ONTARIO BRAIN INSTITUTE | INSTITUT ONTARIEN DU CERVEAU

Ontario Brain Institute
Annual Plan
2022-2023

January 31, 2022

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Ontario Brain Institute Annual Plan for 2022-2023

The Ontario Brain Institute (OBI) is a not-for-profit organization that accelerates discovery and innovation, benefiting both patients and the economy, to improve the lives of the 1 in 3 Ontarians living with brain disorders**.**

The vision guiding the work of the Ontario Brain Institute is to maximize the impact of neuroscience and establish Ontario as a world leader in brain research, commercialization, and care. We realize this through our collaborative 'team science' approach between researchers, clinicians, industry, patients, and their advocates to foster discovery and deliver innovative products and services that improve the lives of those living with brain disorders.

During the coming year, we will continue to build on our successes to-date and generate research, health, and economic impacts for Ontario. We will also prepare a renewal submission outlining our long-term vision and some new and exciting directions.

OBI's strategic priorities are**:**

- Building a learning healthcare system by integrating research and care and fueling it with next generation informatics and analytics.
- Growing a globally competitive neurotechnology cluster by training highly qualified personnel and working with partners to create a seamless pipeline of support for Ontario companies.
- Improving brain health through shaping better policies with deployment of data-validated innovations and educating the public on brain health.

Below is a summary of OBI's plans for 2022-2023, our key accomplishments in 2021-2022, and the milestones and activities in 2022-2023 for each priority area and operations. The budget for next year is also provided and an overview chart bringing together the priority areas, objectives, activities, and milestones is included as an appendix.

Overview of OBI Plans for 2022-2023.

During 2022-2023, OBI will be focused on the final year of its five-year contract with the Ontario Government and completing work on our Integrated Discovery Research Programs, health informatics platform, commercialization programs, and knowledge translation initiatives.

At the same time OBI will be preparing an application for provincial funding that will be submitted in Fall 2022 in anticipation of a new contract effective April 1, 2023. OBI is refocusing existing programs and inviting new research teams to apply to a reimagined research networked model.

In 2022-2023 there will be an increased focus on data, a refocusing of our research networks, an increase in new technologies being brought to the market, and an increased engagement with community groups to ensure that we are focused on bringing solutions to real life challenges.

OBI's goals are to: position OBI as an internationally recognized platform for neuroscience innovation; establish new networks nationally and internationally that have the potential to have a positive impact in Ontario; strengthen our national and international connections – become a part of the world-wide conversation; and expand our focus on commercialization of neuroscience technologies including seeking new technologies from across Canada that have potential benefit in Ontario.

The following is a summary of OBI's plans for 2022-2023 for each priority area:

Building a Learning Healthcare System

The Ontario Brain Institute's approach to brain health research unites Ontario talent in brain research, neurotechnology and care, bringing net benefit to the province. As a catalyst, integrator and innovator, the Ontario Brain Institute tears down traditional healthcare silos and builds partnerships to connect strengths between clinicians, researchers, industry and patents. OBI is building a learning healthcare system by integrating research and care and fueling it with next generation informatics and analytics.

In 2022-2023 OBI will launch an open call for reimagined data-driven research programs that will better understand the underpinnings of brain disorders. We will have an open and transparent competitive process and provide an opportunity to the neuroscience research community at large, to come together in a collaborative way to submit proposals. Through this process, we will identify integrated and collaborative networks that we will launch in the next funding phase.

OBI's pioneering neuroinformatics platform, Brain-CODE, invites researchers to make use of the rich clinical research data from dozens of brain disorders. In 2022-2023, more data sets from our research programs will be made available to external groups for secondary use through our data releases. We will also continue to support research programs in enhanced analytical projects through our linkage with the health administrative data at the Institute for Clinical Evaluative Sciences (ICES) and ensure that the linkage between Brain-CODE and ICES is maintained up to date.

Growing a Globally Competitive Neurotechnology Cluster

OBI is growing a globally competitive neurotechnology cluster by training highly qualified personnel and working with partners to create a seamless pipeline of support for Ontario companies. OBI will continue to de-risk investments in technology, which creates jobs and helps bring new products to market. Through its partnerships with clinicians and patient communities, OBI ensures that new brain health technologies are clinically validated, effective, and address real life challenges for patients.

In 2022-2023 OBI will pilot scaling our commercialization programs nationally so that we can bring the best technologies to Ontarians and test them in partnership with our patient groups. OBI will establish new partnerships with large multinational enterprises in pursuit of collaborations involving clinical trials and co-funding of Ontario companies.

Improving Brain Health

OBI improves the lives of Ontarians impacted by brain disorder by ensuring that patient needs drive research at all levels. OBI builds partnerships with patients and caregivers to improve the process, quality, and outcomes of research so we can deliver better treatments. OBI brings care and support closer to home by supporting connected community care. OBI elevates the role the community organizations play in improving the quality of life for people with brain disorders, and helps them spread, scale, and improve the services they offer. OBI is also focused on improving brain health through shaping better policies with deployment of data-validated innovations and educating the public on brain health.

In 2022-2023 OBI intends to continue to strive to positively contribute to improving brain health by involving multiple stakeholders in the exchange of knowledge and ensuring that research priorities reflet those of people affected by brain disorders. Most

notably, OBI has determined that decision making and policies need to be data driven and the critical link at the disposal of OBI is Brain-Code.

Operations

In less than three years, OBI has accumulated $196.7 million and is well on its way to meeting its $200 million leveraging target in 2022-2023. Over the past nine years, OBI has taken the $180 million invested by the Province of Ontario and converted it into over $600 million in impact on the Ontario neuroscience community.

Conclusion

OBI has been using a collaborative approach to bring about value for those with brain disorders in Ontario for over 10 years. This annual plan continues this approach with the facilitation of connecting researchers, industry, clinicians, patients, advocates and community. OBI continues to focus on *Ontario as a world leader in brain research, commercialization and care.*

2021-2022 Key Accomplishments

Over the past year, OBI continued its focus on better serving the one in three Ontarians who are living with a brain disorder. Our goals of improving brain health and creating economic wealth continue to be supported by our approach to collaborative research, data sharing, new neurotech company formation and community engagement.

In response to COVID-19, the economic and other challenges Ontario is facing, OBI has made it a priority to work with its research programs, the Government of Ontario and other organizations to address urgent issues. Some examples include:

- After three successful pilot linkages, OBI and ICES have created a more permanent crosswalk linkage between the respective organizations to allow for more seamless and efficient data linkage projects. ONDRI will be the first research program leveraging this linkage for an analysis project.
- CAN-BIND and Centre of Excellence in Mental Health continued exploring how to work collaboratively and have clinical findings coming out of our programs inform care models and knowledge implementation.

An integrated and collaborative approach to science is the cornerstone of OBI's work. We continue to work towards a learning healthcare system, improving health, building community, and creating economic opportunities through this approach. Our strength

lies in our ability to support quality research based on scientific excellence that advances our understanding of brain disorders. Some examples include:

- ONDRI (neurodegeneration) was engaged in finalizing Research Ethics Board approval and other logistics before launching the HANDDS-ONT recruitment. Aiming for 2 initial cohorts in Parkinson's and ALS.
- CP-NET (cerebral palsy) is rolling out a Hip Surveillance Quality Improvement Initiative. Data from health records show only 50% of kids had a hip X-Ray. CP-NET is going to implement a process change and is aiming to get up to 90% adherence. Currently launched at Grandview and scaling up to two other sites later this year.
- In collaboration with the Centre for Applied Genomics at Sick Kids and under the leadership of Dr. Steve Scherer and team, we are undertaking Whole Genome Sequencing.
- The Cross-IDP Sleep Study is progressing well with descriptive analyses of the different IDP data sets. Data organization and statistical analysis were expected to be completed by early July. The manuscript for the analysis was well underway with a target journal of JAMA Pediatrics, highlighting the OBI framework allowing for this cross-diagnostic study.
- ONDRI's Scientific Retreat took place. Focus was on partnerships that are developing and latest findings on molecular biomarkers.

