

THINK LIFE SCIENCES THINK DURHAM



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Meet **Durham Region**

A Centre of Life Sciences Activity

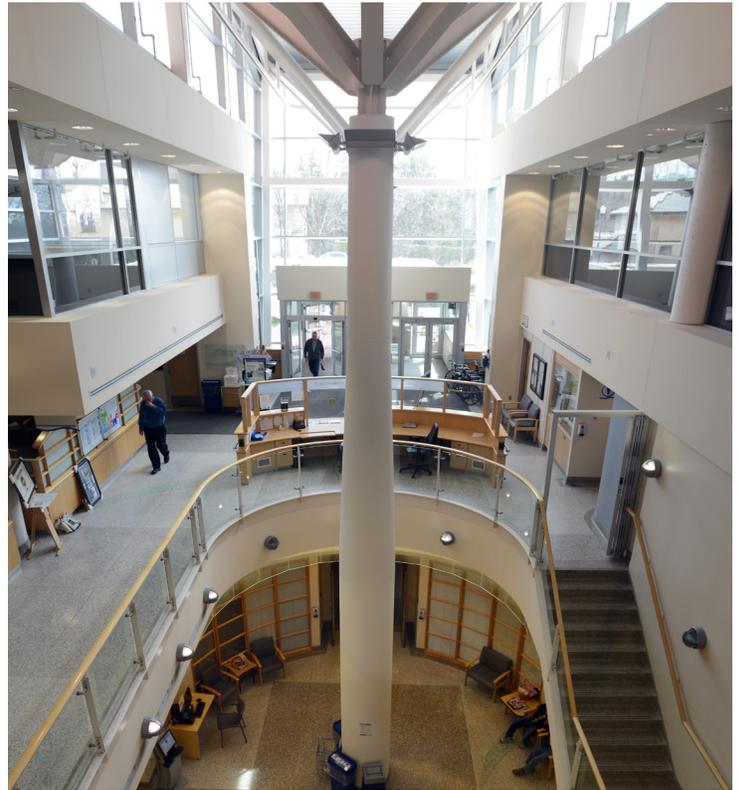
Located on the eastern edge of the Greater Toronto Area (GTA), Durham Region's reasonable cost of doing business, skilled workforce, and high quality of life have combined to make it one of the fastest-growing regions in North America. Here, life sciences companies merge research, development and business collaboration in a desirable, industry friendly location.

The GTA is Canada's centre of life sciences activity, and Ontario's broad and innovative life sciences sector includes about 1,900 firms. The province ranks seventh in North America in terms of life sciences employment and eighth in the number of life sciences establishments. Life sciences companies in Durham Region have access to a remarkable cluster of top-ranked institutions, researchers, developers and manufacturers.

Durham Region's dynamic life sciences sector is continuing to grow. With support from government, post-secondary institutions, research organizations, and the business community, the sector is primed for investment.

Health care and social assistance employment in Durham grew by 11 per cent from 2010 to 2015, to 26,891 employees, which is slightly higher than the overall Ontario rate of 10 per cent. (The life sciences sector also includes pharmaceutical and chemical research and development (R&D) and manufacturing, which is also growing in Durham.)

Numerous federal, provincial and regional programs exist to support the advancement of life sciences, including very favourable tax incentives.



Recent successes in Durham include: Canada's first hospital to fully integrate a digital pathology system (reducing wait time from weeks to days); and the introduction of a radically redesigned hospital IV pole, which reduces the strain on nurses by 50 per cent.

Lakeridge Health has five public hospitals in the region, as well as Ontario Shores Centre for Mental Health Sciences, a large public provider of mental health services. The Oshawa Clinic Group, Canada's largest private medical clinic, with over 130 physicians. It includes a pain management clinic, a surgical centre, diagnostic imaging and laboratory

services, a dental centre, hearing testing and rehab services.

Among the specialty areas widely evident in the region are health informatics, palliative care, diagnostics and testing, clinical trials, surgery, cancer care and support services (i.e. call centres).

