Hamilton Health Innovation Check-up: Meeting Minutes

September 2020

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STANDING AGENDA TOPICS:

- **Guest Speaker Discussion**: insights around the experience and expertise of an invited speaker, focusing on a subject that may be of interest to the broader community
- **Communicate**: share recent successes, upcoming events, innovation pipeline and new products, health innovation trends, etc.
- **Collaborate & Accelerate**: welcome new members to community, partnership opportunities, discover programming and resources available to the community, discuss market gaps and challenges, learn about potential funding opportunities, new RFPs issued, etc.

Facilitator & Note Taker	Alex Muggah, Director, Synapse Consortium
Virtual Location	Join Zoom Meeting: https://zoom.us/j/405351918 Dial in: +1-647-558-0588,,405351918#

Next Monthly Check-up: October 26 9:00 – 10:00am | McMaster Innovation Park (via Zoom)
Please sign up to our mailing list to receive meeting minutes and other important updates.

Finding collaborative partners for health companies and researchers can be difficult. Synapse has created the Health Innovation Partnership Portal (HIPP) to facilitate finding new partners within Canada's leading health research and educational ecosystem located in in Hamilton, Ontario.

Minutes for our monthly check-up meetings are not published and are for reference purposes only. We do our best to ensure all information is accurately portrayed, and that no privileged/private information is inappropriately disclosed. Past meeting minutes can be access through a public Dropbox, using the following link.
For additional information on any subject, to contact a presenter directly, or should you have an adjustment to make to the notes made here, please contact: Alex.Muggah@SynapseConsortium.com. Updates will be reflected in a revised version of the monthly minutes.

As a result of the COVID-19, all in-person conferences and meetings have been cancelled. We are trying to track down events that will be held virtually and will try to keep our calendar up to date.

If you have an event that you would like listed here, please contact us at: info@synapseconsortium.com

Hamilton Health Innovation: Calendar Highlights

Check out Synapse's online calendar

October

- Sept 28 – Oct 2: Global Biotech Week (GBW)
- Sept 28: Editing our Economic Future: The Power of CRISPR (Ontario Genomics)
- Sept 28-Oct 2: LSO Roadshow (LSO)
- Sept 30: Hamilton presenting at LSO Roadshow (LSO)
- Sept 30: Mohawk College Future Ready Leadership Signature Series (Mohawk College)
- Oct 2: BDO Life Sciences VC Pitch Day 2020 (BDO)
- Oct 5-7: The MedTech Conference (AdvaMed)
- Oct 13: Infoway Partnership: Fall Series (Infoway)
- Oct 14: Realizing Success Through Young Talent with BioTalentCanada (Innovation Factory)
- Oct 14-15: FHIR Without Borders: Accelerating Change During a Global Pandemic (Mohawk College)
- Oct 19-20: Driving the Future of Digital Health 2020 (Digital Health Canada)
- Oct 19-20: CIX Digital Summit (CIX)
- Oct 20: Public Health Education & Workforce Needs (Centre for Health Economic and Policy Analysis)
- Oct 26: Hamilton Health Check-up (Synapse Consortium)

November and Beyond

- Nov 12: Mohawk College Future Ready Leadership Signature Series (Mohawk College)
- Nov 2: Empowering the Life Sciences in Ontario's post-pandemic Future (LSO)
- Nov 3: Infoway Partnership: Fall Series (Infoway)
- Nov 3: Career + Calling Virtual Networking Expo (Redeemer University)
- Nov 21: BioTEC 2nd annual pitch competition (BioTEC)
- Nov 30: Hamilton Health Check-up (Synapse Consortium)
- Dec 7-8: Canada Regulatory MedTech Conference 2020 (Medtech Canada)
- Jan 11: Health Ventures Certificate Program – Winter session (MGD Health ICE)
- Jan 31: Innovation Nation Conference (CSii)

On Demand

- COVID-19 Webinar Series (multiple videos) (Digital Health Canada)
- Current COVID-19 Research in Canada, featuring McMaster VPR Dr. Karen Mossman (CENE)
- The McMaster University Collaboratorium – Seminar Series

Time allotted | *30 Minutes*

Topic: **Guest Speaker Discussion**

Insights around the experience and expertise of an invited speaker, focusing on a subject that may be of interest to the broader community

Guest Speaker Discussion
Guest Speaker(s): • Prof. Jeremy Hirota, Canada Research Chair in Respiratory Mucosal Immunology Assistant Professor of Medicine and Biomedical Engineering – McMaster University CEO and Co-Founder – Infinotype [presentation slides used, and are available for download in the Health Check-up drobox folder]

Discussion

[the following is a synopsis of the discussion, and has been lightly edited for length and clarity]

Introduction

Today, my hope is to avoid talking about myself – and instead to talk about many of the things the Firestone Institute for Respiratory Health is doing. The Institute is based at St. Joseph's Healthcare, Hamilton, and is part of McMaster University. The goal of the Institute is to turn research into a tangible reality, which will launch the next generation of respiratory health.

I'm aware that some of you may not know much about the Firestone Institute. Being biased, I can tell you it's not your average group of respirologists or researchers. In terms of timeline, the Institute history goes back to the forming of the faculty of health sciences at McMaster University in 1965 started. Additional talent was recruited throughout the late 80s and 90s, before the Institute was formally founded in 1999 by Prof. Paul O'Byrne (who is now Dean of the Faculty of Health Sciences at McMaster).

Innovation with a Global Impact in Respiratory Care

As the Institute moved into the 21st century, researchers and engineers working at Firestone developed many innovations that have since been deployed globally, becoming the standard of care in serving patients with respiratory problems. Today, we like to think that we're continuing that trajectory – and hope there will be more innovation in the future. It is through engaging with partners across the region, that we will broaden our reach and impact. By way of example, I'd like to highlight four sets of innovators who have helped transform standards of care by bringing innovative products to patients.

Dr. Moran Campbell, was the founding chair of McMaster Medical School, who is responsible for the invention of the Venturi oxygen mask. This is now used globally to enable controlled oxygen delivery for patients.

