Discover Canada's Leading Research & Education Cluster

synapse
Life Science Consortium

Hamilton, Ontario, Canada

Leading Canadian Life Science Innovation

Hamilton is Canada's leading health research and educational cluster; a launchpad for innovative life science research and commercialization.

At the nexus of Ontario's dynamic $52 billion health care industry, Hamilton possesses an unmatched network of research-intensive hospitals, leading academic institutions, globally recognized researchers and clinicians, and private-sector companies; more than 35,000 professionals work together to develop and deploy health innovations that are changing lives around the world.

From laboratory bench to market success, Hamilton offers the expertise, talent, funding, resources and assets needed by researchers and clinicians, medical entrepreneurs, early-stage start-ups and multinational giants. Hamilton is anchored by the Canadian HQ of global medical device company (Stryker), the most comprehensive hospital network in Ontario and one of Canada's leading research hospitals (Hamilton Health Sciences) and Canada's most research-intensive academic institution and the home of evidence-based medicine (McMaster University).

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Synapse is a non-profit representing Canada's leading health research and educational cluster in Hamilton, Ontario. A strategic broker to the health ecosystem, Synapse promotes and facilitates initiatives that support the commercialization of health innovation and attract investment to the region.

To learn more about the cluster, or to partner with us, visit:

synapseconsortium.com/partner

The David Braley Health Research Institute

Working together, succeeding together

Synapse Life Science Consortium, a partnership of key anchor institutions is working together to facilitate leading-edge life science research and accelerate the commercialization of health innovation.

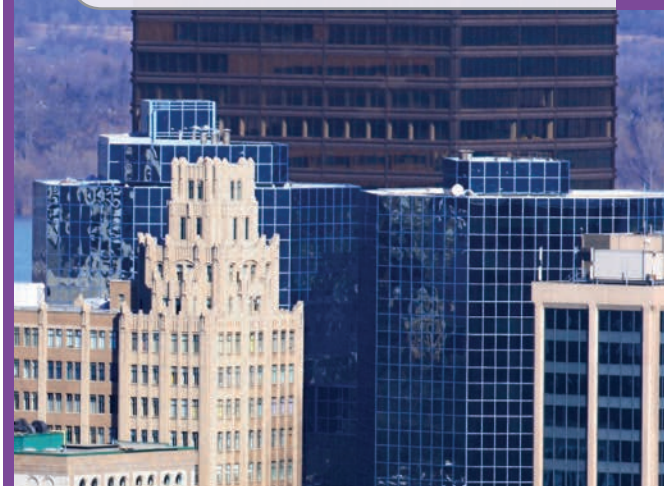
Synapse is a strategic broker, connecting life sciences players from across the spectrum, leading to powerful collaborations, acting as an advocate and concierge for public and private-sector stakeholders engaging Hamilton's capabilities and assets. "Hamilton has tremendous strength as a life science hub. There is a collective work ethic and ability to collaborate that brings together the city's incredible healthcare system and its academic institutions," said Synapse Chair Dr. Ted Scott.

Making Hamilton Home

A vibrant and dynamic city, Hamilton is recognized as the best place to invest in Ontario, the most diverse economy in Canada and among Ontario's fastest-growing economies.

Hamilton is the fulcrum of a globally renowned health innovation corridor that stretches from Toronto to Buffalo. A gateway to U.S. and global markets, Hamilton provides easy access to North American largest border crossings. A new 70,000-square-foot cross-dock facility handles time-sensitive cargo, including medical supplies and pharmaceuticals, is next to Canada's largest overnight express hub, which operates without curfew.

An hour's drive to more than 9 million people, Hamilton is undergoing a cultural renaissance thanks to its emergence as a centre for art, music and culinary talent, beautiful historic architecture and an unmatched range of natural amenities.



Hamilton Health Sciences

"Hamilton Health Sciences is actively working to develop the life sciences cluster in Hamilton, to benefit not only our community but people around the world. HHS researchers are tackling disease prevention, such as cardiovascular disease and diabetes, on a global scale, and are making an impact on treatment policies and regulations. Our collaboration with IBM is attracting and accelerating technology-enabled health innovation, while PHRI, in partnership with McMaster University, is world renowned for large clinical trials and population studies."

