MACH
Melbourne Academic Centre for Health

CARE OF THE AGEING

Ageing and Aged Care Research Review

Authors: Rebecca Madill, Nick Walsh and Professor Andrea Maier

October 2020

www.machaustralia.org/ageing

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Acknowledgement of Country:
Members of the Melbourne Academic Centre for Health Care of the Ageing Network would like to acknowledge and pay respect to the Traditional Owners of the land on which we work, and pay our respects to Elders, past, present and emerging.

Acknowledgements:
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Foreword

I am pleased to present the first Ageing and Aged Care Research Review prepared by the Melbourne Academic Centre for Health (MACH) Care of the Ageing (CotA) Network. The purpose of this report is to highlight the achievements of ageing and aged care researchers and emphasise the established multidisciplinary network for ongoing and future partnerships.

As you digest this report, I hope you enjoy reading the many examples of translational ageing and aged care research across the MACH CotA Network.

This report acts as a starting point, highlighting the breadth, depth and resilience of our network to answer the ever-changing and complex needs of ageing and aged individuals. I invite further collaboration from researchers across the ageing and aged care research fields and beyond.

I embrace the innovative, collaborative and inclusive nature of our network and see it is as fundamental in progressing and producing meaningful research that continues to support our community.

Professor Andrea Maier
Chair, Care of the Ageing Network

As Australia's ageing population increases, we see the need to adapt the models of care we once relied on for the older generation. COVID-19 has had substantial impacts on the aged care system and the need to focus on new solutions is ever more prevalent. Our research must advance to provide and care for all members of our ageing community. It's crucial that we prioritise and focus on ageing and aged care research to meet these new needs.

MACH's collaboration with 10 leading public health services, eight medical research institutes, the University of Melbourne and La Trobe University allows us to bring research to life that benefits patients and strengthens the economy.

This Ageing and Aged Care Research Review demonstrates the foundations we have in place to do this for ageing and aged care. MACH CotA Network facilitates collaborations with the brightest researchers in the field to respond to issues that are affecting our ageing population and work towards improving the lives of older adults in these most challenging of times.

Professor Sir John Savill
Executive Director of MACH

Executive Summary

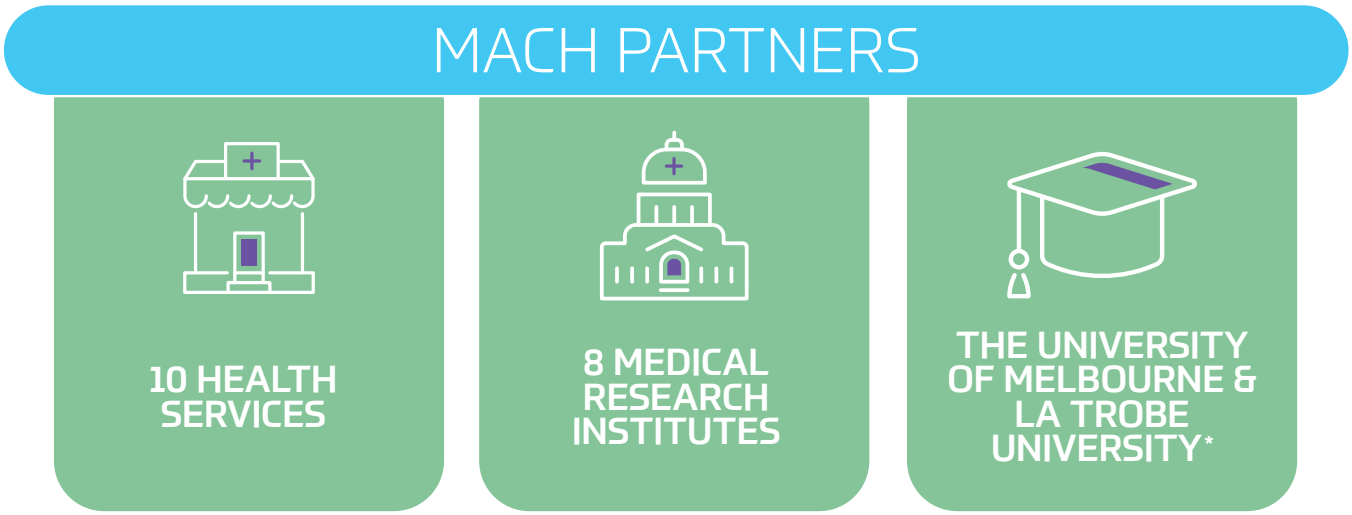
There has never been a more pertinent time for ageing and aged care research in Australia. As the Australian population continues to age, the dynamic health needs of Australia's older population continues to evolve. Identification of research and support of ageing and aged care across the spectrum of the ageing process ensures that, as a society, we continue to support older adults' physical, mental and psychosocial wellbeing.

Internationally, the need to ensure healthy ageing is also recognised with the World Health Organization recently announcing its Decade of Healthy Ageing (2020–2030) initiative, providing an exceptional "opportunity to bring together governments, civil society, international agencies, professionals, academia, the media, and the private sector for ten years of concerted, catalytic and collaborative action to improve the lives of older people, their families, and the communities in which they live," [1 (pg. 1)].

While recognition for ageing and aged care research across Australia continues to grow, greater appreciation into the diversity and value ageing and aged care research has in shaping a healthy society is needed. Ageing and aged care research, is often categorised into well-known research identifiers such as dementia and Alzheimer's disease research and while fundamental to the field, it must be acknowledged that the field encompasses a much broader paradigm than this.

This report aims to emphasise the extensive ageing and aged care research across Melbourne Academic Centre for Health partners which currently run over **440 related clinical trials** and almost **700 ageing and aged care related research projects.**

Figure 1 - Overview of the MACH Partnership



* Denotes affiliate member.

ABOUT THE MELBOURNE ACADEMIC CENTRE FOR HEALTH

MACH is a National Health and Medical Research Council-(NHMRC) recognised Advanced Health Research and Translation Centre (AHRTC). We are also a member of the Australian Health Research Alliance (AHRA), which consists of all seven NHMRC-recognised AHRTCs and three Centres for Innovation in Regional Health.

MACH is a collaboration that includes 10 leading public health services (hospitals), eight internationally excellent medical research institutes, the University of Melbourne—Australia's highest ranked University, and La Trobe University as an affiliate member. MACH brings together health services and health scientists committed to translation of interdisciplinary research that will benefit patients and strengthen the economy.

Figure 1 provides an overview of the MACH partnership.

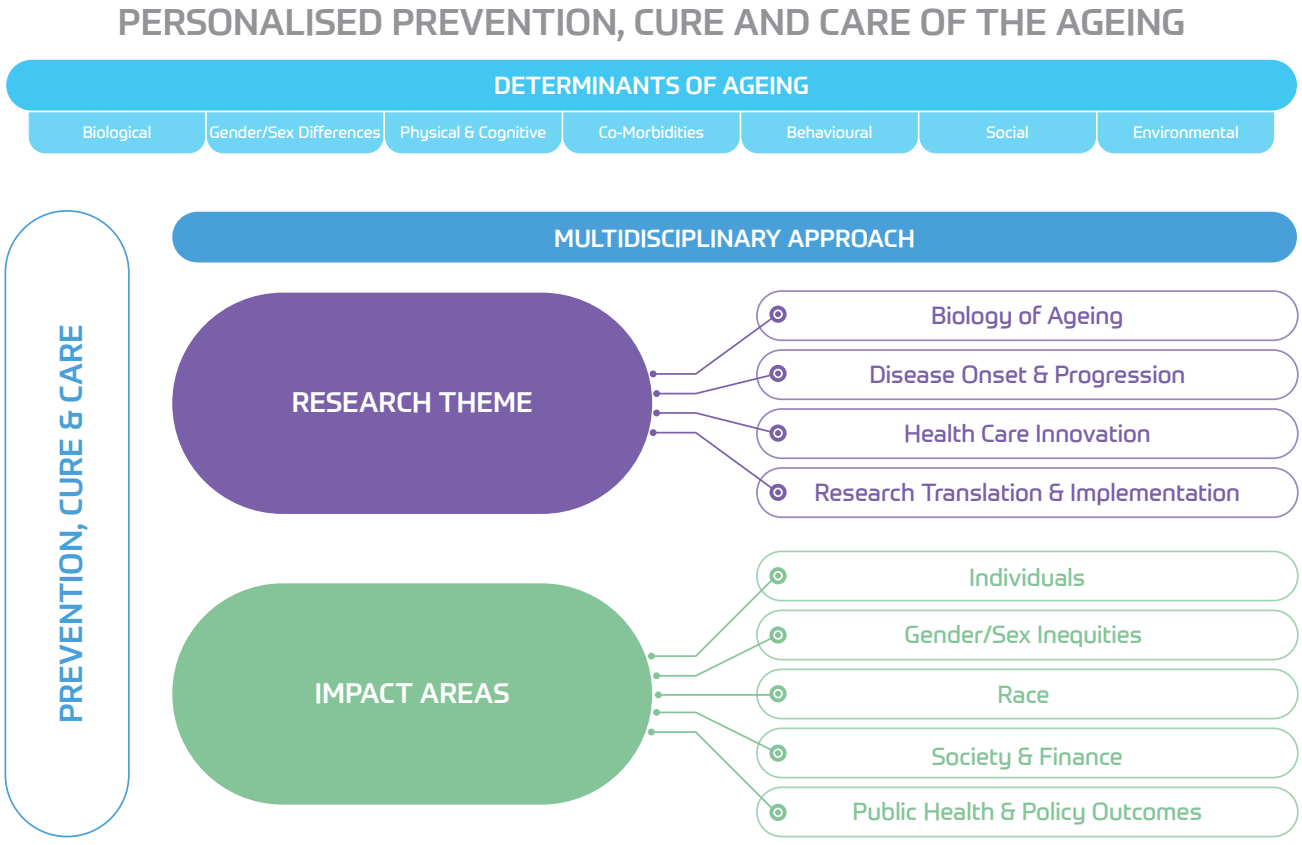
MACH Care of the Ageing Network

CotA is a network of pre-eminent ageing and aged care researchers that is committed to a personalised approach to prevention, cure and care for the ageing and aged care sector with a focus on research translation and implementation

Research themes span the health research spectrum from laboratory research, biological sciences and animal studies; to human inquiries, such as clinical trials and cohort studies; social sciences, public health and policy interventions.

See **Figure 2** for the CotA Research Strategy.

Figure 2 - CotA Research Strategy



RESEARCH ACROSS THE CARE OF THE AGEING NETWORK

The breadth, depth and expertise of the CotA Network is world-class with many researchers regarded as being at the top of their field internationally. The network represents strong clinical and multidisciplinary research collaborations in order to support the ongoing needs of older adults across Australia.

The network is supported by a committee that acts as a gateway to other ageing and aged care leaders and researchers across MACH partners. Consumer representatives are active members of the network, ensuring that the voices of ageing and older adults are heard and contribute to how ageing and aged care research is conducted in Australia.

As highlighted by the recent COVID-19 pandemic, MACH CotA researchers are in a position to provide high quality and rapid research translation at short notice. This is exemplified in a current collaborative project evaluating inpatient falls across MACH and Monash Partners hospitals during the pandemic.