Dr. Michael Newhouse and Dr. Myrna Dolovich (still active), which they developedthe AeroChamber, a pocketable device that improves MDI-generated aerosol therapy adherence, reduces adverse upper respiratory tract and systemic effects of inhaled corticosteroids and, in many centers around the world, has largely replaced wet nebulization for treating asthma and COPD in infants and toddlers, adults ,the aged, and patients on ventilators. If anyone has asthma, this nebulizes the medicine and makes sure the medicine enters the lungs more effectively. This device was patented and licenced out to Trudeau Medicine and is now used globally in more than 100 countries. Dr. Newhouse was also the Founding Director of the Firestone Regional Chest and Allergy Unit, the precursor to the Firestone Institute.

Guest Speaker Discussion

Dr. Freddy Hargreave, led international advancements in the care of asthma patients including developing a way to phenotype patients that didn't require invasive scopes or tissue samples. His innovative tests to measure airway responsiveness and airway inflammation allowed him to gather cell samples in a non-invasive manner directly from the lungs. Evaluating these cells guided Dr. Hargreave around how to best treat patients.

Dr. Gerard Cox helped build a medical device that can assist sever asthmatics in controlling their condition. For many suffering from sever asthma normal medication just doesn't work, resulting in reduced quality of life and higher risk of premature death. Dr. Cox helped developed a technology that removed the smooth muscle that would contract a patients airways. Once removed, the airways no longer contract during an asthma attack, resulting in individuals being able to breath better. This is one of the more recent innovations that Firestone has brought to market.

What will fuel the next generation of innovation?

We see clinical care at the centre of creating the next generation of innovation. Clinicians and researchers are looking at patient problems and thinking about neat solutions to improve their quality of life. Historically, we've seen these clinicians work closely with engineers because those ideas needed to be built. Moving forward, we believe that there is real importance of including and incorporating bioinformatics and data scientists into the innovation process. Bringing that into the equation – and in my venn diagram – will be critical moving forward.

I'm really proud of a big initiative currently underway at the Firestone Institute. Specifically, we're merging the extremely strong talent that can be found in the McMaster Engineering department into the Institute. This summer we have officially brought in 7 individuals to become Affiliate Members of the Firestone Institute. They're all respected leaders in their fields (e.g., 3D printing, remote sensors, drug delivery, materials engineering, point of care diagnostics, regenerative medicine, imaging, biosensors, microfluidics, smart materials, tissue engineering and more). This will be the first time we've embedded engineers into the Institute. We will now share trainees, focus on problems and develop solutions to advance innovation in local ecosystem around respiratory health.

New engineering talent coming to the Institute

I don't have time to go over each of the new Affiliate Members, but wanted to highlight 4 of them and the work that they're doing.

Dr. Ravi Selvaganapathy has been developed a medical device which he calls an artificial placenta. The problem he's hoping to solve is where we have neonatal babies with immature lungs that are unable to get the oxygen they need. Unfortunately, they often don't have enough blood in their bodies to pump through an oxygenator. Ravi has been working on a two-sided ultra-thin oxygenator – where the traditional one is one-sided and cumbersome and requires a lots of blood volume. With his new device, we can get multiple levels of oxygen. He has been funded for another 3-4 years to develop this as a medical device to bring to market.

Dr. Leyla Soleymani has a speciality is in point-of-care diagnostics devices (and a Canada Research Chair in Miniaturized Biomedical Devices). Rather than focusing on a particular problem, she is taking centralized lab testing and attempting to bring it to remote locations, and eventually even into the home. The device she is working on will connect with physician/pharmacy, making sure the patient gets the right medicine. She is developing modular technology that can be used to detect any molecule of interest. For example, she is working with an industry partner on assessing BDNF (brain-derived neurotrophic factor) as the molecule of interest. When BDNF is present, that interferes with the electrical signal in her medical device – the level of interference tracks the amount of molecule that is present. Observing the magnitude of the drop in current in the molecular

Guest Speaker Discussion

sensor allows us to plot a change in current (greater drop correlated to higher presence of the molecule of interest). Leyla and I are working on a molecule that will be important for managing post-COVID lung health.

Dr. Boyang Zhang is working on cutting edge tissue regeneration. Rather than focus on diagnostics, Dr. Zhang is creating advanced cell model systems that are scalable and modular that can be used to asses blood health or tissue health. He has created a plate that can capture a 3-dimensional view of a patient's tissue. This allows us to observe the delicate channels where air travels through the tissue, and how our cells react to being treated with different types of drugs. He has created an alveolar lung model that can be used to assess gas exchange in the lung. This model will help us to better understand how drugs affect patients, with dramatic effects on drug development. The blue sky thinking with this innovation is that we may be able to collect cells from a patient with a specific lung condition, and then determine with their own cells what type of drug combination will work – in effect, personalized medicine.

Dr. Todd Hoare is a materials engineer who works on developing smart materials. His arsenal of innovation is incredible – his goal is that every project should lead to a commercializable technology. Recently, he's created microscopic temperature sensitive materials that will change shape and/or size in a known way, based on changes in temperature. However, what's interesting is that he's made it so the materials will change based on other environmental conditions (i.e., pH, chemical concentration, light, magnetic field, etc). Thus, using this technology we can impact chemical changes based on the environment they are in. This will have a big impact on controlled drug delivery, minimizing off-target effects in organs that aren't the target.

The future requires data science

We are focused on clinical care (our north star), which will result in innovation having an end user and some positive patient value. We're trying to interact with individuals outside of our existing research networks, to make sure that the research we're doing is going to meets a real need. A big part of this is engaging data scientists and researchers, to make sure that we incorporate bioinformatics into our innovation efforts.

We've reached out to colleagues at the University of Waterloo, and have brought on three additional Professors as adjunct faculty, providing us with partners who can become co-applicants on grants and work on joint projects together. We're trying to integrate them into everything that we're doing at the Firestone Institute. Our intent is to supplement our local talent (that we're nurturing) with this talent from UoW.

