

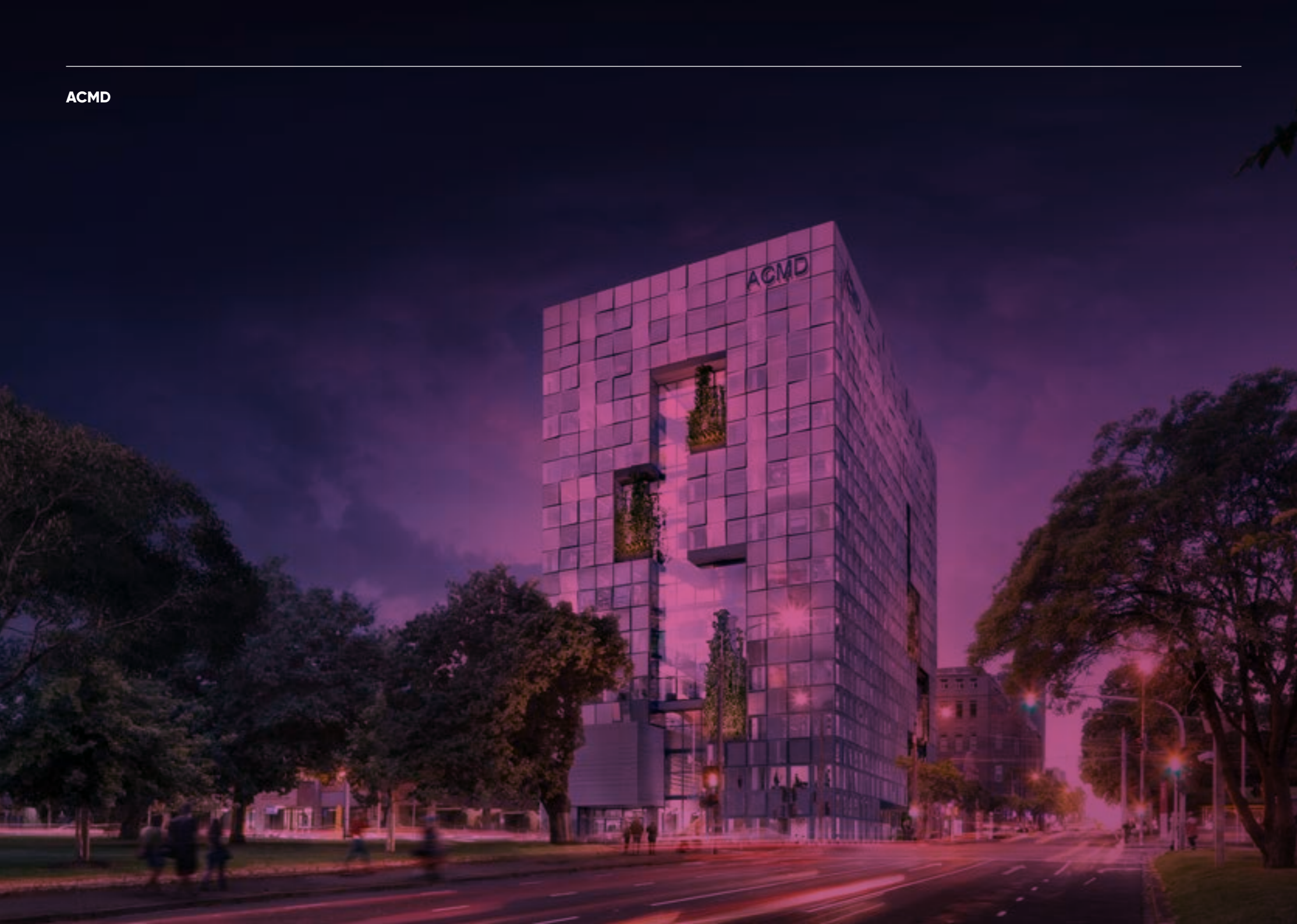
# Engineering the future of healthcare

The Aikenhead Centre for Medical Discovery



Help drive the transformation





## A catalyst for healthcare innovation

The Aikenhead Centre for Medical Discovery (ACMD) was set up to translate Australia's research excellence into innovative devices and treatments to drive healthcare transformation.

