

Hamilton Health Innovation Check-up: Meeting Minutes

April 2021

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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
Virtual Location

Alex Muggah, Director, Synapse Consortium
Join Zoom Meeting: <https://zoom.us/j/405351918>
Dial in: +1-647-558-0588,,405351918#
Register here:
<https://us02web.zoom.us/meeting/register/uZQodOyppzoiQnRwfvVuEJtEMUpKPUZPzg>

Next Monthly Check-up: May 31st 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 [Hamilton Health Ecosystem Directory](#) and the [Health Innovation Partnership Portal](#) (HIPP) to facilitate finding new partners within Canada's leading health research and educational ecosystem located 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 accessed 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](#)

April & May

- Apr 27: [CAMH Innovation Expo](#) (CAMH)
- Apr 28: [Inequities in Canadian Healthcare](#) (CENE)
- Apr 28: Women's Symposium@McMaster University (Faculty of Health Sciences)
- Apr 29: [Strategic Partnerships between Early-Stage Ventures and Industry](#) (JLABS)
- May 3-Jul 26: [Health Venture 2](#) (MGD Health Innovation, Commercialization & Entrepreneurship)
- May 5: [32nd Annual Psychiatry Research Day](#) (McMaster University)
- May 6: [The Digital MedTech Conference](#) (Advamed)
- May 10-11: [Why? The Business Case for Ethics and Integrity](#) (APEC LIEP)
- May 11-12: [Celebrating 5 Years of Empowering Innovators](#) (JLABS)
- May 25: [Capital, Cash & Coffee](#) (JLABS)
- May 26-27: [eHealth 2021 Virtual Conference and Tradeshow](#) (Health 2021)
- May 27-28: ['OMICS and Epidemiology Conference](#) (Research Institute of St. Joe's)
-  May 31: [Hamilton Health Check-up](#) (Synapse Consortium)

June and Beyond

- Jun 8-11: [Redefining Early Stage Investment Service Provider Showcase](#) (RESI)
- Jun 10-18: [BIO Digital 2021 w/ Ontario Gov't Delegation](#) (Biotechnology Innovation Organization)
- Jun 15-16: [Canada's MedTech Conference 2021](#) (Medtech Canada)
-  June 28: [Hamilton Health Check-up](#) (Synapse Consortium)
- Sept 2021: [Health Venture 1](#) (MGD Health Innovation, Commercialization & Entrepreneurship)
- Oct 13-14: [FHIR North Conference](#) (Mohawk College)
- Oct 14: LSO [Celebration of Success – Annual Awards Presentation](#) (LSO)

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
<p>Guest Speaker(s):</p> <ul style="list-style-type: none">Jeremy Pletch Founder, CREATE (CentRE for dAta science and digiTal hEalth) @ Hamilton Health Sciences
<p>[presentation slides used, and are available for download from the Health Check-up website]</p>
<p>Discussion <i>[the following is a synopsis of the discussion, and has been lightly edited for length and clarity]</i></p> <p><u>Introduction</u></p> <p>Hello, my name is Jeremy, and I am happy to be here. I am relatively new to Hamilton, Ted Scott (Chief Innovation Officer & VP Research, HHS) recruited me two years ago to come to HHS and to establish this new digital innovation group, that we call CREATE (or the Centre for Data Science and Digital Health). Before coming to Hamilton, I was at St. Michaels in Toronto for about 10 years.</p> <p>We had identified a strategic gap in HHS around capacity for things like applied data science, applied machine learning and artificial intelligence, as well as digital health development, interoperability research, and so on. We came up with a shared vision for a unit that could address these types of issues with a service-based model.</p> <p>We were founded to support clinician innovators and clinician scientists at HHS, where they would bring their clinical expertise and knowhow, and the CREATE team would bring our capacity in data science and digital health to partner on projects to deliver results for them. We have a multi-disciplinary team made up of specialists in health systems, data engineering, data science, software engineering and interoperability. We have a partnership model, I am a professor at McMaster and UofT, but we're not here to work my research, but on partnerships with industry and clinicians on their priorities.</p> <p><u>CREATE Team: Digital Science</u></p> <p>We're broken up CREATE into two teams, which come together based on the nature of the project: the Data Science Team and the Digital Health Team.</p> <p>The Data Science Team is focused on applied machine learning and artificial intelligence, as well as managing high-volume, high-velocity, high-variability data. They are experienced in a whole range of machine learning approaches, including deep learning. And they are experienced in applying data science for a variety of applications, including: risk prediction, image recognition and natural language processing. This is very useful in healthcare these days, since a lot of our health data is stored in free text rather than being nicely organized.</p> <p>I'd like to give you a sense of the kinds of projects that the Data Science Team is currently working on. We were approached by the Cath Lab at HHS around an initiative to the rate of unnecessary angiograms – to predict which patients will not benefit from an angiogram. Our challenge is that almost 50% of the angiograms we do each year are unnecessary, those patients would be better served by going through a non-invasive cardiac CT process prior to any angiogram, since they won't get benefit of revascularization. There are both adverse events associated with angiogram (i.e., one out of every 1000 will suffer an adverse event), and it also a really expensive procedure to perform.</p>