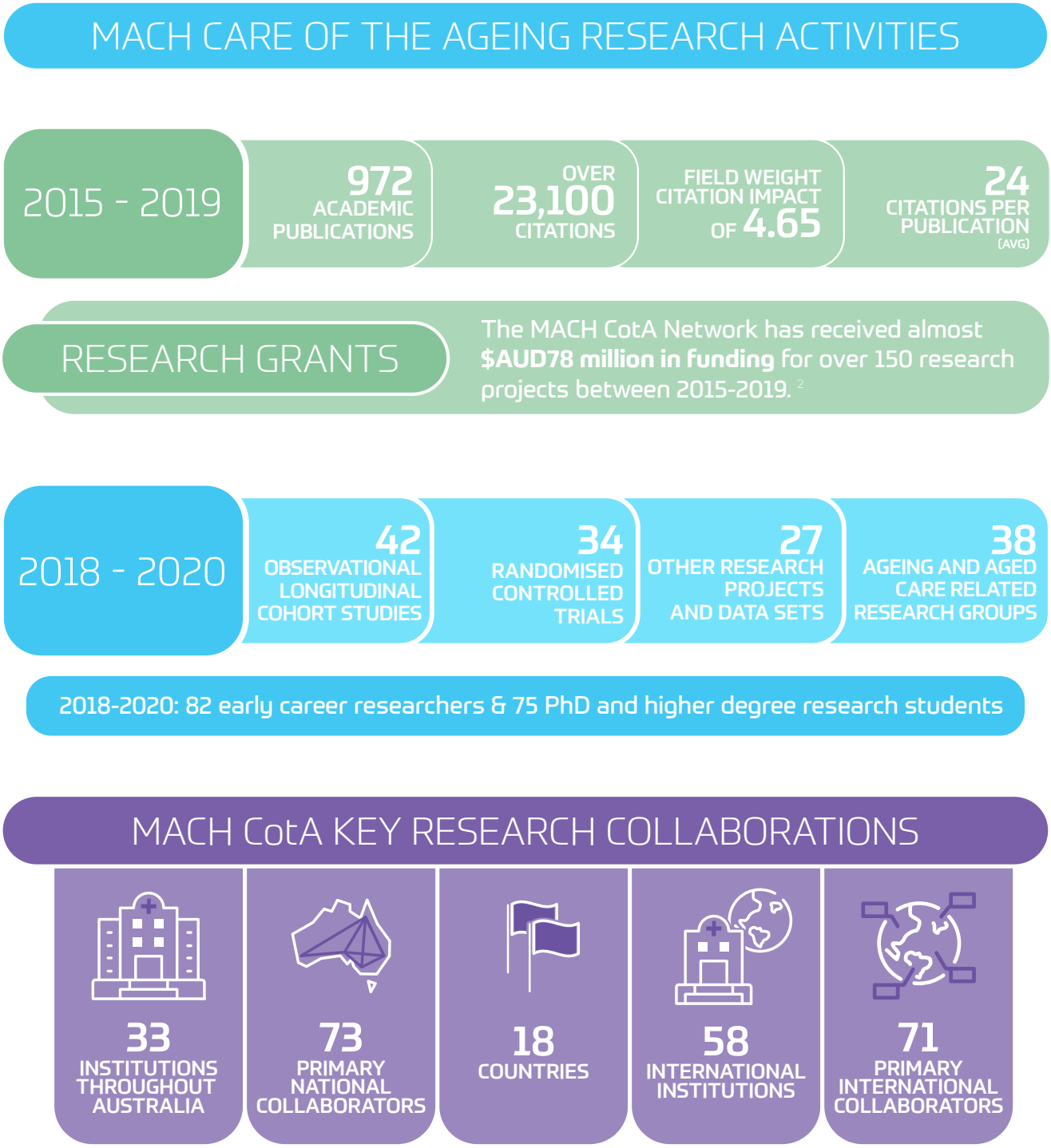
MACH CotA researchers are passionate about capacity building and supporting early and mid-career researchers as the next-generation of leading ageing and aged care researchers and clinician-scientists. Between 2018-2020, the network supported numerous mid-career researchers, over 80 early career researchers and 75 PhD and higher degree research students, in addition to extensive teaching and education commitments.

See **Figure 3** for key research statistics.

Members from the MACH CotA Network have worked collaboratively on a number of projects, some examples include:

- The Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing (AIBL) study
- REStORing health of acutely unwell adulTs: RESORT
- The Healthy Ageing Project
- Australian Brain Health Project
- The Hunter Valley Community Study
- Women's Healthy Ageing Project.

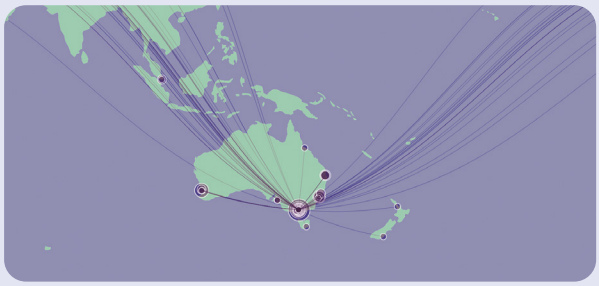
Figure 3 - MACH CotA Key Research Statistics



RESEARCH COLLABORATIONS OVERVIEW

The MACH CotA Network collaborates extensively with major research institutes and universities across Australia such as the University of Sydney, Queensland University of Technology and the University of Western Australia; and internationally with leading institutions including Cambridge University, the University of Copenhagen and the University of California, San Francisco.

Collaborations were identified by surveying MACH CotA members who identified their top five national and top five international research collaborators. This offers a collaboration snapshot of a much larger network.



National Collaborations

Extensive collaboration occurs throughout Australia with 33 key national collaborating institutions and 73 primary collaborators identified by MACH CotA Network members. Between 2015-2019 these 73 national collaborators have produced:

- 4,527 academic publications
- Over 71,729 citations
- A field weight citation impact of 2.18
- 16 citations per publication (average).

International Collaborations

Internationally, collaborative research has been primarily conducted in 18 countries across 58 key institutions with 71 primary international collaborators. Between 2015-2019 these 71 international collaborators have produced:

- 4,424 academic publications
- Over 133,090 citations
- A field weight citation impact of 4.61
- 30 citations per publication (average).

Network maps created in collaboration with SCIP scip.unimelb.edu/

SCIP Social and Cultural Informatics Platform

Background

Australia's population is ageing. According to the Australian Institute of Health and Welfare (2018), in 2017 15% of Australia's population was aged 65 years or above [3]. By 2057 it is estimated that 22% of Australia's population will be over 65 and by 2097 will make up 25% of our population [3].

Additionally, many older Australians are staying in their homes for longer prior to potentially moving to residential care facilities [4]; with many older adults also being more educated, involved and active in their health compared to previous generations [4]. Therefore, preparation as how to best care for older adults in our communities must be given urgent consideration.

There are many aspects of ageing and aged care that require attention. This ranges from adequate and compassionate care as highlighted by the Aged Care Royal Commission Interim Report [5]; to understanding fundamental biological aspects of ageing and how we can best support Australia's population to live long and healthy lives [6]. Indeed, the variations into ageing and aged care requirements are diverse and complex.

Given these challenges, research is well placed to address many of the difficulties we currently and will continue to face to improve the lives of older adults, their families and carers, and health systems to support them.

MACH CotA Network comprises a specialised group of ageing and aged care researchers and clinicians [7], who aim to address some of the major issues faced by Australia's ageing population.

Definition of key terms

Ageing: Ageing refers to biological changes at molecular and cellular levels where the impact and accumulation of damage to cells occurs over time. The decreases in molecular and cellular functionality and capacity leads to a decline in physical, mental and cognitive health, and eventually death [8].

Beyond biological changes associated with ageing, life transitions and other losses associated with ageing (such as retirement, sociodemographic changes such as moving into poverty, or the death of a loved one) can significantly impact on one's health [8].

Aged Care: "Aged care is the support provided to older people in their own home or in an aged care (nursing) home. It can include help with everyday living, health care, accommodation and equipment such as walking frames or ramps. Government-funded aged care services are available to eligible people" [9 (pg. 1.)].

Part 1 | Ageing Research across Australia

The breadth and depth of ageing and aged care research in Australia is vast. It includes fields such as biological and molecular sciences – for example investigating biomarkers of dementia – to broader population and global health research, such as promoting physical activity and other modifiable factors associated with healthy ageing and life expectancy. Due to the enormous variation in what constitutes ageing and aged care research it can be challenging to neatly define and encapsulate all related research in Australia. Therefore, in an attempt to narrow the scope of this exercise, we have identified some of the current major sources of funding and support for ageing and aged care research.

National Initiatives

The Federal Government has a large research focus on aged care through initiatives such as general (GEN) aged care data [10] which acts as a repository for data and metadata relating to government funding aged care programs for researchers to access [10]. Additionally, initiatives such as the Medical Research Future Fund (MRFF), Dementia, Ageing and Aged Care Mission aims to spend $185 million over 10 years, to support research in helping older Australians maintain health, independence and quality of life as they age, while accessing the services they need [11].

Another initiative is AHRA, which consists of seven NHMRC-accredited AHRTCs and three Centres for Innovation in Regional Health (CIRHs) [12]. These research translation centres collaborate with primary, secondary and tertiary health services as well as research centres and universities [12]. AHRA has an Aged Care Research Translation and Impact Network, which is an alliance of ageing and aged care clinician researchers with representatives from across the AHRA network [12].

Victorian Initiatives

At the state level, the Victorian Government has commissioned research to be undertaken to consider the needs of the residential aged care workforce [13], and supports ageing research through funding of key research organisations, such as the National Ageing Research Institute (NARI) [14]. Ageing and aged care research in Victoria is largely led by hospitals, research institutions and universities, which all play a major role in ageing and aged care research across the country.

Numerous not-for-profit and advocacy groups also play a role in ageing and aged care research, such as Dementia Australia [15], Council on the Ageing Victoria [16] and Seniors Rights Victoria [17]. Volunteer and not-for-profit organisations are fundamental elements of ageing research as it gives voice to consumers (end-users) who benefit from research outputs.

Part 2 | Ageing Research across MACH Partners

MACH Themes

MACH convenes a range of themed committees that address gaps in the Australian healthcare and health research systems.

Care of the Ageing is one of 11 themes covered within the MACH research translation portfolio. Other research themes include Clinical Trials and Research Facilitation, Consumer and Community Involvement, Data Driven Health Care Improvement, Education and Workforce Planning, Health Services Improvement and Implementation, Indigenous Health, Infection, Primary Care, Strategic Translational Research and Platforms, and Women's and Newborn Health [18].

MACH partners:

- Austin Health
- Bionics Institute
- Centre for Eye Research Australia
- La Trobe University *
- Mercy Health
- Murdoch Children's Research Institute
- National Ageing Research Institute
- Northern Health
- Olivia Newton John Cancer Research Institute
- Peter MacCallum Cancer Centre
- St. Vincent's Hospital Melbourne
- St. Vincent's Institute of Medical Research
- The Florey Institute of Neuroscience & Mental Health
- The Royal Children's Hospital Melbourne
- The Royal Melbourne Hospital
- The Royal Victorian Eye and Ear Hospital
- The Royal Women's Hospital Melbourne
- The University of Melbourne
- Walter and Eliza Hall Institute of Medical Research
- Western Health.

* denotes affiliate member

MACH PARTNER PUBLICATIONS 2015-2019
(ALL RESEARCH AREAS)

61,911	27,860	1.98	813,862	13.1
PUBLICATIONS	AUTHORS	FIELD WEIGHT CITATION IMPACT (AVG.)	CITATIONS	CITATIONS PER PUBLICATION (AVG.)

RESEARCH MAPPING BACKGROUND AND SEARCH METHODOLOGY

MACH partners boast an extensive network of research and collaboration across the full spectrum of healthcare. This also holds true for MACH CotA Network. Members of the CotA Network who sit on the committee provide opportunities to connect to the vast ageing and aged care research activity that occurs across all MACH partners. To understand the extent of ageing and aged care research across MACH partners an initial desktop search was conducted.

Search Strategy:

1. All MACH partner websites were searched for annual reports, research reports, strategic plans and other key documents – relevant information related to ageing and aged care research was recorded.
2. Keywords "research", "ageing" and "aged care" were used to identify further ageing related research within organisations.
    - Information was gathered from institution websites
    - Ageing and aged care related research predominately relates to ages 65 years and older, although it can include the impacts of ageing across the life course
    - Excluded: Royal Children's Hospital and Murdoch Children's Research Institute as these institutes are specific to the needs of children.
3. Once a desktop analysis of ageing research was conducted, an email was sent to each research office asking for clarification of ageing research across their network. Follow up emails were sent to each research office if a response was not forthcoming.

This broad search strategy gave a starting point as to the volume of ageing and aged care research that was being conducted across MACH partners. From this initial investigation, further clarification of ageing and aged care research was defined by our members from the MACH CotA Network, as discussed in Part 3 of the report.

Limitations to data collection

Every attempt was made to accurately reflect the correct number of ageing and aged care research projects, however website details are not always up-to-date with their most recent projects and the response from research offices was varied, with a response rate of approximately 67%. Therefore, there may be slight inconsistencies in the number of ageing and aged care projects reported and the true number being conducted.