Responding to COVID-19 opportunities

At the Firestone Institute, we had this wonderful plan to fuel the next generation of innovations; and then COVID-19 hit. We were going to share space and students, but the pandemic stopped us in our tracks. However, it only stopped us for a short while, as the model that we had developed as a group was robust enough to take up the challenge and tackle COVID-19. Put another way, it was a clinical problem that required engineers and data scientists. This provided us all with the opportunity to undertake a remarkable pivot, and start building novel technology to help us address the pandemic.

Dr. Selvaganapathy, who's involved in biosensors, is taking on the problem of securing supply chains for high-quality N95 masks and other types of critical personal protective equipment (PPE). In response to acute shortages, he developed a Centre of Excellence in Protective Equipment with Dr. Alison Fox-Robichaud of Hamilton Health Sciences. In Hamilton, we can now manufacture masks locally, test them locally, and explore how to make them using more sustainable materials. We have been able to leverage expertise from the Firestone institute to advise this initiative (e.g., Dr. Imran Sattia, an international cough expert).

Guest Speaker Discussion

Another example is our engineering colleagues repurposing a relevant technology that was produced pre-COVID. Dr. Tohid Didar and Dr. Soleymani had developed a technology that enabled surfaces to be repellant to viruses and bacteria. This was a material that could be put on high-contact surfaces (e.g., door knobs) and viruses and bacteria will simply not grow. They're hoping to build a spin-out company and will roll this out to market in the future.

The Firestone Institute has also been supporting Dr. Ishwar Puri and Dr. Rakesh Sahu work on a lung-printing technology that enables the creation of lung models that can be used to screen diagnostic therapeutics. They're also working on salvia-based COVID-19 tests that could be performed by individuals in their own home. At the same time, I've been working on a technology to assess the implications of positive COVID-19 tests, in particular whether it is the result of an early acute infection that's winding down, or if the patient was exposed months before and we're simply seeing the remnants of an asymptomatic condition that is no longer infectious. Understanding this difference will give us insights into the trajectory of the disease. We've created a company and are working on rolling out this type of technology to a broad audience.

Building partnerships across disciplines

We're going to need to have inter-discpilinary research, with a focus on clinical care and unmet needs. We're hoping that consortium and partnesr can advise us on what are unmet needs. We hope that we'll bring all these people to the table and advance the quality of life. We want to increase our socio-economic impact. If we can increase inter-disciplinary aftions and become outward facing, we can fuel the next generation of innovation.

For example, we're reaching out with organizations like MEDTEQ+, a CECR out of Quebec that is developing medical devices. We've created a joint-call

Question & Answers

Question: How are you managing incentives for professors that are different for commercialization?

Answer: Most academics have not been thinking about commercialization, and so we've tried to focus on the non-traditional academics who are interested. For them, they may already have patents, or licensed out their technology, or even better started their own companies. We're very open to innovation and commercialization. For example, Leyla and Tohid have spun out a company and have said that they wants to create a company out of every project they work on. Our hope is that being exposed to this new culture can help catalyze those acadmics who are on the fence, and push them to seeing the value in commercialization. We understand that not everyone wants to be a CEO, but we want to enable those who do.

Time allotted | *15 Minutes*

Topic: **Communicate**

Recent successes, upcoming events, innovation pipeline, new products, health innovation trends, etc.

Discussion	Presenter
St. Joseph's invented molecular transport media to enable high volume COVID-19 testing and preserve supply chains – leveraging ~$4.5M investment MHL Research Director Dr. David Bulir created McMaster Molecular Medium (M^3) in April 2020. M^3 is a temperature-stable storage medium that can maintain coronavirus specimens for up to 14 days, significantly longer than any other transport media. M^3 inactivates - kills - the virus so it cannot replicate and potentially infect a lab technician. The genetic material is kept stabilized and ready for testing. A major innovation of M^3 is the ability to pool tests - four samples can be tested together - significantly reducing costs and time to results. One thousand testing runs now handle four thousand individual tests with this high-throughput pooling system. M3 is now in full production, and is supplying the province and many labs provincially. It is also being used on 40,000 covid tests that are being done on a project with Air Canada. In total, we've had just shy of $4.5M to one lab. We've rebuilt the process from start to finish, and are now turning our focus to developing a saliva-based test that can be deployed to remote communities. To learn more, reach out to Gail Martin at the Research Institute of St. Joe's.	Gail Martin (Research Institute at St. Joe's)
Forge Business Incubator Applications Now Open for Jan-Aug 2021 Cohort The Forge Business Incubator is a limited-enrollment program for early-stage startups. We create customized plans for a small cohort of tech startups to help them grow. Alumni of this program include software, hardware, IoT, medical devices, healthcare IT, life sciences, advanced manufacturing, and consumer products companies. Full-time founders based in Hamilton are preferred but all applicants are welcome. The Forge and McMaster University do not take equity in the companies they support and are committed to growing the entrepreneurship and innovation community. Applications will be accepted until November 29, so lots of time for those interested in applying. More information about the program can be found here	Heather Brunt (Forge)
McMaster Innovation Park – finalizing timelines for construction of 44 Frid Street MIP will be delivering office and lab space at 44 Frid Street by June 2022. There is a temporary lab solution that is being pursued, using custom built mobile trailers, to provide bridging lab/office space within 6 months. This space will be located behind the MARC building on the MIP campus. Companies looking for 1200 square feet up to several thousand square feet of space should contact Jim Wilson at CBRE to learn more.	Jim Wilson (CBRE)
The eHealth MsC internship cohort starts in May We have a new cohort of Master of eHealth students that has just started, and our internships program is up and running.	Margaret Leyland (DeGroote

