Hamilton Health Innovation Check-up: Meeting Minutes

August 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	Alex Muggah, Director, Synapse Consortium
Virtual Location	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: September 27th 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 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

September

- Sept 15: Building Better Teams by Fostering Equity in Early-Stage Life Science Companies (JLABS)
- Sept 15: Antimicrobial Resistance - Breakthrough Innovation and Breaking Barriers (JLABS)
- Sept 15: Building Better Teams by Fostering Equity in the Workplace (JLABS)
- Sept 16: Export Pitch Practice Workshop (Government of Ontario)
- Sept 16: Emerging Leaders Community Day (ONEIA)
- Sept 20: Health Venture 1 (MGD Health Innovation, Commercialization & Entrepreneurship)
- Sept 23: Investor Pitch Preparation Workshop (Gov't of Ontario Export Business Missions)
- Sept 27: Hamilton Health Check-up (Synapse Consortium)
- Sept 28: Link to Employment: Part-time Job Fair (Mohawk College)
- Sept 29: Fall 2021 National Healthcare Innovation Summit (Economic Club of Canada)
- Sept 29: Attracting and retaining talent as you grow (OBIO)
- Sept 30: Meet with...Pandemic Investors (JLABS)

October

- Oct 4-5: Innovate Care (Invest Kingston)
- Oct 5-6: MedTech Conference 2021 (MedTech Canada)
- Oct 13-14: FHIR North Conference (Mohawk College)
- Oct 14: LSO Celebration of Success – Annual Awards Presentation (LSO)
- Oct 21: Strategic Business Thinking – Leveraging Commercial Intelligence to be Proactive (OBIO)
- Oct 30: Hamilton Health Check-up (Synapse Consortium)

November and Beyond

- Nov 2 – 6: Annual Policy Forum (LSO)
- Nov 3 – 5: Career Calling – Networking Expo (Redeemer College)
- Nov 4: Value Pricing in MedTech (OBIO)
- Nov 17: Device Manufacturing Scale Up & Budgeting (OBIO)
- Feb 9-11: 20222 OBIO Investment Summit (OBIO)

Looking to engage the Hamilton Health Ecosystem?

SOPHIE Southern Ontario Pharmaceutical & Health Innovation Ecosystem

In partnership with Innovation Factory and Synapse Consortium partners, leverage up to $100,000 to work directly with an academic or hospital partner in the Hamilton ecosystem. Funding will support collaborative projects for Ontario-based life science firms requiring clinical/research expertise, evidence, or data to commercialize their innovation. Learn more about SOPHIE here

HEALTHI
Hamilton Ecosystem to Accelerate and Leverage Trials of Health Innovation

Leverage up to $15,000 in funding to work directly with the Research Administration groups at Hamilton Health Sciences or The Research Institute at St. Joe's Hamilton to create the pre-trial protocols and documents required to undertake a commercialization project or clinical trial in one of Canada's leading research hospitals. Learn more about HEALTHI here

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. Stephen Veldhuis Executive Director, McMaster Manufacturing Research Institute (MMRI) [presentation slides used, and are available for download from the Health Check-up website]
Discussion *[the following is a synopsis of the discussion, and has been lightly edited for length and clarity]* Introduction & Overview of MMRI By way of background, I am a mechanical engineering professor at McMaster University, as well as the Director of the McMaster Manufacturing Research Institute (See YouTube video here). And in this context, I'll be sharing some of our activities and highlighting our interest in identifying opportunities in the medical/life sciences space. We think about manufacturing in our institute, helping to connect materials to final products and services. When you think about the sources of material that are out there – Canada is really well positioned as a source of raw materials. We do this in a number of spaces – from our perspective, its "heavier duty" engagement with industry. We have large industrial equipment, and we run tests on those to prove processes. The McMaster Manufacturing Research Institute consists of seven research labs. Each lab specializes in a unique branch of manufacturing. • Machining Systems Laboratory (MSL) • Metal Forming Laboratory (MFL) • Micro Manufacturing Laboratory (MML) • Centre for Advanced Polymer Processing and Design (CAPPA-D) • Robotics and Manufacturing Automation Research (RMAL) • Thermal Processing Laboratory (TPL) • Material Property Assessment Laboratory (MPAL) • Electrochemical Manufacturing and Device Laboratory Impact and Implications of Value Creation in Manufacturing The Institute is positioned within an academic realm, which means that we have to perform academic research and then use it as the foundation that can be applied in an industry setting in some manner that drives impact. My personal area of focus looks at machining; a lot of components (30-50% of manufacturing activity is machining). There is a lot of high-value added activity – you take a material that's worth $10 and you convert it in to a $100 or $10,000 piece (especially true in industries like aerospace). I learn about processes, and then apply them for impact with my corporate partners. An important consideration for us is understanding the process parameters that drives the value-creation/impact equation for companies. Its not so simple. Expertise and decisions across different areas of focus will dictate outcomes around productivity, quality, cost, and robustness of the final products. These are necessary to have a