SUMMARY OF AGEING AND AGED CARE RESEARCH ACROSS MACH PARTNERS

Below is a high-level summary of ageing research undertaken across the MACH network. Caution must be taken when reviewing these figures as all hospitals and research institutes report the number of ongoing research projects differently, with some organisations listing research projects by theme, while others list activity by clinical research project or clinical trial. Additionally, there is variation in capacity to report current research activity across institutions. It is clear however, that a thriving ageing and aged care research community is active across MACH partners.

Table 1: Summary of Ageing and Aged Care Research across MACH partners

HOSPITALS	RESEARCH INSTITUTES	UNIVERSITIES
Over 290 clinical trials, many of which are specifically relevant to people aged 65 years and older. As well as at least **215 ageing and aged care related research projects.**	**150 clinical trials,** many of which are specifically relevant to people aged 65 years and older and other projects that cover a spectrum of ages including older individuals As well as at least **370 ageing and aged care related research projects.**	Approximately **120 ageing and aged care research projects.**
Total: 440 related clinical trials and over 700 ageing and aged care related research projects.		

Hospitals

The CotA Network is connected through clinical and research input with the following nine MACH partner health services:

- Austin Health
- Mercy Health
- Northern Health
- Peter MacCallum Cancer Centre
- St. Vincent's Hospital Melbourne
- The Royal Melbourne Hospital
- The Royal Victorian Eye and Ear Hospital
- The Royal Women's Hospital
- Western Health.

The majority of the comprehensive health services provide specific ageing and aged care services for their communities, while specialist hospitals such as the Peter MacCallum Cancer Centre and the Royal Women's Hospital provide services for a specific population demographic.

Clinical trials and longitudinal observational cohort studies form a large part of the research that occurs across MACH partner hospitals. These cover a broad range of demographics and research themes and are currently in various phases of recruitment. The strong base of clinical-based research, clinical trials and cohort studies forms a foundation from which many ageing and aged care research projects are created with the CotA Network.

When searching for ageing and aged care research across MACH partners, it was found that few institutions list ageing research as its own entity, instead listing it under specific medical disciplines such as cardiology, neurology or nephrology, while aged care research is often categorised as dementia and Alzheimer's disease research. It must be acknowledged that ageing and aged care research is often multidisciplinary and encompasses a much broader paradigm than these well-known identifiers.

The scale of ageing and aged care research that occurs across the MACH partner hospital network is too extensive to be captured within this document and as such only selected ageing and aged care research highlights and MACH CotA members have been included in this overview.

AUSTIN HEALTH

Austin Health spans several campuses and addresses the needs of a broad range of demographics. Austin Health encompasses a wide range of clinical, scientific, and health related research, much of which captures the cohort aged 65 years and older. The range of health research is demonstrated during the annual Austin Life Sciences Research Week. *For more information click here.*

Research Highlights

Medical and Cognitive Research Unit (MCRU)

Located at the Austin Repatriation Hospital, the MCRU is the largest dementia clinical trials site in the southern hemisphere and is also one of the largest in the world [19]. The MCRU has established a strong reputation and expertise in Alzheimer's disease research.

For more information visit:
https://www.austin.org.au/cognitiveresearch

Researcher Spotlight

Dr Paul Yates is a Consultant Geriatrician at Austin Health. He also holds a position of Honorary Research Fellow at The Florey Institute of Neuroscience and Mental Health, and the University of Melbourne.

Dr Yates is involved with consumer engagement and collaborations with stakeholder groups including primary care health care networks, Seniors Rights Victoria/Council on the Aged, and on ethics committees. He has broad experience in diverse settings and aspects of clinical geriatric medicine and research, across randomised control trials, quantitative and qualitative methods, clinical, health systems and biomarker work.

MERCY HEALTH

Mercy Health provides care across a broad range of demographics, from newborn services to aged care. It has a strong focus on research and continues to progress research in ageing and aged care.

Mercy Health
Care first

Research Highlights

Some key ageing research projects occurring across Mercy Health include:

1. **Talk2Me Technology: Collaboration with NARI funded by the Australian Government Department of Health – Dementia and Aged Care Services Research and Innovation Funding.** People living at home, including those with dementia, from culturally and linguistically diverse (CALD) backgrounds do not always receive care from ethnospecific organisations or from people who speak the same language. Yet effective communication relating to everyday issues is essential for older people — particularly those with dementia — to support orientation, safety and essential care needs.

2. **Socio-Spatial Analysis of the Design and Lived Experiences of Residential Aged Care Models: A Qualitative Study of Traditional and Small Household Typologies Collaboration with University of Notre Dame (WA)**. Funded by Mercy Health Foundation, Mercy Health and the University of Notre Dame. The objective of this research project is to reveal the socio-spatial factors within case study buildings that may enhance or inhibit quality of care and contribute to residents' quality of life.

For more information click here.

NORTHERN HEALTH

Northern Health covers four main health services including: Broadmeadows Hospital, Bundoora Centre, Craigieburn Centre, with the Northern Hospital in Epping being the largest health care service provider. Northern Health is currently involved in a range of clinical research and trials including ageing and aged care research.

Research Highlights

Northern health has over 200 research projects listed across all subject areas, with approximately a quarter relating to ageing and aged care.

Northern Health has strong affiliations with the University of Melbourne and La Trobe University for both clinical and research activities.

For more information click here.

Researcher Spotlight

Dr Barbara Hayes is the Clinical Lead for Advance Care Planning at Northern Health and has extensive experience in palliative medicine and qualitative research.

PETER MacCALLUM CANCER CENTRE

Peter MacCallum Cancer Centre research program encompasses 41 laboratories and hundreds of laboratory scientists, clinician-researchers, research nurses and other health professionals [20]. The Centre is involved in basic, pre-clinical and translational research, clinical trials and research to improve the social, emotional and physical impacts of cancer on patients, their families and carers. While much of the Centre's research is not specifically directed into ageing and aged care, their research does cover the spectrum of ages of people affected by cancer, including those older than 65 years.

Research Highlight

The Geriatric Oncology (GO) Nursing Education Module supports nurses working with older adults in oncology environments. This online educational resource to improve nursing care of older people with cancer is freely available as a national resource in this *link.*

The modules cover the following topics:

- Changes associated with ageing (including definitions of ageing and assessment)
- Impact of cancer and treatment on older people
- Communicating with older people about cancer and treatment
- Professional issues associated with caring for older people with cancer [21].

For more information click here.

Researcher Spotlight

Professor Meinir Krishnasamy is the Director of Cancer Nursing and Academic Nursing Unit, Peter MacCallum Cancer Centre; Chair in Cancer Nursing, the University of Melbourne; Victorian Comprehensive Cancer Centre (VCCC), Research and Education Lead, Cancer Nursing

Professor Krishnasamy is immediate past President of Clinical Oncological Society of Australia (COSA) (2014-2016). Her appointment saw a non-medical practitioner awarded the Presidency of COSA the first time in its 40-year history. She is a founding member of the International Community of Practice in End of Life Care (2016-current). Professor Krishnasamy is past Board member of Cancer Council Australia (until 2016) and current Board member of COSA. In February 2016, she was appointed inaugural Chair in Cancer Nursing at the University of Melbourne and later that year, inaugural Research and Education Lead for Cancer Nursing at the VCCC. In August 2019, Professor Krishnasamy was appointed Director of the Academic Nursing Unit at PeterMacCallum Cancer Centre a joint position with her Professorial role at the University of Melbourne.

ST. VINCENT'S HOSPITAL MELBOURNE

St. Vincent's Hospital Melbourne is a major teaching, research and tertiary referral centre providing acute or chronic medical and surgical services, as well as clinical training. The hospital is involved with hundreds of clinical trials and many clinical research projects related to ageing and aged care.

Research Highlight

Some examples of ageing research occurring across St. Vincent's Hospital Melbourne include:

- The prevalence of potentially inappropriate prescribing in elderly high-level care nursing home residents presenting to a metropolitan emergency
- An exploration of the efficacy of Geriatric Evaluation and Management units
- Implementing the Australian Elder Abuse Screening Instrument (AUSI)
- A pilot study of implementing national physical activity guidelines for older people who are cognitively healthy, or have subjective cognitive decline or mild cognitive impairment, in an aged persons mental health service
- Randomised trial to imProve the quality of Life of people with Dementia plus their carers (RAPID-plus).

For more information click here.

St. Vincent's Hospital Melbourne is a partner of the Aikenhead Centre for Medical Discovery: a research and academic medical centre that is bringing together clinicians, engineers, scientists and students with the aim of achieving three major health outcomes for Australians: Improved management of chronic illness, Ageing well and Prevention of disease.

For more information click here.

THE ROYAL MELBOURNE HOSPITAL

The Royal Melbourne Hospital (RMH) has strong research collaborations across its network including its Royal Park Campus, North-Western Mental Health (NWMH) and The Peter Doherty Institute for Infection and Immunity (PDI) – a joint venture between RMH and the University of Melbourne.

The Royal Melbourne Hospital

Research Highlights

@AgeMelbourne Research Group

The @AgeMelbourne Research Group conducts research in conjunction with the University of Melbourne and is a national and international collaboration of ageing researchers led by Professor Andrea Maier, Division of Medicine and Community Care at RMH. Current longitudinal observational cohort studies and randomised controlled trials include:

- REStORing Health of Acutely Unwell AdulTs: RESORT
- CGA-Oncology Study: Comprehensive geriatric assessment and intervention in older lung cancer patients
- EMPOWER-GR: Enhancing Muscle POWER in Geriatric Rehabilitation
- The SHAPE Study: Nutritional Needs, Physical Function and Sarcopenia in Geriatric Outpatients.

For more information click here.

Researcher Spotlight

Professor Andrea Maier is a Professorial Fellow General Medicine and Aged Care, Divisional Director of Medicine and Community Care, RMH and Professor of Medicine and Aged Care at the University of Melbourne.

Professor Maier has extensive clinical and research experience nationally and internationally. As a clinician scientist she is the lead researcher for the innovative, multidisciplinary @Age research team working in the Netherlands (@AgeAmsterdam) and in Australia (@AgeMelbourne).

She is the president elect of the Australian and New Zealand Society for Sarcopenia and Frailty Research Society and inaugural Chair of the CoTA Network. Professor Maier is also a frequent guest in radio and television programs to disseminate ageing research and an invited member of several international academic and health policy committees.

The Healthy Ageing Program

The Healthy Ageing Program is conducted in conjunction with the University of Melbourne and is led by Professor Cassandra Szoeke. The program includes a number of longitudinal prospective cohort studies with a focus on health and is overseen by a Scientific Advisory Committee. Streams of research include Healthy Brain, Heart and Body with Health Informatics and Lifestyle research themes working across all projects.

The cohorts include:

1. The Women's Healthy Ageing Project (WHAP) which commenced in 1990 recruiting over 1897 women then aged 45-55 years.
   In 1992 the project commenced the longitudinal follow up of over 400 women from the original cohort and has continued to follow these women through now three phases, midlife (45-55) with 88% retention, retirement (55-65) with 70% retention, early ageing (65-75) 52% retention, and is now entering the fourth phase of follow up ageing with all participant now aged over 75.
   Thanks to the commitment and volunteer service of its participants WHAP is the longest running study in Australia. It is also the only longitudinal cohort study in Australia with more than 20 years collection of data such as blood biomarkers, imaging (bone and brain) and over 15 years with full neuropsychiatric evaluations.
2. The Healthy Ageing Program which commenced with a Pilot program in 2015, recruiting over 20,000 participants into an online health study. This initial program then secured funding for the Healthy Ageing Program and Australian Brain Health study, which is a validated online annual health study incorporating validated cognitive and mental health measures alongside lifestyle and clinical information. It is novel in its inclusion of validated cognitive testing available online and it being open to all Australians to join (with no exclusion or inclusion criteria) There are over 4,000 participants in the study to date.
3. The Healthy Ageing Generations Study which includes 300 children of the original Women's Healthy Ageing Project and examines healthy ageing and impact of generational and family effects.

For more information click here.