OBI is engaged in collaboration and data sharing to break down the silos in research and help decrease the time it takes for discoveries to move from the lab to life. Data sharing and data linking through Brain-CODE, OBI's large-scale health database, continue to be one of OBI's unique differentiators from other research funding agencies. OBI is working to enhance the value of Brain-CODE data holdings for our local research community and create a new resource for the international brain research community. Some examples include:

- The Brain-CODE platform currently supports over 1500 users in the gathering and sharing of research data. With data from over 21,000 study participants, secured with the highest privacy standards, Brain-CODE's data repository continues to attract international attention. We continue to support research programs in sharing data with External Collaborators. We have supported programs in their collaboration plans with partners such as Lundbeck, McGill University, Linköping University (Sweden), and Université de Montréal.

- The first two Zone 3 Controlled Data Releases, the 5P and PND01 clinical registry data releases, went live on the Brain-CODE website in May. This was followed by ONDRI releasing its baseline data in November. There will be upcoming data releases from all of OBI's other research programs.
- OBI launched new studies from ONDRI and CAN-BIND on Brain-CODE including the HANDDS-ONT Study and Impact of COVID-19 on Mental Health Study. The former includes several technical developments on Brain-CODE including the generation of a global ID for participants on the platform (so that the same participants can be tracked through a core study and subsequent sub-studies), as well as making improvements to how we capture medical history and ethnicity on study participants.
- The first OBI Inaugural Analytics Workshop in October 2021 was a terrific success and highlighted a group of advocates on the data and data product side – using the data holdings from Brain-CODE with the larger analytics community a series of new relationships are highly likely to be created and build towards fulsome partnerships for future developments. Use cases were from both the research and commercial sectors. There were two panel discussions related to analytics in health and neuroscience research, as well as analytics collaborations in academia, industry, and government.

OBI is working with companies commercializing research that will help patients with brain disorders. This includes the development of entrepreneurial skills to help new companies develop faster, supporting companies through start-up phases, and linking companies to various management and advisory services. Some examples include:

- To date, OBI has supported commercialization activities for 86 companies and has trained over 65 ONtrepreneurs.
- OBI and Telus signed an MOU. The MOU provides the opportunity for Telus and OBI to collaborate on data, company and research initiatives and work towards a binding partnership agreement. Near-term projects in motion include:
    - Project 1: OBI provided feedback about the nature of clinical validation for two of their tools (one of which is an Ontario start-up).
    - Project 2: Telus is providing connectivity (phones and SIM cards) for the testing of a seizure monitoring watch made by Novela Neurotechnologies, in partnership with Epilepsy Ottawa.

  - Project 3: OBI is assisting with the clinical validation of a Telus Health decision tool for mental health
  - The Telus Chief Neuroscience Officer is raising awareness about the importance of offering clinically validated solutions through Telus.
  - Potential synergies include: scaling MiNT model nationally, getting real world evidence for the efficacy of neurotechnologies (community testing), testing algorithms on Brain-CODE, providing cell coverage for community neurotech studies.
- The End ALS Kaggle challenge, which was led by Roche and EverythingALS and supported by OBI, announced the 3 winners and 3 runners-up. The next step is to bring these six groups together to cross-pollinate and see if they can improve on their algorithms by working together. One of the winners, Bowhead Health, is an Ottawa-based AI startup.
- The Sunnybrook – Winterlight Labs Data Use Agreement is fully executed, and Sunnybrook staff have transferred data from the Sunnybrook Dementia Study into Brain-CODE.
- Portfolio Company success stories include:
  - Joe Geraci, founder of Netramark, had his first successful exit. Netramark was acquired by Nurosene Health Inc. The acquisition will help Nurosene focus on the development of their app and drug development for mental health.
  - Nanology Labs, a company developing next-gen nanomedicines to conquer cancer, closed an over-subscribed $3M seed round, led by FACIT (OICR's investment arm). OBI is a co-investor in this round, through our NERD deal that was executed last fiscal. One of Nanology's main proof points will be in the context of brain tumor detection and therapy.
  - Steadiwear Inc successfully raised $1.1 million CAD to assist with the launch of their hand tremor glove. OBI supported some product development milestones through NERD to de-risk this follow-on investment.
- OBI onboarded this year's cohort of ONtrepreneurs:
  - Ahmad Al-Kabbany: VRapeutic is a software house specializing in the development of rehabilitation solutions for children and young adults, with a current focus on virtual reality for learning, mental, and developmental disorders.

  - Andre Bertram: HelpWear is a device company that developed HeartWatch, an ECG monitor worn on a patient's bicep to detect minor and major heart conditions and contacts healthcare professionals when needed.
  - Michael Lee: MINT Memory Clinic is improving the lives of people living with dementia through delivery of complete compassionate healthcare closer to home.
  - Amanda Manget: Xpan is a proprietary expandable port technology for maximizing safety and efficacy of minimally invasive neurosurgery.
- NERD deals included:
  - OBI signed a NERD deal with Neurovine, a company using neurophysiological data to guide concussion recovery.
  - OBI signed a NERD deal with Babbly. Babbly is a company developing speech algorithms for the early detection of developmental delay and has graduated from the ONtrepreneurs program

At OBI we take a great deal of pride in helping to take the innovative work that happens in the confines of a lab and translating it into real life – ultimately better supporting individuals with brain disorders as well as their families and caregivers. Some examples include:

- Mobio is partnering with Green Shield Canada, Canada's fourth largest health and dental benefits provider, to make their mental health app available to all of their plan members across Canada for free for the next 6 months. This is the first time that one of our companies has partnered with an insurance provider in Canada and an important step towards the adoption of their neurotechnology. The press release is available here: https://www.midigitaltherapeutics.com/210210-gsc-987364.html
- Based on an introduction by OBI, Mobio is partnering with Loblaws Inc to make their app available to PC Optimum subscribers. This is another national partner for Mobio and will help make their mindfulness app available across Canada
- Epilepsy Ottawa obtained REB approval for the Epilepsy Ottawa – Novella Study (referred to as the 'EONS' Study), which will test a seizure monitoring device, developed by Novela Neurotechnologies, in the community to see if it helps improve quality of life for people living with intractable epilepsy.
- The Final Workshop of the Epilepsy Priority Setting Partnership took place at the beginning of April. The purpose of the workshop was to come to a consensus on the 10 most important research questions the public wants answered. The

top priority was about better understanding genetics of epilepsy, something very strongly aligned with OBI's mission. There are plans to undertake a similar plan in the UK later this year, following specifically the work done by OBI.

- POND hosted a consultation with PAC members concerning a grant proposal on characterizing brain network dynamics in very young children with autism using wearable MEG sensors.
- OBI officially announced funding for three community-led programs who join the GEEK cohort. Our GEEK program was developed to recognize and amplify the work being done on the ground by community-led partners who can help reduce the stress on the healthcare system and address crucial gaps in our community – so that care can be local, accessible and more personal. These are the approved projects:
    - Family Navigation Project, (Greater Toronto Area): The Family Navigation Project provides free-of-charge support to youth ages 13-26 with mental health and addictions concerns and their families. Through the program experts help youth navigate and access the most appropriate services and resources.
    - The Acquired Brain Injury Transition Program, Vista Centre Brain Injury Services (Ottawa): The Acquired Brain Injury (ABI) Transition Program supports the safe transition of ABI clients back to the community through a counseling partnership with The Robin Easey Centre of The Ottawa Hospital Rehabilitation Centre.
    - Epilepsy-Specific Mental Health Program, Epilepsy Ontario (across Ontario): The Epilepsy-Specific Mental Health Program in Ontario delivers remote-based mental health services to people living with epilepsy in areas where there is no local mental health programming or Community Epilepsy Agency.
- OBI hosted our 9th Annual Patient Advisory Committee Workshop, drawing in over 50 community members from the six IDPs. We heard different perspectives from researchers, patients, and companies on how patient and community engagement create value for their work, shared approaches to doing engagement with a strong focus on inclusion, and collected feedback from members to inform our renewal plans

