Surgery @ Melbourne

2023-2024 Annual Report

Faculty of Medicine, Dentistry and Health Sciences

Department of Surgery

THE UNIVERSITY OF MELBOURNE

About this Report

This report focusses primarily on Department of Surgery activities in 2023 but also includes notable achievements from the first half of 2024 (1 January – 30 June). Data reported is based on the 2023 calendar year.

Acknowledgement

The University of Melbourne acknowledges and pays respect to the Traditional Custodians of the lands on which our campuses are situated:

- Wurundjeri people and Boon Wurrung people (Parkville, Southbank, Werribee and Burnley campuses)
- Yorta Yorta people (Shepparton and Dookie campuses)
- Dja Dja Wurrung people (Creswick campus).

We also acknowledge and respect our Aboriginal and Torres Strait Islander students, staff, Elders and collaborators, and all Aboriginal and Torres Strait Islander people who visit our campuses from across Australia.

Front cover image: *St Vincent's Hospital Da Vinci Robot Team*

Contents

Message from the Head

It is with great pleasure that I introduce the Annual Report of the University of Melbourne Department of Surgery for the past year. This report encapsulates a year filled with remarkable achievements, unrelenting dedication, and unwavering commitment to advancing the fields of surgery, research, and education. As we reflect upon the past, we also look forward to a future brimming with promise and innovation.

One of the hallmarks of our department is the extensive network of university-affiliated metropolitan hospitals that we are privileged to collaborate with. From the renowned St. Vincent's Hospital, Royal Victorian Eye and Ear Hospital, Royal Melbourne Hospital, Western Hospital, Sunshine Hospital, Northern Hospital, and Austin Hospital, to the Royal Children's Hospital and Peter MacCallum Cancer Centre, these institutions have been steadfast partners in our journey towards excellence in healthcare. The invaluable contributions of these hospitals have allowed us to push the boundaries of surgical knowledge and practice, ultimately benefiting the wider community.

Our success is not only attributed to the tireless efforts of our dedicated faculty but also to the exceptional leadership of the chairs of the six major clinical precincts. These visionary leaders have worked diligently to harness the individual strengths of our department and hospitals, forging a larger collaborative that amplifies our impact on healthcare and surgery. In addition to our clinical prowess, our academic and research strengths across all surgical disciplines have shone brightly. Our faculty's commitment to pushing the boundaries of surgical science has been evident in the significant number of national peer-reviewed grants we have received. These grants are a testament to our ongoing commitment to advancing surgical knowledge and improving patient outcomes.

Furthermore, our governance structure, characterized by balanced representation on hospital executives and broad participation in executive committees, underscores our commitment to inclusivity and shared decision-making. It ensures that all voices are heard, from the most junior to the most senior members, fostering a culture of collaboration and transparency.

As we emerge from the challenges posed by the COVID-19 pandemic, our focus is now firmly set on strategic directions in translational research, intellectual property generation, and commercialization. We are expanding our efforts in hospital services research and are prioritizing value-based care in surgery. These endeavours are the result of the dedicated work of our Research Committee and Innovation and Enterprise Committee, who continue to drive our department towards greater heights.

A critical aspect of our department's strength lies in the close connection between our honorary and paid academic staff. We are particularly proud of our commitment to promoting strong mentorship for students, residents, and trainees by our senior clinical and academic staff. The

University of Melbourne Medical School Building *Michael Kai Photography*

Mentorship and Career Development Committee plays a pivotal role in ensuring that this vital mentorship continues to be a cornerstone of our mission and is integrated into the continuing professional development of our staff.

Additionally, the expansion of clinical trials at multiple sites within our network provides a compelling reason to build platforms that will support these endeavours in the future. These trials serve as a bridge—connecting researchers, clinicians, hospitals, government entities, and industry partners—fostering collaboration for the greater good of patient care and scientific advancement.

Outreach remains a fundamental focus for us. We are actively exploring avenues to promote and contribute to education, training, research, and teaching in remote and regional Australian sites, as well as in underserved third-world communities, with a particular emphasis on regions in Africa. Our commitment to global surgical equity underscores our dedication to making a difference beyond our immediate community.

In navigating the increasingly complex landscape shaped by changing geopolitical imperatives, post-COVID-19 recovery, and rapid technological advancements, we have learned the importance of evolving a mindset that values cross-disciplinary collaboration, reduces duplication, and leverages our strengths. Addressing these challenges requires agile thinking, out-of-the-box creativity, and an entrepreneurial spirit that is stronger than ever before. Our success in this new era will be defined by our ability to remain adaptable and innovative, always seeking new ways to improve patient outcomes and drive impactful research.

In conclusion, I extend my heartfelt congratulations to all members of the Department of Surgery at the University of Melbourne for an outstanding year. Your tireless efforts, remarkable achievements, and resilience in the face of adversity have propelled us to new heights. As we move forward, let us continue to work together, united in our commitment to excellence, innovation, and the betterment of healthcare for all. The future holds immense promise, and I am confident that together, we will continue to write a story of success, impact, and inspiration.

Professor Peter Choong AO

MBBS, MD FRACS, FAOrthA, FAAHMS
Sir Hugh Devine Chair of Surgery
Head, Department of Surgery
Melbourne Medical School

Surgery @ Melbourne

The Department of Surgery (DoS) is based across six precincts of the Melbourne Medical School (Eastern Hill, Parkville, Heidelberg, Northern, Western and Sunshine) and its affiliated hospitals including St Vincent's Hospital, Royal Victorian Eye and Ear Hospital, Royal Melbourne Hospital, Austin Hospital, Western/Sunshine Hospitals, Epworth Hospital and Northern Hospital.

DoS honorary staff also include those from Peter MacCallum Cancer Centre, Royal Children's Hospital and the various Melbourne University affiliated research institutes. DoS is comprised of paid academic surgeons, scientists, professional staff and a large body of honorary academic (clinical and research) staff. An executive committee encompasses representation from all hospitals within the Department.

The Department forms the focus for academic activities in surgery for the University of Melbourne. Members of the Department are involved in research, teaching and training, undergraduate and postgraduate surgical education, wider community engagement and entrepreneurship. Policies established by DoS's governance structures underpin all activities within the Department including:

- Research
- Education and training Mentorship
- Innovation and enterprise
- Appointments and promotions.

Vision

The Department of Surgery strives to be a globally renowned leader in:

- Research that produces the highest quality in patient care outcomes
- Surgical education at all levels from students to master surgeons
- Innovation and enterprise in the conduct of basic and clinical sciences, with a keen focus on translational research.

Purpose

The Department is committed to developing a community of surgeons and researchers who are exploring the mechanisms of disease, translating these into effective treatment strategies and studying the impact of available evidence to ultimately drive the highest levels of value-based care.

Research Impact

These statistics highlight the scope of the Department of Surgery's research capacity and reach for the 2023 calendar year.

549 publications	Over **$7M** in HERDC grant funding	**134** research staff
708 news stories and blog posts	**5915** social media mentions	**2** Doctor of Medical Science students
70 PhD candidates (including completions)	**11** Master of Philosophy (Surgery) students (including completions)	**21** Masters of Surgery students (including completions)

8

Large Grants with a Department of Surgery Chief Investigator
(new grant of $1.2 Million in the reference year)

Changes to output reporting from last year
In 2023, reported publications included all output types collected in the University system, providing a broad overview of all published outputs. Most of the 2024 reported publications focus on research book chapters and peer-reviewed articles affiliated with our Department. This refined reporting approach prioritises peer-reviewed research contributions.

International Collaborations

The cornerstone of the Department of Surgery's global impact and academic excellence lies in our extensive network of international research collaborations. These partnerships transcend borders, fostering the innovation, knowledge exchange, and diversity of thought needed to address the world's current and future medical challenges.

In 2023, we collaborated with over 200 institutions across the globe. This list represents our top research partnerships (those with at least four collaborating papers) ranked by number of publications.

1. Sun Yat-Sen University
2. Cleveland Clinic Foundation
3. Duke University
4. University of Toronto
5. National University of Singapore
6. Southern Medical University
7. Singapore National Eye Center
8. University College London
9. South China University of Technology
10. Guangdong Provincial People's Hospital
11. Medical University of Vienna
12. University of Cambridge
13. University of Washington
14. Houston Methodist
15. Moorfields Eye Hospital NHS Foundation Trust
16. University of Oxford
17. Case Western Reserve University
18. University of Bern
19. Cornell University
20. Guy's and St Thomas' NHS Foundation Trust
21. Shanghai Jiao Tong University
22. McMaster University
23. Columbia University
24. Chinese University of Hong Kong
25. University of Copenhagen
26. Johns Hopkins University
27. Memorial Sloan-Kettering Cancer Center
28. University of California at Los Angeles
29. University of Miami
30. New York Presbyterian Hospital
31. Zhejiang University
32. Hong Kong Polytechnic University
33. University of Otago
34. University of Bonn
35. Institut national de la santé et de la recherche médicale
36. King's College London
37. University of Edinburgh
38. Vita-Salute San Raffaele University
39. University of Bologna
40. Radboud University Nijmegen
41. Karolinska Institutet
42. Harvard University
43. Icahn School of Medicine at Mount Sinai
44. Oregon Health and Science University
45. University of California at San Francisco
46. IRCCS Ospedale San Raffaele
47. Wenzhou Medical University
48. Dongguk University
49. Singapore General Hospital
50. University of Manchester
51. IRCCS Istituto Ortopedico Rizzoli - Bologna
52. Leiden University
53. Lund University
54. Tel Aviv University
55. University of Ottawa
56. Baylor College of Medicine
57. Mayo Clinic Rochester, MN
58. National Institutes of Health
59. Stanford University
60. University of Alabama at Birmingham
61. University of California at Davis
62. Wills Eye Hospital
63. Oxford University Hospitals NHS Foundation Trust
64. University Health Network
65. Massachusetts General Hospital
66. Capital Medical University
67. L.V. Prasad Eye Institute India
68. Sungkyunkwan University
69. Samsung
70. National Cancer Centre
71. Ghent University
72. KU Leuven
73. German Cancer Research Center
74. University of Hamburg
75. Heidelberg University
76. Tampere University
77. Assistance publique – Hôpitaux de Paris
78. Medical Research Council
79. Erasmus University Rotterdam
80. University of Montreal
81. University of British Columbia
82. Northwestern University
83. University of Michigan, Ann Arbor
84. University of Pennsylvania
85. University of Wisconsin-Madison
86. Washington University St. Louis
87. Cedars-Sinai Medical Center
88. University of Texas MD Anderson Cancer Center
89. Universidade Federal de São Paulo
90. Pontificia Universidad Católica de Chile
91. Hadassah University Medical Centre
92. Beijing Institute of Ophthalmology
93. University College London Hospitals NHS Foundation Trust

Research Strategy

Our research strategy guides our pursuit of excellence in surgical research, education, and training, while promoting a culture of collaboration, accountability and inclusiveness.

Guided by the University's values of Collaboration, Teamwork, Compassion, Respect, Integrity, and Accountability, the Department conducted a comprehensive mid-year analysis that gathered 18 research, executive, and academic staff from across the precincts to build on the Department's strategic research direction in alignment with the priorities of the University, Faculty, and Melbourne Medical School.

DoS has identified four priority areas in a strategic shift to ensure the aspirational goals of the Department aligns with our stakeholder and University expectations:

- Be a ***world class leader in surgical research*** spanning translational and fundamental science, clinical studies, education and training, and technological innovation.
- Promote a culture of ***support and inclusiveness*** to surgical research and research training.
- Promote a culture of ***collaboration and excellence*** in surgical research and research training.
- Promote a culture of ***accountability and integrity*** in surgical research and research training.

In setting the scene for the next two years, DoS is building a community of surgeons and researchers to operationalise new strategic research priorities.

EDUCATION
Advances in surgical training; a theory and technology based approach.

Led by Professor Peter Choong, Professor Jennifer Wilkinson-Berka (Head, School of Biomedical Science), Dr. Fiona Reid (Western Health)

RESEARCH
Strengthening collaborations between clinicians, scientists and industry

Led by Professor Keith Martin, Professor Michelle Dowsey and Professor Alice Pébay AM.

SURGERY
Surgery with robotics.

Led by Professor Ben Dixon and Dr Renu Eapen.

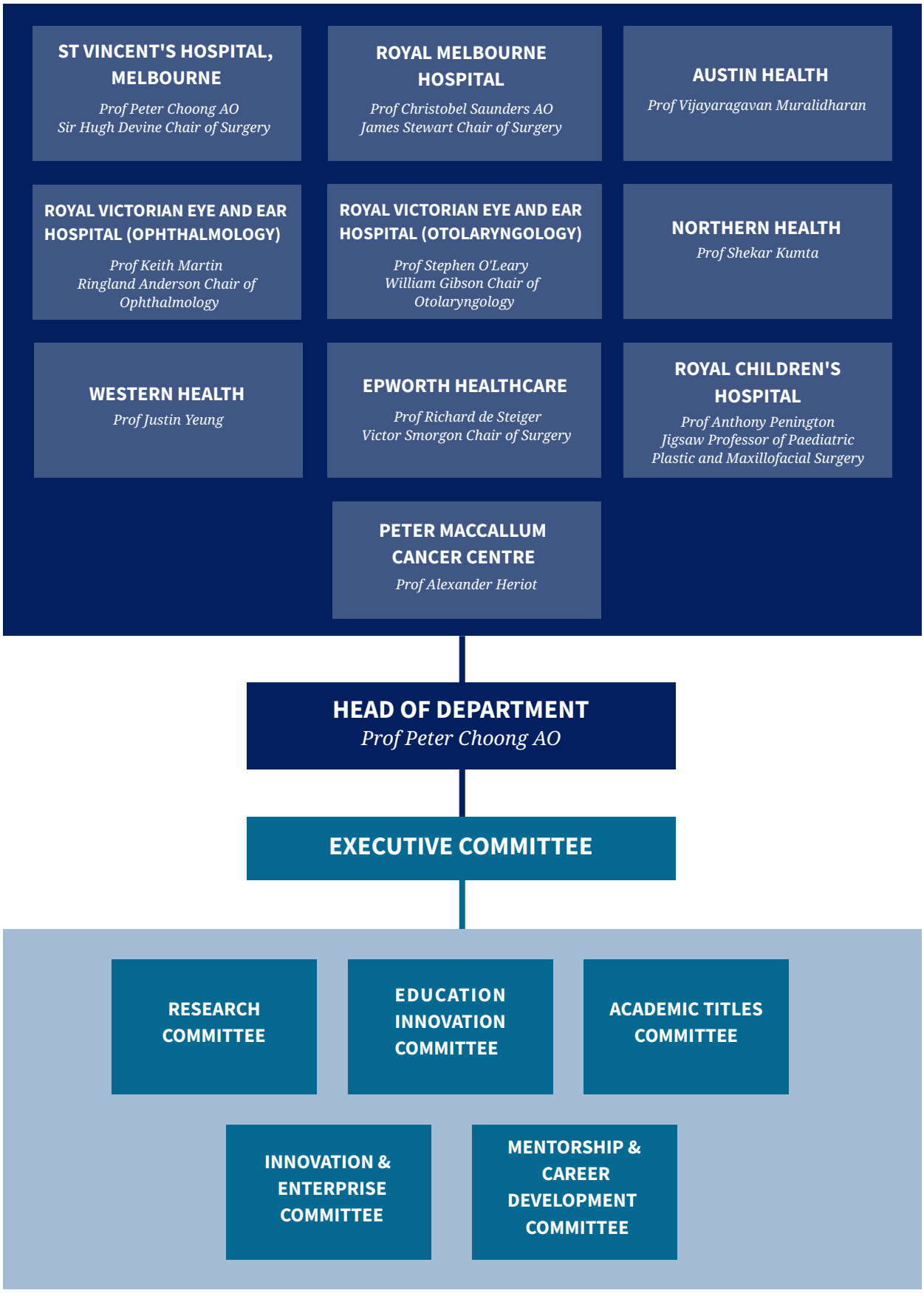
HOSPITAL RELATIONSHIPS
Enabling hospital services across precincts.

Led by Professor Christobel Saunders AO, Professor Justin Yeung and Professor Shekhar Kumta.

Roadmap to Excellence in Surgery

STRATEGIC PRIORITY	OBJECTIVES	ACTIONS
1. Be a world class leader in surgical research, across the realms of translational and fundamental science, clinical studies, education and training, and technological innovation	**1.1** Develop and acquire new knowledge by supporting translational, fundamental, and clinical research **1.2** Communicate the Department's leadership direction effectively to our stakeholders and to the broader community **1.3** Develop a culture of entrepreneurialism and initiative that seeks to translate innovative research into clinical outcomes **1.4** Focus and facilitate the translation of surgical research to ensure improved outcomes at point of care **1.5** Improve internal awareness of research being performed within the Department	**1.1.1** Commit the Department to an annual budget for the support of internal research **1.1.2** Align Departmental grants with the broader research strategy, monitored via a three-yearly review process **1.1.3** Establish a database of skills, biostatistical support, research themes, and infrastructure, accessible to all within the Department **1.1.4** Improve connectivity and communication between geographically disparate precincts across the entire Department **1.1.5** Explore the potential of establishing centralised tissue banks for improved crossdepartmental access to suitable specimens for research **1.2.1** Improve clinician-researcher engagement, especially from current and prospective surgeons **1.2.2** Implement a communication strategy that promotes the Department s achievements internally and externally, as well as the broader community **1.2.3** Invest in a partial FTE (Full Time Employee) communication/social media / marketing professional to help promote Departmental activity **1.3.1** Promote the Innovation Committee as a fulcrum for the generation of ideas that will fuel superior surgical research **1.3.2** Facilitate the advertisement of funding calls to the entire department **1.4.1** Investigate the development of a Departmental Clinical Trial Support **1.5.1** Continue and extend DoSTalks **1.5.2** Organise an annual Departmental Research Showcase Day **1.5.3** Develop internal standardised mechanisms of communication (OneDrive orwebsite) **1.5.4** Develop a regular quarterly newsletter by the Head of Department to inform on the Department's life, fresh directions and upcoming meetings and events
2. Promote a culture of support and inclusiveness to surgical research and research training	**2.1** Foster Departmental programmes which promote career development and support research staff and students **2.2** Enable the Executive Committee and Department to provide support, stability, and continuity to research staff **2.3** Ensure the adherence and respect of the University's codes of conduct	**2.1.1** Develop healthy working relationships between the Mentoring, Promotion, Research, Education, and Innovation Committees **2.1.2** Organise bimonthly meetings of committee chairs to implement inclusive actions for research staff and student development **2.1.3** Develop a Departmental approach to accessing mentors including surgeons and researchers **2.1.4** Research Committee to work closely with Education Committee to facilitate career development **2.1.5** Promote career development activities and information **2.2** Commit the Department to an annual budget for the support of researchers in their last year of funding **2.3** Champion a zero-tolerance policy for actions that transgress the University's codes of conduct
3. Promote a culture of collaboration and excellence in surgical research and research training	**3.1** Provide access to collaboration opportunities **3.2** Demonstrate excellence in research and research training **3.3** Improve connectivity, communication, and awareness within the Department **3.4** Strengthen and develop strategic collaborations, funnelling individual projects towards a more unified Departmental effort	**3.1.1** Commit the Department to the provision of a partial FTE (Full time Employee) to the support of administration related to research activities **3.1.2** Improve visibility of the Department's research and clinical practice internally (See *1.2*) **3.1.3** Encourage engagement with hospitals and external colleagues **3.2.1** Encourage high quality and high impact publications **3.2.2** Provide tailored, personalised support for grant and ethics applications as well as the development of surgical clinical trials **3.2.3** Ensure existing and new infrastructure can support Departmental research activities **3.2.4** Consider Departmental awards that recognise and celebrate excellence in research, collaboration, training, and supervision **3.3** Develop a method of communication that facilitates rapid and efficient dissemination of information between staff across precincts (See *1.2*) **3.4.1** Investigate models for a Departmental tissue banking facility **3.4.2** Develop a universal audit tool for all surgical patients across campuses to vastly increase patient cohorts for surgical studies
4. Promote a culture of accountability and integrity in surgical research and research training	**4.1** Ensure that the University's codes of conducts are respected	**4.1.1** Ensure supervisors, staff and students are aware and appropriately trained for supervision, and delivery of ethical, responsible, and accountable research

Department Structure and Leadership



Governance

Executive Committee

The Executive Committee is the University's leadership group in surgery. With leaders from each precinct reflecting our commitment to equity in leadership, we work strategically and collaboratively to raise the performance and achievements of our charges, and to learn from the needs and changing ethos of our communities to develop a more progressive view to the academic surgical program.

There are five committees chaired by members from the Executive and supported by members from our various clinical campuses. These committees are responsible for promotions and titles, career development and mentorship, teaching and training, research and research training, and innovation and enterprise.

By involving staff from each of the academic surgical departments, these committees aim to strengthen and nurture existing connections with our wider clinical campuses while also building new links to further inform our activities.

We are indebted to Ms Michelle Marcola who as the official Executive Assistant to the Committee, uses her many talents to support the various committee chairs, as well as assist the promotion of the activities of the Department of Surgery (DoS) through the Melbourne Medical School website.

Committee members

Prof Peter Choong AO
(Chair, Executive)
St Vincent's Hospital, Melbourne

Mr Alan Eddy
Department Manager, Surgery

Prof Michelle Dowsey
(Chair, Mentorship & Career Development)
St Vincent's Hospital, Melbourne

Prof Stephen O'Leary
(Chair, Academic Titles)
Otolaryngology

Dr Sudanthi Wijewickrema
Otolaryngology

Prof Keith Martin
(Chair, Innovation & Enterprise)
Ophthalmology

Prof Sebastian King
Royal Children's Hospital

Prof Robyn Guymer AM
Ophthalmology

Prof Christobel Saunders AO
Royal Melbourne Hospital

Prof Alistair Royse
Royal Melbourne Hospital

Prof Justin Yeung
(Chair, Education) Western Health

Dr Fiona Reid
Western Health

A/Prof Marcos Perini
(Chair, Research) Austin Health

Prof Vijayaragavan Muralidharan
Austin Health

Prof Debra Nestel AM
Austin Health

Prof Shekar Kumta
Northern Health

Prof Alexander Heriot
Peter MacCallum Cancer Centre

Dr Renu Eapen
Peter MacCallum Cancer Centre

Mr Daniel You
Department of Surgery Liaison Officer
(Surgical Students Society Melbourne)

Ms Zhou-Ai Wang
President of the SSSM (Surgical Students Society Melbourne) University of Melbourne

Research Committee

The Research Committee serves as an advisory body to the Department of Surgery's Executive Committee, guiding the development and implementation of the department's research strategy. Our focus is on fostering excellence in surgical research through strategic development, integration, and knowledge exchange. The Committee is committed to advancing the department's research agenda, ensuring that it aligns with both academic and clinical objectives.

VISION AND GOALS:

As part of our strategic framework, the Research Committee aims to:

1. **Enhance Research Support:** We are committed to increasing the resources available for research within the department. This includes facilitating greater access to research opportunities for all faculty members and fostering a supportive environment for innovative research initiatives.
2. **Promote Interdisciplinary Collaboration:** We actively seek to bridge research hubs within and beyond the department, creating a cohesive network that fosters collaboration across disciplines. This includes the management of the annual DoS Research Grant Scheme, which supports interdisciplinary teams in tackling translational problems in surgery. The grants not only encourage innovation but also promote high-quality research, collaboration, mentorship, and team diversity. Our goal is to provide the necessary support to enable successful applications for major grants from leading bodies such as the MRFF and NHMRC.
3. **Showcase Research Excellence:** The Committee organizes the annual DoS Research Showcase, a platform for sharing and celebrating research achievements across the department and beyond. This event allows each research precinct to highlight its contributions and impact.
4. **Facilitate Knowledge Sharing:** Through initiatives like the DoSTalks webinar series, the Committee promotes the dissemination of research findings and the sharing of knowledge across the department. These six-weekly webinars focus on showcasing exceptional research while ensuring gender equity, diversity, and equitable representation.
5. **Strategic Planning:** In 2022, the Committee organized a Research Strategy Day, bringing together key stakeholders to unify the department's research vision. This initiative allowed us to clearly define our research priorities and set a course for the future.

2025 & BEYOND:

As we look to the future, the Research Committee will continue to provide strategic input to the Department Executive Committee, with a focus on:

- **Sustaining Excellence and Innovation:** We will monitor research capacity and capabilities, identify areas for improvement, and propose solutions to support the department's pursuit of research excellence.
- **Fostering a Collaborative Culture:** The Committee aims to strengthen a culture of collaboration, bridging fundamental, clinical, and translational research. Mentoring early and mid-career researchers will remain central to our efforts, ensuring that we retain and cultivate research talent.

Committee members

A/Prof Marcos Perini
(Chair) Austin Health

Dr James Dimou
Royal Melbourne Hospital

Tayla Razmovski
Otalaryngoloy- University of Melbourne

Prof Justin Yeung
Western Health

Dr Russell Hodgson
Northern Health

Dr Serena Dunchi
St Vincent's Hospital, Melbourne

A/Prof Sina Babazadeh
(Early Career Representative)
St Vincent's Hospital, Melbourne

Dr Carla Abbott
(Early Career Representative)
Ophthalmology

Zoe Pasvanis
(Student Representative) University of Melbourne

Key Activities for 2025:

- **Administration of the DoS Research Grant Scheme:** We will continue to manage this critical initiative, supporting innovative and impactful research projects.
- **Organization of the DoS Annual Showcase:** This event will remain a cornerstone of our efforts to promote and celebrate research achievements within the department.
- **Continuation of the DoSTalks Webinar Series:** We will maintain this platform for knowledge sharing and community building.
- **Support for DoS Researchers:** The Committee will explore additional ways to support our researchers, ensuring they have the resources and opportunities needed to thrive.

This proposal reflects our commitment to advancing the Department of Surgery's research agenda, promoting excellence, and fostering a collaborative and innovative research environment.

Education Innovation Committee

It has been an exciting year for the Education Innovation Committee. We have been involved in several important projects over the last 12 months that have helped support both medical students and early career researchers at Western Precinct.

We are currently engaged in a project to determine the skills that surgical interns require to help them practice safely and competently in their day-to-day clinical practice. Dr Matthew Wei and Dr Howard Tang, both Research Fellows at the Western Precinct, are interviewing senior medical students, current interns, residents, intern supervisors and senior nurses across several University of Melbourne hospital precincts. With these results, we hope to better shape undergraduate and intern training in the future.

In addition, Professor Shekhar Kumta (Northern Precinct Lead) and Professor Justin Yeung (Western Precinct Lead) are planning a joint surgical skills day for medical students to learn advanced surgical management across several disciplines including general, colorectal and orthopaedic surgery, as well as critical care. This will be the first cross-precinct surgical skills activity focused on medical students and we hope that this will be the first of many more initiatives.

Finally, the Education Innovation Committee have been working with the Surgical Students' Society at the University of Melbourne to run our annual Surgical Anatomy Poster Competition and Surgical Careers Day. These have previously been very well attended events which help support students in their future surgical career through mentorship and networking with academic surgeons and future clinical supervisors.

Committee members

Prof Justin Yeung
(Chair) Western Health

Dr Suheb Ahmed
Northern Health

Dr Yasser Arafat
Western Health

Prof Paul Baird
Ophthalmology

Mr Alan Eddy
Melbourne Medical School

Dr Thomas Edwards
Ophthalmology

Dr Jordan Hamilton
Royal Melbourne Hospital

Dr Chiu Kang
Northern Health

Prof Shekhar Kumta
Northern Health

Dr Kirstie MacGill
Royal Children's Hospital

Dr James May
Royal Melbourne Hospital

Dr Krinal Mori
Northern Health

Dr Sean Stevens
Austin Health

Dr Emma Tully
Royal Melbourne Hospital

Dr Matthew Wei
Western Health

Mr Karim Sadik
Surgical Students' Society of Melbourne

Mentorship & Career Development Committee

The Mentorship and Career Development Committee has achieved significant success in advancing the professional growth of academic clinicians. Its primary mission is to assist clinicians in navigating the complex processes of academic progression while supporting their individual career goals. The committee plays a crucial role in helping both professional and academic clinicians achieve promotions and career advancement through targeted programs and guidance.

One of the most impactful initiatives has been the series of half-day workshops led by **Professor Michelle Dowsey**. These workshops have focused on helping clinicians build strong and persuasive applications for academic promotion. Designed to target promotion levels C, D, and E, the sessions have garnered considerable interest from staff, with a noteworthy participation of women surgeons, comprising nearly half of the attendees. This highlights the committee's commitment to fostering diversity and gender equity in academic medicine. Encouraged by the success of these sessions, the committee plans to expand its approach by hosting precinct-based workshops, bringing these opportunities directly to clinicians at their respective home sites.

Another key achievement lies in the committee's efforts to enhance mentorship resources. **Associate Professor Sina Babazadeh** has expertly curated the mentorship section of the committee's website. This resource serves as a dynamic platform, offering access to valuable content, including web interviews with notable speakers. Babazadeh has invested significant time in identifying and recruiting speakers who can offer meaningful insights, further enriching the mentorship experience. This web-based component ensures easy access to diverse perspectives and best practices for clinicians at all stages of their careers.

Looking ahead, the committee intends to broaden its focus by increasing the representation of various surgical disciplines in its initiatives. Additionally, the committee has actively engaged students and pre-vocational trainees to better understand the types of mentorship and interview formats that resonate most with these groups. Through continuous feedback and a forward-thinking approach, the Mentorship and Career Development Committee is well-positioned to further elevate academic and professional development opportunities across the clinical community.

More information on this initiative

Committee members

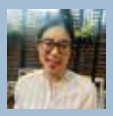
Prof Michelle Dowsey
(Chair) St Vincent's Hospital, Melbourne

Prof Debra Nestel AM
Austin Health

Dr Fiona Reid
Western Health

A/Prof Lih-Ming Wong
St Vincent's Hospital, Melbourne

A/Prof Sina Babazadeh
St Vincent's Hospital, Melbourne



Dr Eunice Lee
Austin Health

A /Prof Jean-Marc Gerard
Otolaryngology

Prof Peter Choong AO
St Vincent's Hospital, Melbourne

Alice Chen
Student representative

Jasmin Elkin
Student representative

Innovation & Enterprise Committee

The function of the Innovation and Enterprise Committee is to encourage DoS researchers to think, where appropriate, about the possible commercialisation of their research at an early stage to help maximise the real-world impact of their work.

We aim to do this through a combination of 'in-house' informal advice from those with relevant experience and by providing guidance towards appropriate University resources as required. We offer help with questions such as where to get the initial seed funding to push an idea along and how best to pitch your technology to investors. We also liaise closely with Professor Peter Choong AO in his role as Associate Dean for Innovation at Faculty level.

The Innovation & Enterprise Committee also offers DoS researchers an opportunity to gain advice on how to navigate the labyrinth of IP protection and think about spin-off tech companies and business development. We will offer teams successful in departmental research competitions the chance to pitch their idea to the Committee and hopefully gain some useful feedback. We will also be offering a series of talks and panel discussions at upcoming DoS meetings.

Committee members

Professor Keith Martin
(Chair) Ophthalmology

A/Prof Claudia Di Bella
St Vincent's Hospital, Melbourne

Dr James Dimou
Royal Melbourne Hospital

A/Prof Andrew Morokoff
Royal Melbourne Hospital

Prof Stephen O'Leary
Otolaryngology

A/Prof Raymond Wong
Ophthalmology

Academic Titles Committee

The Academic Titles Committee is chaired by Professor Stephen O'Leary (William Gibson Chair of Otolaryngology) based at the Royal Victorian Eye and Ear Hospital. The remit for this Committee relates to both new and renewal appointments for Honoraries and paid promotions at Levels D and E.

Applications (together with a letter of support from the relevant Precinct Lead) are reviewed by the Committee prior to approval by the Head of Department. The Committee advise the Head on whether the application is likely to meet the University's requirements for appointment. If so, the application progresses through the University processes. If not, advice is given to applicants on how to improve their track record to meet the promotion criteria.

Committee members

Prof Stephen O'Leary
(Chair) Otolaryngology

Prof Kate Drummond AM
Royal Melbourne Hospital

Prof Anthony Penington
Royal Children's Hospital

Prof Alistair Royse
Royal Melbourne Hospital

Prof Robyn Guymer AM
Ophthalmology

Teaching and Learning

The Department of Surgery (DoS) is based across the seven precincts of Melbourne Medical School – all at key hospital sites – as well as conducting academic activities in surgery at other hospitals. The Department has a strong emphasis on teaching and research, with educational research gaining increasing importance within the departmental philosophy.

The Melbourne Model's curriculum combines academic breadth with disciplinary depth to strategically reposition the University in an increasingly globalised higher education framework. The University prepares its students to enter a world marked by rapid change, where graduates must possess the applicable knowledge, and flexible and adaptable skills, to succeed.

There is a vibrant and highly productive research community within the University and more specifically in the Faculty of Medicine, Dentistry and Health Sciences and its partner institutions. This provides tremendous scope and opportunity to develop multidisciplinary collaborations ranging from basic science discovery, clinical epidemiology and hospital services research to health economics, translational research, and device and med-tech development.

Students at the St Vincent's Hospital Registrar Ready Day

St Vincent's Hospital, Melbourne

Message

Professor Peter Choong AO
Sir Hugh Devine Professor of Surgery
Head of Department of Surgery

This past year has been a period of remarkable progress for our department, where we have consistently led in surgical care, research, education, training, and advocacy.

Our steadfast dedication to innovation, collaboration, entrepreneurship, and social responsibility has guided us as we adapt to new developments in surgical techniques and healthcare. Central to our success are the core pillars of research, teaching, training, and advocacy, which form the foundation of our reputation as a centre of excellence in surgery.

Our multidisciplinary team spans a wide range of specialties, including Orthopaedics, Plastics and Reconstructive Surgery, Urology, Thoracic Surgery, Upper Gastrointestinal and Hepatobiliary, Colorectal Surgery, Neurosurgery, ENT & Head and Neck Surgery, Cardiothoracic Surgery, Breast Surgery, and Endocrine Surgery. Through close collaboration, these specialties have driven forward advancements in surgical practice and knowledge.

One of our greatest accomplishments is our continuous commitment to advancing surgical education and research. Our surgeons and trainees are engaged in various research programs, including PhD and Doctor of Medical Science studies, and provide guidance to MD student research projects. This focus on scholarly activities not only deepens our expertise but also enriches the global medical community.

Our partnerships with the St. Vincent's Surgical Students Society and the St. Vincent's PreSET Society have been instrumental in nurturing the next generation of surgeons. By fostering young talent, we are ensuring the continuity of our legacy of patient-centred care and surgical innovation.

A key aspect of our department's progress is our close and dynamic partnership with the Aikenhead Centre for Medical Discovery (ACMD). Here, our surgeons and researchers work together to develop cutting-edge engineering solutions for human disease. This collaboration merges clinical insights with technological innovation, enabling us to address some of the most pressing healthcare challenges. By combining surgical expertise with advancements in medical engineering, our partnership with ACMD is paving the way for transformative therapies and devices that can significantly improve patient care.

In tandem with these scientific advances, there has been a notable growth in the entrepreneurial mindset within our department. We are increasingly focused on translating research into real-world applications that have a direct impact on patient outcomes. This emphasis on practical innovation ensures that our discoveries extend beyond the laboratory and reach the patients who can benefit most.

