STRATEGIC PLAN 2023 - 2026

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1. EXECUTIVE SUMMARY

There is a vast amount of brain and spinal cord-focused work underway in Halifax, including fundamental science, clinical research, drug, and technology development. The Brain Repair Centre is a hub that unites these diverse interests and connects them to the wider community - including government agencies, the private sector, individuals, and societies - who represent patients affected by neurological and mental health disorders-to encourage understanding and support for this research.

This strategic plan builds on the original plan from 2019-2022 and reflects the ongoing operational programs and includes an expansion into mental health research. We will also investigate a new concept entitled “The Aging Brain”. This is of relevance in Nova Scotia with our aging population and overall neurodegenerative “health”. Work must be done to link to appropriate provincial government bodies.

Our highly collaborative, productive, and innovative neuroscience research community has benefitted from the BRC’s guidance, programs, and funding.

Our planning has allowed us to:

- Create and foster an engine of growth in neuroscience research
- Forge partnerships and collaborations
- Educate students, faculty and public with an enhanced focus on historically excluded and marginalized communities
- Build a strong and prosperous future for our researchers
- Be better able to serve the needs of our province with an emphasis on the aging population in NS and beyond
- Provide early-stage commercialization/mentorships

Moving forward, the BRC plans to facilitate the expansion of neuroscience-based research, encourage, and create programs in support of BRC members, and develop linkages with stakeholders to leverage our reach, and grow our funding.

We propose to do this by:

- Increasing sustainable funding sources for
    - programs (grants: BRC-KT/Innovation, Research, Dissemination & Commercialization’s; trainee stipends; collaborative grants; summer studentships; communications.)
    - staffing – administration and communications
- Increasing funding amounts for researchers (Ben Gurion University, NSERC CREATE, Laval), while continuing to expand collaboration opportunities
- Influence policies, locally and nationally (Canadian Brain Research Strategy, Standing Committee on Science and Research, Canadian Association of Neuroscience)

Our conclusion is that in order to implement the strategic plan as outlined in the following pages, it is imperative that the BRC has sustainable funding. In addition, as the BRC has solidified its presence and offers a mature slate of programs it is timely to augment its operating budget and actively seek funds for its researchers, staff complement, and programs.

The validation and momentum of the strategic plan (2019-2022) was the basis for our latest plan. It set the stage for furthering the advancement of neuroscience-based research initiatives and contribute to the Nova Scotia economy through research, innovation, and worldwide partnerships.

2. PLANNING CONTEXT

BACKGROUND

The Brain Repair Centre (BRC) is a research institute at Dalhousie University in Halifax, N.S., involving 50 principal investigators, $13.5 million in annual outside funding, and 235 trainees and staff in a wide range of research pursuits. Building on our strong foundation of facilities, programs, talent, and partnerships, the BRC is attracting some of the world's best neuroscientists and becoming Canada's premier centre for neuroscience research.

Since 2012 neuroscience-based programs, grants and its people have been key aspects of the BRC's strategic focus. This has been underpinned through its policy component which has provided the accompanying rationale for its programs and initiatives. The BRC has been an advocate for its research community through development of policies important to this community.

Recent BRC testimony to the House of Commons Standing Committee on Science and Research to encourage geographic diversity when supporting research, adjusting the match requirements for the CFI (Canada Foundation for Innovation) projects to allow the smaller provinces to share in the proceeds reflect some of its advocacy and policy efforts.

Importantly the BRC spans a broad reach from academia through to the patient. Various participants who are involved with the BRC include researchers, students, clinicians, Societies, government, companies, patients, and the public.

There is a vast amount of brain and spinal cord-focused work underway in Halifax, including fundamental science, clinical research, and drug and technology development. The Brain Repair Centre is a hub that unites these diverse interests and connects them to the wider community—including government agencies, the private sector, individuals, and societies representing people affected by neurological and mental health disorders—to build understanding and support for this research.

At the same time, the Brain Repair Centre encourages neuroscience innovation and commercialization, with funding from the Nova Scotia Department of Advanced Education. Because of this support, the BRC can also sponsor entrepreneurship training for (young) neuroscientists, host learning sessions for its members, and provide grants to researchers who are bringing international meetings to Halifax.

Together with its partners, and with the engagement and support of the community, it has an opportunity to foster a vibrant and diverse neuroscience sector in Nova Scotia's emerging innovation economy. In so doing, it can help our region cope with and mitigate rising rates of neurological and mental health illnesses.

The BRC serves its members through

- a slate of programs including grants focussing on research and innovation
- policy analysis to define trends and drivers of neuroscience research and innovation
- an emerging new focus on communications
- fund raising

A concerted effort beginning in 2012 was made to identify member needs and shape programs accordingly. Initially much effort was given to deliver programs and provide grant opportunities around innovation. In parallel research themes labelled foci were also identified to ensure cross fertilization of ideas and ultimately collaborative opportunities.
A decade later our analysis has revealed the following to best position our Institute in the coming years:

1. Neuroscience research is vitally important and at a frontier to better understand the brain and spinal cord function. Few treatment options exist for ALS and Alzheimer's disease - which is the second leading cause of deaths worldwide.
2. Research is dependent upon a) funding and b) people
    a. We will strive to increase research funding investments for our members. Avenues to pursue include lobbying for regional specific investment from federal institutions, altering the matching fund component, etc. We will work with the Canadian Brain Research Strategy initiative on these matters. In tandem, we will begin an initiative through Dalhousie to raise funds
    b. An increased focus of our programs will be on our trainees and areas of focus will include career development/opportunities, fair and equitable stipend support, grant opportunities, travel awards, etc.
3. Our research themes will be:
    3.1. AMAP (Impaired Motor Function)

    Dalhousie University is home to a large group of spinal cord researchers. Together, they aim to restore function and mobility in people with diseases or injuries that affect their spinal cord. These researchers — who include neurosurgeons, neurobiologists, electrophysiologists, physiatrists, and physiotherapists — are learning how neurons develop, specialize, and form neural networks to control movement and other functions, how the nervous system responds and adapts to illness and injury, and how function and movement can be preserved, restored and/or rehabilitated after an illness or injury.

    In addition to their affiliation with our centre, these researchers and colleagues outside Nova Scotia have formed the Atlantic Mobility Action Project to strengthen their collaborative efforts to restore mobility and important functional abilities to people whose nervous systems have been damaged by injury or disease.

3.2. Aging Brain

Our research impacts people who live with neurological diseases, mental health disorders and injury, as well as their caregivers, business partners and community members. Much of the work of the BRC is focussed on, in many cases, an aging population who are predominately afflicted and/or debilitated.

According to the WHO: By 2030, 1 in 6 people in the world will be aged 60 years or over. "In fact, Stats Canada data (Proportion of the population 0 to 14 years and 65 years and older, July 1, 2021, Canada, provinces and territories (statcan.gc.ca) shows 1 in 5 Canadians or 18.5% aged 65 or older and that Newfoundland and Labrador (23.1%), New Brunswick(22.5%) and Nova Scotia (21.8%) top the list .

