



KOLLING INSTITUTE

Bridging Medical Research and Health

RESEARCH STRATEGY 2021-2025



Health
Northern Sydney
Local Health District



THE UNIVERSITY OF
SYDNEY

FOREWORDS



As the chair of the Kolling Institute Governance Committee, I am tremendously proud of our team of Kolling researchers and impressed by their skill, expertise and unwavering commitment to a healthier community. Many are world renowned in their fields, leading enthusiastic teams at the forefront of scientific progress.

It is important that we support our researchers with a strong strategic framework and deliver new opportunities, access to high quality facilities and new partnerships. A key component of the new strategy is the provision of research enablers, which will be instrumental in providing collaborative opportunities, operational efficiencies and increased funding. These initiatives will be available to all Kolling researchers.

Researchers are set to benefit too from unprecedented support from the joint venture partners. By harnessing the resources and services of the university and the local health district, researchers will receive targeted assistance to optimise their research outcomes.

The Kolling is respected for its high quality, valuable research, a reputation earned over many decades. I'm confident the initiatives developed through this new strategic framework will strengthen the Kolling's position as a centre for world-leading research, improving the health of the broader community.

Michael Nugent

Chair of the Kolling Institute Governance Committee



The global pandemic has seen a renewed appreciation for research and its potential to support the health of our community. This promise of scientific progress and clinical improvement is at the heart of our approach at the Kolling, inspiring our dedicated group of researchers. As the Kolling marks 100 years of research, we are moving to strengthen our ability to achieve ground-breaking research and improve patient outcomes. Through extensive consultation, we have developed the Kolling Institute Research Strategy which will position the institute as a centre of translational research excellence.

Three research priority areas have been identified during the formation of the strategy including musculoskeletal, neuroscience and pain, and cardiovascular and renal health. By focusing on areas of strength, we will be well placed to attract increased and diversified funding, while raising the profile of the institute both nationally and internationally. Valuable collaborations will be developed, enhancing the support provided through the joint venture partners, the Northern Sydney Local Health District and the University of Sydney.

In 2020 we welcomed the opportunity to reflect on the milestones achieved over the last 100 years. We expect this important new strategic direction will help the Kolling drive research progress and vital improvements in healthcare over the next 100 years.

Professor Carolyn Sue AM

Executive Director of the Kolling Institute



The partnership between the Northern Sydney Local Health District and the University of Sydney has been built over a period of 100 years. It will continue long into the future and well beyond both our tenures. The strength of this partnership lies in our shared belief that research is the bedrock on which patient care is built and will be continually improved.

It is with this background we now launch the priority research areas that will better leverage our collective expertise, and ultimately deliver on our shared goals. One of our key initiatives is the decision to promote the Kolling as the vehicle for pursuing our translational research priorities as we work together as an unincorporated joint venture.

The Faculty of Medicine and Health and Northern Sydney Local Health District have now established the Northern Sydney Precinct unit, to provide dedicated local support for research performance, infrastructure and career development as well as grant management. This will be a unique opportunity to explore new ways of pursuing our long-standing partnership, to deliver for our own communities, and to make our mark on the world stage. It will ensure our research informs patient care and ultimately improves the health of our community.

We thank you for your support of the Kolling strategy, and we look forward to our high quality research putting the Kolling in the national and international spotlight.

Deborah Willcox
Chief Executive,
Northern Sydney Local
Health District

Professor Robyn Ward AM
Executive Dean,
Pro Vice Chancellor of
Medicine and Health,
University of Sydney

The Kolling is in a unique position. Established in 1920, it is the oldest medical research institute in New South Wales, with a rich history of scientific progress and improved patient care. As the Kolling celebrates 100 years of research excellence, it is a good time to map the future direction of the institute and ensure it remains at the forefront of scientific discovery for the next 100 years.

A robust strategic framework will strengthen the Kolling's ability to achieve game-changing research, while delivering new opportunities and greater assistance to our team. The research strategy will focus on areas of strength, positioning the institute as a centre of translational research excellence, improving the health of the broader community.

It will provide greater support to researchers, broadening opportunities to directly incorporate scientific discoveries into clinical practice. This will enhance the impact of research across the Kolling and ultimately health outcomes.

A collection of research enablers will be instrumental in delivering collaborative opportunities, operational efficiencies and increased funding. Importantly, they will also support the strategic use of resources.

