Message from Scientific Director

The McMaster Institute for Research on Aging (MIRA) was established in the fall of 2016 in order to coordinate, facilitate and amplify aging research across all Faculties at McMaster. When I reflect on the completion of our first year, I am pleased with our progress and enthusiastic about the months and years ahead as we build upon the foundation that we have now established. This report outlines our accomplishments as well as the challenges and opportunities we anticipate facing as we aim to realize our vision of transforming the experience of aging by transforming the science of aging. As MIRA is also home to the Labarge Centre for Mobility in Aging (LCMA), we are able to provide scientific direction and research support to build capacity in this broad area as a component of our work. Our progress to date has resulted from the strong, team-based culture we have developed within the Institute’s administration, as well as our shared commitment to advancing research and knowledge translation activities focused on aging. This culture and commitment will position us well to respond to opportunities and gain recognition for McMaster as a powerhouse in aging research.

- Dr. Parminder Raina, Scientific Director, McMaster Institute for Research on Aging

Message from the Chair of the International Scientific Advisory Committee

On behalf of the International Scientific Advisory Committee (ISAC) I congratulate the leadership and staff of MIRA on a successful first year. Although the Institute’s work is just beginning, it is clear that MIRA is building upon a number of research platforms that already have momentum, such as the Canadian Longitudinal Study on Aging and the McMaster Optimal Aging Portal. Members of the ISAC will be providing scientific insight and advice to MIRA as the Institute develops its research platforms, as well as helping MIRA identify areas of focus to facilitate capacity building and establish a leadership position in the broad field of aging. The members of the ISAC are committed to contributing to the future success of MIRA.

- Dr. David B. Hogan, Professor and Academic Lead, Brenda Strafford Centre on Aging, University of Calgary
MIRA Mission and Values

MIRA’s mission is to optimize the health and longevity of the aging population through leading-edge research, education and stakeholder collaborations, while upholding the values of integrity, excellence, collaboration, inclusion and transparency. Within MIRA lies the LCMA, which will use an interdisciplinary approach to examine the biological, behavioural, technological and environmental factors that can affect individual and community mobility in older adults.

Structure and Governance

MIRA has established the following governing bodies to oversee and inform its activities:

* Not yet formulated

In 2017, the International Scientific Advisory Committee and Executive Committee have been active and offering strategic input. Working groups on communications and training/education have also been
established and are assisting in the formulation of plans to move these initiatives forward, while also looking for opportunities to leverage existing assets at the University.

For instance, The Communications and Promotions Working Group met twice this year. It consists of communications staff members from multiple platforms in aging research across the University, including the Aging, Community and Health Research Unit (ACHRU), the Canadian Longitudinal Study on Aging (CLSA), the McMaster Health Forum, the McMaster Optimal Aging Portal, Gilbrea Centre for Studies in Aging, and the Geriatric Education and Research in Aging Sciences (GERAS Centre) at St. Peter’s Hospital. The goals of these meetings include promoting awareness of MIRA and other aging research strengths at McMaster, facilitating knowledge sharing and promotional activities and improving internal coordination and cooperation.

The Strategic Advisory Council, which has yet to be created, will comprise prominent individuals who will offer advice on the strategic direction of MIRA and corresponding Centres from the perspective of the general population and broader society. One of the challenges MIRA will face in the months and years ahead will be to secure the commitment of these individuals and ensure that their engagement and participation is viewed as valuable from their perspective. We will mitigate this challenge by working with others, such as University Advancement, to ensure that our plans are well aligned with expectations.

Research Activities

MIRA takes an interdisciplinary approach to facilitating research impact through the following activities:

1. A coordinated, collaborative research agenda that brings together academic researchers and clinicians from all Faculties;
2. The generation of human-centred solutions through active engagement of research end-users and the consideration of perspectives arising from various disciplines and life experiences;
3. Ongoing interaction with diverse stakeholders.

MIRA’s research approach is designed to generate solutions that are built upon the foundation of curiosity-driven activities, and that are practical, readily implemented, and promote aging in place.
Within MIRA lies the LCMA, which supports a focus on the broad topic of mobility in aging. Interactions between biological factors and the built and social environments combine to impact older adults’ mobility, social engagement and overall health. However, few studies have addressed these interactions across multiple levels. By better understanding the range of issues associated with mobility in aging, we will have the potential to optimize the well-being of Canadians.

At the LCMA, McMaster researchers have identified three priorities areas for study:

1. Understanding, defining, and exploring mobility in aging;
2. Maintaining and restoring mobility through prevention, intervention and interaction with health systems; and
3. Examining environmental facilitators and barriers that influence mobility.

The LCMA has distributed financial support to advance these priorities through several mechanisms:

Exploration Grants
Exploration grants offer the opportunity to conduct collaborative and interdisciplinary research focused on mobility in aging. These grants are intended to stimulate new collaborations and allow researchers to collect preliminary data to support future proposals for full-scale studies.

There are two types of exploration grant, each requiring the participation of researchers from multiple disciplines:

1. **Planning Grants** to explore and establish new cross-Faculty partnerships with the goal of generating research questions that integrate the perspectives of multiple disciplines.
2. **Catalyst Grants** to conduct feasibility/pilot studies or scaling of interventions for groups that have already established cross-Faculty partnerships.

This year, MIRA has supported several projects of each type, as described below.

