

**WESTERN SYDNEY
UNIVERSITY**



**WESTMEAD
INNOVATION
QUARTER**



Western Sydney University is a student-focused, research-led university located in Australia's fastest growing, most economically significant region – Greater Western Sydney.

With campuses throughout Australia's global city, the University has grown to more than 50,000 students and a cohort, both locally and globally, of more than 200,000 alumni.



IN THE WORLD

UNITED NATIONS' SUSTAINABLE DEVELOPMENT GOALS*

* Times Higher Education Impact Rankings 2022

RANKED NUMBER 1

Ranked in all major global rankings systems, we are delighted to be ranked the world's best in the 2022 Times Higher Education (THE) University Impact Rankings.

Assessing universities on their commitment to the UN's Sustainable Development Goals, Western Sydney University topped the list out of more than 1,400 universities for our work tackling issues like sustainability, climate action, equality, inclusivity and social justice.

We are also a research leader, with more than 85 per cent of our research rated at 'World standard or above' according to the Excellence in Research for Australia (ERA) evaluation.

COMMUNITY

Our Western Growth strategy is reshaping our campus network and co-creating transformative educational infrastructure across the region in partnership with industry, government and higher education providers.

With world-class vertical campuses in key Western Sydney growth centres – Parramatta, Westmead and Liverpool – we will soon open a high-rise campus in Bankstown CBD.

These campuses offer technology-rich teaching and research spaces, promote collaboration with industry, and embed the University in the economic and civic life of the Western Sydney region.

RESEARCH

Western's cross-disciplinary expertise in partnership with industry, government, and the community tackles local, national and global issues through challenge centric codesigned research that translates into policy, practice and solutions.

We identify and foster areas of potential, including the next generation of research leaders, facilities, and research training. Our research delivers impact through a robust, transparent, and supportive research culture that fosters excellence, engages and challenges researchers and students, and champions and celebrates our strengths and contributions.

Institutes located at the Westmead precinct include Western Sydney University's MARCS Institute for Brain, Behaviour and Development, the Translational Health Research Institute (THRI) and the NICM Health Research Institute. These institutes play an important role in addressing some of the most persistent healthcare challenges.

The site will evolve into a hub for 2,500 students, 2,000 residents and 1,900 workers. Westmead railway station, the Parramatta Light Rail, Sydney Metro West and the rapid bus Transitway (T-way) service will connect the precinct to the region.

This Innovation Quarter is a unique opportunity for collaboration between businesses, researchers, government sector workers and clinicians and health professionals to share the latest ideas, evidence and technology.

The Innovation Quarter is a pioneering health and medical precinct, showcasing the University's world-class research and creating new partnerships with industry, government and health care providers.

The Innovation Quarter is an opportunity for communities, researchers and industry to come together and generate ideas that translate solutions for clinical and community health challenges.

Westmead has Australia's largest concentration of hospital and health services, co-located with research and education facilities.

More than 50% of Western Sydney University's research is in health and medicine.



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WESTERN SYDNEY UNIVERSITY INNOVATION QUARTER



Biomedical Engineers Professor Paul Breen and Dr Titus Jayarathna testing Gold standard equipment enabling physiological measurement and comparison to novel devices.

The Institute consists of three Research Areas - Brain Sciences, Biomedical and Human Technologies, and the International Centre for Neuromorphic Systems.

The MARCS Institute for Brain, Behaviour and Development is an interdisciplinary research institute of Western Sydney University.

The vision for the Institute is to optimise human interaction and wellbeing across the lifespan.

Established in 1999, MARCS was one of the first flagship research concentrations at Western Sydney University (WSU) and in 2012 was elevated as one of the flagship Institutes of the University.

MARCS is home to more than 67 academic researchers, 15 administrative and technical support staff, 30 part-time research assistants, and 50 PhD students.

Research income that the Institute has secured since 2016 exceeds \$22M. MARCS has 11 specialist laboratories with leading edge equipment, housed in an area of over 5,000 metres.



Psychophysiological assessment with continuous measurements using an electroencephalography (EEG) cap in the Westmead BabyLab.



PhD candidate Simone Simonetti in MARCS Institute for Brain, Behaviour and Development researching emotion recognition in older adults.

BabyLab conducts research into the development of cognitive, social and emotional skills especially through speech and language.

- Researchers use equipment that can record eye movements, heart rate and brain responses using electroencephalography.
- More than 1,000 infants and their caregivers visit BabyLab each year.
- Projects include identifying early precursors to potential communication challenges such as dyslexia, the benefits of bilingual and multilingual environments, infant mental health, the role of infant-directed speech, and the development of infant cognition.

The Institute's **AgeLab** investigates changes in perception and cognition as people age.

- Researchers investigate associations between changes in hearing, social cognition and cognitive decline.
- Projects include examining how older adults recognise faces and voices, age-related changes in visual and auditory attention, and ways to optimise communication and wellbeing.
- Evidence-based interventions to potentially delay changes in cognition with age include learning a new language or a musical instrument.