Guest Speaker Discussion

competitive process. Right now, Canada is losing a lot of this type of value-add activity to other global players – both at the high end (i.e., US and Germany where they are putting a lot of science towards upgrading processes) and other countries at the lower end that are putting labour into, learning through trial and error.

For Canada, we need to apply our smarts, and make complicated components better, faster and cheaper than anyone else. We see a lot of changes across different industries – for example, in automotive we see this in the switch-over to electric vehicles and more autonomous control. In aerospace, there is a push towards higher efficiency, combined with some electrification. We can benefit from these improvements (i.e., ease of use, safety, positive climate impact). However, if we don't engage on this front, we will lose out capturing the economic activity and jobs that come with manufacturing.

Competitive Manufacturing in Life Sciences

Many of you are developing medical devices and products – but if we on the manufacturing side don't engage with you and find a way to produce your products locally and supply it globally – we've really lost the opportunity to create value here in Canada. Part of what MMRI is trying to do is to work alongside companies that are developing innovative products and work with them so those products can ultimately be made in Canada.

So what do we need to achieve in making medical device products in Canada? We will need to knock out a lot of low-value manual labour. If we can load a part up with a robot, produce it, and then offload it with a robot, package and ship it – then it will be very hard for anyone else in the world to compete with that. As long as we're doing this with all of our expertise/insight engaged. As soon as someone needs to physically touch a component or part, then we've lost some of our competitive advantage. The technology side of the equation is very important.

The productivity challenge in Canada – everyone has high expectations of quality, but exception of paying for that quality is low. To resolve this challenge, we've focused on robustness in these processes. If I can make a process robust, then I can do a production run in the millions and do that at a cost I can supply globally. We have a number of examples where MMRI has helped company do this and achieve global market share.

Applying MMRIs Experience from Other Industries

About 60% of our current partner (customer) base is automotive. MMR is looking to take experiences developed in working in the automotive sector (e.g., around cost and volume) and begin applying that to medical devices. Everyone one of a part in car needs to be made – and Canada does very well in this sector. We have a number of large assembly facilities which draw parts from companies across Ontario. It is a large driver of our economy locally. It really comes down to making these parts. Cost is one of the primary concerns, driving many of the decisions, since few people are willing to pay extra at the dealership. In the automotive space, you need to generate about 300,000 of something – while maintaining the high quality that people expect. This pressure gets applied to the OEMs, the parts manufacturers, and all the way down the supply chain. The opportunity for MMRI is to drive innovation while facing these cost pressures.

In aerospace, the main difference is that we're looking at safety issues. You can't just pull over and fix something – you can't have a critical failure of a part as that might lead to a catastrophic crash. This means that when you're producing parts – they can't have any type of flaws in them. Because of cost, automotive manufacturers don't use the highest cost materials, while in aerospace you're using light weight and high-performance materials, which are very challenging to process. We need to create geometries and materials without putting any flaws into it. We work with companies to develop processes and parts that minimize those flaws.

Guest Speaker Discussion

Where do we see an opportunity in the medical space? We have a very good understanding about processes and we can start applying them to some of the medical products that you produce. They have to be tangible products – not reagents or chemicals – mostly what we're looking are physical components, exploring how we can add value to that, leveraging our experience in automotive and aerospace.

