MONASH University

MALAYSIA

RESEARCH PROSPECTUS

WHO WE ARE

Monash is a modern, international and research-intensive university with a world-renowned reputation for research and education excellence.

Our people are change-makers, driven by a shared purpose to build a better and more sustainable world through solutions-focused research and future-oriented education.

Monash is Australia's largest university and a member of the prestigious Group of Eight. We are consistently ranked in the top one per cent of universities worldwide, reflecting our dedication to teaching and research excellence, coupled with our record for innovation. In 2024, we ranked 37th globally among 1503 institutions in the prestigious 2025 QS World University Rankings.

Established in 1998, Monash University Malaysia is Monash's third-largest campus and one of Malaysia's most respected universities. We are Monash's platform for scholarly engagement with Southeast Asia. Our campus is located in Greater Kuala Lumpur, one of the region's industrial hotspots, and we sit in the heart of the rapidly developing economic corridor linking Singapore, Kuala Lumpur, Bangkok and beyond. Our research and education are deeply engaged with this dynamic social and industrial landscape.

OUR LIVING HISTORY

We have been breaking new ground for more than 25 years. Discover our diverse and colourful history.
monash.edu.my/timeline

A DYNAMIC UNIVERSITY

SELF-ACCREDITING PRIVATE UNIVERSITY

RATED BERDAYA SAING (COMPETITIVE) by the Ministry of Higher Education Malaysia (2022)

OUR STUDENTS AND STAFF

9700+
STUDENTS FROM 77 COUNTRIES

890+
STAFF FROM 35 COUNTRIES

21:1
STUDENT TO ACADEMIC STAFF RATIO

85%
OF OUR ACADEMIC STAFF HOLD A DOCTORAL DEGREE

27%
OF OUR ACADEMIC STAFF ARE EXPATRIATE

27,500+
MONASH MALAYSIA GRADUATES

Statistics as of 31 December 2023

A GLOBAL COMMUNITY

With a presence on three continents and partnerships around the world, Monash is truly a global university.

Our international reach gives you access to more research collaborations, more global partnerships, and a greater choice of overseas opportunities.

A WORLDWIDE UNIVERSITY

3
INTERNATIONAL TEACHING LOCATIONS

6
CAMPUSES

140+
PARTNER UNIVERSITIES AROUND THE GLOBE

MALAYSIA
Kuala Lumpur

MELBOURNE AUSTRALIA
Clayton
Caulfield
Parkville
Peninsula

ITALY
Prato

CHINA
Suzhou

INDONESIA
Jakarta

INDIA
Mumbai

TOP 100 RANKINGS

#22
REUTERS TOP 75: ASIA PACIFIC'S MOST INNOVATIVE UNIVERSITIES
(2019)

#35
US NEWS AND WORLD REPORT BEST GLOBAL UNIVERSITIES RANKINGS
(2024)

#37
QS WORLD UNIVERSITY RANKINGS
(2025)

#42
MOST INTERNATIONAL UNIVERSITIES IN THE WORLD
(Times Higher Education 2024)

#54
TIMES HIGHER EDUCATION WORLD UNIVERSITY RANKINGS
(2024)

#54
QS GRADUATE EMPLOYABILITY RANKINGS
(2022)

#77
ACADEMIC RANKING OF WORLD UNIVERSITIES
(2023)

RESEARCH WITH IMPACT

RATED 5 STARS
IN THE MALAYSIA RESEARCH ASSESSMENT (MYRA® STAR RATING 2022) BY THE MINISTRY OF EDUCATION MALAYSIA

1000+
RESEARCHERS

RM267M+
INVESTED IN RESEARCH AND DEVELOPMENT

RM125M+
IN EXTERNAL RESEARCH AND DEVELOPMENT FUNDING RECEIVED

8300+
TOTAL RESEARCH PUBLICATIONS

As of 31 December 2023

Monash is home to some of the world's best talent striving to make a lasting, positive difference in people's lives.

From developing cancer treatments from local medicinal plant-derived phytochemicals to discovering new ways to extract energy from waste by-products, we look beyond traditional boundaries, discovering ways of approaching the fields in which they work. It's why a Monash education is so respected around the world.

Today, our ambition and optimism are stronger than ever. We have a clear vision of what we want our research to achieve and how we'll help our researchers make it happen. We work hard to provide a culture, infrastructure and environment that encourages and supports our researchers. We partner with industry, government and community, with collaborators from all around the world, to translate our research into tangible, measurable outcomes. Every project we support is driven by a desire to make real change.

Join us in our quest to seek imaginative solutions to complex challenges through research and innovation. Start your research career with us, partner or work with us and let's achieve meaningful change together.

COLLABORATE WITH US

At Monash, we believe in the power of collaborative innovation.

We see research and industrial partnerships as the crucible to translate groundbreaking ideas into tangible solutions, foster innovation and propel industries forward. With our researchers' specialised expertise and access to state-of-the-art research facilities and support services, we are committed to building and nurturing long-term relationships with our research partners to provide solutions to problems facing the communities in Malaysia and other regions globally.

SOME OF OUR RESEARCH COLLABORATIONS

AGILENT INTEGRATED BIOLOGY FACILITY

We have collaborated with Agilent Technologies to establish the Agilent Integrated Biology Facility at the Malaysia campus, a highly advanced biomedical facility to support biomedical, pharmaceutical and clinical research.

SARAWAK INFECTIOUS DISEASE CENTER

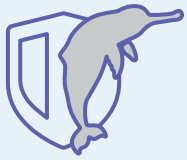
Our collaboration with Sarawak Infectious Disease Center is a part of the Monash University Malaysia Innovation Sandbox (MUMIS) initiative. We developed solutions for feasible storage and transport of temperature-sensitive point-of-care kits on patients in various areas of Sarawak, including rural areas.

HEIDELBERG INSTITUTE FOR GLOBAL HEALTH (HIGH)

This partnership builds on HIGH's expertise in climate change research and Monash's Southeast Asia Community Observatory's experience as a significant health surveillance site in Malaysia to explore climate change and its health impacts in Southeast Asia. The SEACO-HIGH partnership will provide important methodological and empirical advances in the field.

MONASH CLIMATE CHANGE COMMUNICATION AND RESEARCH HUB MALAYSIA NODE

On 21 February 2023, the Monash Climate Change Communication Research Hub launched its first official node at the Malaysia campus. The node's mission is to conduct research that is grounded in evidence across communications, social science, and biophysical science to inform climate communication programs in Southeast Asia and cultivate climate literacy in Malaysia.



SOUTH ASIAN BLIND RIVER DOLPHIN CONSORTIUM

Our researchers are coordinating the research strategy of the multinational South Asian Blind River Dolphin Consortium. Monash will be contributing to the genome sequencing of the dolphins, complementing the Vertebrate Genomes Project to address conservation questions from new angles, and manage and inform conservation efforts more effectively. They will work alongside researchers from universities and research institutes in Bangladesh, Malaysia, Nepal, Pakistan and Qatar.

We also have a range of technologies available for licensing to suit your industry's needs and provide a competitive advantage.

We welcome industries from various sectors to partner with us. Find out more about how we can collaborate through our research capabilities by getting in touch with us at **mum-reugeneral@monash.edu.**

Let us be your preferred research partner of choice.

OUR SCHOOLS

ARTS AND SOCIAL SCIENCES

MONASH IS RANKED

#47
IN THE WORLD FOR COMMUNICATION AND MEDIA STUDIES

#64
IN THE WORLD FOR ARTS AND HUMANITIES

TOP 100
IN THE WORLD FOR ANTHROPOLOGY, POLITICS AND HISTORY

RECOGNISED BY
Public Service Department in Malaysia

QS World University Rankings by Subject 2024

Southeast Asia is a rapidly evolving region, and the School of Arts and Social Sciences (SASS) is leading the way in understanding its evolution, and making a difference to people and communities.

At SASS, we strive for excellence in research and education that incorporates future-focused, socially engaged Southeast Asian perspectives on global challenges. We are a highly research-active school and our researchers are experts in a range of disciplines, including international studies and politics, anthropology, gender studies, literary and screen studies and digital media studies. We conduct research that:

- generates new knowledge and understanding of the human experience, past, present, and future;
- emphasises social and environmental justice, inclusion, and equity;
- contributes a regional perspective on global challenges;
- enables and empowers individuals and communities – locally, regionally, and globally – to thrive in the face of these challenges.

We nurture and develop global ambassadors with meaningful experience of local contexts by:

- offering future-focused education that is digital, global, and transformative;
- grounding our teaching in our research and scholarly expertise, our values of social justice and inclusivity, and our connection with wider local and regional communities.

RESEARCH CAPABILITIES

Geopolitics, development and governance

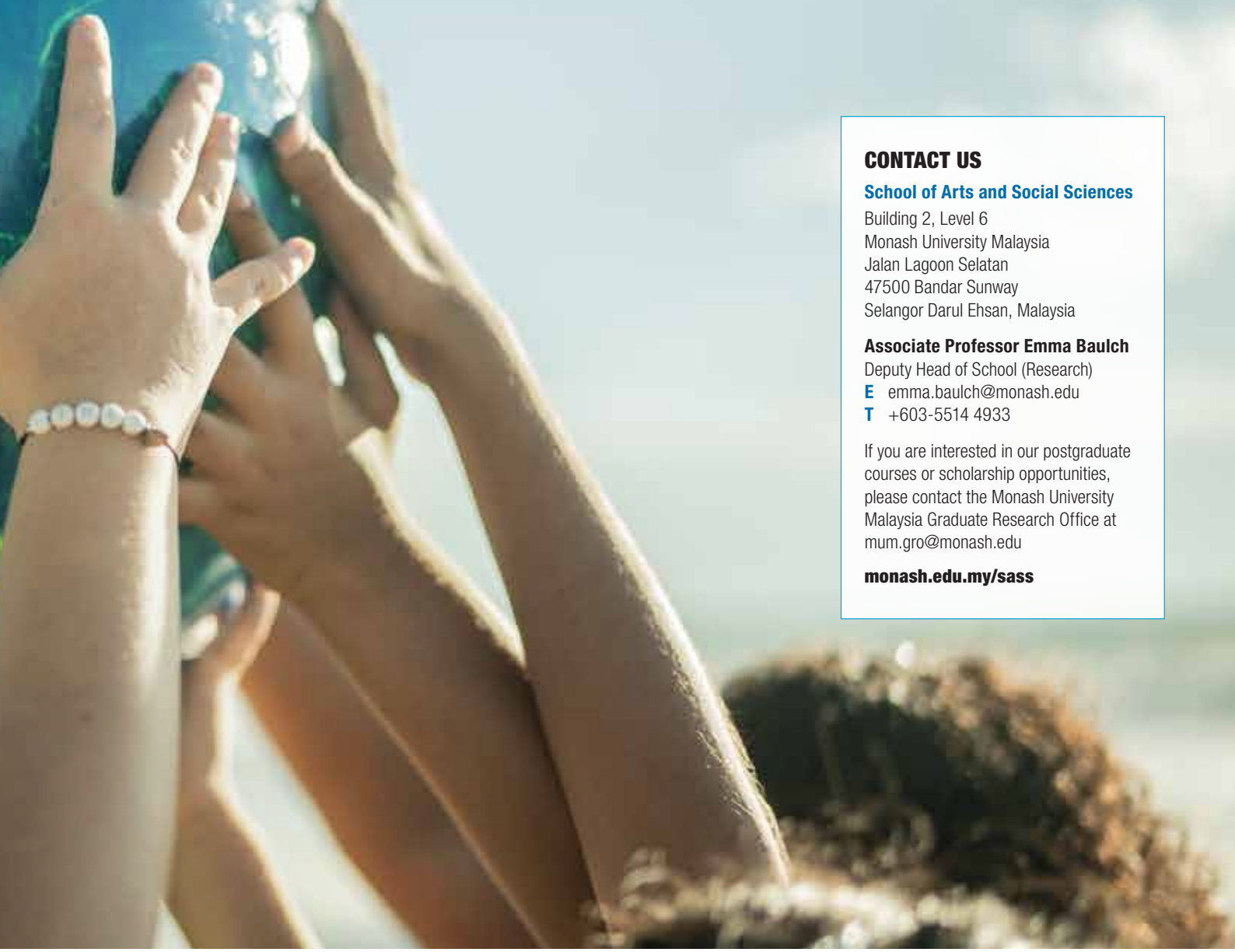
This research strength examines key questions of local, national and international life – conflict and cooperation, peace and security, migrations and other forms of mobility, and development, environment and humanitarian concerns. We address these topics from a number of disciplines including anthropology, geography, history, international relations, political science, political economy and urban studies.

