



MONASH
University

**MONASH
UNIVERSITY
RESEARCH
AGENDA
2020**



This image depicts a map of the axonal connections of the human brain, as reconstructed using magnetic resonance imaging (MRI). These connections allow different parts of the brain to communicate with each other, and it is these communication patterns that underlie all our thoughts, feelings, and behaviour. We can use these connectivity maps to determine the neural pathways that underlie individual differences in behaviour and the effects of brain disease.

REFRESHING OUR RESEARCH AGENDA

For more than 60 years, research at Monash University has changed the world. Our groundbreaking discoveries have earned us a national and international reputation for the quality of our research, and our work improves health, solves complex global challenges and empowers whole communities.

This reputation is made possible not only by our world-class infrastructure, services and platforms, but also, and above all, by our people. Monash prides itself on recruiting the best talent, cultivating a performance culture, and creating a progressive environment in which people are empowered to thrive.

Our research also continues to reflect our commitment to diversity and inclusion, including enhancing opportunities for indigenous research and researchers.

Focus Monash, the University's strategic plan, is a directive to uphold and improve this internationally respected reputation. This refresh of the University's research agenda will help us further cement our position as a destination university for the best and brightest from around the world.

By mapping our unique strengths, consulting with the research community and identifying the world's most critical challenges, we have identified four thematic areas that will form a framework for the University's continuing cross-disciplinary research efforts:

- **Artificial intelligence and data science**
- **Better governance and policy**
- **Health sciences**
- **Sustainable development**

It is a blueprint for improving upon our excellent fundamental investigator-led research, and ensuring that our research discoveries are translated into relevant real-world solutions, and prepares us for the next University strategic plan.

As we move forward, we'll continue to strengthen and expand key international partnerships with universities, enterprise, government and communities. In close collaboration with our industry and government partners, we will focus on improving the ways in which our research can benefit the lives of all.

With a focused research agenda in place and the infrastructure and committed people on board to carry it out, Monash will be positioned to take a leadership role among Australian universities as together we take on the challenges of the future.



Professor Marc Parlange
Provost and Senior Vice-President

OUR RESEARCH VISION

We're increasing our capacity to do outstanding, relevant research and generate new knowledge that positively impacts the world.

Excellent education, excellent research

Monash research and education are inter-connected. As working environments transform, Monash's curriculum and programs evolve to support our students in navigating an increasingly complex world. Creativity, critical thinking, enterprise, intercultural competence and digital literacy form the heart of our education programs. Monash's education agenda also equips our next generation of researchers with the skills they need to drive change.

Focus on the challenges of our time

Basic, fundamental, high-quality investigator led research is the backbone of Monash. We are absolutely committed to supporting our researchers to be the very best. The greatest challenges of our age are both social and environmental, and our multidisciplinary approach puts us in a unique position to find and help implement solutions.

We have identified four focus areas where our expertise and continued investment will have the most significant impacts. These four areas span our established strengths as well as emerging areas of excellence, and provide themes for collaboration where we can have impact on the societal and planetary challenges of our time.

Our activities are underpinned by the Monash guiding principles:



Ambition



Discovery



Openness



Respect



Service



**AI & DATA
SCIENCE**



**BETTER GOVERNANCE
& POLICY**



**HEALTH
SCIENCES**



**SUSTAINABLE
DEVELOPMENT**

**RESEARCH EXCELLENCE,
RELEVANCE & IMPACT**



**RESEARCH LED
EDUCATION**

**TALENTED
FACULTY**

Attract and grow
research leaders

Action 1: Support a high performance culture through effective recruitment, probation, mentoring and promotion processes

Action 2: Support and promote our existing research and professional talent

Action 3: Target investment to support recruitment in research focus areas

**TALENTED
STUDENTS**

World-leading
research education

Action 1: Continue to increase the scale, quality, diversity and international experience of our HDR cohort

Action 2: Build a Monash Doctorial Program second to none

Action 3: Continue to significantly increase our PhD scholarship funding

**ENTERPRISE
CONNECTIVITY**

Enduring partnerships with
industry & precinct partners

Action 1: Enhance our commercialisation support developing researchers and graduate students with enterprising capabilities

Action 2: Ensure our research is translated for impact, including in the development of new industries

Action 3: Develop productive industry relationships leveraging our research capability and key platforms