Planning Grants
Funding for planning activities this year has primarily focused on developing new relationships through networking and brainstorming events. In particular, the LCMA and MIRA have supported the following opportunities through allocating $15,000 with a funding match of $3000 from the Faculties:

1. **Technology and Design for Optimal Aging**
The Faculties of Engineering and Health Sciences collaborated to present a networking and knowledge sharing event for researchers, funders, industry partners and collaborators who aim to redesign the experience of aging. The event brought together researchers and partners with diverse perspectives on design and innovation to improve the experience of aging in place.
Maureen Markle-Reid and Ruta Valaitis, School of Nursing, present on transforming stroke rehabilitation during the Technology + Design for Optimal Aging networking event on Nov. 9.

2. **Boomer Brain**  
The Faculties of Humanities and Business co-hosted a multi-component event focused on the unique ways of thinking among older adults. The guest lecturer, Michael Smith (Vice President, Consumer Neuroscience at Nielsen), discussed his work in the science of marketing to and communicating with baby boomers to an audience of researchers, alumni and industry partners, followed by an opportunity for researchers to explore shared research goals and opportunities.

3. **Biology of Aging**  
The Faculty of Science will host three half-day workshops, inviting researchers from other Faculties to network and plan new projects in the following areas: 1) discovery of molecular biomarkers of aging; 2) determining and mitigating impacts of muscle loss in aging; 3) developing diagnostics and sensors related to aging.

4. **McMaster Living Mobility and Aging Lab**  
In 2018, the Faculty of Social Sciences will host a workshop to explore the viability and benefit of creating a Living Mobility and Aging Lab in partnership with community-based organizations that offer Activity-Based Natural Built Environments (ABNBEs), such as the Royal Botanical Gardens. The event will include participants from all Faculties as well as community partners.
Catalyst Grants

Mac researchers come together to tackle issues in aging -&gt; bit.ly/2xPT52Q #RethinkMobility #AgingReimagined #BrighterWorld

In October, the Catalyst Grant recipients participated in a networking session facilitated by MIRA, which was intended to share the details of the funded projects and look for synergies and efficiencies within and between the teams. The participants were highly engaged during the presentations, and committed to sharing information as the projects move ahead. There was also an interest in having an additional session partway through the year so that early results can be shared and so that the project teams can remain informed and look for ways to work together.

The following projects were supported by seed-funding of $228,817 through the LCMA as well as matching funds of $70,000 from other sources:

A comprehensive framework for the conceptualization of physical mobility as an essential construct to address in both the assessment and treatment of older adults

Ayse Kuspinar, Chris Verschoor, Lori Letts, Ruta Valaitis, Ellen Amster, Carol Bassim, Dawn Bowdish, Vanina Dal Bello-Haas, Johnathan Dushoff, Jocelyn Harris, Carrie McAiney, Sarah Neil-Sztramko, Julie Richardson, Brenda Vrkljan

Physical mobility is one of the most important contributors to well-being and health-related quality of life as we age. It is critical to remain socially engaged, reduce the risk of mental and physical deficits, and prevent institutionalization. However, the trajectory of mobility impairment in older adults is complex, influenced by factors belonging to biological, cognitive, behavioral, psychosocial and environmental systems. As such, a keen understanding of how these systems are related will be required in order to
design effective, multifactorial interventions to preserve physical mobility into old age. Our interdisciplinary team aims to use a mixed-methods approach to build and validate a model of physical mobility in older adults. First, we will develop a model of physical mobility using data from the Canadian Longitudinal Study on Aging. Second, we will validate this model by exploring the perceptions of older adults regarding mobility and impairment.

**Cognitive vs. Chronological Age as Barriers to Using Wearable Activity Monitors in Older Persons**

Maryam Ghasmeaghaei, Manaf Zargoush, Stuart Phillips, Reza Samavi

Daily physical activity is a strong independent predictor of morbidity, mortality, and independence. The use of smart devices (e.g., Fitbit) has the potential to positively affect older adults’ quality of life and decrease the use of expensive health resources by encouraging and facilitating physical activity. However, some members of this demographic group perceive high disability (i.e., cognitive and physical limitations) that make it difficult for them to independently utilize smart devices. Moreover, individuals’ self-perception of age (i.e. cognitive age) has been found to be a better predictor of their behaviors towards using technology than their chronological age. This interdisciplinary project has gathered scholars from several disciplines to explore the effects of older adults’ cognitive age on their disability perceptions, which can influence their adoption of smart devices. A combination of qualitative and quantitative methods will be utilized to achieve the stated objective.

**Assessing and Improving Mobility in Older Adults Using a Smart Knee Monitoring System**

Jamal Deen, Khaled Hassanein, Tapas Mondal, David Cowan

Healthy aging is a growing socio-economic concern in many societies including Canada. Maintaining optimal mobility with relative ease and freedom of movement is key to healthy aging. Poor mobility eventually leads to lack of independence, declined ability in conducting daily activities, and deteriorating mental health and quality-of-life. Poor mobility coupled with aging leads towards rapid degradation of the musculoskeletal system in older adults, thus making them more vulnerable to falls and fall-related bone and joint injuries. Knee joint, being a primary bearer of the body weight, plays a vital role in maintaining mobility. Therefore, monitoring the knee joint can potentially provide important quantitative information related to declining mobility. This project involves expertise from the engineering, medical and business disciplines to design, implement, test and validate a simple, easy-to-use, cost-effective, non-invasive and unobtrusive wearable wireless knee monitoring system; and interpret the analyzed data to extract useful information about the overall mobility status of the individual.

