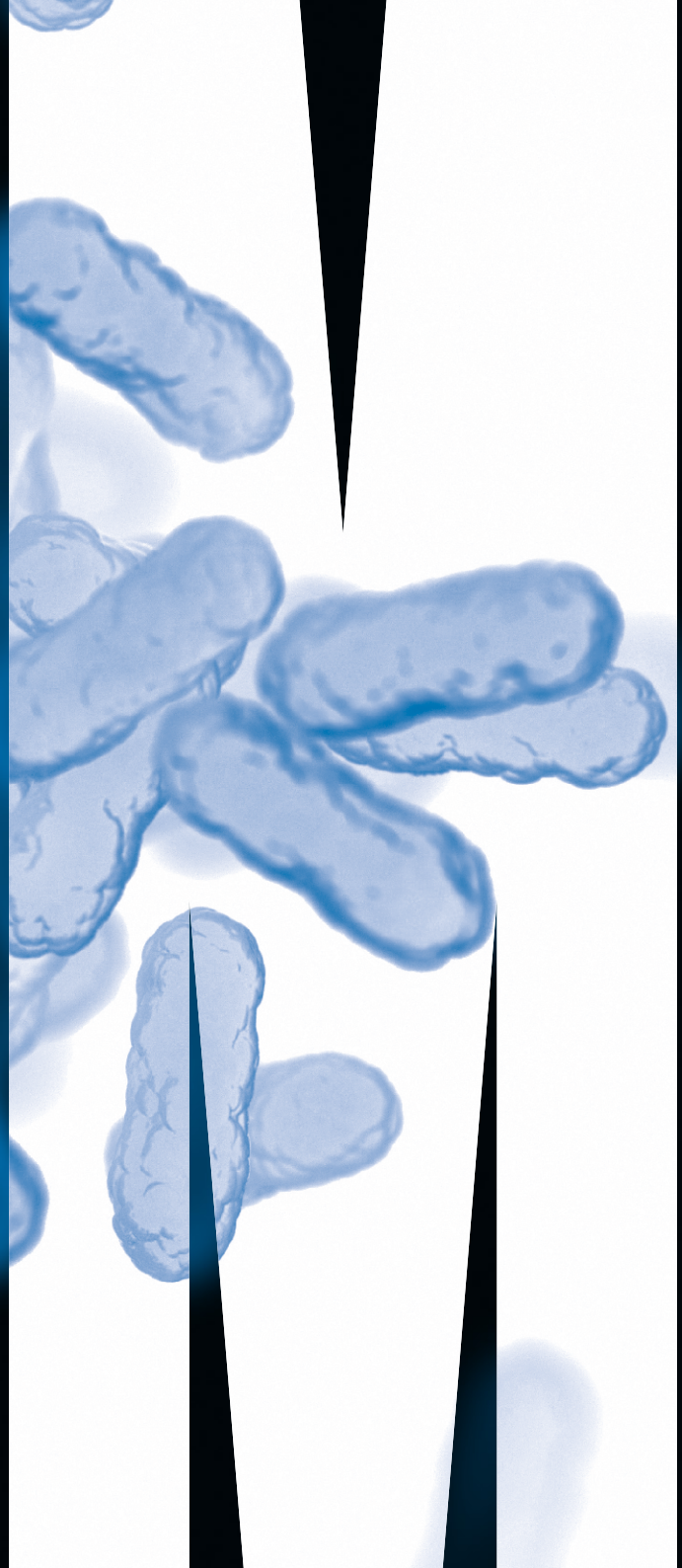
MONASH University

IMPROVING THE HUMAN CONDITION

MONASH
MEDICINE
NURSING AND
HEALTH SCIENCES



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Acknowledgment to Country

Monash University recognises that its Australian campuses are located on the unceded lands of the people of the Kulin nations, and pays its respects to their Elders, past, present and emerging.

Monash is committed to fostering a society that recognises, respects and includes Indigenous peoples, cultures and knowledge.

The University will contribute to the creation of this society by working with and celebrating Aboriginal and Torres Strait Islander peoples, cultures and knowledge, as well as Indigenous peoples of other places where Monash has a campus or major presence.

Monash University is committed to supporting and contributing to:

- The Uluru Statement from the Heart process for a First Nations Voice to the Commonwealth Parliament of Australia; and
- Treaty discussions in the state of Victoria and the Yoo-rrook Justice Commission.

Chapter 1

Overview

About Monash University

Monash University ranks in the world's top 50 universities.

Times Higher Education World University Rankings 2023

- For more than 65 years, we've been working to change the world.
- Our researchers and alumni are addressing some of the greatest global challenges in health, climate change and achieving global business connectivity.
- Our vibrant student community numbers over 80,000 from all corners of the world.
- Our international footprint of campuses spans Melbourne and regional Victoria, Kuala Lumpur, Jakarta, Mumbai and Suzhou, with a major cultural centre in Prato.
- We play a critical role in the Australian economy contributing $5.2 billion in economic activity annually.
- Monash is a member of the Group of Eight, an alliance of leading Australian universities recognised for their excellence in teaching and research.

$2.8b
Our operating revenue 2022

$7.2b
in non-current assets (2022 annual report)

About Monash Medicine, Nursing and Health Sciences

We are looking to the future - fostering a culture of innovation, collaboration and big ideas to adapt to a changing world.

Embedded in an ecosystem of health, academia and industry we're working to ensure we can provide the skilled workforce, technology, techniques, platforms and partnerships to create an impact now and for future generations.

At Monash Clayton, we are part of the world-class Monash Technology Precinct (MTP), which employs over 90,000 people across 13,000 businesses and contributes nearly $10 billion annually to the Victorian economy. We closely partner with other prestigious organisations that amplify our research and education capability. Together with our health service partners, we have thriving research, education and healthcare precincts spanning Monash Clayton, the Alfred Precinct in Prahran, Mornington Peninsula, Box Hill, and reach into regional and rural Victoria.

We are an international leader in the design and delivery of clinical trials. Together with our health service partners, we are involved in almost 25 per cent of Australia's clinical trials activity and over 2000 trials started every five years. These bring patients access to life-saving medicines and care as well as the critical evidence required to commercialise new pharmaceutical, diagnostic and medical device products towards global markets.

With over 61 licence deals and a focus on generating medical products, we are leading medical product commercialisation outcomes of any Australian university, contributing to patients and health networks, economic growth, export and trade opportunities, skills development and employment generation.

We are partnering with companies such as mRNA Victoria, CSL, Ono Pharmaceuticals, Moderna, GSK, Novartis Roche, UCB Biopharma, AstraZeneca, Global Medical Solutions Australia and Telix Pharmaceuticals to grow Australia's medical product manufacturing ecosystem, expanding our capability to develop biologics, radiopharmaceuticals and other medical products for research and industry partners.

We are renowned for providing rich educational experiences, positioned #31 in the Times Higher Education, World University Rankings 2023 for preclinical, clinical and health sciences. Our educational offerings are integrated with industry opportunities with partners such as GSK and placements with leading healthcare providers, instilling a collaborative and innovative mindset that sets our students up to succeed. We offer an extensive list of specialised short courses and workshops that assist healthcare professionals to keep pace with the rapidly changing needs, practices and standards of the healthcare sector.

Join us as we work to scale our education programs, research, infrastructure and partnerships to deliver impact on the grand challenges of the age - Climate Change, Geopolitical Security and Thriving Communities - and improve the human condition.

Leadership reflections

Professor Christina Mitchell AO, Dean

We are fortunate to operate within a culture that is purposeful and embraces innovation and collaboration in both teaching and research. Underpinned by our strong and enduring healthcare partnerships and our world-class infrastructure, our educators, researchers, clinicians and professional staff are focused on a single goal - to improve the human condition.

We do this by training the healthcare workforce, translating groundbreaking research into better clinical practice, and improving health equity and access. The breadth of our research benefits everyone - from newborns to older adults, locally, nationally and globally. We also support and partner with researchers, health services and industry to translate research findings into policy and practice that improves public health outcomes and our healthcare system.

I am pleased to present a highlight of our capabilities across medicine, nursing and allied health sciences and invite you to join us in our mission to improve the human condition.

Professor Wayne Hodgson, Deputy Dean of Education

Solving complex global challenges is today's science frontline. We are focused on preparing healthcare graduates to tackle them by connecting research-based evidence with actual change in the classroom to ensure their readiness to make a difference in our rapidly changing world.

The student learning experience forms the foundation of what we deliver and is at the heart of everything we do. As one of Australia's largest providers of education for doctors, nurses and allied health professionals, our students benefit from our partnerships with leading healthcare providers, our multidisciplinary approach, our global alumni network and our mentoring and leadership programs.

