



## REVIEW PANEL REPORT: OBSERVATIONS AND RECOMMENDATIONS EXECUTIVE SUMMARY

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### Introduction

The Ontario Brain Institute (“OBI”), funded in part by the province of Ontario, is a not-for-profit organization dedicated to improving brain health. OBI maximizes Ontario’s excellence in brain science and clinical care by catalyzing an integrated, pan-Ontario system to translate research into care and embed commercialization into research.

The OBI was established in 2010 with three years of proof-of-principle funding, ending March 31 2013. One of the conditions of this funding was that the OBI undertake an external review of its activity and progress. Nominations for the review team were presented to the Board through the Chairs of the Science and Industry Advisory Councils and the President of the Neurological Health Charities, to ensure independence from influence by OBI staff. The review team reviewed all pertinent material, and conducted interviews with selected individuals or teams over 1.5 days from October 9<sup>th</sup> -11<sup>th</sup>, 2012.

The Review Panel consisted of:

- Dr. Samuel Weiss (Chair), Director, Hotchkiss Brain Institute, University of Calgary
- Dr. Howard Chertkow, Director, Bloomfield Centre for Studies in Aging, McGill University
- Dr. Dan Marcus, (SAC Representative), Assistant Professor, Washington University
- Dr. Mark Lundie, (IAC Representative), Director, Research and Development, Pfizer Canada
- Ms. Vanessa Foran, Director, Policy, Partnerships and Government Relations, NHCC
- Dr. Neil Buckholtz, Director, Division of Neuroscience, National Institute on Aging, USA

The observations and recommendations presented below are based on the eighteen month period since the OBI began actual operations.

### Observations

#### 1. **Regarding the quality of research OBI is funding and its potential to be transformational, scientifically excellent, and internationally significant...**

It is clear that the OBI has galvanized the scientific research communities among different thematic areas and neuroscientists in Ontario. This is seen, in particular, in the funded Integrated Discovery Programs, where groups of researchers and clinician-scientists have come together, on a scale and scope not previously realized. This organizational effort in connectivity alone has led to new connections among the community that is producing novel high quality research groups with the potential for high impact research teams in the future.



The primary observation taken from speaking with the lead scientists from one of the groups was a sense of excitement about a process of scientific and translational discovery that did not exist before. Indeed, even though it is still too early to measure any scientific output from the projects, the quality of the scientists involved in each of the funded programs promises a good outlook for the future.

***2. Regarding the success and potential for the OBI's approach to drive (jump start) new initiatives/approaches in brain research...***

The centralizing data-collection and distribution system called "Brain-CODE" is, to date, the most prominent example of new initiatives forming from the provision of integrative forums to researchers and clinicians. The need for and resources available to create this system were not even contemplated in the original OBI strategic plan, but now it has the potential to be a model for other provinces, if not even on a national scale, for data collection systems with enormous translational potential.

Similarly, a clinical trials network and a patient database for neurodevelopmental disorders were novel initiatives that will serve this subfield of neuroscience as a whole and have very quickly moved from concept to reality across multiple centres with the expectation of further site involvement.

***3. Regarding the degree to which the OBI has / is likely to enhance Ontario's profile in the global scientific community and advance Ontario's strengths in neuroscience research...***

It may still be too early to assess true global impact. However, Brain-CODE will be, in the short term, the best vehicle for advancing Ontario's place in the global scientific community. Success will be dependent upon the OBI's ability to attract interest in the large standardized base of patient information and to provide an easy method of accessibility to the data on an international scale.

The OBI's vision is to integrate researchers from both basic and clinical scientific perspectives toward a larger goal of translating discovery into clinically relevant applications more efficiently. With a small budget, this vision can only be achieved by focusing on translational research rather than heavily funding basic neuroscience, which is not traditionally oriented toward collaborative work. It should be noted, however, that basic science, from the example that we reviewed, appears to be very much present in the programs. What is important is that the OBI system integrates the basic science in a way that should lead to more rapid translation of the basic science into clinically relevant programs.

Although it is still too early to apply exact metrics of impact, the three integrative teams funded thus far address important gaps in clinical neuroscience and the needs of the various patient communities. For example, although the cerebral palsy and epilepsy communities are



small, the needs affecting quality of life are significant and these research programs have a high potential to make an impact in those areas.