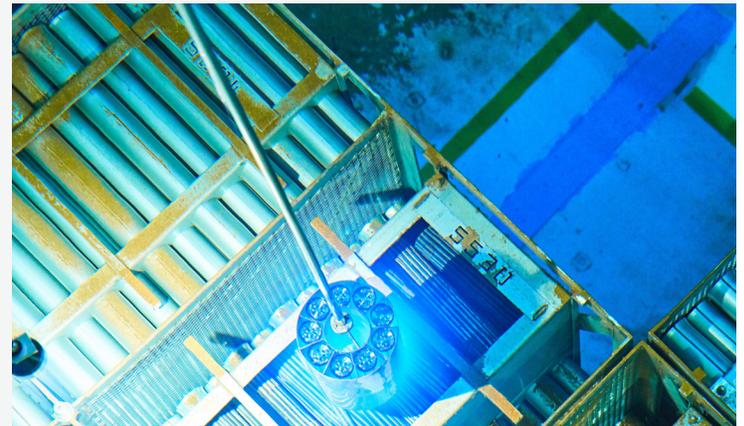
The life sciences sector benefits from collaboration with other related businesses, including advanced manufacturing, agri-business and education. Many resources are available to help these companies thrive.

Clarington's Darlington Nuclear to be new source of life-saving medical isotope

By the end of 2019, Ontario Power Generation's (OPG) Darlington Nuclear Generating Station is scheduled to be the world's first large-scale commercial nuclear power station providing a life-saving medical isotope.

Molybdenum-99 (Mo-99) is used for patients who need skeletal, brain and organ imaging to detect and diagnose harmful diseases. Each year, it is used in more than 30 million life-saving diagnostic and medical treatments. Mo-99 is a parent isotope of technetium-99 (Tc-99m), which is used for the detection and diagnosis of heart disease, cancer and more.

Located in the Municipality of Clarington, Darlington's CANDU reactors allow for the insertion and removal of medical isotope targets, while also producing electricity. In fact, Ontario's nuclear industry is a major world supplier of isotopes, including Cobalt-60 (used to sterilize medical equipment) and tritium (used



Isotope from Ontario Power Generation's (OPG) Darlington Nuclear Generating Station

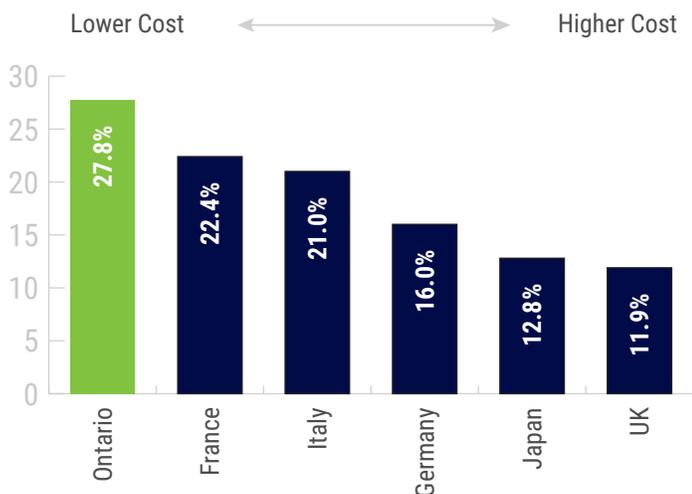
for photoluminescence). Together, OPG and Bruce Power supply 70 per cent of the world's Cobalt-60.

The new Mo-99 isotope production is made possible by a recent collaboration between Canadian Nuclear Partners (affiliated with OPG) and a subsidiary of BWX Technologies, Inc. (BWXT). BWXT will take the materials from the Darlington Nuclear Generating Station to a facility near Ottawa for processing and production of the medical isotope.

Programs and Incentives for Growth

Ontario's Research and Development (R&D) tax credits are the most generous among the Organization for Economic Co-operation and Development (OECD) countries. Combined with federal R&D programs, Ontario's R&D Tax Program can reduce after-tax costs by 40 to 60 per cent.