A key part of the strategy will see Kolling researchers benefit from the resources and expertise of the joint venture partners, the University of Sydney and the Northern Sydney Local Health District. This will involve targeted support, assisting researchers to make tangible gains.

The Kolling Institute Research Strategy has wide-sweeping objectives.

- To enhance research outcomes
- To increase public and private sector research funding
- To strengthen existing partnerships and establish new collaborations
- To improve the provision of care and health outcomes locally, nationally and globally
- To enhance the Kolling's reputation for research excellence
- To record medical and societal impact across health and industry



STRATEGY PROCESS



The Kolling Institute Research Strategy was developed following broad consultation. Significant quantitative and qualitative investigations were undertaken to identify the current research strengths of the Kolling, the areas of greatest potential and the additional support required.



Researchers, staff, affiliates and the joint venture partners contributed to the development of the strategy through various initiatives. From the abundance of contributions received, a clear understanding of the Kolling's current position and future aspirations was formed.



Based on the identified strengths, and in consultation with the Kolling Institute's Governance Committee, three research areas were nominated to form the Kolling's first priority research areas. These will provide a unique research identity for the Kolling Institute and the University of Sydney's Northern Precinct, while complementing the Sydney and West Precincts of the Faculty of Medicine and Health.



PRIORITY RESEARCH AREAS

These areas of research investigate some of the biggest health challenges of our time. Collectively, they cost the community billions of dollars a year in health, personal and economic costs.

There is tremendous expertise across these disciplines within the Kolling. Our research teams have a track record of success, a unique breadth of skills and knowledge and globally recognised expertise.

They are well placed to strengthen their international, government and industry collaborations, and increase the impact of their research.

The research strategy will increase opportunities to achieve research excellence, while raising the profile of the institute as a centre for world leading research.

Many researchers will work across the priority research areas. For example, pain research will enhance both the neuroscience and musculoskeletal research areas, while allied health will support all three priority research areas.