—Rob MacIsaac, President and CEO, Hamilton Health Sciences

Dr. Guillaume Pare at the Population Health Research Institute (PHRI) – Canada's premiere global health research institute and a world leader in large clinical trials and population studies

Continued from previous page…

"Our ecosystem is both deep and broad. We have everything high-potential companies need in terms of expertise and infrastructure and Synapse brings it all together in a one-stop process," said Scott. With particular expertise in biomedicine, clinical trials, and digital health, life science innovators are leveraging Hamilton's $4.8 billion health ecosystem, collaborating with experts to discover, validate and scale novel health technologies.

In Hamilton, collaboration is not just a concept or a goal; it's a way of life. Synapse embodies Hamilton's culture of collaboration, bringing key players around a single table to act nimbly and advance common goals. Whether it's an idea or an obstacle, Synapse brings the community together to broker, engage, negotiate and execute on your behalf.

"Hamilton is already one of the highest impact health research centres of excellence in the world, and I am sure this will be further strengthened by the Synapse Life Sciences Consortium," said Dr. Salim Yusuf, a global expert in cardiology and epidemiology and executive director of the world-renowned Population Health Research Institute.

Mitch Wilson, president of Mariner Endosurgery, an early-stage enhanced laproscopic surgery platform, says Synapse turbo-charges the relationship-building process with key players. "There is a very strong research and investigation push in the hospitals and the broker role Synapse provides is so important in creating and maintaining traction and momentum for a company such as ours. Bringing together hospitals with early-stage start-ups is a very smart model."

St. Joseph's Healthcare Hamilton

"Over the past few years Synapse and its management have proven crucial in bringing together the academic, civic and healthcare communities in Hamilton to provide one of the most innovative and integrated life sciences organizations in the country. Uniting the breadth of capacity in our outstanding academic and healthcare resources across a seamless spectrum, Synapse is capable of moving our community forward in a united way to make our goals a reality, branding Hamilton, nationally and internationally, as a city with both a heart and a brain."

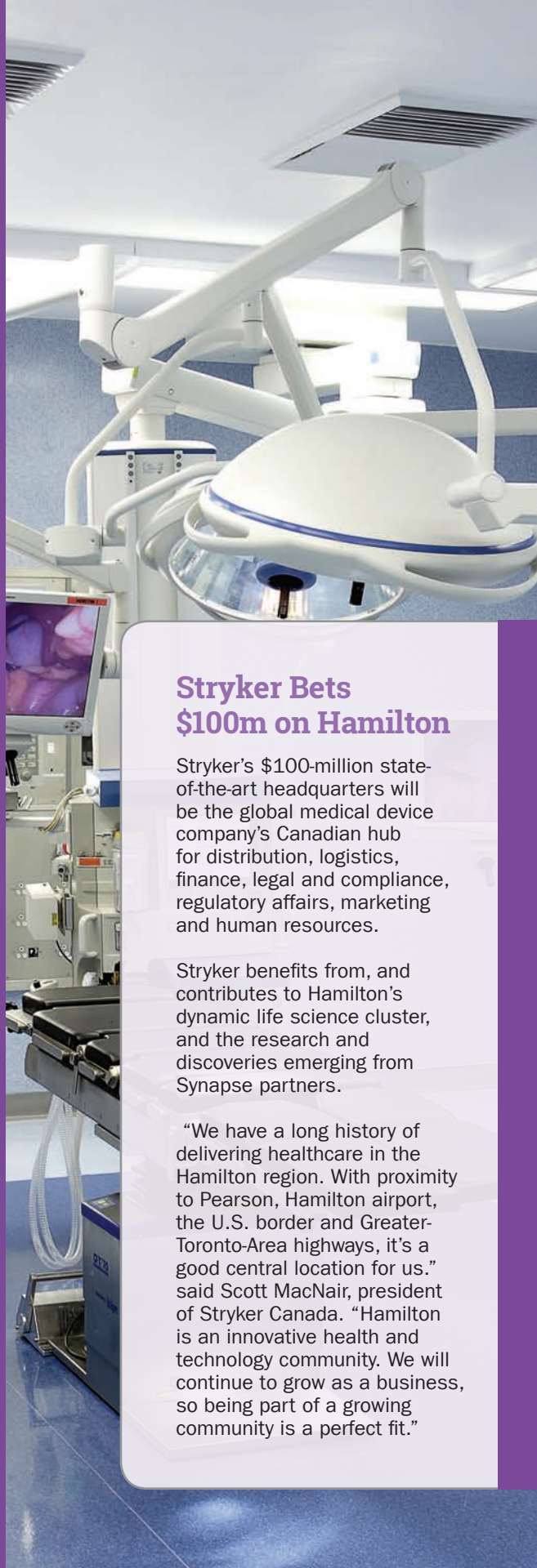
—Dr. Jack Gauldie, Vice President Research, St Joseph's Healthcare
Distinguished University Professor, Department of Pathology and Molecular Medicine