Researcher Spotlight

Professor Cassandra Szoeke is currently the Director of the Healthy Ageing Program in the Centre for Medical Research at the University of Melbourne. She currently sits on the Council of the Australian Medical Association (Vic) and is a member of the Chairs of Quality and Safety in the Victorian Healthcare Association. She is internationally recognised for her expertise in women's health in ageing and the importance of sex differences in cognitive health and chronic diseases of ageing. Her programs work, which focusses on health outcomes, rather than disease, has contributed significantly to the inclusion of overlapping and interactive pathologies that contribute to chronic disease development and consideration of multi-morbidity.

Research Highlights

NWMH provides services at RMH, Royal Park Campus, Footscray Hospital, Sunshine Hospital, the Northern Hospital and Broadmeadows Health Service.

Academic Unit for Psychiatry in Old Age (AUPOA)

The AUPOA is a unit of the Department of Psychiatry, Melbourne Medical School, the University of Melbourne and is also an integral part of the Aged Persons Mental Health Program (APMHP) within NWMH. The AUPOA team is multidisciplinary with many members having clinical backgrounds including psychiatry, clinical psychology, neuropsychology, occupational therapy, exercise physiology, nursing, speech pathology, and social work. The team has additional specific expertise in cognitive interventions technologies and evaluation research (CITE research group).

"The Academic Unit for Psychiatry of Old Age conducts research focusing on mental and cognitive health in older age to advance knowledge, service delivery and care and help reduce stigma and discrimination associated with mental health problems and cognitive impairment in older age" [22 (pg. 1)].

For more information click here.

Researcher Spotlight

Professor Nicola Lautenschlager is the current Director of the AUPOA and Associate Professor Kathryn Ellis is the Deputy Director. Professor Lautenschlager is Professor and Chair of Old Age Psychiatry at the University of Melbourne and consultant old age psychiatrist in the APMHP. She is also the Director of Research in the APMHP and Deputy Head of School and Research Director of the Melbourne Medical School. Professor Lautenschlager is internationally recognised for her expertise in interventions to improve cognitive and mental health outcomes in middle-aged and older adults, with a current focus on dementia risk reduction strategies.

THE ROYAL WOMEN'S HOSPITAL MELBOURNE

The Royal Women's Hospital (RWH) specialises in women's health with a range of research projects which reflect this.

Research Highlight

The RWH is involved in a range of clinical trials, the biggest one related to ageing being the Women's Health After Surgical Menopause (WHAM) study.

Led by Professor Martha Hickey WHAM is a world-first study to investigate how menopause affects women after their ovaries have been removed to reduce their cancer risk. Professor Hickey is also a specialist in sex and gender specific health issues and ageing. She is a Professor of Obstetrics and Gynaecology and Head of the Gynaecology Research Centre at the University of Melbourne and the RWH.

For more information click here.

Researcher Spotlight

Martha Hickey is Professor of Obstetrics and Gynaecology at the University of Melbourne and Adjunct Professor of Obstetrics, Gynaecology and Reproductive Sciences at Yale University, Connecticut.

She is in active clinical practice with research expertise in menstrual disorders and menopause.

THE ROYAL VICTORIAN EYE AND EAR HOSPITAL

The Royal Victorian Eye and Ear Hospital (RVEEH) currently supports over 200 research projects ranging from first in human clinical trials testing medicines and devices, to a wide range of clinical research, population research and health services research.

the royal victorian eye and ear hospital

Research Highlights

World-leading research currently being undertaken at the hospital is looking at how hyperspectral imaging, based on NASA satellite technology, can be used to improve early detection of Alzheimer's disease.

The future of hearing for our ageing population

Age is one of the biggest contributing factors to hearing loss. With Australia's ageing population, this presents a real challenge for us to identify ways to cope with the growing issue. HEARing Cooperative Research Centre (CRC) in partnership with the RVEEH, led by Professor Robert Cowan and Dr Kerrie Plant, is currently conducting research looking into ways to better predict the outcomes of adult cochlear implant recipients.

Vision research

Challenges of the ageing eye, conditions such as cataracts, age-related macular degeneration, glaucoma and other neurodegenerative diseases will become more prevalent as a greater percentage of the population falls into the 65 years of age and older age range.

Professor Keith Martin, the Ringland Anderson Professor of Ophthalmology at the University of Melbourne and Managing Director of the Centre for Eye Research Australia (CERA), is undertaking research focused on glaucoma, gene therapy and neuroregeneration.

For more information click here.

WESTERN HEALTH

Western Health includes Footscray Hospital, Sunshine Hospital and Williamstown Hospital, the Sunbury Day Hospital, and a Transition Care Program at Hazeldean in Williamstown. Western Health cares for a wide range of demographics including older adults as well as culturally and linguistically diverse populations, which is something that is reflected in the research they undertake.

Western Health

Research Highlights

The Australian Institute of Musculo-Skeletal Science (AIMSS) at Western Health

AIMSS is a collaborative institute for translational research into ageing and musculoskeletal diseases. AIMSS has a strong focus on ageing research themes such as Geroscience, Ageing & Osteosarcopenia, and strong research collaboration between medical, allied health and clinical staff.

For more information click here.

The Western Health Chronic Disease Alliance (WHCDA)

The WHCDA aims to address the chronic disease burden affecting the western community of Melbourne by targeted research and other initiatives across a number of clinical disciplines.

The alliance, led by Western Health's Director of Nephrology, Associate Professor Craig Nelson, is an evolving partnership between disease specialists and other experts at Western Health. This will ultimately improve the quality and length of life of the community of Western Melbourne.

For more information click here.

Researcher Spotlight

Associate Professor Cathy Said is the inaugural Associate Professor of Physiotherapy and has a joint appointment at Western Health and the University of Melbourne. She is the program director for Musculoskeletal Allied Health at Western Health and her research program focuses on gait, balance disorders and falls in older people and people with a neurological disease.

Associate Professor Said and colleagues are responsible for the successful recently launched website to promote physical activity and exercise for older people: www.safeexerciseathome.org.au

Professor Gustavo Duque is a geriatrician, clinician and biomedical researcher with special interest in the mechanisms and treatment of osteoporosis, sarcopenia and frailty in older persons. He is currently Chair of Medicine and Director of the Australian Institute for Musculoskeletal Science (AIMSS) at the University of Melbourne and Western Health. He is also Director of the Fracture Care and Prevention Program at Western Health (Melbourne). As part of this Program, Professor Duque implemented a Falls and Fractures clinic at Sunshine Hospital where patients are assessed for falls and fractures risk in a comprehensive manner.

Medical Research Institutes

The CotA Network is connected through a range of ageing and aged care specific research projects with a strong focus around dementia and Alzheimer's disease with the following seven MACH partner medical research institutes:

- Bionics Institute
- Centre for Eye Research Australia
- National Ageing Research Institute
- Olivia Newton John Cancer Research Institute
- St Vincent's Institute of Medical Research
- The Florey Institute of Neuroscience & Mental Health
- The Walter and Eliza Hall of Medical Research.

BIONICS INSTITUTE

The Bionics Institute is a biomedical institute where biology, medicine and engineering intersect. Focusing on a wide range of research, the institute develops research topics related to hearing, vision and neurobionics.
The institute investigates vision and hearing impairment, considering the impact of ageing. The Bionics Institute investigates vision and hearing impairment across the life-course including understanding the impact of ageing.

Research Highlights

Hearing related ageing research

- Improving cochlear implants - understanding why some adults with a cochlear implant do not understand speech well
- Objective measurement of tinnitus
- Understanding the hearing brain - how the brain combines electric and acoustic stimulation
- Optogenetics - optical stimulation technology to improve the precision of bionic devices
- Hearing Therapeutics - protecting hearing with nanoengineered drug delivery systems
- Hair cell regeneration to treat hearing loss.

Vision related ageing research

- The next generation bionic eye
- Retinal stimulation to prevent/delay degeneration.

Neurobionics ageing related research

The Bionics Institute also have a focus on Parkinson's disease research, particularly the impact of deep brain stimulation can have on improving treatment of the condition.

Related research includes:

- Adaptive and targeted brain stimulation
- Improved deep brain electrodes
- Disturbances of posture, balance, and gait in Parkinson's disease
- Stimulation to improve stroke rehabilitation.

Electric medicine ageing related research

Additionally, the Bionics Institute has a focus on electric medicine research, particularly the impact of vagal nerve stimulation.

- Vagal nerve stimulation to treat inflammatory bowel disease
- Vagal nerve stimulation to treat Type II diabetes
- Vagal nerve stimulation to treat arthritis
- Pelvic nerve recording and stimulation to treat urinary conditions.

For more information click here.

CENTRE FOR EYE RESEARCH AUSTRALIA

The Centre for Eye Research (CERA) Australia is closely affiliated with the University of Melbourne Ophthalmology Department and the RVEEH, ensuring effective research translation. CERA has a focus on three main eye diseases: macular degeneration; glaucoma and diabetic eye disease, with the goal of finding innovative solutions to improve vision across Australia.

CENTRE FOR
Eye Research
Australia

Research Highlights

Clinical Trials Research Centre

The Clinical Trials Research Centre at CERA conducts clinical studies for a variety of eye conditions including diabetic eye disease, age-related macular degeneration, glaucoma, uveitis and other retinal diseases.

Macular Research Unit

CERA's Macular Research Unit aims to improve understanding of the disease processes and treatment options for age-related macular degeneration (AMD). In particular, research focuses on determining risk factors for progression from early AMD to advanced, the genetics of AMD, environmental associations with AMD, and biomarkers of AMD.

Mitochondria and Neurodegeneration

The Mitochondrial and Neurodegeneration group is investigating how mitochondrial dysfunction can lead to neurodegenerative processes, in particular glaucoma, Leber's hereditary optic neuropathy, Parkinson's and Alzheimer's disease.

Ophthalmic Epidemiology

The Ophthalmic Epidemiology team conducts clinical and epidemiologic research in eye and vision-related disease. The team have been working extensively on artificial intelligence and its application in medicine and big data analytics research on multidimensional clinical data.

Ophthalmic Neuroscience

The Ophthalmic Neuroscience group investigates the links between the eye and the brain, focussing on Alzheimer's disease, glaucoma, AMD, diabetic retinopathy and inherited retinal diseases. They also provide research support for KeepSight, a national program to tackle diabetes-related blindness and vision loss.

Glaucoma Research

The Glaucoma Research unit focusses on developing new approaches to improve glaucoma management as well as methods to detect short-term changes in the structure and function of nerve cells. The group aims to understand optic nerve susceptibility to disease and to discover new ways to protect and recover cells in the optic nerve.

For more information click here.

Researcher Spotlight

NASA satellite technology research to improve early detection of Alzheimer's disease (see RVEEH pg. 30) is being led by ophthalmologist **Peter van Wijngaarden**, Deputy Director of the Centre for Eye Research Australia (CERA) and Associate Professor of the University of Melbourne. He is a Director of the Ophthalmic Research Institute of Australia and a member of the Research and Medical Committees of the Macular Disease Foundation of Australia. Associate Professor van Wijngaarden is also a member of the Australian Alliance for Artificial Intelligence in Healthcare Workforce Program Committee and the Futures of Ophthalmology Taskforce of the Royal Australian and New Zealand College of Ophthalmologists.

NATIONAL AGEING RESEARCH INSTITUTE

The National Ageing Research Institute (NARI) is a specialised research centre dedicated to ageing and aged care research. NARI conducts research into many aspects of ageing with consideration of how getting older affects the individual and society. NARI also has a strong focus on health promotion as a way of translating research into practice.

Research Highlights

NARI is involved in a wide range of ageing and aged related research projects. Research themes span a broad range of topics:

- Aboriginal and Torres Strait Islander health
- Aged care
- Cultural diversity
- Dementia
- Elder abuse
- Falls and balance
- Healthy ageing
- Hospital care
- Lesbian, gay, bisexual, transgender, and intersex people (LGBTI) research
- Mental health
- Pain
- Physical activity
- End of life care
- Technology.

A major strength of research at NARI is their strong consumer voice, with all their projects having at least one consumer being involved in an advisory capacity.

For more information click here.