- Inter-Asia migration
- Digital technologies and state formation in Southeast Asia
- Critical geopolitics and the Asian regional order
- Political and diplomatic histories in Asia.

Thriving communities

This research strength focuses on issues of marginalisation and heritage in Malaysia and the Southeast Asian region, leveraging on the expertise of academics who work in areas such as film, television and screen studies, public relations, writing and literature, communication studies, religious studies and gender studies. We are deeply interested in education which develops transformative responses, behaviours and practices towards the creation, promotion and sustenance of a better quality of life.

- Gender, sexuality and religion
- Histories of cinematic production and cinema-going in Southeast Asia
- Cinematic heritage in Southeast Asia.



CONTACT US

School of Arts and Social Sciences

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If you are interested in our postgraduate courses or scholarship opportunities, please contact the Monash University Malaysia Graduate Research Office at mum.gro@monash.edu

monash.edu.my/sass

Digital Southeast Asia

We collaborate with leading digital media scholars and research institutions in ASEAN to understand the implications digital technologies hold for the economic, social, and cultural development of societies in the region. Our research is cross-disciplinary, and involves close collaboration with colleagues in working in the fields of business, IT, engineering and medicine.

- Digital health and wellbeing
- Digital technologies and rights
- Transactional technologies and digital consumers.

Climate change communication

The research strength brings together expertise in SASS with climate research being undertaken across the Monash Malaysia campus. We apply research strategies from media studies, journalism, climate science, sociology, psychology, international relations, education, and political science to research public attitudes towards climate change, and ways to better communicate the science and solutions.

- Surveying perceptions of climate change in Malaysia
- Climate change and human health.

RESEARCH PROGRAMS

Doctor of Philosophy (PhD)

The research degree is presented and assessed as a thesis with the aim of producing an original work of scholarship that will contribute substantially to the understanding of the subject matter.

Areas of research include:

- Politics, development and governance
- Culture, religion and gender
- Communication, media and society
- Literature, cinema and society.

SPECIALIST SERVICES

Various academics of the School also provide specialist services to industry, non-governmental organisations, and government bodies. Some of these services (past and present) involve:

- democracy promotion and constitutional design
- gender and equity
- project monitoring, evaluation, assessment and learning (MEALS).

BUSINESS

MONASH IS RANKED

#35
IN THE WORLD FOR ACCOUNTING AND FINANCE

#36
IN THE WORLD FOR ECONOMICS AND ECONOMETRICS

#62
IN THE WORLD FOR BUSINESS AND MANAGEMENT STUDIES

TOP 50
IN THE WORLD FOR MARKETING

QS World University Rankings by Subject 2024

ACCREDITED BY

- Association to Advance Collegiate Schools of Business

AACSB ACCREDITED

SIGNATORY OF

- United Nations Principles for Responsible Management Education

PRME
an initiative of the United Nations Global Compact

The School of Business is an entrepreneurial and culturally diverse school.

We are driven by a mission to make meaningful impact on the way business is conducted in Asia through high quality research, educational excellence and extensive engagement with industry and community. The School is structured into seven departments which are:

- Accounting
- Finance
- Business Law and Taxation
- Econometrics and Business Statistics
- Economics
- Management
- Marketing.

We prepare students for an exciting and rewarding career with a research-informed and industry-driven business degree, developing future global business leaders who can deal with real-world problems in real-life situations.

RESEARCH CAPABILITIES

Sustainable business

Sustainability drives business success. It creates a positive impact on the society and environment. The cluster provides a platform to explore a wide range of issues that underpin how socially responsible business can be conducted. Specifically, emphasis is on the following areas of interest:

- Socially responsible business
- Energy justice
- Responsible education
- Sustainable finance and ESG.

Digital transformation

Digital transformation is our future. It leverages big data and digitisation in transforming business processes and decision making. Attention is given to exploring the way individuals, businesses, and societies create value using data and technology through education and research. The areas of interest include:

- FinTech, RegTech and SupTech
- Digital business and innovation
- Data analytics and modelling.

Thriving communities

The 'good life' is a basic right of every living citizen. Any citizen deprived of access to 'good life' is considered marginalised and vulnerable. This is the challenge of how we live well individually and as members of our community. As a catalyst for transformation, this cluster seeks to shift marginalised communities towards becoming thriving communities. Areas of interest include:

- Economics and policy
- Consumption, community, and technology
- Entrepreneurship.

CONTACT US

School of Business

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If you are interested in our postgraduate courses or scholarship opportunities, please contact the Monash University Malaysia Graduate Research Office at mum.gro@monash.edu

monash.edu.my/business

RESEARCH PROGRAMS

We offer the following postgraduate research and research pathway programs:

- **Master of Philosophy and Doctor of Philosophy (PhD)**: Research may be undertaken in key areas including accounting, business law and taxation, management, marketing, and business and economics which encompasses economics, finance, econometrics and business statistics.
- **Bachelor of Business and Commerce (Honours)**: This honours degree is an additional or fourth year of advance study in one of the School's specialised business areas. It teaches students how to conduct business-related research at an advanced level.
- **Postgraduate Diploma in Business and Commerce**: This is a structured one-year course designed for students looking to craft a career in both academia and the industry. It develops technical and analytical skills, and reinforces critical and independent thinking.

KEY RESEARCH FACILITIES

Gerontechnology Laboratory

This lab supports interdisciplinary research on the health and well-being, active ageing and safe living of older adults using assistive technology. Our researchers work to identify the challenges and opportunities of longevity, design age-friendly products and services, and promote an active and independent lifestyle for older adults.

Focus Group Discussion Room

Provides a space for groups of up to 12 people to focus on a particular issue, idea, product or service in a guided discussion led by a moderator. The interaction provides a richer understanding of the research issue.

Other facilities include:

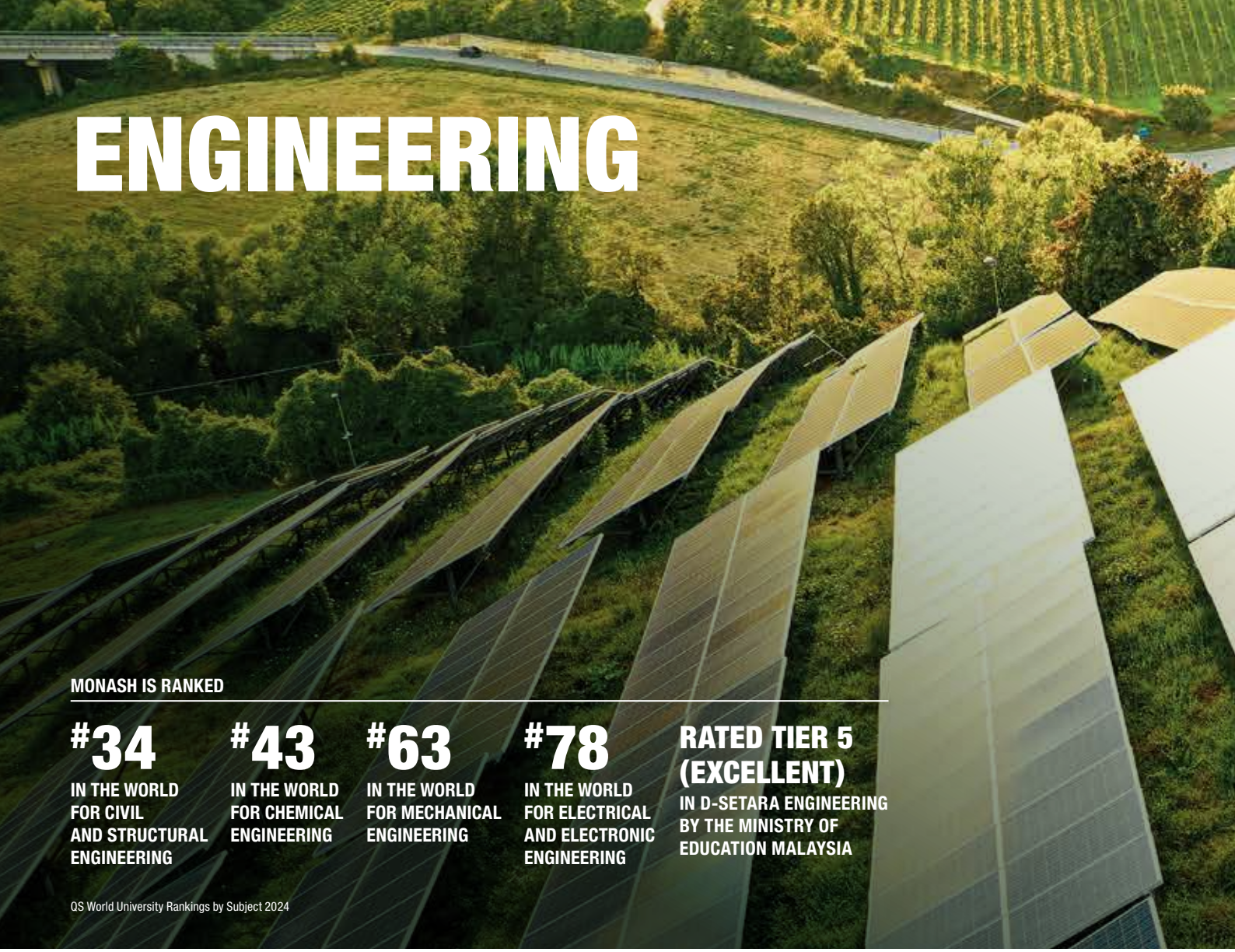
- Bloomberg Terminals
- High Speed Computer Terminals
- Research labs
- Research databases such as Compustat, CEIC, Refinitiv, WRDS, and more.

