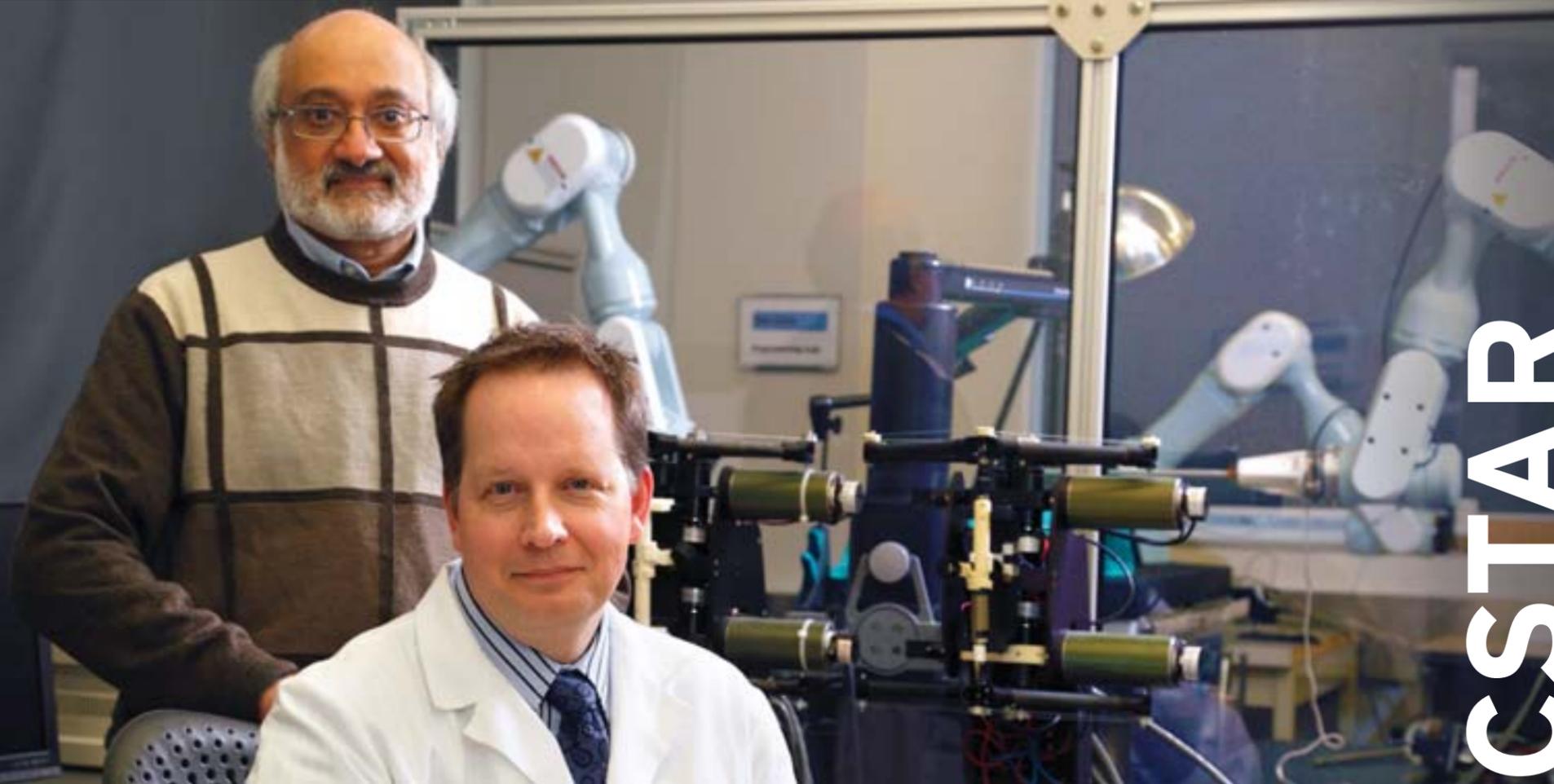
- the unwavering commitment of the senior leadership at both the University and the Hospital and their continued belief in the entity's purpose, plans and promise,
- the growing number of researchers that have expressed an interest in seeing their research actualized in the marketplace,
- the engagement of private-sector business people at the operating and Board level,
- the strong engagement of an impressive business development and support team that serve as enablers behind every researcher, project, and/or industrial partnership,
- better coordination, improved focus and stronger support from community and public sector partners all working together towards the same success agenda.

Consistent with our past practice, WORLDiscoveries® is once again pleased to introduce you to the exceptional people and partners behind some of the more promising market-ready innovations under development at Western University, Robarts Research Institute and the Lawson Health Research Institute. The Report also highlights our performance for the past year as well as the cumulative results of the Find Your Edge program for the past five years.

Overall, WORLDiscoveries® is proud to have served as an example of what collectively can be achieved when all of the key components behind any commercial success come together under one operating umbrella and one unifying purpose. While much work remains, those parties responsible for the initial concept, start-up and maturation of WORLDiscoveries® over the past five years can take great pride in the business unit's achievements to date and can anxiously anticipate the achievements to come. 🌍

Paul Paolatto, Executive Director

Back - Rajni Patel,
Front - Chris Schlachta



Dr. Schlachta was awarded a \$3.2 million operating grant in 2012 by the Ontario Research Fund (ORF) to support his R&D and simulation-based training for laparoscopic and computer-assisted surgery at CSTAR, an LHSC research and education unit.

THE SPIN-OFF EFFECT

“**WORLDiscoveries**® helped us develop the commercialization plan. The competition was huge and [their support] was likely why we succeeded. Through industry partners, we were able to leverage this \$3.2 million grant into \$9.6 million in funds through 2016. This grant brings a wide group of researchers into a common vision and common purpose.” – Dr. Christopher Schlachta

This generation of medical students and surgeons is highly proficient with virtual reality games. So why not incorporate those skills and technologies into their training?