Ontario's R&D cost advantage versus other G7 countries (KPMG, 2017)



Source: MEDEI/MRI analysis, prepared using CompetitiveAlternatives.com Cost Model, 2016.

Tax Incentives

There are government programs available to new life sciences companies, such as:

- Scientific Research and Experimental Development Tax Incentive
- Ontario Research and Development Tax Credit
- Ontario Business Research Institute Tax Credit
- Ontario Innovation Tax Credit

Provincial (Ontario) Programs

The following programs help to promote innovation within the province:

- MaRS: Excellence in Clinical Innovation and Technology Evaluation (EXCITE)
- MaRS: Investment Accelerator Fund
- Ontario Research Fund: Research Infrastructure
- Ontario Research Fund: Research Excellence
- Ontario Tax Exemption for Commercialization

Federal (Canadian) Programs

- Natural Sciences and Engineering Research Council of Canada - Industrial R&D Fellowships
- Canadian Institutes of Health Research Programs
- FedDev Program (Federal Economic Development Agency for Southern Ontario)

In Durham Region, the Municipality of Clarington has created a Life Sciences Cluster Committee comprised of industry, economic development, service providers, post-secondary institutions and the workforce planning board. This project engages employers in the life sciences sector to support life sciences training and the development of solutions to advance the sector.



Life Sciences **Education and Research & Development**

Durham Region has two academic institutions that offer progressive life sciences education and R&D: Ontario Tech University and Durham College. These institutions provide employers with a steady stream of highly skilled employees for multiple life sciences fields.



Ontario Tech University

Ontario Tech's medical laboratory science program is one of two such programs in the country and is one of the first teaching sites in Ontario to use a simulation lab for nursing. It's also the only one in Ontario connected with a university.

Disability prevention and rehabilitation is a field of excellence at Ontario Tech University. Ontario Tech has a Centre for the Study of Disability Prevention and Rehabilitation, in addition to a Canada Research Chair focused on disability prevention and rehabilitation.

Ontario Tech University's Canada Research Chair in Health Informatics, Dr. Carolyn McGregor, is leading an international data mining initiative for neonatal intensive care.

Mental health, including dementia care, is also a significant focus at the university.

One of Ontario Tech University's key strengths is the integration of information technology into health care, including data analytics, data visualization, sensor-based home care, lean health care, and serious game design for health. The latter is

used for total knee replacements, plastic surgery, coronary artery bypasses, diabetes management and surgical proficiency.

Ontario Tech University degree programs in life sciences include:

- Bachelor of Health Science, Medical Laboratory Science (BSc)
- Bachelor of Science and Bachelor of Science and Management, Biological Science (BSc)
- Bachelor of Science, Chemical Biology (BSc)
- Bachelor of Science, Forensic Science (BSc)
- Bachelor of Science, Pharmaceutical Chemistry (BSc)
- Bachelor of Science, Environmental Biology (BSc)
- Master of Science, Materials Science (MSc)
- Master of Science, Applied Bioscience (MSc)
- Doctor of Philosophy, Applied Bioscience (PhD)

Life Sciences **Education and Research & Development**



Durham College

Durham College's nine academic schools offer market-driven programs, led by industry experts across a wide range of disciplines, including:

- Biotechnology
- Biomedical Engineering Technology
- Chemical Laboratory Technology
- Chemical Laboratory Technology, Pharmaceutical and Food Science

At Durham College, health-care programming is provided through the School of Health and Community Services, as well as the School of Justice and Emergency Services. Programs include mental health, child and youth care, critical care nursing, dental hygiene, fitness and health, practical nursing, and a Collaborative Bachelor of Science in Nursing program (with the Ontario Tech University).

The college also offers a paramedic program—the first in Ontario to be accredited by the Canadian Medical Association.

The college features an Honours Bachelor of Health Care Technology Management program, the first of its kind in Canada.