Working in partnership with the patient community we have co-created over 250 knowledge products including the Top 10 Priorities for Epilepsy Research, Physical Activity and Dementia toolkit, and a video series on mental health in youth with neurodevelopmental disorders. Engaging and empowering the public to improve care is an important part of our mandate:

- Already this year, OBI has reached over 180,000 people through its outreach and public education initiatives like the Wellness Series of OBI Public Talks, using mental health apps education webinar, and the introduction to research in clinical neuroscience workshop for teens.
- Physical activity and the brain called 'Finding Meaning Through Movement' on May 26 to kick off the Wellness Series of talks this year. 643 people viewed the talk live from 12 countries. Our international views include USA – 42, UK – 18 and even 1 from Russia and Australia.
- Our Quarterly Forum with the Knowledge Translation and Communications Leads of our research programs was very successful. We presented a roll up of activities that took place over our last fiscal year and the numbers are impressive:
    - Collectively we hosted 38 events, all during a pandemic. Virtual events have been able to extend our reach across the globe – attendees from Europe, Asia and South America are no longer uncommon.
    - 118 knowledge products created. Including infographics, webinars, blogs, podcasts, videos, newsletters, lay summaries.
    - Our partnerships with patients and community members actively involved in research activities has also grown. 86 new partnerships this year, 38 % of these activities were in research stages that include priority setting, study design, research analysis and evaluation. This is a 10% increase from last year.
- OBI began planning for the public talk, 'Your Brain on Food' to be held on November 22, which explores the connections between food, nutrition, and brain health with our panel of experts.

OBI finalized its RFP process and selected KCI as it's fundraising service provider. KCI has extensive experience in non-profit fund raising. Working with OBI staff and Board members, KCI has identified top 100 donors to mental and brain health in Canada who might be the best prospects for OBI. Industry, corporate, banks, funding foundations that are interested in neuroscience are prioritized on this list.

OBI has committed to leveraging the $200 million in funding to match the $100 million provided by the Ontario Government. In less than three years, OBI has accumulated $196.7 million and is well on its way to meeting the 2022–23 target.

Leveraging Chart

Fiscal Year	Target	Leveraged
2018/2019	$40 million	$40,000,000
2019/2020	$40 million	$40,000,000
2020/2021	$40 million	$40,000,000
2021/2022	$40 million	$40,000,000
2022/2023	$40 million	$36,744,144
Total	$200 million	$196,744,144

In the coming year OBI will continue to build upon our success to date and through our collaborative model ensure we achieve improvements in healthcare and economic opportunities through integration, collaboration, data sharing and building community.

2022 – 2023 Operational Plans

Priority: Build a Learning Healthcare system

OBI is uniquely poised to help build a learning healthcare system – by integrating research and patient care and moving research from the lab and clinics into the community. The learning health care system embeds research into patient care and ensures that research findings are translated into evidence-based clinical practice and health system change to bring about real patient and economic impacts.

The IDPs are large-scale multi-disciplinary, multi-institution collaborative efforts that bring together researchers, clinicians and industry partners, as well as patients and their advocates. Their goal is to drive patient-focused, high impact research across multiple sites, disciplines, and sectors.

OBI will continue to fund and manage six pan-Ontario multidisciplinary research programs in the areas of cerebral palsy, epilepsy, depression, neurodegenerative disorders, neurodevelopmental disorders, and concussion.

Through the performance management framework, OBI will ensure that the activities of the IDPs are aligned with OBI's Vision by the ongoing monitoring and evaluation of the programs against the milestones set for each program. OBI will be supported in these efforts through the scientific, industry, patient and community advisors that are critical to our approach. These advisors provide advice and actionable milestones to ensure scientific excellence, economic impact, and patient impact of the IDPs. The IDPs enable

us to build on Ontario's key neuroscience assets and address areas of brain disorders that have a very large personal, societal, and economic burden.

OBI will ensure that the programs continue to adhere to the IDP research principles:

1. A focus on internationally ranked, leading edge science
2. A focus on the patient
3. Integration (across sectors, sites, and disciplines)
4. Standardization
5. A translational thrust

OBI's research is focused on gaining a deeper understanding of brain disorders and will yield new insights into the underlying mechanisms of disease. OBI is committed to the idea of using this research to drive improvements in health. Therefore, we work to ensure that as research advances our knowledge of brain disorders, the public benefits through better diagnosis and screening, new treatments, and updated policies. This includes increased translation of research into new treatments and tools, enhanced patient-care through evidence-based practice, faster movement of research findings to patients, and increased public access to information about brain research, brain disorders, tools, and treatments.

OBI has built one of the most comprehensive and secure brain research databases in the world, Brain-CODE. OBI's research contracts with universities and research hospitals across Ontario provide agreement for data to be stored in Brain-CODE. This level of data harmonization and sharing is unprecedented among institutions nationally and internationally. As the number of participants and the richness of data continues to grow within Brain-CODE, the potential to leverage these data (i.e., through federations with other national and international databases) grows exponentially. OBI will also continue to build a strong research network by using the same common data elements (CDEs) which allows researchers to look at commonalities across neurological conditions.

The pristine and well curated datasets in Brain-CODE are of considerable value and create both improved healthcare and economic development opportunities. Its primary purpose will still be to support our researchers, but it also supports national and international opportunities to provide a consistent and secure approach to data collection including management, storage, and analysis. Privacy and security remain at the forefront of the initiative and the sharing of data will be based within the context of international standards.

National and international data sharing opportunities will be pursued. The continued development, improvement and support of Brain-CODE will be a key priority of OBI in the coming year. Much of the new development will take place through funds that will be generated through the participation in national and international activities where grant or contract funding will be possible.

Objective: Ongoing management of six current IDPs, ensure alignment with OBI Vision and adherence to the OBI model

OBI continues to work with each of the IDPs to ensure that they operate consistent with OBI's strategic priority to drive a learning healthcare system approach with funding and activities that are in alignment with the OBI model as recommended by the External Review.

Each of the IDPs has developed a logic model that highlights the short-term outputs and long-term goals of the program. This logic model and the implementation of the performance management framework will enable us to keep the IDPs focused on prioritized activities (e.g. those with healthcare impacts). We will continue to hold quarterly strategic planning meetings with each program to allow for joint planning and to monitor milestone progress. In cases where there is a failure to meet milestones or to adhere to the OBI model, these meetings will provide an opportunity to provide warnings and adjust accordingly.

OBI has developed and implemented a performance management framework (the "IDP Snapshot") that is based on its logic model. We will continue to work with each IDP to utilize their logic models to inform budgets, timelines, milestones, and deliverables. This updated performance management framework will create clear linkages to the Programs and the health and economic impacts that they will achieve.

The IDPs' clinical framework will continue to drive OBI's approach to creating impact. OBI funding will continue to reflect this and will not duplicate or replace what other funding agencies provide. OBI's support of basic science will be limited to reverse translational research that is closely tied to the clinical component and thus contributes to development and validation of models and/or biomarkers.

With the evolution of OBI's commercialization programs and of Brain-CODE, OBI must be poised to help develop the growing number of Ontario data companies through validating their software platforms and algorithms. In addition to supporting our research community, as mentioned earlier, this will help to further build the artificial

and machine learning capacity in Ontario and keep Ontario at the leading edge of this field.