Musculoskeletal



Neuroscience and Pain



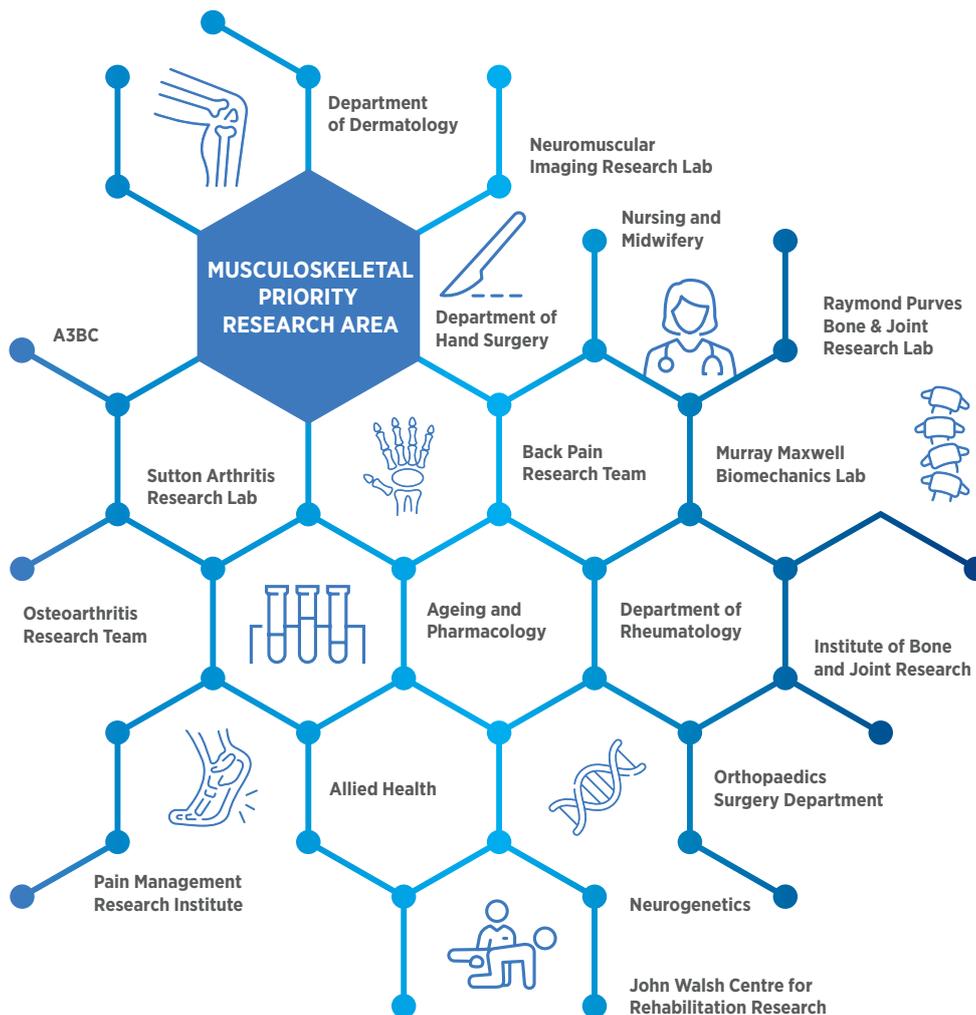
Cardiovascular and Renal





MUSCULOSKELETAL PRIORITY RESEARCH AREA

Musculoskeletal research is a demonstrable area of strength within the Kolling. Research teams attract significant funding, publish widely and have a strong record of translational research success. The areas of bone and joint, rheumatology and orthopaedics are stand out performers within the Kolling, with several world leaders in this field, and well-established industry and international collaborations.



Musculoskeletal research at the Kolling directly informs clinical practice across a range of areas, including imaging, surgery, physiotherapy, engineering, biomechanics, exercise physiology and medical devices. Key strengths include research into osteoarthritis, back pain, rheumatoid arthritis, psoriatic arthritis, systemic lupus erythematosus, vasculitis, osteoporosis, musculoskeletal injury, ageing and muscle problems. Researchers are represented in industry related projects and involved in government policy development.

Over the past four years, the University of Sydney has funded the Musculoskeletal Alliance through their

Faculty of Medicine and Health. Kolling researchers have been leaders of the alliance within the Faculty of Medicine and Health. Continued alignment with the priorities of the joint venture partners will ensure a focused direction and help maximise partner engagement.

Expanding the institute's focus in this field, while emphasising research quality and collaborations with global peers, will raise the profile of the institute as a world-class research facility. Researchers will benefit from an enhanced research environment and opportunities to build their capacity.

Living with Osteoarthritis

Tom Buttel's story

At 16, Tom Buttel suffered a knee injury while playing rugby, and while that incident happened more than 40 years ago, it continues to impact his life today.

At 60 Tom has advanced osteoarthritis in his right knee after the debilitating condition took hold in his mid-20s. Tom underwent several surgeries over a 15 year period and has now lived with osteoarthritis for many years.

"It has a huge impact on my life, but I have developed the skills to manage the condition and have learnt a great deal about osteoarthritis and self care," Tom said.

"As I'm getting older, my arthritis is naturally not improving, but I'm in a better position to manage the condition and reduce its symptoms.

"The best treatment has been a chronic care program involving clinician/researchers from the Kolling which focuses on losing weight and specialised exercises.

"It's been very helpful for me in recent years and the multi-disciplinary team has been tremendously supportive.

"The program has adopted an evidenced-based approach developed through a series of research initiatives. You really are receiving the best care if it's informed by the latest research.

"I have been fortunate to have been supported by some of the Kolling's impressive clinician/researchers including Professors Hunter, March and Little and I've benefitted from their expertise.

"They are leading experts in their field and that gives you a huge amount of confidence that you are receiving the best care and advice."

Convinced of the importance of evidenced-based care, Tom has taken part in a collection of research trials and continues to support patient advocacy initiatives.

"I feel the more you give, the more you receive. I've met some wonderful people and they've inspired me as a patient to try a little harder.

"Seeing that level of care and dedication from those looking after you encourages you as a patient.

"It can dramatically improve their condition and ultimately quality of life.

"I'm keen to do what I can to support research and help more people benefit from evidenced-based care."



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NEUROSCIENCE AND PAIN PRIORITY RESEARCH AREA

Neuroscience and Pain research within the Kolling has consistently demonstrated outstanding research outcomes and impact for patients and the community. Research in this priority research area receives broad national and international funding, and is published widely.



This priority research area focuses on treatments for pain, psychiatry, cognitive function, dementia, Parkinson's and mitochondrial diseases, along with ageing, frailty, pharmacology, spinal cord injury, head injury, brain cancer, trauma and genetics.

These areas boast a high level of international connectivity, with excellent academic impact and citation rates. The groups demonstrate effective bench to bedside research pipelines, well developed community engagement and emerging levels of industry engagement.