Moreover, we recognize the immense potential of artificial intelligence in healthcare. Our commitment to leveraging AI, big data, and high-performance computing is integral to addressing complex health challenges and enhancing service delivery. These technologies offer opportunities to improve diagnostic precision, optimize treatment plans, and enable personalized patient care. As we move forward, we are eager to engage with the principles of the Fourth Industrial Revolution (IR 4.0), understanding that adopting these advances is crucial for maintaining our leadership in surgical innovation and ensuring that our services remain at the cutting edge.

I am also pleased to report our notable successes in research and innovation. The acquisition of significant MRFF grants and industry-supported investigator-led grants highlights the importance and impact of our work. These achievements underscore our determination to push the limits of surgical science and translate our discoveries into practical improvements for patient care.

As we look toward the future, our dedication to social responsibility remains strong. We are committed to outreach initiatives, focusing on education, training, and support for surgeons from underserved communities. This work reflects our belief that excellence in surgery should benefit all, regardless of background or location.

A key initiative has been the establishment of the St. Vincent's Academy of Surgery, which connects our honorary and full-time university staff. This platform fosters the sharing of knowledge and expertise between our esteemed honorary members and core faculty, enriching our collaborative efforts and elevating the quality of both surgical education and patient care.

In closing, I extend my deepest appreciation to every member of our department, our partners, and supporters for their invaluable contributions. Together, we are shaping the future of surgery, improving patient outcomes, and continuing to champion excellence in our field.

PRECINCT OVERVIEW

SIR HUGH DEVINE CHAIR OF SURGERY
Prof Peter Choong AO

EXECUTIVE ASSISTANT
Toni Ardino

RESEARCH

CLINICAL MUSCULOSKELETAL
Prof Michelle Dowsey
(Deputy Academic Head)
A/Prof Sina Babazadeh
Emma Choong
Angela Cochrane
Dr Tilini Gunatillake
Dr Elizabeth Nelson
Dr Penny O'Brien
Ryan Prehn
Dr Chris Schiling
Dr Tim Spelman
Dr Jarrad Stevens
Sharmala Thuraisingam
Students

NEUROSURGERY
Mr Paul Smith
(Head of Unit)
Mr Kristian Bulluss
Mr Rana Dhillon
Mr Terence Tan
Mr Fahmi Jalil
Ms Emma Priest
Ms Jane Staker

UROLOGY
A/Prof Lih-Ming Wong
Mr Alexandar Christov Dr
Dan Lenaghan
Dr Kapil Sethi
Dr Jeremy Goad
Dr Anthony Ta

COLORECTAL
Dr James Keck
Dr Rodney Woods Dr
Michael Johnston
Dr Eugene Ong
Dr Richard Brouwer
Dr Cori Behrenbruch
Dr Glen Guerra
Dr Suat Ng

VASCULAR
Dr Leonard Shan

CARDIOTHORACIC/ SURGICAL ONCOLOGY
Dr Andrew Newcomb
A/Prof Gavin Wright
Mr Naveed Alam
Dr Jazmin Eckhaus

EAR, NOSE & THROAT, HEAD AND NECK
A/Prof Ben Dixon
Dr Richard Kennedy
A/Prof Bernard Lyons
Dr Timothy Baker
Dr Michael Borschmann
Dr Benjamin Cook
Dr Sam Flatman
Dr Lisa Wun
Dr Eric Levi
Dr Mark Guirguis
Dr Dan McCormick
Dr Tim Mclean
A/Prof Joanne Rimmer
A/Prof Ian Hewson
Dr Eliza Tweddle

HPB AND UPPER GI
Mr Simon Banting
Mr Michael Hii
Mr Matthew Read
Dr Lynn Chong
Dr Henry Badgery
Dr Rosalind Walmsley Eunice Lim
Stefanie Navaratnam
Students

CARTILAGE REGENERATION
A/Prof Claudia Di Bella
Dr Serena Duchi
Dr Carmine Onofrillo
Dr Lilith Caballero-Aguilar Students

BREAST SURGERY
A/Prof Caroline Baker
Dr Jocelyn Lippey
Dr Christina Foley
Dr Leah Marley
Dr Matthew Ng
Suraya Roslan

ENDOCRINE SURGERY
Mr Stephen Farrell
Dr Jane Harding
Dr Jason Tan
Dr Tracey Lam
Dr Matthew Ng
Suraya Roslan

Key staff

Prof Peter Choong AO
Sir Hugh Devine Chair of Surgery

Toni Ardino
Executive Assistant

Dr Lilith Caballero-Aguilar
Dr Anton Allen
A/Prof Sina Babazadeh
Annabelle Choong
Angela Cochrane
A/Prof Claudia Di Bella
Prof Michelle Dowsey
Dr Serena Duchi
Elise Naufal
Dr Elizabeth Nelson
Dr Penny O'Brien
Dr Carmine Onofrillo
Lauren Patten
Ryan Prehn
Sid Rele
Dr Chris Schilling
Cade Shadbolt
Dr Leonard Shan
Dr Timothy Spelman
Dr Jarrad Stevens
Dr Sharmala Thuraisingam
Dr Camilla Tuttle
Dr Cynthia Wong
A/Prof Lih-Ming Wong

88
publications

25
research staff

21
research students

Clinical Musculoskeletal Research

ARISTOCRAT

The ARISTOCRAT research program is a collaborative research program that spans Victoria and New South Wales. Prof. Peter Choong leads the ARISTOCRAT program within the Department of Surgery at the University of Melbourne.

Prof Choong has bought together a consortium of experts from the University of Wollongong, Swinburne University, Monash University, La Trobe University, Royal Prince Alfred Hospital, St Vincent's Hospital and Akenhead Centre for Medical Discovery. Together his team brings together a diverse range of expertise, combining engineering, materials science, biology, consumer engagement and clinical knowledge to create innovative solutions for cartilage-related disorders, with a specific focus on the knee and ear.

The goal of the program is to develop new treatments for cartilage disorders. For the ear our research is targeting a better understanding of how to regenerate and print cartilage that is crucial for conditions like microtia. For the knee, the focus is on repairing hyaline cartilage early in a patient's life, to prevent the onset of osteoarthritis in later life.

The knee cartilage research is currently at a Technology Readiness Level (TRL) of 5, meaning that the technology has been validated in a relevant environment and is moving closer to practical application. By the end of this program, it is expected that the knee cartilage technology will reach a TRL 7 where it will be ready for large clinical trials. The ear cartilage research is at an earlier stage, TRL 2, this means that we are still developing the basic concepts of the treatment. At the end of the 5-year program the ear program is expected to reach a TRL 5 bringing the treatment closer to practical use. ARISTOCRAT aims to address serious cartilage disorders that impacts many lives.

MELBOURNE UNI-TRAMaganza

News Highlights

ARISTOCRAT starts its pre-clinical trial

In March of 2024, team members from ARISTOCRAT flew to Adelaide to work with our colleagues at SAHMRI to start our pre-clinical trial. This trial will assess the safety and efficacy of our technology to treat cartilage damage. In preparation for the pre-clinical trial, we practiced the procedure through a series of mock surgeries, where we tested and retested, not only our technology but the instructions that we would provide to the users. These mock surgeries helped us refine our procedures and the benefit of our mock surgeries was observed in our pre-clinical trial, where the surgeries flowed seamlessly. This is a 6-month trial that will end in late October. This is a major milestone for the ARISTOCRAT program as the findings of this trial will directly impact our next steps, which includes our first-in-human trials.

PCT Lodged:

We've lodged a PCT (Patent Cooperation Treaty) application to protect our surgical technology to treat cartilage damage. This application helps safeguard our innovations internationally, giving us the option to pursue patents in multiple countries later down the track. By lodging the PCT we are ensuring that our innovation remain secure while we continue to develop them. This step is essential to protect the value of our work, and we wouldn't have been able to do this without the help of Dr. Grace Chan and Mr. Nav Jaggi from the Research Innovation and Commercialization office at the University of Melbourne.

News Highlights (cont)

Quality Management System:

Our material scientists have implemented a Quality Management System (QMS) to produce our patented material. The QMS is a major milestone for ARISTOCRAT as it will ensure the material we develop is consistent, safe and reliable. It establishes clear protocols for production, testing and documentation of the material which helps maintain high standards throughout the development process. This step is essential to move from the development phase to clinical trials. Furthermore, by adhering to a QMS we can meet regulatory standards, and gain industry certification. The QMS system will also allow for continuous improvement, ensuring that the material remains effective over time.

Consumer Engagement:

A key highlight for ARISTOCRAT is hearing from and implementing the findings of our consumer engagement team who conduct interviews with potential users of our technology and the broader community. These conversations help us understand the real needs, concerns and preferences of the people who will ultimately benefit from our technology. By listening to their experiences, we can design more practical and user-friendly solutions to treat cartilage disorders. This feedback has directly shaped our development process, ensuring that our innovations meet the needs of not just the user (Surgeon) but also the patient who ultimately receives our therapies. Our consumer engagement team have done considerably working in engaging and conducting interviews with the broader community and are currently preparing publications to disseminate our findings.

TRAM:

In 2023 members of the ARISTOCRAT team participated in Translating Research at Melbourne (TRAM) Track, which cultivates in the TRAMAGANZA showcase. The program runs for 8-weeks and the team, working under ARISTOCRAT's commercial entity Axcelda interviewed relevant stakeholders for our surgical technology. In November we presented at the TRAMAGANZA which required a 90 second pitch to a large audience and a booth in the Exhibition Hall. TRAM taught us the difference between academic research and research and development, for commercialization as well as improved our pitching skills.

MELBOURNE UNI-TRAMaganza

MELBOURNE UNI-TRAMaganza

MELBOURNE UNI-TRAMaganza

Clinical Musculoskeletal Research (cont)

TOP HIGHLIGHTS:

- Multi-collaboration grant: **Prof. Michelle Dowsey** has been awarded a multi-centre investigator-initiated research grant for a significant drug trial titled Effect of Subcutaneous Tirzepatide Once-Weekly in Patients With Obesity and Knee Osteoarthritis (STOP KNEE-OA). This interventional, randomized, double-blinded, placebo-controlled trial aims to evaluate the efficacy of tirzepatide, a new drug, in individuals with obesity and knee osteoarthritis.

  The primary goal is to determine whether tirzepatide can reduce the number of participants who eventually require knee replacement surgery. Over a period of 72 weeks, participants will receive weekly injections of either tirzepatide or a placebo. The trial plans to recruit 352 participants across various hospitals in Victoria.

- Fellowship: **A/Prof. Sina Babazadeh** has been awarded the prestigious ABC Travelling Fellowship for 2024. Every two years, this fellowship selects one member of the Australian Orthopaedic Association for a five-week tour of orthopaedic centres in North America. The Fellowship offers an exceptional academic experience and is highly regarded by all participating orthopaedic associations. Sina travelled across North America for six weeks, from May to July this year, forming collaborations and friendships within the international orthopaedic community. This experience also provided an opportunity to shift focus, adopt an enquiring mindset, self-reflect, and learn from other leaders. Sina has returned refreshed, with new priorities and a positive development plan to drive change

- Publication: A paper by **Dr. Yushy Zhou** and colleagues, titled *"Predictive Tool Use and Willingness for Surgery in Patients with Knee Osteoarthritis,"* was published in JAMA Open Network. This study explored the impact of an online predictive tool on patients' willingness to undergo total knee arthroplasty for knee osteoarthritis (OA). The randomized clinical trial involved 211 patients and compared the use of the predictive tool with standard treatment practices. The findings indicated that the use of the predictive tool did not significantly alter patient willingness to undergo surgery six months after its use. This study highlights the complexity of decision-making in knee osteoarthritis treatment and suggests that predictive tools alone may not be sufficient to influence patient decisions. However, predictive tools may still improve health outcomes for patients with knee OA, and additional research is needed to optimize patient decision-making in this context.

SUMMARY FOR EACH RESEARCH THEME:

Optimising informed consent and recruitment to clinical trials

Prof Michelle Dowsey and Prof Peter Choong AO

Low recruitment is common in clinical trials, with only one third meeting their target sample size. Failing to meet this target, leaves trials underpowered and at risk of abandonment without generating valuable knowledge. This not only represents a significant waste of funds, it also raises ethical concerns. The problem is amplified in placebo-controlled surgical trials, where patients can be reluctant to undergo an anaesthetic and skin incision for no potential therapeutic benefit. Difficulties understanding research concepts may also leave many patients unwilling to participate. Previous research suggests that various consent interventions can help improve informed consent, including video animation. Compared to traditional written information, informed consent supported by video animation has been demonstrated to enhance patients understanding and overall satisfaction with research.

In this Department of Surgery Translational Research Grant, the first study aimed to determine if participant recruitment in a hypothetical placebo-controlled surgical trial could be improved by using a visual animation and consent form, compared with using written patient information and consent forms alone. To answer this question, this research involved a randomised feasibility trial. The visual animation consisted of a 6-minute long video explaining a hypothetical trial based on previously published placebo-controlled trials of arthroscopic subacromial decompression (ASD).

The study recruited 69 patients who had consented to undergo, or who had already had, upper limb orthopaedic surgery at St Vincent's Hospital. Despite the innovative approach, the study found no significant increase in willingness to consent among those who viewed the animation compared to those who received only written information. The overall willingness to participate was moderate, with 53% of participants expressing a positive inclination towards enrolment. Key factors influencing participation included understanding of trial concepts and perceptions of the trial's benefits and risks.

In another study exploring clinical trial recruitment issues, a scoping review was conducted to examine gender-based differences in clinical trial participation. This research identified that factors such as socioeconomic status, ethnicity, and health condition play significant roles. Gender-specific concerns, like 'concern for self,' were found to influence participation rates, but the relationship between gender and willingness to participate is complex and moderated by various factors.

Together, these studies highlight the need for effective recruitment strategies and a nuanced understanding of participant motivations. While visual animations alone may not significantly enhance recruitment, exploring diverse strategies and addressing specific factors affecting willingness to participate, including gender-based differences, is crucial for optimizing trial engagement and ensuring robust participation in clinical research.

Smart Choices

A/Prof Chris Schilling and Prof Michelle Dowsey

In 2022 The SMART Choice tool, an online prognostic tool, was developed to predict a patient's likelihood of benefiting from TKA surgery based on thousands of previous surgeries recorded in the SMART Registry.

Two hundred people who were considering surgery due to osteoarthritis were recruited, with half randomly provided access to the tool. Results from the trial were promising and showed that using the SMART Choice tool altered patients' willingness and preference for surgery, and that those patients found to be least likely to benefit from surgery we more than likely to prefer non-surgical treatment options.

The research team is now following up trial participants to see if, since using the SMART Choice tool, they have gone on to have a TKA, thus providing a link between using the tool and surgery utilisation.

Together with health insurer HCF, the HCF Research Foundation and the Research, Innovation and Commercialisation (RIC) team at The University of Melbourne we have commenced the process for potential commercialisation of the tool. We are currently working to improve the language, look and feel of the tool, and assessing its requirement for TGA regulation.

Consumer And Community Involvement

Dr Elizabeth Nelson, Prof Michelle Dowsey, Cade Shadbolt, Bob Eden and Marion Glanville Hearst (Consumers)

In orthopaedic research in Victoria, there are no formal programs that allow researchers to integrate consumer experiences into research project design and implementation. Involving people with lived experience of a disease in designing recruitment and retention strategies has been shown to significantly benefit research outcomes.

To address this gap, we have established a formal Consumer and Community Involvement Program to guide the research conducted at the research centre. Originally developed by Prof Dowsey, this has since informed several national and institutional consumer involvement programs. The program works at the ground level by embedding interested consumers early in the research cycle, ensuring that our research outcomes align with community expectations and maintain relevance. Consumers provide ongoing input into the trial design, co-design formal recruitment and retention strategies, and contribute to the development of dissemination strategies. Additionally, consumers benefit from this program by personally expanding their knowledge of the subject matter, building community awareness, and advocating for research on key issues in osteoarthritis.

Since its inception with a cohort of 11 in 2021, the program has expanded to 28 consumers in 2024, in partnership with Musculoskeletal Health Australia. Participants are enrolled into the program and can choose to engage in various research activities, categorized into Tiers based on the level of involvement required. The higher the Tier, the more involvement required. After carefully developing the framework, the structured program has begun embedding consumer participants into student research projects within the department successfully.


Dr Penny O'Brien

ECCO

Dr Penny O'Brien, Prof Michelle Dowsey and Prof Peter Choong AO

Equitable health care

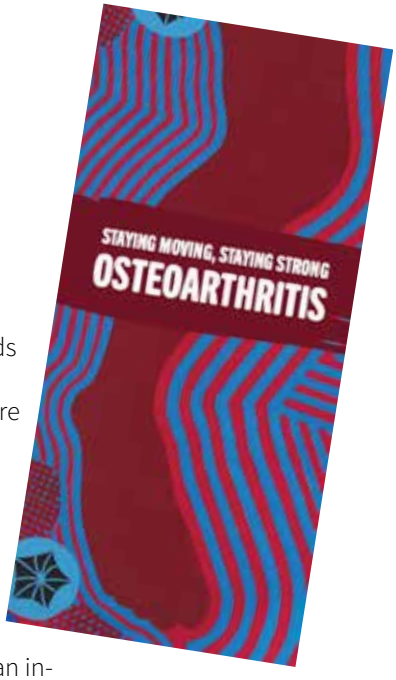
The research program Equity, Collaboration, and Culturally secure Osteoarthritis care (ECCO) aims to understand the osteoarthritis (OA) needs of Aboriginal and Torres Strait Islander communities.

Osteoarthritis disproportionately affects Aboriginal and Torres Strait Islander peoples and they are less likely to access care. By reaching out to partner Aboriginal organisations, ECCO is beginning to understand the landscape and meet the needs of Aboriginal and Torres Strait Islander communities by formulating culturally secure resources with community members.

Staying Moving, Staying Strong

The the aim of this project was to co-design and develop health information resources with and for Aboriginal and Torres Strait Islander peoples living with arthritis conditions (osteoarthritis, rheumatoid arthritis, lupus and gout).

The health information resources, launched in November 2023, bring together core recommendations from evidence-based clinical practice guidelines for the treatment of arthritis conditions and qualitative evidence on the health information needs and preferences of Aboriginal and Torres Strait Islander participants in Western Australia and Victoria. The Staying Moving, Staying Strong project team engaged with Aboriginal and Torres Strait Islander artists, graphic designers and videographers in Western Australia and Victoria to create four brochures, six community videos and website. Over 4000 brochures have been distributed to Aboriginal Community Controlled Health Services and Aboriginal Services nationally. The website which provides a platform for the resources and additional information was launched in August 2024 can be found at www.stayingstrongwitharthritis.org.au.



Dr Penny O'Brien, who completed her mixed-methods PhD titled 'Every bone in my body aches': A culturally secure exploration of osteoarthritis among Aboriginal and Torres Strait Islander peoples' in 2022 has since been awarded an Arthritis Australia Fellowship and a University of Melbourne Early Career Researcher grant to conduct an in-depth, qualitative evaluation of the final Staying Moving, Staying Strong resources. The evaluation is currently underway.

The Staying Moving, Staying Strong project is funded by the Australian Commonwealth Government through a grant administered by Arthritis Australia.

Conferences and publications

Across 2022-24, the ECCO research team have had Across 2022-24, the ECCO research team have had eight articles published in journals including The Lancet Rheumatology, ANZ Journal of Surgery, BMC Rheumatology, Research Involvement & Engagement Clinical Rheumatology, PLOS ONE and Arthritis Care and Research.

Three members of the ECCO team presented findings from the Staying Moving, Staying Strong project at the 2023 Australian Physiotherapy Association 'Ignite' conference. The following abstracts were accepted for podium presentations:

- **Dr Penny O'Brien: Joint replacement may be valuable treatment for Aboriginal and Torres Strait Islander people with osteoarthritis, but uptake is low.**
- **Dr Penny O'Brien: Understanding the impact and tackling the burden of osteoarthritis with Aboriginal and Torres Strait Islander peoples.**
- **Ms Jane Linton: "I believe if you know better, you do better": the perspectives of Aboriginal people with arthritis conditions on health information.**
- **Ms Brooke Conley: What education should be provided to Aboriginal and Torres Strait Islander peoples with osteoarthritis, rheumatoid arthritis and gout?**

STOP KNEE-OA Trial

Prof Michelle Dowsey, Prof Peter Choong, Cade Shadbolt

Guidelines recommend weight loss as a core treatment for knee osteoarthritis (OA) in patients with obesity, although the optimal strategies remaining controversial. Studies have shown that weight loss can reduce pain associated with knee OA in individuals with excess weight. Weight loss may also reduce the likelihood of needing knee replacement surgery. Current weight loss treatments include diet and exercise, which can be difficult for people with knee OA, or weight loss surgery which has strict criteria.

Effective medication-assisted weight loss interventions may help patients with obesity and OA avoid progressing to knee replacement surgery without resorting to more invasive and less widely accessible treatments such as weight loss surgery. A new weight-loss medication, tirzepatide, has demonstrated potential in inducing substantial weight loss in patients with obesity.

The purpose of this study is to see whether medication assisted weight loss, combined with diet and physical activity recommendations, reduces the likelihood of undergoing a knee replacement. The study also aims to assess if medication-assisted weight loss improves other OA symptoms, such as knee pain, function, and knee stiffness.

This trial will employ a randomised, double-blinded, parallel group design to evaluate whether tirzepatide is superior to placebo in limiting progression to knee replacement surgery. The trial will involve adult patients without diabetes, who have a body mass index (BMI) of 30 kg/m^2 or more and are eligible for unilateral knee replacement surgery to treat moderate-to-severe knee OA. The trial aims to recruit 352 participants across several hospitals in Melbourne.

Substantial weight loss in patients with knee OA and obesity has been shown to improve pain and reduce reliance on knee replacement surgery. We hope that the results from this research will lead to better management and treatment options for moderate-to-severe knee osteoarthritis in patients with obesity.

Orthopaedic Devices Infection Network (ODIN) – A Global Prosthetic Joint Infection Registry

A/Prof. Sina Babazadeh

The Orthopedic Device Infection Network (ODIN) is a global collaboration that aims to improve treatment outcomes for patients with prosthetic joint infections (PJIs). PJI is a devastating but rare complication of total joint arthroplasty. The rare nature of this condition makes it difficult for individual centres to gain enough data to answer research questions that require large datasets. The aim of ODIN is to overcome this issue by creating a network of international databases that pool data to answer research questions that will help to reduce the morbidity and mortality associated with PJI.

The collaborative was formed by an international group of surgeons, infectious disease specialists, epidemiologists, and microbiologists. Together they have developed a database that collects de-identified information on patients with PJI, their surgical and microbiological treatment, and the outcome of their treatment. Centralized data analysis is facilitated by a single data coordination centre that is responsible for pooling data from all sites and executing analyses. By creating this large-scale, standardised, network of international databases, ODIN is working to improve the understanding and treatment of PJI.

Gluteal Tendinopathy in People Undergoing Total Hip Arthroplasty

Rita Kinsella (PhD Candidate) and Prof Michelle Dowsey

Total hip joint replacement surgery (THJR) for people with advanced hip osteoarthritis improves pain and disability in most individuals, though incidence of persistent symptoms post-surgery ranges from 7-23%. Greater trochanteric pain syndrome (GTPS) is a painful hip disorder, with symptoms arising from pathology of the gluteal muscles and tendons around the lateral hip. Up to 20% of those undergoing THJR for hip osteoarthritis have been shown to have degenerative gluteal pathology on MRI suggesting these soft-tissues may be another source of pain, pre- and post-operatively for some individuals undergoing THJR and therefore a potential factor explaining poor outcomes. There is a limited understanding of prevalence, diagnosis, and management of GTPS when present concurrently with hip osteoarthritis including what impact having both conditions has on post-surgical outcomes. Our research aims to evaluate the prevalence and impact of co-existing GTPS in patients undergoing primary THJR surgery for idiopathic hip Osteoarthritis.

Patients presenting for pre-operative assessment at SVHM, who report lateral hip pain are evaluated, using an evidence-based hip testing cluster. A clinical diagnosis of GTPS can be made via a two-step pain provocation algorithm, provided the pain on testing is located to the lateral hip muscles and tendons, rather than deep joint pain or pain emanating from lumbar spine/ radiculopathy. Patient self-reported pain, function and quality of life outcomes collected at 3, 6 and 12 months will be analysed, with comparison made between those who have co-existing GTPS and Osteoarthritis, with those who have Osteoarthritis only. Results will inform the next stage of our research. For patients waiting for THJR for hip Osteoarthritis and diagnosed with co-existing GTPS, targeted intervention to address their GTPS either before or after their surgery, could improve post-surgical outcomes in a clinically meaningful way.

Building an Evidence Base for the Treatment of Prosthetic Joint Infection through International Collaboration

Elise Naufal, PhD Candidate | Prof Michelle Dowsey | Prof Peter Choong | A.Prof Sina Babazadeh | Dr Sharmala Thuraisngam | Dr Marjan Wouthuyzen-Bakker | A.Prof Srujana Sahebjada

Elise's PhD project investigates the quality of prognostic tools that aim to predict the treatment of Prosthetic Joint Infection (PJI), a condition that is associated with troubling rates of morbidity and mortality. While only 1-2% of patients undergoing primary total joint arthroplasty will develop a PJI, the increasing volume of arthroplasty procedures being performed means that tens of thousands of these complications occur each year. Selecting the appropriate approach to surgical management of PJI must carefully balance restoration of function and the likelihood of eradicating the underlying infection. Several predictive tools that aim to guide decisions about the management of PJI have been developed in recent years. While some of these models have been recommended to use in clinical settings, their suitability for clinical use remains uncertain. Elise's PhD aims to address this uncertainty by performing external validations of these tools using data from the Orthopaedic Device Infection Network (ODIN).

Perioperative Recommendations for Patients Prescribed GLP-1 Receptor Agonists

Jasmin Elkin, PhD Candidate | Prof Michelle Dowsey | Prof Peter Choong | Cade Shadbolt | A.Prof Michael Hii | A.Prof Priya Sumithran

Jasmin's PhD project aims to explore management options for GLP-1 receptor agonists (GLP-1 RAs), a class of medications used to treat type 2 diabetes and obesity, before elective surgeries. The use of GLP-1 RAs is becoming more prevalent. However, variability exists in the advice provided by professional bodies on managing these medications during the perioperative period for elective surgeries. The primary concern revolves around delayed gastric emptying, a side effect of GLP-1 RAs, which may increase the risk of aspiration during anesthesia and surgical procedures. The duration it takes for gastric emptying to return to normal after discontinuing GLP-1 RAs remains unclear. Additionally, withholding these medications could impact glycemic control, particularly in diabetic patients, adding complexity to perioperative care.

Due to the lack of a strong evidence base, some professional bodies have refrained from issuing specific recommendations regarding the management of GLP-1 RAs prior to surgery. This project seeks to address these knowledge gaps and provide clear guidance on perioperative management. The randomised clinical trial will involve 108 participants from St Vincent's Hospital Melbourne, who will be randomised 1:1 into two groups. By comparing these groups, the study aims to determine the effects of withholding GLP-1 RAs on residual gastric contents, as well as explore the potential risks of dysglycemia in diabetic patients during the perioperative period. Given the current uncertainty and discrepancies in clinical practice, the findings from this study could guide future perioperative recommendations for improving the safety of patients using GLP-1 RAs.

Optimising Preoperative Decision-Making in Total Knee Arthroplasty Using a Machine Learning Approach

Dr Daniel Gould, MD-PhD| Prof Michelle Dowsey | Prof Peter Choong

Total knee replacement (TKR) is an effective surgical treatment option for people with advanced osteoarthritis of the knee joint. Due to many factors, including an ageing population and the rising prevalence of obesity, the incidence of knee osteoarthritis is increasing and there a concomitant rise in TKR utilisation rate.

Readmission following TKR, specifically that which occurs within 30 days following discharge from hospital, disrupts the patient's postoperative recovery and often indicates complications in the postoperative course. Readmission is also used as a metric for quality of care, and it places additional burden on the already strained healthcare system.

Being able to predict readmission could potentially facilitate risk mitigation strategies, discharge planning, and targeted post-discharge follow-up for high-risk patients.

In order to achieve this, a multi-stage stakeholder-informed project was undertaken:

1. Identify risk factors: systematic review and meta-analysis, followed by Delphi survey and focus group
2. Describe the data used to develop the predictive model: cohort profile for SMART (St Vincent's Melbourne Arthroplasty Outcomes) Registry
3. Engage patients to explore their views on machine learning, or 'artificial intelligence' in clinical decision-making: qualitative interview study with patients who have undergone TKR surgery
4. Develop the predictive model: machine learning and statistical techniques, using registry data and administrative data to ensure the model can be integrated seamlessly into the hospital system without requiring any additional manual data entry by clinicians
5. Benchmark the performance of the model: compare the predictive performance of the model with the predictive performance of clinicians caring for TKR patients

Daniel worked with a 'Research Buddy', a consumer who has personally experienced joint replacement surgery, throughout his PhD. We wrote about our experience and published a perspective piece on consumer involvement in an MD-PhD program.

The predictive model was developed using variables routinely collected in clinical care and available in the hospital's administrative database. The next step is to implement it in the clinical environment and determine whether it can make a positive impact on patient care.

Association Between Central Nervous System Active Medication Use and Total Hip and Knee Arthroplasty Outcomes

Cade Shadbolt Phd Candidate, Prof Michelle Dowsey, Prof Peter Choong, A/Prof Chris Schilling, Prof Maria Inacio

This thesis aims to examine the relationship between the use of common CNS-active medications and patient-reported outcomes in people undergoing total hip or knee arthroplasty. To achieve this aim, the thesis draws on a novel dataset, which linked prospectively collected data from a large institutional registry with nationwide medication dispensing records, to conduct three cohort studies. Each of these studies examines pain and function-related outcomes among patients who underwent total hip or knee arthroplasty for osteoarthritis at St Vincent's Hospital in Melbourne, Australia.

The first study examines whether receiving antidepressant therapy prior to surgery is associated with pain and function-related outcomes following total hip or knee arthroplasty in patients with depression. The second study examines whether preoperative benzodiazepine use, which has commonly been linked to persistent postoperative opioid use, is also associated with differences in postoperative pain or function. The final study investigates whether exposure to opioids at discharge can be reduced without sacrificing downstream improvements in pain or function, by comparing outcomes before and after a targeted initiative resulted in an abrupt reduction in discharge opioid prescribing at our institution.

Together these studies aim to provide original insights into how data linkage can be used to examine important – and potentially modifiable – factors associated with pain or functional limitations following hip or knee arthroplasty.

Cost-Effectiveness of reducing length of stay for hip and knee arthroplasty

Dr Siddharth Rele, MD-PhD| A/Prof Chris Schilling | Prof Nick Taylor | Prof Michelle Dowsey | Prof Peter Choong

Globally, marked increases in the rate of arthroplasty being performed are predicted within the next ten years. Reducing length of stay has been proposed as a method of increasing throughput and to match demand. However, the cost-effectiveness of reducing LOS from the perspective of different stakeholders remains to be understood.

To comprehensively analyse this broad objective, this mixed methods project aimed to identify factors that affect length of stay for joint replacement surgery; explore strategies that can be utilised to reduce length of stay; understand the clinical and cost-effectiveness of earlier discharge; and explore trial characteristics and meta-biases amongst trials investigating enhanced recovery after surgery pathways.

Sid's work incorporated a qualitative perspective harnessing the views of patients and orthopaedic surgeons towards short stay surgery. While a quantitative side took advantage of a linked dataset combining the St Vincent's Melbourne Arthroplasty Outcomes registry (SMART) and healthcare utilisation data measured by the Pharmaceutical and Medicare Benefits Schemes.

This body of work will help inform the model of care for arthroplasty to help shorten length of stay for joint replacement in Australia.

REGENERATIVE ENGINEERING AND MODELLING OF OSTEOCHONDRAL DISEASE GROUP

The REMOD research team (Regenerative Engineering and Modelling of Osteochondral Diseases) is a multidisciplinary entity with the aim to develop therapeutic strategies for the treatment of osteochondral diseases using advanced manufacturing technologies. The team is led by Senior Research Fellows Dr Serena Duchi & Dr Carmine Onofrillo under the mentorship and supervision of orthopaedic surgeons Prof. Peter Choong and A/Prof. Claudia di Bella.

Members of the team for the reported period are:

- **Stef Dilek**, research assistant;
- **Dr. Cathal O'Connell**, material scientist;
- **Dr. Lilith Caballero Aguilar**, chemical engineer;
- **Dr Steph Doyle & Dr Anna Trengove**, biomedical engineers;
- **Students**: **6** PhD, **1** master, **4** honours, **2** internships.

The research carried by the team is focused on two main aspects: 1) the application of 3D bioprinting and tissue engineering for the development of implantable solutions to regenerate cartilage and bone after injuries or tumour resection; 2) the fabrication of 3D biological models to mimic the behaviour of osteosarcoma tumour cells in a physiological manner aiming to test patient's specific treatments.

Over the years the REMOD team has built strong collaborations within the University of Melbourne, The University of Wollongong, Swinburne University, RMIT, University of Sydney in Australia as well as international collaborations with Rizzoli Orthopaedic institute and CNR (Italy), Huston Methodist Hospital (Texas, USA) University of Barcelona (Spain).

Some of the team members are also part of ARISTOCRAT-MRFF Project 2022-2027(lead PI Prof Peter Choong) and part of an industry partnership named Axcelda with the aim develop and distribute a suite of clinical products to repair human cartilage injuries using autologous stem cells combined with proprietary biomaterials delivered directly into a cartilage defect with a proprietary hand-held delivery device (AxceldaPen).

Thanks to the work of the REMOD team, the combination of stem cell technology, engineering and surgical innovation promises to simplify surgery for the treatment of osteochondral diseases.

Dr Serena Duchi presenting at WBC 2024 – South Korea

HIGHLIGHTS

Putting 3D Printing into The Reality Of Surgery

The team has received Funds from NHMRC-MRFF Investigator Grant (2020-2025, lead PI A/Prof Claudia Di Bella) to develop a multifunctional system that allows surgeons to perform long lasting cartilage repair. This multidisciplinary project provides methods to harvest autologous stem cells and deliver them together with osteo-chondrogenic scaffolds with adhesive properties and reinforcement structures.

Publications from this project for the reported period:

1. Caballero Aguilar L, Trengove A, Silva SM, Xie A, O'Connell C, Di Bella C, Duchi S, Onofrillo C, Moulton SE. "Electrostatic Complexation of Growth Factors in Thiol-armed Hydrogel Enhances In Situ Cartilage Tissue Engineering". Applied Materials Today 2024 DOI: 10.1016/j.apmt.2024.102181

2. Doyle S, Snow F, Onofrillo C, Di Bella C, O'Connell CD, Pirogova E, Duchi S. "Negative printing for the reinforcement of in situ tissue engineered cartilage". Tissue Engineering Part A 2024 Mar 22. doi: 10.1089/ten.TEA.2023.0358

3. Doyle S, Pannella M, Onofrillo C, Bellotti C, Di Bella C, O'Connell CD, Pirogova E, Lucarelli E, Duchi S. "NEST3D printed bone-mimicking scaffolds: assessment of the effect of geometrical design on stiffness and angiogenic potential" Front. Cell Dev. Biol., 07 March 2024 Sec. Stem Cell Research, Volume 12 – 2024. https://doi.org/10.3389/fcell.2024.1353154.

Autologous stem cells, harvested and isolated during surgery, can be mixed with osteo-chondrogenic gel and delivered using the hand-held 3D bioprinter directly into the osteochondral wound, using a bone replacing scaffold as a base structure.