Supporting Life Science Entrepreneurs

Hamilton's hospitals, life science companies and research institutions form an integrated network that is garnering international acclaim. Building on decades of expertise in clinical trials, digital health, and biomedicine, entrepreneurs have the chance to validate their innovations in simulated and real-world clinical environments. Mohawk College's MEDIC digital access centre and the Fraunhofer Project Centre for Biomedical Engineering, the HHS-IBM Innovation Exchange and Advanced Manufacturing (BEAM) are unique to Hamilton. Large research programs at Hamilton Health Sciences (HHS) and St. Joseph's Healthcare are critical to validation and achieving regulatory approval for a broad range of innovators.

Compacting timelines and accelerating commercialization is the key to Hamilton's success. Synapse provides the forum to quickly engage and leverage the full breadth of capabilities required for entrepreneurs to develop, deploy and launch innovative health technologies.

"We are creating immense talent in the healthcare technology space," said Scott. "The success of Synapse – the talent it generates, the innovation it powers, the problems it solves – will serve the broader interests of Ontario, Canada and the world for generations."



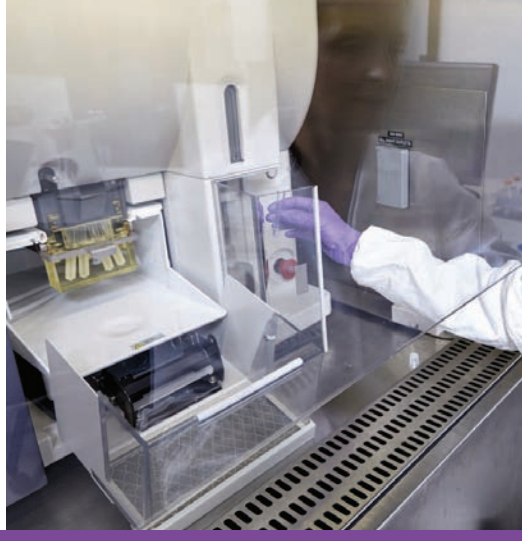
Stryker Bets $100m on Hamilton

Stryker's $100-million state-of-the-art headquarters will be the global medical device company's Canadian hub for distribution, logistics, finance, legal and compliance, regulatory affairs, marketing and human resources.

Stryker benefits from, and contributes to Hamilton's dynamic life science cluster, and the research and discoveries emerging from Synapse partners.

"We have a long history of delivering healthcare in the Hamilton region. With proximity to Pearson, Hamilton airport, the U.S. border and Greater-Toronto-Area highways, it's a good central location for us." said Scott MacNair, president of Stryker Canada. "Hamilton is an innovative health and technology community. We will continue to grow as a business, so being part of a growing community is a perfect fit."

CLINICAL TRIALS



Global Leader in Clinical Trials

From targeted population studies to global longitudinal assessments, Hamilton has demonstrated global leadership in delivering trans-disciplinary clinical trials.

More than 40 health research institutes bring hundreds of clinicians, researchers and scientists together with entrepreneurs and multi-national companies to validate health innovation from radio-pharmaceuticals to medical devices to in-clinical processes.

Around the World, Around the Block

Population Health Research Institute (PHRI) is a world leader in large clinical trials and population studies. With a staff of 350 PHRI oversees more than $150 million in clinical trials each year. With unparalleled trans-disciplinary expertise in epidemiology and population health, PHRI's capacity to conduct multiple international studies concurrently, with tens of thousands of participants in each, is a capability few can match.

To date, PHRI has enrolled more than a million participants on six continents and in 101 countries. It is now undertaking one of the most extensive population health studies in the world, involving 200,000 people across 25 countries.

Hamilton's "culture of enquiry and challenging established thinking" and ability of researchers to collaborate locally, nationally and internationally built PHRI, says its founder Dr. Salim Yusuf. It tackles "important health questions by thinking big, globally, and conducting research that is high impact and makes a difference to people's lives worldwide." A former World Health Foundation president, Dr. Yusuf is an internationally renowned cardiologist and epidemiologist, who was the second-most cited researcher in the world in 2011.