This concept is embraced by Dr. Christopher Schlachta a Professor of Surgery and Oncology at Western University and the medical director of CSTAR (Canadian Surgical Technologies & Advanced Robotics). He says there has been significant innovation in computer simulation technology specific to surgical training. Used correctly, these innovations diminish risk of human frailty. “We currently have an apprenticeship model where trainees practice on real people,” he says. “Medical error happens and patients can come to harm. This technology helps eliminate errors - computers don’t get tired or forget things.”

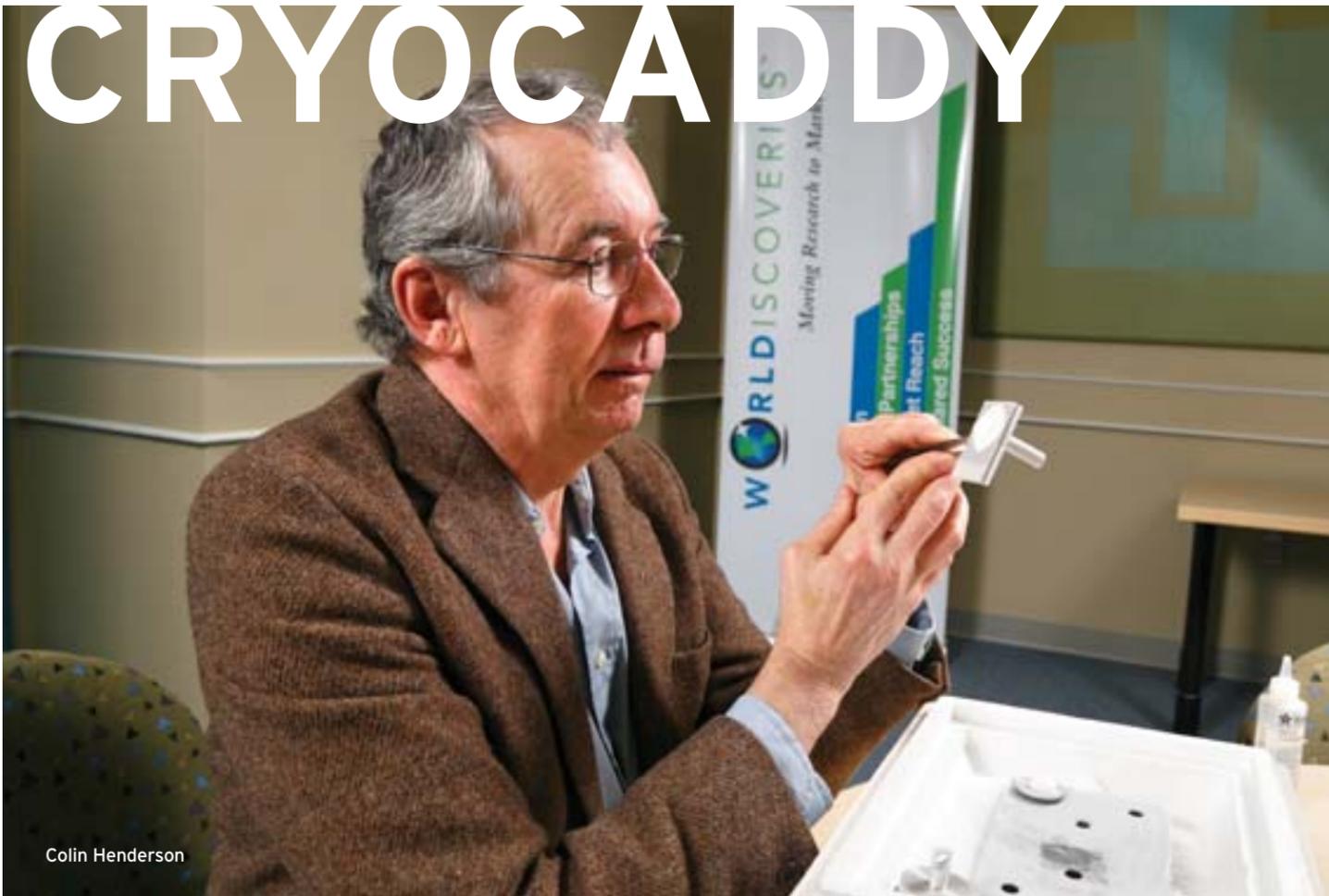
“Our specific focus is to harvest the mechatronics expertise of our robotics engineers led by Dr. Rajni Patel and imaging expertise of our collaborators by Drs. Aaron Fenster and Terry Peters.”

With these assets in place, Dr. Schlachta is driven to maximize Western’s global investment in training on this technology platform. “CSTAR is a true innovation centre with three arms; surgical technology research, knowledge translation through education and simulation, and the Canadian training centre for da Vinci surgery, the only FDA-approved robotic surgical platform,” he says. “We are 100-percent certain that computers and robotics will become integral to surgery over time. The rate of technology change is not just rapid but accelerating.”

CSTAR’s state-of-the-art facility in University Hospital has been built up over ten years and is without peer in Canada - already training hundreds of medical professionals each year. “We are over three floors with a multi-media theatre, an idea development lab and the Kelman Centre,” says Schlachta.

Schlachta says with the ORF, you must demonstrate the viability of your commercialization plan. “We are indebted to WORLDiscoveries® who helped us develop the commercialization plan for the ORF grant,” he says. “The competition was huge and [their support] was likely why we succeeded. Through industry partners, we were able to leverage this \$3.2 million grant into \$9.6 million in funds through 2016. This grant brings a wide group of researchers into a common vision and common purpose.” 🌐

CRYOCADDY



Colin Henderson

Some medical devices are born out of frustration.