Guest Speaker Discussion

The Cath Lab had 12 years of very good, and very granular, referral data from all the patients that they had done angiograms on. And because they had objective findings (i.e., ground truth), which allowed us to train a machine learning classification system to get best-in-world performance in terms of predicting which patients should go directly to have an angiogram and which should go for a non-invasive imaging modality. We are now working with William Ossler Health System (Brampton) to get access to their data, to get an external validation on this approach to make sure it works on novel data. It is estimated that within Hamilton Health Sciences, it would avoid 770 unnecessary angiograms a year, reducing risks to patients and saving the system \$972,000 a year. We are talking to core health, to implement this solution province wide if the validation goes as well as we hope.

CREATE Team: Digital Health

Our Digital Health Team specializes in the design, development, and deployment of clinical applications. The solution architects are experienced in deploying large-scale software solutions in both Canada and the developing world. We're fortunate that we had alumni of the Mohawk MEDIC program come over to HHS, and they have brought a wealth of experience with them. The Team also has expertise in healthcare interoperability standards (e.g., FHIR) to ensure that solutions can be integrated with other health information systems.

To give you another example, of an HHS-oriented project that was build the strategic theme of patient empowerment. The project, called MyHead Health (featured in [Hamilton Spectator](#)), was designed and developed in partnership with the Integrated Adult Concussion Clinic to empower patients to take control of their own recovery. The focus is on helping patients who have chronic concussions, focused on those with symptoms for longer than three months. Once patients face chronic symptoms, patients need to be in the driver seat engaging with a care plan (e.g, exercise, meditation, stretching, healthy sleep habits, etc.). There is only so much that the healthcare system can do for them. The Concussion Clinic noticed that patients were struggling to engage effectively with their care plan for a variety of reasons, including that it can be complicated (i.e., patients struggle to remember what they are supposed to be doing), trouble tracking their progress, and few people were getting their sense of symptoms over time.

The CREATE team worked with the Concussion Clinic on a vision for an application that would integrate patient education material with an activity tracker and a symptom tracker. So that on a daily basis, we're collecting patient engagement with the care plan, as well as given us a longitudinal picture of their recovery. This allows for virtual surveillance, while also enabling the use of behavioural economics and behavioural science nudge strategy to help the patients to keep on track and engaged with the care plan. As an additional benefit, this created an extremely rich data source around granular daily information about patient behaviours and how those effect symptoms on a daily basis. It has been a long time in incubation with the CREATE Digital Health team, but COVID derailed us for a while. However, this solution will go live next month at a virtual integrated concussion clinic.

Integration Strategy

One of the most important services we offer is around integration, both internal to HHS and external to industry partners. The model we have is that for everything that we're building, HHS can serve as a incubation and test space for new innovation. In addition, everything that we're designing is meant to be scalable outside of HHS – a key ingredient of that is interoperability. Wherever possible, we're using industry standard APIs (HL7 FHIR) or another HL7 modalities where necessary. It has been quite valuable that HHS is in the process of implementing EPIC, as CREATE can develop competencies around all of the potential integration points in EPIC (such as Orchard). This will allow us to further partner with industry who want to see their solution integrated with EPIC so they can pivot down and access the US market (where EPIC dominates the digital information system space). Developing these integration points, as well as the experience of St. Joseph's Healthcare Hamilton (which is also implementing EPIC), is very valuable.

Guest Speaker Discussion

Working with Industry Partners

We are doing a few things with industry right now.

One service that we offer at HHS is a high-performance computing cluster with a lot of GPU capacity, and a managed application stack with frameworks and several VM clusters to allow us to serve up affordable hosting. This GPU computing will also be accessible to researchers and industry partners.