**INTERNATIONAL
CONNECTIVITY**

Institutional alliances with
key partners

Action 1: Develop and foster our institutional alliances with international priority partners, including through Networks of Excellence

Action 2: Use staff and student exchange to build on key international relationships

Action 3: Support and initiate further international collaborations

SUPPORTED BY EXCELLENT INFRASTRUCTURE, RESEARCH PLATFORMS & SERVICES

CONNECTED TO PRECINCTS, GLOBAL CAMPUSES & INTERNATIONAL & LOCAL NETWORKS

INTEGRATED WITH OUR FACULTIES THROUGH INSTITUTES & CENTRES

FOUR KEY FOCUS AREAS



AI & Data Science

Artificial Intelligence (AI) powered by data science is changing the nature of work and human interaction – it is vast in its nature and application. As we enter a critical phase in its advancement, the potential for economic and societal impact through AI and data science creates an imperative for responsible and immediate action.

Monash is investing in AI and data science by bringing together multidisciplinary teams to develop and understand future technologies and consider the impact of innovation in this area. We will partner with industry to develop and understand future technologies, apply advancements and consider the impact of such applications.



Better Governance & Policy

Inclusive governance and policy are arguably the most significant challenges for the Asia-Pacific region. We draw research strengths from all faculties and disciplines to support local and global government and policy development.

By doing this, we support Focus Monash's commitment to innovation, enterprise and social inclusion, locally, nationally and internationally.

Monash speaks with a collective voice to our research community and partners, as well as governments, industries, and communities about their own policy needs. We're working together towards improving human well-being.



Health Sciences

We have a long history of excellence and impact in health sciences, with our research breakthroughs changing millions of lives for the better. Today, the quality and significance of our research in health care, pharmaceutical sciences and the biosciences rightly positions us to lead the transformational impact on the largest and most complex health issues.

With access to world-class infrastructure, investment, and with the support of our partners, our leading researchers will be equipped to continue their work towards solving some of the world's most significant health challenges and improving the human condition.



Sustainable Development

Sustainability is a core Monash value. Monash is a sustainability leader and champion in our research and our organisational values. In 2016 the University announced its commitment to the UN Sustainable Development Goals (SDG) through all university operations, education and research. The Monash Sustainable Development Institute has an outstanding reputation for its commitment to sustainable development.

We are at the forefront of developing practical solutions to the social, economic and environmental challenges of the SDGs. We invest in a multidisciplinary approach to this focus area.