**The Ultrastructure of Osteoporotic Bone and its Medical Implications in Aging Populations**

Kathryn Grandfield, Henry Schwarcz, Jonathan Adachi, Justin De Beer, Janet Pritchard, Alexandra Papaioannou

Osteoporosis is a chronic condition that affects older adults. It is characterized by significant loss in bone mineral density, and often associated with increased fracture frequency which is a contributing factor to decreased mobility in older adults. However, the origin of this decreased bone density at the nanometer level of bone remains unknown. This project combines engineers, basic scientists, clinicians, geriatricians and orthopaedic surgeons to explore the locus for changes in osteoporotic bone at the nanoscale, using
advanced high-resolution microscopy. The team will also investigate the ways in which a better understanding this osteoporotic bone structure at the nanoscale impacts current therapeutics, implant design and fracture prevention.

ABLE: Arts-Based Therapies Enabling Longevity for Geriatric Outpatients
Paula Gardner, Patricia Hewston, Alexandra Papaioannou, Courtney Kennedy, Laurel Trainor, Rong Zheng

As our senior population grows, frailty becomes an urgent issue, which can result in physical deconditioning and expedite pathways to reduced physical and mood health and social participation. Art, music and game play, however, are powerful therapeutic activities that can motivate participation in physical activity and may have synergistic effects, enhancing cognitive, physical and emotional health. Our interdisciplinary team, consisting of scholars in aging, health, engineering and media technologies has created the project “ABLE” to tackle this problem. ABLE proposes to create a range of arts-based movement experiences using technologies (e.g. Xbox Kinects) that encourage fragile seniors to engage in therapeutic exercises. The movements will produce visuals (on a screen) or musical sequences in multi-player and cross-generational games. We hope that the seniors’ pleasure in engaging in these art based therapies will work to encourage their consistent, long-term commitment to the therapy. In this first stage the project aims to advance the design of the Movement and Biometric Feedback Platform (“the Platform”) to produce artistic expression, gaming, movement, and interactions in co-design with frail seniors and examine how the Platform impacts cognitive, physical, and emotional parameters in older adults.

Implications of Driving Cessation amongst Canada’s Older Adults Living in Rural and Small Urban Communities
Bruce Newbold, Darren Scott, Jim Dunn, Amanda Grenier, Kai Huang, Brenda Vrkljan

For older adults, the personal automobile is the preferred travel mode choice. For those older adults in rural areas or small towns where transportation options are more limited, however, aging and driving cessation bring particular challenges. Understanding how the transportation needs and behaviours of Canada's aging population changes according to their specific needs, relative location, and stage in the life course is important as they age through retirement and approach and complete driving cessation. This project brings together leading experts in aging, health, and driving to examine changing travel behaviours as cessation is approached and completed, with a focus on older adults in rural areas and small towns, and to investigate the health, social and economic implications of driving cessation as individuals approach and complete driving cessation in rural areas and small towns.

Meanings of (Im)mobilities: A ‘New Mobilities’ Perspective
Amanda Grenier, Meredith Griffin, Gavin Andrews, Jim Dunn, Alexandra Papaioannou, Rob Wilton

The objective of this cross-Faculty study led by researchers at the Gilbrea Centre is to reach beyond the traditional understandings of mobility to test out fresh interpretations offered by a ‘new mobilities’ perspective. In the coming year, we will conduct a case study of mobility that is comprised of interviews and observations with 15 participants. The participants will be selected from three groups who have various experiences of mobility, impairment, and immobility. The sample will include five active older
adults, five people aging with a disability, and five older people who are considered ‘frail’. The responses of the participants will be compared and contrasted to reveal similarities, variations and intersections between the groups, and will be examined in comparison with existing understandings, including the binary categories of mobility and immobility. Overall, the research will explore the extent to which we are witnessing a shifting state of knowledge on mobility (and immobility), and whether the new mobilities perspective and the case study method hold merit for further development.

As the projects move ahead, MIRA will need to continue to engage with the project teams and evaluate the impact of this funding approach. MIRA will need to consider the outputs of the projects themselves, as well as the impact of the interdisciplinary connections and of this non-competitive funding process. Adapting to the outcomes of this process will be both a challenge and opportunity for MIRA in the coming years, which will be mitigated by involving MIRA’s research coordinator in continual engagement with the researchers and Faculty representatives.

**Research Activities of MIRA Members**

**Research Successes**

Beyond the funding that MIRA and the Labarge Centre have allocated, MIRA researchers have also had success in attracting other funds to build research capacity at McMaster within their field. The examples below are meant to illustrate the types of projects that have experienced recent success.

A new $2.7 million national study, funded by the Canadian Frailty Network and the Government of Canada, is aiming to narrow the gap between the care that frail elderly Canadians want and the care that they receive by evaluating ways to improve care planning conversations between patients, families and health professionals. The study is led by John You of the Department of Medicine, with co-PIs Sharon Kaasalainen (MIRA member), School of Nursing, and Michelle Howard, Department of Family Medicine.

A study led by MIRA members Gianni Parise and Stu Phillips of the Department of Kinesiology, and funded by the Labarge Optimal Aging Initiative, was published in *PLOS ONE* this fall. The report described the impact of a supplement created to improve the physical strength of older adults and combat sarcopenia, or age related muscle loss. The findings showed improvements in deteriorating muscle health and overall strength for participants both before and after the exercise regimen.
In terms of grant funding, McMaster University has received $417,500 from the Canadian Institutes of Health Research for research projects that analyze data from the Canadian Longitudinal Study on Aging (CLSA). Four of the six funded projects are led by MIRA researchers, including studies on frailty from a population health perspective, combinations of risk factors that influence disability with age, sarcopenia and mobility impairment, and driving mobility and social participation.