Researcher Spotlight

Associate Professor Frances Batchelor is the Director of Clinical Gerontology and a Principal Research Fellow at NARI and Research Program Manager of the Melbourne Ageing Research Collaboration (MARC). Associate Professor Batchelor oversees research encompassing over 20 projects, including an extensive program of work for the Victorian Department of Health and Human Services focussed on improving health services for older people. She has expertise in non-traditional academic collaborations and strong skills with consumer representation.

OLIVIA NEWTON-JOHN CANCER RESEARCH INSTITUTE

The Olivia Newton John Cancer Research Institute (ONJCRI) is involved in over 150 current research projects. While much of ONJCRI research is not specifically directed into ageing and aged care, their research does cover the spectrum of ages of people affected by cancer. Therefore, while all five programs of research are relevant to people aged 65 years and older not all research is specific to this cohort.

Research Highlights

The five main research streams:

- Cancer and Inflammation Program
- Cancer Immunobiology Program
- Gastrointestinal Cancers Program
- Translational Breast Cancer Program
- Tumour Targeting Program.

ONJCRI also provides a range of palliative care services; has connections to many different cancer related clinical trials; and is part of Austin Health and La Trobe University where it forms the School of Cancer Medicine.

For more information click here.

ST. VINCENT'S INSTITUTE OF MEDICAL RESEARCH

The St. Vincent's Institute of Medical Research (SVI) focuses on a range of common diseases that affect a large cohort of the population including those 65 years and older. SVI has a mission to create and harness knowledge of disease in order to improve health.

Research Highlights

Examples of ageing and aged care research occurring at SVI:

- Development of targeted therapeutics for cancer and rare disease
- Control of bone mineralisation by osteocytes
- The mechanisms of action of new treatments for cardiovascular disease
- Structural biology of infection
- Intracellular pathways of beta-cell death in type 2 diabetes.

For more information click here.

THE FLOREY INSTITUTE OF NEUROSCIENCE AND MENTAL HEALTH

The Florey Institute of Neuroscience and Mental Health is one of the world's largest and most respected brain research centres and is a world leader in dementia and Alzheimer's disease research [23]. It boasts one of only three molecular gerontology laboratories in Australia, which specialises in the impact of ageing in multicellular organisms. The Florey Institute has 215 ongoing research projects related primarily to epilepsy, stroke, imaging, stem-cell research, and Parkinson's disease among other research topics.

Research Highlights

Ageing associated research projects (ongoing):

- Alzheimer's disease and other dementias
- Cardiovascular research
- Depression research
- Motor neurone disease
- Parkinson's disease
- Stroke.

For more information click here.

Melbourne Dementia Research Centre

Melbourne Dementia Research Centre is a collaboration between the Florey Institute of Neuroscience and Mental Health and the University of Melbourne. Headed by Professor Ashley Bush, the Melbourne Dementia Research Centre has a charter to transform research in dementia. By developing new and better diagnostics and treatments, the centre aims to achieve real outcomes for people living with dementia.

For more information click here.

Researcher Spotlight

Professor Ashley Bush is Professor of Neuroscience and Psychiatry at the University of Melbourne and the Director of the Melbourne Dementia Research Centre at The Florey Institute of Neuroscience & Mental Health. He is Co-Director of Biomarker Development for The Australian Imaging, Biomarkers and Lifestyle Study of Ageing (AIBL), and holds staff appointments in Psychiatry and Radiology at Massachusetts General Hospital, USA.

Professor Amy Brodtmann is a world leader in her field and is uniquely trained and experienced as a stroke and cognitive neurologist with 20 years ward experience. She has now set up three cognitive neurology services in Melbourne, one of which is the Eastern Cognitive Disorders Service. Professor Brodtmann is internationally recognised as an exemplar of atypical dementia diagnostics and dementia trial centre. She is also the inaugural president Australian Cognitive Neurology Society, inaugural chair of the Organisation for Human Brain Mapping Australian Chapter, board member of the Wicking Trust Strategic Panel Dementia Australia Research Foundation and committee member of the Australian Frontotemporal Dementia Association.

THE WALTER AND ELIZA HALL INSTITUTE OF MEDICAL RESEARCH

The Walter and Eliza Hall Institute (WEHI) aims to find improved ways of detecting disease to assist the community to live long and healthy lives. This is achieved by improved diagnosis, prevention and treatment of many diseases, including those affecting older adults, which place a burden on national and global populations. The Institute currently houses 14 research divisions. More than 70 faculty members lead research groups, and are supported by professional service teams.

FIAT LUX
Walter+Eliza Hall
Institute of Medical Research
DISCOVERIES FOR HUMANITY

Research Highlights

Research themes

Multidisciplinary collaboration is a strength of WEHI and they capitalise on this by focusing on a defined set of challenges aligned with five key themes:

- Cancer Research and Treatments
- Healthy Development and Ageing
- Infection, Inflammation and Immunity
- Computational Biology
- New Medicines and Advanced Technologies.

WEHI aims to also improve the diagnosis, prevention and treatment of diseases that affect the aged disproportionately, such as:

- Dementia
- Neurodegenerative disorders
- Parkinson's disease
- Retinal disorders.

WEHI also conduct extensive research into many cancers and immune health and infection all of which impact on ageing.

For more information click here.

Researcher Spotlight

Professor Melanie Bahlo is the head of the Healthy Development and Ageing theme as well as leading the statistical genetics laboratory within the Population Health and Immunity Division at WEHI. Professor Bahlo is skilled in advanced bioinformatics and statistical genetics analysis. Her work involves the development and application of novel analysis methods to identify genetic risk factors, with a focus on neurological and retinal disorders. This has led to the discovery of novel genes and improved patient outcomes through genetic diagnosis.

Universities

MACH partner universities act as a hub where many of our researchers collaborate and form multidisciplinary partnerships to explore all aspects of ageing and aged care. Both the University of Melbourne and La Trobe University have flourishing ageing and aged care research networks.

THE UNIVERSITY OF MELBOURNE

The University of Melbourne, Australia's number one university [24], acts as a focal point for producing ageing and aged care research, as well as connecting ageing researchers and institutions. The majority of ageing and aged care research at the University of Melbourne occurs within the Faculty of Medicine, Dentistry and Health Sciences (MDHS) often with collaborations occurring outside this network such as the Melbourne School of Engineering (MSE).

Ageing and aged care research occurs within a variety of fields including nursing, allied health, medicine, technology, design, history and philosophy, workforce, bioinformatics, mental health, engineering, architecture building and planning, and population health and policy. Given this vast research landscape, only highlights of ageing and aged care research have been selected.

Research Highlights

Faculty of Medicine, Dentistry and Health Sciences

The Faculty of MDHS is Australia's largest biomedical research faculty and is comprised of:

- Melbourne Dental School
- Melbourne Medical School
- Melbourne School of Health Sciences
- Melbourne School of Population and Global Health
- Melbourne School of Psychological Sciences
- School of Biomedical Sciences
- Faculty Centres, Institutes and affiliated Medical Research Institute Based Departments.

For more information click here.

Melbourne Medical School

The Melbourne Medical School (MMS) has 10 departments and almost 60 research projects with a care of the ageing focus occurring across its networks, with strong ties to MACH health services and institute partners.

There are many MMS ageing research groups which are led by MMS employed clinician scientists who also have a joint hospital appointment. Research examples may be found under specific hospitals.

For more information click here.

Melbourne School of Health Sciences

The School of Health Sciences has at least 34 ageing and aged care research projects occurring across its network capturing research from audiology & speech pathology, nursing, physiotherapy, optometry & vision sciences, and social work.

For more information click here.

Research Highlights

Department of Audiology & Speech Pathology

Associate Professor Julia Sarant leads the research program in Hearing Loss and Cognition in the Department of Audiology & Speech Pathology. The program explores:

1. The relationship between hearing loss and cognitive decline in older adults with hearing loss
2. Whether treatment of hearing loss can delay cognitive decline for people who use either cochlear implants or hearing aids
3. Co-morbidities of hearing loss in adults.

This research is currently funded by an ARC Linkage Grant, a Victorian Medical Research Acceleration Foundation grant and by international and national industry companies Sonova AG and Cochlear Ltd respectively.

For more information click here.

Department of Nursing

Dr Suzanne Kapp's research has a focus on the prevention and management of chronic wounds including leg ulcers and pressure injuries. Dr Kapp is an advocate for engaging healthcare recipients as active participants in their management and care. She conducts research in the acute, community and residential aged care settings.

Current projects include:

1. The Pressure Injury Digital Image Library (PIDIL) Project
2. A randomised controlled trial of a turning and positioning system for the prevention of pressure injuries in the Intensive Care Unit
3. Informing self-management of chronic wounds: establishing research priorities.

For more information click here.

Researcher Spotlight

Associate Professor Julia Sarant has been conducting clinical research with adults and children with hearing loss for 30 years. Associate Professor Sarant's current research program is exploring co-morbidities of hearing loss in adults, particularly the relationship between hearing loss and dementia in older adults with hearing loss, and whether this can be delayed or improved for people with treatment of hearing loss. She has extensive expertise in conducting successful multi-centre and multidisciplinary clinical collaborative research.

Dr Suzanne Kapp is a researcher and lecturer in the Department of Nursing at the University of Melbourne specialising in wound management and expertise with experience also including chronic disease management.

Department of Physiotherapy

The Department of Physiotherapy supports the Centre for Health, Exercise and Sports Medicine (CHESM), a multidisciplinary centre combining high calibre researchers with experienced clinicians from a range of disciplines including physiotherapy, medicine, science, exercise science and podiatry. The research aims for CHESM include understanding the role conservative strategies, particularly exercise, has in promoting health and well-being across the life-course.

CHESM runs a number of projects including the following related to ageing:

- Footwear for Osteoarthritis of the Lateral Knee (FOLK)
- Footwear for self-managing knee osteoarthritis symptoms (FOOTSTEP)
- My Knee Exercise
- What motivates people with osteoarthritis to be physically active?
- Knee bracing and footwear for medial knee osteoarthritis
- Exercise for people with hip osteoarthritis (PHOENIX).

For more information click here.

Department of Optometry and Vision Sciences

The Department of Optometry and Vision Sciences conducts a broad spectrum of multidisciplinary research including the following related to ageing:

- The Ocular Biomarker Laboratory: capitalises on the eye's attributes as an accessible outpouching of the brain to inform age-related neurodegenerative disease
- Centre for Neuroscience of Speech is focussed on understanding how speech, language and swallowing evolve in the second half of life.
- Ocular Physiology Laboratory has investigated the underlying mechanisms that make the older eye at greater risk of developing neurodegenerative diseases, including glaucoma, a leading cause of vision loss
- The Corneal and Ocular Immunology lab, examines the interaction between the nervous system and the immune system in the mouse cornea during homeostasis, ageing and disease
- Clinical Psychophysics Unit aims to understand healthy ageing of the visual system/visual brain
- Anterior Eye, Clinical Trials and Research Translation Unit are examining the effect of ageing on ocular surface health and corneal wound healing. Ageing is a risk factor for several conditions that affect the health of the front surface of the eye
- Macular Degeneration Clinical Care Audit Tool (MaD-CCAT), for clinicians to audit their practices relative to best-practice standards, and a suite of tools for optometrists to use in-office with their patients.

For more information click here.

Department of Social Work

The Department of Social Work is involved with research across a broad spectrum. The Department aims to improve the social justice of our community though evidence and applied research, addressing some of society's pressing concerns.

Associate Professor Ralph Hampson is an Associate Professor of Health and Ageing, Department of Social Work. Recently Professor Hampson and colleagues completed a project titled "Evaluating the use of interactive virtual reality technology with older adults living in residential aged care."

For more information click here.

Melbourne School of Population and Global Health

The Melbourne School of Population and Global Health (MSGPH) has at least 11 ageing and aged care research projects occurring across its networks.

Associate Professor Lucio Naccarella is a researcher and evaluator with expertise including workplace design of health services and aged care facilities. Current projects include:

1. Dianella Health and Plenty Valley Community Health Advisory Role
2. Hope Evaluation
3. Optimal Care Pathways Health Pathways Evaluation.

Dr Vieira Sousa is currently involved with a number of projects related to ageing including:

- HOMESIDE - A home-based family caregiver-delivered music and reading Interventions for people living with Dementia: A Randomised Controlled Trial
- MIDDEL - Music Interventions for Dementia and Depression in Elderly Care: A cluster-randomised Trial
- PITCH program - Promoting Independence Through quality dementia Care at Home: Randomised Control Trial.