Discussion	Presenter
For companies that are looking for interns, the program starts on May. The typical paid internship lasts 8 months. We have some funding to enable companies to fill these positions. We're looking for job descriptions that can be shared with students – who have a variety of backgrounds, including healthcare professionals, health science students, and business students. For more info contact Margeret Leyland, Relationship Manager (eHealth): leylanma@mcmaster.ca	School of Business)
Juravinski Hospital in Hamilton to get $1 Billion Renovation (Hamilton Spectator) Hamilton Health Sciences has been pegged for up to $1.5 billion in hospital rebuilds by Infrastructure Ontario. A projects update from the provincial agency on Thursday lists $1 billion for Juravinski Hospital on the east Mountain and up to $499 million for West Lincoln Memorial Hospital in Grimsby. "Overall these are two projects that are desperately needed for the health of people in our region and I think it's great that the province recognizes this and is moving forward with them," said Rob MacIsaac, CEO of Hamilton Health Sciences (HHS). "We've been pressing ahead with both the Juravinski and the West Lincoln projects despite the pandemic." Read the full article here	Alex Muggah (Synapse)
Mohawk and Merq Automation leveraging SONAMI funds to improving Lab Accuracy with Additive Manufacturing Merq Automation, based in Stoney Creek, is a laboratory solutions and automation company. Merq asked the Additive Manufacturing Innovation Centre to partner with them in the design and development of an ergonomic syringe dispenser. The AMIC research team designed and built multiple iterations of the syringe dispenser, testing the product at each stage for ease of use, safety and functionality. By using a combination of Fused Deposition Modeling (FDM) and Selective Laser Sintering (SLS), the team were able to produce the plastic prototypes quickly while also minimizing plastic waste. As a result of the collaboration between Mohawk and Merq, the company's clients can now purchase a product that will decrease health and safety risks due to repetitive strain and improve productivity by reducing the time technicians spend dispensing and transferring samples. They also gained a new employee- Merq hired a one of the student researchers that worked on the research project. The Ergonomic Syringe Dispenser is now available for sale to labs across the country.	Neil Wilkinson (Mohawk College)
$2-million gift to help McMaster fight pandemics in Hamilton and abroad (Hamilton Spectator, Sept 10) McMaster University has received a $2-million gift to support the school's work aimed at fighting COVID-19 and preventing future pandemics. Earlier this month, McMaster launched "The Global Nexus for Pandemics and Biological Threats," an international network of scientists from a variety of disciplines that continues the university's long-standing research focus on infectious diseases and antimicrobial or "superbug" resistance. McMaster has so far undertaken more than 100 COVID-19 related research projects in its new initiative, that include researching treatments and vaccines for the disease, building personal protective equipment, and studying bats to learn how their immune systems fight viruses.	Alex Muggah (Synapse)

Discussion	Presenter
Amazon Establishing Fulfilment Centre and Delivery Station in Hamilton, 1500 New Jobs The fulfilment centre represents one of the largest local investments in terms of square footage in the City's history. These private investments in Hamilton's goods movement sector will bring over 1,500 new jobs when the facilities are scheduled to open in 2021. Amazon Canada's plans include a new 855,000 square foot fulfillment centre to be located in Mount Hope adjacent to John C. Munro Hamilton International Airport. Employees at this location will work alongside Amazon robotics to pick, pack and ship small items to customers such as books, electronics and toys. In addition, a new 50,000 square foot delivery station in Stoney Creek will power the last mile of Amazon's order fulfillment process. Packages are transported to these delivery stations from Amazon fulfillment and sortation centres, and then loaded into vehicles for delivery to customers. With a renewed focus on air cargo/transportation, the City of Hamilton now has a prime opportunity to develop and promote the Airport Employment Growth District (AEGD) as a North American Gateway hub for logistics, distribution and goods movement, and to develop a Hamilton alliance with partners to jointly market opportunities for development and increase the awareness of Hamilton's infrastructure strengths.	Tammy Hwang (City of Hamilton)
Crumbling Hamilton industrial relics to get new life as global pandemic nexus (Hamilton Spectator, Sept 24) In the sweeping, far-reaching vision of McMaster Innovation Park and McMaster University is going to be a vast epic story of our times. The whole complex — 606 Aberdeen and the glass warehouse — will be a focal part of a broad far-flung laboratory and research park integrated with the larger environment and community; among other things that will go on there will be the work of something, Karen Mossman tells me, is being called the Global Nexus for Pandemic and Biological Threats. The plans for these buildings, once part of the huge Westinghouse presence in Hamilton, are monumental. The 606/Glass Warehouse project, once operational (probably in about three years), will feature 300,000 square feet of laboratory, research, meeting space and amenities, including dining. "It will be the equivalent of a 30-story building, horizontally," says Ty Shattuck. He compares it to a big bank tower in Toronto lying on its side. Read the full article here	Alex Muggah (Synapse)
McMaster University innovating on technology to address COVID-19 pandemic McMaster University is now home to an established network of engineers, clinicians, local manufacturers and companies dedicated to advancing personal protective equipment products in Canada. The newly opened Centre of Excellence in Protective Equipment and Materials (CEPEM) aims to create an ecosystem of local expertise to build domestic supply chains for PPE and innovate existing products, including face masks and shields. (read more here) McMaster researchers have developed Repel Wrap, a restructured plastic surface – like transparent plastic wrap – with microscopic textures that exclude all external molecules such as bacteria and drops of blood. It can be shrink-wrapped to fit different surfaces to create a protective barrier. After confirming its effectiveness against viruses similar in structure to COVID-19, the team of engineers and health scientists are now testing the surface with the COVID-19 virus. (read more here)	Alex Muggah (Synapse)