In the Faculty of Social Sciences, MIRA members Meridith Griffin, James Gillett and Gavin Andrews were funded by a SSHRC Insight Development Grant ($50,818) to partner with the Hamilton Public Library on an initiative focused on writing and reading autobiographical narratives about leisure experiences.

Matthew Woolhouse (MIRA member, pictured on the left), in the Faculty of Humanities, received an Early Researcher Award from the Province of Ontario to support the development of computer applications to help people with Parkinson’s stay active, enjoy music and dance, and keep connected with community programs such as the Dance for Parkinson’s classes offered by the Hamilton City Ballet. MIRA members Jennifer Heisz (pictured on the right) (Science) and Michelle Kho (pictured in the centre) (Health Sciences) were also recipients of the award, which provides $100,000 in research funding and is matched with $50,000 from the University.

In the DeGroote School of Business, MIRA member Khaled Hassanein released novel findings about the preferences of older adults when using online recommendation agents during e-commerce interactions. Contrary to the general perception that older users prefer more simple technologies, older adults preferred more complex recommendation agents because the outputs were more useful, in spite of the potential for challenges during the transaction. These findings challenge existing perceptions about the abilities and preferences of older adults, and will inform the development of future e-commerce support agents.

Research Map
MIRA is in the process of developing two major, multi-year research programs that will bring together interdisciplinary teams of researchers, along with end users, to advance our capabilities in two broad topic areas. The programs of research will be led by working groups and will include multiple, interrelated projects, which will enable research strength in mobility and aging. Each working group will collaborate to develop and submit a proposal for funding to MIRA, which will be vetted and reviewed by MIRA’s International Scientific Advisory Committee.

Two broad topics will be the focus of the working groups: 1) Technology, Environment and Mobility, and 2) Exercise, Nutrition and Mobility. These topics were selected because of McMaster’s existing research capacity in these areas, the need for broad, interdisciplinary input, and the potential to have an impact on today’s population of older adults.
In order to facilitate the interdisciplinary connections that are required for this opportunity, and to engender a broader sense of community among MIRA researchers, MIRA has created a map to illustrate the focus and impact of each individual researcher’s work. Displayed below in draft, each researcher was asked to position themselves within the two-dimensional plot, with the Y-axis illustrating research output (policy, product/service or academic), and the X-axis displaying the type of research conducted, from theory/discovery to practice/application. The map is intended to allow MIRA researchers to view themselves as part of a broader community, and will facilitate connections by highlighting areas of strength and opportunity among MIRA members. Over time, there are plans to make this map more informative and interactive so that its use will be expanded.
MIRA Membership

Through the efforts of MIRA’s administrative staff, membership in the Institute has grown from 35 members (Jan 1, 2017) to 83 members (Oct 27, 2017). As displayed in the table below, membership within certain Faculties remains limited, however there is evidence of increased engagement around the University and these numbers are expected to grow; this is an ongoing challenge for MIRA.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Number of Members</th>
<th>Before Jan 1, 2017</th>
<th>Jan 1- Oct 27, 2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Sciences</td>
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<td>15</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>4</td>
<td>12</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Social Sciences</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
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<tr>
<td>Total</td>
<td>35</td>
<td>48</td>
<td>83</td>
<td></td>
</tr>
</tbody>
</table>

We will continue our efforts to engage with researchers who are working in the field of aging from across the University, so that we can learn more about how our Institute can offer value to members from all disciplines.

Training, Education and Capacity Building

MIRA intends to leverage and build upon McMaster’s position as a leader in higher education through a number of educational activities meant to amplify and draw attention to opportunities to perform research with aging as a focus and/or working with older adults as career pathways for trainees. Activities include awarding graduate scholarships, creating active and engaged Graduate Student and Junior Faculty Networks and forming a Training and Capacity Working Group that will explore ways to build capacity among students in the field.

Graduate Scholarship Recipients

Funded by the LCMA, this year’s recipients are Sydney Valentino, a Master’s student in Kinesiology in the Faculty of Science, and Michael Kalu, who is pursuing a Ph.D. in Rehabilitation Science within the Faculty of Health Sciences. Both recipients were selected for their demonstrated high academic
achievements, proven interest in aging and mobility research, ambition to collaborate with other disciplines, and participation in research activities that show potential to benefit older adults.

Valentino spent the last two years working alongside Dean of Science Maureen MacDonald in her Vascular Dynamics Lab. There, students and researchers examine the response in arteries to changes in physical activity. Valentino will continue her work in the lab developing a stair climbing intervention for cardiac rehabilitation.

Kalu, a trained physiotherapist from the University of Nigeria, has devoted his prior academic career to studying mobility among older populations. Having extensive clinical experience, Kalu observed a decline in the mobility of older adults as they move from one care setting to another. That observation formed the basis for his current Ph.D. thesis, which will focus on mobility enhancement for older adults across care transitions in partnership with his supervisor, Vanina Dal Bello-Haas in the School of Rehabilitation Sciences.

MIRA’s graduate scholarship recipients, Michael Kalu (left), who is pursuing a Ph.D. in Rehabilitation Science, and Sydney Valentino (right), a Master’s student in Kinesiology in the Faculty of Science.

**Post-Doctoral Fellowship Recipients**

Through a competitive process vetted by MIRA’s Executive Committee, the Institute has funded and awarded two post-doctoral fellowships to incoming trainees. Each award includes $50,000 for salary and $15,000 for research expenses and professional development, and is matched by $10,000 from the supervisor. Candidates have one primary supervisor and two mentors from other Faculties.