While we know the numbers and projections regarding aging, this does not address the necessary additional resources and burden on caregivers/families, medical system, and economy. We need to ensure that there is a concerted effort to focus our research on neurodegenerative diseases and disorders and fund accordingly.

3.3. Traumatic Brain Injury

Much work has been dedicated to developing a Traumatic Brain Injury Research Program (TBIRP) since 2016. It has been spearheaded by brain injury survivor, Peter Covert and his advocate, Ken Nason. Regretfully due to the pandemic progress has slowed, however it is anticipated that it will now pick up again.

In tandem, there is active research happening with the hope that the additional resources from TBIRP will further the depth and breadth of research.

Salient facts about TBI include:

- 5,000 cases in NS
- 200,000 cases in Canada
- 5,000,000 cases on a global basis
- Global Estimated Cost: $400 billion (health care & lost productivity)

3.4. Neurodevelopment

How the brain develops in utero and beyond is key in understanding neurodevelopment disorders. Research includes the study of emotions, learning in children and youth, brain circuitry and more. These disorders can persist through the person's life and require varying degrees of support. It is estimated that any of these disorders can impact approximately 5-20% of the world's population.

3.5. Mental Health - It has become apparent that the BRC needs to incorporate its research strength in mental health. In addition, Dr Tibbo joined our Executive Committee as we strive to solidify our presence and expertise in this important area. Our mental health focus at the BRC, broadly speaking has a focus on diseases and disorders, such as mood disorders (bipolar and depression), autism, schizophrenia, ADHD, and pain. The end goal is to

advance the understanding, prevention, treatment and outcomes for these diseases and disorders.

In 2019, **1 in every 8 people, or 970 million** people around the world were living with a mental disorder, with anxiety and depressive disorders the most common (1). In 2020, the number of people living with anxiety and depressive disorders rose significantly because of the COVID-19 pandemic. Initial estimates show a 26% and 28% increase respectively for anxiety and major depressive disorders in just one year (2). While effective prevention and treatment options exist, most people with mental disorders do not have access to effective care. Many people also experience stigma, discrimination, and violations of human rights.

WHO Mental disorders (who.int)

Trainees

The BRC has spent the past 10 years encouraging the pursuit of commercialisation through the funding support acquired from the NS government. However, as we more intensely engage with our trainees it has become apparent that with inflationary cost of living, various increases, etc., they are facing financial hardship and, in some cases, mental anguish. In response, the BRC will also focus its efforts to increase finding for our trainees to mitigate these effects, where possible.

Research Funding

The conduct of research requires funds. Largely the bulk of funding comes from the federal government (CIHR, NSERC, SSHRC), a bit from Research NS, NIH, other select foundations and societies. These funds are necessary for the researcher to set up (equip) and operate their lab - pay trainees and technicians, etc.

The BRC advocates for its researchers to obtain funding and lobbies the government on their behalf. Funding is also required to develop therapies, technologies, and ultimately commercialize research - another aspect where the BRC actively supports its research community. It delivers programs such as collaborations with internationally and nationally based universities and provides grants.

The focus of the BRC in this strategic planning context will be to actively pursue avenues to source additional funds in support of its researchers, programs, trainees, and staff.

Commercialisation/Innovation

- Innovation (KT) Grants
- Research, Development & Commercialisation
- Commercialisation Training / Mentorship

REPORTING RELATIONSHIPS

As the BRC has evolved in recent years, two main areas of operation, coupled with complex reporting relationships, have resulted in:

1. Organisational requirements overseen and administered by Dalhousie and AE (AE deliverables found in Appendix B); and
2. Programming overseen and administered by BRC staff.

We strive to have an efficient and effective organisation buttressed by neuroscience-focussed programs.

Our strengths are that we are a forward thinking, people-focused, results-oriented institute.

ACCOMPLISHMENTS

Over the past five years, the BRC has achieved significant accomplishments that have moved the neuroscience research community at Dalhousie into a whole new realm locally but also nationally and internationally.

This strategic plan is a continuation of the 2019-22 plan and reflects the ongoing operational programs and unique stand-alone projects.

Below is a listing of the accomplishments and programs, details of which are found in Appendix B (*hyperlinks to appendix if underlined*).

- Knowledge Translation (KT) & Research, Dissemination & Commercialisation (RD&C) Funding
- Dalhousie Medical Research Foundation (DMRF) Trainee Studentships
- BRC-BGU Collaboration
- Traumatic Brain Injury Research Partnership Business Case Development (ongoing)
- Liaison with local societies
- Canadian Brain Research Strategy (CBRS) Policy and coordination work
- Grant guidelines for third party assessments
- Global Affairs Canada Research Initiative (ongoing)
- BRC Tours (Minister AE)
- Standing Committee Testimony (2022)
- New Comms program (new hire 2021)
- New website (Spring 2021)
- Promotional video (Summer 2021)
- Ministerial meetings
- Intellectual Property (IP) pilot program 2021

Additional Programs

- Brain Awareness Week
- Brain Bee
- Slam Your Neuroscience Competition
- Research Day
- Journal Clubs
- Brain Waves
- Communications, Financing, Reporting & Human Resources
- Policy analysis Policy and Planning Development, Execution and Reports
- AMAP meetings
- TBI meetings
- Innovation/commercialization seminars
- Commercialisation Mentorships

3. BRC RESEARCH IN ACTION

BRC VALUE PROPOSITION

This BRC research community has proven it can accomplish a lot in the realm of brain repair—together, we've built a world-class research facility (the Life Sciences Research Institute) and a highly collaborative, productive, and innovative neuroscience research community that's making an impact on the prevention, diagnosis and treatment of brain-related diseases and injury.

The results of this research are crucial as Nova Scotia's population ages and faces ever-rising rates of neurodegenerative disease. Our ongoing neuroscience research will assist in the creation of diagnostic, preventive and treatment strategies, while creating jobs and attracting talent to Halifax from all over the world. Ongoing funding is necessary for success, and we continue to keep this as a priority.

It's a powerful win-win scenario that requires sustained commitment and investment.

Aging Brain - a comprehensive approach to individuals and diseases is warranted and age is often a constant in many scenarios. Funding, mechanisms of action, and coordination would be greatly enhanced with this approach.

FOCUSED RESEARCH INITIATIVES CONTINUE

The BRC has grouped its researchers around themes, referred to as foci. The foci are also placed into two categories: research, or research and clinical care. This approach supports knowledge sharing and collaboration. The BRC funds these groups with an emphasis on hosting events and forums with invited experts to share knowledge and share ideas.

There are currently five foci described in detail in Appendix D:

1. Impaired Motor Function - AMAP (research and clinical care model)
   Lead: Dr. Victor Rafuse
2. Traumatic Brain Injury Research Partnership - TBIRP (research and clinical care model)
   Lead: Dr Alon Friedman; Advocates: Peter Covert/Ken Nason
3. Aging Brain & Neurodegeneration (research model)
   Lead: Dr. George Robertson
4. Neurodevelopment cluster (research model)
   Leads: Dr Tara Perrot, Dr. Angelo Iulianella
5. Mental Health (research and clinical care model)
   Lead: Dr. Phil Tibbo

CURIOSITY DRIVEN RESEARCH

Curiosity is the driving force behind scientific discovery, which in turn leads to medical and technological breakthroughs. The Brain Repair Centre's members are keenly aware that a deeper understanding of the normal functioning of the brain and nervous system is the gateway to effective means of preventing, diagnosing, and treating neurological and mental health diseases. The Brain Repair Centre therefore seeks to strengthen curiosity-driven neuroscience research at Dalhousie University and its affiliated teaching hospitals.