A Hub of **Research**

Durham Region is home to highly regarded research organizations dedicated to advancing the life sciences sector, including:

Lakeridge Health Education and Research Network (LHEARN)

The LHEARN Centre, located at Lakeridge Health hospital in Oshawa, is a hub for cutting-edge training, education and research. LHEARN connects more than 80 post-secondary institutions, including Ontario Tech University, Durham College, Queen's University and the University of Toronto. Each year, more than 1,600 students across a broad range of health disciplines pursue their studies here.

LHEARN has also hosted nearly 600 research studies and clinical trials. The centre offers continuing education programs to help health-care providers in Durham Region keep up with the latest advances in clinical care.

High-simulation labs allow students, clinical staff, physicians and trainees to test their skills.

Queen's University has a competency-based medical education framework for post-graduate residency. The university sends residents to the Queen's-Bowmanville-Oshawa-Lakeridge Family Medicine Program. Notably, their academic home in the Durham Region is the LHEARN Centre.



R.S. McLaughlin Durham Region Cancer Centre

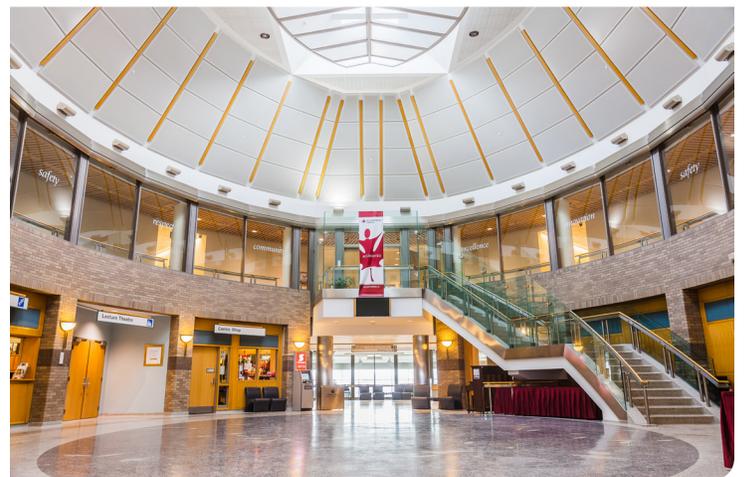
As one of the top cancer centres in Ontario, this centre emphasizes research into cancer treatment and prevention. More than 60 clinical trials are taking place at any time.

The centre has doubled the number of people served since 2007 and now sees close to 500 patients each day. It is a top-ranked cancer centre for quality by Cancer Care Ontario.

Ontario Shores Centre for Mental Health Sciences

Ontario Shores focuses on discovery and innovation to help people living with complex and serious mental illnesses. Its research aims to improve recovery and wellness outcomes. The centre also researches how to prevent and reduce the stigma of mental illness.

The centre employs approximately 1,200 people and provides a range of specialized assessment and treatment services.



Ready **for Business**

With approximately 682,250 residents in 2017, and a forecasted population of one million by 2031, Durham Region has one of the fastest growing populations in Canada.

Durham Region is composed of the cities of Oshawa and Pickering; towns of Ajax and Whitby; Municipality of Clarington; and townships of Brock, Scugog, and Uxbridge—all of which are primed for ongoing economic expansion.

Through its proximity to the GTA—with a population of more than five million people—Durham Region also offers prime access to Canada's largest market and its key service providers, as well as to 135 million American and Canadian customers within a day's drive.

Durham's transportation infrastructure is made up of an integrated network of:

- Provincial and regional highways
- Cargo-loading and deep-sea shipping ports connected to the Atlantic Ocean via the St. Lawrence Seaway
- Transcontinental and commuter railway lines
- Local and international airports



Population

2017
682,250
residents

2031
Projected to be
one million
residents

In addition to life sciences, Durham's diverse economy includes strengths in:

- Agri-business
- Energy, environment, and engineering (EN3)
- Innovative technology
- Manufacturing
- Professional and technical services
- Tourism

This sector diversification, the educated workforce, affordable real estate, active real estate development, and an extensive transportation system have created an economy that's thriving and is ready for future growth.

