IT IS AN AMBITIOUS GOAL...

... one that may never be completely attained, but one that must be sought nonetheless and one that serves as the central purpose and true promise of our being.

> a place, a destination, a home where talent and technology, industry and invention, dreams and discoveries converge to contribute extraordinary creations to our world and our future

> an enabler, principled in all dealings, positive in approach, and uncompromising in values

> a catalyst that anticipates needs, responds to requests, and continually seeks means and methods that can help all those that share in the quest, reach their own goals

> relentless in the pursuit of forms and formulas that can help create economic and social good today and for tomorrow
In 1989, Western University opened its first Research Park, a 20 hectare campus to accommodate and advance the growing imperative for academia and industry to come together and create greater economic and social value from research.

The Park, which will now be called Discovery Park, was designed to be more than commercial property, but rather a setting where entrepreneurs, researchers and start-up companies could mix with industry leaders in R&D and collectively generate new ideas, new inventions and new enterprises from this collaborative work.

In the twenty-plus years since this initial opening, Western has expanded its Park program and contributed to the opening of two more Parks, a 10 hectare site located alongside Highway 401 called the Western Advanced Manufacturing Park, and a 30 hectare location just south of Highway 402 called the Western Sarnia-Lambton Research Park. Interestingly enough, both Parks were established through a unique partnership between the University, the local colleges, Fanshawe and Lambton, and the respective municipalities in which they reside.

In commissioning the Parks, Western and its partners hope to leverage the region’s rich legacy in health sciences, information technology, energy and environmental stewardship, manufacturing and industrial processing to generate local employment, civic wealth and global advances to the collective benefit of the Park founders and the region.

Since the Parks’ inception, Western and its partners have made considerable strides in these areas. For example, Western’s Parks are collectively home to:

- Over 70 tenants ranging from small early-stage high-tech proprietorships to large branch operations of industry-leading multinationals.
- Over 1,100 knowledge-based workers including a mix of scientists, software developers, seasoned business leaders and new graduates.
- Enterprises and employees which, when combined, contribute an estimated $130 million to the local economy each year.

Regrettably, this good news story has largely gone untold. So in an effort to expand our reach and trumpet the success of our impressive roster of tenants, we are pleased to share with you the first ever Annual Report for Western Research Parks’ program, entitled Transforming Our World.

Western University is committed to establishing its network of Research Parks as world-renowned destinations where talent and technology, industry and invention, dreams and discoveries converge to create transforming works for the benefit of our world and our future. We welcome this challenge and look forward to delivering on its promise.

Paul Paolatto
Executive Director (Acting)
Research Park was designed to be more than a commercial property, but rather a setting where entrepreneurs, researchers and start-up companies could mix with industry leaders in R&D and collectively generate new ideas, new inventions and new enterprises from this collaborative work.
SERNOVA CORP.

For a person with diabetes, the dream of insulin independence still burns bright. That day may be a little closer thanks to Sernova’s medical device. Sernova (TSX:V-SVA) won approval in 2012 from Health Canada to conduct a human clinical trial to test the safety and efficacy of their Cell Pouch™ for therapeutic islet transplantation.

The Cell Pouch, about the size of a paper thin business card when placed under the skin, provides a safe environment for the long-term survival and function of the insulin-producing islets.

Dr. Philip Toleikis, President of Sernova, a career entrepreneur experienced with unique medical devices, drugs and drug/device combinations, says the device offers islets protection from an anti-immune response. “The Cell Pouch is unique in that it has pores which fill with tissue and microvessels forming chambers for the islets,” he says. “After the islets are transplanted, they become closely associated with microvessels where they detect blood sugar and release insulin naturally.”

Toleikis collaborates with Dr. James Shapiro of the University of Alberta Health Sciences Centre in Edmonton – a developer of the Edmonton Protocol – the current standard on islet production and transplantation through a portal-vein delivery of donor islets and anti-rejection drugs into the liver.

Sernova is also testing an important technology which can protect the islets locally within the Cell Pouch, eliminating the need for daily anti-rejection drugs. “Our Sertolin™ technology is a second cell type which is placed in the Cell Pouch with the therapeutic cells to protect them from immune system attack,” says Toleikis. “The combination of therapeutic cells and Sertolin could provide a non-toxic therapy for diabetes and other chronic diseases.”