Discussion	Presenter
McMaster engineers bringing to market at-home test to detect COVID-19 antibodies and 3D cell printing technology. he team has been "sprinting" to create these products since March and have recently launched a startup company called Makers and Solvers. The rapid-detection kit for COVID-19 antibodies takes a small blood or saliva sample and uses reagents to "wash away" all biological material in the sample except the specific antibody in question – in this case, the SARS-CoV-2 strain of coronavirus which causes COVID-19. (read more here)	
McMaster Engineering Launches new Podcast: Big Ideas for a Changing World Exploring innovative research in the Faculty of Engineering at McMaster University, Canada's most research-intensive university. With sustainability in mind, our researchers are helping to find solutions to the world's greatest challenges during the COVID-19 pandemic and beyond. Hosted by John Preston, Associate Dean of Research, Innovation and External Relations in the Faculty of Engineering. Recent episodes include: • Simulating virus spread and campus reopening using network science (listen now). What if we could create digital twins of cities and test how different re-opening scenarios will affect the city's population and infrastructure systems? • Working with vaccine manufacturers to get stable, cost-effective vaccines to remote parts of the world (listen now). Last year, a team of McMaster researchers made headlines with their invention which allows vaccines to be stored safely and affordably for weeks at a time at temperatures up to 40C. • Making surfaces repellent to bacteria and viruses with Repel Wrap (listen now). What if frequently touched surfaces like food packaging, door handles and bus railings could be coated with a plastic that repels bacteria and viruses? • Creating an accurate COVID-19 antibody test, and 3D-printing cells for drug research (listen now). Since March, a team of researchers have developed and advanced two novel technologies which have applications during the COVID-19 pandemic and beyond. Innovating masks and protective gear for healthcare workers (listen now). Early in the COVID-19 pandemic, engineers at McMaster joined forces with physicians upon realizing the urgent need for local solutions to personal protective equipment shortages. Just months later, McMaster University is now home to an established network of engineers, clinicians, local manufacturers and companies dedicated to advancing personal protective equipment products in Canada	Alex Muggah (Synapse)
McMaster to create and lead new international nexus for pandemics and biological threats McMaster is launching The Global Nexus for Pandemics and Biological Threats, to ensure Canada and the world are better able to manage the human and economic devastation of COVID-19 and avert future pandemics. The Global Nexus for Pandemics and Biological Threats will be an international network of scientists, clinical health and medical specialists, engineers, social scientists, history and policy researchers, economics and business experts devoted to one goal: preventing future pandemics and mitigating global health threats like antimicrobial resistance. McMaster researchers across diverse fields of expertise have rapidly mobilized to deliver on more than 100 COVID-19 related research projects, leveraging vast international networks. These experts were awarded more than $20 million in COVID-19 Rapid Research funding representing more than a quarter of the funds allocated in the national competition.	Alex Muggah (Synapse)

Discussion	Presenter
Some of the expertise McMaster is already delivering: • Infectious disease physician Mark Loeb, a veteran of the SARS epidemic, is investigating with U.K. partners whether a COVID-19 vaccine will work for Canadians • Virologist Karen Mossman, who leads McMaster's research enterprise, and her postdoctoral fellow Arinjay Banerjee, part of the Canadian team that isolated the coronavirus, continue to study bats to learn more about how their immune systems fight viruses • Engineer Ravi Selvaganapathy and researchers in the Centre of Excellence in Protective Equipment and Materials are working with Canadian manufacturers to offer a made-in-Canada solution as they build and test personal protective equipment that's safe and effective • Hematologist Donald Arnold is leading one of the world's largest clinical trials to determine whether blood from recovered COVID-19 patients offers an effective treatment for others hospitalized by the disease McMaster's strengths in infectious disease research and clinical and health sciences are broad and deep. During the past decade, 34 researchers from 10 departments and four Faculties attracted $293 million in research funding for these areas.	
McMaster researchers receive $2.9M in provincial support for COVID-19 research Two McMaster researchers have received almost $700,000 in funding from the Province of Ontario to pursue projects that will help the province respond to the ongoing COVID-19 pandemic. Kathy Georgiades, a professor in the department of psychiatry and behavioural neurosciences and researcher with the Offord Children's Centre, received $575,645 over two years to study the impact of COVID-19 on the mental health and well-being of children and their families, ultimately supporting future strategies and policies around the adverse effects of the pandemic. Civil engineering professor Benzhong Zhao received $105,000 over one year to lead research that will provide further clarity on the role of face masks in preventing the spread of COVID-19, leading to new testing standards for measuring masks' effectiveness. The projects are among eight new initiatives that were funded at universities and health-care centres across Ontario, with a total government investment of $2.9 million. To date, McMaster has received almost $3.4 million from the province's Ontario COVID-19 Rapid Research Fund.	Alex Muggah (Synapse)
McMaster HealthLabs, Air Canada and Greater Toronto Airports Authority to conduct a voluntary COVID-19 study of arriving international travellers McMaster HealthLabs, Air Canada and the Greater Toronto Airports Authority today announced that they will partner on a voluntary COVID-19 study of international travellers arriving at Toronto Pearson International Airport. The study's core purpose is to gather information to explore the effectiveness of various quarantine periods for travellers. McMaster HealthLabs is a non-profit organization that develops COVID-19 research initiatives and testing solutions to accelerate business recovery during the pandemic.	Alex Muggah (Synapse)

Discussion	Presenter
"MHL's team of scientists and doctors from McMaster University, the Research Institute of St. Joseph's Hamilton, and other Canadian universities and research organizations, generates scientific COVID-19 data to keep Canadians safe and to support a strong economy," said John Gilmour, MHL's chief executive officer. "Our study will provide data to help determine if an airport-based COVID-19 surveillance program is feasible, whether self-collection of COVID-19 testing is effective, and to explore options regarding the 14-day quarantine for international travel. The leadership of Air Canada and the GTAA in supporting COVID-19 research serves as a model for other organizations looking to make evidence-based decisions."	
Bay Area Health Trust Launches Green Shoots Healthcare Innovation Program Portal Bay Area Health Trust collaborates with the Hamilton life sciences ecosystem as part of the Synapse Consortium to develop profitable private sector business opportunities and partnerships. The 'Green Shoot' program was created as an outlet for innovation in the healthcare space for ideas originating within the HHS employee community. We welcome all ideas, no matter how big or small, to be submitted to the 'Green Shoot' portal, and thank you for your contribution and involvement in supporting innovation in healthcare. Submit an idea through our online portal Bay Area Health Trust's Business Development Office will review the idea and determine strategic fit. Ideas will be evaluated on their ability to meet the following criteria: • Uniqueness of the idea • Potential impact on human health • Feasibility of the idea • Thoroughness of approach • Identification of key resources and plan to further idea	John Hands (BAHT)
5 McMaster Professors Join Canadian Academy of Health Sciences Five McMaster University professors, all members of the Faculty of Health Sciences, are joining the Canadian Academy of Health Sciences (CAHS) as fellows. The CAHS recognizes excellence in health sciences and is considered the highest recognition of excellence in Canadian academic health sciences. The fellows are chosen for their demonstrated commitment, through their careers and lives, to their field of expertise in many ways. • Karen Mossman, professor of pathology and molecular medicine and vice-president, research for McMaster University • P.J. Devereaux, professor of medicine at McMaster University • James Douketis, staff physician in general internal medicine and clinical thromboembolism at St. Joseph's Healthcare Hamilton, and professor of medicine at McMaster University • Harriet MacMillan, Distinguished University Professor of psychiatry and behavioural neurosciences, and pediatrics • Lehana Thabane, professor of health research methods, evidence, and impact and acting chair of the Department of Health Research Methods, Evidence, and Impact	Alex Muggah (Synapse)