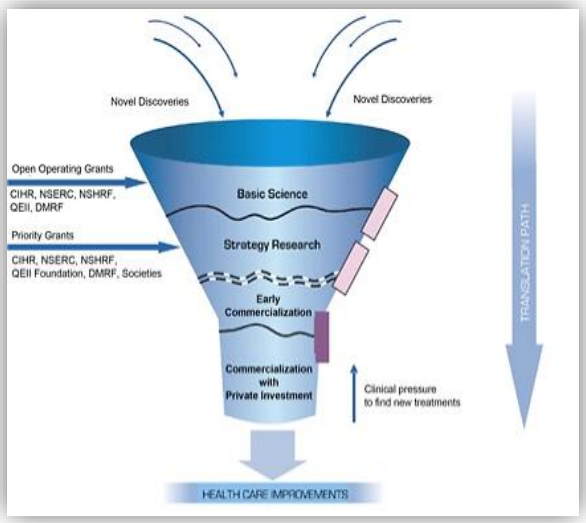
Dalhousie University, the IWK Hospital and QEII Health Sciences Centre are home to a vibrant neuroscience research community, with principal investigators, research associates and trainees passionately dedicated to revealing the mysteries of the brain. In broad strokes, their research aims to shed light on how:

- Neurons arise and form complex networks in the developing nervous system
- The brain focuses attention, learns, and forms memories
- The brain processes sensory inputs (through sight, smell, taste, touch, and sound)
- The brain and nervous system change with age, injury, environ- mental factors and disease
- Circuits in the spinal cord control movement
- The brain and nervous system can be protected and restored in the face of age, injury, and disease.

The Brain Repair Centre's role in supporting curiosity-driven research includes:

- connecting researchers from diverse fields, to share ideas and find common ground for collaborations, through such activities as networking sessions and journal clubs
- helping to establish and maintain sophisticated shared research facilities that would be too expensive for one researcher to establish, staff and maintain
- raising the profile of neuroscience research, helping to attract top scientific talent from across Canada and around the world
- being a champion of neuroscience research
- identifying and providing grant opportunities
- provision of national and international grant opportunities
- advocacy for increased research funding particularly in neuroscience research

COMMERCIALIZATION & INNOVATION



Recognizing the potential of made-in-Nova-Scotia neuro-innovation to save millions of health care dollars while fuelling a growing knowledge economy, Nova Scotia Department of Advanced Education has provided the Brain Repair Centre with funding for programs that support entrepreneurship and technology transfer in the neuroscience sector.

As a hub for neuroscience innovation, the BRC provides its members with opportunities to learn the ins and outs of commercialization and to connect with people and organizations in the broader community who can help them transform their ideas into reality. In addition to learning and networking opportunities, BRC provides direct funding to researchers through its unique knowledge translation grant program.

Brain Repair Centre Innovation Grants (Knowledge Translation)

Brain Repair Centre - Knowledge Translation / Innovation Grants (BRC-KT/I) help researchers launch their discoveries as commercially viable services and technologies that will help people. *In 2022 the BRC renamed this grant to Innovation Grant and will relaunch them.* Funded by Nova Scotia Economic and Rural Development and Tourism and launched in 2013, the BRC awards the grants through an annual competition. An arms-length scientific- review committee judges the applications and awards up to three $30,000 knowledge translation grants each year. Successful applicants can use the knowledge translation grants to patent their inventions, conduct proof-of-principle or market studies, and engineer prototypes, among other things.

The intention is to award 3-5 KNOWLEDGE TRANSLATION grants on an annual basis, based on funding. See Appendix E for details of previous BRC Knowledge Translation grant awardees.

Brain Repair Centre Research Dissemination & Commercialisation Grants

The Brain Repair Centre - Research, Dissemination & Commercialization (BRC-RDC) program supports events and meetings that contribute to the dissemination, exchange, and commercialization of research aimed at improving brain, neurological and mental health outcomes for Nova Scotians and Canadians.

Commercialisation Training/Mentoring

The BRC has provided commercialisation training, workshops, seminars, and advice over the past years and ran an Intellectual Property (IP) session in 2021. We continue to have access to our experts who in turn provide mentoring. This type of program requires ongoing financial investment to attract and retain requisite expertise.

ECONOMIC IMPACTS

Together, the lead investigators hold an estimated $13.5 million per year in external peer-reviewed grant funding—an average of $270,000 per lead investigator per year (primarily from Canadian Institutes of Health Research (CIHR), Natural Sciences and Engineering Research Council of Canada (NSERC), Atlantic Canada Opportunities Agency (ACOA), and the Nova Scotia Health Research Foundation (NHRF), now Research Nova Scotia. Research shows 70 per cent of grant funding goes to salaries for research trainees and staff.

Current Employment: 235[1] Trainees and Staff

The lead investigators run research programs involving 235 trainees (students, fellows) and staff (research associates and technicians)—an average of eight trainees/staff per lead investigator.

To date, the lead investigators have supervised or co-supervised over 550 Masters students, PhD students and postdoctoral fellows to successful completion of their programs—an average of 12 per lead investigator.

These positions require highly trained individuals earning highly competitive salaries. With the significant outmigration problem of Nova Scotia's graduate, the BRC provides an opportunity for these young people to stay here, employed in positions that allow them to further their careers.

Publications	2022	2021	2020
Journals	146	270	237
Conferences	25	83	92
Book Chapters	3	9	11

HQPs	**2022**	**2021**	**2020**
Postdoc	25	23	9
PhD	66	86	46
MSc	62	66	47
BSc	81	45	55
Total	*234*	*220*	*157*

Patents: 53[1] Secured and Pending

The lead investigators collectively hold or are in the process of securing intellectual property on 53 innovations. These include a range of devices and compounds for diagnostic, neuro-protective and therapeutic uses. A number of these patents have the potential to be commercialized and researchers are in varying stages of considering the options for moving forward.

[1] *2022 figures – subject to change annually*

POLICY IMPACT

Ongoing analysis of policies, programs, and climate for research. Drafting of policies, position papers, impact assessments, responses, etc., to various issues (domestic and international) re neuroscience collaboration and coordination with non-governmental organisations (NGOs), government (federal and provincial) and upon request, with industry *(see list of (Partners/Collaborators below).*

Current policy work at the BRC is around the following topics:

- Canadian Brain Research Strategy (CBRS) is developing a comprehensive approach into conducting brain research in Canada
- Aging Brain / Neurodegeneration – Nova Scotia has the second oldest population in Canada. Age related brain changes can adversely impact an individual. A strategy to focus research and better assist our citizens is needed
- Standing Committee in Science Research (SRSR) – testimony was given by Dr Vic Rafuse in 2021, in support of science research
- Trainees have raised concerns relative to stipends and career development
- Increasing investment (federal/provincial funding) into research
- Taxing traffic tickets/infractions in support of a research fund

Typically, policy positions / papers are drafted and debated with relevant organisations

4. BRC STRATEGIC OUTLOOK

A Mission to Connect and Engage the Neuroscience Community

Great science requires not only great creativity but great connectivity as well, to bring brilliant minds together to solve mysteries and generate ideas. The Brain Repair Centre plays an important role as a hub for connecting scientists and clinicians and building a more cohesive, impactful research community. This also involves connecting with the international neuroscience community and engaging the broader local community in the larger research mission.