The successful candidates for 2018 are Tara Kajaks and Caitlin McArthur, both of whom will begin new positions at McMaster in the coming months. Working with Brenda Vrkljan and mentored by Jennifer Heisz and Cheryl Quenneville, Tara will study the challenges with homecare for older adults, including the complexity of serving as both a caregiver and care recipient among older people. Caitlin, who will be working under the supervision of Alex Papaioannou and the mentorship of Paula Gardner and Amanda
Grenier, will develop and test a portable technology platform to promote sustainable exercise participation within the homes of frail, older adults who have been discharged from hospital.

Professional Development for Trainees
As part of its mandate to build capacity among trainees, MIRA is developing a number of initiatives to support the development of graduate students and post-doctoral fellows, as well as junior faculty members.

In partnership with a number of national networks, and facilitated by AGE-WELL, Canada's technology and aging network, MIRA will offer its trainees access to several webinars on a series of topics, such as science communications and optimizing collaborations. Each network contributor offers one webinar but gains access to all sessions for their trainees. MIRA’s contribution will be a presentation by Parminder Raina, who will speak on “Grant Writing: Positioning your Submission for Success”, on June 11, 2018. Parminder will highlight differences between successful and unsuccessful proposals, sharing best practices and strategies to optimize chances for success.

MIRA has also created a Trainee Network (currently 31 members) to facilitate interdisciplinary research connections among trainees, and a Junior Faculty Network (currently 15 members), to build capacity for cross-Faculty research projects and provide direct assistance to young faculty as they attempt to establish independent research careers.

Educational Programming
In order to better understand the gaps and opportunities available at McMaster for student education and training, MIRA’s project coordinator has conducted an environmental scan of existing learning opportunities. There are many courses, certification and training opportunities related to aging at the University and in the broader community, and discussions with MIRA’s Training and Capacity Working Group will guide and inform MIRA’s role in facilitating, expanding and communicating about these resources.

MIRA has mapped existing courses and programs focused on aging, research methods and design thinking that are available to undergraduate, graduate and health professional students. The scan has also looked at other institutions, and compared the structures of aging-related programs and research institutes with educational offerings in Canada and internationally. These programs differ in their target audience, ranging from elementary/secondary school students to university students (undergraduate, graduate and health professions) to working professionals and older adults. This initial environmental scan suggests that there is opportunity to encourage students from other Faculties (beyond Social Sciences, Health Sciences and Science) to pursue courses or programs related to aging. Further, many existing courses are only open to students from particular programs or departments. There is also an opportunity for MIRA to take a leadership position in creating resources for members of the broader community, and we are exploring options to move this forward in partnership with the Centre for Continuing Education and the MacPherson Institute.

MIRA is also working with Dr. Andrew Costa from the Faculty of Health Sciences to pilot two programs: the first (Make a New Old Friend) focuses on offering exposure opportunities to medical students with
older adults to enhance comfort level and capacity building, and the second involves the creation of a
learning portfolio that tracks and rewards (through a MIRA certificate of completion) medical students
who participate in a certain number of training or engagement opportunities focused on aging. Both of
these initiatives have the potential for scalability to other programs at the University and beyond.

Next steps include narrowing the focus of MIRA’s involvement in developing and communicating about
educational programming for various audiences with the input of the Training and Capacity Working
Group, and building a communication platform to share information about the resources that are
available to trainees.

Partnerships

MIRA has developed a number of new relationships and collaborations with both internal and external
partners during its first year.

External Partners
In 2017, Memoranda of Understanding (MOUs) were developed with the following organizations:

- AGE-WELL National Centre of Excellence
- Ontario Neurotrauma Foundation
- Shalom Village
- Thrive Group
- Carlow Institute of Technology

These MOUs focus on developing collaborative research proposals, partnering on events or outreach
activities, cross-promoting initiatives as appropriate, and a general commitment to look for
opportunities to work together. A challenge for MIRA will be to facilitate continued engagement with
these partners for mutual benefit, rather than mobilizing only around distinct opportunities. In order to
mitigate this challenge, MIRA’s managing director will ensure continued interaction with these partners,
even in the absence of specific projects or opportunities.

The partnership with AGE-WELL, in particular, allows MIRA to expand its network and co-fund both
research projects and trainees whose interests align with both organizations. We anticipate that these
co-funding activities will begin in 2018.

In the spring of 2017, Parminder Raina, MIRA’s scientific director, Laura Harrington, MIRA’s managing
director, and Brenda Vrkljan, associate professor of occupational therapy at McMaster University and
executive committee member of MIRA, travelled to Carlow, Ireland to meet with the founders of
designCORE within the Institute of Technology. The purpose of the trip was to strategize ways in which
design thinking can be implemented into the interdisciplinary research process. While there, MIRA
signed an MOU with designCORE to continue this collaboration.
"The signing of this MOU between designCORE IT Carlow and MIRA at McMaster marks the commencement of a unique and progressive collaboration. It offers unparalleled opportunities to create new interdisciplinary research approaches and epistemologies within Design and Gerontology, from the Health, Social, and Natural Sciences to Engineering, Business, and Humanities" – Dr. PJ White, designCORE at Institute of Technology Carlow.

Since that time, MIRA has continued to engage with designCORE, and two researchers from IT Carlow have visited McMaster and facilitated workshops to launch the process of developing the research programs to be funded by the Labarge Centre. More details on this process are found on page 10 as part of the description of the MIRA Research Map.