Discussion	Presenter
Hamilton taking part in LSO's Virtual Roadtrip Around Ontario (Sept 30) Join us during Global Biotech Week (September 28th – October 2nd) for our first virtual Roadtrip around the Province. We'll be exploring 5 specific ecosystems in Ontario to find out what the Life Sciences sector looks like in their region, what makes their region unique and what resources are available. The presentation for each day will be from 9:00-9:30am. Agenda: Monday, September 28th – TechAlliance in London Tuesday, September 29th – Invest Ottawa in Ottawa Wednesday, September 30th – Synapse Life Science Consortium in Hamilton Thursday, October 1st – Innovation Guelph in Guelph Friday, October 2nd – Waterloo MedTech in Waterloo For more information on each session, and to register for the event click here.	Andy Donovan (LSO)
Mohawk College Future Ready Leadership Signature Series (Sept 30 & Nov 12) Does your team have the skills necessary to be future ready? With over 800 graduates across Ontario, Mohawk College Enterprise's (MCE) engaging Future Ready Leadership program provides the framework for an empowered and future ready workforce. Future Ready Leadership Signature Series 1 | Sept. 30 2020 The Future Ready Leadership program is designed to help participants identify and develop their own leadership style. This program will enable a seamless transition into a leadership role or the opportunity to enhance skills for an existing one. For more information click here. Future Ready Leadership Signature Series 2 | Nov. 12 2020 The goal of this program is to enhance each participant's current leadership skills and make them a more effective leader. Participants will be led by an experienced and highly skilled facilitators through discussions and individual/group activities. For more information click here.	Andrea Johnson (Mohawk College)
BDO Life Sciences VC Pitch Day 2020 (Oct 2) Calling all technology life sciences companies: we want to hear your amazing ideas. BDO is looking for the best tech life sciences companies across Canada. Our Life Sciences VC Pitch Day 2020 allows up-and-coming life sciences companies to pitch their ideas to some of Canada's dedicated life sciences venture capitalists. This unique event gives your company the opportunity to raise money for your scale up. If you are looking for investment to facilitate your growth—whether for product development or market expansion—you should apply. Applicants from across the country are eligible to apply. Applications open August 25, 2020, and close September 20, 2020 This is a virtual event where you will have 10 minutes to pitch your idea followed by a 15 minute Q&A with valuable VCs, including Telus Ventures, HaloHealth, and more	Alex Muggah (Synapse)

Discussion	Presenter
Nomination for 2021 LSO Awards Now Open (Oct 5th deadline) The LSO Awards recognize excellence in Ontario life sciences on behalf of both individuals and emerging companies. Awards will be presented at LSO's Annual Celebration of Success, in February 2021. Stay tuned for more details. The LSO Awards are an important part of the collective advocacy for the sector, through celebrating the individuals and companies behind its success.	Andy Donavan (LSO)
Realizing Success Through Young Talent with BioTalentCanada (Oct 14) BioTalent Canada has a long track record of successful wage-subsidy programs, helping new talent gain the skills needed for employment in biotech while assisting companies in offsetting the costs associated with hiring. As a direct response to COVID-19 and the need for additional healthcare workers, BioTalent Canada's Student Work Placement Program (SWPP) has been extended to include Canada's healthcare sector. There are 1,500 open spots available in 2020-21. This webinar will focus on how BioTalent Canada's wage subsidy programs have helped organizations find success in advancing their technologies while helping young talent gain the skills needed to grow the biotech and healthcare sectors.	Brigitte Huard (Innovation Factory)
FHIR Without Borders: Accelerating Change During a Global Pandemic (Oct 14 - 15) Established in 2014 by Mohawk MEDIC, Gevity, Smile CDR and Canada Health Infoway, FHIR North is the only Canadian conference focused on building awareness, knowledge and experience around HL7® FHIR healthcare interoperability standards in Canada. FHIR North is more than just a developer's conference: our sessions can help build understanding and knowledge for anyone in your organization that wants to understand how this standard can improve patient care and the clinical experience. Globally Focused: Explore how FHIR and interoperability can play a role in the response to a global pandemic and what it means for healthcare innovation. Coast to Coast: Join attendees from across the country to learn how FHIR is being used to build a more resilient and responsive healthcare system. Virtual: Attend more sessions and connect with more speakers thanks to our new virtual format which allows you to network 1:1 and face-to-face with fellow attendees. To learn more, or to register, visit the FHIR North site	Andrea Johnson (IDEAWORKS)
PHRI's Dr. PJ Deveraux Presenting at Driving the Future of Health Conference (Oct 19 & 20) The fourth annual Driving the Future of Digital Health conference will take place online on Monday, October 19, 2020 and Tuesday, Oct 20, 2020 from 1PM to 4PM ET each day. Join us to connect with existing communities and initiate new relationships within both traditional and emerging segments of health and healthcare in Canada. This popular conference attracts attendees from consumer digital health, retail health, health technology, government, insurance, and traditional healthcare delivery. To learn more, or register, click here	Alex Muggah (Synapse)