Milestone	Planned Activity	Metric
Develop a plan to implement and track standard assessments, beyond Brain-CODE CDEs, across all IDPs	Track relevant Brain-CODE CDE metrics to manage ongoing QA/QC, new research protocol design, and standardized clinical framework Utilize insights from past CDE review process to start planning for renewal phase and data collection/curation needs	# of IDPs with standardized clinical framework # of participants with Brain-CODE CDEs
Identify opportunities and create plan for cross-IDP collaboration	Identify potential new cross-IDP projects to initiate in renewal based on results of Brain-CODE CDE assessments	# of cross IDP collaborations # of projects/ proposals using Zone 1 data
Conduct annual bibliometric analysis on IDP publications	Assess quality and impact of IDP publications from 2020	# and quality of publications

Objective: Active testing of biomarkers in the community care setting

Our IDPs are innovating within the healthcare delivery system where people are cared for. This involves providing validated, data-driven interventions by integrating research and care, moving research from the lab into the community, and creating a true learning healthcare system that results in continuous quality improvement. For example, initiating partnerships with Ontario family health teams where discovery (e.g., new biomarkers) from the research laboratory can be translated and tested in the primary care setting where innovations and quality improvements are either quickly discarded or scaled, as appropriate.

Milestone	Planned Activity	Metric
Continue ONDRI@Home	Complete the HANDDS-ON study including patient recruitment, data upload and data sharing, facilitation of community and industry partnerships	# of study participants with data in Brain-CODE
Continue biomarker testing for depression	Continue to support data upload, management, and sharing for CAN-BIND validation study, ECT-Ketamine study, and biosample processing	# of study participants with data in Brain-CODE
Initiate a new biomarker trial in other IDPs	Continue to provide administrative and informatics support for ongoing studies: • HANDDS-ONT in neurodegenerative and dementia cohorts • Epileptic Encephalopathy Registry, to support rare forms of epilepsy • Whole Genome Sequencing in neurodevelopment dementia and cerebral palsy cohorts • Fluid biomarker analysis in dementia cohorts • Quality Improvement initiatives in cerebral palsy, to inform diagnostic guidelines and quality of life • Collection of Concussion CDEs COVID-related studies in depression and neurodevelopmental programs	# of clinical trials

Objective: Advanced analytics for disease modeling and diagnostics

Data science, machine learning and artificial intelligence are areas of increasing importance to research, healthcare, and economic development. Consistent with recommendations from the OBI Wide External Review Panel, OBI is proposing to expand its data sciences focus by building on its existing informatics and analytics platform Brain-CODE to:

- provide world class informatics tools based in artificial intelligence and machine learning to support the IDPs.
- provide data, analytical workspaces, and tools to engage the broader neurosciences community – nationally and internationally in the analysis of data.
- engage industry to stimulate the development of new intellectual property, tools and treatments.
- strengthen its relationship with the Vector Institute and the Toronto Machine Learning Series to stimulate the development of new analytical tools and algorithms to be included in Brain-CODE and support the creation of new companies and new products for existing companies to add to the marketplace.

OBI is an associate member of the Digital Technology Supercluster consortium of industry participants, academia and not-for-profits on a national basis who have been awarded funding under the federal supercluster initiative. OBI will continue to be a key component of the Precision Health Pillar in this supercluster. OBI has already been involved in a successful application in collaboration with the Autism Sharing Initiative. The application's aim is to connect national and international autism databases while adhering to standards from the Global Alliance for Genomics and Health (GA4GH). GA4GH is a policy-framing and technical standards-setting organization, seeking to enable responsible genomic data sharing within a human rights framework.

Milestone	Planned Activity	Metric
Ongoing development of new IP, analytic tools, and treatments through participation in Digital Technologies SuperCluster	Continue involvement with Supercluster projects: Development of a Frailty Care System with XCO and the Home to Healthcare Consortium Autism Sharing Initiative to develop a patient-centered research platform with DNAstack, POND, Autism Speaks Canada, and Roche	# of projects/ proposals using Zone 1 data

Develop new IP and analytic tools for Brain-CODE through grants, partnerships with industry and AI experts, and IDP development	Continue to work with analytics groups and industrial partners on opportunities to expand analytics capabilities of Brain-CODE	# of projects/ proposals using Zone 1 data

Objective: Quality improvement processes for healthcare

Building a learning healthcare system involves integrating research in the primary care setting. This is where most people with brain disorders receive their care. OBI is working with each of its IDPs to create partnerships with frontline service organizations, including primary care e.g. MINT Memory Clinics, Project ECHO, ECT-Ketamine study, ONDRI@Home, First Nation communities, Empowered Kids Ontario, where discovery from the clinical research program is immediately applied into the local care setting.

Milestone	**Planned Activity**	**Metric**
Establish partnerships between each IDP and frontline care providers	Support the implementation of IDP evidence/research pilots in partnership with care providers: • CP-NET Hip Xray referral path • CAN-BIND Depression Continuing Medical Education program for clinicians EpLink UPLIFT program to support mental health for people living with epilepsy	# of partnerships between IDPs and frontline care organizations
Measure health outcomes from IDP front line care partnerships	Utilize Brain-CODE - ICES linkage to identify quality improvement projects from IDPs and support their implementation into the health / care system	# of quality improvement projects

Objective: New Treatments

The IDPs' clinical framework will continue to drive OBI's approach to achieving impact. OBI funding will continue to reflect this and will not duplicate or replace what other funding agencies provide. OBI's support of basic science will be limited to reverse

translational research that is closely tied to the clinical component and thus contributes to development and validation of models and/or biomarkers.

Milestone	Planned Activity	Metric
Catalyze clinical trials and clinical validation studies through IDPs	Continue to provide administrative and informatics support for ongoing studies: • HANDDS-ONT in neurodegenerative and dementia cohorts • Epileptic Encephalopathy Registry, to support rare forms of epilepsy • Whole Genome Sequencing in neurodevelopment dementia and cerebral palsy cohorts • Fluid biomarker analysis in dementia cohorts • Quality Improvement initiatives in cerebral palsy, to inform diagnostic guidelines and quality of life • Collection of Concussion CDEs • COVID-related studies in depression and neurodevelopmental programs	# of clinical trials

Objective: National and International data sharing and linkages

The Brain-CODE platform is unique in its ability to facilitate both external collaborations to enhance Ontario's research system and link with health administrative data for more effective health outcomes. OBI has worked with each IDP to create data Exclusivity Plans which outline how research datasets will released to external third-party researchers. As a result, OBI announced the release of its first clinical data sets to promote open science and accelerate research in brain health through Brain-CODE in May 2021. The first sets of clinical data were collected for research studies led by OBI's neurodevelopmental disorders (like autism) program (POND) and the Post-Concussive Problems In Pediatrics (5P) study that involved researchers from OBI's concussion research program (CONNECT). OBI released two open datasets, including ONDRI's dementia dataset in Nov 2021 and CAN-BIND's depression dataset in Dec 2021.

On a national level, Brain-CODE has supported the sharing of data sets from OBI's neurodegeneration program, ONDRI, with the Canadian Consortium for

Neurodegeneration in Aging (CCNA), whose data is housed on McGill's Longitudinal Online Research and Imaging System (LORIS) system.

Brain-CODE continues to be used by the Centre for Addiction and Mental Health (CAMH), which has established a centralized database powered by Brain-CODE for research being conducted at the institute. OBI and CAMH are exploring the possibility of co-developing data models and improving data integration functionality. In addition, Brain-CODE is a key element of the broader Canadian Open Neuroscience Platform (CONP), an infrastructure that is being funded in part by a Brain Canada grant. OBI is an active member of the CONP Technical Steering Committee and CONP Data Governance and Ethics Committee. OBI will continue to provide support in the development of the CONP data portal and related policies and guidelines.

Brain-CODE is a critical link between research, healthcare and economic development. The pristine and well curated datasets in Brain-CODE are of considerable value and create both improved healthcare opportunities and economic development opportunities. Critical to this is the linking of the deep data that comes from OBI's IDPs with the broad health administrative data that is contained at the ICES and within electronic medical records.

After three successful pilot linkages, OBI and ICES have created a more permanent crosswalk linkage between the respective organizations to allow for more seamless and efficient data linkage projects. ONDRI will be the first research program leveraging this linkage for an analysis project. In parallel, we will continue to work across all IDPs, to identify meaningful research projects that would make use of this linkage and provide an overview of healthcare utilization costs and inform clinical care. Annual updates are planned for this crosswalk linkage to account for new participants recruited through the various studies collecting data on Brain-CODE.