* Professor Wayne Hodgson is our outgoing Deputy Dean of Education and newly appointed inaugural Dean of the new Sub-Faculty of Health Sciences.

Professor James Whisstock, Deputy Dean of Research

The breadth of our research portfolio and the quality of our researchers is quite extraordinary. Since joining the Faculty as Deputy Dean in 2022, a week has never gone by without my learning of new and exciting research areas our Faculty is developing and leading.

As a global leader in medical research, the faculty's vision is to address the major health challenges of the age, to develop and translate new therapeutics, and to improve the human condition. We further seek to continue to develop and expand our multicultural and diverse research community and build strong and productive international partnerships and program alliances.

Chapter 2

Core capabilities

Our expertise

Combining global health research and education focused on the world's biggest health challenges, we place an international perspective on our goal of improving the health of global communities.

Our Areas of Excellence:

1. Global health education
2. World-class clinical trials and translational research
3. Biomedical innovation
4. Informing new models of care
5. Informing policy and practice
6. Health informatics/ big data

1. Global health education

As one of Australia's premier Group of Eight medical, nursing and health science institutions, we are recognised as a global leader in medicine and health education.

Strengthened by our dedication to building a culture of diversity, inclusion, integrity and empowerment, our students are encouraged and supported to build their own paths through our undergraduate, postgraduate and professional development course offerings.

Through access to our outstanding supervisors and mentors, support through a wide range of generous scholarships and grants, field placement opportunities, access to state-of-the-art platform facilities and global immersion opportunities through our international networks, our graduates continue to shape the fields of medicine, nursing and health sciences locally and globally.

CASE STUDY

Building health capacity in low and middle-income countries

In the late 1990s, key stakeholders in the management of Sri Lanka's health system worked to address gaps in that nation's occupational health and public health capacity.

Over 20 Sri Lankan doctors each spent a year embedded within our School of Public Health and Preventive Medicine, undertaking postgraduate training in core public health research subjects, engaging in research seminars and participating in site visits to relevant workplaces and stakeholder organisations.

Participants have improved local Sri Lankan healthcare by applying their knowledge and skills through a range of key roles within the Sri Lankan Ministry of Health, the Health Promotion Bureau and related organisations. Some are now working with the World Health Organization, assisting their regional neighbours in turn.

In addition to empowering the doctors to improve healthcare at an individual level, the program drove structural improvement, actively supporting the development of Sri Lanka's first Code of conduct for health research and the creation of a health research governance strategy.

2. World-class clinical trials and translational research

We have Australia's largest clinical trials network, spanning 7000+ beds across six major health services, four state-of-the-art clinical trial facilities across Melbourne and a 3000+ strong national regional and rural GP and clinical network that is supported by dedicated ISO-certified technology platforms, world-class infrastructure and equipment.

Essential to the development of new medical treatments and diagnostics tests, our core knowledge and expertise in world-leading trial design, methodology and biostatistics alongside our patient access has helped us build an impressive track record of large-scale, international clinical trials that advance medical knowledge and research methodology.

The Monash University Clinical Trial Centre (MUCTC) brings together leading and highly skilled trials professionals who can support clinical trial activity from conception through to changing policy and practice including both investigator-initiated and industry trials, small to larger multi-national, and multi-site trials in hospital and community settings, nationally and internationally.

We are also proud to establish the Victorian Health Innovation Centre to support the acceleration of medical technologies to market for cardiovascular and other critical diseases, generously supported by the Victorian Government.

Our work helps us drive cross-sector collaboration, grow and sustain a highly skilled workforce, and attract investment partners in globally significant clinical trials such as:

- ASPREE - (Aspirin in Reducing Events in the Elderly) Australia's largest clinical trial of aspirin for primary prevention in older adults, with 19,000+ participants at enrolment in Australia and the USA / 22 ancillary studies. Winner of the 2019 Australian Clinical Trial of the Year, the ASPREE study is in the post-intervention phase, called ASPREE-XT, funded by the National Institutes of Health (USA).
- REMAP CAP - has revolutionised the global treatment of COVID-19 in critically ill people, evaluating more than 50 distinct treatment interventions, 2021 Winner of Australian Clinical Trial of the Year, 11,000+ patients, more than 350 trial sites in 25 countries.
- STAREE - A world-first investigator-initiated randomised controlled trial studying the effects of statins on healthy ageing in those aged over 70 involving 9,971 participants and 2,897 GPs across Australia, STAREE is generously funded by NHMRC in partnership with Monash.

7000
beds across six major health services

4
state-of-the-art clinical trial facilities across Melbourne

3000+
strong national regional and rural GP and clinical network

3. Biomedical innovation

Monash has a strong history of commercialisation and is the leading recipient of funding from the commercial sector among Australian universities.

We focus actively on industry engagement and the commercialisation of intellectual property that delivers health benefits to society.

With currently 61 active licence deals, this vital work makes significant contributions across Australia to:

- improve patient care and health outcomes
- develop contemporary health networks
- drive economic growth
- enhance export and trade opportunities,
- develop skills and
- generate employment.

We also work with mRNA Victoria and manufacturing partners to grow Victoria's mRNA ecosystem. In collaboration with five faculties across Monash including the Faculty of Pharmacy and Pharmaceutical Sciences, we have over 65 world-leading mRNA researchers, 11 technology platforms linked to mRNA research and Australia's most advanced COVID-19 vaccine in clinical trials led by the Monash Institute of Pharmaceutical Sciences.

Monash's Generator Accelerator Program develops student and alumni entrepreneurial talent. Since 2017, there have been 1,141 participants complete one of the four programs and it has supported 455 startup projects.

Our student body of over 86,750 students globally provides a highly educated, industry-informed, experienced job-ready workforce.

340+
patent families

$440m
investment capital raised from 2018 – 2022

65+
world-leading mRNA researchers across Monash

4. Informing new models of care

We use novel strategies to investigate service delivery and consumer experiences, providing data to build sustainable, accessible and continuously improving health systems whilst reducing resource wastage.

Our work to inform safe and efficient healthcare provision at all health system levels aligns with the Australian Commission on Safety and Quality in Healthcare and other national and state priorities.

Access to expertise at the Monash Bioinformatics Platform, the Health Data Platform (HELIX) and Monash Business School complements that of the Monash Medicine, Nursing and Health Sciences' own health economists, boosting our ability to understand big data, apply health economics principles to our sector-based research, and support sustainable health systems into the future.

Strong relationships with major health service providers, including Monash Health and Alfred Health, provide us with access to real-world platforms where we can identify improvements, test interventions and create novel strategies.

Our multidisciplinary Health and Social Care Unit works at the intersection of public health, psychology, social sciences and clinical care, supporting evidence-based policy and programs to improve community health and wellbeing.

CASE STUDY

At-Home Pulmonary Rehabilitation

Chronic Obstructive Pulmonary Disease (COPD) was the fifth leading cause of death in Australia in 2018. With early diagnosis and treatment, people with COPD can breathe better and live healthier lives. NHMRC-funded research trialled in-home rehabilitation as a way to improve access for patients with COPD, providing an alternative to the traditional in-person delivery at outpatient facilities, resulting in a transformative shift in clinical practice and a more integrated model of disease management.

CASE STUDY

Better functional outcomes in trauma

With traumatic injuries the leading cause of death among Australians aged 44 years and under, our BEFIT study developed, tested and evaluated an innovative new model of allied healthcare for trauma patients, featuring an intensive, multi-disciplinary program.

The evaluation showed it to be more cost-effective than standard practice, revealed a reduction in hospital-acquired complications, better functional outcomes for patients, and a reduction in the length of hospital stays.

5. Informing policy and practice

Our researchers, academics, health economists and biostatisticians develop epidemiological and economic models to:

- **evaluate the real-world impact of ill health**
- **examine the benefits of health treatments and interventions, including addiction**
- **showcase ways of working that translates into efficient and cost-effective policy**
- **support evidence-based policy and practice through evidence synthesis from Cochrane Australia**
- **undertake continuous evidence surveillance to develop and update living clinical guidelines for Australian clinicians through the National Clinical Evidence Taskforce.**

We consult with all levels of Australian and international governments, as well as the private healthcare industry. The commercial-in-confidence projects arising from these engagements have led to a multitude of treatments and therapies.

We share biostatistical and methodological expertise and conduct novel research into emerging methodologies. These activities advance complex research and provide economic intelligence to inform and guide the development of effective healthcare policies and decisions.

Our biostatistics experts develop and advise on new ways of interpreting data, with Cochrane Australia providing world-renowned meta-analyses and a focus on evidence-based outcomes.

We are Australia's largest manager of clinical quality registries with unrivalled in-house expertise and support, rigorous data collection and the ability to translate this data into guidelines that help assure patient safety. We've established or maintained over 30 Australian-based registries and collaborate with multiple international Registries.