We are supporting collaboration with health data, such as our partnership with a research in digital pathology and Huron Digital Pathology (an industry group in Waterloo). We have been able to play a role in digitizing pathology data and testing their novel machine-learning image classification system. We have been able to bring their servers in house, work with Huron to digitize the images. Once digitized, they are transferred to a secure environment and then leveraging the CREATE high performance computing environment to test out the data within the secure environment – rather than having to move it between systems and the complications around that. Being able to do this all inhouse, while leverage OBIO funding, is an example of the benefit we can offer by being located in a health system.

We do a lot of data engineering internally (i.e., moving large volumes of data and getting it transformed and integrated). We have been working with Pentavere Research Group based out of Toronto to build a whole data engineering pipeline around their natural language processing tool. Previously they were only able to do historical data extracts to perform data insights, we have enabled daily extraction pipeline within HHS to make their data real-time.

We have undertaken some applied machine learning work, including a project with CloudDx built on a great partnership with HHS to evaluate their Vitality device. We're one part of that effort, working with the data collected through that clinical trial to help improve upon their early warning systems that will be integrated within their device. There are a few other companies that we're working with that are doing similar time series vital sign data to improve early warning systems.

We are also doing integration with EMRs and provincial assets. A provincial EMR vendor, YMS, has recently completed an integration with the provincial DHIR funded through Ontario MD.

Lastly, we are doing some custom boutique software development, which we have done with Mutuo Health Solution – another AI company – which needed help with machine learning and how to get their AI solution integrated into the Oscar EMR.

Hopefully that gives you a flavour of some of the industry partnerships that we're working on this now. With that, I'd love to open it up to questions.

Question & Answers

Question: How do you identify partners, and what select criteria do you use to identify those you wish to collaborate with?

Answer: So far, we have been operating in stealth mode – this is one of the first presentations that we've given in public – and so most of the industry group that we've worked with have come through contacts of either Ted Scott or myself.

In terms of prioritization, we have three big strategic priorities that guide us in what we want to work on. Patient empowerment (e.g., MyHeadHealth) to empower and improve patient experience in managing their own health

Guest Speaker Discussion

conditions. Another priority are companies that are creating continuous connections with the health care system, better connecting patients with care providers (e.g., CloudDx). Finally, stuff around concepts of a learning health system (e.g., Pentavere) which allows the healthcare system to better leverage its own data to inform its providers and learn from current practice. Anyone working in the data analytics space, and the concept of feeding data back to the providers, using AI as a key enabler to this effort.

Question: Can you give us a sense of the size of the team at HHS?

Answer: We have been careful to build out the team in an intentional way. We are relatively small – 12 core team members, including 2 senior solution architects and a senior data scientist and a series of more junior staff working out under their supervision. We are growing rapidly, with 5 new members arriving in May (will be about 17 strong as of May 3rd). Our hope is to continue to grow as quickly as we can sustain it. We have been fortunate with supportive grants and some industry funding to sustain that level of growth.

Question: We support researchers who are cross-appointed between McMaster University and HHS. They may have great idea to help develop an app or develop machine learning capabilities. How can they best engage the CREATE team – do they come in with funding, or are there models for collaboration?

A: The CREATE team has a little bit of resources set aside to support work on grant development with partners, since not everyone has cash in the pockets. In some of these areas we have brilliant clinicians who don't have as much exposure to machine learning or digital health, so we will partner with them on the grant development. We would go in as co-applicants on a grant, and have done that on a few occasions with CHIR, NSERC, etc. We are happy to contribute to the development of grants, as well as initial scoping work to do accurate budgets. We will work with people with cash in hand, but equally happy to work with those who need support with grant writing.

Question: What TRL levels are you looking for in terms of product development or sophistication in an ideal partner?

A: We have worked on just about everything at this point. From projects that are at the prototype stage, as well as products that are already in market. As well as some really basic work (e.g., app development for the Concussion Clinic) where it was a twinkle in their eye, and we built it from the ground up. If it makes sense to us, it's worth a conversation to identify if we're a good fit. We have worked all along the product development maturity lifecycle.

Question: For those organizations that are looking to engage with CREATE, what is best entry point?

A: Reach out to me or Ted is a great start, and we'll then pull in the necessary team members to have a productive conversation.