"We are particularly proud of our culture of mentoring and developing young investigators, working on new themes of the interfaces of different disciplines, and the willingness to explore potentially risky topics using innovative approaches that few other research groups focus on," said Yusuf.

The expertise of PHRI was spun off into the for-profit Bay Area Research Logistics (BARL) in 2007 to provide logistics services for large international trials conducted by research institutions, biotech companies, pharmaceutical organizations and academic researchers from around the world. In 2017, BARL was chosen to run all of GSK clinical trials in Canada.

Learning about living longer

The Canadian Longitudinal Study on Aging (CLSA), the largest long-term study ever undertaken in Canada is exploring how 50,000 participants age and how to shape policy around disease prevention and health services.

The CLSA data is made available to researchers, entrepreneurs, urban planners and policy-makers in real-time, allowing for immediate innovation and the commercialization of novel health technologies and processes to tackle the health and social burdens of aging populations.

Dr. Alison Fox-Robichaud developed The Hamilton Early Warning Score (HEWS)

Fighting allergic disease

AllerGen NCE Inc. is a national research network hosted by McMaster University dedicated to supporting research, commercialization and capacity-building activities that contribute to reducing the morbidity, mortality and socio-economic impact of allergic disease. Dr. Judah Denburg, the scientific director at AllerGen, oversees one of the largest practices in allergy and immunology in Canada.

The Canadian Healthy Infant Longitudinal Development (CHILD) Study, hosted by St. Joseph's Healthcare, is following 3,500 mothers and children. CHILD is the largest multidisciplinary, longitudinal, population-based birth cohort study in Canada, and one of the most informative studies of its kind in the world. Data on how genetics and early childhood environmental exposures impact asthma, allergies and other chronic childhood diseases have led to more than a dozen key discoveries that are changing medical practice, consumer product regulation and public policy.

INNOVATING ON THE HOSPITAL FLOOR

Dr. Alison Fox-Robichaud, a critical care physician professor of medicine, had two innovative ideas: drastically cut code blue events, and a bedside device to test for sepsis.

The Hamilton Early Warning Score (HEWS) Dr. Fox-Robichaud developed reduced code blue events from 400 to just 54. "HEWS is harnessing technology to push the right information to the right people to decrease code rates," said Fox-Robichaud. A digital bedside monitoring system that tracks abnormalities in a patient's vital signs to detect subtle indicators of declining health before a critical event, HEWS is now deployed across multiple locations.

The Thrombosis and Atherosclerosis Research Institute (TaARI), earned an international reputation for innovation excellence, beginning with the world's first clinical trial demonstrating the effectiveness of using aspirin to prevent stroke.

Today, a multi-disciplinary TaARI team led by Dr. Fox-Robichaud, has developed a bedside device to quickly detect the presence of sepsis, a condition which kills more people in Canada than heart attacks. The TaARI device zeroes in on biomarkers that will predict what patients are at risk for life-threatening sepsis earlier than traditional lab tests.

"Hamilton has always been an environment of collaboration. There is a critical mass to enter the technology development world but it's small enough that people are willing to work together here."

Did you

Total Combined Number of...

employees

31,289

McMaster University
Mohawk College
Hamilton Health Sciences Corporation
and St. Joseph's Healthcare Hamilton
employee statistics, 2017

student work placements

8,155

researchers

1,496

Annual Spend on Health

$4,834,000,000

METRO AREA, THE GREATER HAMILTON AREA BASED ON SPEND / PERSON ON HEALTHCARE

Ranked **#1**
Research-Intensive University in Canada
McMASTER UNIVERSITY Hamilton

Current # of research projects:
3,813

2nd LARGEST
Hospital Network in Canada

know?