HIGHLIGHTS

Awards

- **Duchi:** Choong-Dickinson Award, ANZSA-Australasian and New Zeeland Sarcoma Association
- **Duchi:** Best Senior Investigator Oral Presentation-ACMD Research Week 2023

National Grants

- **2023 Pipeline Accelerator grant, Phenomics Australia.**
  Project: Developing a GMP Compliant Adipose Derived Stem Cell Manufacturing Process for Cartilage Based Stem Cell Therapies.
  Funds: $50,000
  Named Investigators: Duchi

University Grants

- **2024 MMS Minor Equipment Grant Scheme.**
  Project: Arthroscope system for Stem Cell Isolation.
  Funds: $10,839
  Named Investigators: Duchi
- **2024 MDHS Large Equipment Grant Scheme.**
  Project: Tuttnauer t-edge 11, class b autoclave.
  Funds: $8,500
  Named Investigators: Duchi
- **2023 MDHS Large Equipment Grant Scheme.**
  Project: Class II Biological Safety Cabinet. Funds: $10,000
  Named Investigators: Duchi
  Hospital Grants (St Vincent's Hospital, Melbourne)
- **2023 Research Endowment Fund.**
  Project: Catalysing Osteosarcoma Therapy: Ceramic Implants Enabling Local Chemotherapy and Bone Regeneration.
  Funds: $20,000
  Named Investigators: Duchi, Di Bella, Kurtam, Lu, Roohani, Lucarelli, Zreiqat

Philantropy Grants

- **2024 Harold & Cora Brennen Benevolent Trust.**
  Project: Using 3D Bioprinting to create a bioengineered model of Osteosarcoma to improve research outcomes.
  Funds: $35,000
  Named Investigators: Onofrillo

International and National conferences

- WBC-World Biomaterials Conference, Daegu, South Korea, May 2023: 3 selected oral presentations (Duchi, Onofrillo, Caballero Aguilar), 2 posters (2 PhD students)

REMOD Team 2024–drawings by PhD Student Amy Xie

- Duchi Invited Speaker: 5th Australian Bioprinting Workshop, Sydney, NSW
- Duchi Invited Speaker: "In situ cartilage tissue engineering: A path towards Clinical translation" ACMD-Research Week, St Vincent's Hospital 2023
- Duchi Invited Speaker: "In situ cartilage tissue engineering: A path towards clinical translation" Advanced Materials and 3D Printing in Regenerative Medicine Workshop, Christchurch, NZ
- Duchi & Onofrillo Selected Oral Presentation ASBTE International Annual Conference, Christchurch, New Zealand

National & International Collaborations

- Prof Andrea O'Connor (UoM): High-throughput screening (HTS) in tissue engineered cartilage repair
- Dr Andres Ruland Palaia (University of Wollongong): Ultrasound imaging of tissue engineered implants
- A/Prof Jason Cain (Hudson)-Prof O'Connor (UoM): 4DOSM_Biofabrication of a 4D Osteosarcoma Model
- Prof Gordon Wallace (University of Wollongong), Prof Simon Moulton (Swinburne University), A/Prof Payal Mukherjee (University of Sydney), Dr Claire Tanner (Monash University), A/Prof Chris Schilling (UoM), Prof Michelle Dowsey (UoM), Andrew Ronchi (UoM): ARISTOCRAT: Auricular and articular cartilage repair.
- Prof Hala Zreiqat (University of Sydney): Ceramic Implants for Local Chemotherapy & Bone Regeneration
- Dr Sharon Sagnella (Cell & Molecular Therapies, Royal Prince Alfred Hospital): Developing a GMP Compliant Adipose Derived Stem Cell Manufacturing Process for Cartilage Based Stem Cell Therapies
- Prof Davide Donati-Dr Enrico Lucarelli (Rizzoli Institute, Italy): 3D Osteosarcoma tumor model
- Dr Gianluca Cidonio (IIT, Rome, Italy): 3D Printing in Bone tumor modeling
- Dr Greta Varchi (ISOF-CNR, Bologna, Italy): Stem cell drug delivery for treatment of Osteosarcoma
- A/Prof Francesca Taraballi (Houston Methodist Hospital, USA): The role of inflammation in cartilage tissue engineering
- A/Prof Sara Ramos Romero (University of Barcelona, SPAIN): Stem cells and inflammation in cartilage repair

REMOD @ Anzsa celebrating Choong Award Nov 2023

PUBLICATIONS:

4. Mendes A, Caballero Aguilar L, Nascimento ATD, Duchi S, Charnley M, Nisbet D, Quigley A, Kapsa R, Moraes Silva S, Moulton S. "Integrating graphene oxide-hydrogels and electrical stimulation for controlled neurotrophic factor encapsulation: a promising approach for efficient nerve tissue regeneration". ACS Appl Bio Mater. 2024 Jun 3. doi: 10.1021/acsabm.4c00523

5. Nascimento ATD, Mendes AX, Duchi S, Duc D, Quigley A, Kapsa RMI, Stoddart PR, Silva SM, Moulton SE. "Wired for success: probing the effect of tissue-engineered neural interface substrates on cell viability". ACS Biomater Sci Eng. 2024 May 9. doi: 10.1021/acsbiomaterials.4c00111

6. Caballero Aguilar L, Trengove A, Silva SM, Xie A, O'Connell C, Di Bella C, Duchi S, Onofrillo C, Moulton SE. "Electrostatic Complexation of Growth Factors in Thiol-armed Hydrogel Enhances In Situ Cartilage Tissue Engineering". Applied Materials Today 2024 DOI: 10.1016/j.apmt.2024.102181

7. Doyle S, Snow F, Onofrillo C, Di Bella C, O'Connell CD, Pirogova E, Duchi S. "Negative printing for the reinforcement of in situ tissue engineered cartilage". Tissue Engineering Part A 2024 Mar 22. doi: 10.1089/ten.TEA.2023.0358

8. Doyle S, Pannella M, Onofrillo C, Bellotti C, Di Bella C, O'Connell CD, Pirogova E, Lucarelli E, Duchi S. "NEST3D printed bone-mimicking scaffolds: assessment of the effect of geometrical design on stiffness and angiogenic potential" Front. Cell Dev. Biol., 07 March 2024 Sec. Stem Cell Research, Volume 12 – 2024. https://doi.org/10.3389/fcell.2024.1353154.

9. Martella E, Dozza B, Ferroni C, Bellotti C, Obeyok C, Tubertini M, Guerrini A, Ballestri M, Columbaro M, Manet I, Gambarotti M, Martini L, Fini M, Cevolani L, Donati DM, Lucarelli E, Varchi G, Duchi S. "Numbers matter: the role of cell dose in the treatment of osteosarcoma using mesenchymal stromal cells as cellular vehicles". Adv. Therap. 2023, 2300045. https://doi.org/10.1002/adtp.202300045.

10. Nascimento ATD, Mendes AX, Begeng JM, Duchi S, Stoddart PR, Quigley AF, Kapsa RMI, Ibbotson MR, Silva SM, Moulton SE. "A tissue-engineered neural interface with photothermal functionality". Biomater Sci. 2023 May 16. doi: 10.1039/d3bm00139c.

11. Zoneff E, Wang Yi, Jackson C, Smith O, Duchi S, Onofrillo C, Farrugia B, Moulton S, Williams R, Parish C, R. Nisbet DR, Caballero-Aguilar LM. "Controlled Oxygen Delivery to Power Multifaceted Tissue Regeneration". Nat Commun. 2024 May 22;15(1):4361. doi: 10.1038/s41467-024-48719-x

12. Chow T, Humble W, Lucarelli E, Onofrillo C, Choong P, Di Bella C, Duchi S. "Feasibility and Barriers to Rapid Establishment of Patient-derived Primary Osteosarcoma Cell Lines in Clinical Management". iScience 2024 110251. doi.org/10.1016/j.isci.2024.110251

13. Trengove A, Duchi S, Onofrillo C, Sooriyaaratchi D, Di Bella C, O'Connor AJ. Bridging bench to body: ex vivo models to understand articular cartilage repair. Curr Opin Biotechnol. 2024 Apr;86:103065. doi: 10.1016/j.copbio.2024.103065

14. Bini F, D'Alessandro S, Agarwal T, Marciano D, Duchi S, Lucarelli E, Ruocco G, Marinozzi F, Cidonio. G Biomimetic 3D bioprinting approaches to engineer the tumor microenvironment. IJB 2023, 9(6), 1022. https://doi.org/10.36922/ijb.1022

PATENTS:

1. Apparatus for use in tissue repair. Inventor. Filed May 2024 (PCT/AU2024/050581)

Vascular Surgery

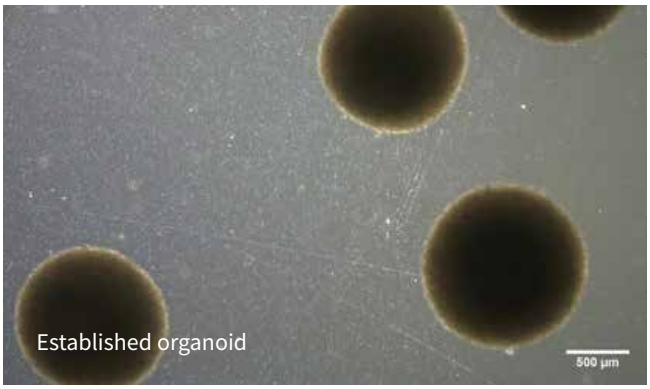

Dr Leonard Shan

Dr. Leonard Shan recently completed a PhD on measuring quality of life in patients with chronic limb-threatening ischemia, which was a collaboration between The University of Melbourne and Imperial College London. A blueprint for a new disease-specific quality of life measurement instrument was developed, with the view that this instrument may be used as part of comprehensive outcomes analysis to improve our ability to provide high-value care.

Leonard is currently building a vascular research program in Melbourne where he continues to supervise research students through to publication. This work has attracted international interest from medical and PhD students and he has been invited to present at this year's peripheral artery disease colloquium at the Heart Research Institute and ANZSVS annual scientific congress.

Leonard is currently working on PAEDIS international trial development project and a new multinational RCT on the use of compression stockings in DVT which will foster collaboration between multiple institutions and fields of medicine.

Neurosurgery



BRAIN TUMOUR ORGANOIDS

Bio-Brain: Brain Tumour Organoid & PDX Project

Brain cancer, either primary or secondary, affects 1 in 124 individuals in Australia and is the 10thleading cause of cancer related death1. Despite significant research efforts, there has been no improvement in overall survival over the past decade. New therapies are urgently needed.

Patient derived tumour organoids (PDTO) are a novel technology promising to revolutionise drug development and personalised medicine in medical oncology. Organoid cultures can be established in the laboratory within weeks from multiple tumour types, including brain cancers, with emerging data confirming molecular fidelity compared to the tissue of origin. In addition to this, there is concordance of organoid drug sensitivity and *in vivo* treatment response when the same drug is used in the treatment of the patient from which the organoid was derived. Research opportunities include the potential to better understand treatment response and resistance and to assess tumour treatment sensitivity prior to patient treatment, allowing the most active therapy to be chosen from available agents or to enrich enrolment onto clinical trials.

The Walter and Eliza Hall Institute of Medical Research (WEHI) has made a major investment in PDTOs across a broad range of tumour types. This study will be led by the Personalised Oncology Division. PDTOs will be established from brain tumour surgical specimens with clinical and translational data prospectively collected in the ethically approved BRAIN registry. Patients will be recruited and/or registered at several centres across Australia, including St Vincent's Hospital Melbourne lead by Mr Andrew Gogos.

To date the establishment rate of PDTO's: Samples sent fresh – 100%, Samples sent under 3 days – 80%,

HIGHLIGHTS

EMDT: Excellence in improvement and innovation award 2024

The emergency multidisciplinary team, eMDT, is a St Vincent's Hospital Melbourne (SVHM) initiative, in partnership with Adult Retrieval Victoria (ARV), to streamline the decision-making process and management of critical neurosurgical patients. It activates a digital consultant-led multidisciplinary team meeting at short notice to review case records and imaging via an internet-based platform. eMDT's early multidisciplinary consultant input into decision-making better streamlines and facilitates efficient emergency transfers and interventions, improving patient safety and outcomes and helping ARV manage limited resources.

Neurosurgical emergencies can be life-threatening and require rapid coordination of care and transfer from peripheral hospitals to a tertiary neurosurgical centre. Transfer is deemed futile for a subset of patients who often have catastrophic haemorrhage or significant comorbidities. A study from our institution revealed up to 22% of neurocritical transfers were futile, with no resulting change to care. Futile and avoidable transfers often cause significant distress to the patient, their family and local community. These patients are better staying at their local hospital with family and local support and eMDT advice on palliative care strategies.By bringing together key specialists promptly, eMDT ensures decisions regarding patient care are more comprehensive and efficient.

The eMDT initiative has been quickly adopted by clinicians. The pilot study data suggests a reduction in futile neurocritical transfers and activation times for retrieval teams transporting critical neurosurgical patients to tertiary neurosurgical centres. A further larger study is being planned to assess these impressions formally, allow detailed follow-up of clinicians, patients, and their families to understand the implications in depth, and apply statistical analysis to a larger data set.

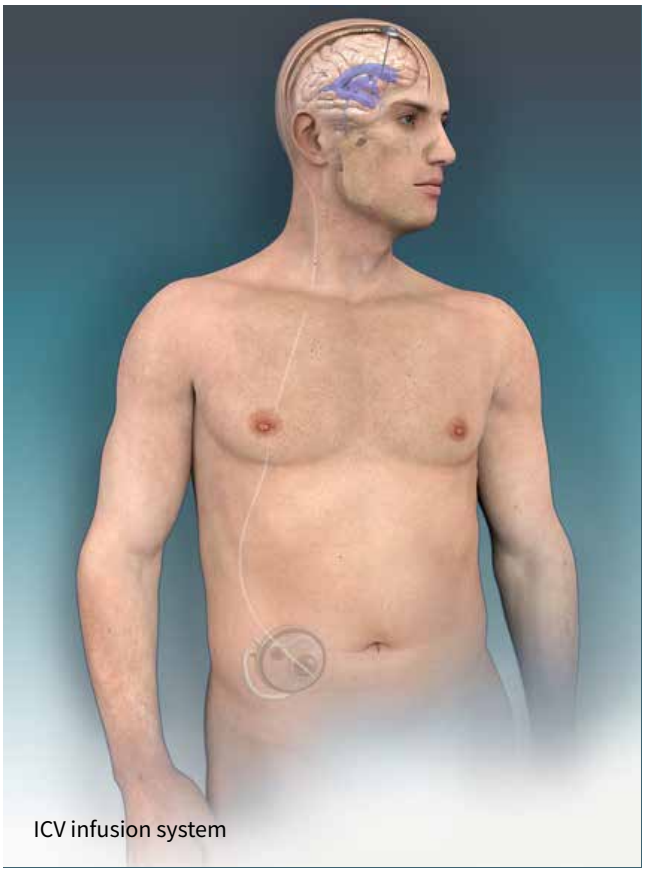
This partnership enables better access to definitive care for Victorians experiencing neurosurgical emergencies and reduces futile neurocritical transfers allowing improved utilisation of limited retrieval resources. It ensures good decisions for individuals and improves care for Victorians.

EXTENDED SCOPE OF PRACTICE

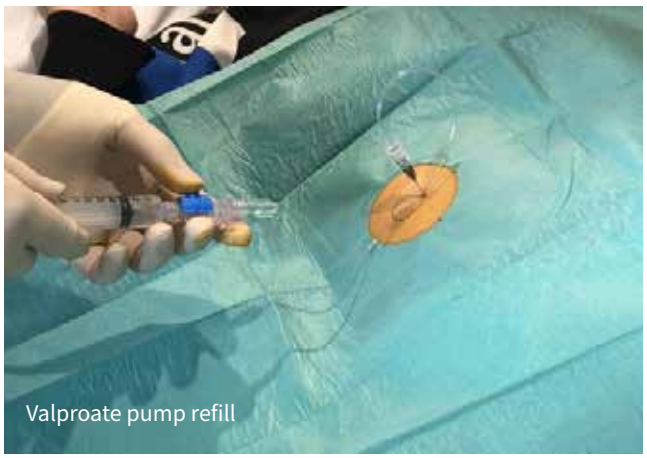
This year, the Neurosurgery Research nurse team received approval to perform valproate pump refill procedures on medically refractory epilepsy trial patients.

The refill procedure is performed in two clinical trials currently running within the Neurosurgery Unit. Traditionally performed by medical staff, it is a sterile procedure that refills surgically implanted pumps under the skin of the abdomen of epilepsy patients, which delivers sodium valproate directly into the ventricles of the brain for seizure management.

The extended scope of practice has reduced infection rates, reduced medical team time and workload requirements, and increased patient confidence and satisfaction.



ICV infusion system



Valproate pump refill

JOURNAL ARTICLES PUBLISHED FROM 1 JULY 2023 TO 30 JUNE 2024

- Buntting CS, Tran D, **Fish C**, Chatha G, Jithoo R. Electroconvulsive Therapy in Patients With Cerebral Aneurysms. J ECT. 2023 Dec 1;39(4):220-226.
- **Chin CWH**., Kweh BTS, Gonzalvo A. Saccular Posterior Cerebral Artery Aneurysm Encased Within a Lipoma, BMJ Case Rep 2023;0:e257158.
- Hamer RP, Chen A, & **Gogos A**. Bilateral epidural D-wave monitoring during resection of an eccentric cervical astrocytoma with evidence of asymmetrical corticospinal desynchronization. British Journal of Neurosurgery (Published ahead of print) 2024.
- Kim B, Tan D, **Fish C**, Huang H, Castle-Kirszbaum M, Kam J, Sher I, Lai L. Recurrent haemorrhagic pontine cavernoma resection via a retrosigmoid microsurgical approach. J Clin Neurosci. 2023 Dec;118:58-59.
- Kweh BTS, Lee HQ, **Tan T**, Liew S, Hunn M, Wee Tee J. Posterior Instrumented Spinal Surgery Outcomes in the Elderly: A Comparison of the 5-Item and 11-Item Modified Frailty Indices. Global Spine J. 2024 Mar;14(2):593-602.
- Kwek BTS, Seo J, Mikhail R, Khoo B, **Gupta A**, Donaldson C, Asaid M, Gonzalvo AC. Spontaneous resolution of Chiari malformation after bariatric surgery: a case report and literature review. AME Surg J 2024; 4:5
- Lee WL, Ward N, Petoe M, Moorhead A, Lawson K, Xu SS, **Bulluss K**, Thevathasan W, McDermott H, Perera T. Detection of evoked resonant neural activity in Parkinson's disease. J Neural Eng. 2024 Feb 26;21(1).
- Martinez-Gutierrez JC, **Dawes BH**, Zeineddine HA, Wroe WW, D'Amato SA, Kim HW, Nahhas MI, Chen PR, Blackburn SL, Sheth SA, Chen CJ, Mahapatra A, Kitagawa RS, Dannenbaum MJ. Middle meningeal artery embolization reduces recurrence following surgery for septated chronic subdural hematomas. Clin Neurol Neurosurg. 2024 May;240:108252
- Morshed RA, Cummins DD, Clark JP, Young JS, Haddad AF, **Gogos AJ**, Hervey-Jumper SL, Berger MS. Asleep triple-modality motor mapping for perirolandic gliomas: an update on outcomes. J Neurosurgery, 2023 Oct; 13:1-9
- Nasra M, Maingard JT, Hall J, Mitreski G, Kuan Kok H, **Smith PD**, Russell JH, Jhamb A, Brooks DM, Asadi H. Clipping versus coiling: A critical re-examination of a decades old controversy. Interv Neuroradiol. 2024 Feb;30(1):86-93.
- Peel J, Blazos M, Manuchehri H, **Fish C**, Griffin DWJ. Frontal Lobe Lesion Masquerades as Meningioma. Clin Infect Dis. 2023 Dec 15;77(12):1733-1735
- Teo EJ, Petautschnig S, Hellerstedt J, Grace SA, Savage JS, Fafiani B, **Smith PD**, Jhamb A, Haydon T, Dixon B. Cerebrovascular Responses in a Patient with Lundberg B Waves Following Subarachnoid Haemorrhage Assessed with a Novel Non-Invasive Brain Pulse Monitor: A Case Report. Med Devices (Auckl). 2024 Feb 19;17:73-87.
- Tonroe T, McDermott H, Pearce P, Acevedo N, Thevathasan W, Xu SS, **Bulluss K**, Perera T. Anatomical targeting for electrode localization in subthalamic nucleus deep brain stimulation: A comparative study. J Neuroimaging. 2023 Sep-Oct;33(5):792-801.
- Yang R, Ren Y, Kok HK, **Smith PD**, Kebria PM, Khosravi A, Maingard J, Yeo M, Hall J, Foo M, Zhou K, Jhamb A, Russell J, Brooks M, Asadi H. Verification of a simplified aneurysm dimensionless flow parameter to predict intracranial aneurysm rupture status. Br J Radiol. 2024 Jun 18;97(1159):1357-1364.

Cardiothoracic/ Surgical Oncology

COVE STUDY

A pilot study of Video Assisted Thoracic Surgery (VATS) fissure completion prior to Zephyr® Endobronchial Valve insertion for severe Chronic Obstructive Pulmonary Disease (COPD) in patients with COllateral Ventilation.

Coordinating Principal Investigator: Mr Naveed Alam

Associate Investigators: A/Prof Gavin Wright, Dr Francis Cheung, Dr Adrienne Lui

This trial had its final data export and analysis performed earlier this year in April with the initial manuscript due to be submitted for journal publication later this year.

Conclusions

- 9/9 (100%) subjects were successfully converted from collateral ventilation positive (CV+) to collateral ventilation negative (CV-) status via VATS fissure closure
- 9/9 (100%) subjects underwent successful Zephyr Valve placement, average 3 valves placed per subject
- All subjects visually achieved lobar occlusion (no CV)
- No device malfunctions were reported during placement
- Efficacy endpoint responder rates at 6 months post-valve placement were similar to or greater than rates observed in native CV-patients
- Residual volume: 56% with decrease ≥ 310 mL
  - FEV1: 50% with increase ≥ 12%
  - 6MWT: 75% with increase ≥ 26 m
  - SGRQ: 100% with decrease ≥ -4 pts
  - Results of the COVE study suggest that conversion of collateral ventilation status from CV+ to CV- can be achieved via VATS fissure closure, and that the clinical benefit of subsequent Zephyr Valve treatment is comparable to the benefit observed in native CV-patients

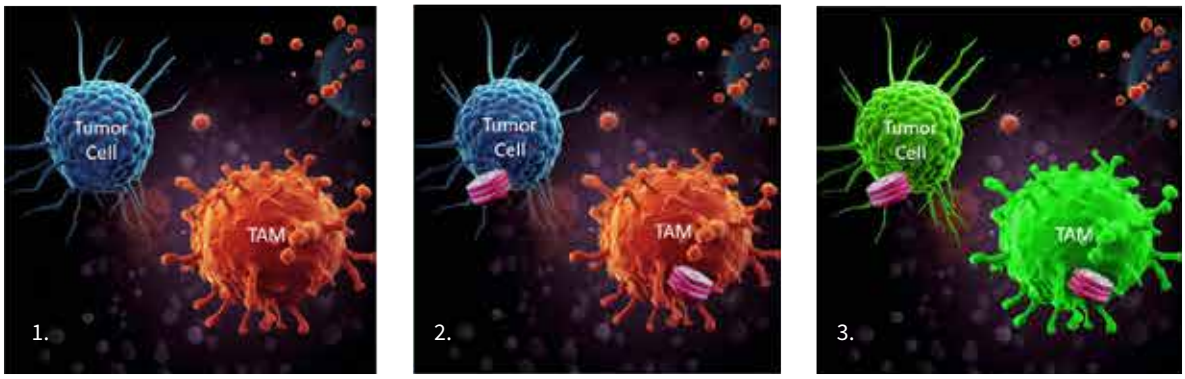
IMUGENE TRIAL

A Phase I, Dose Escalation Safety and Tolerability Study of VAXINIA (CF33-hNIS), Administered Intratumorally or Intravenously as a Monotherapy or in Combination with Pembrolizumab in Adult Patients with Metastatic or Advanced Solid Tumors (MAST).

(GMO oncovirus CF33-hNIS, multi-centre, international, 1st in human trial)

	2023	Current Update
No. of Sites	17	17
Worldwide enrolments	31	52
SVHM enrolments	5 (16% of pt worldwide)	12 (23% of pt worldwide)
No. of IT (intra-tumoural) patients	4 (80% of pt SVHM)	10 (80% of pt SVHM)

- SVHM has a significant proportion of patients worldwide
- As a surgical unit, our focus is on novel intra-tumoural virus delivery via direct injection or interventional radiology
- SVHM currently has the longest treated patient worldwide (12+ months)
- SVHM has just enrolled the first cholangiocarcinoma with PFU/ml dose worldwide (focus cohort)
- Expansion into bladder cancer - new focus cohort planned



1. VGT-309 binds Cathepsin in tumor cells and associated macrophages
2. Quencher cleaved by protease
3. Bound ICG fluoresces

VERGENT PHASE II

Results from a Phase II trial of a Tumor-Activated Fluorescent Molecule for the Intra-Operative Identification of Lung Cancer as presented at the 2023 World Conference on Lung Cancer in Singapore by Coordinating Principal Investigator A/Prof Gavin Wright.

Issues this trial is addressing:

- More tumours need to be resected
  - Opportunistic CT scans = incidental small lung cancers
  - Lung Cancer Screening Program = increased discovery of small lung cancers
- More limited surgery (less than lobectomy) is required for tumours <2cm
- Smaller tumours are more difficult to find with VATS/ Robotic Thoracic Surgery (RTS)
  - Inferior palpation and orientation for VATS
  - No haptic feedback for RTS
- Small tumours are not always visible on CT and therefore may be missed

Possible Solution = Tumor-activated Fluorophore

Participants:

Suspected/Proven NSCLC for surgery

Intervention:

VGT-309 Infusion (Dose escalation)

Day Prior or Day of Surgery

Comparator:

Standard search

Histological assessment of tumour

Histological assessment of margins

Outcomes:

Safety of ↑ doses

Detection of NSCLC (sens. & spec.)

Additional lesions (nodes / mets)

RESULTS		
EFFICACY	**SAFETY**	**CONCLUSIONS**
Cases: 27 Cancer 23 Carcinoid 1 Non-neoplastic 3 Efficacy at max dose (0.32mg/kg) **Cancers:** 12/15 fluoresced in total 12/12 fluoresced @ <1cm deep **Non-cancer:** 0/4 fluoresced (no false positives)	Suspected Unexpected SAE (SUSAR) Liver transaminitis GGT 16 -> 197H -> 178H ALP 16 -> 152 -> 150 ALT 14 -> 309H -> 47 AST 25 -> 242H -> 36 • Asymptomatic • Uneventful hospital stay • Resolved to <1.5 ULN by 30 days	• Safe and very well tolerated drug • Highly sensitivity at 3.2mg/kg • High specificity for malignant tissue

News Highlights

L-R: Research Manager Jane Mack, Principal Investigator A/Prof Gavin Wright and Study Coordinator Rafaela Anja

Channel 7 – Imugene (aired 11 Feb 2024)

https://youtu.be/Z7u7vigFwAg?si=a_9NEBJRQxo7FD68

Channel 9 – Vergent Phase 2 (aired 03 Feb 2024)

https://www.linkedin.com/posts/svhm_st-vincents-hospital-melbourne-has-led-a-activity-7160434727382880256-M0KW?utm_source=li_share&utm_content=feedcontent&utm_medium=g_dt_web&utm_campaign=copy

https://www.svhm.org.au/newsroom/news/study-explores-a-novel-way-to-highlight-lung-cancer-during-surgery

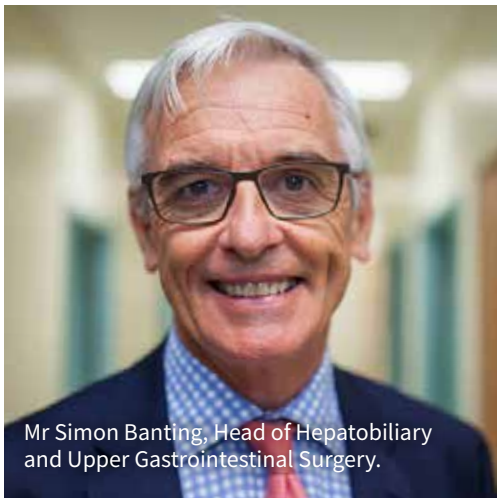
St Vincent's Hospital Melbourne (SVHM) is involved in a world-first study exploring the use of a fluorescent imaging agent to provide surgeons with better visibility of tumours.

As part of the Vergent Bioscience study, the novel agent being assessed is injected intravenously into a patient with lung cancer at least four hours before undergoing minimally invasive or robotic-assisted surgery.

The aim is for the agent to bind to a protein found in high levels in and around cancer cells and fluoresce under near-infrared light projected from a robotic or laparoscopic endocope. It is hoped to help surgeons detect hard-to-see tumours in real time and ultimately improve patients' health outcomes.

Back row: Sharnel Clatworthy, Dr Mingjie Huang, Sunita Chhiber
Middle row: Jacinda Lien, Jane Mack, Rafaela Anja, A/Prof Gavin Wright
Front row: Tetina Bekele, Laura Castleden, Isabelle Shearer, Dr Adrienne Lui, Dr Tovi Vo

Hepatobiliary| Upper GI


Mr Simon Banting, Head of Hepatobiliary and Upper Gastrointestinal Surgery.

RESEARCH THEMES

Optimization of dose and timing of indocyanine green in laparoscopic cholecystectomies

Study site: St. Vincent's Hospital Melbourne

PI: Brett Knowles

In patients undergoing minimally invasive gallbladder removal surgery, an intraoperative cholangiogram (IOC) is often used to investigate blockages in the bile duct, variations, and correct identification of the biliary system and its anatomy. IOC requires additional time and staff, bulky equipment, exposes the patient and medical staff to radiation, and increases the cost of the procedure. Other methods such as "critical view of safety" to ensure clear identification of anatomical structures is time consuming and requires a high level of surgical skill and experience. Use of near infrared fluorescence imaging with indocyanine green (ICG) dye, however, has an advantage over these other methods as it eliminates a) extra bulky equipment, b) extra staff, and c) exposure to radiation.

Although ICG use has been studied in liver and bile duct surgery, there is no agreement on the best dose and timing for its use. Currently, visualization of the biliary system with IOC is used as standard of practice for all gallbladder removal surgeries at St. Vincent's Hospital Melbourne. Having a set guideline for the dose and timing of ICG could help surgeons to continue the dissections with real time image visualization, avoid unnecessary radiation exposure, and likely shorten the time of the procedure. It could be explored as an adjunct to gallbladder removal surgeries and possibly reduce the use of IOC to only cases with suspected biliary obstruction.

Diagnostic and Classification Objectivity in Oesophageal Cancer: The Role of Vibrational Spectroscopy

Study Sites: SVHM, SVPH, Epworth, University of Melbourne

PI: Matthew Read

The gold standard management of oesophageal cancer (OC) is curative surgery. The prognosis for patients with oesophageal adenocarcinoma (OAC), the most common type of oesophageal cancer locally, remains poor, with a 5-year survival of less than 22%. There is no screening programme for OAC in the West, including Australia. Hence, OAC often presents late in the disease course. This worrying trend is set to persist as risk factors for OAC in the population such as Barrett's oesophagus, oesophageal dysplasia (cells that look abnormal and a precursor to OC), continue to rise. Current methods to continuously surveil these at-risk individuals by obtaining tissue samples are labour intensive, expensive, and susceptible to laboratory error.

Our project aims to develop an oesophageal tissue diagnostic classification model using machine learning (ML) technology and novel vibrational spectroscopy. We hypothesise that vibrational spectroscopy can be used to objectively distinguish precancerous and cancerous oesophageal conditions by identifying biochemical differences based on the tissue's specific spectral signature. Being able to accurately diagnose initial dysplasia can facilitate earlier treatment and prevent the burden of patients developing OAC.

Other areas of research interest:

- The efficacy of Botulinum Toxin A as an adjunct to Surgical Hernia repair on large ventral hernia, a Randomised Controlled Trial
- Harnessing the Power of Machine Learning to Enable Personalised Medicine and Improve Outcomes in Oesopahgeal Cancer
- Uncovering the role of gut taste receptors in food preferences, weight loss, and metabolic improvements after bariatric surgery
- Immunological Profiles in Patients Undergoing Distal Pancreatectomy with Splenic Preservation versus Distal Pancreatectomy with Concurrent Splenectomy
- A randomised controlled trial of Akynzeo® (Netupitant/ Palonosetron) versus standard treatment for the prevention of post-operative nausea and vomiting after bariatric surgery
- Intraductal Papillary Mucinous Neoplasm (IPMN) - Australian Pancreatic Cyst Registry (MAPS Registry)

News Highlights

AWARDS:

Uncovering the role of gut taste receptors in food preferences, weight loss, and metabolic improvements after bariatric surgery.

- Peter Ryan Prize (Dr Rosalind Walmsley)
  The risk of malignant transformation in branch-duct IPMN in the Australian population
- Runner-up Peter Ryan Prize (Dr Emma Downie)

Peter Ryan Prize - Dr Rosalind Walmsley (right) & Dr Emma Downie (left) with HPB/UGI Research team

A/Prof Matthew Read - Upper Gastrointestinal surgeon at St Vincent's Hospital Melbourne.

Key achievements:

- Official RACS visitor to the SUS annual meeting in Washington DC (Feb 2024)
- Chair of the Surgical Research Society for RACS
- Adjunct Associate Professor, School of Research, Swinburne University
- Co-Chief Medical Information Officer, St Vincent's Hospital
- Convenor of the November Annual Academic Surgical Conference for RACS
- Keynote Lecturer, DCAS, Christchurch 2024

Scholarship

Dr Keith Jing Wei Tan was awarded a scholarship by Victorian Medical Insurance Agency to pursue novel research in the emerging space of artificial intelligence (AI) in surgical applications, specifically in the domain of oesophageal cancer. The scholarship will allow Keith to undertake meaningful translational research and at the same time complete his PhD with St Vincent's Department of Surgery and the University of Melbourne, combining AI and vibrational spectroscopy methods to identify and classify oesophageal cancer.

Sauce for a Cause 2024 - Fundraising effort to support the HPB and UGI Research unit

Breast and Endocrine Units

BRENDA

The St Vincent's Hospital Breast Unit Database (BRENDA) is a pioneering initiative that plays a role in our commitment to exceptional patient care. Launched 18 months ago, our database already enrolled over 300 patients, making it a valuable resource for our unit. BRENDA goes beyond capturing clinical data. It also incorporates patient-reported outcome measures (PROMs), providing a holistic view of each patient's experience after breast cancer surgery. These PROMs responses are used as a clinical utility, directly informing patient care decisions.

The PROMs responses have been particularly insightful. They have helped our clinicians to become more aware of specific issues faced by patients, allowing them to provide even more comprehensive and supportive care. Ultimately, BRENDA allows us to provide the best possible patient-centred care for our breast cancer patients.

As the database matures, BRENDA will also be a powerful tool for research in the years to come.

BRENDA team: Suraya Roslan, Dr Jocelyn Lippey, Miss Christina Foley, Miss Caroline Baker, Annabelle Motteram, Rafaela Anja

BREAST CANCER AI (BRAIX)

Breast cancer stands as the most prevalent form of cancer among Australian women. While mammographic screening plays a vital role in reducing breast cancer mortality, the interpretation of mammographic images presents challenges due to human variability, leaving room for enhancement. Despite the implementation of independent double reading by radiologists, with a third arbitration read in case of disagreement, around 33,000 Australian women are recalled each year for further assessment, only to be later confirmed not to have breast cancer (false-positive). Conversely, approximately 1000 women are given an 'all clear' result, but later discover they have breast cancer (false-negative).