Mission Statement

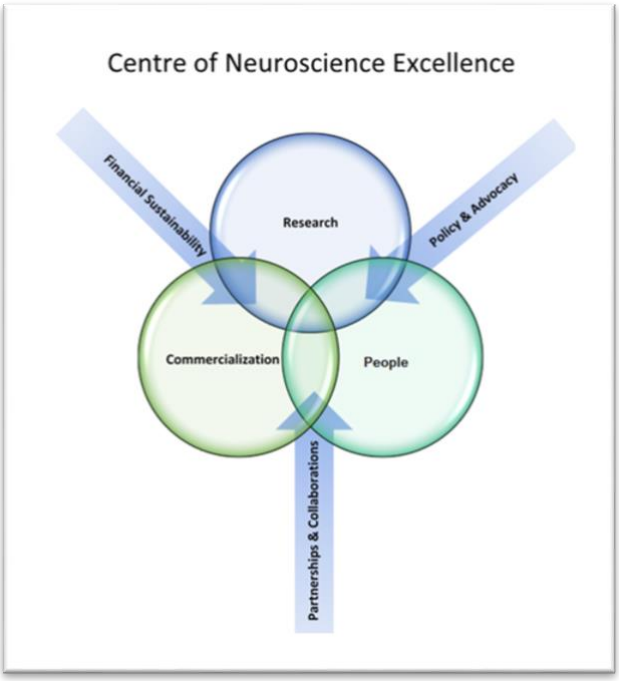
The mission of the BRC is to provide programs and services to advance neuroscience discovery, improve neurological, mental health and clinical care while contributing to the Nova Scotia economy through research, innovation, and world-wide partnerships.

This mission recognizes that:

- It is important for the BRC to engage with the business community locally, nationally, and internationally in an effort to commercialize its research and contribute to the provincial economy
- The BRC provides a unique research environment that is conducive to maintaining a competitive edge needed to attract national and international research funding
- It is also important for the BRC to be recognized internationally as a leader in its field to attract expertise, partnerships, and funding from around the globe
- It can play a role in designing and influencing public policy development in health and economic development to benefit the broader Nova Scotian community
- In its role as facilitator, the BRC can provide a hub to bring together the various stakeholders in the neuroscience community including researchers and students; donors, funders, and investors; business and government; and societies, charities, and foundations

AN AMBITIOUS VISION FOR THE FUTURE

Thanks to novel approaches and new experimental techniques, BRC researchers and their colleagues around the world are making rapid and enormous strides toward understanding the brain and spinal cord and how these complex systems change from in utero through to old age, during illness and injury. This knowledge will lead to new technologies and treatments with the potential to save and transform lives.



The Brain Repair Centre aims to play a leadership role in achieving this ambitious vision. To do this, it must continue to be highly competitive in obtaining research dollars—not only from national and provincial granting agencies, but also through philanthropic organizations and individuals that share their vision.

It must ensure that its research environment continues to attract world- leading scientists and trainees to Halifax, where they can build sustainable and collaborative research programs and launch successful entrepreneurial ventures. Finally, it must engage more fully with the communities it seeks to serve, so that it may share in their mutual successes.

Vision Statement

Building on its solid foundation, the BRC's vision for the future is to be the premiere neuroscience research and innovation centre in Canada by attracting the best neuroscientists in the world doing research in neurological diseases and mental health disorders.

Inherent in this vision is:

- The importance of attracting the top calibre neuroscientists from around the globe
- The recognition of the BRC as a centre of excellence in brain research for neurological diseases and mental health disorders
- The engagement and commitment of members and other stakeholders who believe in and support the vision and the future sustainability of the BRC

CENTRE OF EXCELLENCE

With a demanding mission and an ambitious vision, the BRC has charted a path forward for the next three years that will build on its existing foundation and take the organization to the next level. The goal over the next three years is for the BRC to build a centre of excellence based on three interrelated strategic programs:

- A diverse and collaborative research program that encompasses the full spectrum from fundamental discovery research to knowledge translation, to development of diagnostics, therapeutics, techniques, and services such as clinical care. All of which are represented in our tagline: Good Research. Better Clinical Care
- Strategic partnerships and relationships to fuel the continuum of discovery through to commercialization
- A program that mentors, educates, and trains the highly qualified personnel who comprise the BRC research teams and offer a fair wage and benefit package

Three intersecting themes will support and drive the three strategic programs:

1. Strong local, regional, national, and international partnerships and collaborations will be essential to achieving success
2. For the Centre to grow and be sustainable, it needs committed champions, a marketing and communications program and a financial model that draws on diverse funding sources
3. Being a champion, partner for policymakers and advocate in the prevention of brain disorders, promotion of healthy aging, and fostering academic research and private enterprise in the life sciences sector is an important role for the BRC

Building a centre of excellence in neuroscience research means that a world class team of researchers, collaborating with colleagues within Dalhousie, the IWK and the QEII Health Sciences Centres, and a network of national and international collaborators, working in a state-of-the art facility is conducting ground-breaking research that will enhance neurological, mental health, and clinical care, locally and around the world.

This centre will contribute to the provincial economy by:

- Attracting investment interest from within and outside Nova Scotia
- Providing high calibre jobs on multiple research teams
- Procuring supplies and equipment locally where possible
- Working together with the business and investor communities to commercialize research in a dynamic and collaborative environment
- Spinning out life sciences technology, services, and businesses

STRATEGIC PROGRAMS

Collaborative and Innovative Research

- Continue the implementation of the the new brain research partnership between Dalhousie University and Israel's Ben-Gurion University (BGU). Details are found in Appendix C
- Develop a strategic research program based on the work being undertaken within the foci
- Develop a portfolio of grants to provide opportunities for BRC researchers to pursue neuroscience research
- Attract and retain internationally recognized researchers (and their teams) whose research aligns and complements the BRC strategic research plan
- Traineeships – identify funding for trainees
- Mentor and support trainees towards career opportunities
- Student travel awards
- Attract research associates with linkages to industry to forge new relationships, strengthen existing ones and bring industry insights to the research teams

Commercialization through Strategic Partnerships

- Develop a strategic commercialization plan/program to provide guidance to the BRC and individual researchers as they move through the spectrum of commercialization activities
- Provide programs and support to assist researchers who own their IP with commercializing their research
- Create and implement grant opportunities for the purpose of supporting researchers in their commercialization efforts
- Develop closer relationships with, for example, the business, engineering, and computer science faculties in universities across the province to support neuroscience researchers' commercialization efforts
- Consider the viability of offering fee-for-service research and consulting to support industry product and services development efforts
- Strengthen the relationships with InvestNS, BioNova, and Halifax Partnership, amongst others, to further enhance researchers' innovation and commercialization efforts