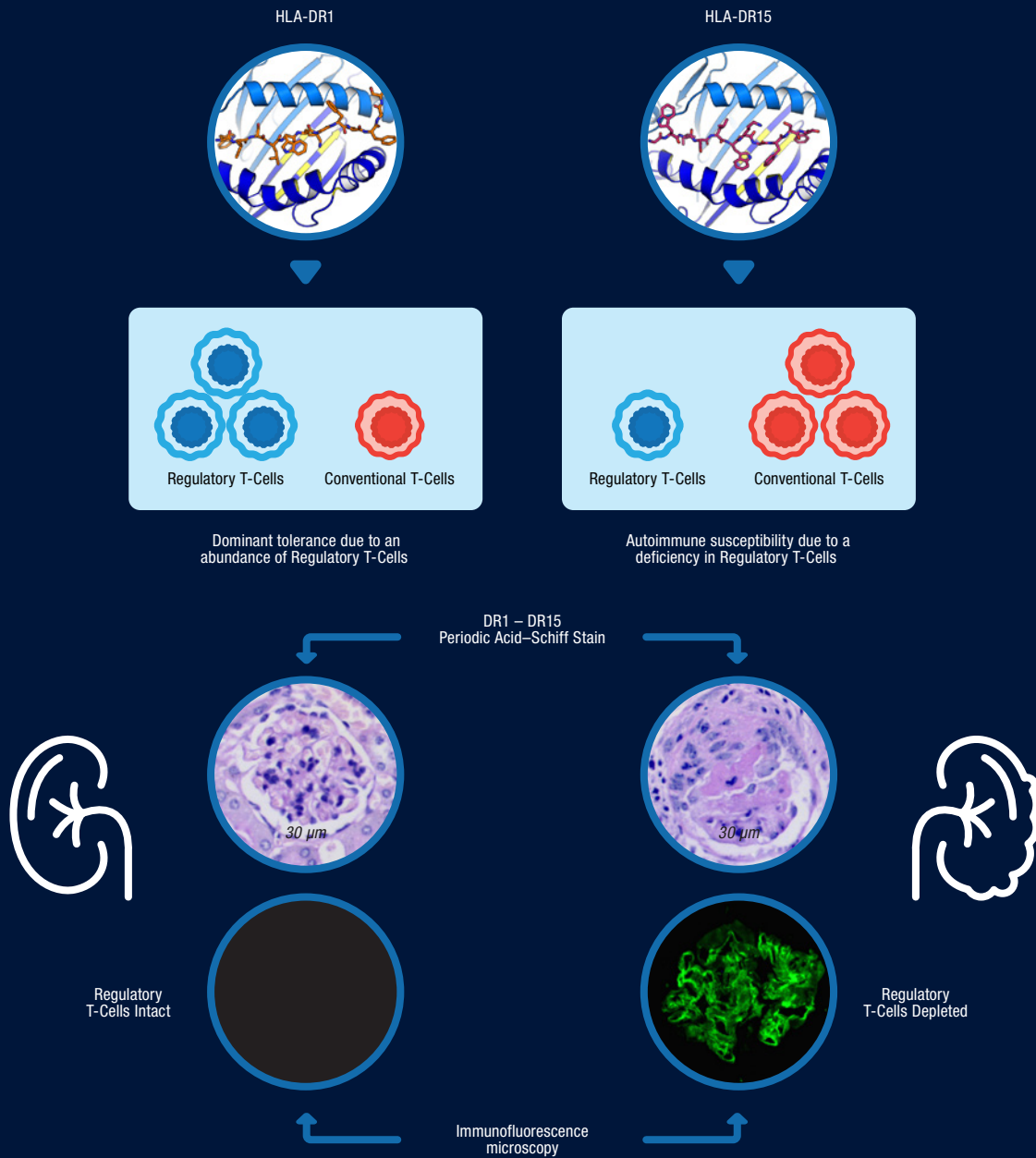
EMPOWERING PEOPLE TO ACHIEVE EXCELLENCE

Our focus on research is complemented by our investment in attracting and retaining the very best talent.

We will continue developing our staff in a supportive and high-achieving environment, ensuring that Monash is recognised as a destination employer with a strong commitment to retaining and growing our talent. We're setting the standard for innovation by fostering a creative, people-centric culture.

We are developing a framework that incentivises positive performance and impact in education and research. We will articulate this framework to staff to ensure that they are equipped to respond to the changing research and funding landscape and are empowered and supported to achieve excellence.





Ooi JD, Petersen J, Tan YH, et al. (2017) Dominant protection from HLA-linked autoimmunity by antigen-specific regulatory T cells. *Nature* 545(7653):243-247.

THE MONASH DOCTORAL PROGRAM

Graduate Research students are the foundation of our university and are future leaders and innovators in their field.

The graduate research program at Monash is world-class, from its structured development and coursework programs, to its approach to monitoring research project progression that promotes excellence, collaboration and engagement. Monash is a unique research environment that affords our students the opportunities of a highly connected local, national and international research network, with the added benefit of an enterprise approach to collaborative and interdisciplinary research that allows students to work in partnership with innovative industry players. Monash graduates are resilient, innovative and versatile, prepared for the demands of the future.

The Monash Doctoral Program is committed to supporting this community of upcoming researchers. We recruit top students, both internationally and nationally, and match them with talented faculty so they can both achieve their academic goals and contribute to cutting edge research. We provide consistent, high-quality support for the entire graduate research student lifecycle, from application through to alumni engagement.

We support staff through graduate research supervisor development and accreditation programs that ensure the best supervisory experience for our students. And last but by no means least, we provide a state-of-the-art research environment with purpose-built facilities so students can maximise their research potential.

Delivering Consistently High-Quality Research

Monash Technology Research Platforms (MTRP) are all certified to the ISO9001 quality management standard and operate in line with best practice. We are committed to providing clients with outstanding outcomes. Excellence and quality are paramount through all stages; from conducting research to collaborating with industry. The integrated network of technology research platforms across STEM and HASS faculties enables our researchers to compete nationally and internationally to lead large research programs.

We will continue to invest in disruptive, world-leading technologies that align with our research priorities. Our approach offers our researchers a “first mover” advantage, supports engagement with our external partners and builds synergy with our precinct partners. MTRP’s coordination of new infrastructure maximises efficiency and the return from our investments.