Toleikis credits Discovery Park with providing a whole range of critical support to move Sernova’s Cell Pouch closer to market. “We appreciate being close to the National Research Council who have been instrumental helping Sernova to grow,” he says, “And we have great collaboration working together with Western on studies.”

CRITICAL OUTCOME TECHNOLOGIES INC.

With any life-threatening disease, you want quick access to the latest therapies. Dr. Wayne Danter, M.D., is President of Critical Outcome Technologies Inc. (COTI) – a TSX-listed company at Western’s Discovery Park dedicated to finding drugs to fight diseases that have few or no effective treatments. With an academic background in pharmacology and therapeutics and an interest in the medical applications of artificial intelligence, Dr. Danter co-founded COTI with his former London Health Sciences Centre colleague Dr. Kathleen Ferguson, to develop proprietary algorithms that transform the 3D molecular structure of small molecules into unique 2D data patterns.

COTI’s modelling process, known as CHEMSAS, minimizes the need for many early-stage, expensive and time consuming laboratory and animal experiments.
Danter says CHEMSAS improves the odds of discovering new, effective therapies. “Using the traditional approach, about 1 in 5,000 molecules will make it to the pharmacists’ shelf. If you identify better starting points for new drugs you improve outcomes,” says Dr. Danter. “To prove this, we dismantled the drug discovery process into its constituent elements, created and validated computer simulations of each and then put them back together in a platform. We use computer simulations to evaluate hundreds of thousands, or even millions of opportunities to identify a better starting point in the drug development process.

COTI’s research led them to discover COTI-2 – a promising molecule to fight ovarian and other cancers. “We are now in the final experiments to get COTI-2 into an FDA Phase 1 study,” says Danter. “Dr. Gordon Mills and M.D. Anderson Cancer Center in Houston are providing considerable guidance in the clinical development of COTI-2.”

As important, Western’s Discovery Park appreciates what COTI is doing to help grow the economy while improving the lives of others through improved drug development.

SUMAGEN CANADA INC.

Scientists say there is desperate need for a cheap and safe preventative vaccine for HIV/AIDS – a disease that has infected 35 million and killed 28 million people worldwide. Sumagen Canada Inc., located at Western’s Discovery Park, was incorporated to bring an effective vaccine for HIV to commercialization.

The outcome of Sumagen’s clinical trial in 2012, under the scientific direction of Dr. Chil-Yong Kang at Western’s Schulich School of Medicine and Dentistry, was the first human trial in its long journey to an effective, prophylactic global vaccine to battle HIV/AIDS. “The main purpose of the Phase I clinical trial was to check the safety and tolerability of the vaccine in humans,” says Dr. Dong Joon Kim, Representative of Sumagen. “A total of 48 patients were screened at four sites and 33 were selected and successfully completed the treatment of our vaccine. In addition to the main test, the immunological response showed that the vaccine formed useful antibodies from the interim results as well.”

The Sumagen vaccine, known as SAV001, is a killed whole-virus vaccine. “The FDA accepted the quality of the material produced and the resultant data,” says Dr. Sangkyun Lee, Sumagen’s Development Manager. “The main concern of the FDA throughout the process was to ensure that patients experienced no adverse effects. This study has proven that the material is safe for human use.”

Sumagen is preparing to commence Phase II clinical trials and will recruit 400-600 volunteers, mainly in North America. “Sumagen’s goal is to reach commercialization of our vaccine,” says Lee. “We are looking for a partner(s), such as a large pharmaceutical company, to work with us. Technical and economic support is very important for the success of this project and we welcome any interest from the community.”

Sumagen is yet another example of the impressive roster of technology and talent under development at one of Western’s Research Parks.
Western University’s Research Parks are very proud to serve as the home for the many clinicians, scientists, researchers and developers who dedicate each day to improving our lives and world around us.

**EATING DISORDERS FOUNDATION OF CANADA**

In addition to building businesses and advancing research, tenants of Western’s Discovery Park advocate for a wide range of social needs including diseases such as mental illness. The Eating Disorders Foundation of Canada (EDF) is one of those organizations that works to raise awareness, reduce stigma and ensure that all who suffer with an eating disorder such as bulimia, anorexia and Binge Eating Disorder have equal access to quality care.