**4. *Regarding the ability of the Integrated Discovery approach initiated by OBI to show/demonstrate potential for patient impact and impact on health care costs...***

The connection between successful clinical research and measurable impact on patient treatment and outcomes is always difficult to measure. At this stage even a successful clinical program would have difficulty assessing its achievements. However, it must be underlined that each of the problems addressed by the three funded program teams is important and it is feasible that dramatic clinical progress will occur over the funding period of renewal.

If connections between Canadian researchers and international investment can be secured, then the integrated discovery approach to research may have enormous impact on patient care and health care costs. The costs of conducting translational research for every neurological disorder in isolation are becoming too unmanageable, and the current institutional framework and system have not produced the kind of cost savings to the health care system needed. Standardizing assessments (e.g., imaging, clinical) within the province itself provides a unique method of evaluating service. Not taking an integrative approach such as that instantiated by OBI may make patient outcomes worse and the current system will falter. It is the opinion of this panel that we cannot afford to not proceed with conducting research in this manner.

**5. *Regarding the role and success of the OBI's contribution to attracting research investment to Ontario...***

In our review of POND as an integrative program, we saw an example of the embodiment of the primary OBI vision: the catalyzing of a new approach to translational research through the integration of the best scientists from multidisciplinary institutions. Even in this early stage a patient registry and database have been established that, as paraphrased from one of the lead scientists, Dr. Steven Scherer, has provided researchers with new multi-modal funding opportunities that they could not previously access. The linking of their database with Brain-CODE will open up this accessibility further still. Brain-CODE itself has the future potential to revolutionize Ontario's capacity to conduct clinical trials, especially for industry, and will actually attract investment.

The OBI's success at fostering communication and building teams has generated excitement and attracted the attention of industry partners not directly involved in the Integrated Discovery Programs. The joint government (\$11M, FEDDEV) and private sector (\$13M) investment for the development of the neurodevice cluster in Ontario exemplifies the OBI's ability to attract investment dollars in Ontario directed specifically to brain research.



**6. Regarding the initial results and potential for the OBI approach to increase/accelerate the commercialization of IP, attract investment in clinical trials, lead to creation of companies and jobs in Ontario – the potential for the Integrated Discovery approach to ‘bridge the gap’ between discovery and commercialization...**

There is a clear potential for investment in clinical trials, both specific to each of the funded programs and in broader terms from the development of Brain-CODE. Initial job creation opportunities will be directly related to an increase in the number of clinical trials produced.

The development of the neurodevice cluster will be the second major pathway toward job creation because of the large number of contributing players in Ontario. From the collaborations formed in the Integrated Discovery Programs it is also conceivable that neurotherapeutics, neuroimaging and neuroinformatics will be future areas of clustered expertise in Ontario. If these efforts are managed well, these products can be exported globally, enabling the establishment of a new sector and further job creation.

Although any venture toward industrial commercialization is still a future concept, the identification and creation of clusters provide evidence, by nature of their definition, of a potentially self-sustaining engine of economic activity. As mentioned by Mr. Joseph Rotman, the chairman of the board of the OBI, a cluster requires scale and connectivity. Ontario has scale in terms of the number of players who can contribute to the development of neurodevices. What was missing was the connectivity between those players, which is one of the essential gaps that the OBI fills.

### Concluding remarks

The wisdom of the Ontario Government in establishing the OBI is to be commended. The impact that the OBI is likely to have, for patient welfare in the community and in economic development, is potentially huge in the estimation of this panel. This will not be achieved, however, at the current funding level. The Review Panel encourages the OBI to work closely with the Ministry of Economic Development and Innovation to develop a strategic business and funding plan that allows for incremental growth of the resource base, commensurate with agreed upon milestones and deliverables.

The people of Ontario are fortunate to have an outstanding human resource and physical infrastructure, which is at the foundation of Ontario brain science and knowledge translation. The carefully and strategically planned harnessing of this knowledge to action foundation serves to benefit the community’s health and welfare. It is the opinion of this Review Panel that the success of the OBI will enhance this huge asset for generations to come. As noted above, there is a very significant risk on many levels in NOT maintaining and enhancing the activities of the OBI.