In Australia, we enjoy one of the best healthcare systems in the world. Our hospitals provide exemplary healthcare. Yet, our system struggles to remain equitable as it tries to keep up with the evolving demands of older, rural, and culturally diverse communities and the rise in chronic diseases. As a result, the gap between what patients need and what can be delivered is rapidly growing wider, putting our health at risk.

According to the 2022 Deloitte whitepaper, Australia would have to build one 375 acute bed hospital every month for the next 15 years to keep up with the growing demand.

Investing in our healthcare system has never been more important than it is today.

To ensure all Australians will continue to get the healthcare they need, we need to change the way we access and deliver health.

You have a unique opportunity to partner with leaders in medicine and biomedical engineering to create a more equitable and cost-effective health system.

● **Accelerate cross-disciplinary healthcare innovation and implementation** both at the bedside, in the doctor's office and in the community.

● **Ensure fair, inclusive, and equitable healthcare** for all people in the community.

● **Drive the research and education collaboration** that will lead to transforming the way we deliver and access healthcare.



## Closing the innovation gap

Although Australia has world-class healthcare, it is struggling to keep up with the rising and increasingly complex healthcare demands of our diverse population.

### Expanding city and regional divide

Rural and regional people miss out on excellent healthcare services which are clustered around Australia's major cities.

### The rise of chronic diseases

Australia is a leader in acute care. But a gap exists in the prevention and treatment of chronic illnesses such as diabetes and mental health.

### Unaffordable healthcare leads to inequity

Not everyone can afford rising health costs. The result is poorer health for those on lower incomes.

## Help drive the transformation



## Engineering the future of healthcare

Biomedical engineering offers us the opportunity to solve our increasingly complex healthcare needs through redefining how we identify, prevent and treat trauma and disease.

The multidisciplinary field of biomedical engineering draws on insights from human biology, engineering and design principles to push the boundaries of modern medicine. Australia has deep expertise in this field. Our track record of the extraordinary innovations pioneered in this country include the pacemaker and the bionic eye.

Recognising the unique opportunity this presents, the ACMD is Australia's first hospital-based biomedical engineering centre dedicated to improving healthcare access, lowering costs and enhancing patient outcomes through technology.

The ACMD will provide the spaces, resources and networks required to significantly accelerate medtech innovation.

### Current barriers to medtech innovation

Instead of a disconnect between the lab and the real-world needs of clinicians...



Instead of a lack of collaboration across disciplines and the public/private health sectors...



Instead of a gap between world-leading research output and commercialisation skills...



### Overcoming barriers through ACMD

We start with real-world clinical problems and use medtech innovation to solve healthcare challenges for people with conditions such as epilepsy, diabetes, osteoarthritis, and cancer.

Biomedical and engineering researchers will work more closely with clinicians, surgeons, industry, and end users to solve today's biggest healthcare problems.

Stronger research collaboration will bring together academic, medical and industry partners, leading to a simpler path from benchtop to bedside trials and ultimately to better healthcare for all Australians.



The Atrium creates a visual link to the historic buildings and gardens opposite through its sculptural staircase

## A new home for biomedical engineering

To drive collaboration and medtech innovation, we are building a physical home for the ACMD on St Vincent's Hospital's Fitzroy Campus. The new building will encourage the sharing of cross-disciplinary knowledge and become a world-leading hub of excellence in applying medtech to healthcare problems.