For more information click here.

Melbourne School of Psychological Sciences

The Melbourne School of Psychological Sciences has at least two ageing and aged care research projects being conducted across its network including research led by Dr Rachel Buckley considering "Do memory concerns in healthy older adults herald future dementia risk?"

For more information click here.

School of Biomedical Sciences

The Melbourne School of Biomedical Sciences has at least 23 ageing and aged care research projects occurring across its networks, covering fields such as Pharmacology and Therapeutics, Anatomy and Neuroscience, Physiology, and Biochemistry and Molecular Biology.

For more information click here.

Faculty Centres, Institutes and affiliated Medical Research Institute Based Departments

There are a further 24 ageing and aged care research projects which are being conducted across Faculty of MDHS Centres, Institutes and in collaboration with affiliated medical research institute-based departments which often occur in collaboration with host institutes.

For more information click here.

Researcher Spotlight

Associate Professor Lucio Naccarella is a leading health systems researcher and evaluator at the Centre for Health Policy, within the School. His research interests include systems change, health system literacy, care coordination, multidisciplinary primary health care team work, primary care organisations and health workforce (especially aged care) reforms, from a policy, practice and research perspective.

Associate Professor Naccarella has a particular research interest in supporting the health and well-being of the aged care workforce; specifically, the role and contribution of the workspace design and built environments upon the well-being of all aged care workers.

Melbourne School of Engineering

The Melbourne School of Engineering (MSE) hosts three schools, five departments and numerous specialty departments, including:

- School of Computing and Information Systems (CIS)
- School of Chemical and Biomedical Engineering (CBE)
- School of Electrical, Mechanical and Infrastructure Engineering (EMI).

Departments

- Biomedical Engineering
- Chemical Engineering
- Electrical and Electronic Engineering
- Infrastructure Engineering
- Mechanical Engineering.

For more information click here.

Ageing and Aged care research across MSE is diverse and fascinating, using new technologies and designs to support the current and future needs of our older generations.

Some examples of ageing and aged care research from MSE are listed below:

Computing and Information Systems

- Emerging Technologies for Enrichment in Later Life: A Critical Perspective
- Robots and Virtual Assistants for Companionship
- Ethics of robots in aged care
- Ageing Bodies, Embodied Interactions and Social Inclusion.

For more information click here.

Infrastructure Engineering

- Transport and Ageing
- Aged Care Infrastructure
- Health, Transport & Ageing.

For more information click here.

Researcher Spotlight

Dr Tanara Vieira Sousa is an experienced health economist within the Health Economics Unit, Centre for Health Policy, MSGPH, with international experience in program evaluation, data analysis, coordination and management of health and traffic-related research projects.

LA TROBE UNIVERSITY

La Trobe University has a strong history as an excellent university. The focal point of research at La Trobe University centres around community, with the aim of producing meaningful research to improve the health and wellbeing of our society [25].

Research spans diverse fields and is centred around five key research focus areas [25]:

- Building Healthy Communities
- Securing Food, Water And The Environment
- Sport, Exercise And Rehabilitation
- Transforming Human Societies
- Understanding Disease

As part of La Trobe's ongoing research strategy they host an extensive range of ageing research projects within several key groups.

Research Highlights

The Academic Collaborative in Health (ARCH)

Directed by Professor Meg Morris, the ARCH has key research themes of ageing and aged care. The ARCH is La Trobe's healthcare partnership with over eight leading Victorian healthcare providers and other stakeholders.

Together with Northern Health, The Royal Melbourne Hospital, Eastern Health, Austin Health, Alfred Health, RWH, Mercy Health and Healthscope, the ARCH is transforming the University's clinical research capability and co-partnering with consumers to improve health of Australians and train the future clinical research workforce.

Established in 2020, the ARCH brings together academics, clinicians, consumers, healthcare professionals, health and social care agencies and policy makers skilled in the translation of interdisciplinary research. The end result is high quality, evidence-based, science-led care for Australians and their care partners. The ARCH will address major challenges in ageing and aged care by creating and delivering evidence-based interventions, research, guidelines and policies.

Healthy Ageing Research Group (HARG)

Directed by Professor Yvonne Wells, the HARG is a collaboration of researchers interested in healthy ageing and aged care. The need to develop an evidence base to help individuals, communities and services prepare for and support Australia's ageing population is paramount.

Research in this area is of substantial contemporary significance as all levels of government actively engage in seeking responses to issues posed by rapid population ageing. HARG operates on a 'hub and spokes' model. As the hub, the Australian Institute for Primary Care & Ageing (AIPCA) brings together four research centres, four of which focus on the broader research question of how to promote healthy ageing and have policies and systems in place to support people as they age:

The Lincoln Centre for Research on Ageing aims to promote a multidisciplinary understanding of the health, wellbeing and care of older people through research, evaluation and professional education.

The Australian Centre for Evidence Based Aged Care (ACEBAC) aims to make a significant contribution to knowledge development, implementation and practice in evidence-based care, care delivery models and the issues related to the longer term conditions of ageing.

The Ageing e-Health Unit is focused around the use of information technology across the aged care sector including assessment, health management and the use of technology by older people.

The Centre for Health Systems Development (CHSD) undertakes applied research and evaluation of national, state-wide and regional programs and policy initiatives, including those relevant to older people.

Understanding Disease Research Focus Area

Our Understanding Disease researchers have a focus on the following themes related to ageing:

- Diseases acquired during a lifetime, including dementia, cancer, infections, metabolic disorders, cardiovascular disease and neurological disorders
- Translational research: prevention, diagnosis and treatment of age-related conditions, especially dementia, stroke and Parkinson's disease.

For more information click here.

Researcher Spotlight

Professor Meg Morris is actively involved with the Residential Aged Care reform – including the Australian National Aged Care Classification (AN-ACC) Trial and has completed several contracts for the Federal Department of Health.

MACH Ageing Research Projects

Through the Australian Government's Medical Research Future Fund (MRFF) as part of the Rapid Applied Research Translation program, MACH supports a number of ageing and aged care research projects.

For more information click here.

1. Enhancing Muscle POWER in Geriatric Rehabilitation: EMPOWER-GR

Professor Andrea Maier

Sarcopenia or low muscle mass is a significant health problem as we age. If sarcopenia is left undiagnosed it can lead to falls, morbidity and even death.

The project gathers evidence on the prevalence of sarcopenia across multiple MACH health services. It also aims to establish a biobank of blood and muscle/skin samples. This will help researchers better understand loss of muscle mass to address sarcopenia through interventions and educational programs for healthcare professionals.

2. Integrating Osteoporosis in Primary Care: The Osteoporosis Risk and Management (ORMA) Project

Professor Gustavo Duque

The ORMA Project aims to increase General Practitioners' (GPs) awareness, diagnosis and treatment of osteoporosis in the community, as currently there is a gap for people who are identified and receive treatment for osteoporosis.

The program will implement and evaluate provision of a newly designed, tested and implemented osteoporosis e-technology which supports:

1. Detection and management of osteoporosis and associated risk factors;
2. Education for GPs on osteoporosis; and,
3. Assistance for GPs in the development of plans to guide how they will improve risk factor detection and disease management.

3. Establishing a stroke biobank to examine protein and genetic biomarkers for post-stroke cognitive decline in the Post Ischaemic Stroke Cardiovascular Exercise Study (PISCES)

Professor Amy Brodtmann

Vascular brain burden is the greatest determinant of late-life cognition. People with stroke, heart disease and diabetes are at increased risk of cognitive decline and dementia, yet are usually excluded from most intervention studies.

This study will examine whether a cardiac-rehabilitation style exercise intervention will preserve brain volume and cognition in this high-risk population.

4. Physical activity guidelines implementation via information and communication technology for vulnerable older adults with poor cognitive and mental health living in the community

Professor Nicola Lautenschlager

This project will investigate the benefits of physical activity for older people living with mental illness and develop practice guidance material for mental health practitioners when promoting behaviour change.

5. Mapping of ageing and aged care expertise across the MACH network and development of plain English articles translating research outcomes and recommendations for consumers

Care of the Ageing Network

This project aims to map ageing and aged care research activities across MACH network and beyond to increase visibility of the Care of the Ageing Network and increase collaboration opportunities. Findings will be made publically available and nationally disseminated to enhance translational research collaboration.

6. Remote Expert Nurse Consultation for Pressure Injury Prevention and Management in Residential Aged Care

Dr Suzanne Kapp

Pressure injuries (pressure ulcers) are a common problem in aged care residents. This study looks at using e-health platforms for nurses to conduct consultations for pressure injury management and consultation in aged care.

Part 3 | Research across MACH Care of the Ageing Network

The MACH Care of the Ageing Network

The CotA Network is comprised of 19 members across the ageing and aged care research field from a wide range of MACH partners, two consumer representatives and two professional support staff. Given the focus on ageing research, MACH partners such as the Royal Children's Hospital and Murdoch Children's Research Institute are not represented within the CotA Network.

Mapping Research Across the CotA Network

To map research produced by members of the CotA Network, information was gathered via two methods:

1. Publication data from CotA members was collected from SciVal (part of the Elsevier research intelligence portfolio, a well-known research and publication database) [26] and reviewed. This gave a broad overview of research activity from the CotA Network. Each researcher was searched and saved in SciVal creating a database of MACH CotA authors. From this, further analysis was undertaken.
2. After an initial review of publication data, a survey was sent out to all members of the CotA Network requesting more specific information regarding their research collaborations and activities. Members were asked to identify their top five national and top five international collaborators and from this a network map was created.

We acknowledge there are various methods to undertake mapping, however due to limited availability of the CotA Network members, this was deemed the most time effective.

MACH CotA Network Academic Publications

Publication data was sourced from the Elsevier network primarily through Scopus and SciVal where a list was created from all academic members of the CotA Network. All article types were included in the analysis including: academic articles, reviews, conference papers, and letters to the editor.

The time frame of 2015-2019 was chosen as MACH CotA Network was formed in 2018 and therefore is a relatively new collaboration.

Limitations to data collection

The Scopus and SciVal databases are extensive and cover a number of publications and publication sources. However even though the range of publication and author information across the Elsevier network is extensive, it does not cover every academic journal and it is possible that publications may have been inadvertently missed in this search. Additionally, all members from the CotA Network were contacted and asked to complete the survey, with follow up emails; however, some members did not respond (response rate 84%), and therefore the true extent of the network is likely to be larger than what is represented here.

RESEARCH ACROSS THE MACH COTA NETWORK

2015 - 2019	972 ACADEMIC PUBLICATIONS	OVER 23,100 CITATIONS	FIELD WEIGHT CITATION IMPACT OF 4.65	24 CITATIONS PER PUBLICATION (Avg)

ACADEMIC REPRESENTATIVES:

PROFESSOR
Andrea Maier
(Chair)
The Royal Melbourne Hospital & University of Melbourne

PROFESSOR
Ashley Bush
(Deputy Chair)
The Florey Institute & University of Melbourne

ASSOCIATE PROFESSOR
Frances Batchelor
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The Florey Institute, Austin Health, The RMH & University of Melbourne

PROFESSOR
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Barry Baulch

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PUBLICATIONS ACROSS THE YEARS

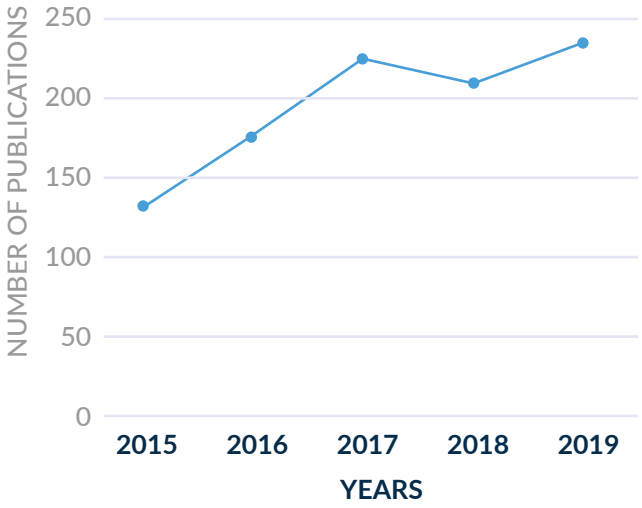


Table 2 - Publications by Type (2015-2019)

PUBLICATION TYPE	NUMBER OF PUBLICATIONS
Journal Article	708
Review	140
Editorial	30
Letter	26
Book chapters & books	20

Publications guidelines can be found *here.*

Citations and Field-weighted Citation impact

The field weighted citation impact (FWCI) of the CotA Network was 4.65 between 2015-2019. This measure indicates that research from the CotA Network has been cited 460% more than expected, indicative of the research calibre and respect the network yields.