Question: With regard to the machine learning algorithm that you developed for Cath Lab determining when to perform an angiogram; can you give me a sense of how large of a data set do you need?

A: More data is always better. For that project we were spoiled, with 12 years of historical data which meant we had 75,000 patients and that was why we could achieve better performance than anyone else before. With regards to any data science / ML, the most important thing is to have a unique data set will give you the competitive advantage.

We have worked with smaller data sets. We have a skunkworks project (with data from only 150 patients), which was a unique data type that allowed us to do some interesting work. The challenge was to identify a signal, to demonstrate enough performance to show there is a signal which can then be rolled into a NIH grant to support

Guest Speaker Discussion

the collection of additional data. It depends on a combination of data quantity and data quality. If the data can be really good, you can get away with less. It usually depends on where you are on the product development life cycle – and if it's getting something ready for production then we'll need a whole lot more data.

Question: How do you deal with clinicians and striking the right balance between decision aid and the fear of being replaced. With researchers, likely not the case, but clinician end-users?

A: Let me use the work we're doing in angiograms to help answer this question. Where we are now is a very good performing models, but that's a long way from actual clinical deployment. In this case, the model building was the easy part from our perspective. The harder part is how to get the model to clinicians at the exact moment that they need this – we are exploring a relationship with the provincial e-referral system as a way of getting that to clinicians. But then there is a question around explainability, and we're opening up some of the tools. We want to get some funding to bring in some clinicians into a focus group, show them the outcomes, to determine which ones resonate the most. We'll work with the clinicians to develop the most trust and confidence in what we're doing. It's an area of ongoing research under health for us, explainable machine learning in a clinical context. I don't have the answer – and we're going down the explainable ML path to see if that helps.

Question: In terms of building ML capacity, what are the learning needs you have seen for future staff/collaborators/interns?


A: One of the most important thing that we do to training the next generation of data scientists is to teach the importance of data (e.g., data engineering, data curation, etc.). If you don't have the data house in order, then data scientists can't thrive. If you're thinking about developing new training programs – and as I mentioned, I'm faculty at UofT with lots of machine learning capacity– but students are not getting the exposure they need to understand what real-world healthcare data looks like. To understand what you need to do to transform it to get it ready to put it into a real-world model (e.g., data curation / engineering is overlooked and important). Our unit with the data warehousing background has been able to help out at HHS.

The other thing is exposure to statistics and computer science within some of the engineering program. Machine learning can be seen scary and different – but it's just math, and often very simple math. Even state of the art neural networks is still just linear algebra all the way down. Improving baseline understanding that it's not magic would be helpful in improving acceptability and reducing the fear around adoption in industries like healthcare.

Time allotted | 15 Minutes

Topic: **Communicate**

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

Discussion	Presenter
<p>Hamilton SOPHIE Program Announcement (Canadian Healthcare Technology)</p> <p>The federal government’s FedDev Ontario announced an investment of \$6 million for Hamilton’s Innovation Factory, which will work alongside the Synapse Life Science Consortium to launch the Southern Ontario Pharmaceutical and Health Innovation Ecosystem (SOPHIE).</p> <p>SOPHIE will bring together Synapse’s network of experts in the life sciences field with Innovation Factory’s experience helping businesses accelerate the commercialization of their products.</p> <p>Through an annual cohort, businesses will receive the advisory services, testing capabilities and financial support needed from experts in the healthcare field to develop and commercialize their specialized health innovations and scale up their companies.</p> <p>Support through SOPHIE will create 50 jobs, maintain an additional 100 jobs, and encourage 100 firms to either establish themselves or grow in southern Ontario. This investment will also leverage over \$7.5 million in other investments.</p> <p>“Through this partnership with FedDev Ontario, Innovation Factory will accelerate the commercialization efforts of innovative life science companies emerging from the dynamic southern Ontario health ecosystem,” said David Carter (pictured), executive director, Innovation Factory.</p> <p>“Innovation Factory will build on our history of supporting startup and scaling companies, ensuring made-in-Canada solutions can emerge with the support of Hamilton’s dynamic health ecosystem.”</p>	<p>Alex Muggah (Synapse)</p> 
<p>NERv Technology raises \$3.32 million as it prepares to bring medical sensor tech to market (Betakit, April 23)</p> <p>NERv Technology, a Synapse Competition Winner, and Kitchener-Waterloo-based startup offering a sensory platform designed for the healthtech sector, has closed a \$3.32 million CAD (\$2.65 million USD) seed round of funding.</p> <p>The seed round was led by returning investor SOSV, with participation from Graphene Ventures, OneValley, Northspring Capital Partners, Boutique Venture Partners, and Threshold Impact. A number of additional undisclosed strategic investors, angels, and physicians also invested in the round.</p> <p>NERv has developed a sensory device that is aimed to help doctors monitor postoperative patients remotely, by detecting potential complications. The startup’s device can attach to catheters and wound drains, and detects leakages that can lead to critical, sometimes fatal, complications.</p> <p>NERv was co-founded in 2014 by CEO Youssef Helwa and COO Amr Abdelgawad, two University of Waterloo engineering graduates. The startup’s executive team also comprises CTO Abdallah</p>	<p>Shannon Graszat (Innovation Factory)</p>