To raise the reputation of the Kolling in neuroscience and pain research, this priority research area will work

to produce distinctiveness in the quality, impact and collaborative nature of its research. By enhancing the connections between the research areas of neuroscience, pain, ageing, pharmacology, psychiatry and rehabilitation, we have created a distinct and impressive collaboration which will distinguish the institute from other research entities. This will support growth within the Kolling, while also strengthening external partnerships.

The research strategy will see further collaboration with the University of Sydney's Brain and Mind Centre and other researchers in the joint venture partnership to achieve common goals, leverage resources and boost impact.

Living with Parkinson's disease

Jo Makamaka's story

As a single mum of four children, Jo Makamaka is juggling many responsibilities. She is not complaining though, just cherishing the opportunity to look after her children and take part in a host of activities which were not always within her reach.

Jo first saw a neurologist in her early-20s in response to a collection of unusual symptoms, but it was not until many years later that she was diagnosed with Parkinson's disease after seeing neurologist and Kolling Institute Executive Director Professor Carolyn Sue.

"I was just relieved to get the diagnosis. There was tremendous pressure with having something wrong, but not knowing what it was. It had a huge emotional toll and was a very challenging time, with plenty of tears," she said.

The diagnosis of Parkinson's disease and tailored treatment approach has transformed Jo's life.

"What this has done for me is give me my life back. It's meant I've been able to be a mum, to take my kids to school, to make lunches and even drive.

"Before, I would never put my hand up for simple activities like helping out at the school canteen, or signing my kids up for weekend sport.

"I couldn't do that as I wasn't reliable, but I'm now able to do things everyone else can do. I can make plans and commit to activities, and be confident I will be able to follow through.

"The medication is not only helping me physically, but mentally as well as I am more confident and less anxious."

Jo is tremendously grateful to Professor Sue, an internationally recognised expert on Parkinson's disease and mitochondrial diseases. Professor Sue runs the largest clinic in Australia for patients with genetic forms of Parkinson's disease, while also driving globally significant research.



I am so appreciative of the care I've had access to. The advice that I received, backed by research, has not only changed my life, but my family's experience as well.

Jo's tailored treatment was informed by the latest research and clinical experience, and she is thankful for the care she has received.

"Professor Sue is really special and her passion for what she does is amazing. Her work is really valuable and I have benefitted greatly from her expertise and experience.

"I have greatly welcomed her understanding, as she carefully listened to what I was going through.

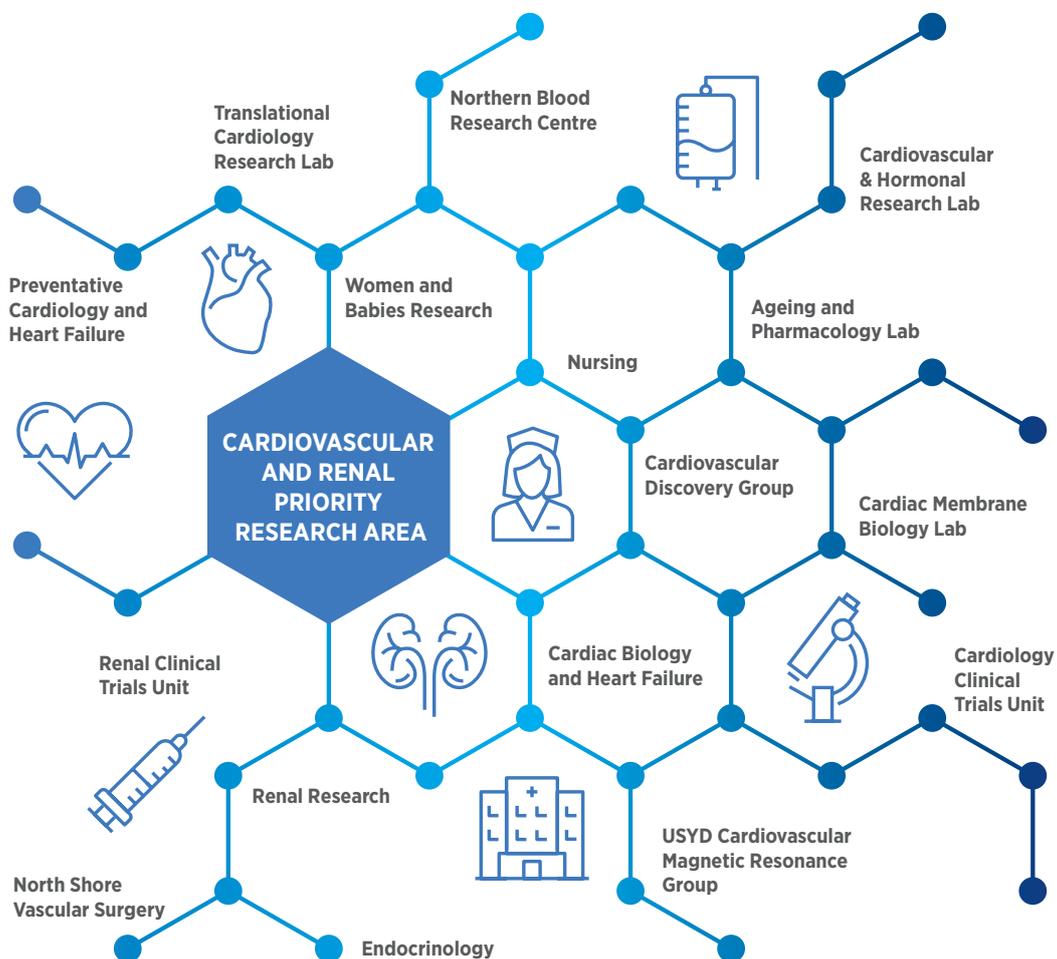
"Everything she does she cares about, putting her heart and soul into it."