PUBLICATIONS BY SOURCE

Between 2015-2019 the MACH CotA Network published in 433 different academic sources. The top 20 journals by number of publications are listed below.

Table 3 – Publications by source (2015-2019)

JOURNAL	NUMBER OF PUBLICATIONS IN JOURNAL
Maturitas	26
The Lancet	26
International Psychogeriatrics	21
Journal of Alzheimer's Disease	20
BMJ Open	19
Journal of the American Medical Directors Association	16
PLoS ONE	16
BMC Geriatrics	14
Australasian Journal on Ageing	13
Neurology	12
Medical Journal of Australia	10
Scientific Reports	10
Australian Health Review	9
Journals of Gerontology - Series A Biological Sciences and Medical Sciences	9
The Lancet Neurology	9
American Journal of Human Genetics	8
Clinical and Experimental Ophthalmology	8
Metallomics	8
Archives of Physical Medicine and Rehabilitation	7
Cochrane Database of Systematic Reviews	7

CLASSIFYING JOURNALS BY RANK

Of the 972 journal articles published by the CotA Network between 2015-2019 across 433 separate titles, journals were ranked with an impact factor from 75 to 1.

Table 4 lists the top 20 highest ranked journals and number of publications by the CotA Network.

Table 4 – Publications by journal rank

SCOPUS SOURCE TITLE	IMPACT FACTOR (2019)	NUMBER OF PUBLICATIONS
New England Journal of Medicine	74.699	2
The Lancet	60.392	26
JAMA - Journal of the American Medical Association	45.54	1
Cell	38.637	2
The Lancet Neurology	30.039	9
BMJ (Clinical research ed.)	27.604	1
Nature Genetics	27.603	2
Advanced Materials	27.398	1
Nature Reviews Neurology	27	4
European Heart Journal	22.673	1
Cell Stem Cell	20.86	1
Journal of Hepatology	20.582	1
JAMA Psychiatry	17.471	2
BMJ	17.215	3
Alzheimer's and Dementia	17.127	1
Diabetes Care	16.019	1
Neuron	14.415	1
Journal of Thoracic Oncology	13.357	1
Science Advances	13.116	1
Nature Chemical Biology	12.587	1

TOPICS OF RESEARCH FOR MACH CotA NETWORK

Topic clusters and topics for the CotA Network were analysed in SciVal between 2015-2019. Topic clusters group core research topics together forming broader levels of interest [27]; whereas topics are a collection of documents with a common focus [27]. Topic prominence is an indication of how much momentum a particular topic has in its field of research [27]. The CotA Network had 205 topic clusters and 485 individual topics. The top 20 topic clusters are represented below with many related to ageing and aged care. It is acknowledged that some members of the CotA Network undertake research outside the ageing field as reflected by the varying themes presented. The majority of publications by topic clusters have a FWCI above 1 indicating the weight and respect our researchers have within their fields.

Table 5 – Topic clusters for research

TOPIC CLUSTER	SCHOLARLY OUTPUT	FIELD-WEIGHTED CITATION IMPACT	PROMINENCE PERCENTILE
Alzheimer Disease; Dementia; Amyloid	123	2.23	98.527
Sarcopenia; Patients; Aged	67	3.22	85.074
Stroke; Gait; Rehabilitation	51	1.19	96.386
Neoplasms; Patients; Palliative Care	35	1.24	94.779
Parkinson Disease; Deep Brain Stimulation; Patients	35	2.69	95.181
Bone And Bones; Osteoporosis; Bone Density	34	1.53	91.365
Women; Erectile Dysfunction; Testosterone	26	1.92	72.691
Eye; Optical Coherence Tomography; Macular Degeneration	18	0.83	93.909
Obesity; Motor Activity; Child	15	17.13	98.862
Epilepsy; Seizures; Electroencephalography	13	3.77	90.295
Zinc; Copper; Hepatolenticular Degeneration	13	1.17	51.272
Insulin; Type 2 Diabetes Mellitus; Glucose	12	1.43	97.055
Endometriosis; Ovarian Neoplasms; Endometrial Neoplasms	12	1.81	87.684
North American Indians; Residence Characteristics; Health	12	1.72	53.347
Wounds And Injuries; Pressure Ulcer; Bandages	11	2.48	61.647
Health; Costs And Cost Analysis; Neoplasms	11	113.16	78.246
Magnetic Resonance Imaging; Brain; Diffusion	10	2.48	92.905
Polycystic Ovary Syndrome; Women; Oocytes	10	2.87	77.577
Genome; Neoplasms; Genes	10	2.03	94.913
Language; Reading; Semantics	9	2.73	88.153

COLLABORATIONS

Collaborating authors and institutions

Collaboration across the MACH CotA Network was captured in two ways; firstly high level data was gathered from SciVal indicating the overall number of co-authors and scholarly output as represented below. **Table 6** indicates that not only do MACH CotA members publish widely both nationally and internationally but the impact of their research is greater when publishing with international colleagues.

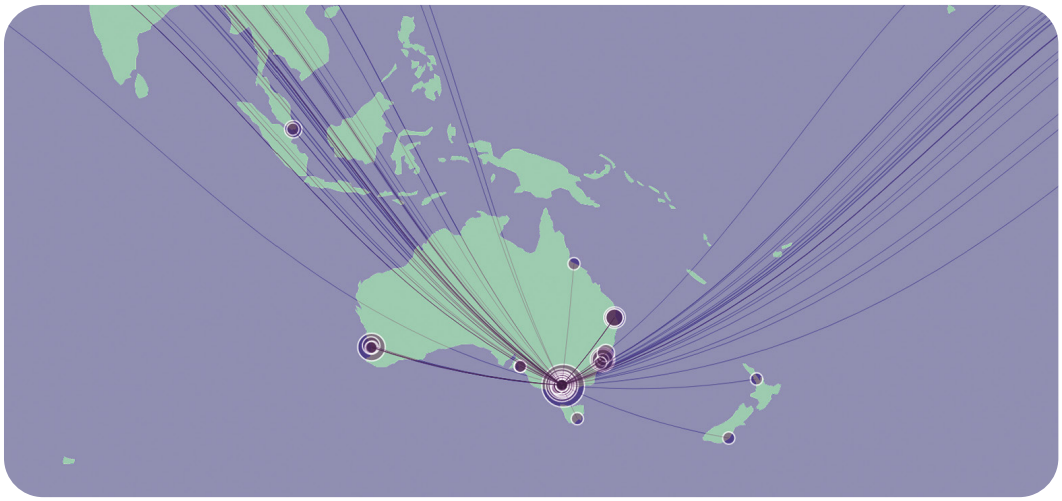
Table 6 – Collaboration by publication

	PERCENTAGE OF PUBLICATIONS	SCHOLARLY OUTPUT	CITATIONS	CITATIONS PER PUBLICATION	FIELD-WEIGHTED CITATION IMPACT
INTERNATIONAL COLLABORATION	49.5%	482	19,023	39.5	7.59
ONLY NATIONAL COLLABORATION	40.5%	395	3,573	9.0	1.57
ONLY INSTITUTIONAL COLLABORATION	8.6%	84	753	9.0	2.93
SINGLE AUTHORSHIP (NO COLLABORATION)	1.3%	13	5	0.4	0.79

The second method in which collaboration data was collected was by MACH CotA members completing a survey identifying who their top five national and top five international collaborators are and the primary institute they represent. As researchers only identified their top five national collaborators the tables and maps below represent only a small portion of overall collaboration.

National Collaborations

From the survey MACH CotA Network members identified 73 primary national ageing and aged care research collaborators. From these 73 national colleagues, the majority of ageing research nationally occurs within Victoria, however it is recognised that the network is likely to be much larger than this snapshot.



Click on the map to see interactive version.

Table 7 - Top Five MACH Partner Collaborating Institutions

COLLABORATING INSTITUTIONS
1 - University of Melbourne
2 - The Florey Institute of Neuroscience and Mental Health
3 - La Trobe University
4 - Austin Health
5 - The Royal Melbourne Hospital

Table 8 - Top Five Victorian Collaborating Institutions (non-MACH partners)

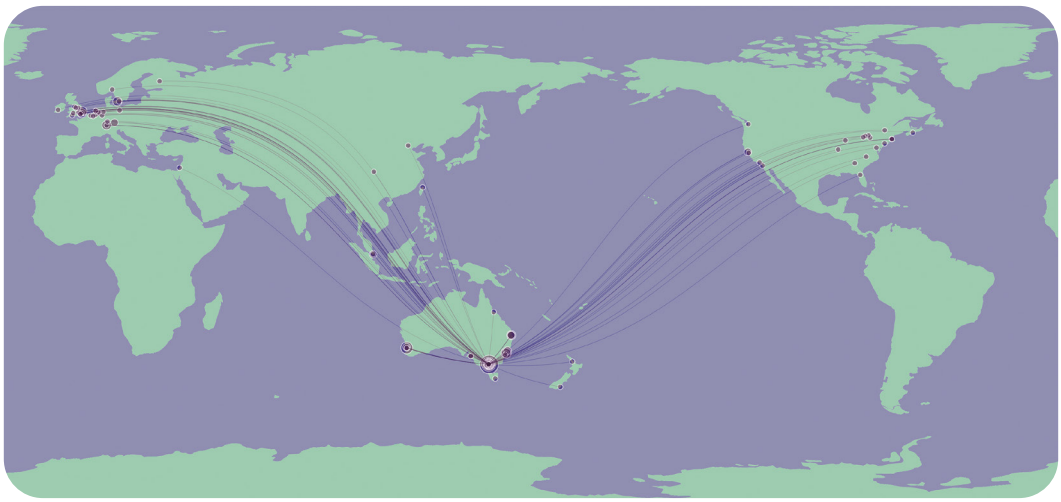
COLLABORATING INSTITUTIONS
1 - Monash University
2 - Deakin University
3 - Cogstate
4 - CSIRO
5 - Benetas

Table 9 - Top Five National Collaborating Institutions (Outside Victoria)

COLLABORATING INSTITUTIONS	STATE
1 - University of Western Australia	WA
2 - University of Sydney	NSW
3 - University of New South Wales	NSW
4 - Edith Cowan University	WA
5 - University of Queensland	QLD

International Collaborations

The MACH CotA Network identified 71 primary international ageing and aged care research collaborators, with the majority occurring within Europe.



Click on the map to see interactive version.

Table 10 - Top 10 International Collaborating Institutions

COLLABORATING INSTITUTIONS	COUNTRY
1 - Sonova AG	Switzerland
2 - University College London	UK
3 - University of Cambridge	UK
4 - University of Copenhagen	Denmark
6 - Duke University	Singapore
7 - Technical University Munich	Germany
8 - University of California, San Francisco	USA
9 - University of Surrey	UK
10 - Amsterdam University Medical Centre	Netherlands

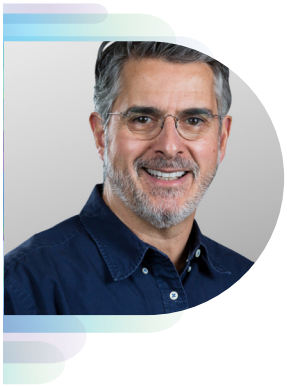
Part 4 | Cohort Studies and Clinical Trials across MACH Care of the Ageing Network

Members of the CotA Network lead or are actively involved as co-investigators in a wide range of observational longitudinal cohort studies and randomised control trials covering a variety of topics.

Observational Longitudinal Cohort Studies Highlights

The CotA Network is involved with 21 observational longitudinal cohort studies for which a member is a principal investigator and are associates on 21 other such studies. Full details can be found in the Appendix.