Discussion	Presenter
BioTEC 2nd annual pitch competition (Nov 21) Focusing on early-stage student-run ventures related to medical devices, digital health, and therapeutics. It will be held virtually on November 21, 2020, and they're aiming to attract upper year undergraduate and graduate student teams from across Canada. Teams will have the opportunity to present their startup idea to a panel of leading health tech venture capitalist judges with $5000 in prizes available. Below, they've drafted an email body and included an infographic which can be passed on to your students.	Alex Muggah (Synapse)
Congratulations to Prof Dawn Bowdish (MIRC), having been elected to the prestigious Royal Society of Canada Dr. Bowdish has initiated and driven an impactful research program in Aging and Immunity since starting at MIRC and has quickly become a leader in the field both in Canada and world-wide. In recognition of this, The Royal Society of Canada (RSC) has elected her as a Member of The College of New Scholars, Scientists and Artists. The College recognizes select individuals who, within 15 years of having completed their post-doctoral studies, have already made exceptional achievements and demonstrated leading scholarly and research excellence. Currently, only 286 individuals in Canada across both Arts and Sciences hold this prestigious position. See the announcement and link to the full list of the RSC Class of 2020 here.	Alex Muggah (Synapse)
MGD-HICE Educational Webinars & DevTank Meetings Operating out of the Michael G. DeGroote School of Medicine at McMaster University, the Michael G. DeGroote Health Innovation, Commercialization & Entrepreneurship (MGD-HICE) aims to accelerate the exploration of health innovation opportunities and creation of socioeconomic impact. Check out the full suite of programming here	Sarrah Lal (MGD-HICE)

JLABs Events Going Virtual (various)
 	
• Level Up: Leveraging AI for Drug Discovery as a Biology Startup (Oct 1)
  ○ Artificial Intelligence for healthcare is here to stay. Machine learning and AI have made it possible to search and develop new pharmaceuticals, faster, cheaper, and more effectively. If you have a biology startup, it may seem obvious to leverage the power of AI to speed up your research – but just because you can, doesn't mean you should. On October 1, two AI companies partnering with biology startups will present their views on
• Meet with the National Cancer Institutet (Oct 13)
  ○ The National Cancer Institute (NCI) continues to develop new funding opportunities that adapt to changes in the way that science is conducted. The Federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs can be a critical source of non-dilutive financing for early stage companies, and has set aside $179M for fiscal year 2020 for innovative technologies.
 	
To learn more about upcoming JLABs events, click here
	Amanda Raponi (JLABS)

Discussion	Presenter
Government Calls for Innovative Solutions • Call for Suppliers (Federal): In support of the Government of Canada's whole-of-government response to Coronavirus disease (COVID-19), they are asking suppliers about their ability to provide a variety of products and services. • Call for Suppliers (Ontario): request for information from companies able to supply emergency products to help fight Coronavirus • Federal Government Call to Action for Canadian Manufacturers to support businesses to rapidly scale up production or re-tool their manufacturing lines to develop products made in Canada that will help in the fight against COVID-19. Please refer to the product specifications and requirements for Canada's medical supply needs. • Health Canada will facilitate earlier access to a vaccine, or therapeutic product for COVID-19 to expedite the review of COVID-19 related health product submissions and applications. • Government of Canada is speeding up the importation and sale of medical devices used to diagnose, treat or prevent COVID-19. Here is information about expediting access and authorization for diagnostic devices for use against coronavirus (COVID-19). • Government of Canada will launch specific challenges through the Innovative Solutions Canada (ISC) program and will rapidly select the best projects to accelerate development and testing of promising innovations that can have a direct impact on our health care response. Also use the ISC Testing Stream to become the first customer of these innovative products. • The National Research Council of Canada (NRC) will organize an NRC COVID-19 Challenge Program, composed of teams of government, academic and private sector partners to address a range of medium term PHAC and HC needs, including personal protective equipment, sanitization, diagnostic and testing, therapeutics, and disease tracking technology. The most promising solutions will be selected for procurement, working with Innovative Solutions Canada. • DISRUPT COVID-19, a Government of Canada virtual forum that will include representatives from the National Research Council (NRC), the Industrial Research Assistance Program (NRC IRAP), Health Canada, the Public Health Agency of Canada (PHAC) and Innovation and Science, Economic Development (ISED), is being organised as a pilot initiative with the goal of getting technologies on the ground helping patients and health care professionals as fast as possible. • Next Generation Manufacturing (NGen) will invest $50 million in Supercluster funding to support companies as they rapidly respond to the COVID-19 pandemic by building a Canadian supply of essential equipment, products, and therapeutics. For more information on NGen's COVID-19 Response Program, see the full bulletin, review the project guide, and share your capabilities in the form below. • Ontario Website for PPE Suppliers to Post Products for Sale: Review a list of companies that sell personal protective equipment (PPE) and other supplies to keep your employees and customers safe from COVID-19. Apply to be added to the workplace PPE supplier directory The Digital Technology Supercluster has launched the COVID-19 Program is focused on unlocking solutions to protect the health and safety of all Canadians and our economy through the development, deployment, and scaling of digital technologies.	Innovation Factory & Synapse Consortium

Time allotted | *15 Minutes*

Topic: **Collaborate & Accelerate**

Partnership opportunities, programming and resources available to the community, market gaps and challenges, learn about potential funding opportunities, discuss new RFPs issued, etc.