The Epidemiological Modelling team builds complex models to project the spread of disease and the effects of mitigation strategies or treatment, working closely with the World Health Organization (WHO) and the Bill and Melinda Gates Foundation's Global Fund to fight AIDS, Tuberculosis and Malaria and eliminate multi-resistant tuberculosis in the South Pacific. This team also made important contributions to Australia's COVID-19 planning.

CASE STUDY

National Clinical Evidence Taskforce

Established in March 2020, the National Clinical Evidence Taskforce is a cross-disciplinary collaboration of 35 member organisations who share a commitment to producing national evidence-based treatment guidelines for urgent and emerging diseases. This pioneering alliance established the world's first 'living guidelines' for the care of people with COVID-19 and its scope has now expanded to include MPX and climate health. Today, the Taskforce continues to undertake continuous evidence surveillance to identify and rapidly synthesise emerging research to develop and update recommendations to ensure Australian clinicians are up-to-date with the latest advice.
For more on the Taskforce model and achievements visit evidenceinaction.org

6. Health informatics/big data

We tackle big health questions by systematically gathering and exploring big health data, producing results that benefit millions of people around the world.

We house the Biostatistics Consulting Platform, which provides high-quality biostatistical support, consulting and collaborative assistance to researchers across Monash Medicine, Nursing and Health Sciences and the Alfred Hospital, as well as other hospitals, institutes and health service groups.

Big data in healthcare enables us to provide enhanced insights and influence decision-making with expertise that includes environmental epidemiology, global environmental change and air pollution, public health genomics and population DNA screening, harnessing AI and emerging imaging tech to better diagnose melanoma and evidence translation in cardiovascular care.

CASE STUDY

DNA screening for cancer

Launched in August 2022 and funded by the Australian Government's Medical Research Future Fund Genomics Health Futures Mission, DNA Screen, a nationally collaborative project led by the Monash School of Public Health and Preventive Medicine, is the world's first preventive DNA screening study designed to assess population DNA screening through a national healthcare system.

The free test will screen at least 10,000 people aged 18-40 for genes that increase the risk of certain types of cancers and heart diseases that go undetected, with the eventual goal of developing a new population-based DNA screening program that could be offered to all Australians through the public health system.

Chapter 3

Excellence in education

3

Education excellence to meet global challenges

We are educating the health workforce for the future, by embracing educational innovation alongside industry, community and health sector insights.

Our award-winning educators are working to ensure our students have the distinctive capabilities to meet the needs of the future workforce, including the talent pipeline for the biotechnology industry and the diverse communities and environments in which we live.

As one of Australia's largest providers of education for doctors, nurses, allied health professionals and medical researchers, we offer programs at all levels, from school leavers right through to professional development for senior health leaders, across a wide range of disciplines.

Our students are embedded within the healthcare sector, industry and research settings, learning from education and clinical leaders renowned in the industry, providing them with a competitive edge.

Our courses include:

Medicine, Nursing & Midwifery, Sonography, Biomedicine, Biotechnology, Psychology, Public Health, Physiotherapy, Occupational Therapy, Paramedicine, Social Work, Podiatry, Medical Imaging, Radiation Sciences, Nutrition, Dietetics, Health Sciences, Wound Care, Clinical Embryology, Forensic Medicine, Addictive Behaviours.

Education excellence to meet global challenges
Continued

A world-class health education

We partner with many of Victoria's leading healthcare providers, including Alfred Health, Monash Health, Eastern Health and Peninsula Health, ensuring students have access to a range of clinical and fieldwork opportunities throughout their course.

Our students can focus on their chosen careers from day one by enrolling in one of our specialist undergraduate courses.

The Gukwonderuk Unit

Monash University's Impact 2030 statement sets out our institutional commitment to fostering a society that recognises, respects and includes Indigenous peoples, cultures and knowledge.

Through the leadership of the Gukwonderuk Unit, we are committed to growing the number of Indigenous healthcare providers, researchers and leaders. Additionally, we aim to grow a healthcare workforce skilled in cultural safety and anti-racism.

Jeffrey Cheah School of Medicine and Health Sciences Malaysia

Established in 1998, Monash University Malaysia is the third-largest campus of Australia's largest university and the first foreign university campus in Malaysia.

The Jeffrey Cheah School of Medicine and Health Sciences provides an opportunity to study in one of the top medical schools in the world.

Students enjoy a truly international experience while spending time in public and private healthcare facilities in Malaysia, along with healthcare settings within or in close proximity to Melbourne, Australia.

Indonesia

Indonesia is a key partner for Australia in the Pacific region. Monash University is proud to be Indonesia's first international, foreign-owned university with an in-country campus. Outstanding junior and senior academics from Indonesia, Australia and around the world work together to create a powerful scholarly community at Monash Indonesia.

Monash has graduated more Indonesian citizens than any other university outside of Indonesia.

All courses offered at Monash in Indonesia are accredited by the Indonesian Ministry of Education and relevant accrediting bodies.

"We want to ensure that our students have the capabilities that employers are looking for, so they can go on to be an integral part of our rapidly changing and complex world. We put the student experience at the heart of everything we do and pride ourselves on a curriculum informed by our industry and healthcare connections, providing our graduates with vital skills to change the lives of many."

– PROFESSOR WAYNE HODGSON

Skilling a global health workforce

Our education programs deliver highly-skilled, workforce-ready talent to help meet the growing needs of a dynamic research and medical sector in Australia and across the world.

60+
Graduate courses

60+
Micro-credential and professional development courses

15+
Undergraduate courses

We regularly review and adapt our education and training services to best meet future workforce requirements, foster career pathways and offer continuous development opportunities. These services are competitively enabled and strengthened by our strong partnerships across the healthcare industry.

Our post-professional degrees, short courses and workshops are among the world's best in terms of professional training and practice standards.

Our world-class courses and workshops help accelerate professional development and advancement for healthcare professionals at all stages of their careers.

We welcome opportunities to co-design or tailor education and training programs that meet unique organisational and/or staff development needs.

Skilling a global health workforce
Continued

CASE STUDY

Infection control training

We developed infection control training for aged care workers to help the industry cope with the COVID-19 pandemic.

Delivered by Monash Nursing and Midwifery, an online and face-to-face program was delivered to over 220 individual aged care facilities in Victoria, upskilling over 3,400 residential aged care workers and over 800 facility champions to provide the greatest support possible to vulnerable seniors.

CASE STUDY

Mental health

Developed by some of Australia's most experienced mental health professionals, educators and researchers, our undergraduate certificate course provides basic knowledge and skills for those with an interest in mental health care.

The online course has been completed by over 1000 aged care, police and ambulance workers to aid in the recognition and basic assessment of common mental disorders such as depression, and anxiety and contemporary models of mental health care and management.

"I have enjoyed learning more about dementia. I didn't realise there were different types… I'm finding already in my work I am recognising a lot sooner signs of additional mental health problems that we were initially unaware of and I'm seeking to get them the extra help and care they need."

– MONASH COURSE PARTICIPANT

Skilling a global health workforce
Continued

CASE STUDY

Civil Defence Force (Singapore)

Monash is delivering a new distance-learning Bachelor's degree in Paramedicine for Singapore Civil Defence Force (SCDF) paramedics.

Singapore is a leader in paramedic education and training in Southeast Asia. SCDF will continue to improve in this discipline by lifting their training standards from an Advanced Diploma to a Bachelor's degree with the help of Monash's long-standing excellence in this field. As part of the agreement, Monash has committed to running regular research workshops for SCDF and providing mentorship for paramedics undertaking research projects including opportunities to share data and publish joint research in peer-reviewed journals.

SCDF will also be recognised as a clinical placement provider for Monash students and selected SCDF staff will be appointed to join Monash's team to deliver the course in Singapore.

CASE STUDY

Supervision training

The Monash Centre for Scholarship in Health Education (MCSHE) co-designed with industry/government partners an evidence-based supervision workshop, delivering the program to approximately 8000 health and human services workers (e.g. family violence, disability) across metropolitan, regional and remote Victoria, filling a pressing gap in current training in supervision.

All team members have received Indigenous cultural safety training to ensure the appropriateness of materials, plus Indigenous supervisors and participants that work with Indigenous communities and clients and other diverse groups have participated actively in training.

Participant evaluation of workshops has demonstrated significant improvements in perceived supervisory knowledge, skills and confidence over time, with the majority of workshop participants reporting their implementation of (or intention to implement) changes in supervisory practices.