New Discoveries Commercialized Potential

average of

101

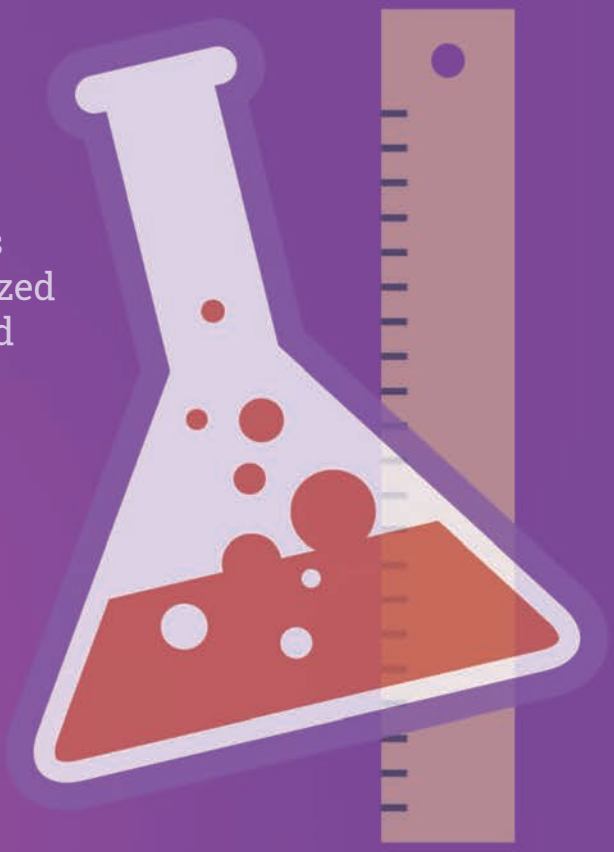
per year

New Ideas Commercialized or Licensed

average

45

per year



+1 million

annual patients visits

Canada's only digital health technology access centre

MOHAWK

Ranked #2

research-intensive college in Canada

+40

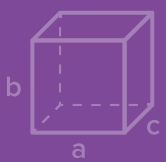
health research institutes and centres

+1 million

global clinical trial patients

Annual research budget:

$458,556,000 CDN



Lab space:

687,467

square feet

Facility building:

13,538,315

square feet

BIOMEDICINE

Ground-Breaking Biomedicine

The opening of the Fraunhofer-McMaster Project Centre for Biomedical Engineering and Advanced Manufacturing (BEAM) in March 2018 is a game-changer for biomedical research and commercialization in Hamilton. The 20,000-square-foot, $33-million facility at the McMaster Innovation Park brings to Hamilton the global prestige of the Fraunhofer Institute for Cell Therapy and Immunology (IZI), a world leader in manufacturing cell therapies. It is only the second Fraunhofer partnership in Canada.

Biomedical companies are increasingly leveraging partnerships across Hamilton. McMaster University, the No. 1 Canadian university by corporate research partnerships, saw $480 million spent on public-private collaborative projects between 2013-2017.

BEAM researchers work with 35 industry partners to translate novel technologies for the marketplace through validation, clinical trials, demonstration and manufacturing. Biotechnology companies like Fusion Pharmaceuticals (see insert) will leverage BEAM to advance work new cancer treatments; biomarkers for cancer detection; point-of-care tests for rapid diagnosis of infectious and chronic disease; and biomaterials to aid in the treatment of disease.

The BEAM centre builds on the work being done at the McMaster Biointerfaces Institute, which has achieved global acclaim in leading cutting-edge research into eye treatments and cell therapy.

McMaster University

"McMaster has earned a global reputation as a research powerhouse – particularly in the health and life sciences. It's a reputation built on the strength of our researchers, enhanced by our collaborations with our regional partners within the life sciences community, and perfectly embodied in the Synapse Life Science Consortium. In Hamilton, multifaceted teams of scientists are engineering breakthrough solutions to our most complex health challenges. Our clinical researchers are influencing the way health care is delivered the world over, while others are conducting scores of clinical trials to ensure the safety and efficacy of novel therapies and technologies."

—Rob Baker, Vice-President, Research, McMaster University

Charu Kaushic is a mucosal immunologist who focuses on women's susceptibility and immune response to HIV and the herpes virus, with the goal of developing new ways to protect women from infections using vaccines and immunotherapies.

Breakthroughs in infectious disease

The Michael G. DeGroote Institute for Infectious Disease Research (IIDR) is a global leader in trans-disciplinary research into infectious disease, including virology, immunology, bacterial pathogenesis, population biology and epidemiology.

IIDR's 35 principal investigators and more than 300 researchers are focused on bridging the lab and marketplace and have been sought out globally to participate in hundreds of collaborations with private industry, research institutes, and hospitals, which have led to commercialization opportunities. IIDR research has become the "go-to" resource across North American for researchers working on antimicrobial resistance, vaccines, and drug discovery.