Professor Ashley Bush



Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing (AIBL): Professor Bush is a Co-Director of Biomarker Development for the Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing (AIBL), a 4.5+ year prospective longitudinal study to discover which biomarkers, cognitive characteristics, and health and lifestyle factors determine subsequent development of symptomatic Alzheimer 's disease.

For more information click here.

Professor Bush is a Principal Investigator on the Brain iron imaging for Alzheimer's disease (AIBL-ADIRON study), an NHMRC-funded project, to measure brain iron using MRI for its prognostic utility in a longitudinal cohort of subjects.

For more information click here.

Professor Bush also has expertise in quantitative susceptibility mapping (QSM) and magnetic resonance spectroscopy (MRS) imaging; Studies of the mechanism of sarcopenia; Animal and molecular models of neurodegenerative diseases; Studies of the molecular mechanisms of ageing e.g., in C. elegans and mice; Sensitive, high-throughput assays of biological metals in tissue samples.

Professor Cassandra Szoeke

The Healthy Ageing Program led by Professor Cassandra Szoeke includes a number of longitudinal prospective cohort studies with a focus on health and is overseen by a Scientific Advisory Committee. Streams of research include Healthy Brain, Heart and Body with Health Informatics and Lifestyle research themes working across all projects.

The Healthy Ageing Program showcases cohort data which is community based and epidemiologically sourced and spans earlier life course studies.

The program includes three cohorts:

1. The Women's Healthy Ageing Project (WHAP) which commenced in 1990 recruiting over 1897 women then aged 45-55 years.
2. The Healthy Ageing Program which commenced with a pilot program in 2015 recruiting over 20,000 participants into an online health study. There are over 4,000 participants of the study to date.
3. The Healthy Ageing Generations Study which includes 300 children of the original Women's Healthy Ageing Project and examines healthy ageing and impact of generational and family effects.

For more information click here.

Randomised Controlled Trials

The CotA network is currently involved in 22 randomised controlled trials (RCT) for which a member is a principal investigator and 12 other RCTs for which a CotA member is associated. Full details can be found in the Appendix.

Professor Gustavo Duque

EMPIRE Study: Professor Duque is the Principal Investigator determining the effect of hydroxy-beta-methylbutyrate (HMB) and vitamin D supplementation on osteosarcopenia in older persons.

For more information click here.

Other research and datasets

Members of the MACH CotA Network have research responsibilities with 27 other datasets.
Full details can be found in the Appendix.

Members of the Network are also extensively involved in a number of ageing and aged care groups, societies and chapters specific to their expertise and interest in ageing. The involvement in other research groups demonstrates passion and commitment to the field of ageing and aged care research.

Part 5 | Supporting the Next Generation of Ageing and Aged Care Research

The CotA Network support many mid-career researchers, over 80 early career researchers and 75 PhD and higher degree research students, highlighting their commitment in supporting next generation of researchers. MACH CotA members are also heavily involved with teaching commitments in ageing related disciplines such as medicine, allied health, public health and nursing across various institutions, to both postgraduate and undergraduate students.

Alongside this, MACH-Track is a new initiative providing opportunities for medical doctors who are in vocational training and interested in a career towards clinical academia. This opportunity provides a new pathway for integration of research career development with completion of medical vocational training with this initiative commencing in February 2021.

For more information click here.

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Appendix

The tables indicate the MACH CotA members who are involved in observational longitudinal cohort studies, randomised controlled trials (RCT), and lead other types of research such as non RCT trials (e.g. implementation trials and/or qualitative research).

Research activity may have changed since the time of publication. For a current list of research activity including project contacts and links visit: www.machaustralia.org/ageing

Table 1: Observational Longitudinal Cohort Studies

Observational longitudinal cohort studies refer to studies that follow a specific population cohort over time [28]. Observational longitudinal cohort studies listed below include ongoing studies and completed studies within the last two years, where a MACH CotA member has been involved.

STUDY	CotA MEMBER
AIBL Study: Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing	Prof Ashley Bush** Prof Nicola Lautenschlager** Prof Cassandra Szoeke* A/Prof Peter van Wijngaarden* Dr Paul Yates*
Aqua therapy for Parkinson's disease	Prof Meg Morris*
ASPREE NEURO	Prof Amy Brodtmann*
Bronovo	Prof Andrea Maier**
CANVAS: Cognition and Neocortical Volume After Stroke	Prof Amy Brodtmann**
CLSA: The Canadian Longitudinal Study on Aging	Prof Gustavo Duque**
COGA	Prof Andrea Maier**
CGA: Comprehensive geriatric assessment and intervention in older lung cancer patients	Prof Andrea Maier**
D2: Dementia and Diabetes	Prof Amy Brodtmann**
EMPOWER	Prof Andrea Maier**
EMPOWER-GR	Prof Andrea Maier**
EpiBioS4Rx: The Epilepsy Bioinformatics Study for Anti-epileptogenic Therapy	Prof Ashley Bush*
Evaluation of the Comprehensive Geriatric Assessment	Prof Andrea Maier** Professor Meinir Krishnasamy**
Falls prevention in hospitals	Prof Meg Morris*
Flesh after Fifty	Prof Martha Hickey**
Grey Power	Prof Andrea Maier**

** Principal investigator
* Co-investigator

STUDY	CotA MEMBER
Health Links Evaluation	Prof Andrea Maier**
How is COVID-19 impacting your health and wellbeing?	A/Prof Frances Batchelor*
iMAP	Prof Nicola Lautenschlager*
Leiden 85-plus Study	Prof Andrea Maier*
Leiden Longevity Study	Prof Andrea Maier*
Melbourne Women's Midlife Health Project	Prof Cassandra Szoeke**
MrOS: Osteoporotic Fractures in Men Study Group	Prof Gustavo Duque**
MyoAge	Prof Andrea Maier*
NOF Study: The Nepean Osteoporosis and Frailty (NOF) Study	Prof Gustavo Duque*
Nutritional needs and physical function in community dwelling geriatric outpatients to counteract sarcopenia and ultimately preserve daily function	Prof Andrea Maier**
PANINI	Prof Andrea Maier*
PEPPERS: The Perth Perception Study	Prof Nicola Lautenschlager**
PREDICT	A/Prof Peter van Wijngaarden*
RESORT: REStORing health of acutely unwell adulTs	Prof Andrea Maier**
SEARCH	Prof Amy Brodtmann*
SEBA study: Sarcopenia - Environmental And Biological Risk Factors In Older Adults	Prof Gustavo Duque*
The effect of cochlear implants on cognitive decline in ageing Australians	A/Prof Julia Sarant**
The effect of remediation of hearing loss on cognitive function in hearing aid recipients	A/Prof Julia Sarant**
The Healthy Ageing Project (includes Australia's Brain Health Study)	Prof Cassandra Szoeke**
The Hunter Valley Study	A/Prof Julia Sarant*
The Raine Study	Prof Martha Hickey**
The Women's Healthy Ageing Project	Prof Cassandra Szoeke** Prof Andrea Maier*
Western 9 evaluation	Prof Andrea Maier**
WHAM: What Happens after Menopause?	Prof Martha Hickey**
WISP: Women Choosing Surgical Prevention	Prof Martha Hickey**

** Principal investigator
* Co-investigator

TABLE 2 - Randomised Controlled Trials

Randomised controlled trials (RCTs) refer to studies that allocate participants into two different groups, providing different interventions to those groups, aiming to reduce bias and increase the validity of studies [29]. RCTs listed below include ongoing studies and studies completed within the last two years, where a MACH CotA member has been involved.

STUDY	CotA MEMBER
A public-private partnership to prevent falls in hospitals	Prof Meg Morris**
A randomised trial of dance for Parkinson's disease	Prof Meg Morris**
A4 Study (Senior Site Physician)	Dr Paul Yates*
AIBL ACTIVE	Prof Nicola Lautenschlager** Prof Cassandra Szoeke*
Aqua therapy for Parkinson's disease	Prof Meg Morris**
AU-ARROW	Dr Paul Yates*
Ban-Dep trial: non-pharmacological intervention for residents with depression in residential care	Prof Nicola Lautenschlager*
Clarity AD: A Study to Confirm Safety and Efficacy of BAN2401 in Participants With Early Alzheimer's Disease	Dr Paul Yates**
CuATSM trial for amyotrophic lateral sclerosis	Prof Ashley Bush*
Deferiprone to Delay Dementia (The 3D study)	Prof Ashley Bush**
Delirium mitigation in COVID19: an open label randomised controlled trial of medications for the safe pharmacological management of agitation in delirium with COVID19	Prof Andrea Maier**
Eggsurance: A Randomised Control Trial of a Novel Decision Aid for Women Considering Egg Freezing	Prof Martha Hickey**
FABS	Prof Nicola Lautenschlager**
FABS II	Prof Nicola Lautenschlager**
FAIR PARK II study (phase 3 clinical trial of Deferiprone for Parkinson's disease)	Prof Ashley Bush*
HOMSIDE trial: international multi-site music therapy trial for people with dementia and their carers	Prof Nicola Lautenschlager*
INDIGO Study: physical activity and goal-setting intervention for sedentary older adults at risk of cognitive decline	Prof Nicola Lautenschlager**
Maintain your brain trial	Prof Nicola Lautenschlager*
MelaDRRAMAA: Melatonin for Delirium Reduction, Resolution And Mitigation of Abnormal Arousal	Prof Andrea Maier**
Patient education to reduce hospital falls	Prof Meg Morris**
PBT434 - Phase 1 clinical trials for Parkinson's disease	Prof Ashley Bush*

** Principal investigator
* Co-investigator

STUDY	CotA MEMBER
Physiotherapy for Parkinson's disease	Prof Meg Morris**
PISCES: Post-Ischaemic Stroke Cardiovascular Exercise Study	Prof Amy Brodtmann**
PITCH: Promoting Independence Through Quality Care at home	A/Prof Frances Batchelor*
PREVENTIA	Prof Nicola Lautenschlager*
PreventIT	Prof Andrea Maier**
RESILIENCE	Dr Paul Yates*
RHAPSODY Plus study	Prof Nicola Lautenschlager**
Sense therapy after stroke	Prof Meg Morris*
TaP ICU: A randomised controlled trial of a turning and positioning system for the prevention of pressure injuries in the Intensive Care Unit.	Dr Suzanne Kapp**
VITA D	Prof Nicola Lautenschlager**

** Principal investigator
* Co-investigator

TABLE 3 - Other Research and Data Sets

Other research and data sets a with MACH CotA member involvement

STUDY	CotA MEMBER
Australian Longitudinal Study on Women's Health	Prof Martha Hickey*
Can Real-Time Biofeedback of Foot Clearance Data be used to Assist with Gait Rehabilitation following Stroke?	A/Prof Cathy Said*
Danish Nurse Cohort	Prof Martha Hickey*
DHEAge Cohort	Prof Andrea Maier*
ENIGMA	Prof Amy Brodtmann*
Epi25 Consortium	Prof Melanie Bahlo*
Growing up today study (GUTS)	Prof Martha Hickey*
Healthscope hospital falls dataset	Prof Meg Morris*
Healthy Brain Project	A/Prof Peter van Wijngaarden*
ILAE Consortium	Prof Melanie Bahlo*
InterLACE: A New International Collaboration for a Life Course Approach to Women's Reproductive Health and Chronic Disease Events	Prof Martha Hickey*
International Longevity Centre	A/Prof Frances Batchelor*
LASA	Prof Andrea Maier*
MacTel Consortium	Prof Melanie Bahlo*
Memory clinic cohort	Dr Paul Yates*
MMU Cohort	Prof Andrea Maier*
NDIUS and MARQUE studies	A/Prof Frances Batchelor*
OATS study	A/Prof Frances Batchelor*
ProMo Cohort	Prof Andrea Maier*
RACF ED presentation dataset	Dr Paul Yates*
STROKOG	Prof Amy Brodtmann*
The Memory and Aging Project (MAP)	Prof Ashley Bush*
The MOVE study	Prof Cassandra Szoeke*
The Swedish BioFinder Study	Prof Ashley Bush*
UoM ARC	A/Prof Frances Batchelor*

** Principal investigator
* Co-investigator

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CARE OF THE AGEING

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