Discussion	Presenter
<p>El-Falou and lead scientist Mohamed Okasha. The startup raised \$1 million in pre-seed funding in 2019, and has raised approximately \$2 million in non-dilutive funding and government grants since its founding.</p> <p>Read the full Betakit article here</p>	
<p>Doug Ward joins as next General Manager MEDIC Team @ Mohawk College</p> <p>We are pleased to welcome Doug Ward to the IDEAWORKS at Mohawk College team as the General Manager of the mHealth and eHealth Development and Innovation Centre.</p> <p>Doug joins Mohawk College from Deloitte where he was a partner in the firm’s Global Investment and Innovation Incentives practice. In addition to being an SR&ED advisor for companies ranging from start-ups to multinationals, Doug has extensive experience in the development and implementation of small and large technology projects. He is also the author of several methodologies and training courses in project and quality management.</p> <p>Please join us in welcoming Doug to the team!</p>	<p>Neil Wilkinson (Mohawk College)</p>
<p>Hamilton POV Podcasts: Featuring Alex Muggah, Director of the Synapse Consortium</p> <p>The POV Hamilton podcast is exploring innovation in #HamOnt. We're talking to movers, shakers, entrepreneurs, researchers, and more about what is making the Steel City such a hot spot for technology, innovation, growth, and discovery. Informative and unique points-of-view are waiting, explore Hamilton, Ontario with us.</p> <p>On the heels of the announcement of a new \$6 Million federal investment for the #HamOnt #lifesciences sector, we spoke to Alex Muggah of the Synapse Life Science Consortium for the new POV Hamilton Podcast. Listen to discover who and what is driving a surge of life science innovations in the city, how Synapse and Innovation Factory Hamilton support commercialization, and what this investment means for the future of this sector.</p> <p>Check out the rest of the podcasts in the series!</p>	<p>Stacey Lambert (Greening Media)</p>
<p>Launchit: A new way of fostering health-tech companies</p> <p>Launchit Ventures, a new healthtech venture studio, announced today the start of a new model of bringing innovations from idea to the commercialization. Launchit Ventures, as a venture studio, helps entrepreneurs build a team, obtain funding and necessary licenses, and will help arrange pilots and tests.</p> <p>“The venture studio model is different than a traditional accelerator,” said Launchit Ventures CEO Jamie Harsevoort, who previously founded Webility Solutions Inc. and Lumedi Inc. “Most accelerators subsidize a young entrepreneur to assist them in building a new business; a venture studio will often build the entire business on behalf of a partner.” Harsevoort said the Launchit Ventures team and its partners bridge the gap between a founder with an idea and the actual reality of getting a healthtech startup product or service into the market.</p> <p>“The world needs big, audacious solutions, and technology entrepreneurs are leading the way in advancing equitable, sustainable, and meaningful change. For the healthtech sector, this means a new era of thinking about innovation and commercial opportunities that make great ideas come to life,” said Harsevoort.</p>	<p>Jamie Harsevoort (LaunchIt)</p>