More than 200 patents and patent applications have been overseen by IIDR director Dr. Gerry Wright, a leading ground-breaking research into using fungi as new sources of antibiotics.

IIDR researchers are among the leaders in the global investigations into a universal flu vaccine and how to combat drug-resistant superbugs. Among IIDR breakthroughs is an innovative test patch to detect harmful pathogens, such as E. coli or salmonella, in consumer food, alerting consumers to potentially dangerous bacteria with the scan of a smartphone.

IIDR has an impressive track record of spinning intellectual property into commercial entities. Among the list of spin-out companies is Turnstone Biologics, Symbal Therapeutics, Triumvira Immunologics, Advanced Theranostics, InnovoGENE Biosciences and Adapsyn Bioscience.

A Living Lab on aging

The GERAS Centre for Aging Research is a leader in fracture, frailty, dementia and end-of-life research.

Its Living Lab, and affiliation with world class geriatricians, research scientists, primary and community support healthcare professionals, allows for rapid and seamless product and innovation testing and evaluation in a real-world environment.

GERAS has worked with local, national and international firms on prototyping and first customer acquisition. The GERAS Centre is partnered with a Norwegian health technology company to pilot one of the world's first "smart" hospital beds and assess its impact on patient care.

A talent for commercialization

To educate and attract the next generation of life sciences talent, McMaster University created the Biomedical Discovery and Commercialization. Led by Dr. Eric Brown, a worldwide leader in drug-resistance superbug research and discovery, the multidisciplinary hybrid bachelor-masters program combines discovery research, business acumen and health sciences.

CASE STUDY

Fusing Health & Business

Hamilton's Fusion Pharmaceuticals, which develops treatments using medical isotopes to eradicate cancer cells, secured more than $59 million from global investors, and was named Ontario's Life Sciences Company of the Year in 2018.

Built on the work of Dr. John Valliant, who founded the Centre for Probe Development and Commercialization (CPDC). CPDC has completed more than 50 radiopharmaceutical discovery, development, and manufacturing programs and brought more than a dozen products into clinical development.

"There is rapid growth among companies in this sector in Hamilton, and biotech companies are receiving funding," said Valliant, Fusion's CEO.

"There is so much highly innovative healthcare and life science work going on in Hamilton waiting to be taken to market. But the expertise and business environment for that is building. It's not just about commercialization, but about patient impact. It takes significant backing to make that happen."

Valliant says the work to coalesce a life sciences cluster in Hamilton, which builds on innovative, results-oriented research, will help the next wave of companies emerge and grow.

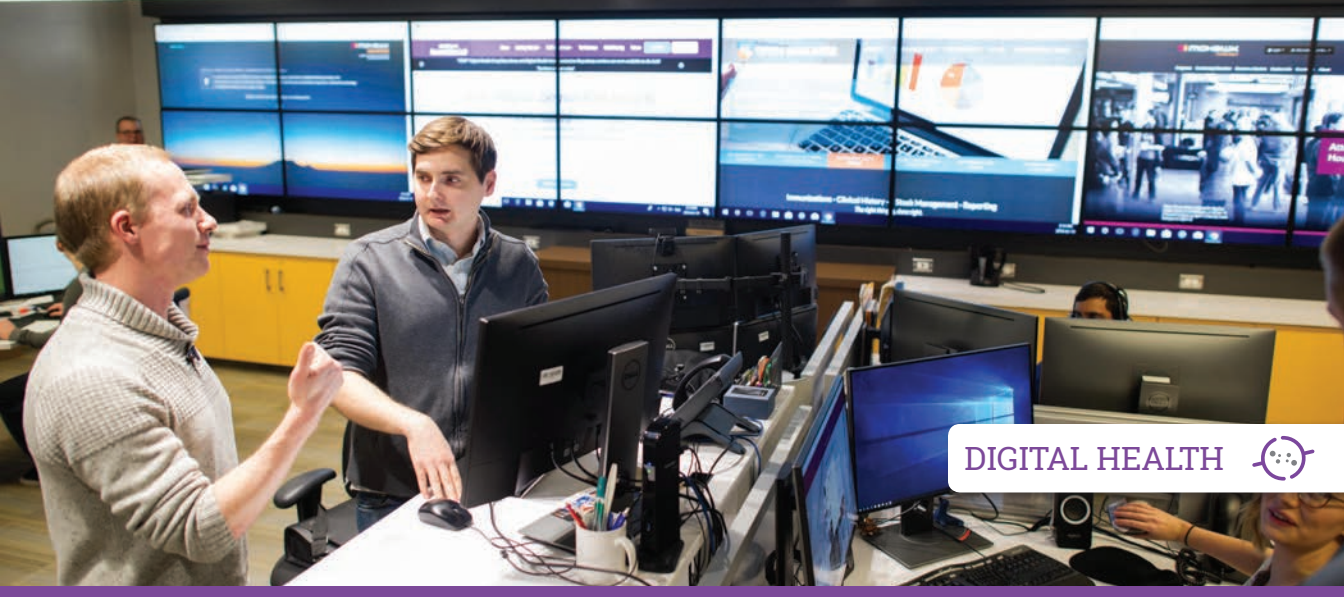
"We are nimble and fast in Hamilton and that's a significant advantage. Hamilton has great people and great research and technology and is building its ecosystem based on that success. This is definitely the time for all this to happen in Hamilton."