Dr. Robbie Campbell, President of the EDF, says the statistics are grim. “Nearly 4% of young women in our region, between the ages of 15-24, suffer from this disease,” he says. “And anorexia has the highest mortality rate of any illness for this group.”

He says one problem is the lack of public outpatient care and transitional facilities in Canada. And when inpatient treatment is over, many patients do not get the support they need to stay healthy. In 2012, the EDF played a lead role in the development of a new eating disorder treatment team and program at the London Health Sciences Centre and partnered with WOTCH Housing to assist with the design of the eight-bed residential treatment component. “It is a terrific model, unique in the country,” he says.

Dr. Campbell, an associate professor for the Department of Psychiatry, Schulich School of Medicine & Dentistry, says the Discovery Park is an excellent place to network for fundraising and to work on his outpatient research initiatives, particularly the use of technology for on-going, cost-effective care and support. “Our research is about providing telepsychiatry and home care monitoring,” he says. “There has to be structure when you leave an inpatient program. And you must do intervention early.”

Western’s Discovery Park is proud of Dr. Campbell’s research and advocacy and proud of the many Park clinicians, scientists and researchers who work to improve the lives of others and truly make the world a better place.
LANXESS is a global leader in specialty chemicals with a butyl rubber plant in Sarnia. In 2011, they chose to locate their butyl R&D facility at Western’s Discovery Park to improve access to Western’s professors and students, as well as scientists at Surface Science Western, a leading materials analytics centre that is also a Park tenant.

Dr. Sharon Guo is Head of Global Research and Development for LANXESS butyl. “The majority of the research we do here is in materials and chemistry research,” she says. “We wanted to be closer to the frontier of research on campus in chemistry and chemical engineering. We bring an industrial side of R&D to Western and Discovery Park.”

One early breakthrough was the development of a bio-based butyl rubber. “The first bio-based butyl material was made here,” says Guo. “But it is at the lab scale, not the commercial scale. We are still pursuing this opportunity.”

Butyl rubber is a versatile, high performance polymer that continues to evolve. “Butyl has low-permeability properties to gas and moisture, therefore, one major application of butyl rubber is inner liner for tires,” says Guo. “Another special characteristic of butyl polymer is its excellent damping properties to absorb energy which is why it is used as a body mount material in automotive applications.”

Guo is excited about butyl rubber products in the pharmaceutical industry. “Current applications are seals in closure systems for antibiotics or blood transfusions – any pharmaceutical applications that require a seal,” she says. “Butyl is clean, stable and biocompatible.” Guo says butyl is also being developed in tire tread applications to improve tire safety by increasing their wet traction, while at the same time, retaining their wear resistance.

For LANXESS, advances in research provide plenty of new bounce for their butyl rubber business. And with their state-of-the-art R&D offices located right next door to Western University, LANXESS expects opportunities for their products will continue to be diverse and buoyant.
Two years ago, in an effort to combat the decline in the region’s manufacturing prominence, Western University, the City of London and Fanshawe College entered into an innovative partnership with three levels of government to commission Western’s Advanced Manufacturing Park – the first Research Park of its kind dedicated to the manufacturing sector in Canada – to serve as the hub to the next generation of manufacturing advances in this region and around the world.

WESTERN’S ADVANCED MANUFACTURING PARK

The manufacturing sector of Southwestern Ontario, the engine of the region’s prosperity since Confederation, took a massive hit in the recession of 2008. Stakeholders across the region vowed to bring it back smarter and re-tooled for the 21st century.

Two years ago, Western University, the City of London and Fanshawe College built an innovative partnership with three levels of government to commission Western’s Advanced Manufacturing Park (AMP) – the first Canadian Research Park dedicated to the manufacturing sector. “This is a long term investment to enable economic growth, wealth creation and social good through innovation and is a catalyst for advanced products and services,” says Andrew Hrymak, Dean of Western Engineering.

The 130-acre technology park, in the heartland of Canada’s largest manufacturing region, has superb access to Highway 401 and an international airport and rail corridor. Founding tenants include the WindEEE Dome and the Fraunhofer Project Centre for Composite Research.