When I'm looking at the medical community, where can we add value and one area that comes up is consistency of product. For example, we understand the need to maintain consistency from one device to the next, to ensure that users can expect consistent performance, and each patient receives the same level of care. Some of the lessons we've learnt in automotive/aerospace can help in that regard. Clearly, safety, cost and productivity are important – but consistency, the ability to produce a device at high volume will be a key enabler for Canada to capture the global market for medical devices.

Leveraging MMRI's Unique Capabilities

When you think about some of the innovation that you're working on – how can MMRI add value? Ultimately, we are able to understand what a product is made up, and what are the characteristics of the materials (right down to the atomic level). We work closely with the Canadian Center for Electron Microscopy (CCEM) to help with this analysis. This allows us to identify how materials react and interact with other materials in the production process. We do this from a manufacturing process, accompanying your analysis of how your device does this from a medical perspective (i.e., interacting with the patient, care provider, and clinical environment).

We are able to look at materials from nano-meters to micro-meters to meters. We can understand materials at all sizes. Our team can do analysis on surfaces, including on how they stand up to wear and tear over time (we can scratch, indent it), demonstrating the characteristics and properties of materials used in the manufacturing process. That will have a big impact, on how it might interact with other materials.

Once we understand the material components, we can begin to work on the production process. We are excited about opportunities to interact with entrepreneurs and researchers to develop prototypes (i.e., a few devices that can be studied). We can help a company realize a functional device, help develop an understanding how that device performs, and then how it can be scaled up so that we can locally support its production to support global demand. For an innovative product – that might scale up to billions of units (for consumable devices that are widely used)

Given the volumes, we expect to see increased use of injection molding. We have relationships with local industry partners that we work with who are making moulds for companies looking to ramp up production on medical device production to serve local demand.

Working with the Life Science Community

The experience that we've developed around materials and how they interact and can be processed, has revealed opportunities for us in the medical community to help with materials assessment related to processing and manufacturing. We're very interested in trying to extend our activities into the life sciences space. Our goal is to support prototyping and scale-up to mass production, design manufacturing in Canada to serve global markets (rather than designing in Canada and having manufacturing done in a third-country).

Working together on innovative products, MMRI could support the assessment of what might be dictating performance or limiting performance, and then supplying that in volume. We're also interested in working with the hospitals in the region, there may be access to immediate demand, and then look at improvements that hospitals are already purchasing. Are there ways that we can then ramp that up to achieve volume production.

Guest Speaker Discussion

Can we link the demand we know that exists, the purchasing power of our hospitals, and the innovation capacity that we have in the region – working together to identify shortcomings and potential improvements.

Examples of MMRI's work in Life Sciences

With COVID-19 we had an opportunity to contribute into the community through support of medical device manufacturing. The first example was working on face shields for different applications in hospital – early on these components were in high demand, but there was very little supply. The hospital teams had good ideas about how to make them even better, we took those ideas to local manufacturing capacity and we got production ramped up to the point where we are making 70,000 units a day and supplying them across the regional hospital networks.

For N95 masks, we characterized the performance along with some of the other resources that McMaster has access to. Ultimately this became a center of excellence for personal protective equipment (CEPEM) at McMaster. We are now looking at the material requirements, and are driving material improvement initiatives and recycling initiatives in this product class.

There are a few other products, including nasal swabs, intubation tubes and a devices that is used to break up phlegm in people's lungs. Some of these products were no longer being produced (historically sourced from China) but they were still required. The group that we worked with had some innovative ideas on how to improve the device, and so we were able to start producing them at volume and supplying local demand.

It is a good idea to interact with us – so we host an annual Industry Open House that we encourage you to attend – so that we can start the conversation with you to understand what are the challenges that you might face, from both on a product standpoint, and ultimately mass producing your device.

Question & Answers

Question: Can you speak to the security considerations around the automation processes. For example, autonomous vehicles are working on similar challenges around data management.

Answer: Data management is a really important consideration for us. In the automotive space we have interacted directly with the OEMs, so we have sensors in their facilities collecting high volumes of data. Currently we have kept all of that data offline, so we haven't bridged the data into an online environment. I would say that we're using the "sneaker net", making sure that the data doesn't go online – given that it contains a great deal of productivity and capability information. We're searching through the data for productivity improvements and maintenance opportunities – for example, able to identify manufacturing lines that might be on trend to break down in the coming months, so that we can schedule maintenance.