CARDIOVASCULAR AND RENAL PRIORITY RESEARCH AREA

Through the development of the Kolling Institute Research Strategy, the benefits of connecting the emerging area of cardiovascular research with the well-established area of renal medicine and associated research, were identified.

Cardiovascular research has developed at the Kolling in recent years following several high-profile recruits, the Federal Government's Mission for Cardiovascular Health and NSW Government investment. The institute is in a strong position to capitalise on government investment in this area.



Researchers within this priority research area are diverse, spanning bench to bedside, to business research. Scientists within the Kolling are closely linked to well-respected clinical teams within Royal North Shore Hospital. In renal medicine, the Kolling has strong connections to industry, with co-authorships a point of distinction from other Australian institutes of medical research. This priority research area receives strong funding support from the National Health and Medical Research Council, industry partnerships and philanthropy.

The research strategy will see closer ties developed with the University of Sydney's Charles Perkins Centre, given the synergies with the translational centre and cardiovascular and diabetes research at the Kolling.

Life after cardiac arrest

Ian Hutchinson's story

Just over two years ago, Ian Hutchinson (Hutch) was cycling with a friend on Sydney's northern beaches, taking part in an activity he regularly enjoyed with his mate. But that morning was to have a life-changing impact, with Hutch suffering a sudden cardiac arrest midway through the ride.

It was only the quick thinking of his friend Don MacKee and a group of bystanders who called triple 0 and immediately began CPR, that saved Hutch's life.

He was treated at Royal North Shore Hospital by interventional cardiologist and Kolling researcher Professor Gemma Figtree, and despite being clinically dead for a remarkable 19 minutes, Hutch survived, recovered and is today fit and healthy.

"I am very lucky to be here and enjoying my life. 91 per cent of people who have an out-of-hospital sudden cardiac arrest don't make it, so I realise how fortunate I am.

"I had never experienced any problems with my heart, I exercised most days and looked after my health, so the cardiac arrest was completely out of the blue. We still don't know the cause.

"I now have an internal cardiac defibrillator in my

chest in case there are any further problems or irregularities. For me it's an insurance policy, giving me confidence to embark on exercise and most of the activities I used to enjoy.

"I am now an advocate for CPR and founded CPRfriendly.org to raise awareness and public access to defibrillators. This is my way of trying to pay it forward and help others."

Hutch says he is indebted to the team at Royal North Shore Hospital and Professor Gemma Figtree, a leading cardiologist, internationally respected researcher and president of the Australian Cardiovascular Alliance.

"Gemma and the team have been excellent all the way through. There's nothing I could fault.

"I not only benefitted from her expertise and experience during those critical moments straight after my sudden cardiac arrest, but two years later Gemma is monitoring my condition and adjusting my medication where necessary.

"It gives you peace of mind and confidence when you have someone like her as your specialist, knowing you are receiving the best care, backed by science and clinical expertise."