Dr Lippey is an Associate Investigator on a $2.26 million MRFF grant that aims to transform breast cancer screening using artificial intelligence (AI). The BRAIx project has assembled a cross- sectoral and interdisciplinary health research team comprised of epidemiologists, AI computer scientists, data scientists, health statisticians, radiologists and breast surgeons (healthcare practitioners), qualitative researchers, and genomic researchers. The diverse team is investigating the use of novel AI techniques in developing deep learning algorithms to improve analysis and interpretation of mammograms and ultimately transform breast cancer screening.

The BRAIx team has already demonstrated the opportunity to significantly improve screening outcomes, lower harms and reduce costs using AI. The BRAIx team's current AI algorithm wa trained to distinguish between 'normal' and 'cancer' samples from small patches of mammograms. The team then tested the model using previously unseen images. Their model produced 88 per cent accuracy, which is on par with human performance. The next stage of research for the BRAIx team is applying their developed deep learning algorithms in a 'proof of concept' prospective screening study to measure the model's real-world performance accuracy at detecting cancers.

Concurrently, BRAIx researchers at University of Melbourne are applying models to discover novel aspects of a mammogram that predict a woman's risk of breast cancer. Underpinning these novel AI research aims, BRAIx researchers are also leading engagement on the ethical, legal and social implications of utilising AI models in healthcare, developing approaches to explain AI prediction and will use a co-creation approach in implementing these models in St Vincent's BreastScreen services. With this technology, the team envision a more nuanced detection of breast cancer and a more personalised assessment of a woman's risk of developing breast cancer at the time of a mammographic screen. This work has led to two preprint articles; one in *medRxiv* and another in *The Lancet*.

The BRAIx team was successful in 2023 in securing a further $2.99million grant from MRFF for a randomised control trial to test the developed AI mammographic reading algorithm in real time within BreastScreen Victoria and BreastScreen South Australia. This is again a cross institutional project with partners from University of Melbourne, St. Vincent's Institute and Monash University. Dr Lippey is leading the qualitative arm, which addresses implementation and input from clients and clinicians around acceptability and trust.

DEVELOPMENT, EVALUATION AND IMPLEMENTATION OF AN ONLINE DECISION AID FOR RISK BASED BREAST CANCER SCREENING

Population breast cancer screening has successfully reduced breast cancer mortality by 20% since its inception in the 1990s. It was established at a time when little was understood about breast cancer risk factors so that it currently stratifies for risk based primarily on gender and age. We now understand a lot more about breast imaging as well as breast cancer risk factors and it would be logical to tailor different screening modalities and frequency to women depending on their individual breast cancer risk. The concept of risk-based population breast cancer screening is being considered locally and is under trial in UK, USA, Canada, Italy and Europe with the multisite MyPeBS trial.

Consumers require education and understanding about a change to the program and Dr Lippey's PhD has addressed consumer needs in this regard. Initially funded by a NBCF Practitioners grant Dr Lippey developed an online decision aid (https://www.defineau.org/) after facilitating focus group with current BreastScreen Victoria clients. This decision aid was tested with an online pre-post survey design showing a considerable impact of knowledge as well as acceptance of varied screening frequencies.

The final project for Dr Lippey's PhD, funded by the Gloria and Herbert Keys RACS scholarship addresses key stakeholders' perspectives on the implementation of decision aids and risk-based screening more broadly. It has involved interviewing 21 key stakeholders in Breast screening in Australia, addressing the barriers and enablers to the introduction of risk based screening as well as the use of decision aids to this end. This work resulted in a publication in the journal *NPJ Breast Cancer* in August 2023.

AUSTRALIA NEW ZEALAND TARGETED AXILLARY DISSECTION (TAD) REGISTRY

This registry aims to focus on improving breast cancer treatment by evaluating a new surgical technique called Targeted Axillary Dissection (TAD). This technique aims to minimise surgical burden while maintaining good long-term outcomes for patients. Nodal involvement (spread to

lymph nodes) is a crucial factor in breast cancer prognosis. It guides treatment decisions, often involving neoadjuvant chemotherapy (NAC) to potentially eliminate cancer cells before surgery. Traditional treatment for node-positive patients involves axillary lymph node dissection (ALND), which can cause significant side effects. Sentinel lymph node biopsy (SLNB) after NAC is a less invasive option, but may miss hidden cancer cells.

TAD has been shown to have a very low false-negative rate, making it a more reliable option than SLNB after NAC. Additionally, it has the potential to significantly reduce post-operative complications compared to ALND. This registry is critical for understanding the long-term effectiveness of TAD in terms of local recurrence rates, disease-free survival, and overall survival. The data can be used to determine if TAD can become a standard treatment option for suitable breast cancer patients in Australia and New Zealand. This was published as a perspective paper in the *ANZ Journal of Surgery* in December 2023.

This research has the potential to improve the quality of life for breast cancer patients by offering a less invasive surgical approach with excellent oncological outcomes.

IMPLEMENTATION AND EVALUATION OF A NEOADJUVANT CHEMOTHERAPY IMAGING PATHWAY IN BREAST CANCER

Neoadjuvant chemotherapy (NAC) is a crucial treatment for many breast cancer patients. To optimize patient care, our team is implementing a standardized imaging pathway specifically designed for patients receiving NAC. This pathway uses evidence-based practices to guide imaging throughout the treatment process, from initial diagnosis to post-treatment evaluation.

This standardised approach offers improved treatment response assessment by using consistent imaging protocols that allows for a more accurate evaluation of how well the NAC therapy is working on the tumour. The imaging pathway helps guide important clinical decisions about surgery and further treatment options.

This study aims to streamline patient-care by having a standardized approach to ensure consistency in patient care across different clinicians, leading to a more efficient and effective treatment journey.

BREAST AND ENDOCRINE CANCER BIOBANK

The Breast and Endocrine Surgery Units have established a comprehensive cancer biobank, containing matched clinical blood and tumour samples. Currently the units have banked samples from 95 endocrine patients and over 250 breast patients. This biobank is overseen by the Breast Surgery Head of Unit, Miss Caroline Baker, and the Endocrine Surgery Head of Unit, Mr Stephen Farrell. Research Coordinator Suraya Roslan manages sample coordination and patient recruitment. This repository of matched blood and tissue samples provides a valuable resource for diverse research projects and multi-institute collaborations.

AUSTRALIAN NEW ZEALAND THYROID CANCER REGISTRY

The Endocrine Surgery unit at St Vincent's Hospital is proud to be a contributing institution to the Australian & New Zealand Thyroid Cancer Registry (ANZTCR). This national clinical quality registry plays a crucial role in improving the diagnosis, treatment, and long-term outcomes of patients with thyroid cancer. Our contribution to the registry allows researchers to gain valuable insights into thyroid cancer patterns across Australia and New Zealand. This data will inform best practices and potentially lead to improved treatment options in the future.

By participating in the ANZTCR, we can benchmark our own practices against other institutions. This facilitates identification of areas for improvement and allows us to continuously strive for excellent quality of care for thyroid cancer patients within our institution and across the region.

CLINICAL SUPPORT TOOL FOR LOW RISK THYROID CANCER

Thyroid cancer rates are rising, but most cases have excellent outcomes. This is due to better detection methods and successful treatments. Historically, surgery was the main treatment, but there is a shift towards a more personalised approach.

Active surveillance (AS) is emerging as a safe alternative to surgery for certain low-risk thyroid cancers. This means monitoring the cancer closely without immediate surgery. However, doctors might not be comfortable selecting suitable patients due to a lack of clear guidelines and decision-making tools. This clinical trial is in collaboration with the team at the Royal North Shore Hospital and its main aim is to develop a tool to help doctors decide if AS is appropriate for a patient.

This tool will consider factors like tumour size, location, and other characteristics. We will test this tool in a study comparing patients who choose AS with those who have surgery. We will track disease progression in the AS group and recurrence in the surgery group as well as examine quality of life and cost-effectiveness of both approaches. This study may lead to a more personalised approach to thyroid cancer treatment, offering some patients the option of avoiding surgery while still ensuring excellent outcomes.

ST VINCENT'S HOSPITAL MELBOURNE ENDOCRINE DATABASE

The Endocrine Surgery Unit at St Vincent's Hospital Melbourne (SVHM) has established a comprehensive database to capture information on all patients undergoing endocrine surgery (thyroid, parathyroid, adrenal, or pancreas) by our team. This initiative is to improve patient care and advance our understanding of endocrine surgery.

By collecting detailed data on surgical procedures and patient outcomes, we can continuously monitor and improve the quality of care we provide. This allows us to identify areas for improvement and ensure our patients receive the best possible surgical outcomes.

This valuable data resource will be instrumental in conducting research on endocrine surgical conditions. By analysing trends and patient experiences, we can contribute to advancements in surgical techniques, treatment options, and ultimately, improved patient outcomes across the field.

News Highlights

AWARDS

Key stakeholder perspectives on implementation of an online decision aid for risk stratified breast cancer screening in Australia – **Royal Australasian College of Surgeons (RACS) - Herbert and Gloria Kees Research Scholarship $66,000 – Dr Jocelyn Lippey (2023)**

GRANTS

Medical Research Future Fund Clinical Trials Activity, $2,994,374 (2023-2027) – *A Randomised Controlled Trial to Assess if the Implementation of an Artificial Intelligence Mammogram Reader Improves Breast Cancer Screening.*

Collier Charitable Fund, $50,000 (2022-2023) – *SVHM Breast Unit Database.*

Cancer Council NSW, $449,682 (2022-2024) – *Development of an integrated micro fluidic platform for multinomics analysis of exosomes to improve the treatment of metastatic breast cancer.*

Cancer Council Victoria, $600,000 (2020-2024) *A Pilot Study of Prone Position Neoadjuvant Breast Radiotherapy to Reduce Skin Toxicity.*

STUDENTS

Sebastian Spillane – MD3 Student - *"Therapeutic nipple-sparing mastectomy: a scoping review of oncologic safety and predictive factors for in-breast recurrence"*

Jessica Nguyen – Honours Student in population and global health University of Melbourne *"The Understanding and Attitudes of Artificial Intelligence Use in Mammography among Clinicians and Clients of Population Breast-screening: A Mixed-Methods Systematic Review"*

Niamh Keating – Masters of Surgery Trinity College Student *"Malignant upgrade rate and associated clinicopathologic predictors for concordant intraductal papilloma without atypia: A systematic review and meta-analysis"*


Dr Jocelyn Lippey

PUBLICATIONS

The unit has achieved multiple notable publications in 2023-2024.

From Breast Surgery, several articles were published, one in the *Journal of Surgical Oncology* and a qualitative research paper by Dr Lippey in the *Journal of Supportive Care in Cancer.*

Endocrine Surgery also had numerous publications during this period. Mr. Farrell authored a guideline for primary hyperthyroidism in adults in the *Journal of Clinical Endocrinology*, contributed a book chapter in Histopathology, published a case report in JCEM Case Reports, and presented a clinical protocol in the *International Journal of Pediatric Otorhinolaryngology*. Additionally, Mr. Farrell co-authored a publication with Mr. Tan in the *ANZ Journal of Surgery* on laparoscopic insulinoma enucleation in June 2024.

St Vincent's Pre-SET Society


Dr Aiden Jackson

The St Vincent's Pre-SET Society continues to go from strength to strength, providing clinical, academic, and social support to junior doctors at St Vincent's interested in surgery.

Surgical education is a key aspect of our service provision, and we have continued to deliver a jam-packed series of surgical lectures and tutorials to both medical students and junior doctors. We often have 20-25 keen juniors in attendance for weekly teaching sessions which will continue for the rest of the year on Wednesday evenings. 2024 also saw another hugely successful running of our Registrar Ready Day, where 50 people attended a series of practical workshops in a specialty of their choice.

One of the key programs we run is the GSSE workshop, an intensive study course run over a weekend around 2 months before the GSSE. In March we had almost 30 students signed up to what was again a hugely successful course. Keep an eye out for our next course in late July, prior to the October GSSE. We will also run a Clinical Exam workshop in September prior to the October RACS Clinical Exam – please let us know if you are interested.

Pre-SET is keen to help junior doctors interested in research to fulfill their career goals. We have informally linked many juniors with interested consultants in the last 12 months. Our flagship event for the year is coming up on 1st August, "Operation Collaboration". Here we will create a marketplace-like atmosphere where juniors can mingle with Surgical Units at the hospital to discuss their research goals and join applicable projects. Keep an eye on our social media platforms for ticket sales.

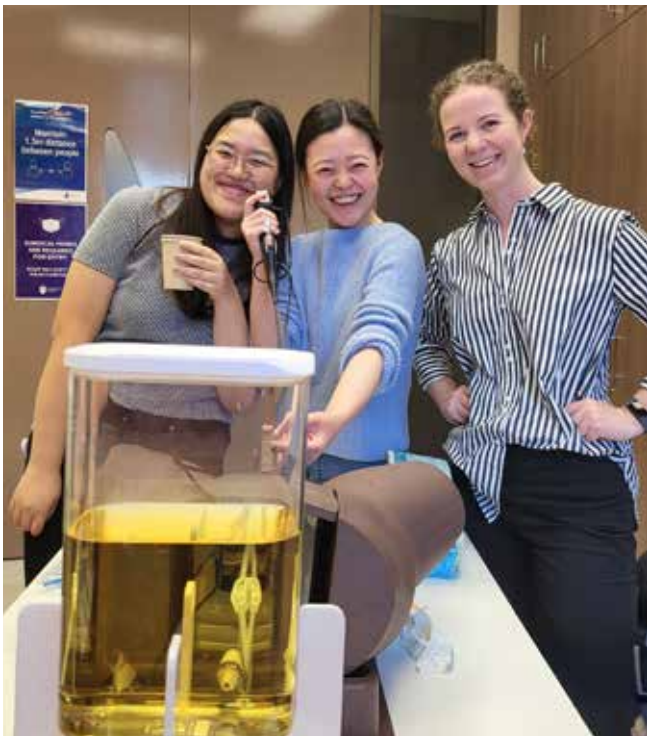
Finally, our community has also come together in social settings throughout the year to relax and catch up outside the work environment. Our year started strongly with our Welcome Night at Rocco's on Gertrude St, where more than 60 juniors packed in to hear Professor Choong inspire us to another year of collaboration and achievement. We have since held endof- term drinks for residents, and have many more social events planned for the year!

Pre-SET has helped to foster a vibrant and energetic community of junior surgeons at St Vincent's in the last 12 months. Our social media platforms, newsletters, and Whatsapp group are great ways to stay involved. We are very grateful to all those who help make our community so great, especially the senior doctors who give up their time to teach, mentor, and guide us. I encourage all of those whom our Society might benefit to get involved, and help yourself and the hospital be the best they can be in the 12 months to come and beyond.

Dr Aidan Jackson

Chief Surgical Resident 2024
aidan.jackson3@svha.org.au

Urology Unit



CLINICAL RESEARCH

Results from our PEDAL study (P.I. Lih-Ming Wong) were published in European Urology Oncology (Jan 2024). PEDAL is a phase 3 single arm prospective trial comparing diagnostic accuracy between PSMA-PET/CT and multiparametric MRI (mpMRI) to diagnose prostate cancer at biopsy. This study showed that mpMRI had superior diagnostic accuracy over PSMA-PET/CT to detect prostate cancer at biopsy (AUC 0.76 vs 0.63, p=0.03).

Further high impact publications in uro-oncology have been achieved through ongoing collaboration as co-investigators with Peter MacCallum Cancer Centre (C.I. Lih-Ming Wong). Long term follow-up from the proPSMA trial showed baseline PSMA PET-CT was predictive of treatment failure in men with intermediate-to-high risk prostate cancer (European Urology, 2024). The FASTRACK II study was a non-randomised phase 2 trial assessing Stereotactic ablative body radiotherapy for primary kidney cancer and was published in Lancet Oncology in March 2024. This new knowledge informed further research on SABR which is increasingly recognised as a new treatment for kidney CA. By providing a treatment option for patients not suitable for surgery it has impacted and improved health management.

A/Prof Wong is co-supervisor for Dr Arthur Yim, Master of Surgery candidate. Dr Yim is researching bladder spectroscopy as an innovative method that could potentially provide an alternative to tradiational tissue diagnosis, that is rapid and deliverable at point of care (e.g. cystoscopy bedside). Thus far, our work using multimodal spectroscopy to diagnose bladder cancer has led to two publications and a $20,000 seed grant from the St Vincent's Research Endowment fund in 2024.

Dr Sethi supervised medical student (S Poppenbeek) and successfully published their narrative review examining the role of alpha blockers in reduction of urinary retention risk post transperineal prostate biopsy.

ACMD CHALLENGE PROGRAM

Dr Anthony Ta and A/Prof Lih-Ming Wong, in collaboration with Dr Katherine Davey (Biomedical Engineering Department) have been awarded a 10K seed grant from the ACMD Challenge Program. The Aikenhead Centre for Medical Discovery (ACMD) strives to be the premier biomedical engineering research translation centre in Australia by bringing together 7 university and research institutes (including University of Melbourne) with St Vincent's Hospital Melbourne, a tertiary hospital. This project looks to develop surgical video registry and develop an artificial intelligence algorithm to automatically assess surgical videos by recognising anatomy and surgical gestures.

ROBOTIC SURGERY:

In 2024, A/Prof Wong's cost allocation business case for the Da Vinci robot led to St Vincent's public hospital signing a risk-share model to enable robotic surgery for urology and other specialties. He was honoured to perform the first robotic operation in the hospital on January 25th, 2024.

Subsequently, A/Prof Wong was successful, in collaboration with A/Prof Chris Schilling (Health economist, University of Melbourne School of Global Health) in obtaining a clinical research grant from the Intuitive Foundation to evaluate the impact of the introduction of robotic surgery at St Vincent's Public Melbourne ($75K USD). We will take the novel approach of assessing if robotic surgery, by reducing length of stay, can increase hospital revenue (productivity) by improved bed efficiencies.

SVH Da Vinci Robot 1st case

Colorectal Unit

Dr Michael Johnston , Professor Laura Hancock, Dr Glen Guerra , Professor Brendan Moran and Dr Cori Behrenbruch at the CSSANZ Spring Meeting.

RESEARCH THEMES

Colorectal cancer is presenting in patients less than 50 at a much higher prevalence globally. To help detect bowel cancer at an earlier stage, this year the screening age for patients with colorectal cancer has been reduced to 45. In collaboration with the Cancer Council, the Colorectal Unit is involved in a multi-centre study – UPBEAT-50 – aimed at determining the barriers to diagnosis and treatment in this group.

The colorectal unit is involved in a number of national and international, multicentre trials:

PROACTIVE: Prospective randomised controlled trial of adults with perianal fistulising Crohn's disease and optimised therapeutic infliximab levels. This trial aims to assess whether infliximab therapy targeting higher TLIs guided by proactive TDM improves outcomes compared with standard therapy. Read the trial protocol. https://pubmed.ncbi.nlm.nih.gov/34210720/

POLARiS: Pathway Of Low Anterior Resection syndrome relief after Surgery. This is a multi-centre, feasibility cohort study with embedded randomised control trial to compare sacral neuromodulation and trans-anal irrigation to optimised conservative management in the management of major low anterior resection syndrome following rectal cancer treatment. Read the trial protocol. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9835955/

PRIORITY-CONNECT 2 TRIAL: effectiveness of prehab program for major gastrointestinal cancer surgery. Read the trial protocol. https://www.sciencedirect.com/science/article/pii/S2950247024000914

HIGHLIGHT 1

The colorectal unit has constructed the program and hosted two important colorectal meetings during this period. The first was the 2024 National Surgical IBD symposium (SIBD) with international guests Professor Willem Bemelmen, AMC Netherlands and Dr Janindra Warusavitarne, St Mark's, London. The one day program was well attended by 100 registrants where updates were provided in the management of complex IBD.

Dr Michael Johnston and Dr Cori Behrenbruch were the convenors for the 2024 CSSANZ spring meeting hosting over 300 colorectal surgeons from Australia and New Zealand for a two day education program. International speakers included Professor Brendan Moran, a peritoneal surgeon from Basingstoke UK and Professor Laura Hancock an IBD specialist from Manchester University Foundation Trust.

HIGHLIGHT 2

International consortiums

The colorectal unit continues to be involved in providing progressive, yet evidence based, multidisciplinary care for patient with complex inflammatory bowel disease. Dr Cori Behrenbruch is now a member of the "TOPCLASS" international consortium (https://topclass-ibd.com/), a group of clinical specialists and researchers, united in advancing the care of perianal Crohn's Disease. The group has been active since 2022 and currently encompasses centres across Europe, North America and Australia. Recent publications from the group include:

- Hanna, L. N., Anandabaskaran, S., Iqbal, N., Geldof, J., LeBlanc, J. F., Dige, A., Lundby, L., Vermeire, S., D'Hoore, A., Verstockt, B., Bislenghi, G., De Looze, D., Lobaton, T., Van de Putte, D., Spinelli, A., Carvello, M., Danese, S., Buskens, C. J., Gecse, K., Hompes, R., … Tozer, P. (2024). Perianal Fistulizing Crohn's Disease: Utilizing the TOpClass Classification in Clinical Practice to Provide Targeted Individualized Care. Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association, S1542-3565(24)00692-X. Advance online publication. https://doi.org/10.1016/j.cgh.2024.06.047

Ear, Nose & Throat, Head and Neck Unit

- Wong, S. Y., Rowan, C., Brockmans, E. D., Law, C. C. Y., Giselbrecht, E., Ang, C., Khaitov, S., Sachar, D., Polydorides, A. D., Winata, L. S., Verstockt, B., Spinelli, A., Rubin, D. T., Deepak, P., McGovern, D. P. B., McDonald, B. D., Lung, P., Lundby, L., Lightner, A. L., Holubar, S. D., … Colombel, J. F. (2024). Perianal Fistulizing Crohn's Disease-Associated Anorectal and Fistula Cancers: Systematic Review and Expert Consensus. Clinical gastroenterology and hepatology: the official clinical practice journal of the American Gastroenterological Association, S1542-3565(24)00504-4. Advance online publication. https://doi.org/10.1016/j.cgh.2024.05.029

Dr Cori Behrenbruch and Dr Glen Guerra have also been involved in projects with PelvEX, an international collaborative group involving over 140 units across five continents with the aim to examine outcomes for patients who have had pelvic exenterative surgery. Recent publications include:

- PelvEx Collaborative (2023). Empty pelvis syndrome: PelvEx Collaborative guideline proposal. The British journal of surgery, 110(12), 1730–1731. https://doi.org/10.1093/bjs/znad301
- PelvEx Collaborative (2024). Beating the empty pelvis syndrome: the PelvEx Collaborative core outcome set study protocol. BMJ open, 14(2), e076538. https://doi.org/10.1136/bmjopen-2023-076538

HIGHLIGHT 3

The colorectal unit at SVH provides specialised/novel techniques/equipment for both benign and malignant colorectal conditions. The unit now provide robotic procedures with using a dual- console Da Vinci Xi robotic platform. Additionally we remain the only public unit offering sphincter preserving surgery for perianal fistula using the Neo-laser and VAAFT.

HIGHLIGHT 4

Reducing surgery waitlist

The Colorectal Unit are proud to have been able to continue to offer surgery to long waiting patients at the satellite site – St Vincent's On the Park (SVOP). An additional nine colorectal lists have been covered at SVOP, resulting in more than 130 patients undergoing surgery and significantly reducing the waitlist.

The Head and Neck cancer service at St Vincent's has focused on Quality of Life and Patient experience research recently with important findings and directions for future research. The importance of a comprehensive multidisciplinary team has been emphasized in order to maximize outcomes. Exploring the lived experience of patients undergoing cancer treatments has provided the research team with valuable insights to help deliver improved care going forward.

A/Prof Ben Dixon has been appointed as the inaugural Garnett Passe and Rodney Williams Professor of Otolaryngology Head & Neck Surgery at the University of Melbourne. With a focus on Head and Neck Cancer Research and Skull Base Surgery, the new program will drive research collaboration between the world-class clinical service at St Vincent's Hospital Melbourne and the many research groups and facilities with the University of Melbourne and beyond.

A/Prof Bernard Lyons has been awarded the Australian Society of Otolaryngology Head & Neck Surgery (ASOHNS) 2024 Society Medal. His distinguished career was celebrated including his leadership and clinical service at St Vincent's Hospital Melbourne, RACS examining and Convening International conferences. He is President of the Asia Oceania ORLHNS Society and is incoming president of ASOHNS.

A/Prof Ben Dixon and A/Prof Bernard Lyons

Austin Health

Message

Professor Vijayaragavan Muralidharan

Engagement, empowerment and collaboration are the strategic philosophies defining the culture at the Austin precinct of the Department of Surgery.

A major emphasis is the engagement between the Department of Surgery and honorary clinicians. We have developed a framework to support honorary clinicians in their quest for research and educational activities along with the opportunity to share their expertise and knowledge with others. This has resulted in greater engagement of our clinicians in research activities and greater visibility for their achievements in the field of research and education. The aspirational goal of having at least one research group in each of the surgical and therapeutic interventional units linked to the Department of Surgery is slowly being realized as more groups develop their identities. Honorary members willing to provide their own specific expertise to others form the research groups which complement available supports. The precinct has also expanded its honorary appointments outside the field of surgery encompassing nursing, allied health, education, ethics and other vocations outside healthcare to complement the craft group diversity and enhance inter-disciplinary collaboration.

This year we highlight the Austin Plastic Surgery Research and Education Unit and the Victorian Complex Oncovascular Group (VCOG).

The precinct is well supported by exceptional collaborative clinical research emanating from leading clinical research groups in Intensive Care, Anaesthesia, Gastroenterology & Hepatology, Liver Transplantation, Oncology, Emergency and Radiology Units.

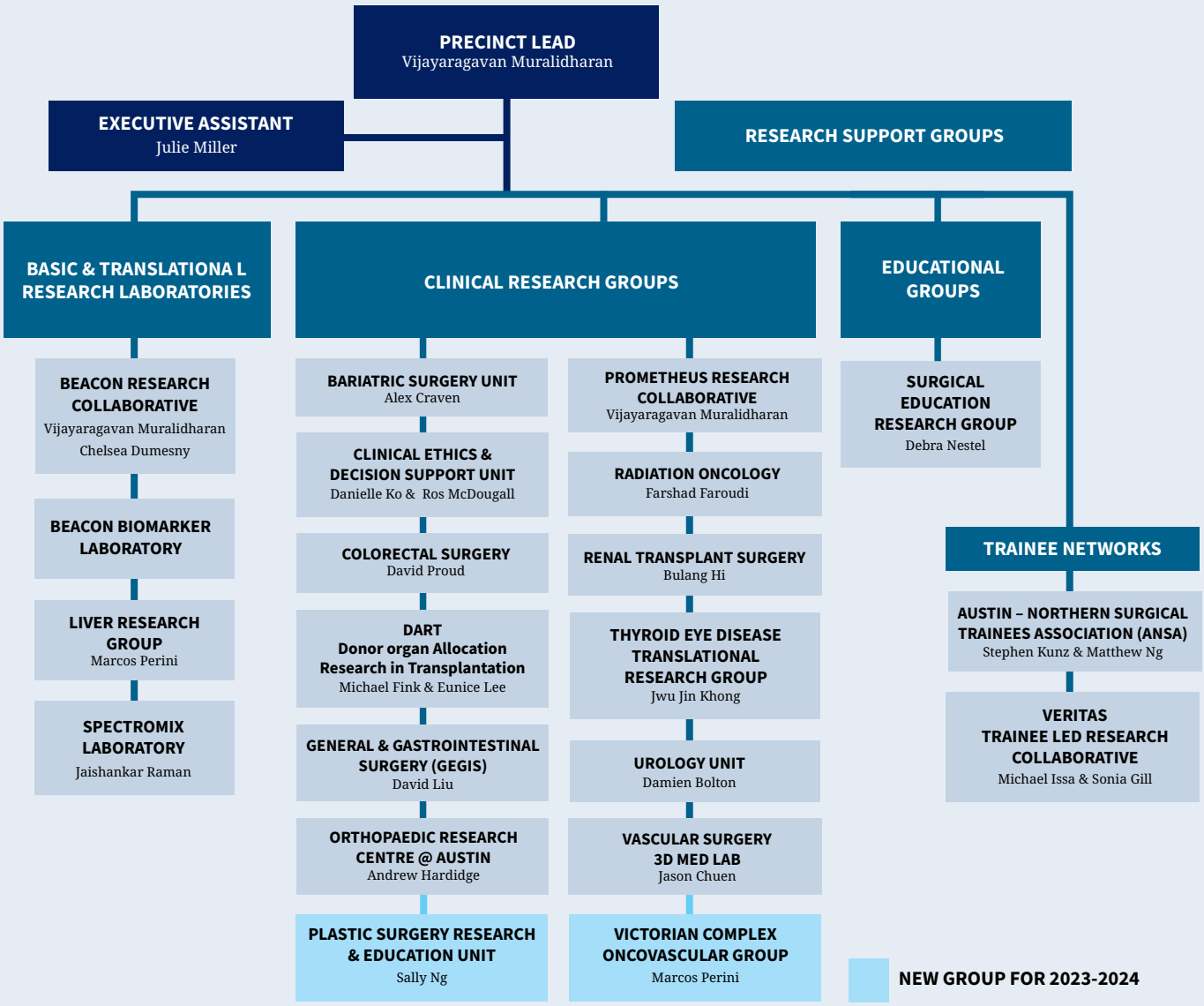
Austin Health Executive and the Austin Health Board have defined Research and Research support as one of the strategic priorities of the organization. The Office for Research has been revitalized as the Discovery and Innovations Unit with Professor James Best (Director of Research) and Dr Heidi Gaulke (Operations Director) at the helm. The Austin-Mercy Precinct Research Collaborative Committee (AMPRCC) led by Professor Richard Larkins continues to strengthen collaboration between clinicians, research institutes and hospital leadership.

The Australian Centre for Transplant Excellence and Research (ACTER) continues to evolve with the appointment of A/Prof John Whitlam as inaugural director. ACTER, Austin Foundation and Austin Research Foundation in generating substantial research grant support is a welcome development integrating with the direction of the BEACON Research Collaborative in advancing transplantation related research.

The Surgical Education Research Group (SERG) is a formalized group to interrogate the science of education. This has led to an increasing number of research higher degree students in surgical education, expanding on their experience in the Master of Surgical Education course.

Surgical education and educational research have long been cornerstones of the precinct's philosophy. The precinct is a national leader in the development of surgical trainee organizations which gives trainees some agency in shaping their training, but also enables them to develop many of the non-technical competencies that are vital in their careers as future surgeons. These include a trainee association (Austin Northern Surgical Trainee Association – ANSA), a junior doctors' surgical interest group (ASPIRE) and a successful trainee-led research collaborative (VERITAS) are examples of empowering trainees and students in research and education.

PRECINCT OVERVIEW



Key staff

Prof Vijayaragavan Muralidharan
Precinct Lead

Julie Miller
Executive Assistant

Prof Debra Nestel AM
Prof Mehrdad Nikfarjam
A/Prof Marcos Perini
A/Prof Rosalind McDougall
Dr Michael Fink
Dr Hong He
Dr David Liu
Danielle Ko
Dr Eunice Lee
Dr Kate Martin
Dr Renu Eapen
Chelsea Dumesny
Fan Zhang
Ida Candiloro
Boris Wong

98
publications

$736,041
total grant funding

16
research staff

25
research students

AUSTIN HEALTH

BEACON Research Collaborative

Prof Vijayaragavan Muralidharan


Dr Alex Dubrovic

BEACON – **B**iomarker **E**nh**A**ncement for **C**linical **O**utcomes and translatio**N**

The BEACON collaborative brings together surgeons, physicians, scientists, geneticists, biochemists, computer scientists and health economists to develop cost effective bloods tests for circulating DNA based biomarkers and streamlined workflow for widespread application in screening, diagnosis, response assessment and surveillance. One of the main aims is to focus on reducing health care costs by replacing expensive diagnostic and surveillance mechanisms with cost effective blood tests. This in turn will facilitate equity of access for regional, rural and remote communities.

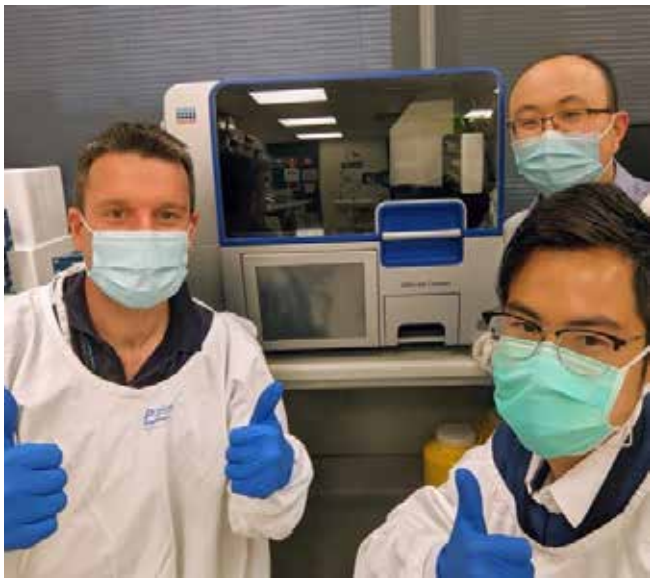
At the core of the collaborative is the BEACON Biomarker Laboratory established by the late Alexander Dobrovic (1954 – 2024) along with a multi-disciplinary management committee, plasma bank, co-supervised research students and a shared funding model. It continues to grow the foundation on which any student, research group or clinical unit may engage in translational research. The basic structure of the collaborative requires each research direction to have a surgeon, physician and scientist leading it.

The foundation for this concept was laid by members of the HPB & Liver Transplant Surgery Unit, Department of Gastroenterology and Hepatology and the BEACON Biomarker Laboratory. The laboratory has developed organ specific methylation patterns of DNA as the main area of research along with the ability to measure circulating cell free mitochondrial DNA. Current research directions are as follows:

- Assessment of acute rejection after liver transplantation
- Detection of colorectal cancer (Molecular Colonoscopy)
- Diagnosis and surveillance of Hepatocellular Carcinoma

One of the key features of the collaborative is the co-supervision of RHD students by surgeons, physicians and scientists. This further strengthens the foundation of the program by establishing long term inter-disciplinary relationships. The BEACON program provides the structure that links the research groups within the precinct (LiReG, PCBRG), external groups (ONJCRI, UoM Biomedical Sciences) and clinicians.


Beacon Biomarker Laboratory



BEACON Biomarker Lab

The laboratory was established by the late Alexander Dobrovic as the Translational Genomics and Epigenomics Group Laboratory which evolved into its present form upon joining the Department of Surgery Austin precinct. This laboratory is an Australian leader in developing novel molecular diagnostic methodologies for use in clinical practice. Translating research into practice is facilitated by the accreditation of the laboratory for liquid biopsy and genetic testing with NATA and the RCPA.

The research team applies enormous creativity, that is highly focused on clinical relevance and thus depends on partnership with clinical colleagues. The close relationship of key clinicians with the laboratory further enables our research to be translated into better treatment and care. A key application is sequential molecular monitoring to allow patients to be managed with a more personalised and nuanced approach to treatment.

The laboratory's principal expertise is in the areas of circulating DNA and DNA methylation analysis, in particular: DNA methylation for predictive biomarkers and as a toolbox of genetic markers, circulating free DNA for diagnostics and monitoring in cancer and organ transplantation.