Question: Is there an opportunity for smaller-scale more personalized medical devices. Have you any capabilities around small-scale, agile production?

Answer: The whole area of additive manufacturing is targeted at small scale production. We have lots of capability in that area, and that is the direction to go. We're trying to digitize the designs, and then produce them. The technology that we have can produce prototypes – which is a good spot for MMRI to support a company, including as them move into production runs of 100s or 1000s. Each level of production is a different technology – but that customization piece is definitely something that we're interested in

Guest Speaker Discussion
Question: Do you have expertise in low-pressure moulding and 3D printing? Answer: We have done some of this work – but it usually comes down to the types of geometries and the types of materials that are used. Pressure moulding is good for small-volumes. The challenge with injection moulding is that it can cost $50,000 to produce an injection mould, so you need to scale production (which can be difficult). With additive manufacturing, we can produce the component or a low-volume mould which could be used in compression moulding. You don't get the best achievement material properties, but you do get a level of quality that you can use for a prototype to understand if the product (and process) is technically feasible at higher volumes. *Question: Can you comment on the size and scale of MMRI (i.e., number of projects, staff). Could you comment on the news about moving into a new home at the McMaster Innovation Park* Answer: We are currently doing about 250 projects a year – someone comes to MMRI with a problem, which we help define, resource and then help them try to solve it. Typically, we engage 50-60 different companies (mostly aerospace / automotive) during the year, working on collaborative projects. Our intent is to work on projects that have implementable solutions – where we can help support the implementation. We have about 20 full time staff with a range of capabilities. A lot of the instrumentation is we're using requires high level of expertise – so our technicians can help companies to use that equipment. We have ~20 graduate students (pre-COVID we had about 40). There is an opportunity to grow, and so we are moving to the McMaster Innovation Park where we'll be strategically placed between the automotive activity and the medical activity. Our main lab is 5,000 squre feet, and it will grow to 9,000 square feet. We will be sharing space with an electric motor start-up company, and sharing equipment with them, bringing new technologies to bear that we can use to support our clients. *Question: Do you have access to funding to support company collaborations?* Answer: We do have funding from the province and from FedDev (through SONAMI network), which allows us to get projects stood up quickly. Our mandate within these funding mechanisms is to have economic impact and to create jobs, which we do by retaining innovation that is happening in other spaces and keeping it local.

Time allotted | *15 Minutes*

Topic: **Communicate**

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

Discussion	Presenter
McMaster University Launches $2M Seed Fund to Establish Innovative Companies Launching in September, the McMaster Seed Fund (MSF), is an early-stage investment vehicle designed to foster innovative startup companies coming out from McMaster research with the potential for significant economic and/or societal impact in the Hamilton region and beyond. Karen Mossman, McMaster's vice-president, research, whose office is leading the initiative, says the fund will support entrepreneurs within the McMaster community and advance the university's culture of commercialization and social innovation and drive the transformation of university research into products or services that will make a positive impact on society. "The MSF will support promising McMaster start-ups with high growth potential," says Mossman, adding the funds are designated specifically for business development. The team at the McMaster Industry Liaison Office (MILO) is managing the effort and Gay Yuyitung, MILO's executive director, says applications will be accepted in the early fall for the first round of funding. The call will be formally announced in the near future, and applicants are expected to present their plans to the MSF Investment Committee by the end of 2021. Yuyitung says the MILO team will help to determine eligibility and is looking forward to working with applicants from all disciplines and faculties to refine projects that show high growth potential. Teams can apply for an initial investment, expected to be in the range of $200K to $500K. Read the full article here	Gay Yuyitung (McMaster University)
Ontario Invests in Niko Apparel's Made in Hamilton Surgical Masks Niko Apparel Systems is investing more than $250,000 to help automate the production of surgical masks with the support of $125,000 from the Ontario Together Fund. With this investment, Niko will leverage existing production processes, materials, supply chain networks, sales, and distribution networks to strengthen Ontario's supply of personal protective equipment (PPE). The renewed Ontario Together Fund is focused on supporting homegrown manufacturing and innovation to combat COVID-19 and providing other goods critical to the health, safety, and security of Ontarians beyond this pandemic. It is doing so under the following strategic pillars: • Strengthening Ontario's domestic manufacturing capacity; • Supporting homegrown technologies and innovative solutions; • Strengthening Ontario's MedTech ecosystem. "Through the Ontario Together Fund, our government is making targeted investments in domestic businesses with the ideas and solutions to support Ontario through this pandemic, as well as future crisis," said Vic Fedeli, Minister of Economic Development, Job Creation and Trade. "Niko Apparel's ability to develop, certify, and manufacture surgical masks is another example of Ontario innovation at its very best."	Alex Muggah (Synapse)