Adaptable Bioscience

Adapsyn Bioscience applies next-generation bioinformatics to discover and develop novel biomolecules produced in nature.

A recent $162 million partnerships with Pfizer Inc. will accelerate the pharmaceutical giant's drug discovery results. "They could go anywhere but they chose our technology. Using big data and analytics means we can find new medicines faster and at lower cost," says Adapsyn's founder, Dr. Magarvey.

"McMaster recognizes that it's individuals who innovate and it enables that process. It allows great the great energy of researchers and entrepreneurs to make things happen. The University is rare in recognizing that."



MEDIC is Canada's only Technology Access Centre with a focus on digital health, healthcare standards and interoperability.

Digital Health

The application of digital technologies is transforming all aspects of healthcare. The volume of medical data generated worldwide is expected to double every 73 days by 2020. It's estimated that an average person generates one million gigabytes of health data in a lifetime – equal to more than 300 million books.

Hamilton is a leader in digital health, from system integration and inter-operability to prototyping novel technologies, to educating the next generation of digital health entrepreneurs.

Exporting Digital Expertise

The mHealth & eHealth Development and Innovation Centre (MEDIC) at Mohawk College is Canada's only Technology Access Centre with a focus on digital health, and serves to bridge the gap between innovative small- and medium-sized enterprises and the mobile health and ehealth needs of an increasingly complex healthcare system.

MEDIC works with companies, governments, health agencies and hospital networks in a dozen countries and across three continents. State-of-the-art facilities and equipment, including a e-health ecosystem in a living lab environment, enable MEDIC to support companies across the health IT innovation lifecycle, from design to deployment.

Under the direction of founder Duane Bender, MEDIC created an immunization management system for 50 million people in Tanzania, building on work digitizing Ontario's decade-old paper-based immunization records system. Closer to home, MEDIC teamed up with a local hospital to test SMArTVIEW, a technology enabling in-home monitoring of patients recovering from cardiac and vascular surgery.

As part of Mohawk College, MEDIC is training the next generation of digital health experts for the sector, while McMaster University offers Canada's only masters in e-Health, an inter-disciplinary program designed to build capacity around digital health informatics. The Institute for Applied Health Sciences, a joint collaboration between Mohawk and McMaster, is a multi-million one-of-a kind simulated hospital and long-term care centre that enables real-world experiences for more than 2,000 students a year.

mohawk COLLEGE

"Life sciences is a key economic driver for our region and a strategic focus for our college. Working in collaboration with our industry partners, Mohawk is preparing the next generation of technicians and technologists and supporting applied research projects that transform ideas into innovative solutions."

—Ron McKerlie, President Mohawk College

A space for innovation

Clinicians, researchers and budgets are under duress in the face of an aging population and healthcare is traditionally conservative about change, says Alexander, IBM Canada Healthcare Industry Technical Leader for the Innovation Exchange in partnership with HHS at the IBM Innovation Space located in downtown Hamilton. It is the only partnership of its kind focused on health care in Canada, bringing powerful IBM artificial intelligence, machine-learning and data analytics technologies in support of research scientists, industry and academic partners, start-ups and scale-ups working to solve healthcare challenges.

“Healthcare costs are mounting,” said Gordon Alexander. “We are bringing a transformation agenda to healthcare in order to accelerate the rate of adoption of innovation. Healthcare is complex and slow to move because patient health is at stake. We are fostering the necessary leadership, innovation, access to resources, proof of concept, the pilots and studies to bring change.” The Innovation Exchange provides the physical and technological space to bring everyone together to experiment and push innovative solutions.