HIGHLIGHTS:

The laboratory has seen the graduation of two HPB + Transplant Surgeons with PhDs and has three Hepatologists currently undertaking their PhDs. Some of the work by the students have been incorporated into international clinical guidelines.

BEACON RESEARCH COLLABORATIVE MANAGEMENT COMMITTEE	
Prof Vijayaragavan Muralidharan *(Head and Medical Director of the BEACON laboratory)*	Dr Avik Majumdar *(Transplant Hepatologist)*
A/Prof Adam Testro *(Transplant Hepatologist, Medical Director Liver Transplant Unit))*	Prof Niall Tebbutt *(Director, GI Oncology)*
Dr Eunice Lee *(HPB + Transplant Surgeon)*	Chelsea Dumesny *(Manager)*
	Kat Hall *(Clinical Research Nurse)*
	Kim McAughtry *(Finance Manager)*
BEACON Laboratory	**RHD STUDENTS**
Ka Leong Boris Wong *(Research Assistant)*	William Chung *(Gastroenterologist)*
Fan Zhang *(Research Assistant)*	Tess McClure *(Gastroenterologist)*
Ida Candilaro *(Research Assistant)*	Dorothy Liu *(Gastroenterologist)*
Su Kah Goh *(HPB + Transplant Fellow)*	Thomas Tiang *(Colorectal Fellow)*
Daniel Cox *(HPB + Transplant Fellow)*	Osamu Yoshino *(HPB Surgeon)*

AUSTIN HEALTH

Bariatrics Research


A/Prof Ahmad Aly

GLOBAL PROBLEM, LOCAL ACTION

The diseases of overweight and obesity are arguably Australia's most important - causing the highest burden of lived disease and second highest burden of mortality. Despite this, very few Australian teaching hospitals provide any effective obesity treatments, let alone education to trainees medical or surgical obesity care. A leading exception is the Austin Health Metabolic/Bariatric Surgery program, performing over 15% of the publicly funded bariatric surgery in Australia, and a much higher proportion of revision cases.

Led by A/Prof Ahmad Aly, the unit is actively engaged in local teaching, national and global education and advocacy initiatives. Unit members hold leadership roles on the National Association for Clinical Obesity Services (NACOS), Australian and New Zealand Metabolic and Obesity Surgery Society (ANZMOSS), the International Federation for Surgery for Obesity and Metabolic Disease (IFSO), and charitable foundation Impact Obesity. A local treatment database and regular research meetings support steady research output on models of care and outcomes of metabolic/bariatric surgery.

Recent updates…

International Federation for Surgery for Obesity and Metabolic Disease (IFSO) Global Congress, Melbourne, 2024

Head of upper gastrointestinal surgery, A/Prof Ahmad Aly, was Congress President for the premier conference on effective obesity treatment worldwide - held in Melbourne this year. Upper gastrointestinal surgeon, Dr Alex Craven, joined him on program and organizing committees, and Dr Krinal Mori, and Dr Kiron Bhatia contributed to chairing and moderating key sessions.

Over 1700 surgeons, physicians, dietitians, nurses, psychologists and other integrated health professionals across the globe attended the IFSO global congress, which received widespread praise for its inclusive, multidisciplinary and outcomes-focused approach to the global obesity crisis. A/Prof Aly presented on multiple key topics and joined a number of panels, and Ms Jarryd Walkley, was an invited speaker in the integrated health program, where the coordinated care pathways of the Austin bariatric unit were presented as an ideal model for multi-surgeon and government-funded metabolic surgery units. In a powerful first for IFSO, Dr Alex Craven produced a session devoted to lived experience of obesity and patient advocacy, where those with experience of weight stigma and effective obesity treatment provided invaluable insight for the health professionals attending. A number of other Austin Health and Melbourne University senior medial staff from other departments also contributed presentations at the congress.

DIXON AWARD BEST PAPER IN INTEGRATED HEALTH

Jarryd Walkley is imbedding nurse-led clinical practice research to improve service design and delivery for patients referred for metabolic and bariatric surgery (MBS). Among the research, her team has designed and implemented an expediated care pathway for women with endometrial cancer whose weight is prohibiting definitive cancer treatment, along with a complex-care multidisciplinary meeting to improve equitable access to a resource limited public health service, and expedited care where appropriate. Jarryd received the Dixon Award for Best Paper in Integrated Health in 2023 when presenting her work at the ANZMOSS Scientific Meeting.

BEVERLEY BRIESE AUSTIN HEALTH NURSING SCHOLARSHIP

Jarryd Walkley, Bariatric Surgery Nurse Coordinator was awarded the Beverley Briese Austin Health Nursing Scholarship 2024 which will support the investigative phase of a long-term, multi-departmental shift towards a complex care referral pathway for patients who are seeking obesity treatment at Austin Health. Her goal is to design, implement, and evaluate a nurse-led complex care referral pathway at Austin Health. This pathway will deliver clinically appropriate care that is accessible, informed, and supportive, empowering patients to actively participate in their care. This scholarship and subsequent investigation of different models of care globally, will solidify the place of advanced nursing practice in the implementation and evaluation of this change.

Dr Alex Craven

Austin Obesity Conference

AUSTIN OBESITY CONFERENCE

Dr Alex Craven and Jarryd Walkley co-convened the inaugural Austin Obesity Conference in June 2024. General practitioners, nurses, allied health, and medical specialists attended Austin Hospital for a full day of education, discussion and networking as part of a very unique event in Australia for obesity care.

Experts from Austin Health and around Victoria joined Andrew Wilson from Weight Issues Network, and internationally regarded obesity expert Dr Georgia Rigas, to speak on modern evidence and understanding of obesity, treatment options, key concepts in decision-making, and delivery of high-quality obesity care. Austin Health's commitment to improving obesity care was made clear by Board Chair, Ross Cooke AOM in his opening address, and there was also input from former Austin Health nurse (now Assistant Minister for Health and Aged Care) The Hon Ged Kearney, MP.

The team is fiercely proud of the opportunity to highlight the importance equitable access to obesity care, particularly in public healthcare and the role that nurses play in leading this service at Austin Health. They were proud to see the immense amount of volunteer work that went into brining the conference to life, be so well received. "We have had an overwhelming amount of positive feedback about the conference, before we even had the chance to ask for it! Many have reached out asking when our next one will be so we better get planning!"


Ms Jarryd Walkely receiving the Dixon Award for Best Paper in Integrated Health in 2023

BARIATRIC SURGERY HOSPITAL IN THE HOME (bHITH)

Demand for greater perioperative capacity and rising costs associated with inpatient stays are driving innovative approaches to delivering post-operative care. Building on existing enhanced recovery after surgery (ERAS) pathways, a nurse-led multidisciplinary team designed an early discharge pathway for primary gastric sleeve (SG) and gastric bypass (GB), which was instituted in August 2023. Patients transition to at home nursing support via the Hospital in the Home service. The pilot study showed 80% of patients successfully transferred to bHITH, with no readmissions or reported complications in 28 days, a total of 55 bed days saved, and excellent patient satisfaction levels. In a display of trans-Tasman solidarity, the program has since been passed onto and successfully implemented in a New Zealand Hospital.

IFSO VISITING FELLOW

Austin Health's Metabolic/Bariatric Surgery Unit was identified as one highest regarded teaching institutions in the world, by the International Federation for Surgery for Obesity and Metabolic Disease (IFSO), in the launch of its new observership program for emerging bariatric surgeons. The "IFSO Observership Program in Metabolic and Bariatric Surgery 2024" pairs early career surgeons with distinguished teaching centres for short-term clinical immersions. Austin Health will host Indian Surgeon, Dr Akshan Ugale, in September, as one of only 2 Australian centres to be selected for the program.

ANZMOSS ACCREDITED FELLOWSHIP

Austin Health is one of the first institutions now accredited with an ANZMOSS Bariatric Fellowship. The accreditation recognizes, endorses and supports suitable existing post-fellowship bariatric training positions. Austin Health were able to demonstrate elite level clinical and governance processes during the site visit in late 2023 and received high praise from the visiting accreditors for the educational opportunities offered.

Clinical Ethics and Decision Support Unit

Danielle Ko receiving the Avant Foundation award on behalf of A/Prof Rosalind McDougall in May 2024.

Ethical decision making is integral to the delivery of high-quality patient-centred care. The Clinical Ethics and Decision Support Unit (CEADS) is a joint initiative of the University of Melbourne Department of Surgery and Austin Health. CEADS provides ethics capacity-building and education, organisational ethics consultation to support ethical policy and guideline development, and clinical ethics case consultation at Austin Health for individual patient care challenges. Our program of collaborative research addresses current ethical challenges in practice.

The CEADS team is made up of Dr Danielle Ko (Head of Unit), A/Prof Rosalind McDougall (Clinical Ethicist), Dr Carolyn Johnston (Clinical Ethicist), Sharon Feldman (Clinical Ethicist), Kat Hall (Unit Co-ordinator), Michele Gaca (Honorary Informationist) and Jerry Luo (Clinical Ethics Intern 2024).

The CEADS unit facilitated 80 clinical case consultations in Jan 2023-June 2024, that assisted with patient care challenges including end of life complexities, care of vulnerable, disadvantaged patients and assisting teams where there is a range of opinions regarding the appropriate clinical management.

HIGHLIGHTS

The philosophy of CEADS is to be guided by the concerns of clinicians on the ground as well as issues of importance to health care organisations as a whole. Common themes emerging from individual case consultations as well as clinical ethics education sessions with groups of clinicians including nursing staff or unit specific presentations, have guided the focus of the unit's research initiatives.

1. Ethical challenges with surgical waiting lists and delays to treatment

Funded by: North East Metro Health Service Partnership

Following discussions with surgical staff about the challenges of working with long waiting lists, we were successful in securing funding from the North East Metro Health Service Partnership to investigate the ethics of this complex area of practice. Ours is the first project internationally to systematically investigate this issue from a clinical ethics perspective. The ethical challenges we have mapped show that clinicians administer "the system" and bear witness to its failings, with some experiencing significant moral distress along the way. Three journal articles from this work are currently in preparation.

As a result of this project, we have developed stronger relationships with surgical unit heads and hospital executive in this space. This work has led to engagement opportunities with relevant government departments examining this issue.

2. Ethical responses to occupational violence and aggression (OVA) in healthcare

Funded by: The Avant Foundation

In collaboration with the Austin Health Emergency and Health Safety and Wellness Departments, we are investigating the ethical views and experiences of ED staff in responding to OVA. Data collection for this project is complete, and we are working with ED clinicians to develop a resource that incorporates the ethical values relevant to the management of OVA.

In addition to supporting clinicians who have experienced significant levels of OVA, this project has elevated the ethics voice at the organisational level with practical impact on hospital processes around responding to OVA.

In May 2024, Dr Danielle Ko was an invited speaker at the Avant Foundation awards ceremony held at the Art Gallery of New South Wales and accepted the Avant Foundation award on behalf of A/Prof Rosalind McDougall.

3. Medical student ethics engagement and support

A/Prof Rosalind McDougall was awarded one of the Melbourne Medical School's' Strategic Grants for Outstanding Women. This has enabled the establishment, delivery and evaluation of the University of Melbourne's Student Clinical Ethics Committee.

The project, co-designed by Mr Jerry Luo (MD3 student and inaugural CEADS Intern) involves piloting a student clinical ethics committee as an experiential learning opportunity alongside the Doctor of Medicine curriculum at the University of Melbourne. The aim is for MD students with an interest in ethics to develop work-ready skills in clinical ethics reasoning, make enriching connections with peers and staff passionate about clinical ethics, and emerge as future leaders in the clinical ethics space. This project is led by CEADS in collaboration with clinical ethicists from the Royal Children's Hospital, The Peter MacCallum Cancer Centre and the Monash Children's Hospital.

AUSTIN HEALTH

CARTWHEEL – Colorectal Research Group

Dr Helen Mohan, Dr. Adele Burgess, Dr. David Proud

RESEARCH ACTIVITIES

Graduate Students:
Ian Ong (MPhil candidate) and
Eleanor Watson (PhD candidate)

The colorectal surgery unit has continued to build its research output over the past few years. Another highlight of this year has been enhanced collaboration across the GI surgical teams especially Dr. David Liu with GEGIS to build surgical research capacity at Austin Health. Current research activities are:

COALA

Dr. Ian Ong has been working on this as part of his thesis. Highlights has been publication of the initial groundwork for the trial this year, opening the observational arm of the study and the recent launch of the pilot trial of prehabilitation prior to reversal of ileostomy.

Diverting loop ileostomy (DLI) in rectal cancer surgery

The unit has commenced two pilot projects into the impact of DLI on patients with bowel cancer. The first is a longitudinal study of the colonic microbiota before, during and after DLI with support from a grant through the Austin Medical Research Foundation. The second is examining the role of pelvic floor physiotherapy in reducing Low Anterior Resection Syndrome (LARS) symptoms. Dr Ian Ong is leading these studies for his masters thesis.

PLATIPUS

This is the focus of a PhD by Dr Eleanor Watson who has multiple publications in the past year and a multi-centre randomised control trial (PLATIPUS) in progress looking at the role of local anaesthesia as an adjunct to haemorrhoid banding. An extension of this study will be the development of an educational curriculum in the management of haemorrhoids for surgical trainees. This trial of analgesia in haemorrhoid banding has reached over 50% of target recruitment and is part of a PhD project by Dr. Eleanor Watson.

ICORC

Dr. Ian Ong has been leading a study with the International Collaboration of Colorectal Cancer Registries (ICORC) comparing infrastructure across registries.

David Proud inserting the first vagal nerve stimulator

Vagal nerve stimulation (VNS) in inflammatory bowel disease

As part of ongoing collaboration with the Florey Institute and the Bionics Institute, a trial of VNS in reducing recurrence of Crohn's disease following surgical resection recruited its first patient in 2023. A further trial will investigate the same technology in patients with Rheumatoid Arthritis.

Multi-centre trials

The unit continues to collaborate with Australian and international groups. Recruitment for the POLARIS (multi-centre, feasibility cohort study with embedded randomised control trial to compare sacral neuromodulation and transanal irrigation to optimised conservative management in low anterior resection syndrome) and DETECT-PM (investigation of the sensitivity and specificity of colon cancer tumour DNA detection in peritoneal fluid to predict subsequent peritoneal disease) will commence in late 2024. Further collaboration with the Melbourne Collaborative Group will investigate patterns of recurrence and metastasis in patients with early-stage colorectal cancer using a retrospective database.

AUSTIN HEALTH

Donor Allocation Research in Transplantation (DART)

Dr Michael Fink and Dr Eunice Lee


Dr Michael Fink and Dr Eunice Lee

Liver transplantation is a highly successful treatment for liver failure and some forms of liver cancer but unfortunately, the demand for deceased donor livers is not matched by the supply, with the result that many people die waiting for a suitable organ donor. The Donor Allocation Research in Transplantation (DART) group is dedicated to finding optimal solutions to ensure the best outcomes for patients awaiting liver transplantation and to maximise the utility of donated organs. The group has well established collaborations with the Australia and New Zealand Liver and Intestinal Transplant Registry (of which Dr Fink is the director), the liver transplant units in Australia and New Zealand, A/Prof Enes Makalic, of the Melbourne School of Population and Global Health, Mr Gabriel Oniscu, Professor of Transplantation Surgery at Karolinska Institutet, Geneva University Hospitals and faculty of Medicine and the Melbourne Liver Group.

The group undertakes statistical analysis of models of organ allocation, including simulation of new allocation algorithms, that underpins changes in allocation systems in Australia and New Zealand.

Split liver transplantation is an established method of increasing the utility of donor organs. However, its application to primary sclerosing cholangitis had not previously been studied. The group analysed the results of split liver transplantation in Australia and New Zealand and found that the outcomes of split liver transplantation is inferior to whole liver transplantation for primary sclerosing cholangitis and inferior to split liver transplantation for other indications. They demonstrated for the first time that hepatic artery thrombosis contributed significantly to the differences in outcome.

Current methods of prioritisation of liver transplant waiting list patients (model for end-stage liver disease score [MELD] and MELD-sodium) have been reported to disadvantage females. In order to correct this, a new score (MELD 3.0) was developed internationally. The group contributed to a study of waiting list prioritisation in Australia and New Zealand which compared waiting list prioritisation by MELD, MELD-sodium and MELD 3.0. The study found that prioritisation by MELD 3.0 did not impact on 90-day waiting list mortality, including in the subgroup of women, in comparison to MELD and MELD-sodium.

Normothermic perfusion is a method of assessing and improving organ perfusion prior to liver transplantation. Methods of organ assessment are evolving. The group contributed to a study investigating markers of post-transplant liver function after normothermic perfusion. The study found that higher haemoglobin concentration early after commencement of perfusion was associated with better liver function after transplantation. This is a possible treatment target to decrease post-transplant early allograft dysfunction.

The group also contributed to a network meta-analysis of machine perfusion for liver transplantation that demonstrated the benefits of both normothermic and hypothermic machine perfusion in comparison to the traditional method of organ preservation - static cold storage.

AUSTIN HEALTH

GEGIS Research and Trials Group


GEGIS Research & Trials Group

The General & Gastrointestinal Surgery (GEGIS) Research and Trials Group was established to improve the outcomes of surgical patients with benign and malignant gastrointestinal diseases. We focus on 1) Risk prediction modelling, 2) Therapeutic biomarker discovery, 3) Clinical service innovation, and 4) Clinical trials.

Our group is made up of clinicians, biostatisticians, database designers, and study coordinators passionate about improving the outcomes of patients with gastrointestinal diseases. We collaborate closely with translational scientists, bioinformaticians, medical and allied health experts, within the public and private health sectors, both nationally and internationally, to deliver scientific evidence that transforms patient care.

We encourage you to visit our website for more information.

ACTIVE PROJECTS

SPACE-FLOT: Survival and Patterns of Care in the Era of FLOT-based Chemotherapy for Gastroesophageal Cancers: An international cohort study

Synopsis: This study aims to evaluate whether pathological tumour response to neoadjuvant chemotherapy can be used to guide adjuvant therapy for gastroesophageal cancer.

Chief investigator: Dr. David Liu

Study coordinator: Ms. Kat Hall

Collaborators: 43 centres across 12 countries

SOCS: Strong for Oesophago-gastric Cancer Surgery: A prospective multicentre prehabilitation trial

Synopsis: This study aims to evaluate the efficacy of a personalised multidisciplinary enhanced prehabilitation program for patients undergoing oesophagectomy and gastrectomy.

Chief investigators: Dr. David Liu, Dr. Ashley Bigaran, Dr. Darren Wong

Study coordinator: Ms. Kat Hall

Collaborators: Austin Health, Northern Health, Olivia Newton-John Cancer and Wellness Centre, Peter MacCallum Cancer Centre

SUMO: Study of the Utility of MRI in Oesophago-gastric cancers: A prospective observational cohort study

Synopsis: This study aims to evaluate whether magnetic resonance imaging can predict tumour response to neoadjuvant therapies for gastroesophageal cancer.

Chief investigators: A/Prof. Sweet Ping Ng, Dr. David Liu

Research fellows: Dr. Su Chen

Study coordinator: Ms. Linda Watson

Collaborators: Department of Radiation Oncology and Upper Gastrointestinal Surgery Unit, Austin Health

OMEGCA: Multi-Omics Evaluation of Peritoneal Fluid in Gastroesophageal Cancers: A prospective multicentre observational cohort study

Synopsis: This study aims to develop an accurate molecular assay to better stage the peritoneum for micro-metastatic disease in patients with gastroesophageal cancer

Chief investigators: Dr. David Liu, A/Prof. Nick Clemons, Prof. Niall Tebbutt, Prof. Jeanne Tie

Research fellow: Dr. Zexi Allan

Collaborators: 11 centres across Australia

Liquid biopsies in Gastroesophageal Cancer: A prospective multicentre observational cohort study

Synopsis: This study aims to determine whether circulating tumour DNA can be used to predict tumour response to neoadjuvant therapies and guide adjuvant treatment.

Chief investigators: Dr. David Liu, A/Prof. Nick Clemons, Prof. Niall Tebbutt, Prof. Jeanne Tie

Research fellow: Dr. Zexi Allan

Collaborators: 5 centres across Australia

Textbook outcomes following antireflux and hiatus hernia surgery

Synopsis: This study aims to determine the textbook outcome criteria for antireflux and hiatus hernia surgery to enable national and international benchmarking.

Chief Investigators: Dr. David Liu, Dr. Darren Wong, A/Prof. Ahmad Aly

Research fellow: Dr. Aly Fayed

GEneral & GastroIntestinal Surgery
GEGIS
RESEARCH & TRIALS GROUP

SPACE-CRIO: Survival and Patterns of Care in the Era of Chemo -, Radio- and Immuno-Oncology for Gastroesophageal Junction Cancers: A national cohort study

Synopsis: This study aims to compare two current standards of care for gastroesophageal junction cancers to identify the optimal treatment for our patients.

Chief Investigator: Dr. David Liu

Study coordinators: Ms. Kat Hall

Collaborators: 25 centers across Australia

SMF-3: Magnetic Sentinel Lymph Node Mapping in Upper Gastro-Intestinal Cancer: A Feasibility Clinical Investigation

Synopsis: This study aims to assess the safety and tolerabilitiy, feasibility and potential added diagnostic and clinical value of using the FerroTrace and FerroMag SLNM System for mapping sentinel lymph nodes in patients with gastric, gastric-oesohageal junction and oesophageal cancers.

Principal Investigator: Dr. David Liu

Associate Investigator: A/Prof Sweet Ping Ng

Study coordinators: Ms. Kat Hall

Collaborators: 4 centers in South Australia and Victoria

ULTRAS: Ultra-high dose radiation for Liver metastasis using MR-guided TReatment with stereotactic Ablative Single-fraction: phase III randomized controlled trial

Synopsis: This trial compares MR-guided stereotactic ablative single-fraction with ultra-high dose radiation versus high dose radiation for liver oligometastasis/ oligoprogression.

Principal Investigator: A/Prof Sweet Ping Ng

Study coordinators: Ms. Kat Hall

Collaborators: International

Detect-PM: Exploring the Utility of Peritoneal Tumour DNA to Detect Clinically Occult Peritoneal Metastasis in Locally Advanced Colon Cancer

Synopsis: This study aims to determine the sensitivity and specificity of tumour DNA detection in peritoneal fluid collected at the time of primary resection of non-metastatic locally advanced or perforated colon cancer to predict for subsequent peritoneal recurrence.

Principal Investigator: Dr David Proud

Study coordinators: Ms. Kat Hall

Collaborators: Victoria

PRIORITY-CONNECT 2: Virtual Multimodal Hub for Patients Undergoing Major Gastrointestinal Cancer Surgery: Randomised Type 1 Hybrid Effectiveness-Implementation Trial

Synopsis: This trial aims to establish the effectiveness of an individualised stepped multidisciplinary intervention including education and peer support group, delivered via a virtual multimodal (pre)rehabilitation hub, in reducing postoperative complications within 30-days following major colorectal cancer surgery, compare to usual care alone.

Principal Investigator: Dr Helen Mohan

Study coordinators: Ms. Kat Hall

Collaborators: 24 Australian sites

POLARiS: Pathway Of Low Anterior Resection syndrome relief after Surgery

Synopsis: A multicentre randomised control trial assessing the treatment options for patients with major low anterior resection syndrome (LARS) to establish a pathway of LARS relief after surgery

Principal Investigator: Dr David Proud

Study coordinators: Ms. Kat Hall

Collaborators: International

2023-2024 RESEARCH OUTPUT

- Research funding: 3 grants from AGITG, VCA and CCV totalling >$1.1 million
- Publications: 29 manuscripts

THE GEGIS RESEARCH AND TRIALS TEAM

- Dr. David Liu, Upper Gastrointestinal Surgeon, Lead and Principal Investigator
- Dr. Sean Stevens, General Surgeon, Principal Investigator
- Dr. Ashley Bigaran, Exercise Oncologist, Principal Investigator
- A/Prof. Sweet Ping Ng, Radiation Oncologist, Principal Investigator
- Dr. David Proud, Colorectal Surgeon, Principal Investigator
- Dr. Helen Mohan, Colorectal Surgeon, Principal Investigator
- Ms. Kat Hall, Program Manager
- A/Prof. Darren Wong, Gastroenterologist, Biostatistician
- Dr. Eunice Lee, Hepatobiliary Surgeon, Database Designer

AUSTIN HEALTH

Liver Research Group (LiReG)

A/Prof Marcos Perini

The Liver Research Group (LiReG) continues to excel as a world-renowned translational research group, focusing on liver cancer from basic science to clinical studies. The group strives to unravel the complexities of cellular signalling pathways in liver carcinogenesis and regeneration, while also investigating the role of the immune system in these processes. With strong national and international collaborations, LiReG is at the forefront of groundbreaking liver research, with tangible contributions to both the scientific community and patient outcomes.

COLLABORATIVE PARTNERSHIPS AND RESEARCH FOCUS

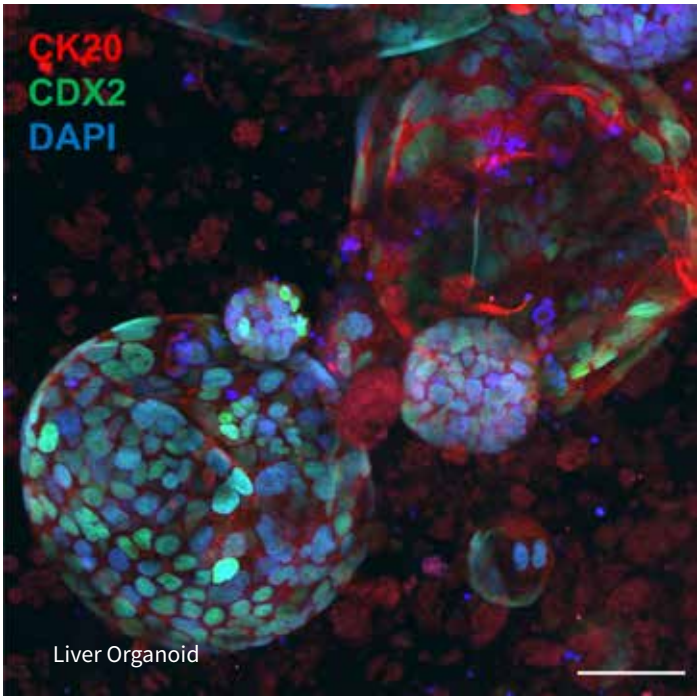
LiReG's has extensive collaboration with prestigious institutions such as the Doherty Institute, Olivia Newton John Cancer Centre (ONJCC), St Vincent's Hospital, and the BEACON program. Strategic priorities include the following:

- **Tumour-Host Cell Interactions:** Investigating the interactions between tumour cells and normal liver cells, including hepatocytes, immune cells, blood vessels, and lymphatics, in collaboration with ONJCC (Prof Mariadason/Dr Milke) and the Peter Doherty Institute (Prof Mackay).
- **Colorectal Patient-Derived Liver Cancer Organoids:** Using patient-derived liver cancer organoids as ex-vivo models to study tumour-immune responses, assess novel therapeutics, and perform genetic testing (Peter Doherty Institute, Prof Vincan).

Cholangiocarcinoma Patient-Derived Organoids: Working with human-derived tissue samples, the ONJ Cancer Centre (Prof Mariadason) and LIREG have successfully cultivated ex-vivo organoids of cholangiocarcinoma. These organoids are being used to further investigate tumour biology and treatment responses, offering significant potential for therapeutic advancements

CLINICAL AND TRANSLATIONAL RESEARCH

The LiReG group has been actively engaged in national and international clinical and translational research. Between



Liver Organoid

January 2023 and June 2024, the group has published 12 peer-reviewed articles, further strengthening its academic presence. Current studies include:

- **HEPASMART Study:** A multicentre pilot study using PSMA PET/CT imaging to assess its predictive value in detecting Hepatocellular Carcinoma (HCC) in patients with radiologic Li-RADS criteria diagnostic of HCC or suspected HCC.
- **BOLT Trial:** A prospective randomized trial evaluating the use of biodegradable biliary stents in orthotopic liver transplantation to reduce post-transplant biliary interventions, supported by the AMRF grant.
- **Transplant Oncology:** Collaborating internationally on the use of liver transplantation to treat colorectal liver metastases and hilar cholangiocarcinoma, leading to the launch of the Liver Transplant Program for Colorectal Liver Metastasis in Victoria.
- **IMPROVEMENT Study:** An international, multicentre observational study validating kinetic prediction models for 90-day and 1-year allograft failure following liver transplantation. This major study involves over 200 liver transplant centres worldwide.

INTERNATIONAL RECOGNITION AND FUTURE DIRECTIONS

LiReG's commitment to research excellence and innovative surgical techniques continues to earn international acclaim. Collaborations with the Doherty Institute, Peter MacCallum Cancer Centre, and other leading institutions are further enhancing the group's global reputation. LiReG is poised to continue advancing the field of liver cancer research and liver transplantation, with several promising projects in the pipeline.

AUSTIN HEALTH

Orthopaedic Research Centre at Austin

ORTHOPAEDIC ORCA RESEARCH CENTRE @AUSTIN

2024 Austin Health Bone & Joint Surgery Week

Established at Austin Health in 2022, the Orthopaedic Research Centre at Austin (ORCA) is the brainchild of A/Prof. Andrew Hardidge, Director of Orthopaedic Surgery at Austin Health. With Andrew's leadership, persistence and the support of an industry sponsored research grant, nurse Liz Walkley joined the team.

Director: A/Prof. Andrew Hardidge
Research Program Manager: Ms Elizabeth Walkley

ACTIVE PROJECTS

- **Robotic Orthopaedic Surgery:** An outcome and cost analysis comparison of Robotic and Traditional Hip and Knee Joint Replacement in an Australian Public Hospital - Austin Health
  - A prospective cohort study comparing Patient Reported Outcome Measures (PROMs) and hospital costs between patients having Robotic and Non-robotic joint replacement surgery.
  - Austin PI: A/Prof. Andrew Hardidge
- **A prospective study of Patient Reported Outcome Measures in Orthopaedic Spine patients awaiting elective surgery in an Australian Public Hospital to understand the benefits of surgical intervention and the effects of waiting times upon post-operative outcomes.**
  - Commencing in October 2022, this project collects PROMs from all patients having elective cervical or lumbar spine surgery from the time of surgery consent until 12-months post-operatively.
  - Austin PI: Mr Gerald Quan
- **Addressing the Post-Pandemic Elective Surgery Waiting List – an Economic Evaluation Protocol for Symptom Management of Patients Awaiting Total Knee Replacement in Melbourne, Australia**
  - Following Orthopaedic Surgery patients with knee osteoarthritis who undergo Radio-Frequency Ablation (RFA) for symptom management with the aim to reduce the elective surgery waiting list for knee replacements and enable relief for elderly, medically co-morbid patients who are unsuitable for major surgery.
  - Austin PI: A/Prof. Andrew Hardidge
- **Evaluating the implementation and effectiveness of a digital intervention to reduce pain and reliance on opioids after total knee replacement surgery**
  - In a collaboration with the University of Sydney, this randomised-controlled trial uses an SMS intervention for patients after total knee replacement surgery to reduce opioid use.
  - Austin PI: A/Prof. Andrew Hardidge
- **Australian Rotator Cuff Study**
  - Austin Health is a site for this national, randomised-controlled trial investigating whether or not repair of the rotator cuff is in fact necessary to achieve improvement in symptom and function.
  - Austin PI: Dr Avanthi Mandeleson
- **Tibial Spine Fractures prospective cohort study**
  - Austin Health is a site for this international prospective cohort study in children and young people who have rare Orthopaedic injuries.
  - Austin PI: Dr Julia Kirby
- **Using digital Patient Reported Measures (PRMs) to screen for frailty in older patients referred for elective orthopaedic joint replacement surgery.**
  - This is a digital health fellowship project aiming to determine the feasibility and validity of using PROMs as a screening tool.
  - Austin PI: Ms Elizabeth Walkley
- **Insignia-23:** A prospective, pre-market, multi-centre evaluation of the clinical outcomes of the Insignia Hip Stem in Total Hip Arthroplasty
  - Austin PI: A/Prof. Andrew Hardidge

MACH TRACK

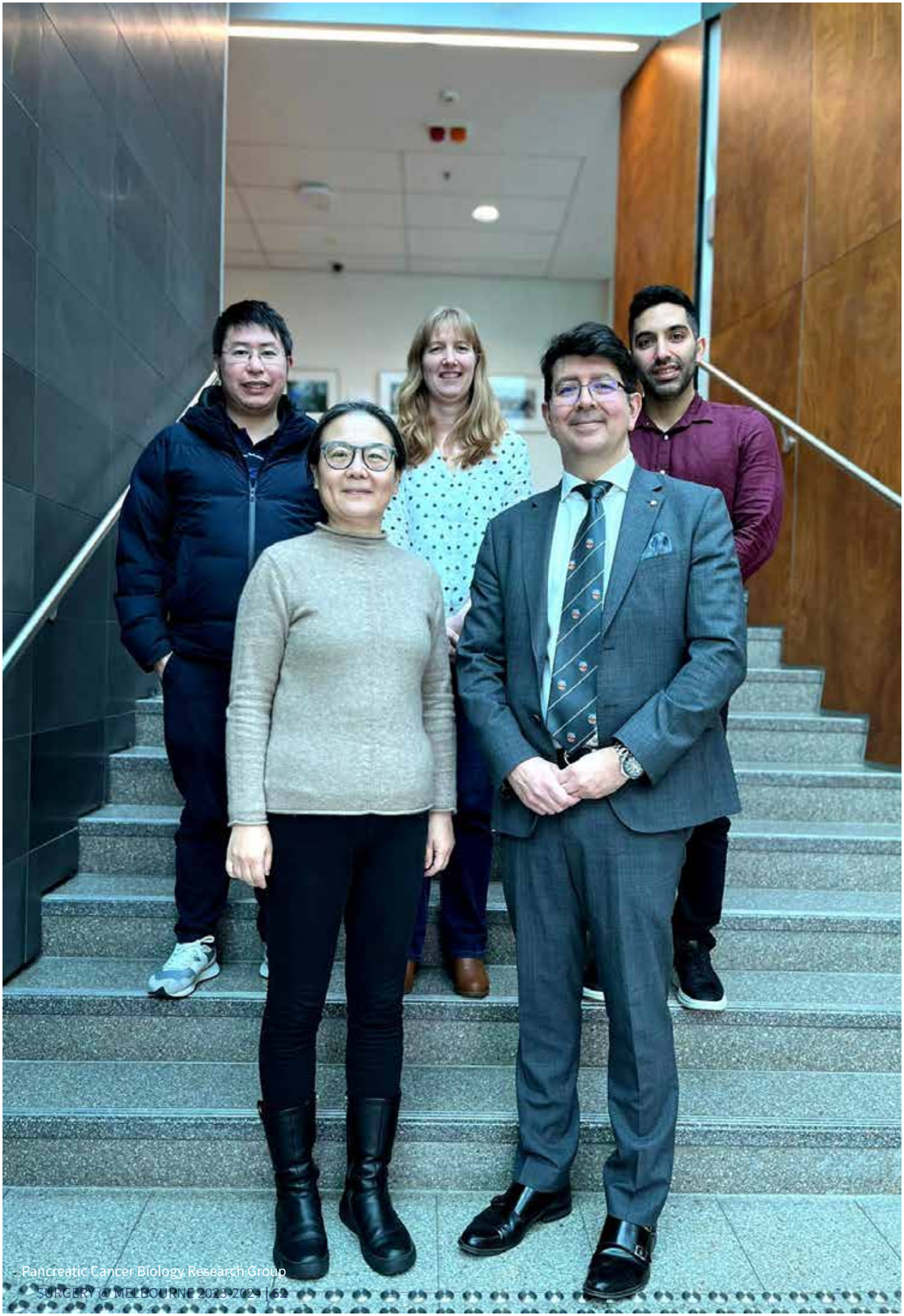
ORCA Research Nurse Elizabeth (Liz) Walkley was successful in her application for the 2025 MACH-Track PhD program. Her research work will centre around Patient Reported Outcome Measures in Orthopaedic Surgery.