Milestone	**Planned Activity**	**Metric**
Continued involvement in work related to the CONP as a mechanism to engage with the broader neuroscience community – nationally and internationally	Continued support for Canadian Open Neuroscience Platform (CONP) as members of the Technical Steering Committee, Ethics and Governance Committee	# of Zone 3 data access requests

Ongoing data releases from IDPs	Release data from IDPs to external researchers for secondary use	# of Zone 3 data access requests
Complete Brain-CODE ICES backbone linkage	Update OBI-ICES crosswalk linkage with next iteration and support IDPs in their ongoing data linkage projects Scope out potential new IDP-ICES linkage projects to undertake	# of linkage projects

Objective: Full implementation of recommendations from OBI Wide External review to ensure a world class informatics platform to support the IDPs

The OBI Wide External Review recommended the development of a new data science strategy that was inclusive of researchers outside of the research programs. Additionally, OBI was advised to leverage existing platforms and ensure user and market demand drove development rather than the technology itself. Stemming from this, OBI created a 5-year Strategic Plan for Brain-CODE with five priority areas. These areas focus on expanding Brain-CODE's capabilities in informatics, governance, and analytics to ensure that a world class platform is in place to support the IDPs, as well as participating in national and international informatics initiatives.

Milestone	**Planned Activity**	**Metric**
Initiate execution of Brain-CODE strategic plan and build into 2022-2023 Statement of Work with Indoc	Continue to implement the 5 priority areas of the 5-year Strategic Plan for Brain-CODE • Strategy and Planning • Platform Operations • Security, Privacy, & Ethics • Analytics, Data Science, & External Linkages • Partnerships & Business Development	# of Brain-CODE users # of Zone 3 data access requests % growth in Brain-CODE users and capacity

Priority: Growing a Globally Competitive Neurotechnology Cluster

OBI is growing a globally competitive neurotechnology cluster by training highly qualified personnel and working with partners to create a seamless pipeline of support for Ontario companies. OBI strives to catalyze the collaborative approach to supporting Ontario companies by working with entrepreneurs and companies across Ontario and in the broad neuroscience community. OBI has now completed ten rounds of the ONtrepreneurs program and will continue to support neurotech entrepreneurs.

To address the need for increased capital in Ontario's neurotechnology cluster and to support small and medium sized enterprises, OBI will continue the Neurotech Early Research & Development (NERD) funding program. This program funds product development or testing at Ontario-based Contract Research Organizations on behalf of selected companies that have an engaged follow-on investor, to address development gaps or the valley of death as it is sometimes referred to. OBI will continue to operate the NERD program as a lending-based program, providing opportunities for OBI to benefit from the resulting company growth.

OBI will forge strong relationships with local, national and international partners to attract investments and to make Ontario a globally-recognized neurotechnology cluster. Through this approach OBI will work across Canada and internationally to engage with the broader neuroscience community.

OBI continues to support the growth of the neurotech Ontario cluster ecosystem and foster collaborations between industry, institutions, and other innovation-based organizations. Activities and events are organized to engage the cluster's players as well as attract experts and resources from outside the ecosystem. OBI will continue to track the resources in the neurotech cluster and the associated outcomes of the outcome of interactions with these resources

The goal moving forward is to have several strategic partnerships with both large multinational enterprises and mid-size biotechnology companies that establish OBI as a preferred product development partner. These relationships may lead to a variety of collaborations including the validation of neurotech-based clinical trial outcome measures and the creation of joint ventures with Ontario companies.

Developing management skills in neuroscience graduates is necessary to support growth in the regional neurotech cluster, its existing and new companies, and to improve the quality and competitiveness of human capital. OBI is growing Ontario's

neuroscience management talent through the entrepreneurship and internship programs. These programs support Government of Ontario objectives related to training, innovation, and healthcare improvement through technology development.

Objective: Scale up small companies

OBI strives to catalyze the collaborative approach to supporting Ontario companies by working with entrepreneurs and companies across Ontario and in the broad neuroscience community. OBI will continue to support neurotechnology cluster development through its internship, entrepreneurship and NERD programs, and will use national partnerships to expand its capacity.

To address the need for increased growth capital in the neurotechnology cluster and to support small and medium sized enterprises, OBI will continue with the scaled-up NERD funding program and work with the investment community to address development gaps or the 'valley of death' as it is sometimes referred to.

Milestone	Planned Activity	Metric
Continue with scaled up NERD program	Continue to run NERD to assist neurotech companies with their product development / clinical validation needs Secure the first returns from NERD loans and reinvest into OBI commercialization programs	NERD follow-on investments # of NERD companies

Objective: Attract and develop new management talent and increase employment in the neurotech cluster

The ONtrepreneurs program is Canada's single largest award that catalyzes early-stage entrepreneurs to commercialize brain-related technologies by accessing funding and support to launch or grow their neurotechnology ventures. OBI will continue this program.

OBI will also support internships at OBI or at industry and institutional partner organizations across the province through the innovation-based internship program. The combination of OBI funding and matching funds from the partner organizations makes for particularly attractive internships and helps facilitate "off the bench" experiential training for recent graduates. In addition to the valuable training opportunity, the internship program provides start-ups with valuable human capital to help grow the

company. Many of the interns find full-time employment with their placement organization, which is helping to build management capacity within the neurotech cluster.

Milestone	Planned Activity	Metric
Continue ONtrepreneurs program	Pilot scaling the ONtrepreneurs program across Canada by running the first National Pitch competition	ONtrepreneurs follow-on investments # of ONtrepreneurs
Prioritize Internship support for industry-based clinical validation studies	Place up to 10 interns in roles that will assist with the clinical validation and/or community testing of neurotechnologies	# of interns per year % follow-on employment # of new co-funders or cluster partners

Objective: Procure homegrown products into the healthcare system

Innovations arising from the IDPs and the neurotech cluster have the potential for economic impact through cost-savings to the healthcare system. OBI will work with innovation partners in new technologies and companies coming through our programs. OBI will continue to catalogue the innovative technologies to determine market readiness and suitability for the Ontario healthcare system. For technologies that are poised for healthcare impact, OBI will work with our network of clinicians, companies, patient groups and policymakers to provide a comprehensive case for adoption to the MoH.

Milestone	Planned Activity	Metric
Work with innovation partners in new technologies and companies coming through our programs	Complete the second community-based project and initiate up to three additional community-based projects	# of products to market # of strategic partnerships with MNEs/funders

	Prepare for the addition of the community-based neurotech testing program as a core OBI commercialization program offering in 2023	# of companies/IDP partnerships developed

Objective: Engage with the broader neurotech cluster

OBI integrates research with industry for economic impact. The commercialization activities of OBI's neurotech cluster initiatives will continue to include scientific and clinical validation, user feedback, and the Internship, ONtrepreneurs and the NERD Programs to support the growth of neurotechnology companies across Ontario and the incorporation of these clinically validated technologies into the Ontario healthcare system.

The interest of multi-national enterprises in neuroscience ebbs and flows, depending on the recent successes or failures of Phase 3 trials. There is also an industry trend for spinning out venture-backed biotechnology firms to develop neuroscience assets. Therefore, OBI will continue to engage multi-national enterprises and will expand our scope to include mid-size biotechnology companies to help secure further partnerships for our IDPs. Examples of partnerships may include target validation, data analysis, clinical trials, and reuse of clinical trial samples.

OBI plans to expand its lead role in developing brain health products in terms of increasing the funding level and developing formal relationships with co-funding and follow-on funding partners across Canada and globally. OBI will engage in fund raising initiatives to increase the funds available to work with the neurotech community across Ontario. Through this approach OBI will work across all of Ontario and engage with the broader neuroscience community.