Sustainability Research in the Olsen Valley, sub-Antarctic South Georgia



*Research in the MonroLab is investigating the evolutionary capacity for marine species like these to adapt to climate change.
Researcher: Dr Keyne Monro
ARC Future Fellow.*



ORGANISATIONAL RESEARCH SUPPORT

Centres and Institutes

Our centres and institutes empower researchers, industry and government partners to extend their research and academic excellence into areas of contemporary relevance. They transcend traditional disciplinary and departmental boundaries and encourage focused application of collective knowledge.

Our centres and institutes are vital to the success of our new research agenda because they support in-depth disciplinary study that directly aligns to our four focus areas.

Research Services and Support

Monash Research Office's research support services sit at the heart of our research community. Our research office staff have extensive experience navigating the local and international research funding environment.

They provide practical guidance, advice and support at every stage of the research lifecycle – from concept to ethical compliance, through to funding.

Library

The Library plays a key role in research, contributing services and resources to enable discovery, use, sharing and management of information across the research life cycle.

Our Data Fluency project supports the University's AI and Data Science focus by developing data science literacy across the research community. We work to build research capacity with students and staff through directed resources, services, programs and communities of practice.

World-Class Research Infrastructure

Monash's Technology Research Platforms are critical to our research agenda. They help us attract and retain top researchers from around the world. They encourage cross-disciplinary research collaborations, and support technology transfer by attracting industry research partners. Thanks to a series of major strategic investments into research infrastructure during the past decade, Monash is now recognised as a Technology Research Platforms world leader.

Our platforms have created stronger connections between faculties, disciplines, industry and government, positioning us to pursue ambitious, high-impact opportunities.

INDIGENOUS, INCLUSION AND DIVERSITY

Social justice, inclusion and diversity are core Monash goals and values. Our research community reflects these core values, supporting staff and students with disabilities, promoting equal opportunity for women in the workplace, and fostering diversity and accessibility.

We welcome researchers and students from around the world and from a range of socioeconomic backgrounds. This diversity greatly enriches everything we do. At Monash, we believe to be truly excellent we must embed diversity into the fabric of who we are. We strive to create an organisational culture that is inclusive and in which all staff participate equally at all levels in our pursuit of excellence. We do this in several ways. A focus on gender equity and inclusivity has been fundamental to our organisational strategy for more than three decades. We believe equity makes us better as a University and stronger as a community.

We were amongst the first institutions in Australia to be awarded bronze status in Athena SWAN, whose primary focus is to advance gender equity in STEM. Monash also recognizes the importance of programs and policies that are inclusive of members of the LGBTIQ community, those from culturally and linguistically diverse backgrounds, and those with a disability.



The way we
undertake
our research



Student
Recruitment



Staff
Recruitment



Our Research
Partnerships



Our Research
Impact

Inclusion and diversity are at the core of what we do

Indigenous Research

Monash is committed to fostering a society that respects Aboriginal and Torres Strait Islander peoples, cultures and knowledges, and works towards addressing the legacies of the past. Through our teaching, research and community engagement, Monash will continue to make a substantial and ongoing contribution to reconciliation by fostering mutually-beneficial partnerships with Indigenous peoples and communities.

We will recruit, support and retain Indigenous students and staff, and advance research, knowledge and awareness of Aboriginal and Torres Strait Islander peoples, cultures and issues. The Research Agenda supports the Monash Aboriginal and Torres Strait Islander Framework. We recognise the vital importance of Indigenous research as a responsibility to Indigenous peoples

and a key contributor to reconciliation. We also acknowledge the complex tensions and historical abuses that Indigenous people and communities have experienced as the subjects of research that has been conducted on or about them.

At every stage, research with and about Indigenous peoples must be founded on a process of meaningful engagement and reciprocity between the researcher and Indigenous people, underpinned by national and international best practice and guidelines. To tackle major Indigenous research challenges we will foster research that leverages the breadth of our expertise, bringing together discipline leaders in partnership with Aboriginal and Torres Strait Islander people and communities. We will prioritise the advancement of Indigenous research, education, engagement, cultural heritage, and knowledge domestically and internationally to advance Indigenous issues.



Designed by Monash Art Design & Architecture's (MADA) Mobility Design Lab (MDL), Monash Institute of Transport Studies (engineering) and MUARC, this project is one of a number studying the advent of an intelligently connected driverless public transport system. Image: Peter Wang.