In 2003, Dr. Claire Temple, a young plastic surgeon in London began using a surgical technique known as Mohs micrographic surgery to effectively cure basal cell skin cancer. Mohs is a very precise surgical technique where layers of cancer-containing skin are progressively removed and examined, in real time, until only cancer-free tissue remains.

The goal is to remove the cancer with the least possible damage to surrounding healthy tissue. This is doubly important when the skin cancer is on the face and requires plastic reconstruction.

In conventional surgery for many skin cancers, doctors guess how far the cancer has spread and then do a "wide excision" to get all the cancer. This can cause disfigurement.

A better way to ensure the complete removal of a skin cancer is to use a technique known as a frozen section. However, standard frozen sections, while fast, do not have the accuracy required for Mohs surgery.

This has frustrated Dr. Temple and Colin Henderson, the Pathology Technical Coordinator she worked with at St. Joseph's Health Care. "The level of inaccuracy can lead to some cancers mistakenly reported as being at the margin. In this case the surgeon either removes healthy tissue believing it to be cancerous or possibly subjects the patient to unnecessary radiation or chemotherapy," says Henderson.

The technique Dr. Temple brought to London from M.D. Anderson Cancer Centre in Houston was more accurate than a standard frozen section, but impeded by very slow lab work.

So Temple and Henderson used their collective ingenuity to develop a kit to do frozen sections. Within months they had developed a crude prototype that could produce fast frozen sections with unprecedented accuracy.

The apparatus, known as CryoCaddy, has been through several cycles of refinement and is ready to be market tested. Using their components and technique, CryoCaddy can cut operating room times by 22 percent, a significant cost and resource savings.

Getting CryoCaddy to market is a work in progress. With support from WORLDdiscoveries® a U.S. patent was awarded in April 2012, and the WORLDdiscoveries spin-off company CryoCaddy Inc. was founded in September 2012. A partnership with Pradeep Agrawal, president of Electro-Pack Inc. in Toronto ensured that CryoCaddy would proudly be manufactured in Ontario. "TechAlliance has also been invaluable in helping get us funding through the MaRS Business Acceleration Program to produce beta CryoCaddy kits for 10 influential surgeons across Canada to do clinical tests and feedback," says Henderson.

With skin cancer, a disease of aging and the most common cancer diagnosed in Canadians, this is good news for the many that have had a little too much sun. 🌞

Dr. Femida Gwady-Sridhar is a miner, but her primary resource is not coal or diamonds, it is information.

Dr. Femida Gwady-Sridhar looks for gold in data repositories, health systems and records. "Data sits in many areas," she says. "We don't always know how to mine information for better decision making."

Gwady-Sridhar is the director of Health Informatics at Lawson Health Research Institute. She is a pharmacist and has a PhD in health research methodology and a passion for excellence in knowledge translation - the method of closing the gap from knowledge to practice to improve patient lives. "There are better ways to deliver care - not just bench to bedside but new tools and systems," she says.

Pulse InfoFrame, Inc. is a private health care analytics company co-founded by Gwady-Sridhar and spun off from The Lawson Health Research Institute. Pulse InfoFrame developed a secure, web-based, database-driven clinical management and integration systems targeted to the unique data requirements of medical specialists. Examples include an iPad management system for babies in neonatal intensive care to a melanoma registry database for potential clinical trials to a mobile phone app to track how plaque builds in arteries when you eat.

Pulse InfoFrame's infrastructure and know-how has helped build a cancer data repository from chemotherapy, drugs and radiation data repositories. "The data from patients provide meaningful clues about what leads to cure or remission," she says. "There is value in bringing different data points together from observational data, to help inform better decision making and surveillance."

Gwady-Sridhar is a proponent of patient portals with two-way controlled access to the health care system. She wants to help patients with diseases such as diabetes, congestive heart failure and prostate cancer manage their recovery with a better sense of control. "You can track quality of life with patients once they go home," she says. "People feel more confident when they interact with the portal and less likely to use emergency services if they know how to manage side effects, nutrition and other things connected to their therapies."

Gwady-Sridhar has worked with WORLDdiscoveries® since pre-commercialization in 2010. "With software it is difficult to patent algorithms," she says, "but the back end platform is our secret sauce. WORLDdiscoveries® has been very helpful with expertise we did not have in-house and TechAlliance was fabulous in identifying opportunities for grants." 🌐



Femida Gwady-Sridhar

Pulse InfoFrame - a new portal to an enlightened health care future.

A safe environment begins with clean surfaces. Organic matter from food residues, oils, and greases not only harbor bacteria but can actually prevent sanitizers from being effective.

Current cleaning practises require the use of harsh chemicals that are often more dangerous than the germs they are designed to kill.

Dr. Paul Charpentier, a Professor in the Department of Chemical and Biochemical Engineering at Western University and an expert in “green nanotechnologies” including titanium dioxide nanotubes, has a “light bulb” idea to revolutionize industrial hygiene.

Charpentier’s lab developed a titanium dioxide additive for spray coatings that was tried in polyurethane to see if it retained self-cleaning properties when exposed to light. Titanium dioxide is a catalyst in the presence of light. Oxidation is achieved when light rays, either from the sun or UV lights, are absorbed on the catalytic surface of the coatings and produces the hydroxyl radical. These hydroxyl radicals oxidize the organic pollutants into harmless carbon dioxide and water molecules. No mops or harmful chemicals are required.

Charpentier scaled it up and moved it out to market. “There was some market pull for a self-cleaning coating that could be used in food processing, so it was time to get it out of the lab,” he says. “You have to transfer out the ideas with potential.”