*Biomedical Learning and Teaching Building

Latest snapshot

Researchers

1700+

PhD students

1600+

Highly-cited Monash researchers

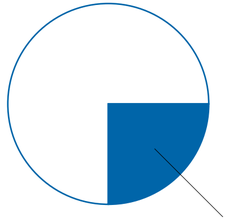
7

Medical products licence deals

26

Active clinical trial contracts

1000+



25%

Together with our health service partners, we are involved in almost 25 per cent of Australia's clinical trials activity

Global network of alumni in over 130 countries

59,000+

Rank for nursing
(Shanghai GRAS 2022)

Rank for preclinical, clinical and health sciences
(Times Higher Ed 2023)

Rank in life sciences & medicine
(QS World University Rankings 2022)

Chapter 4

Excellence in research

Our research expertise and excellence

Our core research expertise is competitively established to meet the health requirements of local and global communities.

In collaboration with our partners, we work to create effective innovative solutions that address these challenges.

From understanding disease and chronic illness, planetary, geopolitical and environmental impacts, to developing and testing novel treatments and translating knowledge to policy and practice, the scale and quality of our research is amongst the highest in the world.

Innovation and collaboration drive our achievements that are at the forefront of ground-breaking discoveries that span concepts to clinical practice.

Disease missions

- Cancer
- Cardiovascular disease
- Infectious diseases
- Immunology and immune-driven diseases
- Metabolism and obesity
- Neurological conditions
- Developmental disorders

Drivers of thriving communities

- Reproductive health
- Preterm / neonatal children / children's health
- Women's health
- Men's health
- Mental health
- Ageing
- Preventive health

Medical and technological enablers

- Critical care, trauma and perioperative medicine
- Public health and health systems improvement
- Climate health

The medicines of the future

- Regenerative medicine
- Radiopharmaceuticals
- mRNA

CHALLENGE 1

Infectious diseases

Infectious diseases represent a grave threat to humanity. Climate change, together with other factors such as antibiotic resistance is driving the emergence of highly dangerous pathogens.

Our research aims to combat these new and emerging threats to society and includes understanding how pathogens interact with humans and novel approaches for treating and preventing communicable diseases.

Our capabilities

Currently include:

- 800+ infectious disease researchers.
- Four infectious disease departments in leading health services.
- In-depth, internationally-leading expertise and infection models for the top antimicrobial-resistant superbug threats identified by the WHO and the CDC.
- $366m+ in infectious disease funding awarded 2015 - 2020.
- Leader in managing and preventing sexually transmitted infections (STIs) - Melbourne Sexual Health Centre.

Impacts

Recent examples:

- Clinical trial journey of drug QPX9003, a much-needed novel antibiotic targeting drug-resistant Gram-negative 'superbugs'.
- The Monash Phage Foundry, led by the Centre to Impact Antimicrobial Resistance (AMR). Phage experts working together to discover, produce and provide therapeutic phages for the treatment of bacterial infections in the most vulnerable hospital patients.
- Portable RNA-Based diagnostic test, making the diagnosis of infectious diseases and antibiotic resistance, food safety and water hygiene possible in places where lab tests are not readily accessible.
- CALIPSO Trial - an adaptive trial examining the optimal duration of antibiotic therapy to prevent infections in 9000 patients undergoing heart surgery.
- Developing novel interventions and strategies to treat and improvise the control of gonorrhoea, chlamydia, syphilis and mycoplasma genitalium to compact the rapid rise in STIs.

CHALLENGE 2

Obesity, diabetes, metabolism

The obesity and diabetes epidemics are major drivers of morbidity and mortality. These diseases also increase the risk for other human conditions, including cardiovascular disease, liver disease, autoimmune diseases, such as type 1 diabetes, neuropsychiatric conditions, such as depression and anxiety, and cancer. As the population ages, we face the challenge of escalating numbers of people with obesity and type 2 diabetes.

These metabolic diseases impact heavily not only Australia but also our partners in the Pacific Nations and beyond.

Our leading experts and world-class technology, together with our focus on research excellence aim to transform every aspect of what we know and how we treat such conditions and their associated health risks.

Our capabilities

Currently include:

- 185+ researchers.
- Multiple basic discovery and clinical research departments spanning discovery science, drug development and clinical trials, for food nutrition and vulnerable communities.
- Only university department in Australia solely dedicated to diabetes research and its complications.
- Globally recognised biomedical research institute with world-leading multidisciplinary discovery programs dissecting the biological causes of obesity and type 2 diabetes and their impact on other diseases.
- Globally recognised Department of Nutrition, Dietetics and Food including Monash Nutrition & Exercise Clinic.

Impacts

Recent examples:

- A new pathway was discovered enabling the regeneration of insulin in pancreatic stem cells, a major breakthrough toward new therapies to treat Type 1 diabetes.
- Low FODMAP diet protocol and App to assist people managing irritable bowel syndrome (IBS).
- Discovery of a new pathway by which exercise improves metabolic health now opens up the possibility of drugs to mimic the beneficial effects of exercise to combat type 2 diabetes.
- Biotechnology approach to block enzymes and receptors promoting cardiovascular and kidney complications in diabetes.
- Discovery of how protein modification in the diet can prevent or reverse type 2 diabetes.
- Establishment of a multicentre nationwide network focussed on understanding and delivering new treatments for eating disorders such as anorexia nervosa.

CHALLENGE 3

Climate change and human health

The world is facing new challenges with climate change. Droughts, heat waves, flooding, bush fires and rising sea levels are having an effect on our livelihoods and our health.

There are increased respiratory and cardiovascular diseases, premature deaths, infectious diseases, water-borne illnesses and threats to mental health.

Our health and climate researchers across Australia and the Asia Pacific are improving the evidence for the impacts of climate change on human health, reducing the impact of the health system on climate change and discovering new ways to support human resilience in the face of climate change.

Our capabilities

Currently include:

- 75+ health and climate researchers.
- Over 10 research groups looking at the biological impacts of climate change.
- Eight key units and centres.
- World-leading surveillance and control researchers are investigating and modelling risks of pathogen transmission and implementing safeguards and solutions.
- Centre to Impact Antimicrobial Resistance.

Impacts

Recent examples:

- World's largest study of global climate-related mortality (Climate, Air Quality Research Unit).
- How breatharian bacteria in the soil can break down trace gases, such as toxic pollutant carbon monoxide and the greenhouse gas methane.
- Hazelwood Health Study - assessing physical and mental health outcomes associated with smoke exposure.
- Sustainable mobility and safety research to drive adoption of affordable, healthy and environmentally friendly transport.
- Empowering the nursing workforce to communicate the health impacts of climate change as a means of building health resilience in climate-affected areas in collaboration with Monash Climate Change Communication Research Hub.
- Energy from air: uncovering the mechanistic basis of how an enzyme extracts energy from hydrogen in the atmosphere.
- Bike Better: Sustainable mobility and safety research to drive adoption of affordable, healthy and environmentally friendly transport.

CHALLENGE 4

Healthy ageing

By 2060, approximately a quarter of Australians (10 million people) will be aged 60 years or older. Healthcare research and frontline health services that integrate effectively to meet our needs across the human lifespan, from child and adolescent health to women's and men's health and onwards into old age, are essential to maintain and advance improved well-being for all communities.

Our capabilities

Currently include:

- National Centre for Healthy Ageing (NCHA) - optimising access and models of health and social care for older Australians
- Rehabilitation, Ageing and Independent Living (RAIL) Research Centre.
- ARC Training Centre for Optimal Ageing.
- Monash Department of Paediatrics - cutting-edge research from biomedical discovery research into early-phase clinical trials.
- Women's Health Research Program - offering expertise in hormone actions and related therapies.

Impacts

Recent examples:

- Leading the world's first trial and patient education program to demonstrate how falls amongst hospitalised adults could be prevented; initiating new trial research design and evaluation of screening tools.
- Social work research informing policy reform in Australia's youth justice system.
- Ask PCOS App - helping women with polycystic ovary syndrome.
- Partners in Centre of Research Excellence in health and preconception and pregnancy
- #5 globally for nursing (Shanghai GRAS 2022), Monash Nursing and Midwifery is a significant research contributor toward the improvement of patient safety and quality.
- Partnership in the SPHERE Centre of Research Excellence driving better sexual and reproductive health outcomes for women through primary care.
- CORD SAFE study - investigating the feasibility and safety of administering umbilical cord blood cells from preterm babies to reduce their increased risk of brain injury and disability.

CHALLENGE 5

RNA vaccines and therapeutics

RNA-based drugs, medicines and vaccines are fast becoming the leading medtech investment internationally. RNA drugs and medicines can be developed and produced rapidly. This makes them the most agile of all therapeutic modalities and makes them perfect for pandemic response and personalised therapeutics.