A Skilled Labour Force Prepared for the Future

Durham Region's greatest asset is its labour force, which has the skills and education to compete in the global market. This makes it an ideal location for new investment.



Approximately 83 per cent of Durham's workforce has an advanced degree, diploma or certificate.

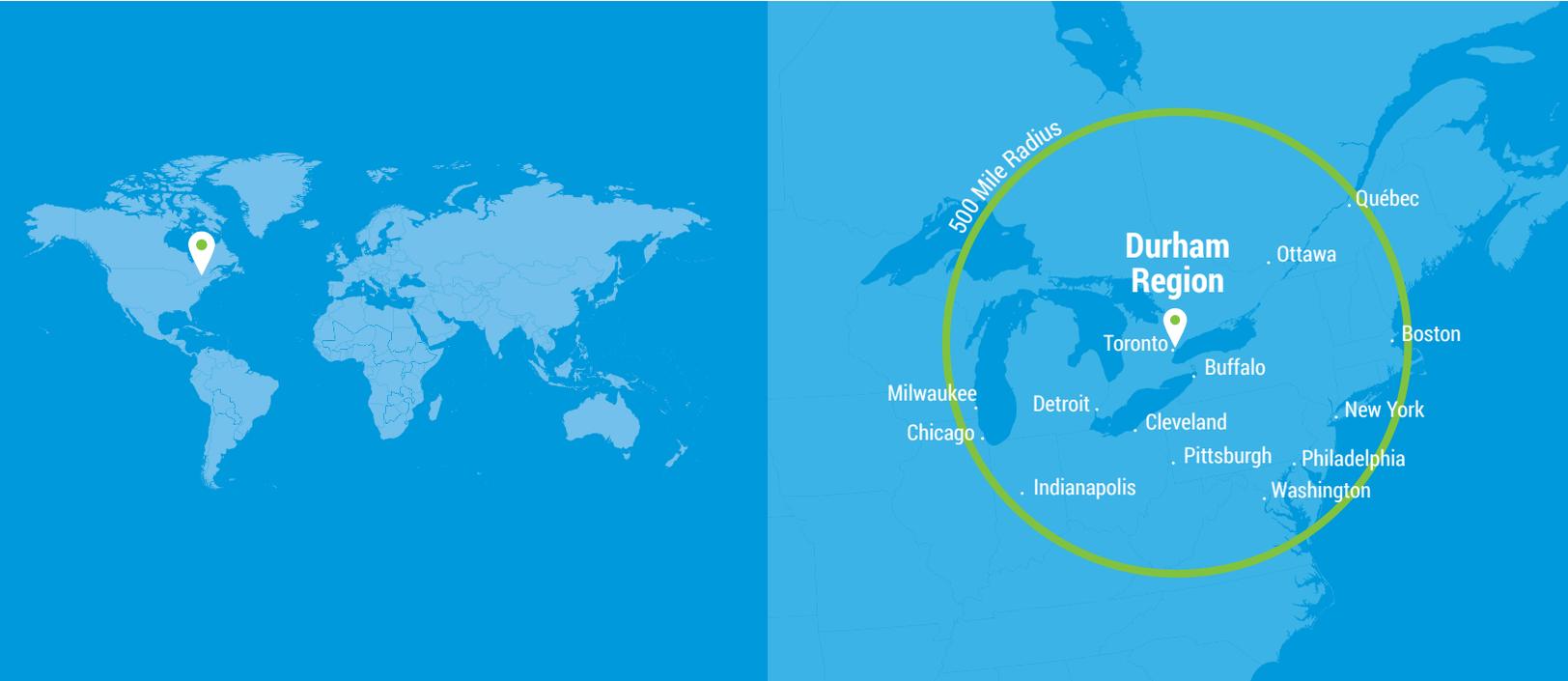
Employers can take advantage of the significant number of these skilled workers, who are currently commuting to other areas of the Greater Toronto Area, but would prefer to work in their home community. And Durham's competitive wages, publicly funded health care, strong workers' compensation insurance system, and quality of life make it easy to attract even more talent to the region.