Speech Labs PhD candidate Yanping Li and Dr Yassine Frej. Capturing acoustic and muscle data in real-time during the dynamics of speech production.



The MARCS Institute for Brain, Behaviour and Development's Associate Professor Gaetano Gargiulo and Professor Paul Breen with their 'VitalCore' wearable technology.

Photo: Michael Amendolia



Music Science Lab. Drs Patti Nijhuis and Peta Mills demonstrate rhythmic interpersonal coordination in a dyadic drumming task. The Music Science lab is equipped with digital instruments, infrared motion capture system, 3D audio, dual EEG, AR/VR, and capacity for an audience of 40 people.



Music science researchers Drs John Taylor and Andrew Milne with Rhythmotron - a robotic musical instrument driven by Dr Milne's Xronomorph software.

MARCS INSTITUTE FACILITIES

5,000 metres of research, collaboration and work spaces.

Bespoke testing spaces include 22 sound attenuated booths, nine with RF shielding.

'Artsience' and 'Artshealth' labs feature motion capture, 3D audio, digital musical instruments and an audience capacity of 40 people.

TRANSLATIONAL HEALTH RESEARCH INSTITUTE



The Translational Health Research Institute (THRI) is a health and medical research institute with a research node at the Westmead precinct. With a focus on translation and impact, THRI examines disease both acute and chronic.

“THRI promotes cross-disciplinary research, outside and within the University,” says Professor Janette Perz, THRI Director. “It’s a hub, a place to collaborate for all health and medical researchers and students in the University no matter what campus or discipline they come from.”

More than 145 researchers across Western Sydney University schools and institutes are part of the THRI network. THRI researchers produce world class research in public health and health services, nursing, psychology, allied health, maternal and child care, clinical medicine, pharmacology and many other healthcare areas.

The THRI cancer and fertility research team review patient experience data for a community health guide published by the Cancer Council.

The Institute’s research encompasses:

- prevention and management of acute and chronic disease
- health and wellness across the lifespan
- health, culture and society
- mental health and wellbeing
- diagnostics and therapeutics
- service delivery and new models of care.

THRI’s Westmead Innovation Quarter facilities enable researchers from across Sydney to collaborate with those from other universities, industry, community and government. They include ‘living labs’ with areas suitable for a broad range of health clinics and practices.

NICM HEALTH RESEARCH INSTITUTE



The Institute was established at Western Sydney University in 2007 with bi-partisan support from the federal and NSW state governments. Pioneers in the field since 1989, Western Sydney University are proud to be the largest Australian university to teach and research in the field of integrative and complementary medicine.

NICM Health Research Institute is Australia's leader in integrative and complementary medicine research and policy. The vision for the Institute is to lead innovation and impact in health and wellbeing through evidence-based integrative medicine research. Unrivalled as Australia's most awarded Excellence in Research for Australia (ERA) 5 institute in the field of complementary medicine, NICM Health Research Institute (NICM HRI) is globally recognised for its world-class research and innovations.¹

¹ Australian Research Council, Excellence in Research for Australia (ERA) Ranking 5 (well above world standards) for each of the last three trienniums: 2012, 2015, 2018.

NICM HRI translates its laboratory research and human clinical trials into relevant clinical practice and government policy. From the bench to the bedside, preclinical, clinical and translational, we advance the evidence base, focusing on safety, efficacy and how medicine works.

The Institute's primary research programs focus on:

- cardiovascular and metabolic health
- neurocognitive, dementia care and mental health
- sexual and reproductive health in women
- cancer management and recovery
- immunity and inflammation.

NICM HRI's state-of-the-art facilities include:

- TGA certified herbal analysis, PC2 pharmacology, and ODC licensed medicinal cannabis laboratories
- GMP pharmaceutical manufacturing
- clinical trial facilities
- an integrative medicine clinic.

THE CENTRE FOR TRANSFORMING EARLY EDUCATION AND CHILD HEALTH (TeEACH)



The Centre for Transforming early Education and Child Health (TeEACH) is a Western Sydney University multi-disciplinary strategic research initiative, bringing together researchers from across different Schools and Institutes with a shared commitment to understanding and addressing the support needs of young children who experience adversity and their families. TeEACH focuses on the earliest years of life, from conception through to 8 years of age. These years form a critical window in which to establish trajectories for health and development that set children on a path towards positive outcomes across the life-span.

TeEACH is an applied centre that strives to be transformative. We work with community members and industry partners to co-design new approaches to service support and implementation. TeEACH research is always strengths-based.

Our starting point is to understand the strengths that exist for families and communities, and to proactively support the building of these strengths and positive experiences. Our work is guided by two key goals:

1. To transform early childhood research and services from a focus on concepts of risk, adversity, and exclusion, to concepts of resilience, strength, and community.
2. To transform professional practice and service delivery from siloed models to connected and linked up service provision that places children, families, and communities at the centre of all decision making.

Ultimately, the TeEACH vision is that no child will have their potential limited by the circumstances into which they are born and live.

PARTNERS

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