Discussion	Presenter
<p>Interested partners can now apply to have Launchit Ventures validate their business idea, fund the development of the product or service, and bring it to market. Launchit Ventures' intent is to co-found the new business with the selected partners.</p> <p>More information can be found at https://launchitventures.com/ or contact: Jamie Harsevoort at jamie@launchitventures.com</p>	
<p>Meet the Hamilton (McMaster) doctors working to identify and treat the rare blood clots linked to COVID-19 vaccines (CBC, April 19)</p> <p>For decades, McMaster University in Hamilton, Ont., has been a hub for research on blood and its diseases — known as hematology — but in recent weeks it has taken on an even more prominent role in the field: working to identify the rare blood-clotting syndrome linked to certain COVID-19 vaccines.</p> <p>The lab, a small space on the third floor of the university hospital, is the only one in Canada with the equipment and expertise to test for the syndrome, known as vaccine-induced prothrombotic immune thrombocytopenia, or VIPIT.</p> <p>"It's not that huge, but it is the centre of the country right now," said Dr. Ishac Nazy, associate professor of medicine at McMaster and director of the McMaster Platelet Immunology Laboratory.</p> <p>"When we realized that this was an issue, we set up a mechanism whereby if anyone in the country suspected that this would be the case, they sent us a sample and we processed that as quickly as possible."</p> <p>So far, the lab has only tested about a dozen samples from across the country that are potentially linked to the AstraZeneca-Oxford vaccine. The test is completed within 24 to 48 hours.</p> <p>Read the full CBC article here</p>	<p>Alex Muggah (Synapse)</p>
<p>Mohawk College Looking to Engage Companies Working in AI with Medical Imaging Data</p> <p>As an AI / Med Tech company, we thought you may be interested in the Mohawk College – McMaster University Centre for Integrated and Advanced Medical Imaging (CIAMI) we are developing. CIAMI will include a suite of medical imaging systems (3T MRI, ultrasound, NIRS, X ray) and full research functionality. The Mohawk and McMaster professors, supporting staff, and students will complete research projects in a range of areas, including (but not limited to):</p> <ul style="list-style-type: none"> • Developing a normal range resource for fascial thickness to help standardize fascia measurements. Potential for image resource for Artificial Intelligence (AI). • MRI for acute haemarthrosis and muscle bleeds in the hemophilic population • Quantitative susceptibility mapping (QSM) for microcalcification analysis and classification as a prognostic tool (breast imaging) • Innovative research image acquisition acceleration in MRI with compressed sensing and parallel imaging • Monitoring/Measuring of pain and discomfort for people who have difficulty self reporting 	<p>Neil Wilkinson (Mohawk College)</p>

Discussion	Presenter
<p>We anticipate these projects will produce a significant amount of images and technology application that could provide great collaboration opportunities on AI projects with you. We would like to ensure we include company partners where it's relevant. Do you have any particular imagery or technology application needs?</p> <p>We are preparing an application for research equipment for the medical imaging systems, which is all expected to be installed in Summer-Fall 2022.</p> <p>It would be great to discuss potential research collaborations and your company's goals. If you're interested, we can set up an introductory call. That would help to plan projects to use the systems once installed.</p> <p>Contact Neil Wilkinson, Director, Business Development, for more information: neil.wilkinson@mohawkcollege.ca</p>	
<p>Rachel Bartholomew (CEO Hylvy Health) recognized by Women of Influence</p> <p>On April 4, Rachel Bartholomew, the founder and CEO of Hamilton-based Hylvy Health has announced that she has been nominated for the RBC Canadian Women Entrepreneur Awards by Women of Influence. The Forge client creates an intelligent and holistic pelvic rehabilitation device for the one in three women worldwide who will experience a pelvic health complication in their lifetime. The award shines a spotlight on Canada's most accomplished and impactful women who have demonstrated excellence, from economic growth to social change, from local to global reach, across multiple sectors.</p> <p>In 2019, Bartholomew got the shocking news at age 28 that she was diagnosed with Cervical Cancer, having to undergo surgery and radiation therapy. Bartholomew was not prepared for the after-care pelvic pain that she experienced post-treatment and serious implications it would have on her future health. From that moment Bartholomew started connecting with thousands of other women in Facebook groups who were going through similar experiences.</p> <p>Currently, Hylvy Health's device provides a quantifiable data set on the pelvic floor and three different therapies from multiple sensors and mechanical functions to help keep track of progress, adapt treatment plans and provide more effective, comfortable rehab experiences.</p>	<p>Riley Moynes (The Forge)</p>
<p>Recruiting COVID-19 Patients for Clinical Trial</p> <p>We are running a clinical trial designed for virtual and at-home participation. You can join and participate in the study remotely, without leaving the comfort of your home. The study is testing our investigational light therapy device (photobiomodulation device) to see if we can help people recover faster from COVID-19.</p> <p>The inclusion criteria are: (a) 18-65 years old, (b) COVID-19 Positive; (c) within 10 days of your symptom onset</p> <p>For more information, contact Peter Adams: peterx.adams@icloud.com</p>	<p>Peter Adams</p>
<p>Ryerson DMZ Business Acceleration and Clinical Engagement (BACE) Program Accepting Applications</p> <p>4-month virtual program, provides startups and students access to online resources on a variety of business and clinical topics, expert-led webinars and workshops, mentorship from BMZ staff & advisors, events, and much more. Applications are open for the Spring/Summer 2021 cohort.</p>	<p>Ryerson DMZ</p>