Description	Jobs in Durham Region
Professional, scientific and technical services	10,445
Ambulatory and health-care services	7,280
Hospitals	5,405
Registered nurses and registered psychiatric nurses	5,325
Policy and program researchers, consultants and officers	2,770
Technical sales specialists—wholesale trade	1,410
Retail and wholesale buyers	670
Managers in health care	510
General practitioners and family physicians	395
Chemical technologists and technicians	350
Chemists	265
Specialist physicians	200
Medical laboratory technicians and pathologists' assistants	40

Source: Durham Workforce Authority, 2017

The Ideal **Location**



Life Sciences Companies in Durham

Durham Region has numerous companies active in the life sciences sector. These include:

Canopy Growth Corporation

Licensed by Health Canada to produce medical cannabis.

Dash MD

Mobile app that helps patients track, manage, and find care needed after they've left the care provider.

Dynacare

Diagnostics and genetic testing laboratory.

Hexyoo Scientific

Wellness product development and benefits validation testing company with expertise in formulating and pouring visco elastic polymers (gel).

Holburn

Research organization that provides customized research and development services for the pharmaceutical, biotechnology and diagnostic industries.

Mediwanna

Licensed by Health Canada to produce medical cannabis.

Patheon

Pharmaceuticals outsourcing.

Purdue

Pharmaceutical manufacturer, with a fully integrated research and development (R&D) formulation laboratory and drug development function.

Starseed Medicinal

Licensed by Health Canada to produce medical cannabis.

Thermo-Fisher Scientific

Laboratory equipment supplier.



Many **Resources Available**

Life Sciences businesses expanding or locating in Durham can collaborate with local organizations committed to helping businesses achieve growth and strategic development.



Spark Centre provides advisory services to early stage or growing innovation and technology companies. Executive coaching, functional advisory, co-location, incubation and day-to-day operational support are just a few of the services available.

Business Advisory Centre Durham (BACD)

provides business advisory services and guidance to individuals, entrepreneurs, start-ups and existing businesses in Durham Region.



Ontario Centres of Excellence (OCE) drives the development of Ontario's economy by helping create new jobs, products, services, technologies and businesses. In partnership with industry, OCE co-invests to commercialize innovation.

National Research Council of Canada Industrial Research Assistance Program (NRC IRAP)

offers technical and business advisory services, as well as funding programs, to help Canadian businesses build their innovation capacity, overcome barriers to growth, identify opportunities and turn great ideas into commercial success at home and abroad.



National Research
Council Canada

Conseil national de
recherches Canada

Many **Resources Available**

Other support networks and services are:

- Health Canada is the federal regulator responsible for licensing medical devices in accordance with the Food and Drugs Act, the Food and Drug Regulations, and the Medical Devices Regulations. This agency provides an overview of the regulatory process related to therapeutic products.
- Health Canada also maintains the **Medical Devices Active License Listing**, a database of all licensed class II, III and IV medical devices offered for sale in Canada.
- Additional legislation and regulatory guidelines relevant to the life sciences industry are accessible through Health Canada's site: **Drugs and Health Products: Legislation and Guidelines**.
- For more information on the medical devices inspection cycle, relevant forms and licenses, visit the **Health Canada website**.



Durham Region, the right choice for a bright future.



Let's Connect

Durham Region's Economic Development and Tourism Division loves nothing more than showing off our dynamic community.

Find out how Durham Region can work with you to achieve your business goals and aspirations by contacting us today. For questions and other inquiries, please contact **Simon Gill**, Director, Economic Development and Tourism at 905-668-7711, ext. 2611, by mobile at 905-903-5225, or simon.gill@durham.ca.

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