SPECIALIST SERVICES

Our highly skilled staff are able to provide:

- Contract research and consultation
- Workshops and training
- Professional courses
- Technical help and access to our research facilities
- Survey design and statistical consulting services.

ENGINEERING



MONASH IS RANKED

#34
IN THE WORLD FOR CIVIL AND STRUCTURAL ENGINEERING

#43
IN THE WORLD FOR CHEMICAL ENGINEERING

#63
IN THE WORLD FOR MECHANICAL ENGINEERING

#78
IN THE WORLD FOR ELECTRICAL AND ELECTRONIC ENGINEERING

RATED TIER 5 (EXCELLENT)
IN D-SETARA ENGINEERING BY THE MINISTRY OF EDUCATION MALAYSIA

QS World University Rankings by Subject 2024

With great emphasis on research excellence, the School of Engineering is involved in pioneering solutions through modern day engineering research to help transform the future.

Our research spans across the disciplines of chemical engineering, civil engineering, electrical and computer systems engineering, mechanical engineering, robotics and mechatronics engineering, and software engineering.

Our research activities are classified into eight focus areas:

- Energy sustainability
- Materials and nanotechnology
- Medical engineering and biological sciences
- Waste and environment
- Intelligent lighting
- Critical infrastructure
- Smart industry and living
- Computational intelligent systems.

We actively collaborate with the industry through research partnerships and professional consultations. Equipped with world-class research infrastructure and state-of-the-art equipment, our researchers and students undertake cutting-edge and high-impact research projects aimed at providing solutions to industry needs and addressing global challenges.

RESEARCH CAPABILITIES

Materials and nanotechnology

- Advanced materials
- Nanocatalysis
- Ionic liquids
- Membrane technology
- MEMS sensors
- Wearable electronics
- Molecular dynamics simulation.

Energy sustainability

- Bio-energy
- Green hydrogen
- Heat integration and simulation
- Renewable energy
- Solar cells
- Thermal management.

Waste and environment

- Biogas and biomass conversion
- Carbon capture and utilisation
- E-waste management
- Solid waste management
- Wastewater treatment.

Intelligent lighting

- Facial expression
- Gesture recognition
- Smart lighting for home
- Visible light communications.

Critical infrastructure

- Sustainable drainage and flood management
- Transportation and traffic
- Building materials
- Geotechnics.

Medical engineering and biological sciences

- Biosensors
- Biocatalysts
- Drug delivery
- Image analysis for disease prediction
- Protein separation.

CONTACT US

School of Engineering

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Monash University Malaysia
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If you are interested in our postgraduate courses or scholarship opportunities, please contact the Monash University Malaysia Graduate Research Office at mum.gro@monash.edu

monash.edu.my/engineering

Smart industry and living

- Autonomous systems
- Blockchain technology
- Condition monitoring and fault diagnosis
- Drones technology
- Robotics and automation.

Computational intelligent systems

- Big data
- Computer vision
- Digital healthcare
- Internet of Things
- Machine learning
- Virtual reality.

RESEARCH PROGRAMS

We are committed to training the next generation of research leaders who are capable of solving the world's most pressing problems. We offer the following full-time research courses:

- Doctor of Philosophy (PhD)
- Master in Engineering Science (Research) (MEngSc).

KEY RESEARCH FACILITIES

- Nano-Analytical Platform (ISO9001)
- Intelligent Lighting Laboratory (ISO9001)
- Monash Oil and Fats Laboratory
- Bioprocess Engineering Laboratory
- Catalysis and Energy Laboratory
- Water and Environment Laboratory
- Advanced Structural Materials Engineering Laboratory
- Geomechanics and Geotextiles Laboratory
- Robotics Research Laboratory
- Sustainable Energy and Materials Laboratory
- Biocentric Engineering Laboratory
- Photonics and Communication Laboratory
- Micro and Nano Devices Laboratory.

SPECIALIST SERVICES

We provide contract research, analytical services, professional development courses, training and workshops to industries, Institutes of Higher Learning and research agencies. We also offer a range of consulting services and industrial R&D related to our research expertise.

INFORMATION TECHNOLOGY

MONASH IS RANKED

#34
IN THE WORLD FOR DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

QS World University Rankings by Subject 2024

#52
IN THE WORLD FOR COMPUTER SCIENCE

Times Higher Education World University Rankings by Subject 2024

The School of IT places a great emphasis on research, industrial collaboration, and graduate research student experience.

As the world embraces rapid technological transformations, we shoulder a responsibility to produce outstanding and ethical researchers. We are committed to innovating theoretical and applied research to meet the technology challenges of the 21st century, and our outstanding labs and research facilities empower this to happen.

RESEARCH CAPABILITIES

Artificial intelligence (AI)

Our researchers in this area integrate knowledge and theories in mathematics and machine learning to create intelligent machines that can solve complex real-world problems. We have expertise in computer vision, deep learning, ethical AI, explainable AI, generative AI, machine learning, natural language processing, and optimisation.

Cybersecurity

In a rapidly changing online data ecosphere, we're constantly looking for ways to keep our systems and data secure. Our researchers are looking into diverse forms of computer security and the rising threat of dark technology. Our research capabilities include cheat resilience, cryptography, dark side security, deepfakes, multimedia security, privacy-preserving methods, and surveillance.

Data science

Research and analysis into big data have the capacity to make a positive impact on our daily lives. We're creating novel data-driven algorithms to extract useful insights from huge volumes of digital data. Our research strengths include data management, information retrieval and extraction, knowledge management, recommender systems, social media and network analytics, and statistical data modeling.

Software and system

Creating high quality and efficient software systems is an art. Our research into the domains of software architecture and design, processes, and analysis of human factors has the ultimate goal of delivering robust and reliable software solutions. Our researches include AR/VR, blockchain, IOT, metamorphic testing, SE education, software engineering in AI, software quality, and testing and maintenance.

Digital health

We're using a multidisciplinary approach to improve healthcare outcomes for people by developing smart methods, applications and systems for the healthcare industry. Our expertise include big data in health care, bioinformatics, bio-signal and image processing, chronic disease management, computer-aided diagnoses, digital twin and simulations, and tele-therapy.

CONTACT US

School of Information Technology

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If you are interested in our postgraduate courses or scholarship opportunities, please contact the Monash University Malaysia Graduate Research Office at mum.gro@monash.edu

monash.edu.my/it

RESEARCH PROGRAMS

We focus on providing quality in training our graduate research students. Various support schemes are put in place to enable world class research experience, notably funding for students to present their findings in top conferences and overseas research mobility programs. In addition to the fundamental and core research topics, we also collaborate with different companies to solve industry problems. We offer the following postgraduate research courses:

- Doctor of Philosophy (PhD)
- Master of Philosophy (MPhil).

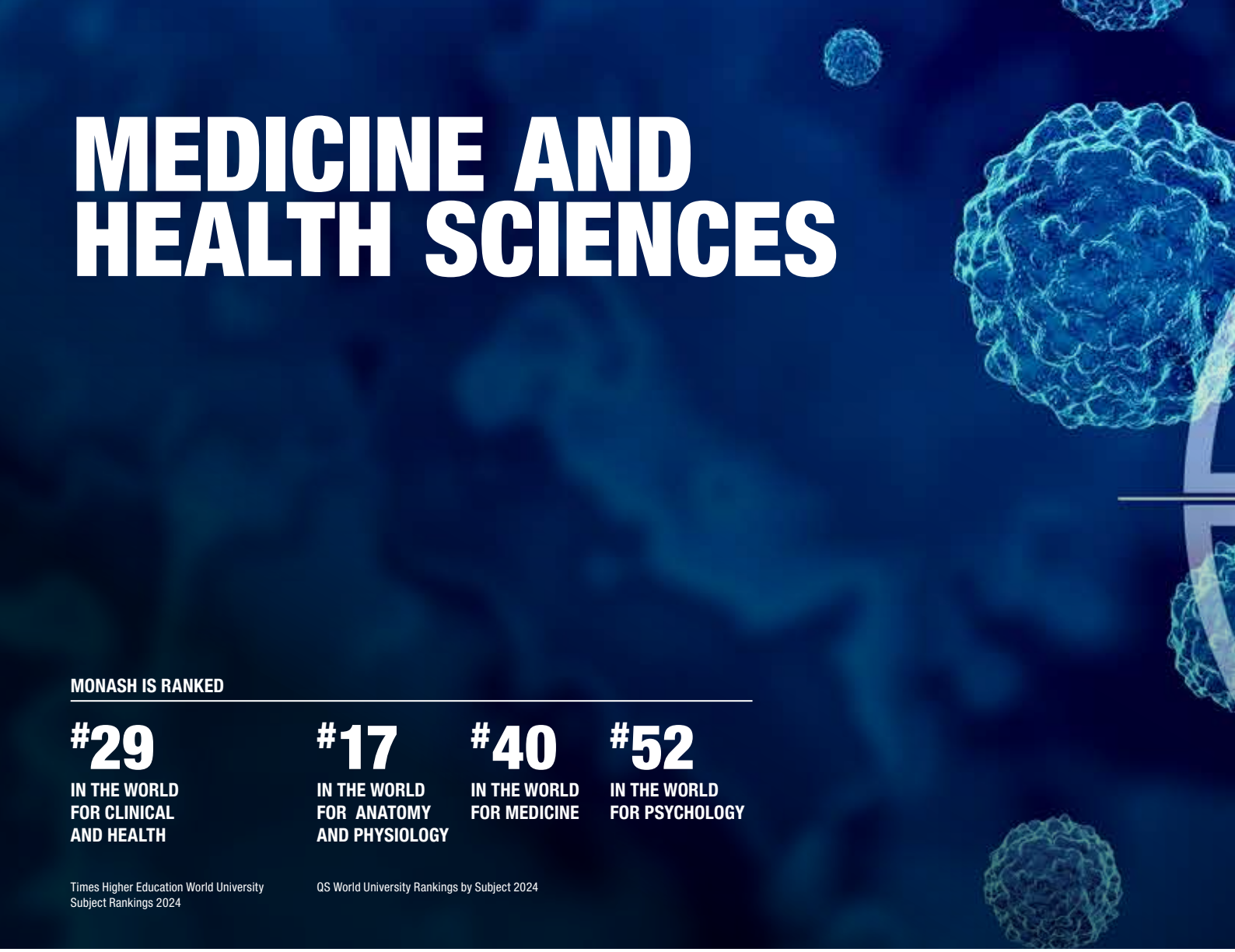
KEY RESEARCH FACILITIES

- Advanced Computing Platform
- Drone (DJI, Tello Edu)
- RoboMaster S1
- NAO robot
- Oculus Quest 2.