The Exhibition Space will act as an engaging billboard for science, bringing biomedical engineering to life for visitors



The Human Kinetics Laboratory features a cutting-edge gait analysis system. It is designed to explore treatment options for neuromuscular conditions



A soaring space, the Lecture Theatre will be a destination for biomedical engineering learning, thought leadership, collaboration and innovation



The Clinical Simulation Lab can be adapted to provide any life-like clinical training scenario for health workers, researchers, and students

## Innovation in the real world: Skin injuries project

Covering a broad spectrum of health challenges, such as osteoarthritis, cancer and epilepsy, the ACMD is focused on addressing the areas of most urgent clinical need.

What all ACMD projects have in common is that they focus on bringing cutting-edge technology to health challenges where they can make the most profound difference.

In various stages of development, trials, and commercialisation, you can help take ACMD projects, such as the skin injuries project to the next level.

### Treating skin injuries with 3D printing

Skin is your body's largest organ. It has an incredible ability to heal itself after the falls, scrapes and cuts that are the inevitable part of life. By and large, we take skin for granted.

But major trauma or accidents can cause skin to be permanently damaged, leaving it unable to regenerate itself. Some examples include:

- Suffering severe burns to your body e.g., when caught in a bushfire or house fire.
- Major surgery requiring skin grafts e.g., after a mastectomy.
- Skin trauma after an accident e.g., motorcycle, car, or bicycle accident.

Treating such skin injuries is often a major challenge. In some cases, it can take years and multiple reconstruction procedures.

But now a new skin regeneration technique is being developed through an ACMD collaboration jointly led by

Associate Professor Chris Baker, Director of Dermatology at St Vincent's Hospital Melbourne, and Robert Kapsa, Professor of Biofabrication and Tissue Engineering at RMIT University.

This project aims to use bio fabrication techniques to make the three layers of human skin and integrate them into synthetic skin tissue using the patient's own cells. Special bio-inks help to create artificial skin material that emulates the structure of native skin by laying down skin components such as collagen and elastin.

The result will look, feel and function like real skin and can be used to repair damaged skin in cancer, burns and trauma patients. This technique is expected to encourage faster healing and minimise rejection and scarring.

"These exciting innovations in treating skin trauma are a great example of ACMD's approach to bringing different skill sets together to solve a real-world health problem," Associate Professor Chris Baker said.



## A winning alliance

The ACMD will bring together world-leading scientists, researchers and educators in medicine, biomedical engineering, and technology to transform Australia's health system. The ACMD is also dedicated to preparing the next generation leaders in health.

### An investment in the ACMD is an investment in:

#### Cross-sector collaboration

Bringing together the brightest talent from leading organisations across healthcare, education, and research to drive this change together.

#### Cross-disciplinary expertise

Encouraging experts in medicine, biomedical engineering, and technology to breakdown discipline boundaries to create life-changing health solutions.

#### Innovation infrastructure

Building the physical spaces, systems and processes needed to enable a flourishing medtech ecosystem.



Help drive the transformation

## A call for innovation partners

You are invited to play a key role in driving change and innovation in Australia's healthcare sector.

The ACMD seeks to transform the future of healthcare and create a fairer and more equitable health system for all. That is why the ACMD needs visionary funding partners who want to accelerate innovation not only to make a difference to the health of individuals but to Australia's whole healthcare infrastructure. You have a chance to significantly change people's lives through medtech innovation.

"The ACMD is a world first and the most significant development in biomedical research in Australia in 20 years. When you partner with the ACMD, you will help improve the lives of millions of people through the use of health technology to achieve more equitable access to innovations."

Krystyna Campbell-Pretty AM,  
Co-Chair of the ACMD Philanthropy Council

"The ACMD represents a bold new future, accelerating medical innovation by coupling discovery, biomedical engineering, education and commercialisation. A gift to the ACMD is an investment in Australia's biomedical engineering expertise to create practical solutions that will materially improve patients' lives."

Clark Morgan, Co-Chair  
of the ACMD Philanthropy Council



For a confidential discussion about how you can join our partnership and support the ACMD, please contact Melina Talanis, Director of the ACMD Capital Campaign.

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