Attraction and Retention of Highly Qualified Personnel

- Create and facilitate co-op and other experiential learning opportunities for undergraduates in neuroscience and related programs
- Bring together researchers and trainees regularly through a series of events, seminars, and education opportunities such as neuroscience research days, Brain Awareness Week, the annual Research and Poster Day event, and others
- Promote student interest and engagement through vehicles such as the Journal Clubs, travel stipends, summer student stipend for undergrads to work in research labs (e.g., Brainchild)
- Facilitate entrepreneurship mentoring and education programs

Policy/Communications

- Briefs to government/NGOs and educational seminars
- Testimony to House of Commons Standing Committee
- Researcher profiles
- Social media work
- Reports
- CBRS/CAN/Government liaison and policy development

INTERSECTING THEMES

Partnerships and Collaborations

The success of the BRC will depend in large part on the strategic partnerships it builds locally but also nationally and internationally with a broad range of partners and collaborators. The table below provides an overview of current and potential partners and collaborators.

These partnerships and collaborations are of significant importance to the success of the BRC. Evidence of the success of these relationships have been discussed throughout this document including the reinstatement of the Oversight Committee, the highly successful national neuroscience leaders' meeting, the ongoing development of the Traumatic Brain Injury Research Partnership, the Acquired Brain Injury Strategy collaboration with the Brain Injury Association of Nova Scotia and the Department of Health and Wellness, and the new research partnership with Ben Gurion University, to mention just a few.

The BRC will continue to work at strengthening its partnerships and collaborations, particularly with the organizations shown in the table below.

Partner/Collaborator Type	Specific Organizations
Government	• NS Department of Advanced Education • CFI, Research Nova Scotia • NS Health • NS Department of Health and Wellness • ACOA, NRC, CIHR, NSERC, SSHRC, CFI • Brain Canada • NIH, DoD, EU • Global Affairs Canada

Partner/Collaborator Type	Specific Organizations

Universities	• Dalhousie
	  – President' Office
	  – Vice President Research Office
	  – Medical School
	  – Business, engineering, and computer science faculties
	• Other Nova Scotia and Atlantic Canadian Universities
	• Ben Gurion University
	• Université Laval

Research Community	• NS Health • Research NS • IWK • Other brain research centres nationally and internationally
Business community	• Bio Nova • Local / regional life sciences companies • Local / national / international investment community • Commercialization and investment experts
Foundations	• QEII Foundation • IWK Foundation • Weston Foundation
Health Societies	• Parkinson's Society Canada • Mental Health NS • Alzheimer's Society of NB & NS • MS Society of Canada • Alzheimer's Association • Epilepsy Association of the Maritimes (EAMS) • Brain Injury Association of Nova Scotia (BIANS) • Canadian Paraplegic Association • Citizens United for Research in Epilepsy (CURE, US) • Glaucoma Society of Canada • Heart and Stroke Foundation • Canadian Psychiatric Research Foundation • Alzheimer's Society of Canada
Brain-related organisations	• Canadian Association for Neuroscience (CAN) • Canadian Brain Research Strategy (CBRS) • Society for Neuroscience (SfN)

Promoting Industry Partnership

BRC is producing new promotional material designed to encourage industry partnership with BRC researchers. As part of the Dalhousie School's Centralized Operation of Research Equipment and Support (CORES) program, BRC has access to sophisticated laboratory research facilities. The facilities, complemented by leading-edge expertise, create an ideal environment for industry partnerships. BRC's expertise in animal behaviour for assessing movement disorders, anxiety and neurodegenerative disorders and its state-of-the-art imaging facilities for neuropathological research (CMDI) are just two examples of where potential industry partnerships are viable. BRC will continue to promote these partnership opportunities in 2023 and beyond, with a goal to increasing awareness of Nova Scotia neuroscience research and secure new industry partnerships and funding.

These activities must be supported by a marketing/communications program and a targeted fund-raising initiative.

5. ORGANIZATION STRUCTURE

GOVERNANCE

The BRC governance consists of a three-tiered structure that includes the Dalhousie Senate, the BRC Oversight Committee and the BRC Executive Committee.

The Senate

The Senate is the university's senior academic governing body, responsible for the approval of new programs; approving the granting of degrees and diplomas; and managing the reviews of Faculties, Centres and Institutes. The Senate Reviews of Centres and Institutes Policy provides a process for accountability by the university and its communities, improvement for the university's academic/research and support activities, and information for planning, budgeting, and other decision-making processes.

Each May the BRC files an annual report to the Senate. The general objectives of the Senate review process are to: i) provide a vehicle for accountability by the university to its communities; ii) improve the University's academic/research and academic/research support activities; and iii) provide information for planning, budgeting, and other decision-making processes. The principal focus of the review of a Centre/Institute is to consider its academic/research plan, current performance, relationships, and contribution to the mission of the university.

Reviews are conducted according to the *Procedures and Terms of Reference for Committees Conducting Senate Reviews of Centres and Institutes*[2]

BRC Oversight Committee

The function of this committee will be reviewed over the course of the 2023-26 strategic plan and a recommendation made to its Chair. The purpose of the Oversight Committee is two-fold: i) to provide oversight to the BRC and guide its actions as a Research Institute of Dalhousie University; and ii) to advocate for support to ensure continued success of the BRC.

It is specifically accountable for overseeing the following:

- The strategic direction of BRC
- Research and fiscal aspects of the BRC (including review of annual reports and financials)
- Implementation (where appropriate) of recommendations from the 2016 External and Internal Senate Review reports
- Analyse the need for a Scientific Director of the BRC.

[2] Dalhousie University website; https://www.dal.ca/dept/university_secretariat/policies/research-/senate-reviews-of-centres-and-institutes.html

Membership of the Committee consists of the following nine individuals (or designates):

1. VP research Dalhousie University
2. Deans of Faculty of Medicine
3. Dean of Faculty of Health
4. Dean Faculty of Science
5. Minister, Advanced Education (AE)
6. VP Research of the IWK
7. VP Research NS Health
8. BRC Director
9. BRC COO

It is anticipated that a review will include a review of relationships that have a direct impact on the BRC, for the Oversight Committee make up. While the Department of Health and Wellness does not serve on the Committee, the AE representative is responsible for briefing the Department.

The Committee meets biannually with the role of the chair rotating among the Deans.

BRC Executive Committee

The BRC is governed by an Executive Committee which includes one representative from each of the four research foci, the BRC Director and the BRC COO and since 2021, a Trainee representative.

The primary accountabilities of the Executive Committee are as follow:

- Develop and implement the BRC research plan and program
- Establish and oversee implementation of the strategic direction for the BRC
- Respond to Senate Reviews.

The Committee meets three times per year and is chaired by the BRC Director.

OPERATIONAL STRUCTURE

The operational structure currently consists of two part-time positions: the Director, COO and full-time Program Administator (PA). Reporting to the Director, the COO is accountable for day-to-day operations of the BRC, implementation of the strategic plan, and management of the PA. As additional funding becomes available, full-time fundraising and communications professionals will be hired.