SPECIALIST SERVICES

We provide contract research, professional development courses, training and workshops to industries, Institutes of Higher Learning and research agencies. We also offer a range of consulting services and industrial R&D related to our research expertise.

MEDICINE AND HEALTH SCIENCES



MONASH IS RANKED

#29
IN THE WORLD FOR CLINICAL AND HEALTH

Times Higher Education World University Subject Rankings 2024

#17
IN THE WORLD FOR ANATOMY AND PHYSIOLOGY

#40
IN THE WORLD FOR MEDICINE

#52
IN THE WORLD FOR PSYCHOLOGY

QS World University Rankings by Subject 2024

The Jeffrey Cheah School of Medicine and Health Sciences aims to establish and sustain a research culture that fosters collaboration, mentoring and high-quality research.

We contribute to the disciplines of medicine, health, and the biological sciences with the goal of improving the health and well-being of individuals, populations and society.

We do this by supporting research activities of academic staff, providing guidance and mentoring to junior researchers, creating opportunities for students to engage in research, and encouraging research-led teaching and innovation.

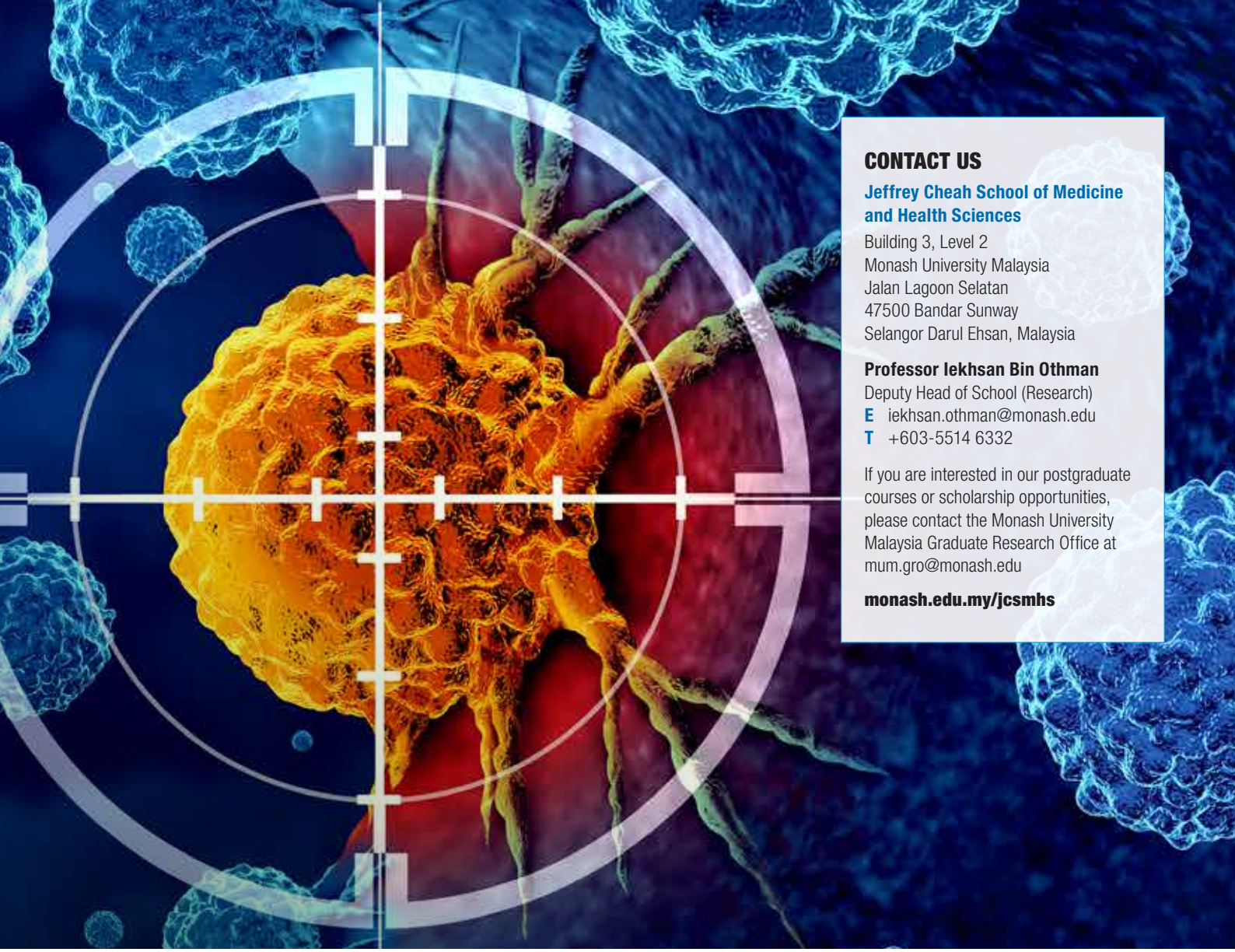
RESEARCH CAPABILITIES

- Public health
- Infection and immunity
- Microbiome and bioresource
- Neuroscience
- Nutrition and nutraceutical
- Clinical research
- Clinical trials
- Memory
- Cognitive neuroscience
- Mental health
- Sexual behaviour
- Drug addiction
- Migrant and indigenous health
- Digital health
- Aged care.

RESEARCH PROGRAMS

We offer the following postgraduate research courses:

- **Doctor of Philosophy (PhD)**: Research may be undertaken in principal areas including biochemistry and molecular biology, epidemiology and preventive medicine, general practice, medical education, medicine, microbiology, paediatrics, pharmacology, physiology, psychology, surgery, and toxicology.
- **Master of Biomedical Science**: This course involves the independent investigation of a research problem that students formulate. The research they undertake is expected to make a significant contribution to the discipline they are enrolled in.
- **Postgraduate Diploma in Biomedical Science**: This is a qualifying degree designed for students who do not hold an honours degree or equivalent, but who would like to pursue a higher degree by research.



CONTACT US

Jeffrey Cheah School of Medicine and Health Sciences

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If you are interested in our postgraduate courses or scholarship opportunities, please contact the Monash University Malaysia Graduate Research Office at mum.gro@monash.edu

monash.edu.my/jcsmhs

KEY RESEARCH FACILITIES

- South East Asia Community Observatory (SEACO)
- Biomedical research laboratories in virology, cancer and molecular biology, genomic studies, proteomic and small molecules analysis
- Neuroscience laboratories in neurogenomics, neuroproteomics, neuropharmacology, neuromorphology, and neuroimaging
- Medicinal chemistry, a drug discovery platform for nanoparticles and natural products
- Psychological Science Research Centre which houses three research labs:
  – Cognitive Neuropsychology Lab
  – Culture and Health Psychology Lab
  – Sexuality and Interpersonal Process Lab.

SPECIALIST SERVICES

We provide contract research, analytical services, professional development courses, training and workshops to industries, Institutes of Higher Learning and research agencies.

We also offer a range of consulting services and industrial R&D related to our research expertise.

PHARMACY

MONASH IS RANKED

#2

IN THE WORLD FOR PHARMACY AND PHARMACOLOGY

QS World University Rankings by Subject 2024

The School of Pharmacy is part of the globally renowned Monash's Faculty of Pharmacy and Pharmaceutical Sciences.

We house a vibrant and creative research community that strives to research the pressing health issues and facilitate the development of actionable solutions to address the current gaps in disease treatments, management, and intervention.

Being at the forefront of pharmacy research and education, our academics strongly advocate for quality curricula and impactful research that promote pharmacy practices, health outcomes, and public health policies.

RESEARCH CAPABILITIES

Clinical pharmacy, pharmacy practice and pharmacy education

- Behavioural sciences and patients' concordance
- Evidence-based pharmacotherapy
- Health promotion and medicine information
- Interprofessional education and practice
- Pharmacovigilance
- Pharmacy and health care education
- Pharmacy management
- Quality use of medicine and drug use evaluation
- Social pharmacy.

Global health and health policies

- Health policy and system research
- Health technology assessment
- Pharmacoeconomics
- Pharmacoepidemiology
- Health systems.

Drug discovery and development

- Drug design
- Green and sustainable chemistry
- Microwave-assisted organic synthesis
- Biogenics compounds
- Medicinal chemistry
- Synthetic chemistry
- Molecular docking
- Multicomponent reactions
- Heterocyclic chemistry.

Drug delivery and nanomedicine

- Drug delivery using nanoparticles and microspheres
- Microencapsulation
- Organ-on-chip
- Nanoparticles
- Colloids
- Transdermal drug delivery
- Preformulation and material characterisation
- Multiparticulate dosage forms.

Neuroscience and mental health

- Neurophysiology
- Neurotoxicity
- Neurodegeneration
- Pharmacokinetics
- Pharmaceutical analysis.

Cardiovascular, metabolic and general health

- Chronic disease
- Health informatics
- Digital health
- Regenerative medicine

CONTACT US

School of Pharmacy

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If you are interested in our postgraduate courses or scholarship opportunities, please contact the Monash University Malaysia Graduate Research Office at mum.gro@monash.edu

monash.edu.my/pharmacy

- Medical biotechnology
- Gene therapy
- Health promotion
- Microbiology and microbiome.

RESEARCH PROGRAMS

Our **Doctor of Philosophy (PhD)** program is ideal for talents who intend to advance into careers as excellent researchers, inspirational innovators and future leaders of the pharmaceutical industry and pharmacy practice. Areas of research include:

- Anticancer therapeutics
- Clinical pharmacy
- Complementary and alternative medicine
- Digital health
- Drug delivery
- Drug discovery and development
- Health economics
- Health policy
- Medicinal chemistry
- Microbiology
- Neuropharmacology and medical biochemistry
- Organic and biomolecular chemistry
- Pharmaceutical analysis/Pharmaceutical sciences
- Pharmacogenomics
- Pharmacoepidemiology and evidence synthesis
- Pharmacognosy
- Pharmacology
- Pharmacy practice
- Public health.

KEY RESEARCH FACILITIES

General Analysis

High Performance Liquid Chromatography (HPLC), Mastersizer, Infrared (IR) Spectrometers, Nanosight, UV-VIS Spectrophotometers, X-Ray Diffractometer (XRD) and X-Ray Fluorescence (XRF) Analyzer, Rheometer, Fourier Transform Infrared Spectroscopy (FTIR), etc.

The school also hosts the Nuclear Magnetic Resonance (NMR) Campus Infrastructure Facility with a Bruker Fourier 300 NMR spectrometer.

Organic Synthesis

CEM Discover SP and Anton Paar Monowave 400 Monomode Microwave Reactors, Preparative HPLC, Flash Chromatography Systems, Schlenk Lines, Rotary Evaporators etc.

Formulation

Spray Dryer, Tablet Press, Franz Diffusion, Dissolution and Disintegration Testers, Moisture Analyser, Tapped Density Tester, Friability Tester, Cone Mill, 3D Mixer, Blister Packing, Industrial Ultrasonic Probe Sonicator etc.