- **Gastrointestinal bleeding incidence and associations in patients undergoing orthopaedic surgery.**
  - This collaborative, retrospective audit aims to review best practice and minimise incidents
  - Austin PI: A/Prof. Andrew Hardidge, Prof. Daryl Jones, A/Prof. Jo Grace

The next 12-months will see several additional research projects commence including the use of Generative Artificial Intelligence in Orthopaedic outpatient clinics.

We are most proud of the work we have done in establishing the ORCA clinical quality registry of Patient Reported Outcome Measures (PROMs). Our hip and knee PROMs are uploaded regularly into the RAPID platform hosted by the AOANJRR for inclusion in this important national registry where it is matched to patient's prosthesis information.

There are now more than 1,500 patients registered in the ORCA database and we have expanded our collection beyond hip and knee arthroplasty and spine surgery, to include pre-clinic PROMs for the Osteo Arthritis Hip and Knee Service (OAHKS) and our Foot and Ankle Clinics.



Pancreatic Cancer Biology Research Group

AUSTIN HEALTH

The Pancreatic Cancer Biology Research Group

Prof Mehrdad Nikfarjam and Dr Hong He

The Pancreatic Cancer Biology Research Group is focused on world-class research into pancreatic ductal adenocarcinoma, with a particular interest in identification of novel methods to improve treatment response, overcome chemotherapy resistance and improve survival.

We have a multiple array of projects that utilize various animal models of pancreatic cancer that replicate human conditions, which is essential prior to the translation of findings into the human situation. We are strengthened by our team's involvement with national pancreatic cancer trials, including contributions to the Australian Pancreatic Cancer Genome initiative. Links with drug development companies and initiatives for early pancreatic cancer detection will allow rapid translation of the findings into the clinical setting. Our unique team consists of surgeons, clinicians and researchers who work closely together and with collaborate links with various groups both nationally and internationally.

The group's main basic research interests are:

- Identifying key molecules responsible for pancreatic cancer initiation and growth and metastasis
- Developing and testing new chemical compounds in cancer cell lines and pancreatic cancer models to develop novel therapies.
- Investigating the mechanism(s) involved in tumour immune response.
- Developing vaccine-based combination therapies for the treatment of pancreatic cancer.

The current research focuses on several themes:

- Developing a vaccine-based combination therapy by modification of cancer cells using CRISPR Cas knockout
- Targeting P-21 activated kinase proteins to improve the treatment of pancreatic cancer
- Determining the effects of chemokines in pancreatic cancer
- Investigating the mechanism(s) involved in tumour immune response to stimulate the
- immunotherapies in pancreatic cancer
- Exploring the tumour vasculature and its impact on immune and chemotherapy response
- Assessment of the role of unidirectional radiation patch in liver and pancreas surgery
- Involvement in multicenter student SCANPatient study that focuses in Synoptic reporting of CT scans assessing cancer of the pancreas.
- Investigating methods to reprogram the tumour microenvironment of pancreatic cancer to improve response to therapy
- Identification of therapeutic vulnerabilities that promote metastatic spread of pancreatic cancer
- Development and refinements of National cancer registries though the Upper Gastrointestinal Cancer Registry (UGICR) and PURPLE Registries
- Improving outcomes and of pancreas, liver and biliary surgery

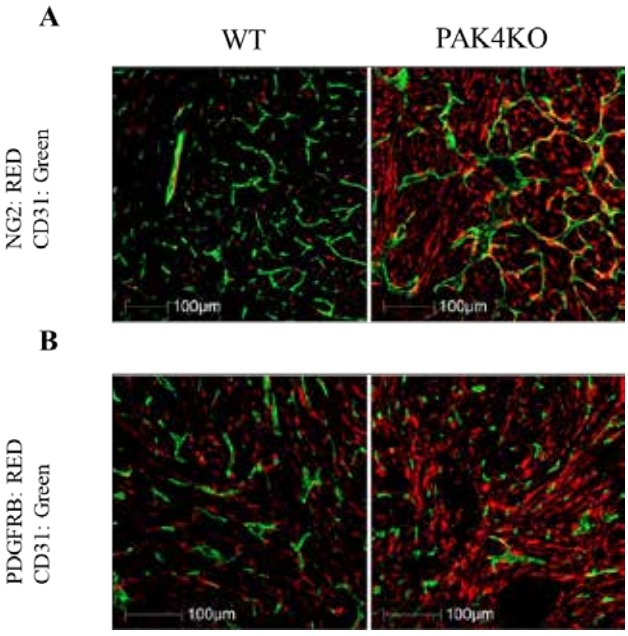
The group is funded by grants from University of Melbourne, Pancare Foundation, Austin Medical Research Fund, MRFF, Pankind Australian Pancreatic Cancer Foundation, Anti-cancer Council of Victoria, Industry funding and by Anonymous donors.

RESEARCH HIGHLIGHTS

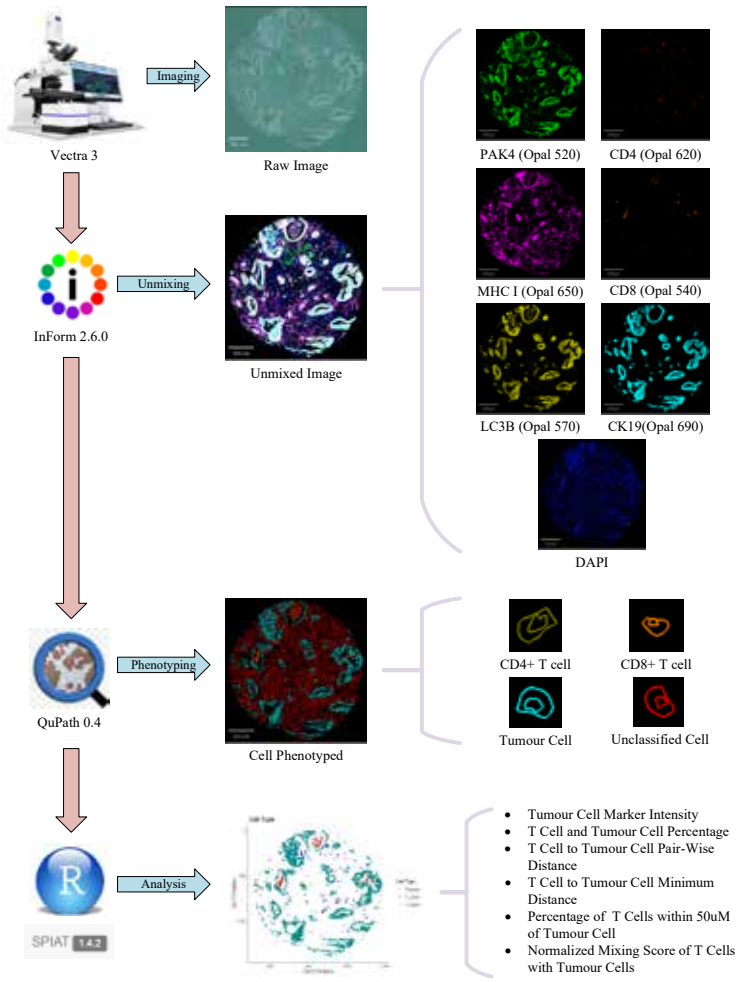
As internationally recognized experts in the field of p-21 kinase (PAK) in cancer research, the Pancreatic Cancer Biology Research Group has been prolific with 5 basic reaech publications since Jan 2023 and 3 research articles under revision. We have had 7 Clinical research publications during this time.

- In collaboration with national and international scientists, the group has discovered the anti-tumour immunity of PAK in pancreatic cancers and published the results as 2 papers in *Cell Communication and signaling* with impact factor 8.2 in 2023.
- The group published 2 invited reviews in *Cells and Cancers*
- In a collaboration with academic researchers and an industrial partner, the group has demonstrated that A tumour homing peptide-linked arsenic compound inhibits pancreatic cancer growth and enhances the inhibitory effect of Gemcitabine. This work is supported by an industrial fundings and is now under revision for publication.

- One PhD student Ma Y presented the research paper: Inhibition of P21 activation kinases 1 and 4 synergistically suppress pancreatic cancer growth at Annual Academic Surgery Conference, 16-17 November 2023, Melbourne, Australia and received Surgical Research Society of Australasia Travel Grant Award 2023.
- One PhD student Ansardamavandi A was awarded a PhD top-up scholarship from Jreissati Pancreatic Centre, Epworth HealthCare.
- Received Austin Medical Research Foundation at Austin Health (AMRF) grant ($15,000) and joint funding from Cancer of Victoria fundings with Latrobe university ($360,000) Identification of therapeutic vulnerabilities that promote metastatic spread of pancreatic cancer 360K
- Completion of a randomized controlled single blinded multicenter trial of polyethylene glycol sealant to the staple line vs staple line alone in distal pancreatectomy (PEGDP-01)



P21-kinase 4 knockout (KO) promoted the vascular normalisation of pancreatic tumours leading to increased efficacy of chemotherapy.



Spatial analysis of immune cell infiltration in pancreatic cancer by multiplex immunohistochemistry staining of human tumour microarray samples.

AUSTIN HEALTH

Austin Plastic Research and Education Unit (APREU)


Dr. Sally Ng received the Epworth Medical Foundation Doctor's Grant

Since its inception in 2021, the Austin Plastic Research and Education Unit (APREU) has quickly become a leading center for research and education in plastic surgery. Our collaborative team —including medical students, interns, residents, research fellows, and registrars—focuses on advancing clinical practice and academic research through cross-disciplinary efforts. Our research spans a variety of services such as breast, head and neck, radiation oncology, transplant, and spinal services, reflecting our commitment to improving patient outcomes.

We are proud to collaborate with local research units and international partners in Shanghai and São Paulo. Our relationships with industrial partners play a crucial role in driving forward some of our wound reconstruction projects. Key research areas for us include oncological reconstructive surgery, complex wound reconstruction, lymphoedema, hand surgery, and upper limb reanimation for spinal injury patients.

RESEARCH OUTPUT
(January 2023 - June 2024)

Publications

Over the past year, our unit has made notable strides in the academic arena with 11 peer-reviewed publications in reputable journals, including:

- Australia and New Zealand Journal of Surgery (IF 1.5)
- Plastic and Reconstructive Surgery Open (IF 1.5)
- Journal of Plastic Reconstructive and Aesthetic Surgery (IF 2.5)
- Hand (IF 1.8)
- Craniomaxillofacial Trauma and Reconstruction (IF 1.3)
- Advances in Wound Care (IF 5.8)
- Scars Burns and Healing (IF 2.1)

Additionally, we have contributed two book chapters on breast reconstruction and the evolving role of dermal matrices in reconstructive surgery. These publications cover a wide range of topics, from innovative surgical techniques to patient-reported outcomes, reinforcing our status as thought leaders in the field.

Conference Presentations

Our global presence was highlighted by 17 presentations at international conferences, where we showcased our multidisciplinary approach and fostered collaborations with leading experts worldwide. Notably, our research on skin cancer in liver transplant patients was selected for presentation at the American Society of Plastic Surgeons Annual Conference, representing the Australian Society of Plastic Surgeons. We also delivered three keynote addresses at the 12th World Congress of Reconstructive Microsurgery in Singapore.

On the national stage, we had 21 presentations across Australia on subjects such as head and neck reconstruction, breast reconstruction, and complex wound management. These presentations reflect the depth and breadth of our expertise and our commitment to sharing knowledge with our peers.

Grant Acquisition

This year, we secured a prestigious grant from the Honda Foundation, facilitated by the Austin Foundation. This funding enables us to acquire a state-of-the-art bioimpedance device which will revolutionize our approach to lymphoedema management by allowing for objective screening and precise assessment. Additionally, Dr. Sally Ng received the Epworth Medical Foundation Doctor's Grant, funded by the Zig and Helen Inge Foundation, to visit several international lymphatic centres and develop our lymphoedema services at Austin Health.

We also obtained an investigator-initiated research grant from Solventum to explore the use of closed incision negative pressure therapy in lower limb trauma settings.

RESEARCH FOCUS

Breast Reconstruction Surgery

Our reconstructive team plays a vital role in the multidisciplinary care of breast cancer patients at the Austin Precinct. This year, we have focused on presenting our result in single-stage direct-to-implant breast reconstruction and are currently investigating total breast reconstruction outcomes, including sensory recovery and lymphatic function restoration post-mastectomy.

Head and Neck Reconstruction Surgery

Dr. Nicola Fleming's research on patient-reported outcomes following major head and neck reconstructive surgeries has gathered data up to 24 months post-operation. Her findings, presented at national and international conferences, have enhanced our understanding of post-resection sequelae and informed strategies to optimize patient functional and aesthetic outcomes. Additionally, we have refined surgical techniques for complex nasal reconstruction, with our revised method showing improved results.

Skin Cancer in Transplant Patients

In collaboration with the liver transplant unit, we have identified unique risk factors for skin cancer in liver transplant patients. Our findings aim to enhance risk stratification and improve skin cancer surveillance guidelines for early detection and management of this secondary malignancy.

Spinal Services

Our significant publication this year details a decade of experience managing spinal pressure sores, providing a benchmark for care. Looking forward, we aim to integrate innovative techniques such as negative pressure therapy and dermal matrices to potentially reduce the need for complex reconstructive surgeries while achieving comparable outcomes.

Lymphoedema

Lymphoedema is a prevalent consequence of cancer treatment, particularly among patients undergoing significant interventions. As a leading cancer service provider in the state, our research focuses on enhancing the screening and early detection of lymphoedema in our cancer patients. Early identification is crucial for effective management, allowing patients who exhibit initial and subtle signs of lymphoedema to access appropriate garments and specialized support from lymphedema therapists.

One area of challenge is head and neck lymphoedema. Our research aims to improve detection methods through both clinical and radiological criteria. By developing and refining strategies to identify early signs of head and neck lymphoedema, we hope to provide timely intervention and support to those affected.

Body Contouring Surgery

Body contouring surgery is a critical component of a bariatric services. Evidence strongly supports that body contouring surgery can further enhance the quality of life following significant weight loss. In the coming year, we plan to focus on the following areas:

- **Trend Analysis:** We will examine the current trends in body contouring surgery across Australia to understand broader practices and outcomes.
- **Consultation and Selection Tools:** We aim to review and assess tools that facilitate patient consultations and selection processes to ensure optimal outcomes.
- **Patient-Reported Outcomes:** We will evaluate the best tools for assessing patient-reported outcome measures to better understand and improve patient satisfaction and results.

These efforts will help us refine our approach and enhance support for patients undergoing bariatric surgery at the Austin precinct, ensuring they receive the highest standard of care and follow-up.

Upper Limb Program

Led by Dr. Natasha Van Zyl, our Upper Limb Program addresses upper limb reconstruction for patients with cervical spinal cord injuries and those suffering from spasticity due to various neurological conditions. Our approach towards these conditions emphasises on tendon lengthening and tendon transfer surgery for spasticity.

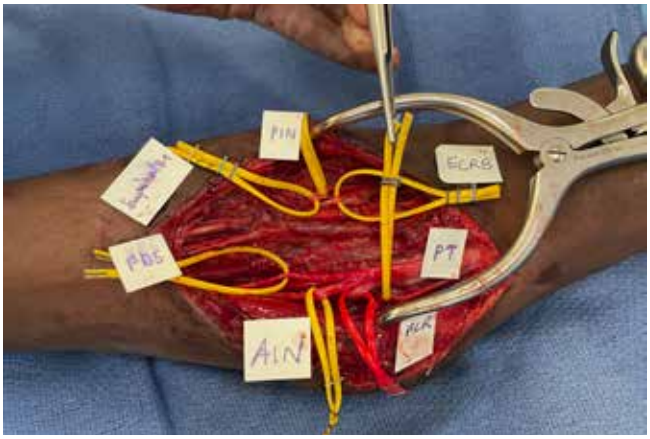
The program is enriched with an active research unit that maintains two registry databases. One is dedicated to upper reanimation surgery after spinal cord injury, and the other is for spasticity surgery.

Our current research includes:

1. A five-year outcome assessment of nerve and tendon transfers in spinal cord injury patients, comparing two-year and five-year results.
2. An analysis of delayed (>18 months post-injury) nerve transfers.
3. A literature review on tendon transfer surgery outcomes for grasp and pinch reconstruction.
4. A study on the histology of peripheral nerves in spinal cord injury patients.

Mentoring and Supporting Future Surgeons

At our unit, we are dedicated to mentoring and supporting students who aspire to careers in surgery, particularly in plastic surgery. We are proud to collaborate with the University of Melbourne's Reconstructive and Aesthetic Surgical Society (RASS) to host the inaugural cadaver free



flap workshop. This workshop provides students with invaluable hands-on experience in human anatomy and the fundamentals of performing various local and free flaps using cadaveric specimens.

Additionally, we actively participate in surgery-focused events and webinars at both the University of Melbourne and Monash University. These engagements are designed to promote plastic and reconstructive surgery as a specialty of choice, helping to inspire and educate the next generation of surgeons.

Through these efforts, we aim to cultivate a strong interest in plastic surgery among students and provide them with the tools and knowledge necessary to excel in this dynamic field

Conclusion

Reflecting on a year of substantial achievements, the Austin Plastic Research and Education Unit remains committed to innovation, education, and collaboration. Our accomplishments underscore the dedication and expertise of our team. As we move forward, we are excited to build on our successes and continue leading in both academic and clinical advancements in plastic surgery.

AUSTIN HEALTH

Prometheus Research Collaborative

Prof Vijayaragavan Muralidharan

Patient centred **R**esearch & **O**utco**ME**s in **T**ransplantation & **HE**pato-Pancreato-Biliary Surgery **AUS**tin Health

The HPB+LT Surgery Unit is an academic surgical unit combining clinical expertise in HPB oncology, liver and multi-visceral transplantation with basic science, translational and collaborative clinical research. The major areas of research interest include treatment, surveillance and response assessment in liver, pancreas and biliary cancers, as well as liver and multi-visceral transplantation.

The unit has a strong academic background and research output. National and international engagement by the surgeons include organisations such as AP-HPBA, TSANZ, ANZHPBA and Pancare Foundation. A major area of translational research is with the BEACON Biomarker Laboratory as well as research groups in the Olivia Newton John Cancer Research Institute, and Walter & Eliza Hall Institute.

The PROMETHEUS Research Collaborative was formed to coordinate and consolidate the unit research activities, enhance inter-disciplinary collaborative work and provide the infra-structure for prospective clinical research.

ACTIVE PROJECTS

Investigating de novo lipogenesis inhibitors in hepatocellular carcinoma

- Synopsis: This study aims to determine whether EVT0185 inhibits liver lipogenesis in human Hepatocellular Carcinoma (HCC).
- Chief Investigator: Professor Matthew Watt, Department of Anatomy & Physiology
- Associate Investigator: Dr. Eunice Lee and Professor Vijayaragavan Muralidharan
- Study Coordinator: Ms. Kat Hall
- Collaborators: University of Melbourne and Austin Health

Assessment of quality of life in liver transplant patients in Victoria.

- Synopsis: Within this project researchers aim to perform a cross-sectional, “snapshot” assessment of quality of life (QoL) in liver transplant patients at Austin Health using validated Patient Reported Outcomes Measures (PROMs).
- Principal Investigator: Dr Eunice Lee
- Student: Harris Siladi
- Study Coordinator: Ms. Kat Hall

COLLABORATIONS

A needs assessment of surgical skills of interns: A qualitative study in Metropolitan Victoria

- Synopsis: To identify the surgical skills that interns require for effective clinical practice through semi structured interview of a range of clinicians across Victorian Metropolitan Hospital sites.
- Chief Investigator: Professor Justin Yeung and Dr Matthew Wei

The STARRS Trial – Implementing tele-prehabilitation into cancer care pathways

- Synopsis: This trial will examine the efficacy and feasibility of tele-rehab education in patients preparing for lung and major abdominal cancer surgery with the aim of improving post operative outcomes.
- Chief Investigator: Professor Linda Denehy
- Sponsor: MRFF

ALIBI - Antimicrobial Levels in HepatoBiliary Inpatients

- Synopsis: This research aims to describe plasma, biliary tissue and bile concentrations of antimicrobials given as prophylaxis or treatment in hepatobiliary patients. Secondarily, it aims to determine whether the current antimicrobial dosing recommendations achieve target drug concentrations in this population.
- Site Investigator: Greg Rumler

Current anticoagulation practice following venous resection during pancreatectomy

- Synopsis: Retrospective audit with the primary aim of determining post-operative anticoagulation practice following PVR during pancreatectomy.
- Site Principal Investigator: Dr Osamu Yoshino
- Study Coordinator: Ms. Kat Hall
- Sponsor: University of Birmingham

NeoFOL-R: Efficacy of Neoadjuvant FOLFIRINOX in Resectable pancreatic cancer: An international multicentre prospective randomized, controlled trial.

- Synopsis: The primary aim of this trial is to investigate whether six cycles of preoperative mFOLFIRINOX followed

Some members of the PROMETHEUS Research Collaborative

by six cycles of mFOLFIRINOX improves the overall survival rate by intention-to-treat to surgery followed by 12 cycles of postoperative mFOLFIRINOX.

- Site Principal Investigator: Dr Osamu Yoshino
- Study Coordinator: Ms. Kat Hall
- Sponsor: Jreissati Pancreatic Centre, Epworth HealthCare.

UNIT AUDITS

Using longitudinal blood results to predict liver transplant outcomes

- Synopsis: The objectives of this project are to apply and compare a variety of machine learning methods to predict post-transplant outcomes (graft and overall survival, acute and chronic rejection, biliary outcomes) using longitudinal blood test results post-transplant.
- Principal Investigator: Dr Eunice Lee

Audit of Cholangiocarcinoma and Mixed Hepatocellular outcomes for patients undergoing LT in Australia and New Zealand (COMIT-ANZ)

- Synopsis: Retrospective audit to determine the clinical outcomes of patients undergoing LT for known or incidentally detected CCA or mixed HCC CCAs on liver explant histology in Aus/NZ to ascertain if LT for patients with known CCAs may be a feasible strategy.
- Principal Investigators: Dr Eunice Lee and Dr Georgina Riddiough

Biodegradable biliary stent in autotropic liver transplant

- Synopsis: Retrospective review of patients which hopes to inform if the use of the trans cystic stent reduces the likelihood of biliary stricture.
- Principal Investigator: A/Prof Marcos Perini

Split Liver Transplant for Primary Sclerosing Cholangitis

- Synopsis: Retrospective audit comparing the outcomes of Split Liver Transplant and Whole Liver Transplant in patients with Primary Sclerosing Cholangitis.
- Principal Investigator: Dr Michael Fink

Unit participation in Trainee collaborative research

- Global Cohort Study: Hernia's, Pathway and Planetary Outcomes for Inguinal Hernia Surgery (HIPPO)
- Global Evaluation of Cholecystectomy Knowledge and Outcomes – GECKO
- Mapping Global Surgery – MAGPIE

Radiation Oncology

RADIATION ONCOLOGY NEWSLETTER

Austin HEALTH

May-June / **Issue 3**

Olivia Newton-John Cancer Wellness & Research Centre

DIRECTORS MESSAGE

Welcome to our departmental newsletter. I hope you enjoy this edition.

Many of you would of seen the concerning heatwaves occurring in the northern hemisphere. Sustainability is a key focus for Austin Health in its Strategic Plan and this is just one way we are doing our bit to be proactive in caring for the planet. Austin Health has an ambitious 2030 net zero target for emissions, which will be helped by the Victorian government commitment to use 100 per cent renewable electricity from 2025 for all public hospitals. Our environmental Sustainability Unit provides services and support to Austin Health staff to create "a healthier environment for healthier people". I encourage each one of you to consider what can be done in our local workplace to make change for the better.

At BAROC our superficial radiotherapy installation is proceeding. This will allow for public skin cancer radiation treatment for the first time in Ballarat. At ONJ Centre our linear accelerator replacement changeover continues to progress. When the changeover is finished, extended hours will cease. Both of these developments have involved significant work by many of our team at both our sites.

The past few years have certainly been difficult for the healthcare sector. Oncology services have experienced an intensified strain due to increasing demands and limited resources. In these challenging times, it is crucial to acknowledge the potential risks associated with this pressure, including burnout.

Our department has two specific purpose funds to support staff education and training one for our BAROC team and the other for our ONJ team. In recent years the ONJ fund (but not the BAROC fund) has been limited relative to applications. This unfortunately remains the case for the new financial year. In determining which applications can be supported, those that are bringing new technique/skills to our department and those that increase our department profile (ie presentations) will be prioritised. Hopefully in the future the fund will be more robust allowing for more applications to be supported.

Our departmental research program continues to grow. This is a great achievement and many of our team need to be acknowledged. At our quarterly combined research meeting Dr Jessica Lye presented an overview showing the significant rise in publications, presentation, and patient recruitment since 2019. Please see the research publications list on our sharepoint site. I would encourage everyone to add their publications, presentations, grants to make this as comprehensive and accurate as possible.

I would like to thank Kathy Ioakimidis for compiling this newsletter. I would encourage you to submit items for inclusion in the next newsletter.

The Department of Radiation Oncology is highly committed to outstanding evidence-based multidisciplinary patient care, transformative research, and education. Our staff are involved in multiple research areas including clinical trials, translational science, data science and health services.

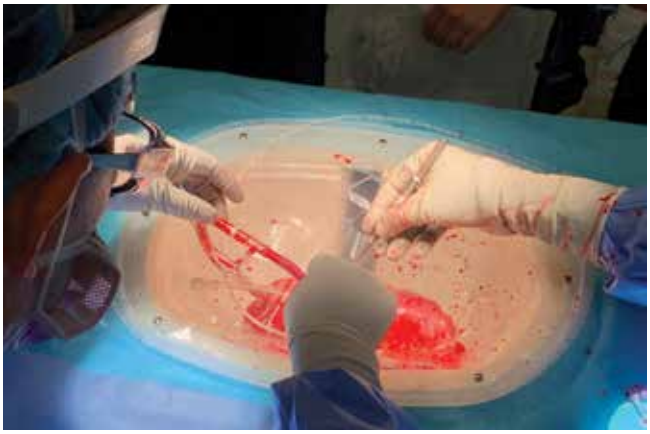
In 2023 – 2024, the academic research activity continue to increase with 94 peer-reviewed publications and successful competitive grant funding. There is growth in collaboration with departments outside radiation oncology – A/Prof. Sweet Ping Ng is leading the SUMO and ULTRAS studies in the VIRTU group together with Dr David Liu (UGI surgery) and Dr David Proud (Colorectal surgery), A/Prof Daryl Lim Joon radiation lead for MR-ABLATE study with Mr Greg Jack (Study PI) and Professor Damien Bolton (Urology), and A/Prof Richard Khor leading the TROG SOCRATES study in collaboration with A/Prof Marie Sinclair (Gastroenterology) and Dr. Mark Goodwin (Interventional radiology).

We also celebrated the appointment of Dr. Sweet Ping Ng to Associate Professor in the Department of Surgery earlier this year.

RESEARCH HIGHLIGHTS

- The FIRM study evaluating the feasibility and imaging on MR-Linac across multiple body and tumour sites have completed recruitment on almost all sites and analysis and reporting is on its way.
- Several MR-Linac clinical trials, including RICE and MR-ABLATE, investigates the novel utilisation of the MR-Linac are recruiting well and are close to reaching target accruals.
- Patient treated on the MR-Linac are now encourage to enrol in the MOMENTUM study, an international registry collecting clinical and patient-reported outcomes. Collaborative multi-centre MR-Linac trials such as ULTRAS (single fraction liver stereotactic radiotherapy) and MAESTRO (risk-adapted anal cancer radiotherapy) will be open to recruitment soon, providing potential new treatment options to patients.
- Ongoing involvement in cooperative group trials including EXPERT (breast), SOCRATES (liver) and FIG (brain)
- A/Prof Richard Khor, leading health services research, is conducting and completing impactful studies as part of the VCCC Value Based Healthcare program.

Renal Surgery and Transplant Unit



The organ shortage is one of the ongoing barriers for patient who needs kidney transplant. Kidneys from marginal donors have been increasingly considered for transplant with survival benefits when compared with those who remained on dialysis. However, these kidneys are susceptible to ischemic reperfusion injury during the process of organ procurement, conventional static cold storage during transport, and the transplantation procedure. As a result, this type of kidney is at higher risk of non-utilization, the declined rate is about 15-25%. Over the past decade, the technologies of hypothermic machine perfusion and normothermic machine perfusion (NMP) of the kidney have been further explored aiming to increase the utilization of donated kidneys and improve transplant outcomes.

Since 2022, Kidney transplant service at Austin Health has established ex vivo NMP with a pilot study using declined kidneys. Six kidneys recruited to the study for reconditioning and further assessment. All kidneys shown good perfusion on ex vivo NMP, with adequate urine output (median volume 480 mL) over 2 hours, and median renal blood flow measured at 196 mL/minute. The creatinine level in perfusate decreased significantly from 151 to 82 µmol/L (p=0.02). This pilot study has paved a way for translation to a clinical trial this year to salvage marginal donor kidneys at high risk of non-utilization. This study was accepted for oral presentation at annual conference of Transplant Society of ANZ. Recently, one marginal donor kidney that was declined by all transplant units, was successfully transplanted to a recipient with excellent kidney graft function following reconditioning by ex vivo NMP. The team has also developed a further research project for conversion blood group A or B donor kidney to universal blood group O to enhance utilization of donated kidneys. The project is funded by AMRF and philanthropy fund.

Along with ex vivo NMP, Oxygenated Hypothermic Machine Perfusion (HOMP) has also been implemented at Austin Health for the establishment of a Machine Perfusion Program in kidney transplant service. So far, a doze of kidneys have been salvaged for clinical transplantation, which otherwise would be non-utilized.

Renal Surgery and Transplant Unit

AUSTIN HEALTH

Spectromix Laboratory

Prof Jai Raman

Researchers: Prof Jai Raman, Prof Shekhar Kumta (Northern Hospital), Prof Bayden Wood (Monash Biospectroscopy)

Precinct: Austin Health, Northern Center for Health, Education & Research – at the Northern Hospital.

Grants Awarded: 6
Total Grants: $200,000
Research Fellowships: 3
Scholarships: 3
Clinical Trials: 1

BACKGROUND

We are a multi-campus collaborative run as a virtual lab called Spectromix. We have representatives from Monash BioSpectroscopy, James Cook University (Queensland) & University of Eastern Finland, University of Melbourne Engineering, University of Sydney Heart Biobank, A2I2 at Deakin University, St Vincent's Hospital, Austin Health, Peter MacCallum Cancer Institute. Our collaboration has a strong foundation at the Austin campus with the newly set up Australian Donation & Transplantation Biobank (ADTB).

Research Objectives

To translate Multi-modal spectroscopy into a Point-of-Care capability. This is being iterated by utilizing excised tissue bank and stored in a frozen form.

Progress

Strong preliminary data in the evaluation of fibrosis in the heart, differentiation between fatty liver and cirrhosis in the liver, detection of bladder cancer, bone quality determination, along with exploratory forays into infectious diseases & urine analyses.

New Personnel

Dr Varun Sharma, a surgical trainee who started at the ADTB Research Fellow has completed his PhD.

Collaboration with Prof Paul Stoddart at Swinburne University of Technology. We are working closely to build a 350 micron Raman Laser wire that can be used for intra-vascular imaging.

HIGHLIGHTS

1. We established the Spectromix lab in late 2020. Despite the Covid pandemic and lockdown, we have established a multi-campus collaborative group that spans the city of Melbourne, the nation of Australia and includes well recognized research laboratories in the US. Over the past 2 years, we have met regularly (on Zoom), built a robust Biobank at the Austin campus, connected with biobanks elsewhere in Melbourne and Sydney. Finally, we have helped establish a tissue biobank at James Cook University in Townsville, with a significant number of indigenous patients participating. This group has had some very encouraging results in evaluating sarcopenia in diabetic patients undergoing coronary artery surgery.

The early Collaboration began with Monash Biospectroscopy, in mid 2020. Our clinical inputs, the use frozen tissue from the ADTB, Liver Transplant Unit (LTU) and the spectroscopic technical knowhow of our collaborators at various other participating centers has made the projects very transformational. More recently, Prof Shekhar Kumta has joined our group and established a translational centre at the Northern Hospital, with collaboration of RMIT University.

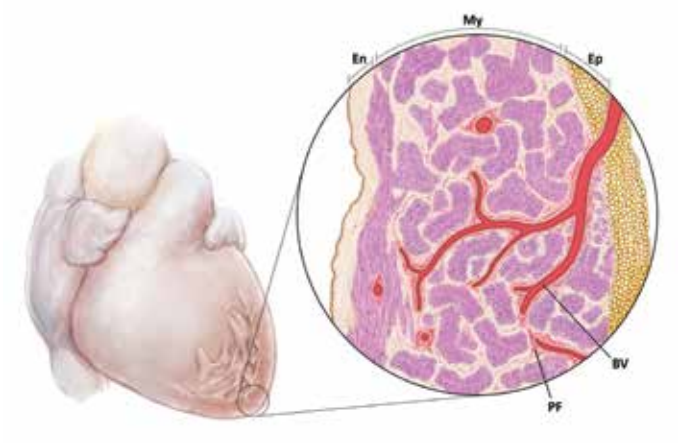
Dr Varun Sharma was awarded a Heart Foundation Fellowship.

Some Publications which demonstrate our collaborations:

1. Adegoke JA, Gassner C, Sharma VJ, Patel SK, Jackett L, Afara IO, Raman J, Burrell LM, Wood BR. [Near-Infrared Spectroscopic Characterization of Cardiac and Renal Fibrosis in Fixed and Fresh Rat Tissuedoi.org/10.1002/anse.202200030

2. JA Adegoke, C Gassner, IO Afara, V Sharma, SK Patel, K Kochan, Raman J, Wood BR. Near Infrared Spectroscopic Characterization of Cardiac and Renal Fibrosis. Circulation,2021; 144 (Suppl_1), A12112-A12112

3. Gassner C, Adegoke JA, Patel SK, Sharma VJ, Kochan K, Burrell LM, Raman J, Wood BR: Improved Tissue



Preparation for Multimodal Vibrational Imaging of Biological Tissues. ClinSpect.2022. https://doi.org/10.1016/j.clispe.2022.100021.

4. Sharma VJ, Starkey G, D'Costa R, James F, Mouhtouris E, Davis L, Wang BZ, Vago A, Raman J, Mackay LK, Opdam H, Jones R, Grayson ML, Martin DE, Gordon CL. Australian Donation and Transplantation Biobank: A Research Biobank Integrated Within a Deceased Organ and Tissue Donation Program. Transplant Direct. 2022 Dec 12;9(1):e1422. doi: 10.1097/TXD.0000000000001422. eCollection 2023 Jan.PMID: 36591329

5. Sharma VJ, Adegoke JA, Afara IO, Stok K, Poon E, Gordon CL, Wood BR, Raman J. Near-infrared spectroscopy for structural bone assessment. Bone Jt Open. 2023 Apr 7;4(4):250-261. doi: 10.1302/2633-1462.44.BJO-2023-0014.R1.PMID: 37051828.