Minister Diab advanced salary funds for hiring a communications profession should be added to the staff complement. It is clear after hiring a communications specialist and redesigning our website and social media plan that a full time position would be advantageous.

6. FINANCIAL SUSTAINABILITY

Building a sustainable financial model is essential to the growth, credibility, and survival of the BRC. Essential to the success of the BRC is a diverse portfolio of revenue sources and a champion(s) who believes in the work of the organization.

The BRC's revenue comes from the Department of Advanced Education (AE), Dalhousie Faculty of Medicine and Dalhousie Medical Research Foundation and the QEII Foundation.

Government

The provincial government through AE has contributed approximately $250,000 per year since the early 2000's. It is hoped that at a minimum this level of funding will be maintained over the next five years and potentially, increased. In addition, we received $11,000 to hire a Communications Assistant which cemented our realisation that a new position with a focus on communications is essential. Additionally, a fundraising professional would facilitate finding new sources of funding to ensure the growth and sustainability of the BRC.

Donors

Working in partnership with various organisations and donors, funds are distributed to researchers and trainees within the BRC.

The BRC will also need to work collaboratively with the foundations and relevant societies to develop fundraising initiatives that will raise the profile of and funds for the BRC. Through the efforts of a fundraising position within the BRC, much could be achieved.

University

Over the past several years, Dalhousie Medical School has been providing $50,000 per year to the BRC for a Program Administrator. It is hoped that this level of funding will be maintained or increased.

Fee-for-service research and consulting

This fee-for-service model does not exist currently and will need to be developed so that the BRC administration has a process for taking work in, contracting, and disseminating it; providing the invoicing and accounts receivable function, as well as an accounts payable function to pay the individual researchers; and an oversight function to ensure the work is being done as contracted. For these services, the BRC would take an administrative percentage that should cover the overhead costs and generate some additional operational revenue. A feasibility study would need to be undertaken to determine the viability of this endeavour over the next five years.

7. PERFORMANCE MEASURES

BRC's primary performance measures are defined by the AE funding agreement deliverables found in Appendix A. Other measures of success include:

- Improved clinical care through new clinical protocols
- Increase in number of life sciences companies, products and services, exports, revenues, and jobs
- Increase in number of patents
- Expanded research program including new research partnerships/collaborations, an increased number of researchers and their teams (jobs)
- Development and retention of other new partners and collaborators
- Increase in research funding (particularly through leveraging)
- Increased communication of research strengths and expertise
- Expansion of, and number of programs offered
- Increase funding support to trainees
- Increase the number of grants to members
- Website and social media traffic tracking

See Operational Plan for a complete list of accountability measures

APPENDICES

Appendix A – Advanced Education Deliverables

Appendix B – Accomplishments and Programs

Appendix C – BRC Foci

Appendix D – Executive Committee Terms of Reference

Appendix E – BRC KNOWLEDGE TRANSLATION Grant Awardees

APPENDIX A – BRC DELIVERABLES PER AE FUNDING AGREEMENT 2022

BRC DELIVERABLES (*Accountability Measures)*
As per DAL/BRC – AE FUNDING AGREEMENT 2022

- Activities funded by BRC, the recipients, and the nature of the activities undertaken
- Updates on BRC programs initiated within the neuroscience community, or progress with existing programs
- The 2022-23 budget and actual expenses
- A five-year summary (2018-19 to 2022-23) outlining the number of Knowledge Transfer Grants awarded by the BRC, (incl. the amount of external funding leveraged)

Objectives
BRC will facilitate innovation and the commercialization of research in a dynamic and collaborative environment.

BRC will promote Nova Scotia's capacity in brain research and will promote collaboration with and among local, Canadian, and global partners that further positions Nova Scotia as a leading region in brain repair research.

BRC will work closely with the Province of Nova Scotia to identify critical health issues, with particular interest in neurodegenerative health, related to Nova Scotia's aging population and will participate in identifying collaborative actions that will help address issues of wellness, health, and quality of life for aging Nova Scotians.

BRC will communicate Nova Scotia's research strengths and expertise in brain repair for the purposes of attracting research and innovation funding from federal and other sources, attracting international conferences, and recruiting highly qualified personnel to live and work in Nova Scotia.

APPENDIX B – BRC ACCOMPLISHMENTS AND PROGRAMS

RESEARCH FOCI

The BRC has grouped its researchers around themes, referred to as foci. The foci are also placed into two categories: 1) research or 2) research and clinical care. This approach supports knowledge sharing and collaboration. The BRC funds these groups with an emphasis on hosting events and forums with invited experts to share knowledge and share ideas.

There are currently five groups:

- Atlantic Mobility and Action Project (research and clinical care model)
- Traumatic Brain Injury Research Partnership - TBIRP (research and clinical care model)
- Neurodegeneration / Aging Brain (research model)
- Neurodevelopment (research model)
- Mental Health

The groups are described in detail in Appendix C.

BRC GRANTS

While the Brain Repair Centre operates on lean operating budget of just over $300,000 per year, it is committed to help local researchers kick-start their studies and increase their opportunity to secure additional funds. The BRC grant program, funded out of this operating budget, includes independent, peer-reviewed grants divided into three categories:

- BRC Knowledge Translation (KT) grants to move discoveries and innovations along a path towards commercialization; $ 427,123 in KNOWLEDGE TRANSLATION grants 2018-22
- BRC Research, Dissemination & Commercialization grants (Research, Dissemination & Commercialisation) to support events and meetings that contribute to the dissemination, exchange, and commercialization of neuroscience research; $ 10,000 in RDC grants 2018-22 and
- BRC Discovery grants designed to stimulate creative ideas and innovative neuroscience research projects.

Funding from the Knowledge Translation grants have supported researchers in leveraging an additional $5 million in external funding.

STUDENT AWARDS AND STIPENDS

DMRF Student Traineeships - $100,000 awarded in 2022

The objective of this project is to provide funding to five trainees (awarded to PhD students entering their 3rd or subsequent year) to maintain stable funding for students committed to finishing their PhD. Funding to be spent over 1-2 years to a maximum of $20,000.

In doing so, the work of the BRC foci (Neurodevelopment, Neurodegeneration, Mobility and Traumatic Brain Injury) will continue to:

- Increase studentships and funding for trainees in labs within the BRC
- Reduce the burden on the PIs so they can maintain their lab research and/or develop new projects; diversify their research teams
- Enhance the overall neuroscience graduate program

Student Travel / Conference Grants

The BRC makes it a priority to help its student researchers expand their knowledge and build national relationships. $30,000 awarded in 2020 for students to attend various conferences. No travel awards in 2020/21/22 due to Covid travel restrictions.

TRAUMATIC BRAIN INJURY RESEARCH PARTNERSHIP

In 2017 the BRC received funding from the Department of Labour and Advanced Education to develop a business model to include the provision of continuing and individualized care to brain injured patients while combining with research/investigation and delivery of support through a collaborative care model. This model is based on the development of a patient-centric, inter-disciplinary and collaborative research effort that aims to improve prevention policies for all Nova Scotians and clinical outcomes for traumatic brain injury (TBI) survivors.