While in Ireland, MIRA also met with Christine O’Kelly of Dublin City University to discuss the preliminary steps for joining the global network of age-friendly universities. Later in the year, McMaster formally joined this network, which is an international group that shares a commitment to a series of principles designed to value and incorporate the work and insights of older adults into the activities of the institution. McMaster’s President and Vice-President Research supported this activity, and MIRA will be working with the core leadership of the network to develop more robust governance structures and membership criteria so that this group can collectively gain visibility and lobby for investment and support on the international stage.

Internal Partnerships
McMaster has also developed a robust relationship with the Office of International Affairs, which provided $5000 in financial support for international collaboration activities in 2017, and has committed to co-funding one international seminar speaker per year with MIRA.

University Advancement has also committed to working closely with MIRA and the LCMA. In particular, government affairs has assisted with a visit to Ottawa for a series of meetings on MIRA; public affairs and communications are working with MIRA on an ongoing basis to develop communications materials to raise the profile of MIRA and aging research at McMaster (e.g. the recent supplement in the Globe
and there is a broad commitment that aging will be a key priority for fundraising and donor relations (e.g. the Lager Lecture and the President’s Club event) now and in the years ahead.

MIRA is also partnering with the VP Administration and Facility Services on a project to design a space that will facilitate interactions between older adults and University students. Led by Brenda Vrkljan and Laura Harrington, MIRA will assist in the visioning of the space itself and the programming that will occur within the space to enable greater intergenerational engagement. The team has conducted a number of surveys and focus groups with older adults and students, and a report is being prepared, which will be used to inform the design of the space. This initiative has also resulted in a partnership with Housing and Conference Services, who oversee the residence and programming, so that there is broader understanding of the challenges and opportunities associated with the space under development.

**Leveraging MIRA Funds**

The Institute has identified several opportunities to leverage the MIRA or LCMA funds in order to support larger initiatives in partnership with other entities. Examples include:

- Securing a Hooker Distinguished Lectureship ($4800) to bring renowned scientist, James Kirkland, from the Mayo Clinic to McMaster to present two lectures on the science of aging;
- Securing funds from the Office of International Affairs ($5000) to support travel to two institutions in Ireland to establish research partnerships;
- Requiring matching funds for the Labarge Mobility Scholarships ($33,000);
- Requiring supervisor contributions to the PDF awards ($20,000);
- Requiring matching funds from the Faculties to support the catalyst grants ($70,000) and planning grants ($3000);
- Leveraging funds from the Labarge Centre to support an externally-funded systematic review ($35,000).

MIRA has also received multiple requests for matching support to external, peer-reviewed grants, and has strategized with the Executive Committee on each proposal to ensure that there is a direct connection to aging within the research study, that the funds are not duplicating or replacing other institutional support, and that the funds are allocated in a transparent way.

**Government relations**

MIRA has engaged in a number of initiatives focused on building awareness among government partners about MIRA and McMaster’s strengths in aging research and knowledge translation. In particular, MIRA has:

- Presented twice at the Social Policy Committee of the Deputy Ministers for the Government of Ontario;
- Participated in the Frailty Caucus in Ottawa, hosted by Research Canada;
- Hosted a number of meetings in Ottawa with relevant government stakeholders within Health Canada, Public Health Agency of Canada, CIHR, Employment and Social Development Canada and others;
- Invited government representatives (Deputy Minister of Seniors Affairs, MP Oakville and MP Vaughan) to participate in MIRA’s End-User and Stakeholder Committee;
- Been invited to attend the announcement and launch of the Province’s Active Aging Plan (Aging with Confidence), presented by the Premier, Minister of Seniors Affairs, and Minister of Health;
- Hosted a visit with MP John Oliver (Oakville), Chair of the Health Research Caucus, to identify opportunities to raise the profile of McMaster’s expertise in aging research among government leaders.

Government relations activities will continue to be a high priority within the Institute. For instance, in the new year, we have a commitment from the Mayor of Hamilton to visit MIRA and learn more about our research activities and platforms to support healthy aging in Hamilton and beyond. We recognize the importance of local government champions, as well as leaders who have a broader, national mandate.

Infrastructure

During its first year of operation, MIRA has established robust infrastructure to support the activities of the Institute and Labarge Centre. In particular, MIRA now has the following resources, infrastructure and mechanisms of support:
Staff
The Institute now has a full staff complement, as outlined in the chart below. In addition to the formal staff of the Institute, MIRA also offers opportunities to undergraduate students through internships (2) and through project coordination (2).

The MIRA staff are housed in an office space within the McMaster Innovation Park, which is funded by the VP Research.

Communications and Outreach
Over the past year MIRA has built strong communication platforms intended to raise the profile of McMaster’s strength in aging research, including a website (mira.mcmaster.ca), which has accumulated over 10,000 views since January 2017.

MIRA has also written or facilitated 26 pieces of media coverage, highlighting MIRA events, conferences, researcher commentary and initiatives, such as McMaster’s membership in the global network of Age Friendly Universities. Of the 26 pieces of coverage, readership equaled 245 million, with an estimated 388,000 coverage views and 2.87K in social media shares. Appendix I at the end of this document includes some highlights of this coverage.
In the summer of 2017, MIRA launched an exclusive monthly newsletter highlighting events and funding opportunities that are of specific interest to researchers in aging, as well as a quarterly newsletter deployed to over 450 opt-in subscribers, including government officials and older adults, highlighting top news stories, featured researcher profiles, media highlights, funding opportunities, publications, events and more.