Discussion	Presenter
<p>The Accelerate Stream is designed for early- to mid-stage companies that are in the process of developing or finalizing an MVP. This stream offers opportunities to delve deeper into business planning and clinical validation, and to receive one-on-one coaching from a variety of advisors and experts. This stream is offered as a renewable term-based membership. After each term, companies meet with BMZ staff to review their progress and to set goals for the next term.</p> <p>Learn more by contacting Ryerson DMZ at biomedicalzone@gmail.com</p>	
<p>Access up to \$5,000 in in-kind service from Canadian Center for Electron Microscopy (CCEM)</p> <p>CCEM has partnered with NRC-IRAP to provide specialized services for companies looking to access world-class electron microscopy capabilities and expertise. Funding expected to be available starting April 1, 2021</p> <p>CCEM can provide</p> <ol style="list-style-type: none"> 1. Chemical specimen processing and resin embedding of biological samples 2. Room temperature and frozen sectioning of samples 3. Structural and compositional data and elemental maps of biological cells/tissue, polymers, viruses, and small molecules 4. Immuno-labelling techniques 5. 2D and 3D imaging and data reconstruction 6. chemical analysis, mapping, 3D reconstruction 7. analysis of beam sensitive materials <p>Canadian Centre for Electron Microscopy is the go-to provider of electron microscopy services and consultation to Canadian industry and researchers working in a broad range of fields. Located at McMaster University, CCEM features state-of-the-art instrumentation and experienced, dedicated staff who are happy to work with you to find solutions to your research and development questions.</p> <p>Contact Andreas Korinek for more information at: korinek@mcmaster.ca</p>	<p>Andreas Korinek (CCEM)</p>
<p>Life Sciences Ontario (LSO) Scholarship Accepting Student Applications until May 17</p> <p>LSO, in collaboration with partners is now accepting student applications for the Scholarship program. This program will award a minimum of 37 undergraduate students (subject to increase depending on the number of sponsors), studying in fields that are linked to the employment footprint of the Life Sciences sector, a total value of \$3000 for the 2021-2022 fall/winter term.</p> <p>Students will be able to access the application portal beginning from March 16th, 2021 to May 17th, 2021</p>	<p>Andy Donovan (LSO)</p>
<p>Attend BIO Digital 2021 with Ontario Delegation (June 10-18)</p> <p>BIO Digital 2021, organized by the Biotechnology Innovation Organization (BIO), located in Washington, DC. The event will take place from June 10-11, and June 14-18, 2021. As a company operating in the Biotechnology sector, this may be of interest to you. BIO Digital is the world's largest biotechnology event dedicated to business partnering and the educational sessions; approximately 18,000 attendees are anticipated from across the eco system.</p> <p>The mission package will include:</p>	<p>Carolynn Reid (City of Hamilton)</p>