Discussion	Presenter
Preliminary Annual Synapse Survey Results Available Dennis Weber (Synapse summer intern) drove the creation of Hamilton's first annual life science cluster report. To inform the report, we created a cluster survey that was sent out to 154 life science organizations in the Hamilton region, to which we received a 54% response rate, which is not terribly bad considering this is our first year of running this report. Some key takeaways about the cluster include: • Employees & organization: over 39,000 employees constitute Hamilton's life science cluster, which consists of over 150 organizations that collectively spent over $5.9 billion to the economy last year. • Research and innovation: fueled by almost $700 million of annual research spend by life science organizations. As all of you may know, Hamilton is extremely research-intensive which explains many of the impressive data points that are found throughout this section of the report. • Facilities and capacity: infrastructure, laboratory space, and healthcare capacity present in Hamilton including a breakdown of our 700,000+ square feet of laboratory space. • Investment and funding: over $1.17 billion in investment has been raised by life science organizations in Hamilton have raised since 2016.	Dennis Weber (Synapse Consortium)
ImaginAble wins National James Dyson Award Biomedical and mechanical engineering student Lianna Genovese has received the National James Dyson Award for her invention, Guided Hands™, which she created in her first-year design course to help people with limited hand mobility write, paint, draw and access technology. The award recognizes an engineering student who has created an effective solution to a problem with design thinking at the forefront. It seeks to celebrate and inspire the next generation of engineers. Genovese, now in her final year at McMaster, says she was inspired to create something that supported people with limited hand mobility after a personal encounter. "I met a woman named Elissa who lives with cerebral palsy, and after hearing her story about losing her ability to paint – a talent and passion she had lost due to the progression of her condition – I knew I had to find a solution," she says.	Alex Muggah (Synapse)
$61.5M federal investment in McMaster hosted Canadian Longitudinal Study on Aging (CLSA) Labour Minister Filomena Tassi today announced grants totaling $61.5 million to support the next phase of the Canadian Longitudinal Study on Aging (CLSA), a national research platform on aging, hosted at McMaster. The funds include $52 million through the Canadian Institutes of Health Research (CIHR) to ensure researchers have ongoing and timely access to a world-class data platform focused on health and aging. It also includes $9.5 million from the Canada Foundation for Innovation. The $52 million supports research activities at McMaster, including funding for all the participating institutions across Canada to ensure the collection of data from CLSA participants until 2027. The investment also supports the introduction of several new or expanded	Ine Wauben (MIRA)