Patrick Therrien, a business development manager at WORLDdiscoveries®, helped with that transition. He brought in Dan Jenken of Line-X Coatings, a polyurethane coating franchise in London, and formed a three-way partnership with Jenken and Charpentier to create SunWash Technologies. SunWash, located in the Stiller Centre in Western’s Research Park, is where the additive is manufactured, the Line-X facility is used to blend the SunWash additive with commercially available polyurethane.

Polyurethane is a perfect coating choice for food processing applications because it combines high-performance durability with an ability to be applied on a variety of forms such as flexible foams, rigid foams, specialty adhesives and sealants. A self-cleaning floor coating is the first SunWash product to be released. 🌍



By several yardsticks, SunWash is a promising Western start-up that is quickly becoming a shining light. In its first year alone, SunWash won both the Venture London business plan competition and TechAlliance’s Techcellence Award for innovation. “With this technology, cleaning is as easy as turning on a light,” says Therrien.



SUNWASH TECHNOLOGIES

(L-R) Dan Jenken, Paul Charpentier, Patrick Therrien

David Edgell



THE TECHNOLOGY EFFECT

“Within a week of the paper being published, we had calls from all the major biotech companies. **WORLDiscoveries**[®] worked with us to protect and advance this development in a direction that would match with the commercialization goals of a global leader.” - Dr. David Edgell

The sequencing of the human genome started a decade ago with the hope to one day find and fix genetic mutations that cause disease.

Dr. David Edgell, an Associate Professor in Biochemistry in the Schulich School of Medicine and Dentistry at Western, says the sheer volume of genomic material complicates the hunt. “There are three billion base pairs of DNA so to target a precise break is a challenge,” says Edgell.

Edgell specializes in “mobile DNA” and how it moves around within the genome. He says enzymes that cut DNA are a hot topic and that slicing and dicing genetic material requires precise molecular tools called DNA endonucleases that facilitate genome editing by creating a double-stranded break in the DNA. “You want to cut a very specific location in the genome and so you need sophisticated molecular tools that both recognize very small stretches along the genome and cut in defined and consistent locations,” he says. “A basic issue is precise recognition and off-target effects. Make the wrong break you can potentially cause cancer or other diseases.”

One problem is the precision of the scissors that cuts the DNA. Edgell’s R&D caught the attention of Life Technologies, a leading San Diego biotech company. “You are after 30 base pairs out of 3 billion and the scissors look like a little Pac Man” he says. “Our scissors have the advantage that they have a built-in targeting domain that acts as a kind of GPS. Life Tech is interested in our scissors because they will only cleave or scissor DNA within a particular sequence. The other scissor domains don’t have this property.”

WORLDiscoveries[®] manages the intellectual property to the benefit of Western and its researchers. “They worked with me and my PhD student, Ben Kleinstiver, to file several patent applications to protect the system that we developed,” says Edgell. “We were presenting our data at a meeting in the U.S., and had submitted a paper describing key findings to the Proceedings of the National Academy of Sciences. Within a week of the paper being published, we had calls from all the major biotech companies and had the luxury of identifying Life Tech as the strongest partner. WORLDiscoveries[®] worked with us to protect and advance this development in a direction that would match with the commercialization goals of a global leader such as Life Tech.” 🌐

LIFE TECH

PERFUSION & CT SCANNING

LIFE SCIENCES



Ting Lee

Our bodies depend on a continuous flow of blood because if circulation stops, tissues die. Perfusion is the passage of blood through the vessels of a specific organ or tissue. Technologies that monitor perfusion provide powerful new diagnoses for diseases like stroke and cancer.

Dr. Ting-Yim Lee, a professor of Medical Imaging at Western and a Lawson and Robarts scientist, is an expert in the visualization of perfusion through imaging methods. His lab pioneered a method of imaging perfusion using x-ray dye and CT scanners to measure blood flow in various tissues including the brain, tumors, and the heart.

Lee is currently leading an ambitious, multi-site Phase III clinical research study of perfusion and his CT scanning applications with the Gynecologic Oncology Group (GOG) and the American College of Radiology Imaging Network (ACRIN) - both are American non-profit organizations that administer major research studies funded by the National Cancer Institute of the NIH.

This study compares the standard with a new treatment method of advanced ovarian cancer - a devastating disease - and investigates if CT Perfusion imaging can be an early marker of treatment response. "This scanning method was designed here. It is the first cancer multi-center trial using CT Perfusion," he says. "We are also using a standardized protocol and standardized analysis method developed in London. This is a big undertaking with over twenty sites in the U.S. and all the images are sent to our lab for analysis."

He has a long-term licensing agreement with GE Healthcare with at least four versions of software developed over the past decade for use with their CT scanners which result in over 1,000 licenses each year. "The current version of software covers the whole body except the heart," he says. "It also includes cancer and stroke in the brain."

Sandy Vascotto, Business Development Manager at WORLDiscoveries® says Lee's constant push for new imaging applications make him a bankable research leader with international support from industry and academia. 🌐

Wireless technologies transform our daily lives. At Western University, Dr. Xianbin Wang cares about new wireless technologies that improve convenience, well-being and human connections.

Wang, an Associate Professor in the Electrical and Computer Engineering Department and Canada Research Chair in Wireless Communications, has over 20 patents in adaptive communications, wireless security and locationing and tracking of a device.

Dr. Wang has a strong research and development team at Western working on new technology creation, prototype development and commercialization. "We invent new ways to meet people's current and future communications needs given spectrum resource constraints and problems in existing wireless infrastructures," he says. "In the future, we will need more efficient, secure and location-aware communications technologies in many emerging applications including mobile healthcare and targeted advertisement."