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I am very lucky to be here and enjoying my life. 91 per cent of people who have an out-of-hospital sudden cardiac arrest don't make it, so I realise how fortunate I am.



KOLLING RESEARCH ENABLERS

A key component of the Kolling Institute's Research Strategy is the provision of four Kolling research enablers. These will provide research teams with new opportunities, modern platforms and infrastructure, increasing competitiveness, career development and core facility support.

The research enablers will assist Kolling researchers through:

- Collaborative opportunities
- Operational efficiencies
- Transparent and strategic use of resources
- Increased and diversified funding

CLINICAL TRIALS AND TRANSLATION

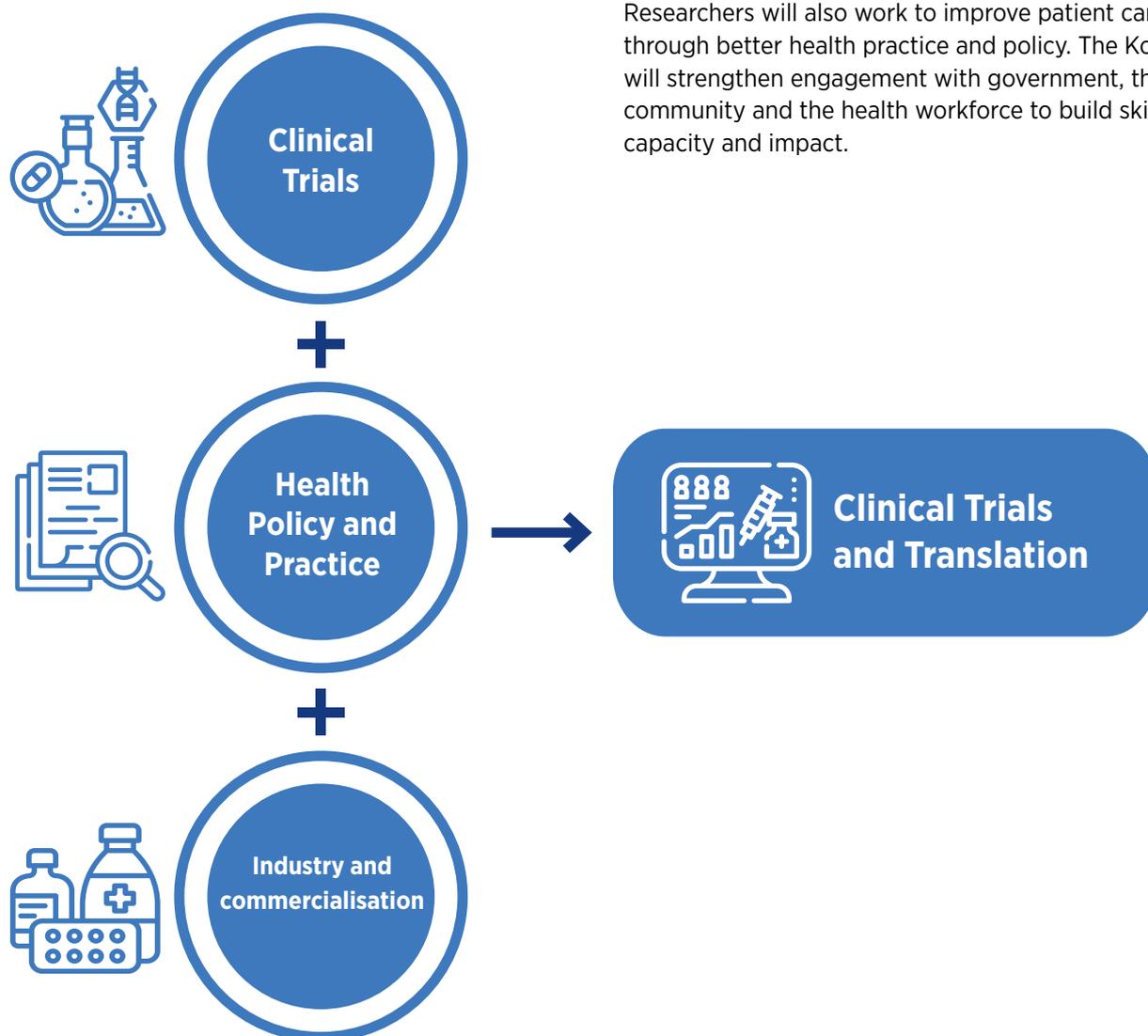
The Kolling is well placed to become a national leader in clinical trials and translational practice.