Discussion	Presenter
assessments in the areas of sexual health, mobility, vision, sense of smell and health-care experiences. Launched in 2010, the CLSA is Canada's largest study of aging, following more than 50,000 individuals who were between the ages of 45 and 85 at recruitment, for 20 years. The platform is led by lead principal investigator Parminder Raina of McMaster University, principal investigators Christina Wolfson of McGill University, and Susan Kirkland of Dalhousie University, along with co-principal investigators Lauren Griffith and Cynthia Balion of McMaster University. Read the full article here	
Hamilton's VoxNeuro's tech gets inside your head After being approved as a medical device by Health Canada in July, the brain-health software made by Hamilton's VoxNeuro is being rolled out to two local clinics. The company, which is based in McMaster Innovation Park, offers the Cognitive Health Assessment, which uses electroencephalogram (EEG) technology and a proprietary protocol to record patients' brain activity, as well as the newly-approved Cognitive Health Assessment Management Platform software. It is able to score cognitive performance in memory, information processing, attention and concentration, which health-care providers can use to inform a patient's care and treatment, and track their progress. Its uses include patients with brain injuries and those experiencing cognitive dysfunction or decline. "The assessment takes 30 minutes to complete and is non-invasive," says co-founder Kimberly Elliott. "EEG electrodes sit on the scalp and record the brain's electrical activity through EEG conductive gel. Patients may think of this as similar to an ultrasound…. The assessment guides patients through a series of neuropsychological tests on a computer while the EEG records hundreds of thousands of data points along their brain waves." She says repeat assessments "track changes in a patient's cognitive scores to monitor their progress and validate the efficacy of treatment, helping health-care providers to maximize patient outcomes and expedite recovery timelines." Read the full Spectator article here	Kim Elliiot (VoxNeuro)
AGE-WELL offers +$25,000 in awards for 2021 Pitch Competition AGE-WELL is pleased to announce the launch of the 2021 AGE-WELL National Impact Challenge, one of the most exciting startup competitions in Canada. The annual competition recognizes top startups and supports entrepreneurship in Canada's technology and aging sector. It's open to any entrepreneur or startup with a technology-based solution that can support the health and quality of life of older adults or their caregivers. AGE-WELL's 2021 pitch competition will showcase top innovators in Canada's technology and aging sector. This year's winner will receive $25,000 in cash plus in-kind prizes. A runner-up will be eligible for a $10,000 cash prize. The Ontario Brain Institute is generously contributing 50 percent of these cash awards.	Alex Muggah (Synapse)

Discussion	Presenter
The deadline to submit an application is September 20, 2021 at 11:59 PM Eastern Standard Time. (From these applications, five finalists will be selected.) Read the full Candian Healthcare Technology article here	
Who will win BIG at this years LiONS LAIR!? Register now for this year's exciting virtual pitch competition. LiONS LAIR celebrates its 11th anniversary as Hamilton's leading pitch competition that brings together innovation and entrepreneurship. This year's competition will take place as a virtual, bracket-style tournament on September 23, 2021, from 12:00PM to 2:00PM EDT. Register now to take part in this year's LiONS LAIR Pitch Madness. Cheer on the top innovators as they pitch their company to a panel of Hamilton's business experts and compete in head-to-head pitch showdowns, for a chance to win big prizes! PLUS! Stick around for a chance to vote for the People's Choice prize and network with the finalists, LiONS, and the amazing Hamilton business, innovation and entrepreneurship community!	Jennifer Gauvreau (Innovation Factory)
One45 acquired by Hamilton's Altus Assessments Very excited to announce that we're welcoming One45 Software to the Altus Assessments team! It's a new chapter for us in our growth and pursuit of a world served by exceptional professionals. Also delighted to have the great team from Updata Partners and CIBC Innovation partnering with us to complete this transaction. Last, but not least, a very warm welcome to Jim Liang as our newest board of directors member and Brian Clare who joins as our newest VP! We're thrilled to be joining the Altus Assessments team! As a unified company, we'll be able to offer end-to-end solutions that help #medicalschools and other #HigherEd institutions identify, select, and nurture all students to become exceptional professionals. These solutions include: research-backed admissions and in-program assessments, near real-time data on student performance that enable earlier and impactful interventions, medical education program management (academic and clinical placement scheduling, curriculum mapping, and assessments), and a robust data warehouse and insights platform that helps drive curriculum improvement and facilitates data gathering to make accreditation easier.	Rich Emrich (Altus Assessments)
Clinical trial on a plate: Researchers to create new "breathing" lung model to study illnesses like COVID-19 A new bioengineered lung model – coined a "clinical trial on a plate" by the research team – will replicate key features of the human lung, including specialized cells, surrounding blood vessels and life-like immune functions. The cutting-edge lung model is being developed by an interdisciplinary team of researchers from McMaster and SickKids, including Boyang Zhang, a professor of chemical engineering. The model can better respond to viruses and drug treatments, giving scientists a tool to advance research in lung conditions like COVID-19, cystic fibrosis and allergens for asthma and air pollution. Other researchers leading on the project are Jeremy Hirota, Karen Mossman from McMaster's Faculty	Alex Muggah (Synapse)