One example of Wang's inventiveness is an integrated wireless system for local area positioning, tracking and communications. This system uses existing wireless networks to provide two-way communications and indoor locationing, with reduced infrastructure cost and ease of deployment.

Applications closest to the pipeline for this innovation include those that cannot run on global positioning systems in urban canyon environments or indoors. "For example, we can do real-time, targeted advertising. If the store knows your position in the mall, more relevant sales information can be sent to your mobile-device," says Wang.

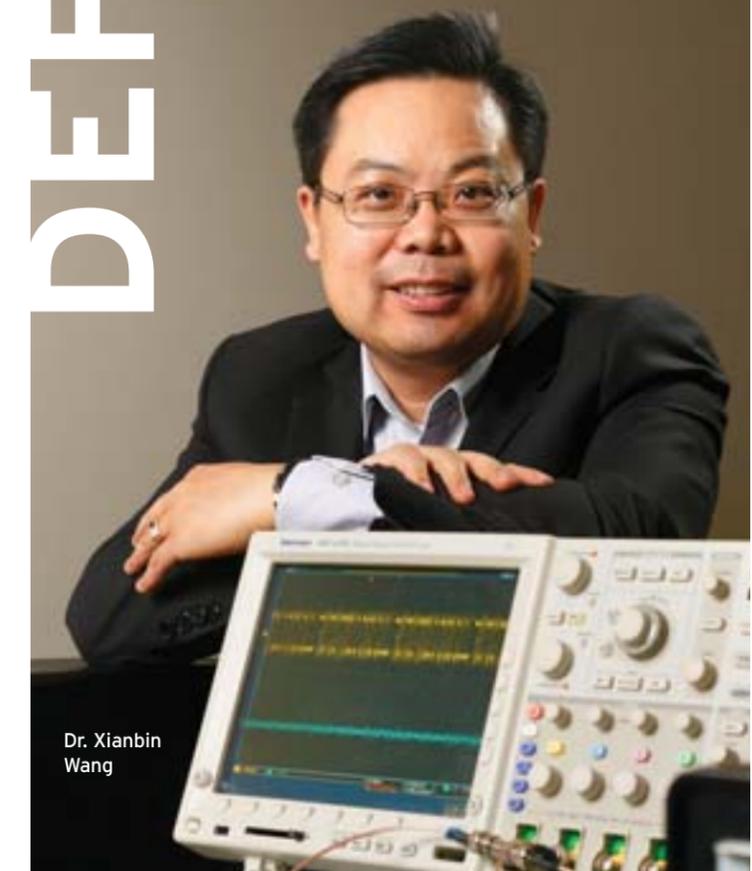
Other intended uses for this multi-functional system include military applications, to help track soldiers in the field. Mobile healthcare monitoring also has potential. "You could have information transmitted to a doctor such as heart rate, temperature together with your location," he says. "It may give patients freedom to move around - or to deploy a health team who will know where you are."

WORLDiscoveries® has helped Wang identify markets and find potential companies to turn their technology into products. "We worked with WORLDiscoveries® to identify target applications to accelerate the technology transfer process from the lab into the market," he says.

Jaipreet Bindra, Business Development Manager at WORLDiscoveries®, helped Wang manage the patent process and sees significant growth in the market. "Revenues from location-based services are projected to increase dramatically to \$15.8 billion by 2014," he says. "And Wang also designed the security mechanism for the needs of the military through system adaptation- an important advantage in today's growing Hi-Tech Marketplace." 🌐

DEFINING OUR WIRELESS FUTURE

ENGINEERING



Dr. Xianbin Wang

Jin Jiang

In a perfect world, industrial early-warning systems would always work. In the real world, these systems are not always fail-safe.

One solution is to deploy wireless monitoring systems concurrently with hard-wired systems.

Dr. Jin Jiang is a Professor in the department of Electrical and Computer Engineering at Western and the NSERC/UNENE industrial research chair in the area of control, instrumentation, and electrical systems in nuclear power plants. He says wireless systems complement conventional industrial monitoring applications. "It's not better than wired," says Jiang. "But wireless is convenient to deploy and can cut costs - similar to the question of cell phone versus land-line."

Wireless monitoring systems can be used in nuclear, petroleum and power generation plants - any complex that requires emergency shutdown systems and data collection devices. "But it can be difficult to install new wires in an existing facility," says Jiang.

Jiang says one ideal case for a wireless monitoring system is a nuclear power plant. "Safety is the most important consideration," he says.