Our capabilities

Currently include:

- 65+ world-leading mRNA researchers in a vibrant local ecosystem.
- 10+ leaders in the local, state and National RNA ecosystem.
- 11 technology platforms linked to mRNA research.
- Members of the Victorian mRNA Innovation Hub.
- Connection to industry and mRNA manufacturing partners.
- Australia's first dedicated mRNA workforce training centre.

Impacts

Recent examples:

- Australia's most advanced mRNA Vaccine in a clinical trial.
- RAGE Biotech, a spin-out developing novel RNA therapies to help patients with chronic inflammatory lung diseases.
- A portfolio of preclinical research using mRNA to treat infectious, rare and chronic diseases.
- Discovery programs for improved mRNA design, stability and translation for improved vaccine and therapeutic efficacy.
- Research teams building sovereign capability and intellectual property in the mRNA platform by focusing on the development of improved enzymes for the synthesis, modification and purification of mRNA.

CHALLENGE 6

Immune disease

An immune disorder is a dysfunction of the immune system, with most autoimmune diseases long-term illnesses. Some of the more common autoimmune diseases include rheumatoid arthritis, lupus, celiac disease, multiple sclerosis and type 1 diabetes.

Our capabilities

Currently include:

- Multiple research platforms including Macromolecular crystallisation, Cryo-Electron microscopy, and Biobanking and multiomics, that underpin major advances in the immune space.
- Advanced animal models of disease, including humanised, that cover the immune disease spectrum.
- Partnership with Australia's largest health services, including children's health, with unrivalled access to clinical data and tissue for translational research and outcomes studies.
- Clinical research platforms including registries such as the AsiaPacific Lupus Collaboration (the world's largest lupus registry) and multiple clinical trials from Phase 1B-IV.

Impacts

Recent examples:

- 2nd-ever drug for lupus approved worldwide based on Monash-PI-led trial.
- Advanced understanding of how HLA molecules predispose individuals to the development of rheumatoid arthritis.
- Industry collaboration to advance the understanding of the immune mechanisms underpinning celiac disease.
- Industry collaborations and venture-funded spinoffs focussed on glucocorticoid sensitivity.
- World-first antigen-specific T regulatory cell platform as a potential cure for autoimmunity - major global pharma collaboration and license agreements.
- A global 10-company pharma collaboration solving problems in clinical trial measurement in autoimmune disease.

CHALLENGE 7

Cardiovascular health

Cardiovascular disease has remained the leading cause of death globally for more than two decades.

At Monash we're determined to change this; drawing on our expertise and experience across research disciplines, educational and clinical settings, and creating a world-leading network of partners and practitioners to collectively transform cardiovascular health outcomes for all.

Our capabilities

Currently include:

- Seven leading expert groups stretching across the basic principles of the cardiovascular system, stroke, high blood pressure, platelets and thrombosis, clinical trials and regenerative medicine.
- The Monash Biomedicine Discovery Program for Cardiovascular Disease brings together 24 group leaders including metabolism, diabetes and obesity giving a cross-disciplinary approach to reducing the burden of CVDs.
- The Victorian Heart Hospital on the Monash Clayton campus houses the Monash Victorian Heart Institute, which is focused on delivering research, education and training excellence which turns into a measurable change in the rates of heart disease in Australia and beyond.

Impacts

Recent examples:

- The Victorian Heart Hospital - Australia's first heart hospital, a collaborative partnership between Monash University, Monash Health and the Victorian Government.
- The Artificial Heart Frontiers Program - to develop and commercialise a world-first durable total artificial heart.
- The Rose Trial: a novel therapy for lowering bad cholesterol.
- Combining cutting-edge genomics and 3D 'gaming' modelling to understand how all genes are expressed in different parts of the heart, unveiling complex patterns and novel marker.
- Cutting-edge imaging technology in the Monash Biomedical Imaging Platform, as well as the Australian Synchrotron are used to understand heart development and dysfunction. These key technology capabilities will be expanded and enhanced via planned future developments in the radiopharmaceutical space.

CHALLENGE 8

Cancer

The year 2020 saw over 200,000 new cancer cases diagnosed in Australia and nearly 10 million deaths worldwide.

Cancer is a disease that can develop within almost every part of the human body and is the second-most common cause of death in Australia after cardiovascular disease.

Our Capabilities

Currently include:

- Expertise in cancer cell biology, proteomics, genomics, functional genomics, structural biology, computational biology, artificial intelligence, and other cutting-edge technologies.
- Major clinical services across all of the Monash-affiliated health services serving an estimated 4 million Australians.
- Monash Partners Comprehensive Cancer Consortium (MPCCC), a strategic alliance of health services and Monash University working to advance cancer care through integrated and collaborative research.
- 8 Cancer Clinical Quality Registries involving different cancers and driving quality improvement at the health system and population levels.
- BioBanking Victoria - First industry-focused biobank in Australia and Australia's first NATA-accredited facility.
- One of the world's largest collections of living tumours from prostate cancer patients, accelerating the testing of new treatments and patient benefits.
- Advanced preclinical imaging, including 9.4T MRI, high-resolution PET-CT and Magnetic Particle Imaging with molecular theranostic capability in the ARA-MBI Preclinical Imaging Facility.

Impacts

Recent examples:

- DNA Screen - pilot of population-based DNA screening to identify individuals at high risk of developing cancer.
- Dedicated laboratory research programs in immuno-oncology.
- Piloted the first national clinical quality registry in early-stage melanoma.
- Discovery of multiple new drug targets that may be exploited for cancer therapy.
- Internationally renowned program of excellence in CAR-T cell therapy - an emerging form of immunotherapy, expanding the clinical research portfolio for lymphoma.
- $5m NHMRC Synergy Grant for a research program that focuses on implementing population-based genomic screening for breast and prostate cancer susceptibility.
- Landmark integrative genomic characterisation of upper GI cancers resulting in the further rationalisation of immunotherapy for gastric cancer.

CHALLENGE 9

Mental health and neuroscience

One in five Australians suffers from mental health, neurological, and substance use disorders - a growing health and social crisis.

Monash brings together interdisciplinary expertise and cutting-edge research in neuroscience that helps us better understand the human brain and its connections. Our researchers are making novel discoveries and developing new methods of treatment to improve the lives of people with neurological, mental health and substance use disorders.

Our capabilities

Currently include:

- Monash Neuroscience provides Australia's largest dedicated academic group focused on discovery and translational research to deliver better health outcomes for patients with neurological conditions such as multiple sclerosis, epilepsy, stroke, dementia, schizophrenia, Parkinson's disease and autism spectrum disorders.
- Turner Institute for Brain and Mental Health - offers nine clinics supporting diverse community needs ranging from trauma, sleep, stroke, neuropsychology and brain injury, to anxiety, stress, autism and attention deficit hyperactivity disorders.
- Health, Education, Research - HER Centre Australia - dedicated to understanding and treating mental illness experienced by women throughout their lifespan.
- Monash Addiction Research Centre (MARC) - world-leading expertise to address the harm done by alcohol, drugs and gambling.
- The Alfred-Monash Early Phase Neuroscience Clinical Trials Unit - located within Melbourne's Alfred Hospital, this unit is Australia's only dedicated neuroscience early phase clinical trial unit, and one of few worldwide.

Impacts

Recent examples:

- World firsts include - developing a suicide surveillance system with the potential to set global standards for suicide prevention efforts; an app to help shift workers with improved sleep; a trial involving amateur footballers to understand concussion and safe return to the playing field.
- $25 million international study to better predict the development of epilepsy after traumatic brain injury - funded by the US National Institute of Health (NIH).
- US Defence Department - military sleep problems examined to understand better how sleep deprivation can affect decision-making in group settings.
- MSBase - a collaborative governance framework, spanning 35 countries, wherein multiple sclerosis (MS) investigators conduct data analyses and cohort studies; findings demonstrate how early intervention with high-efficacy treatments can reduce long-term disability in MS patients.

CHALLENGE 10

Health equity

Health systems with strong primary health care are essential to achieving universal health coverage.

Utilising health data is key to informing, evolving and effecting change in our public health and health system improvement and policy to manage the rise in chronic conditions, achieve a healthier older population and make the best use of emerging health technologies.

Our capabilities

Currently include:

- #31 globally in preclinical, clinical and health services.
- 1500+ health researchers.
- Australia's largest manager of clinical registries.
- Departments that specifically focus on health equity are found within Eastern Health Clinical School, School of Public Health and Preventive Medicine, School of Clinical Sciences at Monash Health, and the School of Primary and Allied Health Care.
- Led by the Faculty of Information Technology, we are involved in a partnership with the NEED Alliance for Equity in digital health.