Discussion	Presenter
Firestone, MEDTEQ and Boehringer-Ingelheim Coordinate Technology Challenge (Deadline Oct 2) Boehringer Ingelheim Canada and MEDTEQ+ wish to issue a call for technological solutions to Canadian industrial, clinical and academic networks to propose solutions to the identified needs in the management of progressive fibrosing interstitial lung diseases (PF-ILD). The most promising proposals will be selected for funding and co-development with our expert partners – the Research Institute of the McGill University Health Centre (RI-MUHC) and the Firestone Clinic (St-Joseph's Healthcare Hamilton).	Nicole DeLong (OCE)
Engaging Mohawk College's IDEAWORKS IDEAWORKS projects in general (of which, MEDIC is one area) which was provided and may help with identifying if Mohawk College can support our companies with projects. This might be a refresher for some or all of us, but highlighting nonetheless: Tips for Innovation Factory Referrals to IDEAWORKS • Our four innovation centres (MEDIC for Digital Health, AMIC for 3D printing, EPIC for energy efficiency related projects and MTIC for Medical Technologies related challenges) are active during this time- but note that due to existing commitments, are often looking at projects one month to three months in the future. • Other areas of expertise are on a case by case basis, especially this year, with a number of our faculty committed to teaching and revamping courses • The ideal applied research partner is one that is in the scaling stage; they have some revenue and can meet a lot of the funding agencies criteria for funding or want to self-fund a research project. Typically what we look for is 2+2; two years in business with two employees • We recommend working with us on projects that aren't mission critical but can help the company explore an innovative idea. What about start-ups? • If they require a few tips or advice, we can normally chat with them (or if there is a critical mass -like five or six companies in a space-, we can do a webinar type discussion). • They can see about the availability of capstone projects, where students generally work on projects for a four month period, for free, in order to get course credit. It may help with MVPs. Contact Andrea Johnson for more information: andrea.johnson4@mohawkcollege.ca	Andrea Johnson (Mohawk College)
The CONNECTION - McMaster University Online Partnerships Portal! The Connection is a new program offered by McMaster's Office of Community Engagement (OCE) designed to facilitate online, mutually beneficial partnerships between campus and local Hamilton community organizations. As communities look for ways to adapt and rebuild in response to COVID-19 The Connection will make the process of addressing Hamilton community and University identified needs easier by providing online tools and resources.	Gay Yuyitung (MILO)

Discussion	Presenter
It's a way for everyone who sees themselves as part of a collective community-campus effort to connect and respond to COVID-19 locally	
Collaborating with McMaster Institute for Infectious Disease Research (New Intake Form) In addition to our ongoing COVID-19 research initiatives at McMaster, the Michael G. DeGroote Institute for Infectious Disease Research is mobilizing its strong research community to assist Canadian researchers and businesses in their attempts to find solutions to the international crisis. The IIDR teams have the capacity to assist with the testing of anti-viral compounds and products, as well as the testing of products or devices aimed at sterilization. This includes new methods for sterilizing personal protective equipment. They are able to offer services in the following areas: • BSL2 cell culture infection with representative human coronaviruses; • Testing of methods or products that are designed to inactivate the virus; • Biochemical/enzyme studies with anti-viral agents. Cell culture and small animal models of SARS-CoV-2 infection can be performed in McMaster's secure biosafety level 3 facility. Availability for BSL3 testing is very limited, and projects requiring this type of work will be screened and prioritized by an internal committee. If you have a product or innovation that you are interested in pursuing further and feel that we could be of assistance to you, please reach out to us through the online form. Each project will be evaluated to determine if McMaster has the capabilities and capacity to perform the required testing.	Gay Yuyitung (MILO)
Hamilton Innovation Partnership Portal Synapse has created the Hamilton Innovation Partnership Portal (HIPP) to make the process simpler and more streamlined to find new partners within Canada's leading health research and educational ecosystem. It is a way for companies to interact with the Hamilton community. A streamlined approach, to have Synapse represent everyone. We've set up an intake form for companies to direct request to the portal. Portal is online through the Synapse website: http://synapseconsortium.com/partner/	Andrea Lee (HHS)
Submit Community Events on the Innovation Factory Calendar Our calendar is home to Innovation Factory workshops and networking events as well as events from the community which help support our local entrepreneurs and businesses. If you have an event which may a fit, please submit it and we will review it within five business days.	Riley Moynes (Innovation Factory)

Our Synapse Consortium partners are at the forefront of addressing COVID-19 in the City of Hamilton, and across Ontario: doctors and nurses caring for patients, public health officials coordinating city-wide responses, conducting epidemiological research at Canada's leading research hospitals, and innovative companies developing products to provide needed supplies and services.

Throughout all of this, Synapse remains committed to our core goal of facilitating connections across the Hamilton health ecosystem, bringing public- and private-sector actors together to enable innovation and resolve pressing health challenges. While Synapse staff are not in the office, we're still providing support virtually – so please continue to reach out and find out how we can help!

If you want to get in touch, please contact Alex Muggah, Director of the Synapse Consortium. Separately, we've assembled links to information that has been compiled by organizations across Ontario (and Canada) to assist you with navigating the COVID-19 pandemic.

Learn More About COVID-19: Online Resources

Synapse Consortium partners have put together a significant amount of information and updates on the status and activities related to containing and addressing COVID-19 for both businesses and citizens in the region:

Hospitals and Research Centres

- Hamilton Health Sciences: COVID-19 Updates
- St. Joseph's Healthcare: Research Institute and Hospital Update
- McMaster Institute for Infectious Disease Research: News and Updates
- McMaster University: COVID-19 Update
- Mohawk College: COVID-19 Update

Hamilton Community Partners

- Mohawk College Collaboration Landing Page
- McMaster University Collaboration Landing Page
- City of Hamilton: City Response and Resources
- Hamilton Public Health: Learn more about COVID-19
- Innovation Factory: COVID-19 Info Centre
- Hamilton Chamber of Commerce: Resources for businesses
- Hamilton Spectator: What you Need to Know in Hamilton
- Buy-Local (Hamilton): Hometown Hub

Government and Agencies

- Health Canada: COVID-19 Information and Resources
- OCE: Collaboration Platform
- Government of Ontario: COVID-19 Information for Ontarians
- Government of Canada: Business Support

For Companies Making COVID-19 Related Medical Products

- Call for Suppliers (Ontario)
- Call for Suppliers (Canada)
- Health Canada: Expedited Review of Health Product Submissions and Applications for COVID-19
- Health Canada: Applications for medical devices under the Interim Order for COVID-19 use
- Health Canada: Expedited Access and Authorization to make COVID-19 personal protective equipment
- Health Canada: Diagnostic devices for use against coronavirus (COVID-19)