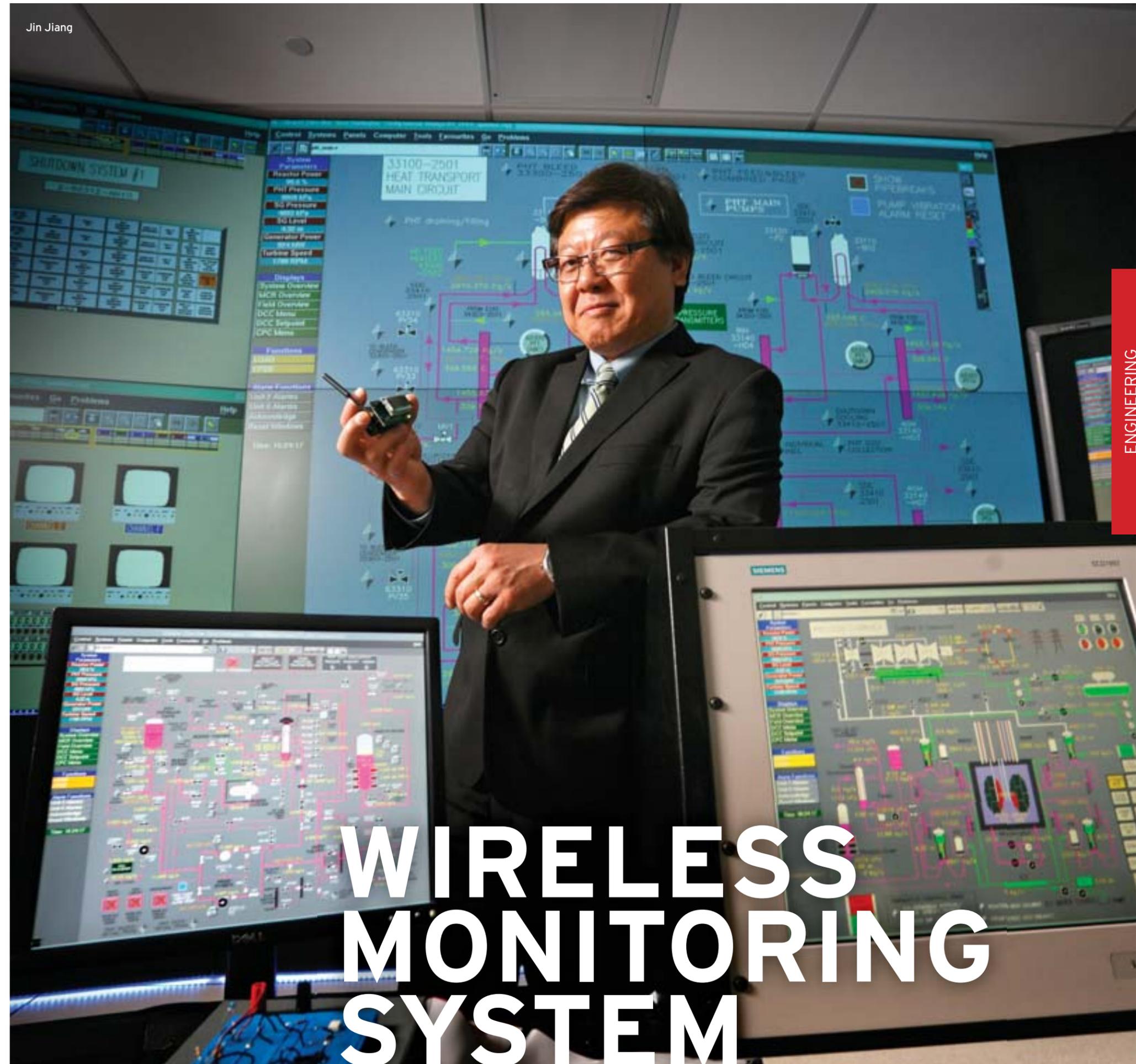
He points out that, after the complete plant blackout at Fukushima, plant and environmental data such as temperature, pressure, radiation level and liquid levels can no longer be measured. "If you had wireless as a back-up you could still get information beamed out and give rescue people some idea of conditions in the plant," he says.

Jiang says the nuclear power plant market is a tough sell without proven use and it is hard to implement new systems while a nuclear plant is operating. "There are very few industrial sites where you can test the system with live, high-level radiation," he says. So they are reviewing a range of industrial applications.

In 2003, Jiang founded Western's Control, Instrumentation & Electrical System (CIES) Laboratory which simulates nuclear power plant operations and other renewable energy systems. His research team developed the wireless monitoring system there with a sensor, transmitter, either conventional power sources or battery-powered and a receiver that can monitor and validate sensed information from 30 metres away.

He says the team is looking at ways to harden the electronics in the box through collaborations with an industrial partner.

WORLDiscoveries® supports Jiang with patent applications and seeking out industry partners. "We have filed one patent and are in the final stage with two more," he says. 🌐



ENGINEERING

WIRELESS MONITORING SYSTEM



(L-R) Mr. Dai (Director of the International office of Nanjing University) at Nanjing University, President Chakma, Premier McGuinty, HUA Zhichun, Professor, Nanjing University, Michael Chan, MPP, Minister of Tourism, Culture and Sport.

WORLDISCOVERIES® ASIA

“In Jiangsu we work closely with Jiangsu Science and Technology Commission. Jiangsu Science and Technology Commission supports our activities in Nanjing by funding further R&D work of various Western technologies towards successful commercialization in China.”

- Ling Ting

For Ling Ting, China's market holds vast potential. Ling is WORLDISCOVERIES® Director of Asian Operations headquartered in Hong Kong with its first sub-centre in Nanjing, the capital of Jiangsu Province and former capital of the Ming Dynasty.

Opportunities in Asia for WORLDISCOVERIES® are everywhere from India to Japan and Korea, but WORLDISCOVERIES® has found Jiangsu Province, bordered by the mighty Yangtze River and the Yellow Sea, a prosperous region north of Shanghai, to be the perfect springboard to commercialize Western University's intellectual capital throughout Asia.

WORLDISCOVERIES® Asia was the first North American university technology transfer office to open in China and Ling feels their approach to commercialization raises the bar high. “We have signed eight exclusive deals including five in China - that set us apart from others in the technology transfer sector in Ontario, if not Canada,” he says.

For example, WORLDISCOVERIES® Asia reached a cooperation agreement with Sinobioway Group Co., Ltd. in Beijing to develop and commercialize the Sox9 target and candidate therapeutics for the regeneration of the Central Nervous System. This therapy includes small molecules, peptides and nucleotides to repair damage in a range of central nervous system diseases such as stroke, Traumatic Brain Injury and neurodegenerative disease. The agreement granted Sinobioway the exclusive right to commercialize the Sox9 invention in China and hopefully move the project to clinical trials and eventually, to market.