ENTERPRISE CONNECTIVITY

Monash is an enterprising university. We build enduring partnerships with industry, government and other organisations that enrich our ability to innovate. These partnerships are firmly grounded in research excellence and enable us to guide industry through globally relevant challenges.

We are an engine for innovation

Our enterprising nature is inextricably tied to our transformational research, state-of-the-art facilities, big data and exceptional talent.

As Australia's largest university, we are critical to the state and national economy.

Recognised globally, with locations in China, India, Italy, Malaysia and the United Kingdom, we have the highest international competitive research income of any Australian university.

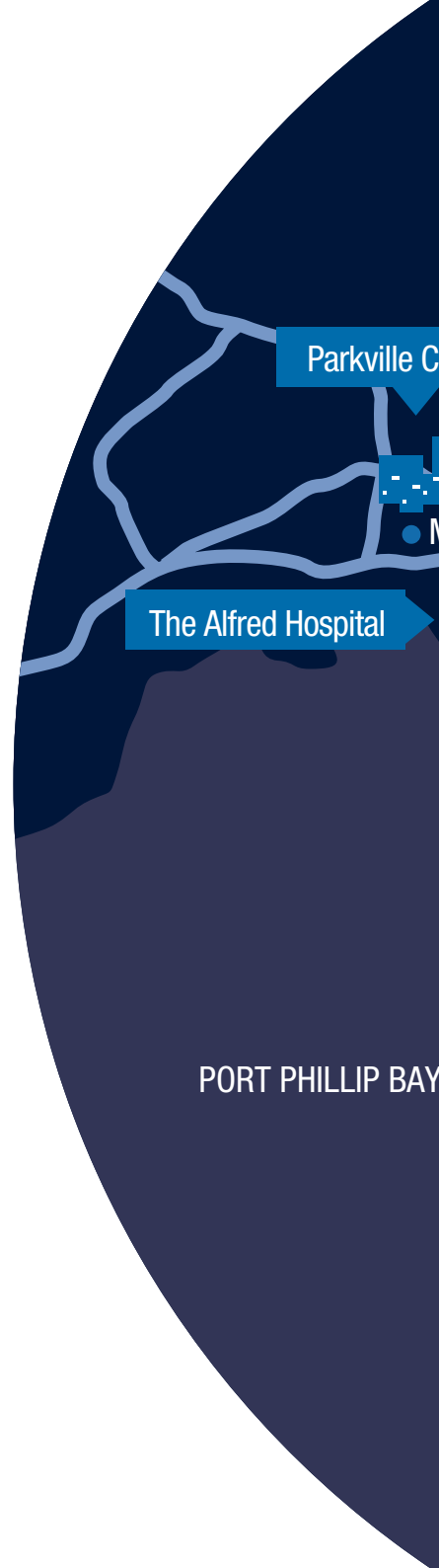
The Monash Precinct

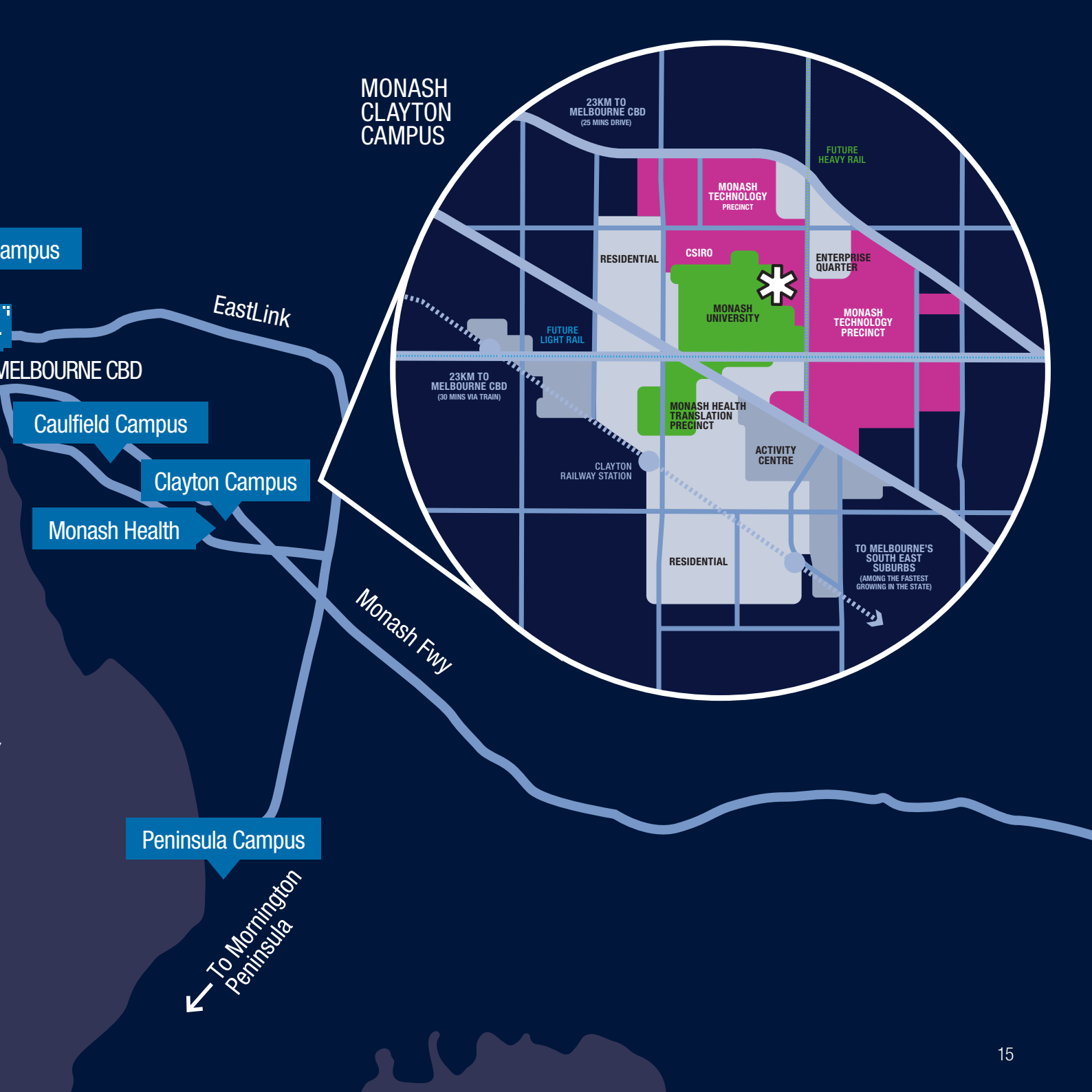
The region surrounding our university is Victoria's leading non-CBD employment, economic growth and innovation hub, contributing \$9.4 billion to the Victorian economy each year, employing more than 82,000 people, and supporting more than 13,000 businesses.

Joint commitment from Monash and the State Government will ensure the Monash Precinct can continue driving economic and social development in this key part of Victoria.

The Precinct's mix of research and commercial facilities provide a unique environment for world-class innovation and research.

We will continue to build on strengths that align with the four focus areas in the research agenda, translating our research results into solutions that benefit everyone.





GLOBAL CONNECTIVITY

Networks of Excellence

The Networks of Excellence initiative fosters high-quality international collaboration with selected international partners. This includes deep alliances that achieve university-to-university collaboration, such as the Monash-Warwick alliance.

The University is also pursuing strategic alliances with select universities, capitalising on potential synergies in areas of research strength. Funded opportunities seek to accelerate research activity, publications, citations and funding while enhancing collaborative activity and impact.

Monash University Malaysia

Monash University's ASEAN platform, with global recognition as a leading research centre, able to solve fundamental challenges and improve the socioeconomic well-being of societies in the Asia-Pacific region and beyond.

Indian Institute of Technology Bombay (IITB) Monash Research Academy

A joint-venture Research Academy training PhD research students supervised by professors from both institutions, and attracting extremely talented students to undertake an industry-engaged PhD.

Monash Warwick Alliance

An Alliance that co-develops, co-publishes and offers a truly transnational experience to our students, academics and professional staff, with a focus on addressing the global challenges and opportunities of the 21st century.