Located alongside Royal North Shore Hospital, one of Sydney's largest tertiary hospitals, our teams work within the hospital, with extensive access to patient groups and state of the art facilities. Researchers are able to directly incorporate scientific discoveries into clinical practice.

To develop excellence in clinical trials, the institute will streamline processes and administration, while providing additional workforce training. By building our expertise and reputation as a leader in clinical trials, the Kolling will become an attractive partner for industry trials.

The Kolling will target research supporting the development of commercial products and services. Enhancing industry engagement and identifying opportunities for commercialisation will be key to successfully impacting patient care.

Researchers will also work to improve patient care through better health practice and policy. The Kolling will strengthen engagement with government, the community and the health workforce to build skills, capacity and impact.



DATA AND INFORMATICS

The Kolling will strengthen its expertise and build capacity in genomics, bioinformatics, health informatics, statistics and health economics through broader access to appropriate resources, infrastructure and training.

Closer ties will be developed with the University of Sydney's Faculty of Engineering, Core Research Facilities, Centre for Translational Data Science, Sydney Informatics Hub and the Northern Sydney Local Health District.

The Kolling and the Northern Sydney Academic Health Sciences Centre will work to build partnerships and skills training across data and informatics areas.

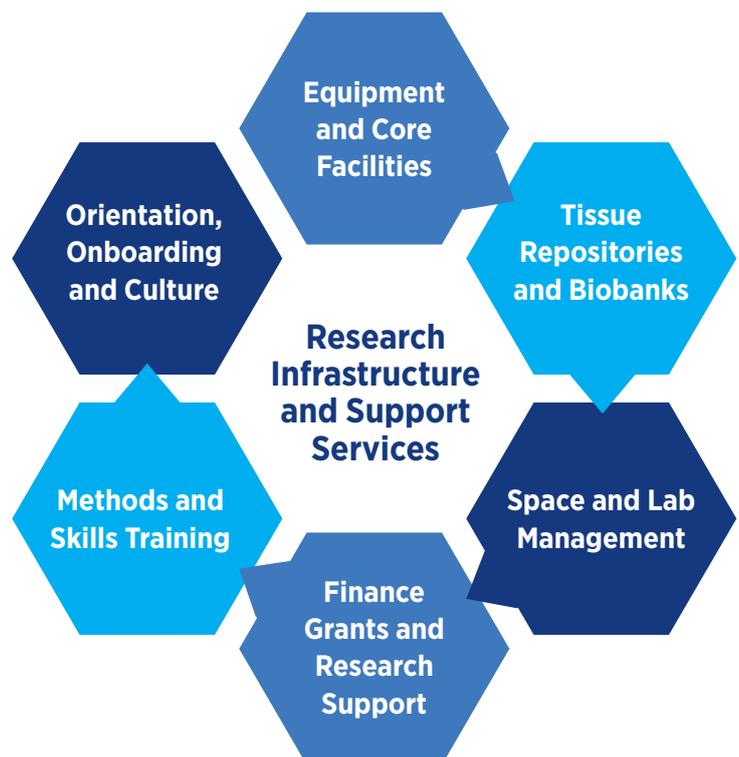
These initiatives will boost research impact through the effective use and analysis of research data.