Impacts

Recent examples:

- Hazelwood Health Study on behalf of the Victorian State Government.
- RISE: Improving water sanitation in informal settlements.
- Modelling the march of tuberculosis through the development of AuTuMN, a software platform for modelling of TB control implemented in Fiji, the Philippines and Bulgaria.
- The ECLIPSe Project: understanding what makes the ideal consultation with GPs for people with low-incomes living with obesity.
- The Deep End Living Lab: health and social care integration for priority populations, including people experiencing unstable housing.
- Collaboration with the Migrant and Refugee Health Partnership to develop guidance for research with people from refugee, refugee-like and migrant backgrounds.
- Equity in mental health services.
- Postnatal mental health programs for culturally and linguistically diverse families.
- Diabetes prevention programs after gestational diabetes for women of Chinese background.

"We have a proud history of delivering world-class translational research outcomes that improve the health of people and communities locally, nationally and globally. Our partnerships with healthcare providers and excellence in clinical trials ensure that groundbreaking discoveries can be delivered effectively to patients, while also informing healthcare systems and policy.

Our researchers are delivering the new therapies and products to improve health outcomes, and providing the international leadership required to address the world's most challenging health issues."

– PROFESSOR JAMES WHISSTOCK, DEPUTY DEAN OF RESEARCH

Chapter 5

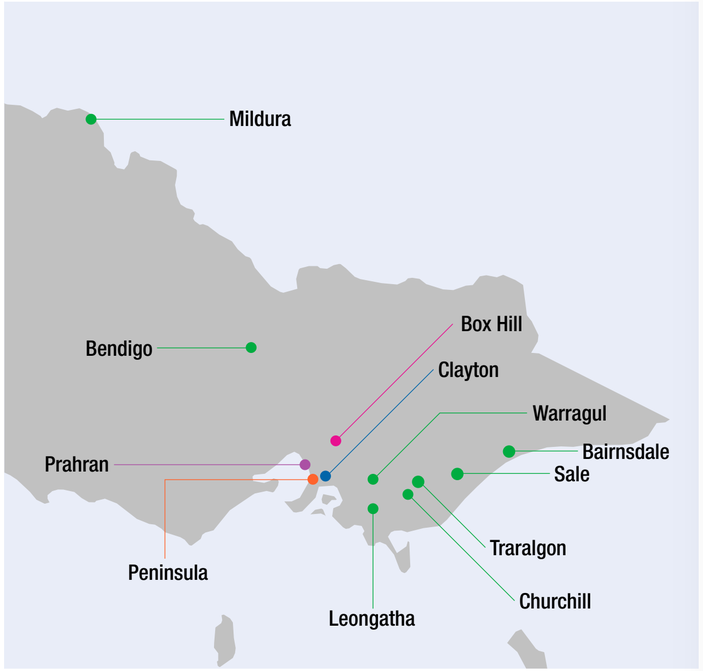
Infrastructure

5

Precincts

Monash is proud to be part of major precincts that lead education, research and clinical healthcare organisations to provide rapid advancements in healthcare for the benefit of people across Australia, including rural and remote communities, and overseas.

The convergence of biotech communities across these precincts competitively positions Victoria to retain our brightest minds, attract the world's best thinkers, share knowledge and create an ecosystem that is attractive for R&D investment and enables export development.



Key:

- Monash Technology Precinct
- Alfred Precinct
- Eastern Health Precinct
- Peninsula Health Precinct
- Rural Health Ecosystem

Precincts
Continued

Monash Technology Precinct

Monash Clayton resides within the Monash Technology Precinct, a globally recognised centre for industry, research and education collaboration, creating leading-edge solutions to improve human health.

The Precinct will soon add the Moderna mRNA production facility, the first of its kind in the Southern Hemisphere, securing access to mRNA vaccines and enhancing medical research and development in Australia. The facility will be complemented by the Monash Centre for Advanced mRNA Medicine Manufacturing and Workforce Training, which Monash is establishing in partnership with the Victorian Government.

In 2023, the operational opening of Australia's first dedicated heart health and research hospital, the Victorian Heart Hospital, will continue to expand the unique capabilities and impact of the Monash Technology Precinct.

This Precinct offers an ecosystem of innovation that combines Monash know-how with knowledge-based industries, commercial partners and research powerhouses. It is Victoria's largest employment hub outside the Melbourne CBD, contributing nearly $10 billion to the Victorian economy annually.

Organisations currently within the Monash Technology Precinct include:

- CSIRO
- Monash Health Translation Precinct (including Monash Health, the Hudson Institute and Monash University)
- BrainPark
- Biobanking Victoria
- Australian Synchrotron
- Melbourne Centre for Nanofabrication
- Monash Health Medical Genomics & Translation Facilities

Alfred Precinct

The Alfred Research Alliance brings together eight independent organisations including Medical Research Organisations (MROs), universities, and a health service provider, to create a community of excellence for medical and health research and education.

With a vision to integrate world-leading research, education and clinical services to achieve better health outcomes, sooner, members work collaboratively to maximise economies of scale and conduct world-leading research that puts people first, always.

The precinct has expertise in a comprehensive range of medical and health research skills, from lab-based discovery science to public health and implementation science, positioning it as a hub of bench-to-bedside innovation and translation.

The key partnership with Alfred Health streamlines access to trial participants, and grounds research in real-world health challenges.

Eastern Health Precinct

The Eastern Health Precinct comprises Eastern Health Clinical School embedded within Eastern Health, which has the largest geographic coverage of all metropolitan health services. This allows the provision of a full range of general and specialist medical and other healthcare services "from cradle to grave," with the exceptions of cardiac surgery and neurosurgery.

Key clinical services include:

- Acute general and specialist medical and surgical care
- Subacute and ambulatory care, including community health
- Women's Health, including maternity services
- Paediatrics
- Mental Health
- Palliative Care
- Alcohol and other drugs treatment and addiction recovery services
- Residential care

The precinct provides statewide services: Turning Point (alcohol and other drugs; addiction treatment and recovery); the Hamilton Centre (statewide specialist centre for addiction and mental health); Spectrum (personality disorders).

Peninsula Health Precinct

This vibrant, integrated health, education and research precinct in Frankston incorporates the Monash School of Nursing and Midwifery, the School of Primary and Allied Health Care, the National Centre for Health Ageing, a partnership between Monash University and Peninsula Health and the Rehabilitation, Ageing and Independent Living Research Centre.

The precinct includes:

- Monash Nursing and Midwifery is ranked #5 in the world for nursing (Shanghai GRAS 2022) and one of the largest schools for the education of nurses and midwifery in Australia.
- The School of Primary and Allied Health Care with strengths in emergency medicine, physiotherapy and occupational therapy, social work and medical imaging and radiation sciences.
- Peninsula Health - major public health service for Frankston and the Mornington Peninsula.
- National Centre for Healthy Ageing (NCHA) - a partnership with Peninsula Health - driving research into integrated healthcare, development and implementation to address the challenges facing our ageing population.
- Rehabilitation, Ageing and Independent Living (RAIL) Research Centre - transforming approaches to health, aged care, disability and support service delivery.
- Monash Addiction Research Centre (MARC) - brings together world-leading expertise from across Monash University and the sector to provide solutions to the challenges of addiction.

Rural Health Ecosystem

Monash Rural Health is dedicated to improving health outcomes in rural communities and developing a sustainable, skilled rural health workforce.

The rural health footprint extends across Victoria from Mildura in the west to Bairnsdale in the east. It operates through two distinct hubs situated in the Loddon Mallee Region in northwest Victoria and the Gippsland region in southeast Victoria.

Institutes

Monash Biomedicine Discovery Institute (BDI)

With more than 120 internationally-renowned research teams, Monash BDI is one of the largest biomedical research institutes in Australia.

BDI offers strong national and international networks and partnerships with health researchers, health precincts and industry, and access to unparalleled, world-leading research infrastructure.

Turner Institute for Brain and Mental Health

Incorporating world-leading neuroscience research programs, the Turner clinics and the development in new technologies, the Turner Institute for Brain and Mental Health brings together world-leading research capability with talented people to galvanise novel solutions for the enormous brain and mental health challenges facing our modern world.

Hudson Institute of Medical Research

The Hudson Institute of Medical Research is home to 450 world-class scientists, clinicians and students pioneering outstanding discovery science and translational research.

As a leading Australian biomedical research institute, the Hudson Institute of Medical Research converts scientific knowledge into new diagnostics, treatments, and cures and leverages its collaboration with Monash University and Monash Health to take discovery science from the lab to the clinic.

Australian Regenerative Medicine Institute (ARMI)

Since its opening in 2009, ARMI has delivered major contributions to regenerative medicine and stem cell research. This research explores the mechanisms of cellular regeneration, studying how life is formed, developed and regenerated. These learnings inform the creation of new technology and therapies that help prevent, halt and/or reverse damage to organs and tissues arising from disease, injury or genetic conditions.