Discussion	Presenter
<ul style="list-style-type: none"> • 1:1 export advice and consultation • Participation in BIO Digital's one-on-one business partnering program, attendance at over 50 educational and keynote sessions, and networking opportunities • Pitch-preparation workshop • Pre-mission webinar • A customized B2B program to connect you with relevant in-market contacts <p>This is a unique opportunity for Ontario companies to make international business connections.</p> <p>For more information contact Patricia Cosgrove: Patricia.Cosgrove@ontario.ca</p>	
<p>Life Sciences Export Business Mission to Medical Fair India 2021 (Aug 19-21)</p> <p>The Medical Fair India focuses on medical products and medical technology, laboratory technology and diagnostics, equipment and furniture for clinics and health centres, and products for physiotherapy and rehabilitation.</p> <p>To participate, or for more information, contact Fanny Mendez: fanny.mendez@ontario.ca</p>	Fanny Mendez (MEDJCT)
<p>The Michael G. DeGroot Health Leadership Academy is pleased to share its portfolio of 2021 leadership programming for aspiring and current health leaders that focuses on learning, and unlearning, the necessary skills to navigate and adapt to our ever-changing health environment. This year we are offering the <i>Emerging Leaders</i>, <i>Pathfinder</i> and the new <i>Shift</i> programs. Applications are now open.</p> <p>Emerging Leaders</p> <ul style="list-style-type: none"> • Learn the fundamentals of leadership in a health context • Tailored to senior undergraduates and recent graduates • Offered virtually: May 2-9 and August 15-22, 2021 <p>Pathfinder</p> <ul style="list-style-type: none"> • Chart your leadership journey in an applied leadership development with personalized coaching • Tailored to health leaders, young professionals and post-doctoral/graduate students • Offered virtually: Apr-Jun and Sept-Nov 2021 <p>Shift</p> <ul style="list-style-type: none"> • Design and build new health futures • Tailored to health leaders, young professionals and post-doctoral/graduate students • Offered virtually: Apr-Jun 2021 <p>The Michael G. DeGroot Health Leadership Academy is a joint venture between the Michael G. DeGroot School of Business, Faculty of Health Sciences and the Michael G. DeGroot School of Medicine at McMaster University. For more information about our programs, please visit healthleadershipacademy.ca or contact Amanda: calzola@mcmaster.ca</p>	Amanda Calzolaio (McMaster Health Leadership Academy)
<p>MGD-HICE Educational Webinars & DevTank Meetings</p> <p>Operating out of the Michael G. DeGroot School of Medicine at McMaster University, the Michael G. DeGroot Health Innovation, Commercialization & Entrepreneurship (MGD-HICE) aims to accelerate the exploration of health innovation opportunities and creation of socioeconomic impact.</p> <p>Check out the full suite of programming here</p>	Sarra Lal (MGD-HICE)


Discussion	Presenter
<p><u>Government Calls for Innovative Solutions</u></p> <ul style="list-style-type: none"> • 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 <p>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.</p>	<p>Innovation Factory & Synapse Consortium</p>

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
<p>Want to Connect with your Ecosystem: Check out the Synapse Health Ecosystem Directory</p> <p>Synapse has created a Director of +200 private- and public-sector organizations in the Hamilton (and regional) health innovation ecosystem which work alongside the Synapse Consortium to support of the commercialization of health innovation.</p> <p>Learn more about what others are up to, and identify potential collaborative partners at: www.synapseconsortium.com/directory</p>	<p>Alex Muggah (Synapse)</p> 
<p><u>Engaging Mohawk College's IDEAWORKS</u></p> <p>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:</p> <p>Tips for Innovation Factory Referrals to IDEAWORKS</p> <ul style="list-style-type: none"> • 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. <p>What about start-ups?</p> <ul style="list-style-type: none"> • 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. <p>Contact Andrea Johnson for more information: andrea.johnson4@mohawkcollege.ca</p>	<p>Andrea Johnson (Mohawk College)</p>
<p>The CONNECTION - McMaster University Online Partnerships Portal!</p> <p>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.</p>	<p>Gay Yuyitung (MILO)</p>

Discussion	Presenter
<p>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</p>	
<p>Collaborating with McMaster Institute for Infectious Disease Research (New Intake Form)</p> <p>In addition to our ongoing COVID-19 research initiatives at McMaster, the Michael G. DeGroot 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.</p> <p>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:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>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.</p>	<p>Gay Yuyitung (MILO)</p>
<p>Hamilton-based technologies available for licensing</p> <p>Each year researchers at McMaster, Hamilton Health Sciences, and St. Joseph's Healthcare Hamilton make new discoveries that lead to new products, services, or process improvements to help companies expand their pipeline or increase their productivity. The business development team at MILO is here to help you tap into and access these discoveries as efficiently as possible. MILO's objective is to support effective transfer of these technologies to companies for social and economic benefit and enable the continued growth of research excellence at the institutions.</p> <p>Please contact Glen Crossley, Associate Director, Business Development and IP or search the list to see some of the technologies currently available for licensing or further R&D</p>	<p>Glen Crossley (MILO)</p>
<p>Hamilton Innovation Partnership Portal</p> <p>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.</p> <p>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/</p>	<p>Andrea Lee (HHS)</p> 

Discussion	Presenter
<p>Submit Community Events on the Innovation Factory Calendar</p> <p>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.</p>	<p>Annie Horton (Innovation Factory)</p>

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 \(COVID-19\)](#)