Decoding drug resistance

Antibiotic-resistant pathogens are an increasing global concern. An estimated 700,000 people die annually due to drug-resistant microbial infections, rising to 10 million a year by 2050 without intervention.

Addressing this challenge are McMaster University researchers Gerry Wright and Andrew McArthur, world-renowned experts in antibiotic resistance and bioinformatics. Together they developed the Comprehensive Antibiotic Resistance Database (CARD), which has been transformative on a national and international level. It is used by health agencies around the world, including the World Health Organization and the U.S. Centers for Disease Control and Prevention.

Accessible to both public and private sector partners, CARD is a rigorously curated, searchable and up-to-date collection of known antibiotic resistance elements, pathogens and antibiotics. The ultimate goal is to create a system that collects and aggregates millions of data points a day, allowing for more effective treatment plans, better monitoring of the emergence of resistance, and guiding the development of new drugs.

St. Joseph's Healthcare West 5th Campus

Integrated Systems, Integrating Care

St. Joseph's Healthcare is leveraging innovative technology to make integrated comprehensive care a reality, providing patients continuity of care across every interaction with the healthcare system. The model, developed and piloted first with chronic obstructive pulmonary disease, won a Canadian leadership award for innovation in improving outcomes. It is now being instituted as a standard of care at academic hospitals across Ontario.

Partnering with a local Hamilton health technology company, orthopedic surgeons at St. Joseph's have developed and tested an orthopedic patient portal, a practice and care management tool that gives surgeons real-time patient monitoring once they leave the hospital. It integrates patient feedback with reporting from other care providers involved in the rehabilitation process, allowing for more responsive care and better outcomes. The project is part of a Synapse initiative which supports companies along their commercialization path, enabling them to perform on-site testing, product development, or clinical trials with a local care provider.

Mariner's surgical precision

Mariner Endosurgery has taken full advantage of all the benefits of Hamilton's life sciences innovation ecosystem. Formed in 2016, Mariner developed LaparoGuard, a soft-tissue surgical navigation platform that augments visualization during laparoscopic surgeries. Within a year it went from prototype, to first sale, having secured approval to treat its first patients at Hamilton General Hospital.

LaparoGuard sounds audio and video alarms when a surgeon encroaches on a safe buffer zone, while a video monitor displays augmented reality information, much like that projected on the windscreen of a fighter pilot.

Located at McMaster Innovation Park, the company worked closely with Innovation Factory, the regional innovation centre, as well as The Forge, the university campus accelerator. It's also been backed by local angel investors and has collaborated with Hamilton surgeons who have been principal investigators on early trials.

"We are an early-stage life sciences company but we were able to engage in conversations with HHS and St. Joseph's Healthcare," said Mariner president and CEO Mitch Wilson.

"One of the greatest things about Hamilton is that things can happen very efficiently. Connections are much easier with decision-makers here. It's easy to say you're collaborative and not deliver on it. That doesn't happen in Hamilton."

GeneBlueprint for success

GeneBlueprint was among the inaugural group of high potential start-ups chosen to partner with the Innovation Exchange and has taken up residence in the downtown HHS-IBM Innovation Space. There, it has gained access to HHS clinicians and conducted a clinical trial. GeneBlueprint's novel technology generates personalized genetic health and wellness programs based on a patented gene score data.

GeneBlueprint plans to migrate to the IBM Cloud platform and use Watson Analytics to uncover new insights from its trials. "Our immediate goal is to deliver preventative, predictive personalized healthcare that integrates hundreds of thousands of genetic variants. This large data requires computing and storage infrastructure, along with advanced analytics and cognitive computing software," said co-founder and CEO Paul Mercante.

"Hamilton has an opportunity to be a centre of excellence for innovation within the healthcare start-up world," said Mercante. "It offers a one-stop shop for resources and expertise that makes for a breeding ground of new innovation. And that reputation is just growing."

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Proud Partners

McMASTER INNOVATION PARK

BAY AREA HEALTH TRUST

Hamilton

innovation FACTORY

hamilton chamber of commerce
your voice in business

McMaster University

St. Joseph's Healthcare Hamilton

Hamilton Health Sciences

MOHAWK COLLEGE