In fact, the AMP is already set to grow. Western was recently awarded a $14 million grant from the Federal Development Agency to construct a new facility to accommodate demand from prospective tenants.

Hrymak says the Advanced Manufacturing Park will enhance Western’s leadership in the renewable energy, materials and environmental engineering sectors. “It is about getting ahead of the game – going to where the puck is going to – smaller, lighter and more energy efficient parts, products and processes.”
FRAUNHOFER PROJECT CENTRE FOR COMPOSITES RESEARCH

Think of it as a crossroads – the place where Canadian ingenuity in surface science and composite materials meets the strength of German manufacturing. The point of intersection is the Fraunhofer Project Centre (FPC) for Composites Research at Western’s Advanced Manufacturing Park (AMP) – North America’s newest full-sized production facility to develop and validate lightweight composite materials and advanced manufacturing processes.

Put it on North America’s auto superhighway and you are on a fast track to manufacturing excellence. “The city contributed this land close to the 401 for a reason,” says Andrew Hrymak, Dean of Western Engineering. “It sends a signal to industry about our ability to innovate and support applied R&D,” he says. “We want to serve as a magnet for companies to move here. Hopefully, manufacturers will want to take advantage of developing low-cost and high production composite materials at the FPC.”

Hrymak believes composites can help re-tool industry to compete globally. “What Canada used to be in the auto sector we can be in the future,” he says. “We are good at making cars. We can make cars that are light weight and efficient.”

Composites are made from two or more materials, with significantly different properties that when combined create superior performance in the finished product – a good metaphor for this German-Canadian partnership. “Companies are interested in using Fraunhofer to advance their objectives in materials and processes,” says Hrymak. “That is the advantage of being in the hub of the auto manufacturing here and in Germany.”

The Fraunhofer Institute for Chemical Technology, located in Pfinztal, the heartland of Germany’s fabled auto sector, is part of the Fraunhofer Society, the largest applied research organization in Europe. “There are 62 institutes at 80 locations around Germany and they are all competitive to each other,” says Tobias Potyra who transferred from Germany to be Fraunhofer Project Centre’s Manager of Operations. “The Fraunhofer mission is to align all research with industry needs. Together, we always do applied research. We are detached and off-campus but we use university services.”
Frank Henning, Deputy Director of Fraunhofer in Pfizntal, spends one week a month in London. He sees opportunities in construction and renewable energy from wind turbines and solar arrays. “We are looking at wind energy – not blades but other components,” he says. “And you can industrialize the way photovoltaic cells are made to be more functional with thermal insulation so they are lighter and cheaper to install – only one person instead of two mount them on the roof.”

Henning likes the flexibility of composites in a vast array of product applications. “We can also do very small things like hollow needles to release drugs into the spine,” he says. “They are a carbon-filled composite. The key is the most performance at the lowest weight.”

So far, the FPC model netted contracts with Ford and General Motors and leveraged funding from the Ontario Research Fund to work on composite applications for vehicles. Some composite applications include a shift to lightweight parts for underbody shields, body structure parts, tailgates, doors and seats. “What is driving this interest in polymer composites is reducing energy consumption and Corporate Average Fuel Economy (CAFE) regulations,” says Potyra. “You have to get the maximum fuel consumption allowed or the OEM’s have to pay. In Europe, polymer composites are used on many vehicle platforms. We want to accelerate this know how.”

Hrymak sees the future. “We are a long way from The Graduate,” he laughs. “When people think plastic they often think of cheap products. What we do here could not be further from that truth.” Western is thrilled to have FPC as a key part of its new Advanced Manufacturing Park and excited about the future prospects that such a world-class operation can bring to our region and our community.

WINDEEEE RESEARCH INSTITUTE

The WindEEE dome, which stands for Wind Engineering, Energy and Environment Research Institute, is the newest asset in Western’s long standing and internationally recognized Wind Engineering program and a founding tenant within Western’s new Advanced Manufacturing Park.