WORLDISCOVERIES® Asia has also developed a solid relationship with Nanjing University - an institution that specializes in science, medicine, engineering and technology.

Innovation flourishes when strong partners combine their mutual interests to move Research & Development (R&D) out of the lab and into the global marketplace. But this can be a challenge when collaboration takes place across two continents. Getting plugged into the local network in China helps WORLDISCOVERIES® develop key local stakeholders.

“In Jiangsu we work closely with Jiangsu Science and Technology Commission, the equivalent of Ontario's Ministry of Research and Innovation,” says Ling. “Jiangsu Science and Technology Commission supports our activities in Nanjing by funding further R&D work of various Western technologies towards successful commercialization in China.”

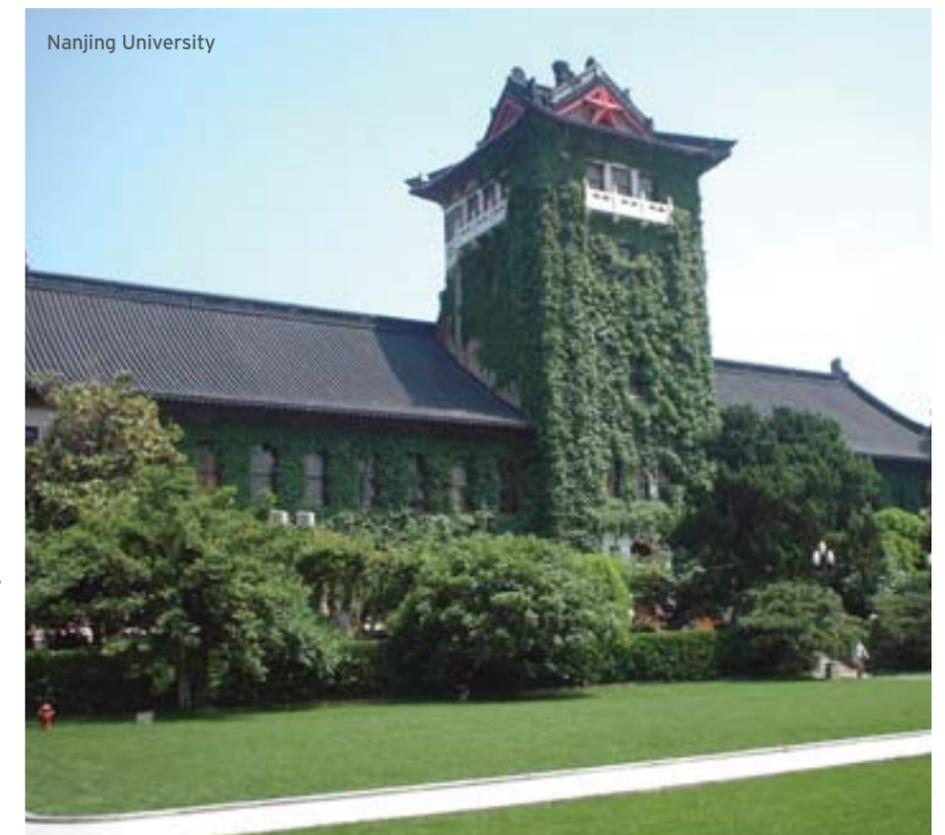
Because of these important developments, Premier Dalton McGuinty chose to visit the lab of a Nanjing based partner of WORLDISCOVERIES® Asia on his final trip as Premier of Ontario in January 2013. “He saw first-hand the role that WORLDISCOVERIES® Asia has played in Western's China strategy,” says Ling. The Ontario government/Western delegation toured Nanjing University's Key Laboratory of Pharmaceutical Biotechnology where scientists are working with WORLDISCOVERIES® Asia

to develop the pharmaceutical potential of one of Western's discoveries, a small cyclic peptide as anti-microbial agent and wound-healing treatment, developed by Dr. Gilles Lajoie of the Schulich School of Medicine.

Premier McGuinty and Western University's President Amit Chakma signed a faculty exchange agreement with Nanjing University to strengthen the ties that bind the two universities. In China, where luck is highly valued, they say good things come in pairs. Certainly there is symmetry of interest between two universities - Western and Nanjing, two sister provinces, Ontario and Jiangsu, and two sister cities, London and Nanjing. This long-standing spirit of cooperation brings an extra dimension to the work of WORLDISCOVERIES® Asia.

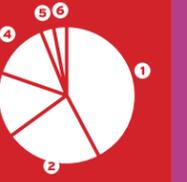
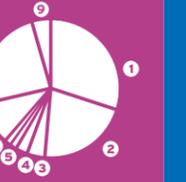
“We are looking to build a new model to create a bigger platform for technology transfer in China,” says Ling. “And yes, a little luck is important too.” 🌍

Collectively these deals have contributed over \$4 million in direct research and start-up investment in our technologies and our talent.