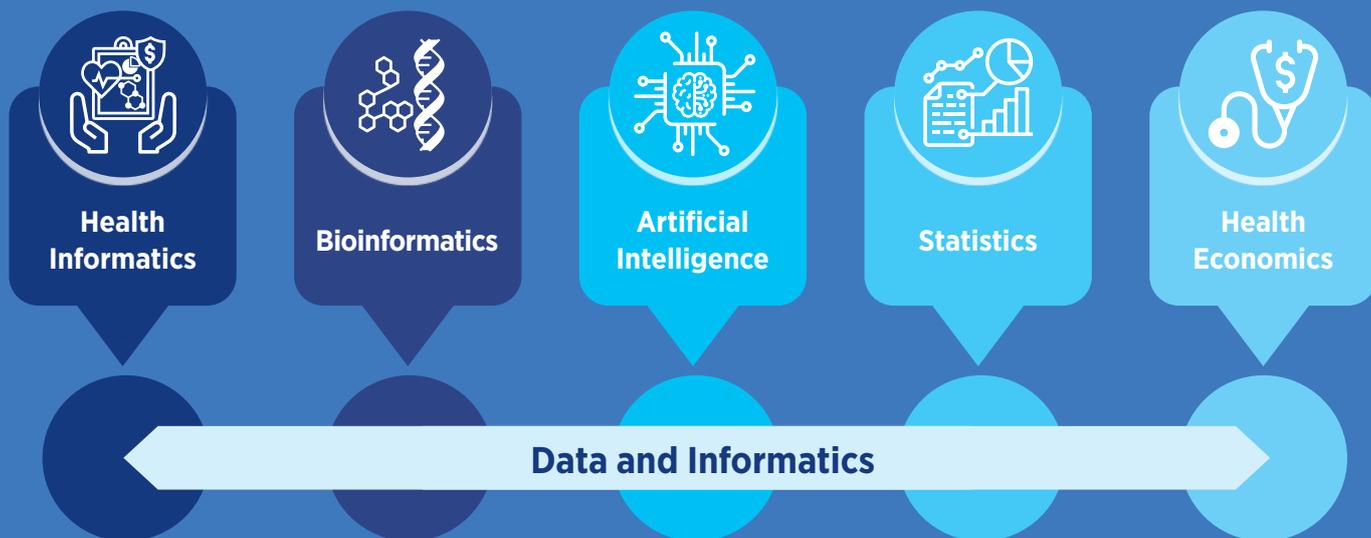
Research Infrastructure and Support Services

This is a broad area addressing the strategic acquisition, allocation and use of equipment, space, and resources to build an environment where researchers are supported and have opportunities for success.

Biobanking, core facilities, grant writing support and skills training are a major focus of this research enabler. An infrastructure roadmap will be developed, focusing on sustainable practices, innovative technology and strong funding strategies.

The Kolling will develop innovative solutions to provide services and support, in partnership with our joint venture partners, enhancing assistance to the priority research areas and the Kolling research enablers.





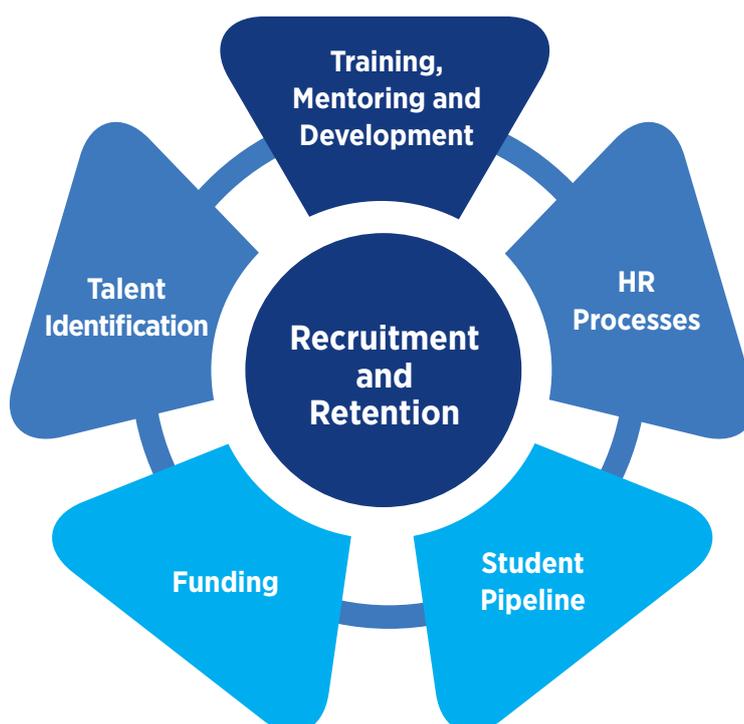
Recruitment and Retention

The Kolling will foster a vibrant and productive research environment, empowering researchers to become world-class leaders. This culture will underpin all recruitment and retention activities, encouraging positivity, productivity, collegiality and collaboration.

The Kolling will work closely with our joint venture partners to streamline recruitment processes to ensure rapid initiation of funded research projects.

Early and mid-career researchers will benefit from focused career and skills development initiatives, including mentoring and coaching. Opportunities will be provided for all staff and researchers to build capacity in their field, develop skills and demonstrate leadership.

Higher degree research students are an integral part of the research environment, A student pipeline will be critical in driving research excellence and productivity. The Kolling will work with the University of Sydney to attract talented students to high performing teams in line with the research strategy.





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