In terms of social media, MIRA chose to focus on building out a Twitter following and platform this year in order to focus the social media strategy around one platform before moving onto another. Twitter has been an exceptionally useful tool for making connections, promoting the aging platforms at McMaster and marketing events, including real-time marketing. MIRA plans to launch a Facebook page in 2018. The Twitter following has grown from 152 to 527 followers in one year, with a total reach of 2,834,437.

MIRA also used communications as a platform for capacity building for undergraduate students by hosting two interns from the Department of Communication Studies and Multimedia. During the internship, the students worked with the communications coordinator to build promotional material for MIRA, create a social media database of content, write biographies for researchers, and provide communications support where necessary.

“MIRA provided me with several opportunities for personal growth and portfolio development. I was given the opportunity to apply my skills in an interdisciplinary environment. I thoroughly enjoyed every aspect of the internship, and looked forward to coming to my placement every day.” – Adriana Skaljin

“My favourite experience was writing the Labarge scholarship piece. The responsibility of gathering information all the way to drafting the article was a very fulfilling and valuable experience for me. I learned to write better professionally, find the right tone of voice and publicly represent a professional organization.” – Matthew Chau

User-Centred Research/Design Thinking
In order to facilitate broader outreach at earlier stages of the research process, MIRA has established an End-User/Stakeholder Committee, which includes representatives from citizens, government and community partners, and researchers from other institutions. This group has been assembled to inform the research activities of the Institute by offering insights into key issues facing the aging population from a number of perspectives, as well as to serve as a sounding board for MIRA researchers.
Moreover, one of the key aims of MIRA is to facilitate the use of user-centered research (design thinking, participatory action research) among researchers at McMaster. In order to support this work, the Institute has established resources and direct connections with experts in the field. In particular, MIRA has worked with Robert Fleisig (Engineering) and Harry Mahler (OCADU) to develop a design thinking workbook to guide researchers in the process and utility of this research approach; worked with Julia Abelson (Health Sciences) to offer a pathway for support for researchers interested in user-informed and involved research studies; and facilitated workshops and training events focused on using design thinking as a new way to establish interdisciplinary and end-user informed research projects.

Events

MIRA has hosted and/or funded a number of events with an aim to raise its internal and external profile, bring attention to McMaster as a powerhouse of aging research, and facilitate the development of new internal and external partnerships. Events that occurred in 2017 include:

**Hooker Fellowship Lectures: Dr. James Kirkland | January 27, 2017**
Student Lecture (50 attendees): Targeting Aging Processes to Delay, Prevent or Treat Chronic Diseases and Loss of Resilience.
Faculty/Researcher Lecture (70 attendees): Interventions Targeting Cellular Senescence: The Path to Translation.

**Early Career Researchers’ Lunch | August 25, 2017**
MIRA is developing a network of early career researchers to offer tailored support for career development and community building for our newest faculty members (13 attendees).
Aging Respiratory Function Meeting | October 3, 2017
MIRA, in partnership with the Firestone Institute, facilitated a meeting among researchers with common interests in respiratory illness and aging. Following a robust discussion of challenges and opportunities, co-leads were identified to develop a proposal that MIRA will help develop for external funding competitions (15 attendees).

The Walrus Talks Mobility | October 5, 2017
In partnership with the Walrus Foundation, MIRA hosted a public event focused on mobility in aging from a number of diverse perspectives. The event was attended by 250 participants, including researchers and members of the public.

Speakers included (from left to right): Parminder Raina, scientific director, McMaster Institute for Research on Aging and the Labarge Centre for Mobility in Aging; Margaret Denton, vice-president, Hamilton Council on Aging; Doreen Spence, Cree elder; Michael Kirby, founding chair, the Mental Health Commission of Canada; Dee Mangin, David Braley Chair in Family Medicine, McMaster University; Stephen Trumper, instructor, School of Journalism, Ryerson University; Adam van Koeverden, Olympic and world champion kayaker; Sanjay Khanna, futurist.

In addition to the presentations, MIRA worked with its Trainee Network to offer a poster session/exhibit about McMaster research interests and strengths in mobility. There were 21 trainee exhibitors, and several others representing other platforms at the University, such as the McMaster Optimal Aging Portal.
Labarge Centre for Mobility in Aging Catalyst Grant Recipients’ Proposal Presentations | October 12, 2017
MIRA planned and facilitated a networking session for recipients of this year’s catalyst grants, with an aim to foster increased collaboration among the participants. There were seven project presentations and 35 attendees.

Technology + Design for Optimal Aging Networking Event | November 9, 2017
This was the joint Engineering/Health Sciences planning grant event, featuring nine presentations and 80 registrants from inside and outside the University.

MIRA /LCMA Working Groups in Mobility: Kick-off Meetings | November 20 & 21, 2017
Working groups in “Exercise, Nutrition, and Mobility” and “Technology, Environment, and Mobility” (which are the two thematic areas that will be the focus of MIRA’s major programs of research in mobility) were launched during these events with a formal call to draft collaborative research proposals to be reviewed by MIRA’s International Scientific Advisory Committee (70 attendees).

Incite Insight: Building Collaborative Perspectives | November 21, 2017
This seminar, offered by MIRA’s collaborators from designCORE in Ireland, discussed the value of design thinking as a tool to facilitate interdisciplinary collaboration and improved research outcomes (30 attendees).