The Traumatic Brain Injury cluster is working with Traumatic Brain Injury Research Partnership advocates, Ken Nason and Peter Covert to create a Traumatic Brain Injury Research and Clinical Care model here in Nova Scotia. The model, which requires cross-sector support and funding to come to fruition, includes the provision of continuing and individualized care to brain injured patients while combining research/investigation with the delivery of research expertise and services through an evidence-based, collaborative care model.

LIAISON WITH LOCAL SOCIETIES

We are fortunate to have a number of active societies that support the need to advance neurological and mental health research in the Maritimes. The BRC is proud to partner with, offer financial assistance and actively participate in these groups. These societies are ALS Society of NS/NB, Alzheimer Society of NS, MS Society of Canada – Atlantic Division, Brain Injury Association of NS (BIANS) and Epilepsy Society of The Maritimes.

Brain Awareness Week

Brain Awareness Week was a virtual event during the pandemic and the plan is to resume normal programming in 2023. This week of activities is focussed on educating students of all ages about neuroscience as a career, as well as the general public. Activities include Brain Fair for school-aged children; Brain Bee for High-schoolers; Slam Your Neuro(Science) for undergraduates; a Neuroscience as Art competition; public talks; lab tours etc.

Brain Bee

Resurrected in 2022, the Brain Bee is a neuroscience-based competition for high school students, the winner of which earns a place in the National competition. In 2022 there were 6 participants and many more are expected in 2023.

Slam Your Neuroscience Competition (2022)

The objective of the Slam was for students to present their research in an engaging, clear, and concise way in order to communicate science research to a wider audience. Undergraduate students enrolled in neuroscience-focused independent research projects were invited to take part and were scored on presentation, timing, and clarity of communication to the audience.

Neuroscience Leaders Meeting & Working Group towards a National Brain Research Strategy

The CBRS mandate is to create a neuroscience-driven nationwide, Canada must link together existing brain research initiatives and then maximize their potential through shared knowledge, infrastructure, and data. CBRS, with its focus on open, collaborative, and transdisciplinary brain research, provides the road map to take us there.

BRC Director, Vic Rafuse continues his role on the CBRS Steering Committee. This group has a newly established Secretariat ensuring a commitment to and continuity of work. Further a broadening of inputs was solicited from neurological and mental health charities, Indigenous Knowledge Holders, patients, and ongoing discussion with early career researchers. Solidifying the message from these central figures will best inform and add credibility to the overall approach. Securing major investment from government for this brain research strategy for Canadians is a key driver of this initiative.

Global Affairs Canada Research Grant

Ongoing research, which was facilitated by the BRC, into a mysterious illness affecting our Canadian diplomats in Cuba. Year to date approximately $5M has been spent to fund this important research.

Research Day

Due to Covid, Research Days were not held in 2021 or 2022, but will resume in Winter 2022/23.

DAL-BGU Collaboration

A Partnership for Advancing Brain Studies: Dalhousie University's Brain Repair Centre and Ben-Gurion University of the Negev's Zlotowski Centre for Neuroscience and Neuro-Medicine Hub was formally launched in 2022. This initiative is supported by an investment from Dalhousie Medical Research Foundation ($140,000) to facilitate on-going joint research projects between the universities. Matching funds will follow from BGU. Four projects were awarded funding in the summer of 2022.

JOURNAL CLUBS

These neuroscience-focused journal clubs illustrate the breadth of research across the Dalhousie University, Nova Scotia Health and IWK Health Centre community. We are encouraged by the cross-pollination of ideas, new partnerships, and opportunities to advance research and innovation, and the application of new knowledge. BRC has awarded $1000 to each of the Journal Clubs annually to support invited speakers, host meetings and continued learning. The current Journal Clubs are Atlantic Mobility Action Project, Interdisciplinary Science, Undergraduate Neuroscience, Vision Science, Acquired Brain Injury Club and Insect Super Club. It is worth noting that the Undergraduate JC has been much more active this year than in the past, which bodes well for the future, and we hope to see many of them become graduate trainees

Details for all Journal Clubs can be found on the BRC's website at brainrepair.ca/journal-clubs.

BRAIN WAVES

The Brain Waves group was set up in 2020 and due to the success of support provided, we continued it in 2021/22. Bringing back alums to share their stories has proven popular with the current trainees, who are seeking guidance regarding their post-graduate plans.

In the summer of 2021, we canvassed the current trainees and appointed two representatives to assist with planning and communication of Brain Wave Events. Tyler Wells is the BRC Executive Trainee Representative, while Pooyan Moradi is the Communications Representative.

We had planned events for Fall 2021 and were able to arrange one in-person event in November 2021, before remote operations resumed. This event featured three alums – Dr. Dylan Deska-Gauthier, Dr. Antonios Diab and Dr. Shannon Hall. Each of them spoke on their respective careers and how forming skills in science communications advanced their careers and broadened their job prospects. The panel was moderated by current trainees, Tyler Wells and Pooyan Moradi. More details of this event can be found at brainrepair.ca/news/science-communications-panel-featuring-brc-alumni

As the trainees have seen value in having their voices heard on issues such as stipends and career development a concerted focus will be made to support them. Engagement will continue with their participation at events (BAW, journal clubs, etc.) and planned events (training, career related job fair, etc.) will be delivered.

COMMUNICATIONS, FINANCING, REPORTING & HR

- New website
- New Comms hire
- New Fundraising Officer hire
- Improved social media
- Ongoing financial documentation/reports, drafting job descriptions, conducting training and personnel development

POLICY ANALYSIS

- TBI business plan
- ABI strategy input on NS Health's committee
- Input/advice in science research to various levels of government

ANNUAL AMAP MEETINGS

The annual AMAP (Atlantic Mobility Action Project) meeting has attracted delegates from UPEI, UNB as well as Dalhousie, typically numbering 35-40. Trainees as well as Principal Investigators provided talks and participated in discussions, as well two guest speakers – one scientific and one from the community (a person living with ALS).

ANNUAL TBI MEETINGS

The TBI (Traumatic Brian Injury) meetings have been hybrid/virtual for the past two years, bringing together scientists, clinicians and trainees located in Beer-Sheva, Leipzig and Halifax, for in-person and virtual presentations on topics including: Neurovascular interactions in health and disease; Blood Brain Barrier (BBB) as a target in brain injury; PSWEs (paroxysmal slow wave events) in Epilepsy; and Imaging.

APPENDIX C – BRC FOCI

Atlantic Mobility and Action Project (AMAP)

Launched in 2010, the Atlantic Mobility and Action Project (AMAP) brings together a diverse group of Atlantic Canadian researchers, based largely in Dalhousie University's Faculties of Medicine and Health Professions. The cluster includes academia, clinicians, government, associations, and citizens. AMAP continues to expand its base of researchers and its involvement with local (and national) societies.