Tissue Culture and Molecular Biology

Protein Purification System, Electrophoresis and Western Blot setup, PCR Machines, Microplate Readers, Cell Culture Facilities, Cryostat etc.

SPECIALIST SERVICES

We offer service and training in NMR spectroscopy analysis, microwave-assisted synthesis, HPLC analysis, and nanosight analysis.

We also provide consultation and contract research in the areas of our expertise (e.g. formulation development, pharmaceutical product stability studies, analytical method development).

SCIENCE

MONASH IS RANKED

#17
IN THE WORLD FOR ANATOMY AND PHYSIOLOGY

#31
IN THE WORLD FOR LIFE SCIENCES AND MEDICINE

#40
IN THE WORLD FOR CHEMISTRY

#66
IN THE WORLD FOR ENVIRONMENTAL SCIENCES

#72
IN THE WORLD FOR BIOLOGICAL SCIENCES

QS World University Rankings by Subject 2024

The School of Science is home to a vibrant, dynamic and world-renowned community at the forefront of innovation, discovery and learning.

The School is part of the Faculty of Science in Clayton, Australia, and its research focus is aligned with Monash University Impact 2030 strategic areas of climate change and thriving communities.

We offer broad choices for specialisations in fields like applied data science, applied microbiology, bioinformatics, biotechnology, food sciences, genomics, medicinal chemistry, tropical and environmental biology, discipline areas where there is strong demand for quality graduates in Malaysia, the Asia-Pacific region and beyond.

RESEARCH CAPABILITIES

We are well-equipped to meet the demands of academic research and industrial collaborations, with dedicated space for research within a 73,000 m² campus.

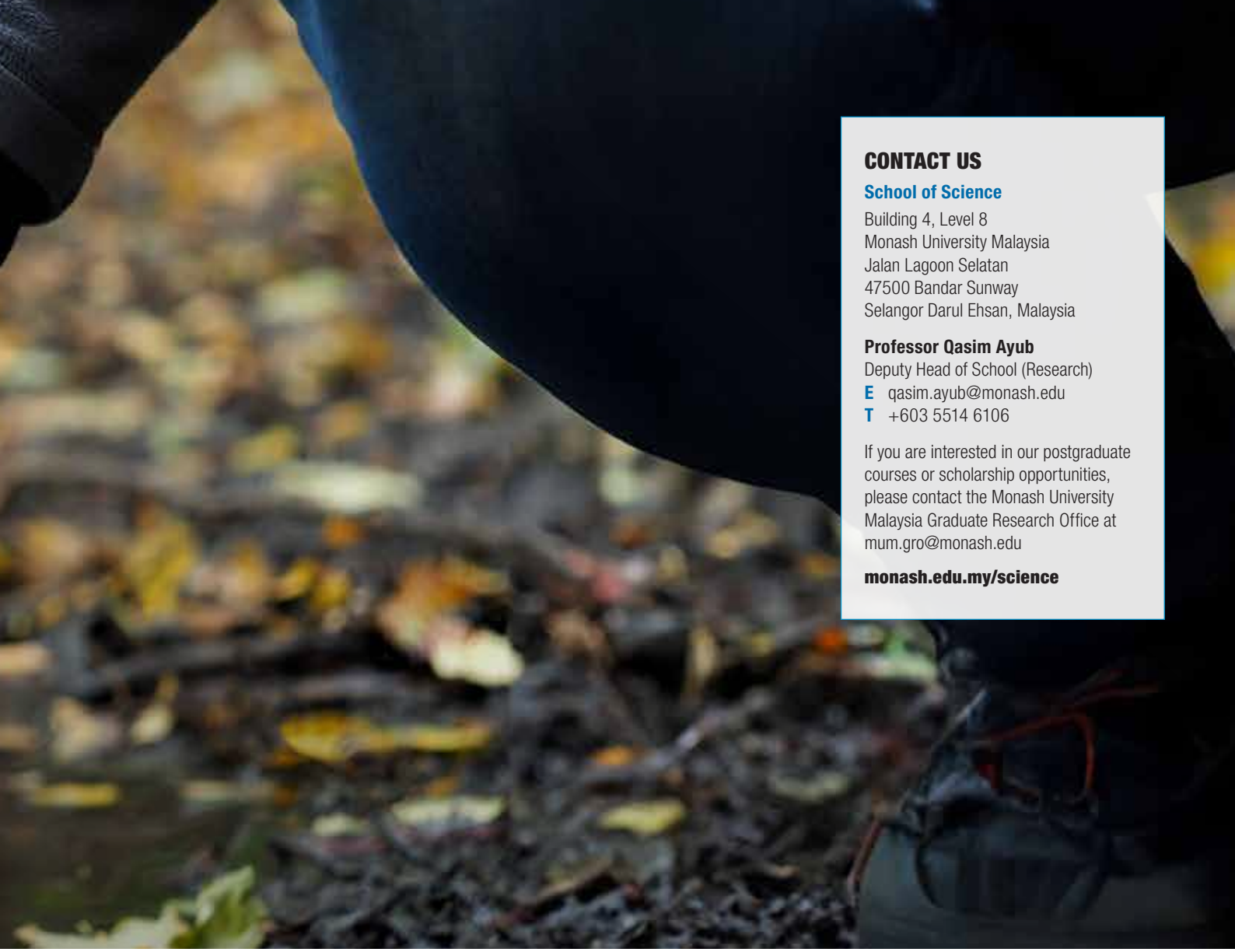
Our state-of-the-art laboratories in chemistry, biosciences, environmental sciences, food sciences, genomics and bioinformatics support hundreds of undergraduate and postgraduate students giving the school a comprehensive research-intensive profile.

We have a dynamic group of experienced academic staff members with established research track records. Researchers based in Malaysia have full access to Monash Australia's infrastructure and collaborate widely with industry and international academia.

RESEARCH PROGRAMS

Engaging in graduate studies at Monash means you will be a member of a dynamic community of scholars and contribute to the advancement of knowledge within your area. We offer the **Master of Science (MSc)** and **Doctor of Philosophy (PhD)**, with a broad range of study areas so you can find the path that best suits your intellectual and vocational passions:

- Drug discovery and development
- Functional and future foods
- Genomics and bioinformatics for one health
- Green and sustainable chemistry
- Tropical biodiversity and conservation biology
- Big data analytics.



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monash.edu.my/science

KEY RESEARCH FACILITIES

The School of Science hosts the ISO9001 certified Monash University Malaysia Genomics Platform which provides high-throughput nucleic (DNA/RNA) acids sequencing services using PacBio Sequel IIe, Oxford Nanopore Technologies and Illumina platforms.

Other major facilities and equipment include a complete pilot food processing facility with sensory laboratory, flow cytometry, fluorescence microscopy, confocal microscopy, luminescence spectrometry, Fourier Transform Infrared Spectroscopy (FTIR), Atomic Absorption Spectroscopy (AAS), Gas Chromatography, Fast Protein Liquid Chromatography, High Performance Liquid Chromatography (HPLC) and Liquid Chromatography-Mass Spectrometry (LC-MS) to support scientific discoveries and excellence in research with strong impact on the local, regional and global community.

SPECIALIST SERVICES

- Consultation for industry and commercial businesses, e.g. analytical services and solution discovery.
- Contract research for industry partners and worldwide institutions.
- Nucleic acids sequencing and analysis.

OUR RESEARCH INFRASTRUCTURE AND SERVICES

PLATFORMS

FACILITIES

ADVANCED COMPUTING PLATFORM

The Advanced Computing Platform (ACP) provides a research infrastructure with high-performance computing services, reducing the time taken for computationally intensive tasks.

It caters to multidisciplinary research in natural and social sciences, aiming to publish outcomes in esteemed journals and conferences.

Funded by the University's Research Excellence Unit and overseen by the School of Information Technology, the platform is research-focused and applied in various fields including computer vision, image processing, optical network, machine learning, pattern recognition, combustion, turbulent flow, nanomaterial, genome analysis, and disease association studies.

EXPERTISE

Our team provides specialised expertise in leveraging the ACP to advance research in the exciting field of artificial intelligence (AI). With a deep understanding of AI algorithms, machine learning techniques, and neural networks, we harness the power of the ACP's high performance computing services to drive groundbreaking AI research. From computer vision and image processing to natural language processing and predictive analytics, our team excels in applying AI methodologies across diverse domains.

KEY INSTRUMENTATION

Our instrumentation within the ACP is specifically designed to empower research that require big data analytics and artificial intelligence, which include:

- High-performance computing clusters for efficient and accelerated computations
- Specialised hardware accelerators for advanced AI and data processing tasks
- Optimised frameworks and libraries for machine learning, deep learning, and data analysis
- Advanced tools for data preprocessing, feature engineering, and exploratory data analysis
- Support for computer vision techniques, including image recognition and object detection
- Natural language processing capabilities for tasks like sentiment analysis and text classification
- Scalability to handle large datasets and train complex AI models Integration with big data frameworks for processing and analysing massive data sets
- Cutting-edge technology to drive innovative research in AI, data science, and related fields.

WORKING WITH US

- Collaborative research
- Consultancies
- Fee for service
- Training.

SPECIALIST SERVICES

Our platform's specialist services also include providing software application expertise for conceptualising, planning, developing, troubleshooting, and supporting projects on the HPC. We collaborate with high-performance computing (HPC) users and researchers to advance their expertise in software applications,

focusing on tools such as Ansys, Discovery Studio, GROMACS, LAMMPS, VASP, Quantum Espresso, OpenFOAM, deep learning frameworks (PyTorch, TensorFlow, Keras), genomics applications (GATK, BCFTool, BEDTool), and MATLAB. Additionally, we explore emerging technologies and maintain collaborative relationships with peer HPC research organisations to address evolving analytical requirements in the HPC field.

Internal and external services

Internal researchers have complimentary access to high-performance computing clusters, specialised hardware accelerators, and advanced tools. External researchers can also access our platform for a fee, benefiting from our cutting-edge infrastructure and specialist services.

Consultancies

Our experienced HPC specialists collaborate closely with researchers, offering technical advice and optimising workflows. We assist researchers in conceptualising, planning, and troubleshooting projects, maximising the utilisation of platform resources, software applications, and specialised tools.

Research collaborations

Through collaboration, we aim to leverage the capabilities, expertise, and resources of our platform to jointly tackle complex research challenges in fields such as AI, data science, and related domains. Collaborative research projects involve close collaboration between our platform's specialists and researchers, with a shared goal of achieving impactful research outcomes. Such collaborations often result in valuable insights, joint publications, and innovative research breakthroughs, benefiting both parties involved.

Training programs

Our platform offers comprehensive training programs to researchers, equipping them with the necessary skills and knowledge to effectively utilise the platform's resources, software applications, and specialised tools. These training programs cover various aspects of high-performance computing, data analytics, and AI technologies. Researchers can participate in workshops, seminars, and hands-on training sessions conducted by our experts. The training programs aim to enhance researchers' technical proficiency, enabling them to maximise the potential of the platform and conduct cutting-edge research.