Professor Horia Hangan is WindEEE’s Director and the Associate Research Director of the Boundary Layer Wind Tunnel Laboratory. He says there is not another facility like it in the world. “WindEEE is not a wind tunnel,” he says. “Essentially it is a dome to create three-dimensional air flows versus one-dimensional air flows. We can model tornadoes, thunderstorms, downbursts and other non-uniform weather systems, not just wind.”

With increased concern that erratic weather patterns are a function of global warming, the research conducted at WindEEE is time sensitive. “There is a shift in all of these winds to the East and in hurricanes to the North,” says Hangan. “And these weather systems create a lot of havoc when they go from non-populous to more industrialized settings.”

Private companies in construction, the auto and insurance sectors have expressed interest in their research capabilities. “The WindEEE Research Institute was created to bring all the research together and to ramp up a very complex machine to carry out projects,” says Hangan.

WindEEE will also serve as one of the cornerstones in Western’s new Advanced Manufacturing Park especially given the University’s growing emphasis on renewable energy and environmental research in the manufacturing sector. WindEEE’s extraordinary test capability when blended with other Park assets, Western’s impressive track record in wind dynamics and local manufacturing capabilities create exciting prospects and potential for industry, academia and the region’s economy.
The success of many of Western Research Parks’ tenants can be directly attributed to the outstanding roster of people and programs offered to our clients through our partners. These on-site business support teams are dedicated to our tenant’s success and can proudly point to a number of exciting entrepreneurs, enterprises and endeavours that are now helping transform our world.
ONTARIO CENTRES OF EXCELLENCE

Research Parks thrive with a variety of tenants. Government funders are important catalysts for innovation with access to and knowledge about grants, support programs and contacts. In London, the Ontario Centres of Excellence (OCE) at Western’s Discovery Park invests in applied research and works hard with academic and industry partners to lower any “silos” that might be a barrier to innovation.

Ross Bradsen is the Regional Director, Southwestern Ontario of OCE. He says the Research Park benefits by not just having OCE as a tenant but also the National Research Council of Canada (NRC) with their strong focus on industry partnerships. “It’s about providing a whole support network. At the operational level people want to do what is best for their clients,” he says. “There is no double dipping involved in funding. It is a good way to share risk between the province and the Feds.”

Bradsen is pleased that all Research Park partners, including TechAlliance, with a mandate to assist early-stage entrepreneurs, specialize in different sectors of innovation. “OCE can only work with intellectual property created at a university or college so we intersect between academic institutions,” he says. He uses a race horse analogy to picking the winners that will help build the economy of the future for Ontario, and Canada. “The most important piece is the jockey, the entrepreneur,” he says. “The stable – or the academic institution that does the training, and even the racehorse which is the invention, is secondary.”

REGIONAL INNOVATION CENTRE

Three years ago, TechAlliance, a member-driven organization that serves as a catalyst for the technology sector in Southwestern Ontario, was invited to become the Ontario’s Regional Innovation Centre (RIC) for this region and join 14 other members of this provincially-funded network to help grow the province’s tech community and improve Ontario’s competitiveness in the global economy.

To this end, Marilyn Sinclair, TechAlliance’s President and CEO had a plan for what is required to make this vision a reality. “We established a comprehensive partnership with all of the key players in the tech community to drive the region’s agenda and bring down silos,” says Sinclair. “It was important that we coordinate and share best practices for the benefit of our clients. When we work collectively it makes it easier for them to access our services and eliminates duplication.”

Regional Alliance (L-R) Jessie Maggard, Paul Paolatto, Ian Haase, Ross Bradsen

“We try to find companies where we can make a significant step up in their business.”

Bradsen is clear that not all inventors are entrepreneurs. After assisting hundreds of early-stage innovators, he has defined four essential characteristics of success. “They must have coach-ability – you must be able to teach them,” he says. “They also need credibility – could I put them in a room and be proud of them? And they need to be resourceful and have energy.”
The partnership, which is headquartered in Western’s Discovery Park, is called the Regional Alliance and includes business, academic and public sector leaders from the Park, the Stiller Centre for Technology Commercialization, WORLDiscovers, Western University, the Colleges Ontario Network for Industry Innovation, and the regional offices of the Ontario Centres of Excellence and National Research Council. It also includes representatives from the Windsor and Sarnia tech communities.