Discussion	Presenter
of Health Sciences, and Amy Wong from SickKids. This project recently received $1M in funding as the winner of the National Sanitarium Association research grant, which supports important new areas of research in pulmonary science and medicine. A preprint version of the research paper was published this week in bioRxiv.	
Clinician Health Innovation Program (CHIP) Clinical Advisory Sessions Are you a startup making waves in the health innovation space? Would your solution benefit from valuable clinical insight and feedback? The Clinical Health Innovation Program (CHIP) at the Michael G. Degroote School of Medicine is inviting early stage health ventures to share their early-stage technologies during "clinical advisory" sessions in the program. Selected startups will have the opportunity to speak with clinician trainees and practicing clinicians to discuss challenges, opportunities, and solicit feedback for their solutions. Sessions will take place ~weekly from Sept 14 - Dec 14, 2021 from 8:00-9:00 pm on Zoom. If your startup is interested, please fill out this form at your earliest convenience and we'll be in touch! We are excited to get to know you and thank you for your interest! For more information or if you have any questions, please contact Sarrah Lal, Education Director of Clinical Health Innovation Program (sarrah@mcmaster.ca).	Sarrah Lal (McMaster)
Life Sciences Ontario Roadtrip Across the Province is back! Join Life Sciences Ontario during Global Biotech Week (September 27th – October 1st) for our second Annual 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 9:00-9:30 am. FULL AGENDA:= Sept 27th: Kingston Economic Development Corporation Sept 28th: Niagara Region Sept 29th: Sarnia Sept 30th: City of Mississauga Oct 1st: Health Sciences North & Greater Sudbury	Andy Donovan (LSO)
FedDev Ontario commits combined $12 million to OneEleven and new Waterloo-London healthtech hub In August, the Government of Canada made some investments, through FedDev Ontario, in the province's innovation and startup support ecosystem. FedDev Ontario committed $2 million to the Ontario Centre of Innovation (OCI) to support the relaunch and expansion of OneEleven's programming, and $10 million towards the creation of a new University of Waterloo and Western University-based healthtech innovation hub. Read the full Betakit article here	Alex Muggah (Synapse)
Partner with Seneca's Centre for Innovation in Life Sciences (SCILS) Seneca's Centre for Innovation in Life Sciences (SCILS) supports applied research	Namrata Barai (SCILS)

Discussion	Presenter
opportunities in the life sciences and cosmetic science sectors with access to expertise from students, faculty and infrastructure. Our state-of-the-art technologies and instrumentation support cutting-edge research and innovative applications to solve business challenges faced by industry and community partners. Key areas of expertise in applied life sciences and cosmetic science • assay development and validation • product formulation • method development and process optimization • product stability enhancement and testing • quality control and regulatory aairs To find out how we can help with your business challenge, contact: Namrata.Barai@senecacollege.ca Director of Applied Research, Seneca Innovation	
Equation Angels Introduces Neil Wilkinson The Equation Angels Executive Committee is pleased to announce the appointment of Neil Wilkinson as the new Managing Director of the organization. Neil joins Equation Angels after 8 years of leadership in applied research management. In that time, he developed and managed applied research teams and projects that provided innovative new products and solutions for small- and medium-sized businesses in a variety of sectors, including agriculture, food and beverage, advanced manufacturing, and digital health. Working collaboratively with key stakeholders, Neil has written proposals for and been awarded over $21,000,000 in research grants. “I am excited to join the team at Equation Angels and use my skills, experience and passion to contribute to the network. My plan is to put the fun back into angel investing for our members,” said the newly appointed Managing Director, Neil Wilkinson.	Alex Muggah (Synapse)
Mohawk College Releases Strategic Plan Mohawk’s three-year plan allows the college to continue to move forward with their ambitious goals, along with emphasizing the need to be flexible to support recovery through innovation. The new plan provides room to respond to current realities and emerging opportunities. Through Mohawk’s annual business planning process, they will develop timely actions and targets to achieve each year, while continually moving towards ambitious leadership outcomes.	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)
Government Call 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.	Innovation Factory & Synapse Consortium

Discussion	Presenter
• 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.	

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
Want to Connect with your Ecosystem: Check out the Synapse Health Ecosystem Directory 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. Learn more about what others are up to, and identify potential collaborative partners at: www.synapseconsortium.com/directory	Alex Muggah (Synapse)
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. 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	Gay Yuyitung (MILO)

Discussion	Presenter
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-based technologies available for licensing 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. 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	Glen Crossley (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.	Annie Horton (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)