WORLDISCOVERIES® FAST FACTS

5 YEAR CUMULATIVE TOTALS

	FY2009	FY2010	FY2011	FY2012	FY2013	TOTAL
TOTAL NUMBER OF DISCLOSURES	101	93	78	82	70	424
TOTAL NUMBER OF DISCLOSURES ACCEPTED, BY FACULTY/RESEARCH INSTITUTION (TOP 5 ONLY)	 <ul style="list-style-type: none"> 1 ENGINEERING - 22 2 SCIENCE - 20 3 ROBERTS - 16 4 LAWSON - 14 5 MEDICINE & DENTISTRY - 12 	 <ul style="list-style-type: none"> 1 ENGINEERING - 27 2 MEDICINE & DENTISTRY - 12 3 LAWSON - 10 4 SCIENCE - 9 5 ROBERTS - 6 	 <ul style="list-style-type: none"> 1 ENGINEERING - 18 2 MEDICINE & DENTISTRY - 11 3 LAWSON - 11 4 ROBERTS - 11 5 SCIENCE - 5 	 <ul style="list-style-type: none"> 1 ENGINEERING - 28 2 MEDICINE & DENTISTRY - 15 3 ROBERTS - 10 4 SCIENCE - 9 5 HEALTH SCIENCES - 2 6 LAWSON - 2 	 <ul style="list-style-type: none"> 1 ENGINEERING - 21 2 MEDICINE & DENTISTRY - 15 3 SCIENCE - 3 4 HEALTH SCIENCES - 2 5 ARTS & HUMANITIES - 1 6 SOCIAL SCIENCE - 1 7 ROBERTS - 7 8 LAWSON - 17 9 OTHER - 3 	
TOTAL NUMBER OF PATENTS ISSUED	19	36	33	17	46	151
TOTAL NUMBER OF LICENSES EXECUTED	11	10	18	17	10	66
TOTAL NUMBER OF LICENSES AND OPTIONS ACTIVE ON LAST DAY OF FY	85	92	111	112	103	
TOTAL NUMBER OF COMMERCIAL GRANTS AWARDED ARC, NSERC, OCE NOT CFI OR ORF	16	4	19	7	7	53
TOTAL VALUE OF COMMERCIAL GRANTS AWARDED (\$000s)	\$607	\$280	\$1,284	\$578	\$425	\$3,150
TOTAL COMMERCIAL INCOME (\$000s)	\$4,513	\$4,982	\$4,686	\$4,696	\$5,400	\$24,300
TOTAL NUMBER OF SPIN-OFFS	6	3	2	2	5	18
SPIN-OFFS INCORPORATED SINCE 2008	<ul style="list-style-type: none"> • EmPOWER Health Research • Teachers Connecting • DQE Instruments • IDEO • Agri-Therm • Biotricity Technologies 	<ul style="list-style-type: none"> • ENT Simulation Technologies • Renix • LifeLike BioTissue 	<ul style="list-style-type: none"> • Enable Imaging Technologies • ProMotion 	<ul style="list-style-type: none"> • BioGenerator • m-Safety 	<ul style="list-style-type: none"> • Beijing Weiming Xida Biotechnology Co. Ltd. • Cryocaddy • SunWash Technologies • Cambridge Brain Science • Vital Biomedical 	

WORLDISCOVERIES® FY2013 FAST FACTS



(L-R) Front Row - Ahmed Yousef, Patrick Therrien, Souzan Armstrong
 2nd Row - Nadine Weedmark, Lori Lariviere, Jaipreet Bindra
 3rd Row - Thurman Sawyer, Ling Ting, Jan Payne
 Back Row - Fabian Folijs, Jonathan Deeks, Kirk Brown, Mona Wuytenburg, Paul Paolatto
 Absent - Sandy Vascotto

PERFORMANCE

PATENTS ISSUED

TITLE	INVENTOR(S)	COUNTRY
Polymer Precursors of Radiolabeled Compounds, and Methods of Making and Using the Same	Dr. Duncan Hunter, Mr. Mustafa Janabi	United States, Finland, Turkey, Greece, Portugal, United Kingdom, Germany, Luxembourg, Monaco, Spain, Austria, Belgium, France, Ireland, Switzerland, Cyprus, Denmark, Netherlands, Italy, Liechtenstein, Sweden
Prosthetic Groups Attached to Stannyl Polymer in the Synthesis of Radiopharmaceuticals	Dr. Duncan Hunter, Ms. Karen Gagnon	United Kingdom, France, Germany
Biofuel Cell	Dr. Dimitre Karamanev	Korea (South) - Republic of Korea
Removal of Carbon, Nitrogen and Phosphorous from Waste Water Using Fluidized Beds	Dr. George Nakhla, Dr. Jinxu (Jesse) Zhu, Dr. Yubo Cui	United Kingdom, France, Germany
Myxoma Virus Mutants for Cancer Treatment	Dr. Grant McFadden, Dr. John W. Barrett	Mexico, Australia
Catalytic Sulfur Removal from a Hydrocarbon Stream	Dr. Hugo DeLasa	Canada
An Oral Device and Kit for Use in Association Therewith	Dr. Ruth Martin, Dr. Julie Theurer, Mr. Frank Bihari, Ms. Rebecca Smith-Stevens	United States, Japan
Transceive Surface Coil Array for Magnetic Resonance Imaging and Spectroscopy	Dr. Ravi Menon, Dr. Robert Pinkerton	United States
Use of Myxoma Virus for the Therapeutic Treatment of Cancer and Chronic Viral Infection	Dr. Grant McFadden	United States, Israel, Germany, France, Hong Kong, United Kingdom, Switzerland
Methods for Regulation of Stem Cells	Dr. Mickie Bhatia, Dr. Jennifer Trowbridge, Dr. Randall Moon	United States, Australia
Liquid-Solid Fluidized Bed Waste Water Treatment System for Simultaneous Carbon, Nitrogen and Phosphorus Removal	Dr. Jinxu (Jesse) Zhu, Dr. George Nakhla, Dr. Yubo Cui	China
Curling Head for Curling Broom	Dr. Thomas Jenkyn, Dr. Jeffrey Wood	Canada
Less Lethal Ammunition Projectile	Dr. Judit Puskas, Mr. Amer Hamdi Ebied, Mr. Barry Lamperd, Mr. Bhuvneesh Kumar	Canada

WORLDiscoveries® is the business development arm of Western University, Robarts Research Institute and Lawson Health Research Institute and is responsible for bringing innovation from its signature commercial areas to market.

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