In short, the Alliance gets advisory services, institutions, funding organizations around one table and all committed to new business development and start-up success. The group’s wealth of contacts, experience and energy improves engagement, stimulates entrepreneurship and enhances success.

Sinclair, a seasoned tech entrepreneur and successful businesswoman, has been an effective, long-time advocate for building capacity in the technology industry and is adroit at inclusiveness, communications and cutting through red tape. “We meet monthly, as a RIC, and talk strategy, successes and approach,” she says. “We also bring clients forward at these meetings so they don’t have to go from place to place and waste time. We are committed to our client’s success and will continue to utilize this efficient and effective partnership approach to grow these companies and grow our economy.”

TECHALLIANCE ADVISORY SERVICES

One of Discovery Park’s greatest attributes is that it is home to a committed network of partners who share in the Park’s vision and play a significant role in the Park’s success. And no partner is more notable or valued than TechAlliance of Southwestern Ontario.

TechAlliance is a grassroots, member-driven organization dedicated to stimulate and support the region’s growing tech industry. They provide a comprehensive roster of business development and advisory services for companies to compete in the global technology sector. As one of Ontario’s 14 Regional Innovation Centres (RIC), TechAlliance assists small and large tech companies alike with the best practices to start, grow and sustain their business including: develop robust business models, provide advice and mentorship, source new capital, reach new customers and markets and find talent.

Ian Haase (Vice President, Advisory Services) at TechAlliance works with more than 160 technology start-ups – three-quarters at the pre-revenue stage. “The tech sector is extremely competitive so new companies are very interested in any assistance that can give them an edge,” he says.

Haase believes that TechAlliance’s programs and services are critical at the start-up stage. The clients who seek their assistance, especially the many faculty and/or students just out of Western, Ivey or Fanshawe, appreciate support when their business idea is young and vulnerable. “We know that new companies often fail because they do not seek outside assistance early enough, or they fail to build diverse teams capable of achieving...
the critical milestones that are attractive to investors,” he says. “Our job is to give them the skills, advice and connections that help them clear the initial hurdles and give them a fighting chance at long term survival.”

The management of these start-ups is process driven, and revolves around a stage-gate model. “We work with our entrepreneurs to develop a critical milestone pathway in order to continually progress, which helps the companies remain focused and committed,” says Haase.

GRADUATE ENTERPRISE INTERNSHIP INITIATIVE

Western’s Discovery Park, with its close proximity to main campus, is well positioned to play matchmaker. The Park works with regional businesses to define their need for interns and assist graduates to find meaningful work experience.

The Federal Economic Development Agency for Southern Ontario’s Graduate Enterprise Internship Initiative is a solid program to assist science, technology, engineering, and mathematics (STEM) graduates find work in Windsor, Sarnia, London and all points in between. This internship initiative has a budget to disburse about 140 internships through to March, 2014.

Erin Leppard is the Research Parks’ Marketing Coordinator and manages the internship program. “Our goal is to help make it easier for companies in our region to make the decision to hire a recent graduate,” she says. “This funding can offset any training costs or free up cash for additional growth.”

Businesses are expected to provide mentorship and must contribute a minimum of 50 percent of the intern’s gross salary. Leppard says the grant is a terrific calling card. “Students can shop themselves with this program,” she says. “If you can find a company with the right criteria you can bring $10,000-15,000.”

Leppard continues to welcome interest from small businesses that may fit the criteria. Here is one more reason to keep young, talented students in London once they graduate.

TRANSFORMING PERFORMANCE

Western Discovery Park Metrics

- 532 Number of knowledge-based employees
- $70 MILLION Estimated annual contribution to the community
- 50 Number of transforming entities
Western Research Parks’ Team

- Paul Paolatto, Executive Director (Acting)
- Julia Hoare, Director, Finance & Administration
- Geoff Wicks-Nicholls, Facilities Manager
- Terry King, Facilities Manager
- Jennifer Dawe, Convergence Lab Manager
- Erin Leppard, Marketing Coordinator
- Jon Scott, Technician

Western Research Park Board of Directors

- Gitta Kulczycki (Co-Chair), Western University
- John Capone (Co-chair), Western University
- Rick Campbell (Advisor), Western University
- Chirag Shah, PwC
- Lynn Logan, Western University

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