In 2017, a team of Dalhousie researchers led by engineering physicist Dr. Jeremy Brown received $2.68 million to develop a miniature ablation endoscope for guided neurosurgery. Brain tumour re-sections currently use tiny surgical tools passed through a small opening in the skull, which is preferable to open-brain surgery but does not provide the surgeon with a much visual information. This new imaging device, originally developed for auditory imaging and now to be adapted for intraoperative brain imaging, will enable neurosurgeons to see such details as the amount of tumour remaining and blood flow in nearby vessels, and to predict dangerous access routes. It represents a quantum leap in guided brain surgery. Other members of the team include fellow AMAP members, Dr. Adrienne Weeks, Dr. James Fawcett, Dr. John Frampton, along with Dr. Robert Adamson.

Traumatic Brain Injury Research Partnership

The Traumatic Brain Injury cluster is working with Traumatic Brain Injury Research Partnership advocates, Ken Nason and Peter Covert to create a Traumatic Brain Injury Research and Clinical Care model here in Nova Scotia. The model, which requires cross-sector support and funding to come to fruition, includes the provision of continuing and individualized care to brain injured patients while combining research/investigation with the delivery of research expertise and services through an evidence-based, collaborative care model.

Neurodegeneration / Aging Brain (Research model)

This cluster studies Alzheimer's and Parkinson's Disease, Stroke, and Multiple Sclerosis. Alzheimer's and dementias affect 2.4% of the general population and the risk of developing dementia increases to 13.9% for people over the age of 71. These general statistics are particularly daunting for Nova Scotia as we have the second oldest population in Canada. Parkinson's disease affects 0.3% of the general population while stroke affects 2.8%. As with Alzheimer's disease, the prevalence of stroke is expected to increase 3.9% by 2030 because of our aging population. There are currently no cures for Alzheimer's Disease, Parkinson's Disease, and Stroke.

Neurodevelopment Cluster (Research model)

The focus of this cluster is to uncover the mechanisms by which the brain develops, and the interplay of genes and environment on that process. The Neurodevelopment Cluster are holding their annual meeting in June 2018, which will see invited guest speaker Dr. Alyson Fournier of McGill University. Cluster Co-Lead, Dr. Angelo Iulianella, presented at CAN 2018 (Canadian Association of Neuroscience annual meeting) as part of the symposium: “Development and function of motor circuits: from hardwired patterning to functional maturation and sensory integration”.

Mental Health (Research model)

Our mental health focus at the BRC, broadly speaking has a focus on diseases and disorders such as mood disorders (bipolar and depression), autism, schizophrenia, ADHD, and pain. The end goal is to advance the understanding, prevention, treatment and outcomes for these diseases and disorders.

In 2019, **1 in every 8 people, or 970 million** people around the world were living with a mental disorder, with anxiety and depressive disorders the most common (1). In 2020, the number of people living with anxiety and depressive disorders rose significantly because of the COVID-19 pandemic. Initial estimates show a 26% and 28% increase respectively for anxiety and major depressive disorders in just one year (2). While effective prevention and treatment options exist, most people with mental disorders do not have access to effective care. Many people also experience stigma, discrimination, and violations of human rights.

Research Activity	Foci				
	Atlantic Mobility Action Project (Vic Rafuse)	Neurodegeneration (Sultan Darvesh, George S. Robertson)	Neurodevelopment (Tara Perrot)	Traumatic Injury (Alon Friedman)	Mental Health (Phil Tibbo)
Brain injury				√	
Spinal cord injury	√			√	
Stroke	√	√			
ALS (Lou Gehrig's disease)	√	√			
Multiple sclerosis	√	√			
Parkinson's disease	√	√			
Peripheral nerve injury	√				
Muscular dystrophy	√				
Osteoarthritis	√				
Alzheimer's, Dementia		√			
Brain Cancer		√			
Glaucoma		√			
Aging		√			
Epilepsy			√		√
Mood disorders			√		√
Autism Spectrum Disorder			√		√
Psychosis			√		√
Attention, memory, learning					
Stress			√		√
Bipolar disorder					√

APPENDIX D – EXECUTIVE COMMITTEE TERMS OF REFERENCE

The Executive Committee is a standing committee of the Brain Repair Centre that is advisory to the Director of the Brain Repair Centre.

Composition: Consists of a minimum of 5 members; includes Brain Repair Centre Director; COO; researchers from Dalhousie Faculties of Medicine, Science and Health; clinicians from IWK/QEII, who are broadly representative of the interests of Brain Repair Centre researchers and of the Collaborators; and a trainee/postdoc. Appointment to the Executive Committee shall be made by the Director of the Brain Repair Centre. The term for these appointments shall be two (2) years. These members will have voting rights. *Quorum/voting: 50% +1 to carry.

Committee Chair: The Director of the Brain Repair Centre is the Chair of the Executive Committee.

Mandate: Executive Committee shall be responsible for advising the Director of the Brain Repair Centre on the operation of the Centre.

Core Functions:

- To advise the Director on all issues relating to the Brain Repair Centre, including research, education, finances, facilities, operational management, communications, commercialisation, and community relations
- To promote the achievement of the Brain Repair Centre ’s goals in research education and commercialisation
- To develop and implement strategic plans for future activities and financing of the Brain Repair Centre
- To recommend annual business plans and operating budgets
- To receive and act on reports from standing committees of the Brain Repair Centre (e.g., Research & Education, Commercialisation, External Scientific Advisory Committee, Community Advisory Committee)
- To create, and act on reports from, ad hoc committees as needed to further the management of all activities related to the Brain Repair Centre

Meeting schedule: Meets a minimum of three (3) times per year (September, January, May to align with academic terms). Meetings may be called as required.

APPENDIX E – 2019-22 BRC KNOWLEDGE TRANSLATION GRANT AWARDEES

2022

- Dr. Sean Christie - Understanding Spinal Cord Blood Flow After Traumatic Injury
- Dr. Laura Dumas & Dr Vic Rafuse - Unravelling Schwann Cell Diversity in Healthy and Injury Peripheral Nerve

2021

- Dr. Aaron Newman - A Speech Recognition-Based App for Aphasia Rehabilitation
- Dr. Jamie Kramer - Development of humanized fly models for neurodevelopmental disorders
- Dr. George Robertson - Development of an intranasal nanoparticle formulation of IRX4204 designed to promote functional recovery in multiple sclerosis by stimulating CNS repair mechanisms.

2020

- Dr. Gail Eskes - Attention Training: Development and validation of SpyTrain, a web-based attention training tool in the Cognitive Repair Kit
- Dr. Steven Beyea - Optimized MRI Acquisition & Reconstruction Technologies for Screening MRI in Emergency Medicine: An Innovation Partnership with Synaptive Medical
- Angelo Iulianella- A genetic method to scale neural organoid tissue size for disease modeling and cell replacement therapies.

2019

- Dr John Frampton - Development of A Flexible Biomaterial Fiber for Nerve Guidance
- Dr James Fawcett - Development of a mouse model for pre-clinical anxiolytic drug testing
- Dr Ying Zhang - A Novel Treatment for ALS
- Dr George Robertson - A novel lipid nanoparticle formulation to reduce ischemic/reperfusion brain injury
- Dr Raymond Klein - The Attention Network Test Database: A structured resource accessible to clinicians, researchers, and knowledge users