Monash Victorian Heart Institute

The purpose of the Monash Victorian Heart Institute is simple; to deliver research, education and training excellence that turns into a measurable change in the rates of heart disease in Australia. The insitute delivers solutions that diagnose and treat heart disease more efficiently, and in a more personalised way, so more Australians can live long and well.

Monash Institute of Medical Engineering (MIME)

The Monash Institute of Medical Engineering fosters links between the faculties of Medicine, Engineering, IT and Design and with a range of industry and MedTech ecosystem partners. Through our unique partnership with Monash Partners Academic Health Science Centre, we work directly with clinicians to identify unmet medical needs and provide seed funding, commercialisation support and education for promising research and researchers.

Monash research platforms

By giving the world's brightest minds access to the world's best technology, we create a culture that supports true research excellence, enabling us to tackle complex global problems to save and transform lives.

25
research platforms

~300
dedicated platform scientists and specialist staff

1500+
advanced insstruments

1500+
complex services

3000+
provides access and services to >3000 students, researchers, collaborators or industry per annum

All platforms are certified to ISO9001 (Quality Management System)

Monash research platforms
Continued

Cryo-Electron Microscopy (Ramaciotti Centre for Cryo EM)

- Enabling 400+ microscope users per year
- 130+ new microscope users trained to research level each year
- 200+ different fields of research
- 100+ national and international collaborations each year
- 110+ industrial collaborations in the last five years

Monash houses two Titan Krios Transmission Electron Microscopes, as well as Cryo-capable Focused Ion Beam Scanning Electron Microscopes. A node of the NCRIS funded Microscopy, Monash is proud to house Australia's most powerful instruments for structural biology, cellular tomography and drug discovery. Discoveries made using our instruments are published in the worlds leading generalist journals including *Nature* and *Science*.

Proteomics & Metabolomics (Monash Proteomics & Metabolomics Facility)

The Metabolomics Facility (MPMF) is equipped with the latest mass spectrometric instrumentation, combining cutting-edge technology with state-of-the-art methodology.

Mass spectrometry is one of the leading technologies to comprehensively identify and globally quantify proteins and other biomolecules in virtually every biological sample and environment. Its unparalleled sensitivity and accuracy make it the method of choice for a range of applications ranging from biomarker discoveries to absolute quantifications of low-abundant peptide species.

Monash Genome Modification Platform

Working together with the Phenomics Australia node at Monash University and the Monash Animal Research Platform, the Monash Genome Modification Platform delivers a comprehensive service in whole animal genome modification using CRISPER, embryonic stem cell and transgenic technologies.

This platform fulfils all requirements for genome modification.

Monash Antibody Technologies Facility

This facility uses state-of-the-art equipment to support researchers globally, providing services for antibody discovery, antibody production, antibody sequencing and cell line cryopreservation.

Our facility generates high-affinity monoclonal antibodies effective in stimulating the immune system for some cancers, organ transplant rejection, autoimmune disorders and allergies, and infections - including COVID-19, osteoporosis, high cholesterol and nervous system disorders. A range of services is also available to support cell line work and antibody characterisation.

Other research platforms include:

- Monash Centre for Electron Microscopy
- Monash Antibody Technologies Facility
- Monash Bioinformatics Platform
- Ramaciotti Centre for Cryo EM
- Monash Centre for eResearch
- Flowcore - note nodes at MHTP and ARA
- Monash Proteomics & Metabolomics Facility
- Monash Metabolic Phenotyping Platform
- Monash Xray Platform
- Monash Histology Platform
- Monash Genome Modification Platform
- Micromon
- Monash Macromolecular Crystallisation Facility
- Monash Biomedical Imaging
- Monash Animal Research Platform
- Drug Candidate Optimisation
- Monash Fragment Platform
- HMSTrust Analytical Laboratory
- Helix
- Data Science & AI Platform
- Monash Micro Imaging
- Monash Functional Genomics Facility
- Monash Centre for Additive Manufacturing
- Drone Discovery Platform
- MASSIVE - High-Performance Computing
- Biobanking Victoria

Other Faculty Research Infrastructure capability (Non-platforms)

- AquaCore
- Biobanking Victoria
- MHTP Medical Genomics
- MHTP Cell Therapies and Regenerative Medicine
- Victorian Heart Hospital
- MASSIVE
- Biostatistics

Chapter 6
Our partnerships

Industry and partner networks

Monash Medicine, Nursing and Health Sciences has successfully established and grown collaborative research and education partnerships across industry, government, NFP and philanthropic sectors both within Australia and internationally.

These partnerships help create and sustain a rich ecosystem where robust, contemporary solutions are developed to address global health challenges and keep Australia's world-class health education and research work at the leading edge of science, innovation and technology.

We partner with industry nationally and overseas to grow Australia's medical product manufacturing ecosystem and expand our capability to develop biologics, radiopharmaceuticals and other medical products for research or commercial use.

Current industry partnership examples include:

- Moderna - mRNA Victoria
- GSK
- Novartis Roche
- USB Biopharma
- AstraZeneca
- Global Medical Solutions Australia
- Telix Pharmaceuticals
- Septerna - discovery and advancing novel small molecule medicines that target G-protein-coupled receptors (GPCRs)
- Rage Biotech - developing novel therapies designed to help patients with chronic inflammatory lung diseases such as severe asthma, cystic fibrosis and chronic obstructive pulmonary disease
- Inosi Therapeutics - technology to treat fibrosis - a condition associated with many chronic diseases where tissue damage leads to scarring and loss of organ function
- Sheba Medical Centre - to research and develop new medical technology, digital health innovations and models of care and facilitate their commercialisation, manufacture and adoption in health service environments
- Pfizer
- Helmholtz-Zentrum Dresden-Rossendorf (HZDR) - Monash-Helmholtz Laboratory for Radio-Immuno-Theranostics (MHELTHERA) to enable clinical translation

Spinouts/ startups

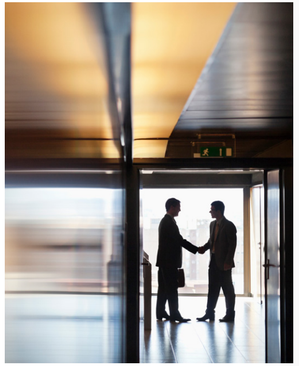
Monash University has extensive capability and a proven track record in innovation and spinout companies, with a substantial commercialisation pipeline.

Monash is building a local business and manufacturing ecosystem to provide solutions across the continuum of care.

Across the University there is a portfolio of 43 spin-out success stories, 340+ patent families, over $440m investment capital raised from 2018 to 2022 and two successful IPOs on the ASX: Amaero International and 4D Medical (through Monash Engineering).

Monash has achieved significant commercialisation success in medical innovations, including:

- RAGE Biotech
- Inosi Therapeutics
- Myostellar
- Aravax
- Resseptor
- GilzRx
- XCystence
- Exosome Therapeutics



Government

We actively collaborate with governments at all levels to help inform policy development, create front-line healthcare solutions, and accelerate advancements in education and research across the health sector.

We are well equipped with a highly skilled workforce and supporting R&D, technology and infrastructure capabilities to aid government in their significant work across diverse focus areas, such as:

- Health and Climate
- Healthy Ageing
- Mental Health
- Women's Health
- Cardiovascular Health
- Infectious Disease
- RNA and mRNA vaccine
- Rural Health
- Digital Health/Artificial Intelligence
- Health workforce skills and development
- Defence

Examples of recent collaborations with government include:

- The Victorian Heart Hospital - a centre of excellence in cardiovascular research, education and clinical care
- mRNA vaccine development and manufacture in-country
- Monash Health Translation Precinct

Philanthropy

Monash values its partnerships with philanthropic and non-government organisations (NGOs) as we work together to inform and empower communities in their journey to improved health.

These partnerships are often uniquely placed to catalyse innovation in technology, best-practice and policy reform in health systems.

Some NGO partners

- Melbourne City Mission
- Burnet Institute
- Cancer Council Victoria
- Learning Clubs (Vietnamese NGO)
- United Nations Organisation
- Open Dialogue Centre
- Mito Foundation
- The Baker Foundation
- Sylvia & Charles Viertel Charitable Foundation
- Metal Manufactures Pty Limited
- The Aftershock

Some philanthropic partners

- David Winston Turner Trust
- Wellcome Trust
- Bill and Melinda Gates Foundation
- Ian Potter Foundation
- Snow Medical Foundation
- Equity Trustees
- Perpetual Trustees
- Blue Sky Foundation
- Financial Markets Foundation for Children
- Gandel Philanthropy
- Lord Mayor's Charitable Foundation
- Helen MacPherson Smith Trust
- LEW Carty Foundation
- Lee Foundation
- Minderoo Foundation
- NIB Foundation
- The Harold Mitchell Foundation

"Monash University is a leading international medical research institution in a thriving technology and health precinct. We generate novel intellectual property and are highly collaborative, engaging in new ventures including commercial opportunities while also training the future skilled global healthcare and research workforce. Our researchers are committed to delivering excellence and innovation to make a real difference in the health and wellbeing of people in Australia and around the world."