6. Yim A, Alberto M, Sharma V, Raman J, Wood BR, Wong L-M, Ischia J, Bolton D: Point-of-Care Diagnosis of Bladder Cancer With Vibrational Spectroscopy: A Systematic Review. Soc Int Urol J. 2023;4(4):321–334 DOI: 10.48083/NCZW3015

2. Collaboration with University of Queensland & Eastern Finland. Dr Isaac Afara, a dynamic researcher in multi-modal spectroscopy with interest in evaluation of cartilage has been a strong collaborator and an integral part of the Spectromix group.

3. Landmark Collaboration and Partnership with Florey Institute of Neuroscience, looking at biomarkers and tissue evaluation in chronically instrumented large animal models of heart failure, ischemic heart disease and sepsis. This has progressed steadily, with early evaluation of fluid samples from the Florey experimental animal models being evaluated by our laboratory at the Northern Hospital precinct.

4. Collaboration with the Bhargava Lab, Beckman Institute, University of Illinois at Urbana-Champaign, USA. The Beckman Institute is home to some of the pioneering methods in spectroscopy and Prof Rohit Bhargava, the Founder professor & head of the Cancer Center is world renowned in developing new techniques in the chemical evaluation of cancer tissue. Our collaboration with his group spans assessment of fibrosis in the heart and more recently, detection & characterization of amyloid in the heart.

The paper on Cardiac Amyloid has been accepted for short publication in Circulation.

A recent publication on characterization of fibrosis in the heart –

Zimmermann E, Mukherjee SS, Falahkheirkhah K, Gryka MC, Kajdacsy-Balla A, Hasan W, Giraud G, Tibayan F, Raman J, Bhargava R. Detection and Quantification of Myocardial Fibrosis Using Stain-Free Infrared Spectroscopic Imaging. Arch Pathol Lab Med. 2021 Mar 23. doi: 10.5858/arpa.2020-0635-OA. Online ahead of print.PMID: 33755723.

5. An ongoing collaboration with the Maier Lab at the Linus Pauling Institute, Oregon State University, Corvallis, OR – looking at Lipidomics and Metabolomics of Heart failure. This was an early publication on the techniques used.

Vaswani A, Magana AA, Zimmermann E, Hasan W, Raman J, Maier C. Comparative LC–MS/MS lipidomic analysis of macaque heart tissue flash frozen or embedded in optimal cutting temperature polymer (OCT): 3 Practical considerations. Clinical Spectroscopy 2021. https://doi.org/10.1002/rcm.9155

Thereafter, we have established a lipidomic profile of decompensated heart failure which is being prepared for publication.

AUSTIN HEALTH

Surgical Education Research Group (SERG)

Prof Debra Nestel AM

Graduates of our Master of Surgical Education (MSurgicalEd) degree, continue to influence the shape of surgical training in Australia and Aotearoa New Zealand. The MSurgicalEd has had over 65 graduates with approximately half taking a research path in the final year of study. The Surgical Education Research Group (SERG) seeks to advance the field of surgical education through rigorous research, innovative methodologies, and dissemination of findings to enhance the training and practice of surgeons. The SERG has a specific role in providing opportunities to advance surgical education research in and beyond the impactful MSurgicalEd degree. This is done by fostering connections for surgical education researchers, wherever they may be. Graduates of the MSurgicalEd are often working in places where surgical research is not prioritised. Additionally, while some MSurgicalEd graduates will proceed to a PhD program, others want to continue to undertake research but not as part of a formal study program. The SERG is designed to facilitate opportunities and connections for all our graduates. While the SERG was formed in 2023, the inaugural meeting was held in June 2024. In the initial invitation-only meeting, twelve attendees considered future actions. The meeting offered an opportunity for consultation on the terms of reference for the SERG and two projects were identified for development in 2024 and 2025. These projects will be undertaken in collaboration with colleagues at Imperial College London.

Three surgeons undertaking a PhD in surgical education are also contributing to the SERG and their achievements continue to be impressive. In 2024, Dr Kat McLeod, a urologist, published an article in The American Journal of Surgery focused on surgical trainees' perspectives of remediation. The article was selected to be featured with an accompanying editorial.

https://pubmed.ncbi.nlm.nih.gov/38350749/

The paper also formed the basis of an invited symposium at the Association for Medical Education in Europe (AMEE) on the role of coaching and simulation in remediation plans. In the spirit of the SERG, the symposium enabled collaboration with colleagues from Aarhus University, Denmark and Stanford University, USA. Dr Marc Seifman, a plastic surgeon, has also tapped into the SERG connections inviting colleagues from leading surgical education centres and scholars at Imperial, Copenhagen, Toronto and Louisiana. These connections have enabled the formation of an expert knowledge user group for the consultation process in his scoping review of surgical curriculum renewal processes as the first part of his PhD. Similarly, Dr Sean Stevens has built on his Churchill Fellowship connections in his PhD project on interprofessional surgical simulation.

Dr Melanie Crispin, one of our MSurgicalEd students represented the Australian Women's Doctors Soccer Team, called the Medtildas in the World Medical Football Championships in July 2024 on the Sunshine Coast.

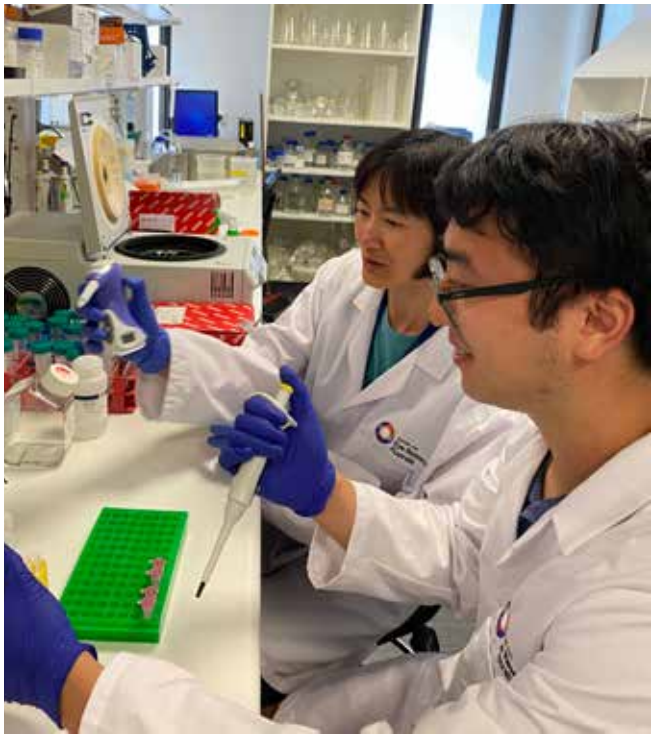
The Medtildas

Dr Melanie Crispin

AUSTIN HEALTH

Thyroid Eye Disease Translational Research Group

Dr Jwu Jin Khong



DETERMINING PREDILECTING FACTORS IN THYROID EYE DISEASE:

One unusual but constant feature of thyroid eye disease (TED) is that the lateral rectus muscle is relatively spared. The inferior and medial rectus muscles are typically most enlarged. Perhaps the lateral rectus or the adjacent orbital adipocytes/fibroblasts expresses gene differently to other quadrants. The divergence in gene expression between the lateral and medial orbit could identify novel, potentially modifiable pathways and may explain disease variation

This research is supported by funding from the Centre for Eye Research Philanthropic Fund, which nurtured the growth of research collaboration between Austin Health and Department of Ophthalmology within the Department of Surgery precinct. Collaborating investigators include A/ Prof Alan McNab and Dr Thomas Hardy (Royal Victorian Eye and Ear Hospital), Prof Gordon Smyth (Walter and Eliza Hall Research Institute of Medical Research) and international collaborations with Prof Rui Chen (University of California Irvine) and Dr Margo Clarke (University of British Columbia).

The study progressed to completion of RNA sequencing for determining differential gene expression between the medial and lateral orbit. We expect to present the findings of this research in national and international conferences in 2025. Through the study, we have been able to offer science degree graduate research internship.

The next phase of the research will seek to understand finer details on thyroid eye disease presentation, looking for a link to immunological and developmental pathways using single cell omics, which may open new channels for investigation that could lead to new treatment.

THYROID EYE DISEASE CLINICAL TRIALS

Dr Jwu Jin Khong is the lead site principal investigator, together with co-investigators Dr Thomas Hardy, Dr Shaun Parson, Dr Mike Lai and Dr Jonathan Hyer, all oculoplastic surgeons, on the following TED trials through Cerulea, the clinical trial arm of Centre for Eye Research Australia.

- Phase 1/ 2 multi dose-ranging study evaluating safety, tolerability, pharmacokinetics and clinical efficacy of a subcutaneous lonigutamab, an insulin-like growth factor-1 receptor (IGF-1R) monoclonal antibody (Industry sponsored, Acelyrn), is currently recruiting. Preliminary findings from cohort 1 and 2 showed early clinical responses in proptosis and clinical inflammatory score reduction and is well tolerated. The results have been accepted as abstracts for several meetings including ENDO, ESOPRS annual meeting, and AAO Congress this year.
- Phase 3 randomized, double masked, placebo-controlled, multi center study to evaluate the efficacy, safety pharmacokinetics and pharmacodynamics of satralizumab in participants with moderate-to-severe thyroid eye disease. (Industry sponsored, Roche) is currently recruiting. The Australian site is a featured global lead.

In the rapidly evolving field of immunotherapy for TED treatment, more TED trials are coming to Melbourne under this team, offering latest and advanced treatment options for our patients.

CLINICAL OUTCOME STUDY

The research group continues to involve Master students and training doctors in clinically driven studies, including multi-centre dysthyroid optic neuropathy study in prevalence and treatment outcome, orbital decompression rates in Australia from 2010 to 2022, quality of life as treatment outcome measure in TED patients, ocular motility impairment as determined by Goldmann perimeter, correlation between Goldmann perimetry and corneal light reflex as methods for measuring ocular duction in patients with TED, audit of medical treatment outcome for TED patients, efficacy of tocilizumab in patients with non-responsive dysthyroid optic neuropathy.

Urology Research Unit

Prof Damien Bolton

The Urology Department has continued to demonstrate their ability to attract high performance research candidates leading to excellent outcomes in terms of research productivity and nationally recognized awards. These have contributed to continued strong academic output of which we are proud.

The suite of projects assessing intra renal-pelvic pressures during endoscopic renal surgery has resulted in Best Poster awards for PhD candidate Dr. Anne Hong at the Annual Scientific Meetings of the American Urologic Association, the Societe International d'Urologie and the European Association of Urology. There is a growing recognition worldwide of the potential significance of this work, and the manuscripts produced to date have already been widely cited. It has been a unique pleasure to sit in the auditorium of these major meetings and view the illustrations from our manuscripts displayed and referenced in the presentations by multiple other institutions.

Continuing the trend of excellence in research outcomes former PhD student Dr Andrew Silagy was the winner of the Keith Kirkland Prize for the best research by a surgical trainee at the Urological Society of Australia and New Zealand conference this year. The groundbreaking work of Dr. Dixon Woon who has successfully reduced the mortality of nephrectomy in the setting of tumour thrombus invasion of the hepatic veins, in association with the Victorian Complex Oncovascular Group (VCOG) was recognised with the award for the best Uro-Oncology presentation at the same conference.

The longstanding research affiliation focussed on prostate cancer management with the Department of Radiation Oncology at Austin Health has continued with the treatment of the first patients in a world first clinical trial of focal therapy for prostate cancer using MRI-LINAC. A series of high-profile manuscripts also have been published this year focussing on our interest in limiting the rectal complications of radiation therapy for prostate cancer by hydro-dissection of the space between the rectum and prostate and instillation of filler gels into this area prior to treatment. This has now become standard of care in many jurisdictions.

A true highlight of the last year has been the progress within the department by Assoc. Prof Joseph Ischia towards the development of a device for stenting of the ureter without the need for radiation imaging or the use of an operating theatre. Animal studies have been completed, ethics committee approval obtained, and the first in human studies undertaken in this potentially significant advance.

The foundation of these research outcomes remains the dedicated commitment of the urologists in the department at Austin Health, particularly Dr Greg Jack, Dr Peter Liodakis and Assoc Prof Johan Gani who have all made major contributions to our research program this year, as well as Prof. Mauro Sandrin who provides constant advice for postgraduates.

Gala Dinner

BEST ONCOLOGY PRESENTATION

WINNER

DIXON WOON

AUSTIN HEALTH

Vascular Surgery Research

A/Prof Jason Chuen

The Austin Health Vascular Surgery Unit was established in 1973 as one of the earliest specialist vascular surgery centres in Australia. In 1979 Austin Health established a non-invasive Vascular Diagnostics Laboratory that remains in active service to this day.

In 2023-24 the Vascular Laboratory supported multiple research projects across Austin Health including clinical outcomes in haemodialysis access fistula creation, carotid plaque morphology, temporal arteritis and lower limb arterial disease in diabetes. Our specialist vascular sonographers and surgeons provided training and professional development across the sector, including webinars on behalf of the Australasian Society of Ultrasound Medicine (ASUM), vocational training and peer-reviewed publications on abdominal vascular compression syndromes and shear wall stress in arteriovenous fistula stenosis.

Core areas of research focus include thoracoabdominal aortic surgery, complex fenestrated and branched aortic repair, management of chronic limb-threatening ischaemia including diabetic foot disease, novel techniques in vascular imaging, carotid plaque morphology in stroke, clinical quality systems, multidisciplinary surgery including oncovascular surgery, and 3D printing for vascular surgical planning. The Vascular Surgery Department remains home to 3dMedLab, the Austin Health Medical 3d Printing Laboratory.

Recent publications and conference presentations have encompassed the role and distribution of varicose veins treatment in Australia, use of atherectomy in peripheral arterial disease, management of mycotic aortic aneurysms, the role of non-core vascular surgery and frailty assessments in vascular surgery.

The Vascular Unit

AUSTIN HEALTH

Victorian Complex Oncovascular Group (VCOG)

A/Prof Marcos Perini

VCOG is a multidisciplinary team of highly experienced hepatobiliary, vascular, and cardiothoracic surgeons, urologists and anaesthetists led by A/Prof Marcos Perini. The group provides pioneering care for patients with complex intra-abdominal malignancies that involve the liver, heart and major abdominal vessels. The group is re-defining onco-vascular care through surgical innovation, multidisciplinary collaboration, and clinical excellence.

The group specialise in the surgical treatment of complex conditions such as:

- Complex liver cancers
- Advanced abdominal malignancies with intra-cardiac extension
- Renal cell carcinoma with vascular invasion and cardiac extension
- Complex retroperitoneal tumours involving multiple organs

The group has gained national and international recognition for developing a novel surgical technique to manage complex renal malignancies invading the liver and heart. This approach is particularly effective in patients with renal cell carcinoma causing acute Budd-Chiari Syndrome, a fatal condition that, until the VCOG's innovative approach, was essentially untreatable. This approach has dramatically improved outcomes for patients whose cancer had been considered inoperable.

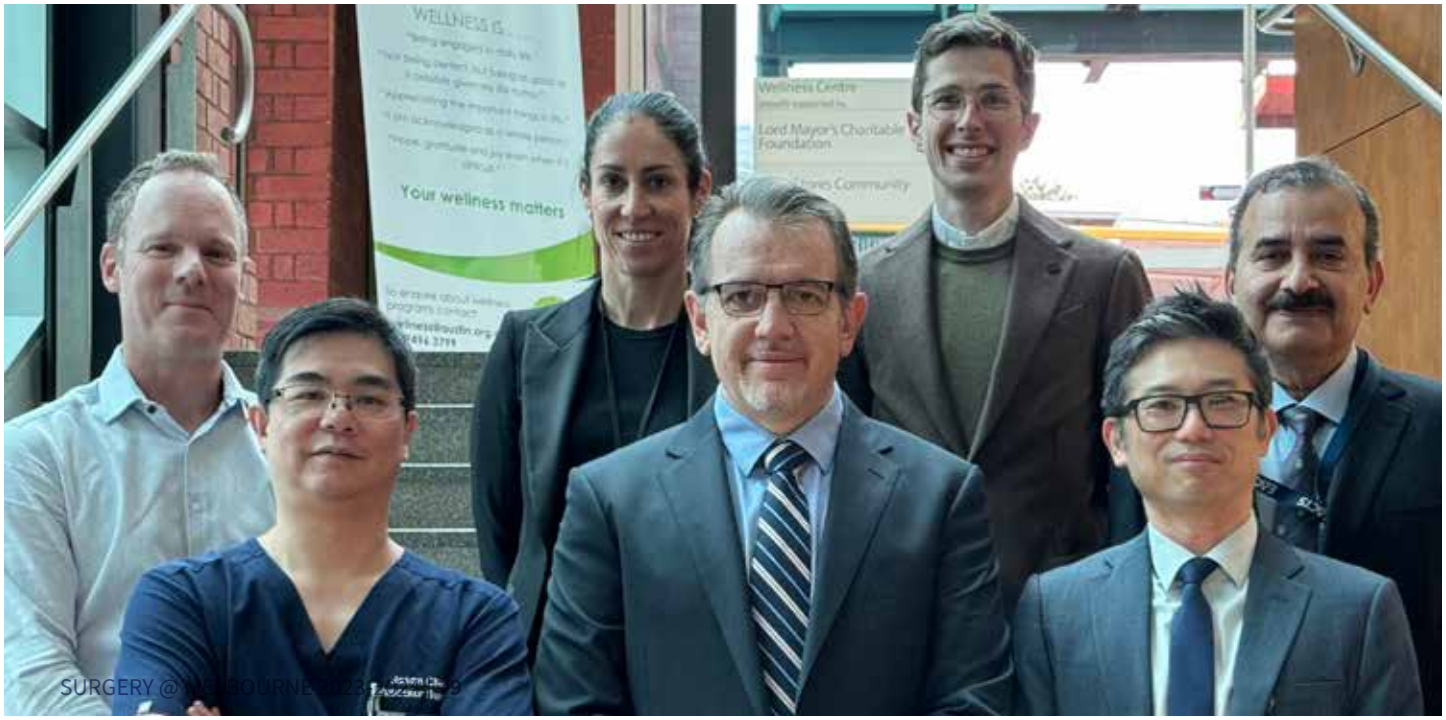
This innovative technique, developed collaboratively by A/Prof Marcos Perini, an experienced liver transplant, hepatobiliary and oncological surgeon, and A/Prof Siven Seevanayagam, cardiothoracic surgeon and Director of the Brian F Buxton Cardiac Surgery Unit at Austin Health, earned the prestigious Surgical Excellence Award at the Urological Society of Australia and New Zealand National Scientific Meeting in 2024.

The group has a national presence attracting patient from across Australia, offering advanced treatment options for patients with highly complex liver and cardiac conditions. The multidisciplinary approach ensures comprehensive, patient-centred care, focussed on improving long-term survival and quality of life.

VCOG is dedicated to ongoing research and clinical innovation that will enhance surgical outcomes for the most challenging abdominal oncovascular cases. As the national leaders in oncovascular innovation the group is setting new standards for care and making a difference in the lives of these patients.

VCOG members

- **Anaesthetists:** Dr Louise Ellard, A/Prof Lachlan Miles, A/Prof Peter McCall.
- **Cardiothoracic Surgeons:** A/Prof Siven Seevanayagam, Mr Jay Bhaskar
- **HPB & Liver Transplant Surgeons:** A/Prof Marcos Perini, Dr Graham Starkey.
- **Urologists:** Dr Dixon Woon, A/ Prof Joseph Ischia
- **Vascular Surgeon:** Mrs Sara Qi, A/Prof Jason Chuen



The Royal Melbourne Hospital

Message

Professor Christobel Saunders AO
James Stewart Chair of Surgery

The Royal Melbourne Hospital Department of Surgery continues to have a strong and impactful academic presence in Melbourne, nationally and internationally.

We have built an international reputation in education, expanding our suite of ultrasound courses to include two new qualifications: the Specialist Certificate in Clinical Ultrasound (Online) and the Specialist Certificate in Clinical Ultrasound (Practical) and have had 7,100 enrolments in short course though MLU. A co-designed course with key personnel from the Aboriginal Community Controlled sector is scanning and identifying patients that present with Rheumatic Heart Disease in rural and remote Australia.

Our clinical research strengths include a recent $5m MRFF grant for the 1000 patient TA Trial ('Impact of total arterial revascularization on angiographic and clinical outcomes'), the MRFF funded ECHONOF III trial - the worlds' largest RCT investigating an ultrasound intervention with 2000 participants with fractured neck of femur receiving a focused transthoracic echocardiography examination before surgery.

The Uro-oncolgy group have had a very successful year having identified specific driver mutations in germline prostate cancer and genes that influence downstream mutational processes and now developed a Phase III study to evaluate the impact of genomic testing on the use of active surveillance in patients with intermediate risk disease. Other exciting trials include MRI guided intratumoural injection of an oncolytic virus in prostate cancer. The group has won the $2m industry/academia grant.

The Breast Cancer and Health Services/Outcomes team have a strong focus on outcomes research in cancer and have joined an international ICHOM Learning Collaborative in early breast cancer, as well as piloting an efficiency metrics in cancer, a world first.

We continue to have a very active research portfolio in brain disease, from fundamental research around the brain cancer microenvironment to survivorship research with Brain Tumour Online, and with a number of clinical trails underway.

Of our many outstanding graduate students a special shout out to Justin Ren - winner of the Dean's Honors List at MDHS and Best Student Publication Prize from the International Society of Heart Research.

PRECINCT OVERVIEW

JAMES STEWART CHAIR OF SURGERY
Prof Christobel Saunders AO

EXECUTIVE ASSISTANT
Michelle Chu

RESEARCH

ULTRASOUND EDUCATION GROUP
Prof Alistair Royse
Prof Colin Royse
Justine Robbins
(General Manager)
Personal Assistant

BRAIN TUMOUR BIOLOGY
Prof Kate Drummond AM
Prof Andrew Morokoff
Dr Verena Schadewaldt
Dr Sarah Bray
Dr Hong Nguyen
Dr Jordan Jones

SIGNALLING
Dr Hongjian Zhu
Students

URO-ONCOLOGY
Prof Chris Hovens
A/Prof Niall Corcoran
(Deputy Lab Head)
Bethany Campbell
(Research Assistant)
Students

SIMULATOR
Dr Rodney Luwor
Dr Stanley Stylli
(Postdoc Researcher)
Students

SURGICAL ONCOLOGY/ GENERAL SURGERY
Prof Christobel Saunders AO
A/Prof Anita Skandarajah
Dr Tracey Dickens
Dr Dilshan Udayasiri
Dr Tim Chittleborough Students

Josie Iaria
(Research Assistant)

Key staff

Prof Christobel Saunders AO
James Stewart Chair of Surgery

Michelle Chu
Executive Assistant

Dr Andrea Bowyer
Dr Sarah Bray
Dr Lindsay Bridgford
Dr David Canty
A/Prof Niall Corcoran
Prof Anthony Costello
Dr Tracey Dickens
Prof Katherine Drummond AM
Dr Ben Dunn
Prof Christopher Hovens
Josie Iaria
A/Prof Ben Loveday
Dr Rodney Luwor
Dr Theo Mantamadiotis
Dr Helen Mohan
Prof Andrew Morokoff
Dr Hong Nguyen
Prof Alice Pébay AM
A/Prof David Read
Justine Robbins
Prof Alistair Royse
Prof Colin Royse
Dr Verena Schadewaldt
Mana Sharifi
A/Prof Anita Skandarajah
Prof Ben Thomson
Dr Stanley Stylli
Dr Hongjian Zhu

177
publications

$5.24m
total grant funding

27
research staff

21
research students

THE ROYAL MELBOURNE

Stem Cell Disease Modelling

Prof Alice Pébay AM

Professor Pébay AM's patient-specific induced pluripotent stem cells (iPSCs) to model selected human neurodegenerative diseases of the eye and brain, to uncover fundamental molecular mechanisms involved, to identify novel treatment targets for vision loss and neurodegeneration and functionally validate and translate these research findings. We use traditional two-dimensional cell cultures and organoids to investigate phenotypes *in vitro.*

Our laboratory also joined Phenomics Australia *in vitro* services and supports on-demand generation of patient induced pluripotent stem cells for research laboratories in Australia. This service also provides training of researchers in the generation and maintenance of pluripotent stem cells.

Our group focuses on the modelling of primary angle open glaucoma (POAG), age-related macular degeneration (AMD), and Alzheimer's disease. We generated a large bank of patient iPSCs from healthy individuals and affected by these conditions, differentiated them to cell types of interest, and subjected to various assays, ranging from single cell RNA Sequencing to functional assays. By comparing the profiles of the various cohorts, we can establish molecular pathways likely to be involved in the progression of these conditions.

We have set up and optimised methods of assessment of specific phenotypes in iPSC-derived retinal cells, in particular for the assessment and quantification of drusen-like deposits in vitro, and mid-thruput assessment of mitochondrial health readouts.

Prof Alice Pébay AM's laboratory group

HIGHLIGHTS

Lab-led publications

- Hernández D, Morgan Schlicht S, Clarke JE, Daniszewski M, Karch CM, Dominantly Inherited Alzheimer Network (DIAN), Goate AM, **Pébay A**. Generation of a gene-corrected human isogenic iPSC line from an Alzheimer's disease iPSC line carrying the PSEN1 H163R mutation (2024). Stem Cell Research. 103495.

- Hall J, Daniszewski M, Cheung S, Shobhana K, Kumar H, Liang H, Beetham H, Cho E, Abbott C, Hewitt A, Simpson KJ, Guymer RH, Paull D, **Pébay A***, Lidgerwood GE* (2024). A Semi-Automated Pipeline for Quantifying Drusen-Like Deposits in Human Induced Pluripotent Stem Cell-Derived Retinal Pigmented Epithelial Cells. SLAS Technologies 29(3):100106.

Our group contributed to work published by collaborators, including:

- Chaves JCS, Laura A. Milton LA, Stewart R, Senapati T, Rantanen LM, Wasielewska J, Lee S, Hernández D, McInnes L, Quek H, **Pébay A**, Donnelly PS, White AR, Oikari LE (2024). Differential cytokine responses of APOE3 and APOE4 blood-brain barrier cell types to SARS-CoV-2 spike proteins. Journal of Neuroimmune Pharmacology 19(1)-22.

- Romero-Molina C, Neuner SM, Ryszawiec M, **Pébay A**, Dominantly Inherited Alzheimer Network, Marcora E, Goate A (2024). Autosomal Dominant Alzheimer's Disease Mutations in Human Microglia Are Not Sufficient to Trigger Amyloid Pathology in WT Mice but Might Affect Pathology in 5XFAD Mice. International Journal of Molecular Sciences. 25 (5): 2565.

- King NE, Courtney J-M, Brown LS, Fortune AJ, Blackburn NB, Fletcher JL, Cashion JM, Talbot J, **Pébay A**, Hewitt AW, Morris GP, Young KM, Cook AL, Sutherland BA (2024). Induced pluripotent stem cell derived pericytes respond to endogenous mediators of proliferation and contractility. Stem Cell Research and Therapy. 15 (1):1-19.

- Jäntti, H, Jonk, S, Gómez Budia, M, Ohtonen S, Ilkka Fagerlund I, Fazaludeen FM, Aakko-Saksa P, **Pébay A**, Lehtonen S, Jari Koistinaho J, Kanninen KM, Jalava PI, Tarja Malm T, Korhonen P (2024). Particulate matter from car exhaust alters function of human iPSC-derived microglia. Particle and Fibre Toxicology 21 (1): 1-21.

- Wu Z, Shen S, Mizikovsky D, Cao Y, Naval-Sanchez M, Tan SZ, Alvarez YD, Sun Y, Chen X, Zhao Q, Kim D, Yang P, Hill TA, Jones A, Fairlie DP, **Pébay A**, Hewitt AW, Tam PPL, White MD, Nefzger CM, Palpant NJ (2024). Wnt dose escalation during the exit of pluripotency identifies tranilast as a regulator of cardiac mesoderm. Developmental Cell 59 (6):705-728.

- Westhaus A, Eamegdool SS, Fernando M, Fuller-Carter P, Brunet AA, Miller AL, Rashwan R, Knight M, Daniszewski M, Lidgerwood GE, **Pébay A**, Hewitt A, Santilli G, Thrasher AJ, Carvalho LS, Gonzalez-Cordero A, Jamieson RV, Lisowski L (2023). AAV capsid bioengineering in primary human retina, Scientific Reports 13:21946

Patent:

Cell cultures and methods of use thereof.
Publication number: AU2023901013

Inventors:
Alex Hewitt, Joseph Powell, Drew Neavin, Nona Farbehi, Alice Pébay, Maciej Daniszewski, Nathan Palpant

Status: PCT

THE ROYAL MELBOURNE

Cancer and Health Services Research Group

Prof Christobel Saunders

Successful Convening of Person Centred Value Based Healthcare Conference

CANCER CLINICAL TRIALS AND HEALTH OUTCOMES RESEARCH

Personnel

Sena Arpaci, Tracey Dickens, Mana Sharifi, Anita Skandarajah, Elizabeth Tan.

HIGHLIGHTS

3

Successful Grants

$74,917

Total Grant Funding

MDHS - 2023 Diversity and Inclusion Grant - CaLD Researchers Network – Improving Equity in Research

- Network database contains details for over 60 members.
- Successful in utilizing the database to identify and invite members to take part in Nursing research requiring input from CALD healthcare workers.
- Research officer appointed

Gilead Fellowship Grant - $50,000

- To support Clinical Research Fellow for 18 months.

Measuring efficiency in cancer care – an exploratory analysis of how well our systems are delivering care for our breast cancer patients.

- Ethics approved at RMH
- Initial data set collected and under review.

Clinical Trials

Sponsored OPTICS Clinical Trial (with OncoRes Medical, PI Prof Christobel Saunders)

A multi-centre, early feasibility study evaluating the safety and functionality of the ORM-P2 system for differentiating tissue types in the resection bed during breast conserving surgery. (RMH/PeterMac)

2 Fellowships

- Dr Elizabeth Tan
- A/Prof Anita Skandarajah MACH Health Service Research Fellowship

Industry Funding

$42,000

- OncoRes - Sponsor of Optics Clinical Trial at RMH;

$137,418

- Industry sponsored Clinical Trial.

Conference

Convened the inaugural Australasian Forum on Person-Centred Value-Based Healthcare (PCVBHC), held in Melbourne in September. The forum brought together over 250 national and international attendees and expert speakers from around the world. The sessions covered topics including putting PCVBHC into practice, why we need to focus on goals and preferences, the value of existing evidence, exploring innovative practices and processes, suggestions for transformation of care, as well as learning from patients and their individual experiences.

THE ROYAL MELBOURNE

Breast Cancer Clinical Research Program

Prof Christobel Saunders
A/Prof Anita Skandarajah

The PROSPECT trial (Post operative radiotherapy omission in selected patients with early breast cancer trial) was published in The Lancet in 2024. This trial examined the role of omitting postoperative radiotherapy after wide local excision of breast cancer in selected patients following a pre-operative MRI. The trial demonstrated an outstandingly low recurrence rate of 1% at 5 years with acceptable quality of life in those who omitted radiotherapy. This multicentre trial was led by the team at The Royal Melbourne Hospital (Chief Investigators Professor Bruce Mann, Dr Allison Rose, Associate Professor Skandarajah) and paved the way for PROSPECTIVE, the international multicentre trial.

The Breast program also continues to explore the role of contrast imaging in de-escalating therapies, such as radiotherapy and endocrine treatment, and conducting trials to explore the use of devices that can enable better margin assessment at wide excision, such as the Optics trial by Professor Christobel Saunders, and is concluding a national study of MRI in breast cancer.

Quality of life for a patient remains a major research priority. A/Prof Anita Skandarajah was awarded a MACH health services research fellowship for 2024. This enabled examining the impact of a patient reported outcomes led survivorship program within the Breast unit. This is a program that has been in existence for 15 years, but with the introduction of the electronic medical record, a Care Companion was built as an electronic diary for patients to access through the portal. This study evaluates the impact of digitalising Nurse-led survivorship care with the use of patient reported outcome measures and the program will be rolled across all precinct partners.

In addition to a long-standing relationship with kConFab, Kathleen Cunningham Consortium for familiar breast cancer, we were successful in conducting a surgical study examining factors which influence reconstruction choices and Patient-reported complications in this high risk group. kConFab comprises 44 institutions and therefore this study included the largest cohort of women at high risk either due to a pathogenic variant or strong family history who underwent mastectomy.

The commitment to international benchmarking and quality improvement have been expanded with a collaboration with ICHOM (International Consortium for Health Outcomes Measurement). In a world first, we attempt to study breast-cancer specific and patient-reported outcomes at an international level.

THE ROYAL MELBOURNE

Brain Tumours Online

Prof Kate Drummond AM

Staff:

Prof Kate Drummond AM
Dr Sarah Bray
Dr Verena Schadewaldt
Ms Irushi Ediriweera

BRAIN TUMOURS ONLINE PROJECT

Funded by an MRFF brain cancer survivorship grant, our multi- disciplinary team of health care professionals, researchers, an industry partner and people with lived experience of brain tumours have co-designed Brain Tumours Online: a secure digital platform to provide reliable information, self-care tools, and a supportive community for people affected by brain tumours in Australia.

Brain Tumours Online has three main 'pillars' to address a range of unmet needs:

- The **Learn** pillar curates useful, evidence-based information and resources in one place to help people find trusted relevant information at the right time.
- The **Connect** pillar allows patients and carers to connect with each other and health care professionals from the comfort of their own home through a social media-style community and interactive Q&A webinars.
- The **Toolbox** pillar provides access to evidence-based online tools and symptom management programs that can be used to address some of the challenges patients and their families may be facing, like insomnia.

Following development of the Brain Tumours Online prototype, we recruited over 200 participants (patients, carers and health care professionals) to use, test and provide feedback on the platform over a 12-month period. This thorough evaluation period has ended now, and we will be launching the public version of Brain Tumours Online in the coming weeks.

https://braintumoursonline.org

JOURNAL PUBLICATIONS:

1. Kalla M, Bradford A, Schadewaldt V, Burns K, Bray S, Cain S, McAlpine H, Dhillon R, Chapman W, Whittle JR, Drummond K, Krishnasamy M. ***Co-designing a user-centred digital health tool for supportive care needs of brain tumour patients and carers: An interview analysis.*** JMIR Cancer. *Submitted 2024.*

2. Kalla M, Burns K, Huckvale K, Bradford A, Schadewaldt V, Bray S, Borda A, McAlpine H, Thomas M, Capurro D, De Abreu Lourenco R, Cain S, Chapman W, Whittle J, Drummond K, Krishnasamy M. ***To framework, or not to framework? Reflections from co-design of a digital supportive care intervention for brain tumours.*** SAGE Digital Health. *Submitted 2024.*

Brain Tumours Online

CONFERENCE AND PUBLIC PRESENTATIONS:

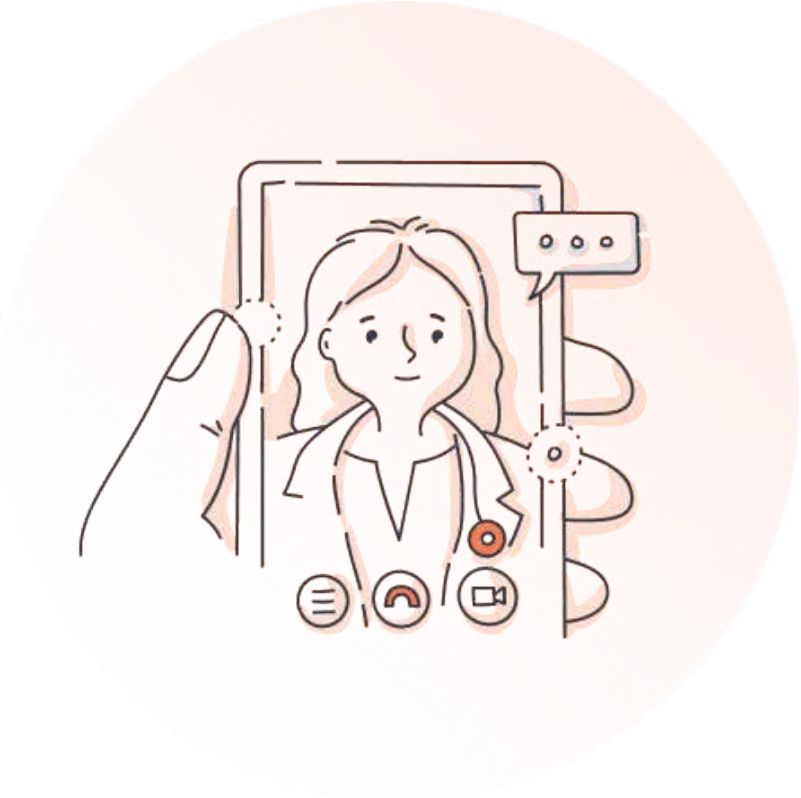
1. McAlpine H. Brain Tumours Online. ***The Brain Cancer Centre Community Forum***. 4 May 2023, Melbourne. Invited public presentation. **https://www.thebraincancercentre.org.au/community-forum/**

2. Whittle J. Connecting Communities: Transforming Brain Cancer Survivorship with Brain Tumours Online. ***15th Cooperative Trials Group for Neuro-Oncology (COGNO) Annual Scientific Meeting***; 8-10 October 2023, Sydney. Invited presentation.