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Advanced Computing Platform

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ANIMAL RESEARCH PLATFORM

The Animal Research Platform (ARP) provides a scaffold for animal research through the supply of high-quality laboratory animals and the provision of essential amenities such as ABSL-2, SPF, and Transgenic Fish Facilities.

We also provide technical resources, contract research services using RG 2 category infectious agents, and animal procedural training.

This platform establishes the highest standard of management processes ensuring high standards of welfare and well-being of the animals specified in the relevant Codes of Practice to support national and international biomedical research.

EXPERTISE

ARP's staff are experienced in animal breeding and providing animals for biomedical research studies, training, and educational purposes. We provide facility access to users such as the ABSL-2, SPF, Transgenic Fish and Fish Facilities to conduct various types of research such as infectious, therapeutics, neuroscience, behavioural, and fundamental studies.

Our animal behaviour analysis systems are used for motor coordination, learning and memory, social interaction, addiction, circadian rhythm, depression, and anxiety.

Users are also able to access imaging equipment (in conjunction with Monash University Malaysia's Optical Imaging Platform) such as the microinjection system for drug treatment and creation of transgenic animals, and fluorescence microscopy for drug screening and observing cell activities.

We also organise seminars and technical workshops related to animal research to bring users together from a wide range of research, providing a forum for collegial interaction and collaboration.

KEY INSTRUMENTATION

- Class II biosafety cabinet
- Individually ventilated cages (IVC)
- Rodent and zebrafish behaviour systems
- CO2 and isoflurane anaesthesia chambers
- Rat and rabbit metabolic cages.

WORKING WITH US

- Collaborative research
- Consultancies
- Fee for service
- Training.

SPECIALIST SERVICES

Our Animal Facility supplies rodents including mice, rats and hamsters. We also house zebrafish and tilapia fish. Several animal facilities such as the ABSL-2 for infectious disease research, Rodent Conventional and SPF Facility and the Fish and Transgenic Fish Facility are available for research purposes. We also conduct in-house training on animal handling and care for all researchers using these facilities.

ABSL-2 Facility

The ABSL-2 Facility is designed for researchers to conduct animal

studies using infectious agents of RG 2. Training on the biosafety and working procedures when using the facility will be provided prior to the commencement of each of the projects. Biosafety procedures and practices are well adhered to maintain the integrity of the ABSL-2 facility.

SPF Facility

The animal research platform maintains a specific pathogen-free (SPF) animal facility for SPF mice and rats with standardised health statuses. SPF animal facility complies with SPF standards of care and use of all SPF-designated animals for breeding, housing, and all animal experiments. Our SPF animal facility has strong support for biomedical research and teaching for internal and external users.

Transgenic Fish Facility

We house transgenic and mutant strains of zebrafish that are imported from research collaborators and licensed zebrafish facilities. Our experienced staff process imports from LKIM including the receipt of zebrafish into our zebrafish holding premises. We also have a microinjection system that allows the generation of transgenic and mutant zebrafish via single cell zebrafish embryo microinjection.

Rodent Facility

We provide various strains of high quality and healthy mice and rats for animal research including:

- Mice strains: BALB/c, C57BL/6J and ICR
- Rat strains: Sprague-Dawley, Wistar and SHR rats
- Hamster: Golden Syrian.

Other capabilities

Animal behaviour analysis (motor coordination, learning and memory, social interaction, addiction, circadian rhythm, depression, and anxiety)

- Imaging of animal samples (organs, slides, zebrafish embryos) – in conjunction with MUM Optical Imaging
- Rat and rabbit cages for metabolic studies
- Operation system (microinjection, intracerebroventricular injection, brain surgery).

CONTACT US

Animal Research Platform

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GENOMICS PLATFORM

The Genomics Platform is an ISO9001-certified infrastructure platform that provides the highest quality of massively parallel, high-throughput nucleic acid sequencing and bioinformatics services and training to researchers, students and clients around the world.

We provide short- and long-read sequencing of whole or partial genomes and transcriptomes for a wide range of organisms, thus, supporting multidisciplinary research.

EXPERTISE

The Genomics Platform provides the following high-quality services:

- Nucleic acids (DNA/RNA) extraction from a variety of biological and environmental sources
- Nucleic acids (DNA/RNA) library preparation and quality checks
- Generation of short or long-read nucleic acid sequences
- Training in genomics and bioinformatics
- Consultation and assistance with study design
- Troubleshooting technical problems and bioinformatics support.

KEY INSTRUMENTATION

- Illumina MiSeq sequencer
- PacBio Sequel IIe system
- Oxford Nanopore MinION Mk1B
- Agilent TapeStation 2200 and 4200
- Agilent Femto Pulse system
- Invitrogen Qubit Flex Fluorometer
- Beckman Coulter Biomek 4000 Automated Workstation
- Covaris M220 Focused Ultrasonicator
- Sage BluePippin Automated DNA Size Selection system
- Promega Maxwell RSC 48 Instrument
- High Performance Computers running on Linux OS/

WORKING WITH US

- Collaborative research
- Consultancies
- Fee for service
- Training.

SPECIALIST SERVICES

Our instruments enable us to provide sequencing services for three high-throughput sequencing platforms using short- or long-read sequencing of whole or partial genomes and transcriptomes for a wide range of organisms.

The Genomics Platform also supports the undergraduate science teaching program in genomics and bioinformatics and provides training apprenticeships and research internships for undergraduate students in genomics and bioinformatics. We also routinely provide training and workshops for internal and external researchers in genomics and bioinformatics.

Short-read sequencing

The Illumina MiSeq short-read sequencing is the core service at Genomics Platform. The short-read sequencing service supports a wide range of applications including microbial population profiling (16S), targeted amplicon sequencing, bacterial or viral whole genome sequencing, transcriptomics, epigenomics and restriction-site associated DNA (RAD) sequencing.

Long-read sequencing

Our long-read sequencing services are based on the Oxford Nanopore Technologies MinIon flowcell and PacBio Sequel IIe System platforms, providing options for researchers based on the suitability of research objectives and available budget. The long-read sequencing services support de novo whole genome sequencing, metagenomics sequencing, full-length 16S ribosomal RNA sequencing and transcriptomics (RNA Seq and Iso-Seq).

Bioinformatics services

All bioinformatics analyses are performed after understanding the objectives and requirements of each project. We strongly encourage researchers and clients to set up a consultation session with us before engaging these services to ensure that the study designs are appropriate and that the data is generated according to the investigator's requirements.

Other capabilities

- DNA and RNA quantitation using Agilent TapeStation and Femto Pulse system
- DNA shearing using Covaris M220 Equipment access (Covaris, Qubit Flex, Maxwell RSC 48)
- Bioinformatics support for students and collaborators.

CONTACT US

Genomics Platform

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NANO-ANALYTICAL PLATFORM

The Nano-Analytical Platform (NAP) was established to promote research excellence for nanoscale analysis by supporting a wide variety of multidisciplinary and cutting-edge research.

The platform hosts state-of-the-art analytical equipment, including a AFM, FESEM, VPSEM, HRTEM, XRD, Raman-PL, and TRPL which facilitate the imaging and analytical investigation of material from a wide range of scientific disciplines. It also houses a PLD system for the deposition process of epitaxial thin film and nanostructure materials.

NAP has been certified with ISO9001 since 2019. With world class facilities, we offer a diverse range of research and commercial capabilities.

EXPERTISE

Our expertise is in providing nanoscale analytical services and solutions to both academia and industry through state-of-the-art material characterisation. The platform offers extensive facilities and instruments to support the fabrication and characterisation of advanced materials with particular emphasis on nanoscale materials and nano-systems:

- Structure, morphology, topography and elemental analysis
- Measurements of nanoparticle size and size distribution
- Crystallographic structure
- Surface and thin film characterisation
- Thin film fabrication.

KEY INSTRUMENTATION

- Atomic Force Microscope (AFM) Bruker Multimode 8
- Field Emission Scanning Electron Microscope (FE-SEM) Hitachi SU8010
- High Resolution Transmission Electron Microscope (HR-TEM) FEI Tecnai G2 20 S TWIN
- Variable Pressure Scanning Electron Microscope (VP-SEM) Hitachi S3400-II
- X-Ray Diffractometer (XRD) Bruker D8 Discover
- Raman-Photoluminescence Spectroscopy (RAMAN-PL) Horiba LabRAM HR Evolution
- Time Resolved Photoluminescence (TRPL) Horiba DeltaPro-DD
- Pulsed Laser Deposition (PLD) Adnanotek Laser Coherent COMPrexPro 102
- Sputter Coater (Platinum/Gold) Quorum Q150R S.

WORKING WITH US

- Collaborative research
- Consultancies
- Fee for service
- Training.

SPECIALIST SERVICES

NAP is an ISO 9001-certified multidisciplinary research infrastructure platform for nanoscale materials characterisation. We provide technical expertise, training and workshops to internal and external researchers with several state-of-the-art analytical instruments in NAP.

Surface morphology, topography, elemental and imaging analysis

Our advanced microscopy techniques, including FESEM, VPSEM, HRTEM and AFM, offer valuable topographical information of materials. They allow our researchers to explore and understand the intricate structures, properties and behaviours of a wide variety of materials, from surfaces and interfaces to internal atomic arrangements.

Raman and PL spectroscopy analysis

Our Micro Raman Spectrometer with PL provides detailed information about molecular vibrations, chemical composition and molecular interactions within a sample. The instrument is also capable of photoluminescence spectroscopy, which involves the measurement of light emission from a sample upon excitation with photons.

Thin film fabrication

Our thin film fabrication uses pulsed laser deposition system coupled with COMPex laser to deliver stoichiometric thin films of wide range materials. The entire deposition process is fully automated.

Diffraction analysis

The capabilities of our XRD tool extend to the analysis of a diverse range of samples, encompassing powders, thin films, bulk materials and nanomaterials. The nondestructive analysis can provide valuable insights into their crystallographic properties, compositions and defects, among many others.

Other capabilities

- STEM analysis (via FE-SEM, HR-TEM)
- EDX analysis (via FE-SEM, HR-TEM)
- Cross section analysis
- Structure and texture analysis at molecular level
- Phase identification
- Thin film analysis
- SAED analysis
- Surface roughness analysis
- Photoluminescence analysis.