The Boomer Brain: Research Workshop, Networking and Public Talk | December 4, 2017
This was the joint Humanities/Business planning grant event, featuring a networking session (30 attendees) and public talk (100 attendees).
MIRA and Labarge Centre for Mobility in Aging Research Day | December 14, 2017

This event represents MIRA’s largest internal event, which is a celebration of aging research across the University. The event will include oral and poster presentations, poster awards for trainees, and networking opportunities for researchers. Following the public session, the members of the Labarge Gift Board will have their annual meeting.

In addition to the events hosted, supported or facilitated by MIRA, the Institute also had a presence at a number of external events, including:
- Keynote presentation at the Innovation Showcase during the Invictus Games;
- Exhibition table at the International Association of Geriatrics and Gerontology conference (San Francisco);
  - While there, MIRA documented its activities live on McMaster’s Instagram feed, which boasts 17.3k followers.
- Exhibition table at the Canadian Association for Gerontology conference (Winnipeg);
- A number of community events and showcases, such as the “100in1 day” in downtown Hamilton.

Participating in and/or leading internal and external events is an important way for MIRA to raise its profile and bring attention to aging research at McMaster. The Institute will continue to seek opportunities to engage with internal and external partners through strategic events in the years ahead while considering the challenge of continued engagement with researchers while not overburdening them with events.

Goals for 2018

MIRA’s first year focused primarily on building relationships, reputation, capacity and infrastructure, establishing an identity within McMaster and beyond, launching new partnerships, and creating mechanisms to provide support for researchers in aging. Over the next few years, MIRA will build on this momentum with a focus on the following activities:

1. Establish major programs of research within the Labarge Centre for Mobility in Aging
   a. These programs will include multi-investigator projects focused on two topic areas: i) Exercise, nutrition and mobility, and ii) Technology, environment and mobility
2. Develop a strategic research plan for MIRA and the Labarge Centre
3. Look for opportunities to create new research centres within MIRA based on McMaster’s strengths and expertise
4. Identify potential pathways to leverage MIRA and Labarge funds to extend and expand the impact of the Institute and Centre
5. Continue to increase MIRA’s profile and reputation among key stakeholders
6. Participate in opportunity-driven initiatives, such as the development of an on-campus space to house intergenerational programming for older adults and university students

7. Segment MIRA’s membership so that different levels of engagement are possible, and so that those who are most highly engaged experience greater benefit

8. Establish activities and/or initiatives intended to enhance internal collaboration

9. Partner with the Office of International Affairs to bring in a prominent international speaker in order to further enhance McMaster’s global reputation

10. Continue to work with internal partners to design and implement student residence project
Appendix I
Selected Communications Materials

May
MIRA member Dawn Bowdish spoke with The Globe and Mail about the centenarian gender gap:

MIRA member Antonio Páez spoke in Spanish with CBC's Radio Canada International about the goals driving MIRA and the importance of rethinking the concept of "old age."

June
Parminder Raina, MIRA's Scientific Director and principal investigator for the Canadian Longitudinal Study on Aging (CLSA) commented on human lifespan for the National Post.

#TheNext150 campaign was a feature story that re-packaged all of our articles on aging, including last year’s Globe and Mail supplement, to align with Canada’s 150. This package was shared across campus, and on the Daily News. We created advertising material for distribution at upcoming events around this campaign as well. http://mira.mcmaster.ca/news-events/news-item/2017/06/27/TheNext150

July
MIRA worked with Stuart Phillips, professor in the Department of Kinesiology and member of MIRA, to develop a press release for distribution among local and international media. The release highlighted his recently published research that concluded the development of a new supplement can repair and rejuvenate muscles in older adults. The release was widely picked up locally, nationally and internationally by multiple news outlets, including The Daily News, The Hamilton Spectator, Global News, Science Daily and Readers Digest, among many more.

August
Dr. Doug Oliver spoke with CBC (Toronto, London, Kitchener-Waterloo, Charlottetown, Moncton, Sudbury, Corner Brook, Yellowknife, Kamloops, Victoria, Kelowna, Prince George/Prince Rupert, Ontario AM and Saskatoon), on a recent study about how loneliness can have negative health effects, while also raising the profile of the work McMaster University and MIRA is doing in aging research:
http://www.cbc.ca/player/play/1026719811955

Dr. Brenda Vrkljan, associate professor of Occupational Therapy at McMaster University and executive member of MIRA appeared on CHCH Morning Live to discuss some important ways to prepare if you, or your parents, want to live out your lives at home. http://www.chch.com/stay-healthy-home/

October
MIRA’s scientific director, Parminder Raina, along with MIRA member, Margaret Denton, and Rachel Weldrick, a McMaster University PhD candidate in social gerontology, were featured in a recent Hamilton Spectator article about the many professionals in Hamilton studying and planning for our aging population. MIRA was specifically highlighted, as was The Walrus event:
In late October, McMaster University and MIRA announced that it has joined the global network of Age-Friendly universities. The story was written in-house by MIRA and shared among local media as a press release. Coverage included: The Daily News, The Hamilton Spectator, CBC and Cable 14, as well as multiple internal newsletters, including Academica Group: [http://mira.mcmaster.ca/news-events/news-item/2017/10/19/mcmaster-university-joins-global-network-of-age-friendly-universities](http://mira.mcmaster.ca/news-events/news-item/2017/10/19/mcmaster-university-joins-global-network-of-age-friendly-universities)

MIRA’s scientific director, Dr. Parminder Raina, published an op-ed titled, “It’s time to treat aging as an asset, not a burden” in The Conversation on October 16, 2017. The article was also published in The Hamilton Spectator.