Prato Centre, Italy

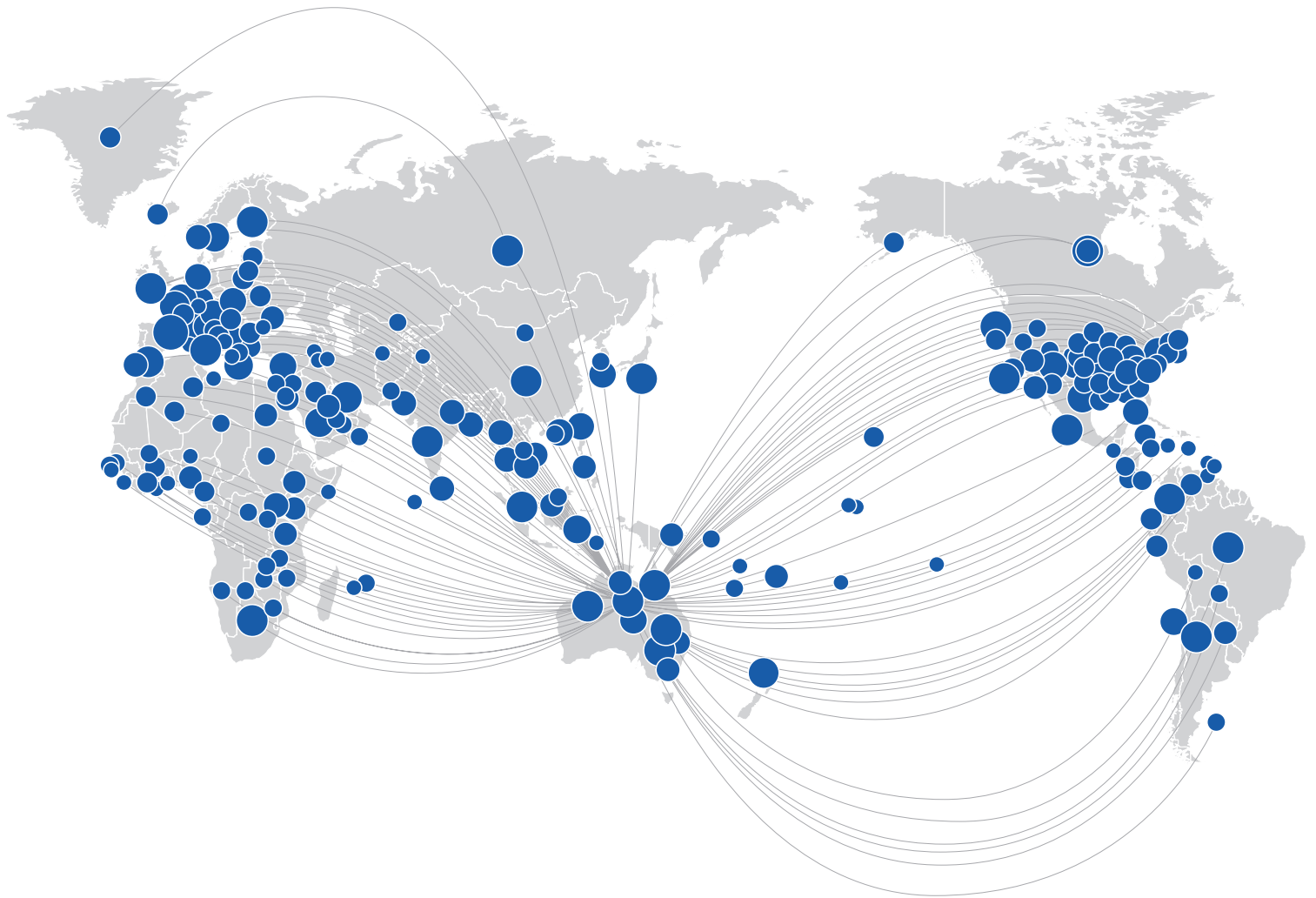
A site for globally-integrated research programs, acting as a research incubator and concentrating our global expertise on complex international challenge areas and location-specific research themes.

Southeast University Monash University Joint Graduate School, China

Producing postgraduates and researchers with ideas that change people's lives in the region and the world for the better. The Suzhou Industrial Park (SIP) is one of the largest innovation precincts in China and recognised as one of the world's most dynamic places for translating research into valuable industrial processes and products.

Monash has a wide array of international research collaborations that enhance our positive reputation as international collaborators, industry partners and world-class researchers.

We work together to build interdisciplinary teams and develop focused, fit-for-purpose partnerships that will progress research around the world.



2015-2019 (5 years) Collaboration Map showing Monash's international connections through co-publication

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This information was correct at the time of publication
(February 2019). Monash University reserves the right
to alter this information should the need arise.