The goal moving forward is to have several strategic partnerships with larger multinational enterprises (MNE) and/or mid-size biotechnology firms to establish OBI as a preferred product development partner. These relationships may lead to a variety of collaborations including clinical trials and the co-funding of Ontario companies.

Milestone	**Planned Activity**	**Metric**
Increase interaction between companies and IDPs	Initiate up to five projects related to the validation of neurotechnology	# of company/IDP partnerships developed

Increase integration with company support programs across Ontario	Initiate pilot projects with up to 5 partners who will help our neurotech companies scale, examples include Telus Health, Roche, Canadian Agency for Drugs and Technologies in Health (CADTH) Provide a maximum of 3 events related to improving access to company supports. Examples include CRO Event, investor event, working with Pharma event	# of CROs engaged # of new co-funders or cluster partners
Categorize and consider expansion of focus of the OBI portfolio companies	Continue to evaluate and validate neurotechnology to support the growth and scale of companies and to increase patient access to validated technology. Create a maximum of 5 market research reports to inform OBI's commercialization activities. Examples include speech-based biomarkers, remote cognitive assessments for dementia	# of portfolio companies # of new companies supported over the 5 years
Increase Neurotech cluster promotion	Continue to implement marketing and communication strategy for neurotech cluster and OBI portfolio companies Deploy a CRM to assist with cluster promotion, tracking outcomes, and engaging investors.	Global recognition of the NeuroTech cluster demonstrated by the engagement of international companies and investors

Investigate the potential for consolidation of similar IP/technologies across research institutions participating in the IDPs	Continue to evaluate and validate neurotechnology to support the growth and scale of companies and to increase patient access to validated technology	# of clinical validation studies undertaken

Priority: Improving Brain Health

OBI is focused on getting research findings to patients faster, improving public access to reliable information about brain research, brain disorders, tools and treatments, and building stronger connectivity with research, industry, and patients. OBI continues to involve the broader research, clinical, industry and community advisors in the process of getting the messages out about the results of the research and commercialization, the potential successes and celebrating the opportunities for improvements in healthcare. OBI is engaging patients and public in neuroscience research and their brain health by fostering knowledge translation and exchange and facilitating linkages between researchers and decision-makers for the uptake and use of evidence through the Patient Advisory Committees, partnerships with other organizations and publicly accessible events like our public talks.

OBI involves patients, care partners/givers and advocates in research by integrating the patient voice in research through the Patient Advisory Committees for each IDP which meet quarterly. OBI will also continue to host an annual Patient Advisory Committee workshop where members share best practices for patient engagement and advise OBI on future directions of our work.

OBI is evaluating the impact of investments by refining and implementing the evaluation plan it developed in conjunction with the Outreach Advisory Committee involving global leaders in evaluation, knowledge translation, and public engagement.

OBI continues to support care in community settings through the GEEK (Growing Expertise in Evaluation and Knowledge Translation) program. GEEK provides funding, evaluation expertise, and support to community-led programs and services for people living with brain disorders with the aim of improving the sustainability, scale or spread of these programs, to improve the quality and quantity of evidence-based care in the community. The first GEEK cohort completed the program last year and two existing cohorts of GEEK will continue to spread and/or scale and evaluate the impact of their programs in Ontario.

Objective: Data-driven decision making/policies

OBI is engaged by government and policy makers to share expertise and provide evidence related to government priorities. Through this mechanism OBI ensures that the experts are positioned to provide information and best practices are directly aligned with government strategies for improved care.

Brain-CODE is a critical link between research, healthcare and economic development. Brain-CODE datasets are of considerable value in terms of both improved healthcare opportunities and economic development opportunities. Critical to this is the linking of the deep data that comes from OBI's IDPs with the broad health administrative data that is contained at ICES and within electronic medical records.

Milestone	Planned Activity	Metric
Leverage network of experts for policy discussions on brain health and link to government priorities	Continue building relationships with key government stakeholders and share approaches that can support government priorities including Ontario Health Data Platform and IP	# of policies impacted
Ongoing work to develop codes for capturing autism and depression in administrative data	Work with IDPs, ICES, and other health system partners to develop algorithms for health system surveillance	# of algorithms developed

Objective: Patient research priorities addressed in research

OBI engages patients and public in neuroscience research and their brain health by fostering knowledge translation and exchange and facilitating linkages between researchers and decision-makers for the uptake and use of evidence through the Patient Advisory Committees, partnerships with other organizations and publicly accessible events like our public talks.

OBI will involve patients, care partners/givers and advocates in research by continuing to integrate the patient voice in research through the Patient Advisory Committees for each IDP which meet quarterly. OBI will continue to host an annual Patient Advisory Committee workshop. OBI has helped to build lasting relationships between its research programs, and patient advocacy groups. Due to the stable and long-term funding of these research programs, meaningful partnerships between researchers and neurological charities have been created and expanded.

In total, OBI has created partnerships with 29 patient advocacy groups or service providers. Of those, 18 are involved with the six IDPs as members of their Patient Advisory Committees.

Through strategic outreach activities like ECHOs, GEEK and direct partnerships with the patient and clinical community, OBI will translate research into improved efficiencies in health care service delivery and facilitate linkages between researchers and decision-makers for the uptake and use of evidence.

Milestones	Planned Activity	Metric
Support patient partnership activities across research process	Continue to facilitate patient partnership by aligning patient interests and IDP needs	# of patient partnership activities # of patients and families engaged in family and science days
Finalize epilepsy research priority setting partnership	Engage funders in conversations about funding epilepsy priorities Launch national knowledge translation campaign to provide resources to community based on knowledge gaps identified in priority setting partnership for epilepsy research	Final report on priorities

Objective: Community-based implementation pilots

OBI will continue GEEK a program that supports the scale and spread of community-based initiatives that provide care and support for those living with a brain disorder (e.g., system navigation, family and patient education, etc.).

OBI will also work with Indigenous partners to support capacity building activities in their communities. Past examples include working with the Chiefs of Ontario to seek the further scaling of a youth suicide prevention program to First Nation Communities, helping to support a province-wide mental wellness initiative for Indigenous youth.

OBI will initiate a process for testing neurotechnology in the community in partnership with patient advocacy groups. This will allow patients to get access to potentially

impactful products to support brain health and provide valuable community feedback to the companies to help with ongoing product development.

Milestones	Planned Activity	Metrics
Continue GEEK program	Support the two ongoing GEEK cohorts and open a new round of applications to the program Create more training opportunities for community organizations to build capacity in evaluation	# of partnerships with frontline care # of new partnerships developed
Scale Indigenous mental health and wellness programs (ongoing, new partnerships)	Continue building relationships with Indigenous partners to support scaling entrepreneurship/innovation for Indigenous communities or capacity building through GEEK evaluation activities	# of new partnerships developed
Work with innovation partners in new technologies and companies coming through our programs	Complete the second community-based project and complete 3 additional community-based projects Prepare for the addition of the community-based neurotech testing program as a core OBI commercialization program offering in 2023	# of products to market # of projects with companies

Objective: Cost-effective healthcare outcomes and interventions

OBI will work with each of its IDPs to ensure that new knowledge generated by the IDPs is shared with the public and patient communities. Through various channels including websites, videos, and social media, OBI and IDPs will create a steady stream of actionable information about brain research and brain health.

Milestones	Planned Activity	Metrics
Develop, disseminate, and evaluate tools to promote brain health	Continue to work with the IDPs to promote the dissemination and implementation of	# of plain language summaries from our

	research findings with a focus on 'brain first' projects	research programs

Objective: Health system planning using research and administrative data

OBI is updating the "Brain Disorders in Ontario: Prevalence, Incidence and Costs from Health Administrative Data" produced in partnership with the ICES. We will engage the patient community in discussion about the data and use it to identify areas of focus for future research and knowledge translation.