CONTACT US

Nano-Analytical Platform

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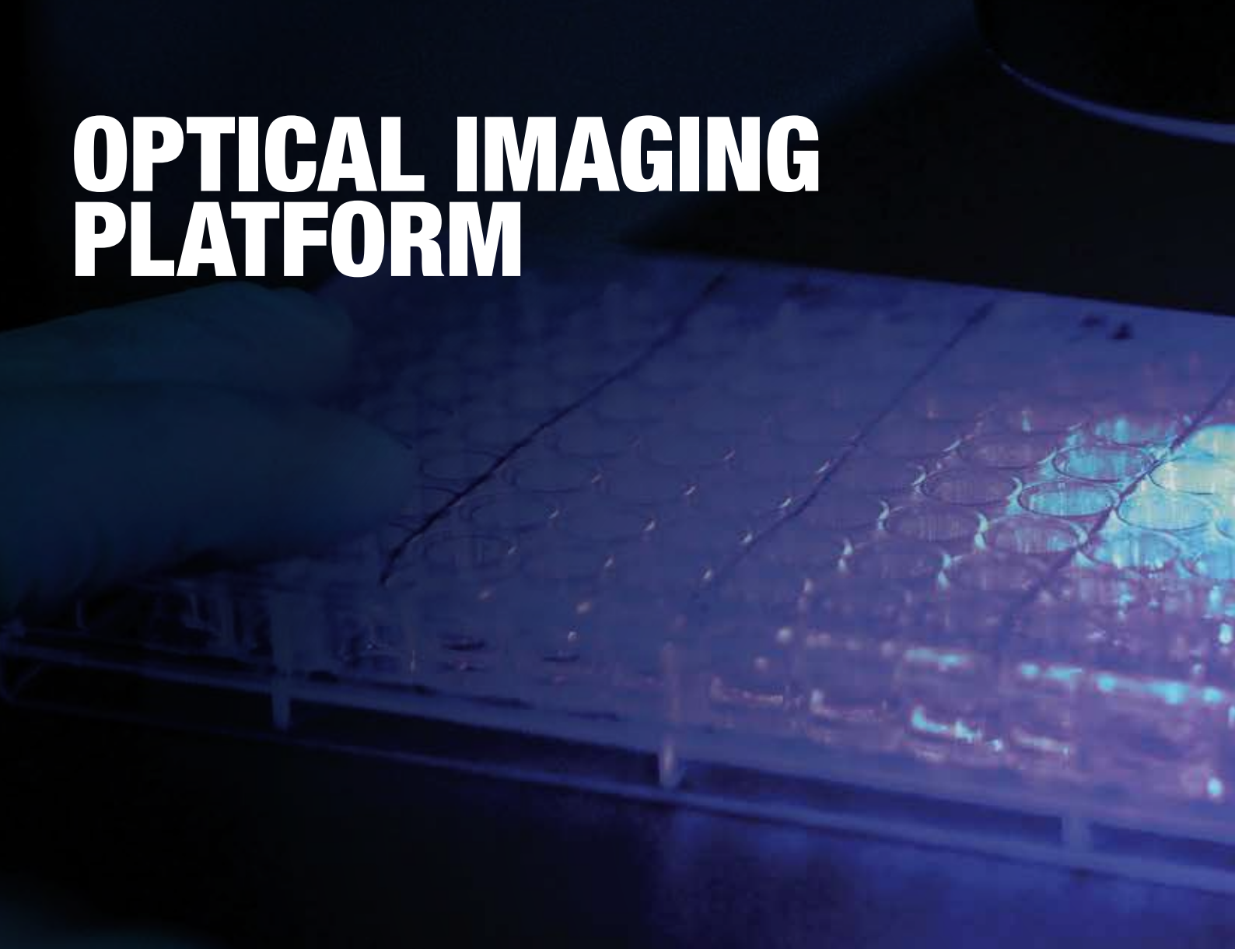
OPTICAL IMAGING PLATFORM



The Optical Imaging Platform (OIP) provides world-class optical imaging with its core facilities.

OIP's technologies include multiphoton microscopy, fluorescence and confocal microscopy, which cater to a diverse range of morphological and functional characterisation in biomedical sciences.

All technologies are underpinned by bioimage analysis and research training.

EXPERTISE

Our team provides expertise and training across a wide range of analytical microscopes and microscopy modalities in optical imaging. Our services range in complexity from sample preparation, image capturing and image data analysis. We also provide guidance and training to allow researchers to undertake cutting-edge analytical optical imaging techniques with confidence.

KEY INSTRUMENTATION

- Widefield/Inverted fluorescence microscopy
- Confocal laser scanning microscopy
- Multiphoton microscopy
- Automated slide scanner
- Stereomicroscopy (at Animal Research Platform)
- Image analysis
- Histology facilities: Cryostat, microtome, ultramicrotome, vibratome, laser capture microdissection.

WORKING WITH US

- Collaborative research
- Consultancies
- Fee for service
- Training.

SPECIALIST SERVICES

Our team provides advanced microscopy instrumentation and analytical techniques to a large research community. Ranging in complexity from the cytology, histology samples to live cell or in vivo imaging, we will guide and train users to perform experiments, produce high-quality images and extract analytical data.

Advanced light and fluorescence microscopy

Our instrumentation provides a solid platform of advanced light and fluorescence microscopy techniques, including time-lapse, slide scanning (in conjunction with our histology facilities) and image tiling, and live-cell imaging on slides, chambers or microplates. Both upright and

inverted microscopes are available, and all systems are supported by a comprehensive range of professional software for bioimage analysis to provide quantitative results.

Live-cell imaging

Our live-cell imaging instrument is equipped with a temperature-, humidity- and CO2-levels controlled chamber and deconvolution function, which supports live and long term imaging experiments.

Optical sectioning and 3D analysis

Our range of instrument modalities includes confocal laser scanning (CLSM) and multiphoton microscopes (MP). Imaging deeper tissue can be done by multiphoton imaging in live, fixed or cleared tissue microscopy which is capable of imaging to a depth of ~800 µm with specialised objectives.

Image analytics

Extracting and understanding bioimaging data is crucial, and handling big datasets is often a bottleneck in research. Our staff are available to train scientists and students in the analytical software with the help of Monash Micro Imaging at Monash Australia.

Other capabilities

Histology-specialised equipment includes cryostats, microtomes, vibratome and laser-capture microdissection for histological and morphological analysis. An automated brightfield and fluorescent slide scanner is also available for digitalisation of histology or cytology specimens direct to your screen.

CONTACT US

Optical Imaging Platform
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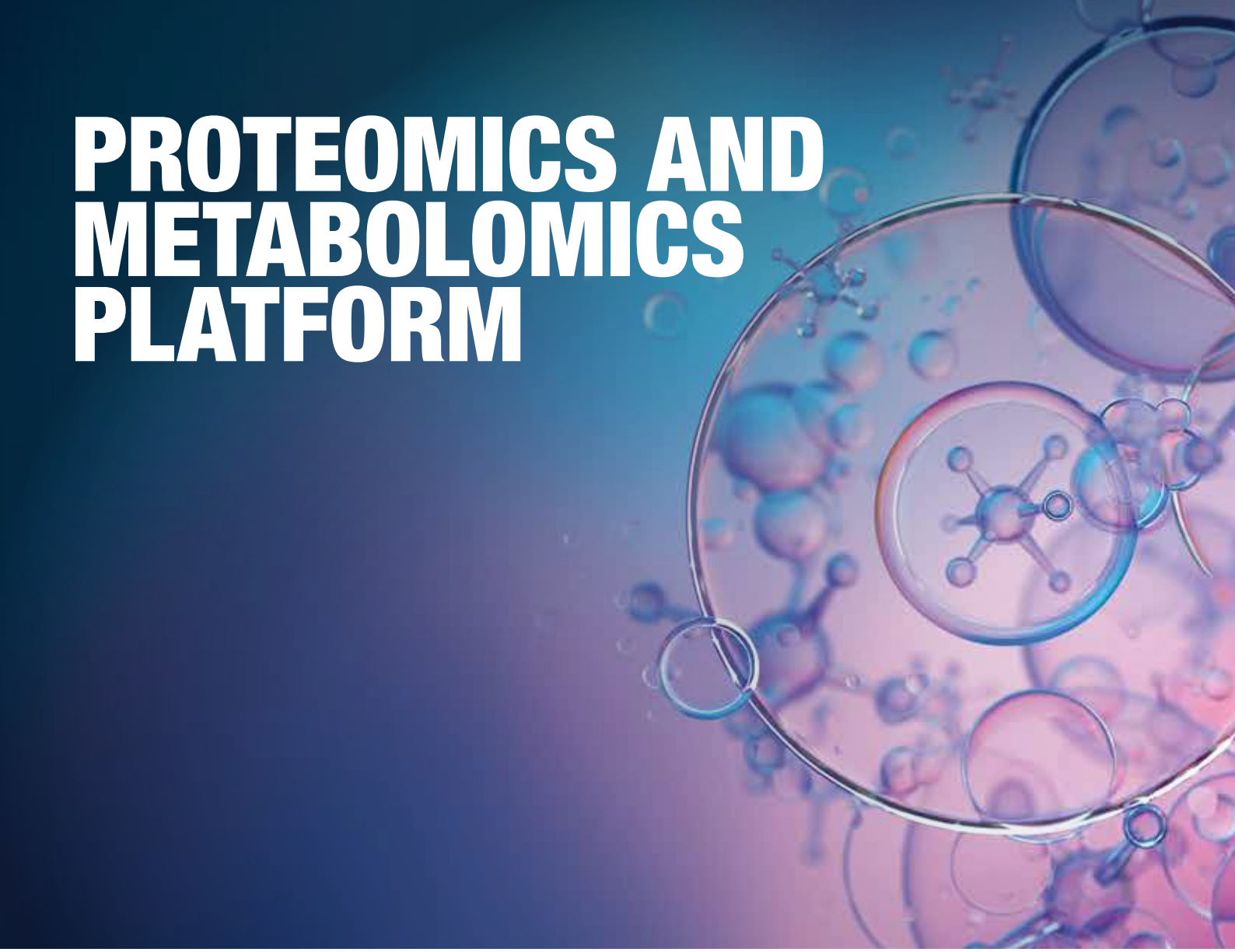
PROTEOMICS AND METABOLOMICS PLATFORM



The Proteomics and Metabolomics Platform is an advanced research facility dedicated to studying proteins and metabolites in all biological systems.

Equipped with state-of-the-art instrumentation and cutting-edge technologies, the platform enables scientists to delve into the intricacies of cellular processes and disease mechanisms.

Liquid chromatography mass spectrometry (LC-MS) is one of the key instrumentation within the platform. The LC-MS system can be applied in diverse research fields such as translational research, clinical diagnostics, drug discovery, environmental sciences, food and beverage assessment and industrial materials.

EXPERTISE

- Proteomics: Comprehensive study of proteins within biological system that involves the identification, characterisation, and quantification of proteins to unravel their functions, interactions, and modifications.
- Metabolomics: Comprehensive analysis of small molecules, known as metabolites, within biological systems. It aims to understand the dynamic metabolic processes occurring in cells, tissues, or organisms.
- Other “Omics”: These "omics" disciplines, including lipidomics, glycomics, and phosphoproteomics, provide valuable insights into the roles of lipids, glycans, and phosphorylation events in cellular functions, disease mechanisms, and therapeutic strategies.