– PROFESSOR ROSS COPPEL, DEPUTY DEAN (INNOVATION AND STRATEGY)

Chapter 7

Our reach

Rural and regional health

Monash Rural Health is committed to improving the health outcomes of regional and rural communities. The school is an academic unit within the University's Faculty of Medicine, Nursing and Health Sciences.

Monash Rural Health's footprint extends over 1,000 kilometres and covers the north-west of Victoria and Gippsland and has major teaching and research sites at Mildura, Bendigo, Warragul, Traralgon, Churchill, Leongatha, Sale and Bairnsdale.

We seek to improve the health outcomes of regional and rural communities, including Indigenous communities, through the recruitment and retention of the rural health workforce, initiation and participation in meaningful health-related research, and engagement with our communities to promote health and health careers.

We work collaboratively in partnership with our regional health services (hospital and community-based), community organisations, Primary Health Networks, advocacy groups, education and training providers, and government and local Indigenous communities to achieve these outcomes.

Monash Rural Health is responsible for the delivery of the Monash medical course within our rural footprint and provides high-quality extended regional placements that increase the likelihood of graduates choosing a rural clinical practice.

Our Gippsland and North West Victorian Regional Training Hubs work with regional stakeholders to increase the opportunities for rurally-based postgraduate training and provide networking and professional development for young rural doctors.

Monash Rural Health also works with other Schools across the University to provide rural placements for nursing, allied health and pharmacy students.

We provide accommodation, opportunities for interprofessional learning and other support for students completing placements within our footprint, from any Australian university.

Global reach

Monash University is a leading modern, global, research-intensive university, delivering education and research excellence in Australia and across the Indo-Pacific.

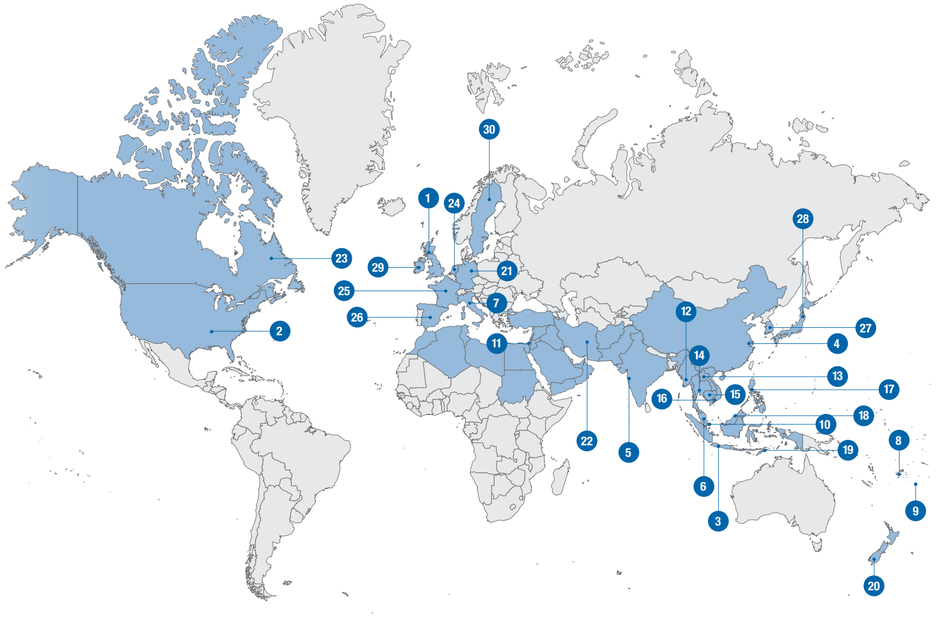
As Australia's largest international University, Monash operates across four Australian campuses and has campuses in Indonesia, Malaysia, China, and India, a teaching and research centre in Italy, and an array of programs and activities in the Pacific, particularly in Fiji and Tonga.

Our partnerships with communities, local governments and research institutions position us to produce exceptional research with real impact within the region and globally.

Our global reputation for education and research excellence ranks us in the world's top 100 universities (40th in the 2022 US News and World Report Best Global Universities Rankings; 31st in the 2023 Times Higher Education World University Rankings). We are a founding member of the Group of Eight, Australia and we are a member of the Association of Pacific Rim Universities (in full).

Operating as Monash's largest faculty, we seek and sustain effective collaborations with universities, governments and industry to create lasting global change. Through innovation and enterprise, we advance new ideas and translate exciting technologies.

Global reach



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20 New Zealand
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29 Ireland
30 Sweden

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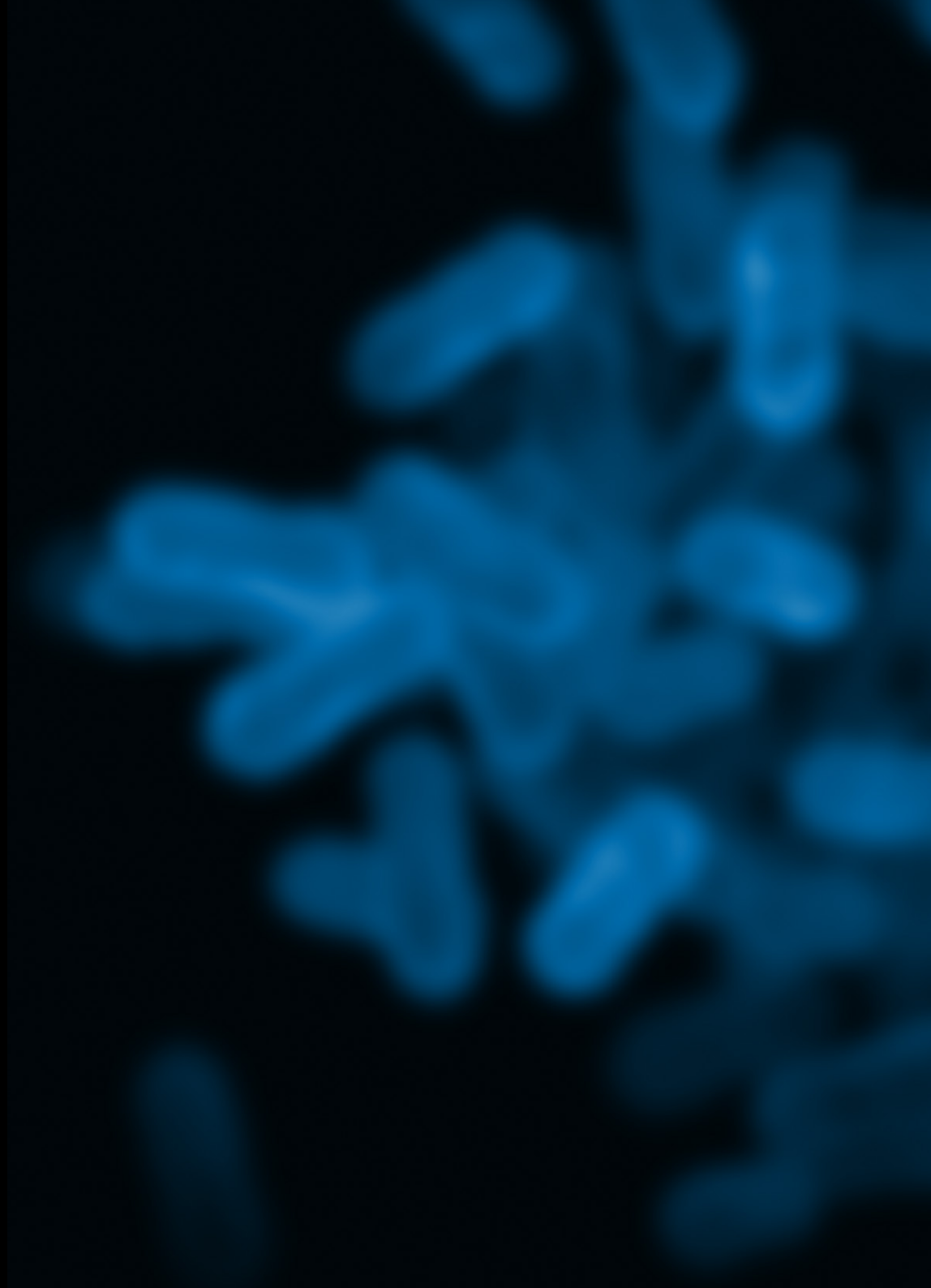

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