Milestone	Planned Activity	Metric
Update brain disorders in Ontario report using health systems data	Share data from Brain Disorders in Ontario with community	New report released in 2021-2022

Objective: Self-management of health

OBI continues to embrace the concept of lab to life and undertakes various activities that connect the outputs of its research programs to the general public and help individuals manage their heath. These include:

- building KT capacity and supporting research programs in developing knowledge products and events for the general public.
- hosting public talks that address stigma, empower people with lived experience, and educate the public.
- creating awareness campaigns as part of Brain Awareness Week and other opportunities addressing stigma, facts and myths about people living with brain disorders.
- providing information on OBI supported research on the website, blog, and social media channels.
- inviting applications for OBI's Event Funding program to support events and activities from the neuroscience and brain health community.

Milestones	Planned Activity	Metric
Host four OBI Public Talks to educate and inform public	Host four public talks in 'Future of Brain Health' theme to inform, educate, and	# of people that we engage in our research

	empower people with actionable information	programs both online and in person

Operations

The administration area provides support to OBI program areas in implementing their activities, as well as ensuring that OBI meets its corporate obligations including legislation, accounting standards, and commitments to funders. This includes activities in the areas of reporting and operational planning, procurement, management controls, human resources, and governance. Administration will work to ensure that OBI is a corporately responsible, well-organized corporation.

Objective: External Review

OBI has completed its mid-term review led by two co-chairs. Dr. Paul Matthews who is Head of the Department of Brain Sciences in the Faculty of Medicine of Imperial College London and a Director of the UK Dementia Research Institute at Imperial College, was selected by OBI. Dr. Maryann Feldman, was selected by the Ministry of Colleges and Universities and teaches in the University of North Carolina (UNC) Department of Public Policy and at the UNC Kenan-Flagler Business School. Her research and teaching focus on the geography of innovation, the commercialization of academic research and the factors that promote technological change and economic growth.

OBI has been implementing the recommendations from the mid-term review and during 2022/23 will complete the External Review of the second half of operations.

OBI will also be working with the renewed Advisory Council that will provide advice and guidance to replace the Scientific Advisory Council and the Industry Advisory Council. OBI will be meeting with the new Advisory Council in the coming fiscal year to seek input on OBI program and activity plans for the future.

Milestone	Planned Activity	Metric
Identify co-chairs for External Review of second half of operations	Identify potential co-chairs and panel members	Co-chairs identified
Finalize terms of reference for External Review	Prepare terms of reference	Terms of Reference finalized

Complete External Review	Review to be undertaken and completed by October 2022.	Review Complete

Objective: OBI Advisory Council

Milestone	Planned Activity	Metric
Convene renewed OBI Advisory Council to provide input on OBI programs	Recruitment of members Meetings held	Recommendations received from the advisory committee

Objective: Fund Raising and Leveraging

OBI plans to raise funds to increase capacity to support research initiatives, increase growth opportunities for small and medium sized companies and expand its programs and services to the broader Ontario neuroscience community. OBI has engaged a fund-raising company, is developing prospect lists and contacting potential donors.

OBI is close to achieving its leverage target for 2022-23 and will continue focusing on maximizing leverage opportunities through its research, commercialization, and knowledge translation activities.

Milestones	Planned Activity	Metric
Develop fundraising approach	Prospect meetings, continual identification of prospects, communication with prospects	Onboarding completed
Internal pre-campaign planning and design	Continual update of case for support and campaign material as required	Fundraising plan in place Case for support completed Donor prospects generated
Gift solicitation kick-off	Contact potential donors, obtain approvals for donations, sign gift agreements with donors and sign contracts with recipients of funds donated.	Solicitation started

Objective: OBI Funding Proposal for the Period 2023/ 24 to 2027/28

Milestones	Planned Activity	Metric
Submit a renewal application to the Ontario Government for the continued support of OBI	Complete renewal planning activities: • Internal and external review of programs • Review stakeholders • Preparation of new strategic and operational plans • Design and details prepared for new programs • Implement communications and engagement strategy in support of funding applications and renewal activities • Preparation of funding request package	Funding request submitted to government in September 2022

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2022-2023 Operating Budget

Ontario Brain Institute Financial Plan – Operating Plan		**Annual Plan 2021-2022**	**Annual Plan 2022-2023**
Revenue			
Ontario Government		20,000,000	20,000,000
Other Revenue			
Carry Forward Funding		115,000	
Total Funding		**20,115,000**	**20,000,000**
Government Funding			
Expenditures			
Research		9,575,000	9,575,000
Informatics		3,000,000	3,000,000
Industry & Training		1,000,000	1,000,000
KT & Community Outreach		1,440,000	1,400,000
Salaries & Operating		5,100,000	5,025,000
Total Government-Funded Expenditures		**20,115,000**	**20,000,000**

2022-2023 Milestones, Activities, and Metrics

Focus Area: Build a learning healthcare system by integrating research and care, and fueling it with next generation informatics and analytics			
Objective	**Milestone**	**2022-2023 activity**	**Metric**
Ongoing management of six current ID Programs, ensure alignment with OBI Vision and adherence to the OBI model	Develop plan to implement and track standard assessments, beyond Brain-CODE CDEs across all ID Programs	Track relevant Brain-CODE CDE metrics to manage ongoing QA/QC, new research protocol design, and standardized clinical framework Utilize insights from past CDE review process to start planning for renewal phase and data collection/curation needs	# of IDPs with standardized clinical framework # participants with Brain-CODE CDEs
	Identify opportunities and create plan for cross-IDP collaboration i.e. co-morbidity analysis, phase 2 trials	Identify potential new cross-IDP projects to initiate in renewal based on results of Brain-CODE CDE assessments	# of cross IDP collaboration, # projects/proposals using Zone 1 data
	Conduct annual bibliometric analysis on ID Program publications	Assess quality and impact of IDP publications from 2020	# and quality of publications
Active testing of biomarkers in the community care setting	Continue HANNDS-ON study led by ONDRI	Continue support for HANDDS-ON study including patient recruitment, data upload and data sharing, facilitation of community and industry partnerships	# of study participants with data in Brain-CODE
	Continue biomarker testing for depression	Continue to support data upload, management, and sharing for CAN-BIND validation study, ECT-Ketamine study, and biosample processing	# of study participants with data in Brain-CODE

	Initiate a new biomarker trial in other ID Programs	Continue to provide administrative and informatics support for ongoing studies: • HANDDS-ONT in neurodegenerative and dementia cohorts • Epileptic Encephalopathy Registry, to support rare forms of epilepsy • Whole Genome Sequencing in neurodevelopment dementia and cerebral palsy cohorts • Fluid biomarker analysis in dementia cohorts • Quality Improvement initiatives in cerebral palsy, to inform diagnostic guidelines and quality of life • Collection of Concussion CDEs • COVID-related studies in depression and neurodevelopmental programs	# of clinical trials
Advanced analytics for disease modeling and diagnostics	Ongoing development of new IP, analytic tools, and treatments through participation in Digital Technologies SuperCluster	Continue involvement with Supercluster projects (dependent on continued funding): • Development of a Frailty Care System with XCO and the Home to Healthcare Consortium • Autism Sharing Initiative to develop a patient-centered research platform with DNAstack, POND, Autism Speaks Canada, and Roche	# of projects/proposals using Zone 1 data
	Develop new IP and analytic tools for Brain-CODE through grants, partnerships with industry and AI experts, and ID Program development	Continue to work with analytics groups and industrial partners on opportunities to expand analytics capabilities of Brain-CODE	# of projects/proposals using Zone 1 data
Quality improvement processes for healthcare	Establish partnerships between ID Programs and frontline care providers	Support the implementation of IDP evidence/research pilots in partnership with care providers: • CP-NET Hip Xray referral path	# partnerships between IDPs and frontline care organizations