KEY INSTRUMENTATION

- Agilent 6550 iFunnel Q-TOF LC/MS
- Agilent 6520 Accurate-Mass Q-TOF LC/MS
- Agilent 6495C Triple Quad LC/MS
- Agilent 6410 Triple Quad LC/MS
- Agilent 5977 GC/MSD
- Agilent 240 Duo Atomic Absorption Spectroscopy (AAS) System
- Agilent 1290 Infinity II Bio-LC System.

WORKING WITH US

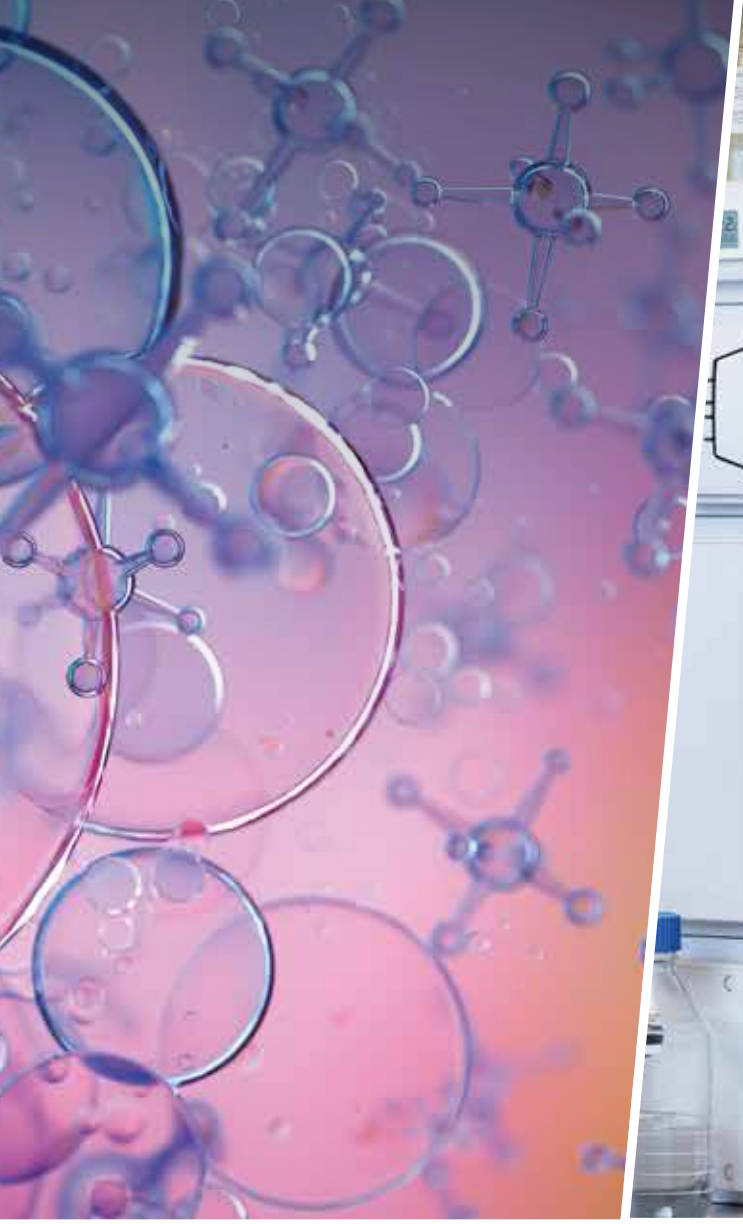
- Collaborative research
- Consultancies
- Fee for service
- Training.

SPECIALIST SERVICES

We aim to provide complete mass spectrometry research services in proteomics and small molecule analysis that supports multidisciplinary research activities for Monash and other local and international institutions. Our laboratory is equipped with a cutting-edge Agilent LCMS system and comprehensive software for data analysis.

Protein discovery

Our state-of-the-art Agilent 6550 iFunnel Q-TOF mass spectrometer coupled with Agilent 1290 UHPLC and AJS-ESI source can accurately identify proteins of interest from any biological sources.



Peptide sequencing and protein profiling

Our LCMS capabilities are enhanced with the availability of highly reliable and accurate search engines (proteomic software). We can accurately identify your peptide sequence or perform protein profiling using advanced software such as PEAKS and MaxQuant.

Intact protein/peptide mass identification

We can provide intact mass analysis of your protein/peptide with our Agilent 6550/6520 QTOF and Agilent MassHunter Protein Deconvolution software.

Small molecule discovery

Our LCMS system (Agilent 6520 AccurateMass QTOF with dual-ESI source) is optimised to allow the discovery of small molecules and metabolites from your biological samples with great sensitivity. Our machine is complemented by the Agilent MassHunter software suite, which provides intuitive, powerful, and accurate qualitative and quantitative data analysis.

Confirmation and quantitation of proteins and small molecules

Small molecule and protein/peptide quantification using Agilent 6410 and 6495 Triple Quadrupole (QQQ) which offers absolute and accurate quantitative results for your research needs.

Other capabilities

Sample cleanup preparation to ensure that samples are LCMS-ready.

CONTACT US

Proteomics and Metabolomics Platform

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AGILENT INTEGRATED BIOLOGY FACILITY

The Agilent Integrated Biology Facility (AIBF) complements and enhances the analytical capabilities of the Proteomics and Metabolomics Platform.

Established in collaboration with Agilent Technologies, the research laboratory is equipped with state-of-the-art equipment comprising the GC-MS, Triple QQQ LCMS, Supercritical Fluid Chromatography and the Bio-LC systems, along with the additional atomic absorption to study heavy metal pollutants.

EXPERTISE

Protein and small molecule quantitation

The platform employs cuttingedge techniques and advanced analytical methods to quantify proteins and small molecules with high sensitivity and specificity. The Agilent 6495C QQQ LCMS can determine the concentration or abundance of proteins and small molecules in various biological samples.

Volatile and semi-volatile compound analysis

The GC/MSD system can detect and characterise volatile and semi-volatile compounds with high precision. We can perform targeted analysis of small molecules, such as metabolites, environmental contaminants, or drug compounds.

Complex biomolecules analysis

Bio-LC system enables the separation and analysis of complex biomolecules such as proteins, peptides, nucleic acids, and metabolites. SFC system is a state-of-the-art instrument combining the advantages of liquid and gas chromatography techniques. It offers excellent efficiency, speed, and selectivity, making it ideal for analysing chiral compounds, lipids, natural products, and other challenging samples.

KEY INSTRUMENTATION

- Agilent 6495C Triple Quad LC/MS
- Agilent 5977 GC/MSD
- Agilent 1290 Infinity II Bio-LC System
- Agilent 1260 Infinity II SFC System (Supercritical Fluid Chromatography).

WORKING WITH US

- Collaborative research
- Consultancies
- Training.

SPECIALIST SERVICES

AIBF is a cutting-edge research facility with state-of-the-art instrumentation to support various biological studies. Our highly skilled team of experts provides specialised services utilising these instruments, covering various biology and analytical chemistry areas. From targeted analysis of small molecules and metabolites to protein identification, characterisation, and quantitation, we offer comprehensive solutions for bioanalysis, metabolomics, proteomics, and pharmaceutical research.

Agilent 6495C Triple Quadrupole LCMS

Agilent 6495C QQQ LCMS provides exceptional capabilities for both protein and small molecule absolute quantitation, and researchers/scientists can gain accurate, precise, and reliable quantitation of these molecules in their samples. This service supports various applications, including biomarker discovery, drug development, pharmacokinetics, environmental analysis, and metabolomics research.

Agilent 5977C GC/MSD

The Agilent 5977C GC/MSD offers exceptional sensitivity, selectivity, and versatility, making it ideal for identifying and characterising volatile and semi-volatile compounds in complex samples. Applications include analysis of organic compounds, such as pesticides, environmental contaminants, drugs, metabolites, and other volatile substances.

Agilent 1290 Infinity II Bio-LC

The Agilent 1290 Infinity II Bio-LC system, with its unique high-pressure capabilities, exceptional resolution, and sensitive detection, this instrument enables accurate separation, identification, and quantification of target compounds in biological samples by its chromatographic capabilities. Our service covers various bioanalytical applications, including protein characterisation, biomarker discovery, drug metabolism studies, metabolomics, and more.

Agilent 1260 Infinity II Supercritical Fluid Chromatography

The Agilent 1260 Infinity II SFC (Supercritical Fluid Chromatography) service at our facility offers advanced analytical chromatographic capabilities for precise and efficient separation and analysis of complex mixtures such as chiral compound analysis, lipid profiling, natural product characterisation, pharmaceutical research, and more. This Agilent 1260 Infinity II SFC system is particularly suited for complex matrices and difficult-to-separate compounds.

Proteomics and metabolomics services

With the Proteomics and Metabolomics Platform, AIBF offers a range of comprehensive proteomics and metabolomics services.

CONTACT US

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NUCLEAR MAGNETIC RESONANCE FACILITY

The Nuclear Magnetic Resonance (NMR) Facility provides a very powerful spectroscopy and is one of the most informative nondestructive analytical techniques.

We provide services on NMR analysis, consultancy and training for internal and external customers.

We offer a wide range of 1D- and 2D-experiments on various atom nuclei, a good selection of deuterated solvents to meet your experiment requirements, as well as advice on experiment selection and data interpretation.

Along with routine NMR experiments, we also assist in identifying unknown materials, determining chemical structures and product properties, quantifying components in a mixture, and analysing conformational and molecular dynamics.

EXPERTISE

- Advanced NMR expertise and state-of-the-art support for industrial and academic research.
- Analysis of small molecules, natural products, and polymers.
- Identification of known and unknown materials and determination of chemical structures.
- Assessment of purity profiles and compositions of ingredients in pharmaceutical products.
- Analysis of conformational dynamics and other molecular properties.
- Analysis of intra- and intermolecular interactions.

KEY INSTRUMENTATION

High resolution NMR Avance NEO 300 spectrometer (Bruker).

WORKING WITH US

- Collaborative research
- Consultancies
- Fee for service
- Training and teaching.

SPECIALIST SERVICES

A wide range of high-frequency 1D and 2D experiments on various NMR active nuclei, NMR spectra analysis and interpretation, and sample preparation support are offered. Expert advice on experiment selection and signal assignments is also available.

NMR analysis

Outsource your facility's NMR analysis and focus on strategic projects; we guarantee rapid turnaround for your routine NMR sample analysis. You can request the following:

- Preparing samples according to your instructions
- Providing NMR tubes and solvents
- Customising experiments to meet your needs
- Entertaining urgent requests and long-term contracts
- Data acquisition, processing and plotting of the spectrum with integrals, peak lists and expanded plots as needed
- Creating documents containing spectral plots in PDF or other formats
- Multiplet analysis with coupling constant calculation
- Providing raw data files
- Returning or disposing samples as requested
- Spectral interpretation.

Training for internal and external customers

Workshops and individual (small group) training tailored to your needs.

CONTACT US

Nuclear Magnetic Resonance Facility

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MALAYSIA

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