		• CAN-BIND Depression Continuing Medical Education program for clinicians • EpLink UPLIFT program to support mental health for people living with epilepsy	
	Measure health outcomes of epilepsy and autism ECHO through EpLink and POND	Utilize Brain-CODE: ICES linkage to identify quality improvement projects from IDPs and support their implementation into the health/care system	# of quality improvement projects
New treatments	Catalyze clinical trials and clinical validation studies through ID programs	Continue to provide administrative and informatics support for ongoing studies: • HANDDS-ONT in neurodegenerative and dementia cohorts • Epileptic Encephalopathy Registry, to support rare forms of epilepsy • Whole Genome Sequencing in neurodevelopment dementia and cerebral palsy cohorts • Fluid biomarker analysis in dementia cohorts • Quality Improvement initiatives in cerebral palsy, to inform diagnostic guidelines and quality of life • Collection of Concussion CDEs • COVID-related studies in depression and neurodevelopmental programs	# clinical trials
National and International data sharing and linkages	Continued involvement in the Canadian Open Neuroscience Platform as a mechanism to engage with the broader neuroscience community – nationally and internationally	Continued support for Canadian Open Neuroscience Platform (CONP) as members of the Technical Steering Committee, Ethics and Governance Committee	# of Zone 3 data access requests

	Ongoing data releases from ID Programs	Release data from IDPs to external researchers for secondary use	# of Zone 3 data access requests
	Complete Brain-CODE ICES backbone linkage	Update OBI-ICES crosswalk linkage with next iteration and support IDPs in their ongoing data linkage projects Scope out potential new IDP-ICES linkage projects to undertake	# of linkage projects
Full implementation of recommendations from OBI Wide External review to ensure a world class informatics platform to support the ID Programs	Initiate execution of Brain-CODE strategic plan and build into 2020-2021 SOW with Indoc	Continue to implement the 5 priority areas of the 5-year Strategic Plan for Brain-CODE • Strategy and Planning • Platform Operations • Security, Privacy, & Ethics • Analytics, Data Science, & External Linkages • Partnerships & Business Development	# of Brain-CODE users # of Zone 3 data access requests % growth in Brain-CODE users and capacity
Focus Area: Growing a Globally Competitive Neurotechnology Cluster			
Objective	**Milestone**	**2022-2023 activity**	**Metric**
Scale up small companies	Continue with scaled up NERD program	Continue to run NERD to assist neurotech companies with their product development / clinical validation needs Secure the first returns from NERD loans and reinvest into OBI commercialization programs	NERD follow-on investments # of NERD companies
Attract and develop new management talent and increase employment in the neurotech cluster	Continue ONtrepreneurs program	Pilot scaling the ONtrepreneurs program across Canada by running the first National Pitch competition	ONtrepreneurs follow-on investments # ONtrepreneurs
	Prioritize Internship support for industry-based clinical validation studies	Place up to 10 interns in roles that will assist with the clinical validation and/or community testing of neurotechnologies	# interns per year % follow-on employment

Procure homegrown products into the healthcare system	Work with innovation partners in new technologies and companies coming through our programs	Complete the second community-based project and initiate up to three additional community-based projects Prepare for the addition of the community-based neurotech testing program as a core OBI commercialization program offering in 2023	# of strategic partnerships with MNEs/funders # of projects with companies # of patients getting access to tech
Engage with the broader neurotech cluster	Increase interaction with Ontario companies to partners that can assist with validation of their technologies.	Initiate up to five projects related to the validation of neurotechnology	# of projects with companies
	Increase integration with company support programs across Ontario	Initiate pilot projects with up to 5 partners who will help our neurotech companies scale, examples include Telus Health, Roche, CADTH Provide a maximum of 3 events related to improving access to company supports. Examples include CRO Event, investor event, working with Pharma event	# of new co-funders or cluster partners # of strategic partnerships with MNEs/funders
	Categorize and consider expansion of focus of the OBI portfolio companies	Continue to evaluate and validate neurotechnology to support the growth and scale of companies and to increase patient access to validated technology. Create a maximum of 5 market research reports to inform OBI's commercialization activities. Examples include speech-based biomarkers, remote cognitive assessments for dementia	# portfolio companies

	Increase cluster promotion	Continue to implement marketing and communication strategy for neurotech cluster and OBI portfolio companies Deploy a CRM to assist with cluster promotion, tracking outcomes, and engaging investors.	Global recognition of the cluster demonstrated by the engagement of international companies and investors
	Investigate the potential for consolidation of similar intellectual property/technologies across research institutions participating in the ID Programs	Continue to evaluate and validate neurotechnology to support the growth and scale of companies and to increase patient access to validated technology	# of clinical validation studies undertaken
Focus Area: Engaging and empowering the public and patient community to improve brain health			
Objective	**Milestone**	**2022-2023 activity**	**Metric**
Data-driven decision making / policies	Leverage network of experts for policy discussions on brain health and link to government priorities	Continue building relationships with key government stakeholders and share approaches that can support government priorities including Ontario Health Data Platform and IP	# of policies impacted
	Ongoing work to develop codes for capturing autism and depression in administrative data	Work with IDPs, ICES, and other health system partners to develop algorithms for health system surveillance	# of algorithms developed
Patient research priorities addressed in research	Support patient partnership activities across research process	Continue to facilitate patient partnership by aligning patient interests and IDP needs	# patient partnership activities # of patients and families engaged in family and science days
	Finalize epilepsy research priority setting partnership	Engage funders in conversations about funding epilepsy priorities Launch national knowledge translation campaign to provide resources to community based on knowledge gaps identified in priority setting partnership for epilepsy research	Final report on priorities

Community-based implementation pilots	Continue GEEK program	Support the two ongoing GEEK cohorts and open a new round of applications to the program Create more training opportunities for community organizations to build capacity in evaluation	# of partnerships with frontline care # of new partnerships developed
	Scale Indigenous mental health and wellness programs (ongoing, new partnerships)	Continue building relationships with Indigenous partners to support scaling entrepreneurship/innovation for Indigenous communities or capacity building through GEEK evaluation activities	# of new partnerships developed
	Work with innovation partners in new technologies and companies coming through our programs	Complete the second community-based project and initiate up to three additional community-based projects Prepare for the addition of the community-based neurotech testing program as a core OBI commercialization program offering in 2023	# of projects with companies # of patients getting access to technology
Cost-effective healthcare outcomes and interventions	Develop, disseminate, and evaluate tools to promote brain health	Continue to work with the IDPs to promote the dissemination and implementation of research findings with a focus on 'brain first' projects	# KT products
Health system planning using research and administrative data	Update brain disorders in Ontario report using health systems data	Share data from Brain Disorders in Ontario with community	# community partners engaged
Self-management of health	Host four OBI Public Talks to educate and inform public	Host four public talks in 'Future of Brain Health' theme to inform, educate, and empower people with actionable information	# of people that we engage in our research programs both online and in person

Operations			
Objective	**Milestone**	**2022-2023 activity**	**Metric**
External Review	Identify Co-Chairs for External Review of second half of operations	Identify potential co-chairs and panel members	Co-chairs identified
	Finalize terms of reference for External Review	Prepare terms of reference	Terms of Reference Finalized
	Complete External Review	Review to be undertaken and completed by October 2022	Review completed
OBI Advisory Council	Convene renewed OBI Advisory Council to provide input on OBI programs	Recruitment of members Meetings held	Recommendations received from the advisory committee
Fund Raising	Develop fundraising approach	Prospect meetings, continual identification of prospects, communication with prospects	Onboarding completed
	Internal pre-campaign planning and design	Continual update of case for support and campaign material as required	Fundraising plan in place Case of support completed Donor prospects generated
	Gift solicitation kick-off	Contact potential donors, obtain approvals for donations, sign gift agreements with donors and sign contracts with recipients of funds donated.	Solicitation started
OBI Renewal Application	Submit a renewal application to the Ontario Government for the continued support of OBI	Complete renewal planning activities: • Internal and external review of programs • Review stakeholders • Preparation of new strategic and operational plans • Design and details prepared for new programs • Implement communications and engagement strategy in support of funding applications and renewal activities • Preparation of funding request package	Funding request submitted to government in September 2022