3. Kalla M, Bradford A, Schadewaldt V, Bray S, Burns K, Cain S, McAlpine H, Dhillon R, Chapman W, Whittle JR, Drummond KJ, Krishnasamy M. Design of Patient-Centred Digital Health Interventions: Leveraging Input from Patients with Brain Tumours for Unmet Supportive Care Needs. ***15th Cooperative Trials Group for Neuro-Oncology (COGNO) Annual Scientific Meeting***; 8-10 October 2023, Sydney. Oral presentation.

4. Bray S. ***Brain Tumours Online. Brain Tumour Alliance Australia (BTAA) & COGNO Patient Education and Information Forum***. 8 October 2023, Sydney. Invited public presentation and panel discussion.

5. Kalla M, Bradford A, Schadewaldt V, Burns K, Bray S, Cain S, McAlpine H, Dhillon R, Chapman W, Whittle JR, Drummond KJ, Krishnasamy M. Design of Patient-Centred Digital Health Interventions: Leveraging Input from Patients with Brain Tumours for Unmet Supportive Care Needs. ***Clinical Oncology Society of Australia (COSA) 50th Annual Scientific Meeting***; 01-03 November 2023, Melbourne. Poster presentation.



THE ROYAL MELBOURNE

Brain Tumour Research

A/Prof Andrew Morokoff


A/Prof Andrew Morokoff

MOROKOFF LAB

The Morokoff Lab research group investigates brain cancer from all aspects including molecular biology, stem cells, liquid biopsy and epilepsy.

Research Objectives

We aim to understand the biology of brain cancer and translate this into clinical trials and ultimately new treatment paradigms.

Research Progress

We have made huge progress in the past year, particularly in the liquid biopsy field, where we have new publications in high impact neuro-oncology journals showing that plasma ctDNA is an exciting new diagnostic methodology for brain cancer identification and monitoring.

We have been excited to become part of the large collaborative group within the Parkville precinct – the Brain Cancer Centre.

New Personnel

Dr Jordan Jones is a young neurosurgeon and early career researcher who completed his PhD in 2022 and is now undertaking a brain cancer research fellowship at RMH. He has focused on the liquid biopsy work.

Kieran Benn is a UOM medical student doing a research project focusing on ddPCR in ctDNA diagnosis in brain cancer.

HIGHLIGHTS

Two first in the world publications in high impact (for neuro-oncology) journal **Neurooncology Advances** based on Dr Jordan Jones PhD showing the potential for a blood test to diagnosis types of brain cancer, and to indicate early resistance to chemotherapy. This work could result in avoiding a neurosurgical operation for brain tumour patients and the ability to switch them to more effective timely therapies. Future clinical trials on this are planned at RMH.

The Morokoff lab has joined in with the WEHI, RMH, UOM and PMCC as a foundation member of the Brain Cancer Centre, a cooperative collaborative group aimed at major breakthroughs in the diagnosis and treatment of brain cancer. The lab manages a large biobank at RMH of brain tumour tissue and blood samples.

The Morokoff lab has been using their expertise in liquid biopsy, genomics and ctDNA technology to work on a game changing blood test for patients with NF1 who are at risk of malignant peripheral nerve sheath tumours. This work is funded by a MRFF grant in conjunction with researchers from the MCRI and the Children's Medical Research Institute NSW.

Lead Researchers:

A/Prof Andrew Morokoff
Prof Kate Drummond
Dr Jordan Jones
Dr Hong Nguyen
Kieran Benn
A/Prof Chris French (DOM RMH)
– epilepsy and brain slice research

2
grants awarded

$5m

1
fellowship

Research Fellowships

Dr Jordan Jones – RMH brain cancer research fellowship

Grants

- **2023-2025** The Brain Cancer Centre. A novel liquid biopsy for monitoring and chemoresistance detection in brain cancer. Morokoff (CIA), Drummond, Jones. $400,000
- **2023-2027** MRFF BRAIN CANCER MISSION. 'GLIMMER' – Glioma Liquid-Biopsy and Multi-omic Monitoring Enabled Research platform. Whittle, Jenkins, Morokoff, Palmer, Fox, Gately, Dawson, Grimmond, Wong, Best, Freytag, Goode, Drummond. $4,550,471

Publications

1. Stuart, S. F., P. Curpen, A. J. Gomes, M. C. Lan, S. Nie, N. A. Williamson, G. Kannourakis, A. P. Morokoff, A. A. Achuthan and R. B. Luwor (2024). "Interleukin-11/IL-11 Receptor Promotes Glioblastoma Cell Proliferation, Epithelial-Mesenchymal Transition, and Invasion." Brain Sci 14(1).

2. Shakhatreh, L., B. Sinclair, C. McLean, E. Lui, A. P. Morokoff, J. A. King, Z. Chen, P. Perucca, T. J. O'Brien and P. Kwan (2024). "Amygdala enlargement in temporal lobe epilepsy: Histopathology and surgical outcomes." Epilepsia.

3. Jones, J. J., H. Nguyen, S. Q. Wong, J. Whittle, J. Iaria, S. Stylli, J. Towner, T. Pieters, F. Gaillard, A. H. Kaye, K. J. Drummond and A. P. Morokoff (2024). "Plasma ctDNA liquid biopsy of IDH1, TERTp, and EGFRvIII mutations in glioma." Neurooncol Adv 6(1): vdae027.

4. Jones, J. J., K. L. Jones, S. Q. Wong, J. Whittle, D. Goode, H. Nguyen, J. Iaria, S. Stylli, J. Towner, T. Pieters, F. Gaillard, A. H. Kaye, K. J. Drummond and A. P. Morokoff (2024). "Plasma ctDNA enables early detection of temozolomide resistance mutations in glioma." Neurooncol Adv 6(1): vdae041.

5. Jones, J. J., K. J. Drummond and A. Morokoff (2024). "Circulating Biomarkers for Tumour Monitoring, Prognosis Predictions and Detection of Temozolomide Resistance Mutations in Glioma." Neurosurgery 70(Supplement_1): 201-202.

6. Hourani, T., M. Eivazitork, T. Balendran, K. Mc Lee, J. A. Hamilton, H. J. Zhu, J. Iaria, A. P. Morokoff, R. B. Luwor and A. A. Achuthan (2024). "Signaling pathways underlying TGF-beta mediated suppression of IL-12A gene expression in monocytes." Mol Immunol 166: 101-109.

7. Whitehead, C. A., A. P. Morokoff, A. H. Kaye, K. J. Drummond, T. Mantamadiotis and S. S. Stylli (2023). "Invadopodia associated Thrombospondin-1 contributes to a post-therapy pro-invasive response in glioblastoma cells." Exp Cell Res 431(1): 113743.

8. Whitehead, C. A., H. Fang, H. Su, A. P. Morokoff, A. H. Kaye, E. Hanssen, C. J. Nowell, K. J. Drummond, D. W. Greening, L. J. Vella, T. Mantamadiotis and S. S. Stylli (2023). "Small extracellular vesicles promote invadopodia activity in glioblastoma cells in a therapy-dependent manner." Cell Oncol (Dordr) 46(4): 909-931.

9. Stuart, S. F., A. Bezawork-Geleta, Z. Areeb, J. Gomez, V. Tsui, A. Zulkifli, L. Paradiso, J. Jones, H. P. T. Nguyen, T. L. Putoczki, P. V. Licciardi, G. Kannourakis, A. P. Morokoff, A. A. Achuthan and R. B. Luwor (2023). "The Interleukin-11/IL-11 Receptor Promotes Glioblastoma Survival and Invasion under Glucose-Starved Conditions through Enhanced Glutaminolysis." Int J Mol Sci 24(4).

10. Moffet, J. J. D., O. E. Fatunla, L. Freytag, J. Kriel, J. J. Jones, S. J. Roberts-Thomson, A. Pavenko, D. K. Scoville, L. Zhang, Y. Liang, A. P. Morokoff, J. R. Whittle, S. Freytag and S. A. Best (2023). "Spatial architecture of high-grade glioma reveals tumor heterogeneity within distinct domains." Neurooncol Adv 5(1): vdad142.

11. Mitchell, P., S. C. M. Lee, P. E. Yoo, A. Morokoff, R. P. Sharma, D. L. Williams, C. MacIsaac, M. E. Howard, L. Irving, I. Vrljic, C. Williams, S. Bush, A. H. Balabanski, K. J. Drummond, P. Desmond, D. Weber, T. Denison, S. Mathers, T. J. O'Brien, J. Mocco, D. B. Grayden, D. S. Liebeskind, N. L. Opie, T. J. Oxley and B. C. V. Campbell (2023). "Assessment of Safety of a Fully Implanted Endovascular Brain-Computer Interface for Severe Paralysis in 4 Patients: The Stentrode With Thought-Controlled Digital Switch (SWITCH) Study." JAMA Neurol 80(3): 270-278.

12. Chong, H. K., Z. Ma, K. K. C. Wong, A. Morokoff and C. French (2023). "An In Vitro Brain Tumour Model in Organotypic Slice Cultures Displaying Epileptiform Activity." Brain Sci 13(10).

THE ROYAL MELBOURNE

Brain Cancer Microenvironment & Biology Laboratory

Dr Theo Mantamadiotis

The laboratory leverages our expertise in neuroscience, cancer biology and state-of-the-art technologies to investigate the mechanisms regulating brain tumour development.

Our mission is to translate the discoveries of fundamental biological mechanisms regulating brain cancer, toward novel approaches for more effective and sustainable therapy, for patients with brain cancer.

Research in the laboratory, performed by the research higher degree students, Marija Dinevska and Samuel Widodo have led to two important discoveries. The first identified the role of perivascular fibrosis in disrupting effective anti-tumour immunity, and the second, identified a novel mechanism regulating macrophage-dependent immunosuppression.

HIGHLIGHTS

$985,233
NHMRC Ideas Grant, as CIB

1
PhD Researcher

Successful PhD completion by **Marija Dinevska**, who was recruited as a post-doctoral researcher to the Garvan Institute in Sydney, to work on an NHMRC-funded Synergy project with collaborators from the Peter MacCallum Cancer Centre and Monash University.

Our laboratory's expertise in applying spatial biology to investigate complex tumour tissue histopathology, with multiple invitations to present our data, as well as the output of **12 scientific publications**, including 3 review articles and invitations to present at the WEHI Spatial Technology Symposium 2024 & the ABCARA 2024 Scientific Research Symposium.

Selected oral presentations at the **VCCC Alliance Research Conference 2023**: Beyond the Breakthroughs & Lorne Cancer 2023, presented by laboratory members.

THE ROYAL MELBOURNE

Cancer Signaling Research Laboratory

Hong-Jian Zhu, PhD, Rodney Luwor, PhD, Adilson Fonseca Teixeira, PhD

1 Successful Grant

$70,000 Total Grants 2023/2024

1 Fellowship

2 Scholarships

1 Patent

BACKGROUND

Cancer Signalling Research Laboratory focuses on how molecular signalling pathway, particularly TGF- β signalling regulates each different stages of cancer development from initiation and growth to dissemination by invasion, circulation and metastatic seeding. More importantly, we translate our fundamental novel findings into therapeutic opportunities.

Targeted therapy is one of the most outstanding successes in cancer treatments today and it is continuing as a major strategic direction for large pharmaceutical companies around the word. It's typified by the development of these "magic bullets" such as Imatinib, also known as Gleevec and STI571, for treatment of chronic myeloid leukemia (CML); Vemurafenib (PLX4032) for late-stage melanoma and Crizotinib (Xalkori) for non-small cell lung carcinoma (NSCLC). Fundamental to all these successes are the discoveries of Bcr-abl, B-Raf(V600A), and Eml4-Alk as the true molecular causes of these cancers respectively.

In contrast, there have been many not so successful "miss-targeted bullets" for example the underwhelming results of 20+ phase I, II, III clinical trials targeting TGF-β signalling for treatment of various types of cancers. It is clear that TGF-β signalling is a major molecular driver for cancer progression, particularly invasion and metastasis and the TGF- β targeted therapies are on-target and show good efficacies in pre-clinical tumour models. The chanllenge is to find the gaps between animal models and human cancer patients and ensure successful clinical treatment outcomes. What we have now discovered is that the bioactive microvesicle exosomes are the key regulator of TGF-β signalling, bypassing the traditional ligand-receptor as the signalling initiators. More strikingly, the conventional ligand targeting therapies have little effect on the exosomal TGF-β, directly and clearly explaining the reasons for not so successful outcomes of clinical trials.

OBJECTIVES

The lab currently is geared towards establishing a new paradigm whereby exosomes are the initiator and amplifier of TGF-β signalling that in turn is the true molecular cause of cancer invasion and metastasis. The research projects cover from basic understanding of how at molecular level exosomes delivers tumourigenic TGF-β signalling, particularly in the context of tumour microenvironment to new therapeutic strategy and therapies for treatment of various type human cancers, i.e. breast, brain, colon and skin cancers.

In addition, we are also developing a new generation of anti-TGF-β therapy with much improved delivery together with cancer vaccination targeting TGF-β signalling's role in immuno-supression. The focuses of latter are on melanoma and breast cancers.

HIGHLIGHTS

Research progress in the past year:

New personnel:
One new PhD student and one postdoc have commenced in 2023.

Fellowships: Dr. Adilson Fonseca Teixeira has been awarded the Huagene Postdoctoral Fellowship and Dr. Rahaf Jawarneh has been awarded a scholarship for her PhD study in Melbourne University.

Significant research findings: Exosomes has been discovered as the major cause in driving breast cancer metastasis by amplifying TGF-b signalling, resulting therapeutic evasion. Importantly, we have established exosomes as new target for cancer therapeutical development.

Publications: Published 9 peer reviewed research articles including one with an impact factor higher than 40:

1. AF Teixeira, Y Wang, J Iaria, P Ten Dijke, **HJ Zhu**, Simultaneously targeting extracellular vesicle trafficking and TGF-β receptor kidnase activity blocks signaling hyperactivation and metastasis, **Signal Transduction and Targeted Therapy 2023**, 8 (1), 456

   This is a high impact publication (IF>40), establishing a new paradigm in targeted cancer treatment ie targeting exosome trafficking pathways.
2. TMB Ware, RB Luwor, **HJ Zhu**, A New Systemic Disease Mouse Model for Glioblastoma Capable of Single-Tumour-Cell Detection, Cells **2024**, 13 (2),192
3. M Murad, Y Chen, J Iaria, A Fonseca Teixeira, **HJ Zhu**, A Novel Method for the Early Detection of Single Circulating, Metastatic and Self-Seeding Cancer Cells in Orthotopic Breast Cancer Mouse Models, Cells 13 (14), 1166, **2024**
4. A Fonseca Teixeira, S Wu, R Luwor, **HJ Zhu,** A New Era of Integration between Multiomics and Spatio-Temporal Analysis for the Translation of EMT towards Clinical Applications in Cancer, Cells **2023**, 12 (23), 2740

THE ROYAL MELBOURNE

UroOncology Research

Prof Chris Hovens and A/Prof Niall Corcoran

HIGHLIGHTS

$2m

Illumina/University of Melbourne TAGC Grant for the Geni-Airspace trial

1

Scholarship

The research group led by Professors Niall Corcoran and Christopher Hovens at the Department of Surgery, University of Melbourne, focuses on prostate cancer, particularly in understanding its biology and developing targeted therapies. Their work involves identifying molecular markers that can predict disease progression and response to treatment. The group is highly interdisciplinary, integrating genomics, molecular biology, and clinical studies to improve the management and treatment of prostate cancer. They aim to translate their findings into clinical applications, with the ultimate goal of enhancing patient outcomes.

Their work has significantly contributed to understanding the complexities of prostate cancer and has led to improvements in the precision of therapeutic interventions.

Their research encompasses several key areas:

- **Molecular characterization:** Investigating genetic and molecular alterations that drive prostate cancer development and progression.
- **Biomarker discovery:** Identifying novel biomarkers to aid in diagnosis, prognosis, and treatment stratification.
- **Therapeutic strategies:** Developing and testing targeted therapies, including novel drugs and treatment regimens.
- **Translational research:** Bridging the gap between laboratory research and clinical practice to ensure that new discoveries benefit patients.

RESEARCH PROGRESS

Published 20 papers

NEW PERSONNEL

2 new Research Assistants:
Emma Li and **Rayann Andrade** and
1 new PhD student **Ignacio Varela**

GENI-AIRSPACE TRIAL

National rates of prostate cancer are rising. It's predicted that 372,000 Australian men will be living with the disease by 2040.

Many of these diagnoses will be classified as having a favourable intermediate risk (FIR), meaning they are unlikely to experience metastasis or death from their disease, even without treatment.

Despite this, more than 80% of prostate cancer patients in Australia with lower risk of disease progression are still subjected to radical treatment with either surgery or radiation. These methods are expensive and have significant concomitant risks of long-term morbidity.

Professor Niall Corcoran and Professor Christopher Hovens from the University of Melbourne are developing the world's first prospective, randomised clinical trial using genomic testing and predictive disease modelling to reduce the burden of prostate cancer, which evidence suggests is over-diagnosed and over-treated in early disease.

The Geni-Airspace trial will test and inform patients whether they carry mutations that may be associated with a high risk of prostate cancer progression, and allow them to make a more informed decision about proceeding to active radical treatment.

GENETIC ORIGINS OF CANCER HETEROGENEITY

Prostate cancer is the most commonly diagnosed internal malignancy in men and increasing life expectancy in the population is sharply increasing its incidence. A large fraction of prostate tumours are clinically indolent, not requiring radical treatment. Yet a subset demonstrates aggressive clinical behaviour and metastasise to distant sites, becoming lethal.

Clinicians currently use clinico-pathological features to distinguish indolent from aggressive tumours, but this poorly distinguishes truly lethal from higher-grade disease. Newly diagnosed prostate cancers differ dramatically in their mutational composition and lethality. The genetic origins of this variability are unclear.

In combination with colleagues at the University of Los Angeles (UCLA) headed by Professor Paul Boutros, we have interrogated the evolutionary origins of prostate cancer heterogeneity. We analysed over 700 prostate tumour whole genomes. We identified a compendium of 223 recurrently mutated driver regions, most undetectable with common targeted sequencing.

Specific driver mutations preferentially occur in patients with specific germline genetics: this in part rationalises heterogeneity in disease presentation, including ancestry differences. Specific driver genes also influence downstream mutational processes. High-grade cancers have a superset of the drivers in lower-grade tumours, including several with increased frequency e.g. BRCA2 and MYC. These driver mutations occur early in cancer evolution, and early mutations are associated with greater risk of cancer death.

Our data suggest high- and low-grade prostate tumours both emerge from a common pre-malignant field, influenced by stochastic mutation-timing and germline genomic context. This study has broader implications beyond the prostate cancer field and implicates subtle germline variants that are inherited as being able to influence the types of mutation profiles that will eventually emerge in a solid tumour. A paper is currently in revision.

Pan-Prostate Cancer Group

For the last 7 years, Profs Hovens and Corcoran have provided leadership to an international consortium harmonising prostate cancer sequencing data from research groups from the UK, Francs, Denmark, Germany, USA, Canada, South Africa and Australia. In-depth genomic data (whole genome sequencing, RNA-sequencing, methylation) have been aggregated from multiple samples from over 1000 patients with prostate cancer, spanning the spectrum from early indolent cancer to end-stage lethal disease. The initial analyses are now complete with 7 papers in advanced stages of preparation including:

- Description of the mutational process underlying prostate cancer development
- Identification of distinct evolutionary trajectories which align with clinical progression
- Characterisation of patterns of tumour spread

The Melbourne group co-hosted a successful working group meeting at Sydney University in June, with over 50 attendees from Europe and North America.

Geni AIRSPACE

Based on the results of our PRECEPT study analysing genomic drivers of metastasis in early prostate cancer, we have developed a Phase III study to evaluate the impact of genomic testing on the use of active surveillance in patients with intermediate risk clinically localised prostate cancer. In association with the Australian and New Zealand Urogenital and Prostate Cancer Trials Group, this randomised controlled trial will recruit over 1200 patients nationally, with a primary endpoint of metastasis-free survival at 10 years. The lead clinic site is Western Health, with funding obtained for trial start-up and initial recruitment. The study has received HREC approval with the trial anticipated to open in October 2024. To date we have successfully raised $2.5 million in competitive funding for the trial.

Bladder Cancer Database

Building on a clinical need identified during the recent global shortage of BCG for intravesical use (the standard management of high-risk non-muscle invasive bladder cancer), we have obtained seed funding to develop a bladder cancer registry for patients presenting with nonmetastatic urothelial carcinoma. The database has been developed in association with Biogrid and is based on an internationally utilised dataset and data dictionary to facilitate future collaboration. Lead investigators have been identified at all VCCC and MPCCC clinical sites and the database is currently in advanced beta-testing.

IMPROVE STUDY

This investigator-initiated study in collaboration with Stefan He inz from Royal Melbourne Hospital radiology and Ben Tran and Belinda Parker from Peter MacCallum Cancer Centre is investigating the impact of MRI guided intratumoural injection of an oncolytic virus on immune system activation in the prostate cancer microenvironment. The study opened in early 2023 and recruitment is ongoing.

Education at the Royal Melbourne Hospital

A/Prof David Canty

The Department of Surgery at the University of Melbourne has been at the forefront of integrating **Point of Care Ultrasound (PoCUS)** into medical education, revolutionising the landscape of clinical diagnostics and patient care. Most known for the Graduate courses for medical specialists, A/Prof David Canty and his team, Mobile Learning Unit, has extended this to the Melbourne Medical School, where it may make a larger impact on patient health care.

In 2023, under the visionary leadership of A/Prof David Canty, the Academic Director of Ultrasound Simulation, the Mobile Learning Unit and Ultrasound Education Group pioneered the inclusion of practical PoCUS training within the Melbourne Medical School curriculum. This marked a pivotal chapter in the institution's history, setting a new standard for medical education nationwide.

POINT OF CARE ULTRASOUND COURSE

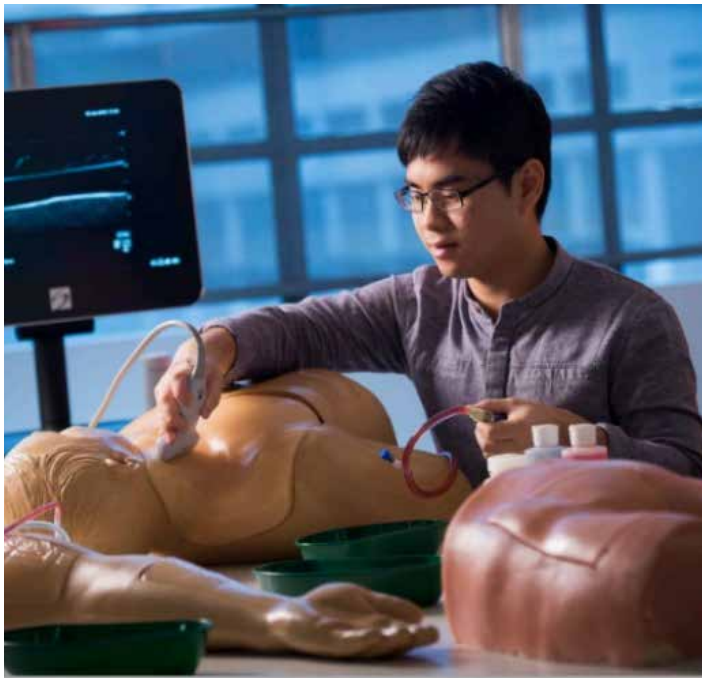
The inaugural **Foundations of Point of Care Ultrasound** course, a 12-week program, was completed by fifty first-year medical students from all nine campuses. The curriculum featured a blend of cutting-edge online modules with interactive diagnostic images and hands-on practice using five high-fidelity ultrasound simulators, funded through grants. This comprehensive approach enabled students to master bedside diagnostic ultrasound techniques, enhancing the precision of vascular, cardiac, pulmonary, abdominal, and pelvic examinations. These trailblazing students represent the vanguard of PoCUS-trained physicians, poised to excel beyond their peers.

In a subsequent stride, fifty second-year students undertook the **Cardiac Point of Care Ultrasound course**, an intensive four-week immersion into cardiac ultrasound diagnostics. Leveraging the same innovative blend of interactive online case studies and simulator-based training, students gained proficiency in identifying common cardiac pathologies, such as ventricular failure, valvular disorders, and pericardial effusion. This training empowers them to confidently diagnose and assess the significance of cardiac murmurs and ventricular dysfunctions, transcending traditional diagnostic methods (the stethoscope may soon be retired).

The overwhelming popularity of these subjects in 2023 resulted in pressure for an increased enrolment cap in 2024, reflecting their status as the most sought-after Discovery subjects. However, to extend this opportunity to all medical students and maintain our competitive edge in medical education, additional funding for simulators is imperative.

Moreover, A/Prof Canty spearheaded the **Ultrasound Guided Peripheral Venous Access** course, an essential skill-building program for fourth-year students. Its widespread acclaim resulted in near-universal participation across all nine campuses in both 2023 and 2024. The course's success has sparked interest among junior doctors at Austin Hospital, inspired by the testimonials of interns who benefited from this transformative learning experience at Melbourne Medical School.

The Department of Surgery remains committed to nurturing the next generation of medical professionals equipped with cutting-edge PoCUS skills, ensuring that our graduates are not only competent but also pioneers in the medical field. Our dedication to excellence in teaching and learning continues to make a profound impact on healthcare delivery and outcomes.



THE ROYAL MELBOURNE

Surgical Education, Colorectal Surgery and Robotic Research Activity

Dr Helen Mohan


Dr Sheri Newman

Helen Mohan, Senior Lecturer University of Melbourne – RMH/Peter MacCallum Cancer Centre Department of Surgery

Alexander Heriot, Co PI's Satish Warrier

SURGICAL EDUCATION

Graduate Students

Dr. Kirsten Larkins (PhD candidate)
– focusing on multiplatform training and cognitive training in robotic surgery;

Dr. Jade El Mohamed (PhD candidate)
– focusing on medical student education in robotic surgery,

Dr. Sheri Newman (MPhil candidate)
– focusing on increasing access to robotic training;

Dr. Tayla Fay(MPhil Candidate)
– focusing on non-technical skills in robotic surgery

Collaborations

Collaboration with the International Medical Robotics Academy (IMRA) as a centre for graduate research in surgical education and for undergraduate robotic education

Research Fellowships

Dr. Sheri Newman first research fellow at IMRA funded by AMRA grant

Prizes

Dr. Kirsten Larkins won the Innovation Prize at the Sydney Robotics Summit 2025

Medical Student Robotic Programme

Discovery programme launched for University of Melbourne Medical Students led by Dr. Jade El Mohamed – a 4 week elective in robotic surgery at IMRA in collaboration with University of Melbourne – 2 groups of students have successfully completed the programme to date with more planned for 2025. A taster one day surgical skills and robotics course for medical students was also run at IMRA in September 2024 where they got to use hydrogel models to practice port insertion, stoma creation and basic robotic skills.

Clinical Research

PRIORITY-CONNECT 2 - RPA lead site for this teleprehabilitation trial with Peter MacCallum Cancer Centre as hub for Victoria- highlights: study successful in receiving MRFF funding. Currently in phase of getting study set up at the hub and sites to start recruitment in the coming months.

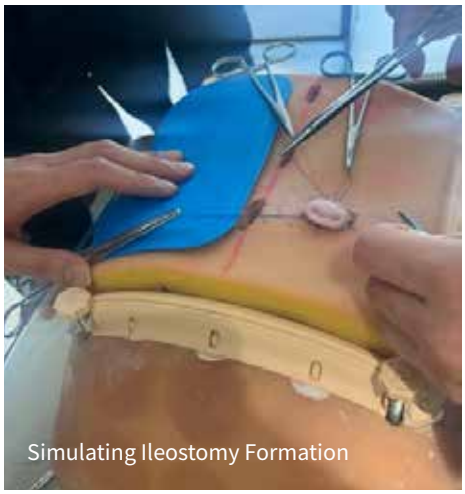
ROPES – Robotic Beyond TME Surgery- an international collaboration developing a registry of using a robotic approach to advanced pelvic cancer with all key sites involved. Lead Site: Peter MacCallum Cancer Centre. Highlights: Funding with industry grant from Proximie. Data Collection commencing January 2025

Publications:

19 publications in past year

Dr Kristen Larkins


Dr Jade El Mohamed teaching medical students


Simulating Ileostomy Formation

Mobile Learning

Prof Alistair Royse
Prof Colin Royse


Ultrasound students

ULTRASOUND AWARD COURSES

The Ultrasound Education Group has developed a comprehensive suite of graduate-level Point-of-Care Ultrasound (POCUS) courses, highlighting the crucial role of ultrasound technology in clinical environments. These courses are designed to significantly enhance patient outcomes by equipping medical professionals with the confidence and competence to employ ultrasound effectively in routine care.

Our Graduate Certificate, Graduate Diploma, and Master of Clinical Ultrasound have gained considerable popularity among practitioners both in Australia and internationally since their launch and are the largest provider of clinical ultrasound education in Australasia. The self-paced, online format of these courses ensures broad accessibility and convenience for participants regardless of their geographical location. The courses are designed to flow-on from one another, with students able to start at the Certificate level and progress to the Master. Our enrolments continue to consistently grow year on year demonstrating the ongoing demand for Ultrasound education across the entire suite.

INTRODUCTION OF NEW SPECIALIST CERTIFICATES

Dr Ximena Cid and Dr Lindsay Bridgford

In 2024, we expanded our offerings to include two new qualifications: the Specialist Certificate in Clinical Ultrasound (Online) and the Specialist Certificate in Clinical Ultrasound (Practical). The subjects include the first core, introductory subject, Focused Transthoracic Echocardiography, Peri-arrest ultrasound, and ultrasound guided critical care procedures. These new courses have surpassed enrolment expectations in their inaugural year. These additions provide further opportunities for study, with plans to introduce new subjects in the coming years.

Ongoing projects/responsibilities include co-directorship of post-graduate award courses in clinical ultrasound; being a contact point for approval of student enrolment, granting of Recognition of Prior Learning, pastoral support to enrolled students, and continued reassessment and editorial changes of content and assessment, based on student feedback. This continued improvement and the introduction of new course material has contributed to substantial increase in award course enrolments over the past 2 years.

GRADUATE DIPLOMA OF PERIOPERATIVE MEDICINE

Dr Andrea Bowyer

A popular part of MLU's online clinical courses is the Graduate Diploma in Perioperative Medicine. Using the MLU's current point-of-care ultrasound courses as a foundation, the graduate diploma extends students' knowledge on how to apply their newfound skills to managing perioperative patients and improving outcomes. During the last 12 months, the majority of enrolment has come from students who are new to point-of-care ultrasound (POCUS) and have recently mastered the certificate level (or higher). This course has introduced a new cohort of students to the importance and clinical application of POCUS as a core component of clinical assessment.

Continuing Success of Short Courses

We continue to experience strong demand in the external marketplace for our short courses with excess of 7,100 enrolments over the 2023 period.

In 2024 we added an additional application to our Learning Management system called the Analytics portal where author can in real time see the progression of their students through the course, which questions they struggled with and real time qualitative and quantitative feedback from the students.

We have recently partnered with the Australian Physiotherapy Council to be their Learning Management System (LMS) provider for the next 3 years, supporting international physiotherapists to complete their training and accreditation to practice in Australia.

MEDICAL EDUCATION DEVELOPMENT SUBJECTS

Dr David Canty

In 2023 we integrated Point of Care Ultrasound into the Melbourne Medical School curriculum for the first time and have run two semesters, limited by equipment constraints to 100 students completing the courses each year. The very popular two Discovery subjects provided advanced learning of anatomy and diagnosis of multiple organ systems using the innovative online platform and cutting-edge ultrasound simulators obtained by grants. A third course completed by nearly all of the fourth-year students (316) empowered them the ability to insert peripheral venous cannulas in patients with difficult venous access using ultrasound on simulators.

Workshops

Honorary Professor Doa El- Ansary and Lynda Tivendale conducted a sold-out workshop in QLD aimed at Nurses and Physiotherapists. The workshop focused on providing practical skills of Ultrasound imaging and simulated learning for image interpretation focused on Lung and Sternum.

RESEARCH

TA Trial

Prof Alistair Royse

A large 1,000 patient, multicenter RCT funded by the MRFF with a $5m grant, the TA Trial ('Impact of total arterial revascularization on angiographic and clinical outcomes'), will address a major research gap in the use of total arterial grafts in cardiac bypass surgery in patients with multiple co-morbidities. It examines the exclusive use of arterial grafts versus the use of one or more saphenous vein grafts, being assessed by CT angiography. Australia leads the world in the widespread use of arterial bypass grafting being approximately 10 fold higher than international experience. This study is widely believed to be the most important coronary surgery study ever to be conducted. With the Mobile Learning Unit acting as Trial Co-Ordinator, the TA Trial has been recruiting patients at Royal Melbourne and Melbourne Private hospitals since December 2023 and has now successfully activated multiple Victorian sites in the first half of 2024. In the second half of 2024, multiple interstate sites will be activated.

ECHONOF III trial

Prof Colin Royse (CI)

The ECHONOF III trial is the worlds' largest RCT investigating an ultrasound intervention. 2000 participants with fractured neck of femur will receive a focused transthoracic echocardiography examination before surgery (or not). A composite outcome will be assessed at 30 days as the primary outcome. It is MRFF-funded and will have 11 sites across Australia. Recruitment is underway and at 15% target so far. The recruitment is expected to be complete by the end of 2026, with 30-day results published that year. Colin is also the co-director of the Mobile Learning Unit and the Ultrasound Education Unit and other oversees trials in ultrasound, perioperative medicine, and cardiac surgery outcomes.

MEDICAL AND PHYSIOLOGIST WORKSHOP

The introduction of a medical and a physiologist annual course for the management of infected pacing and defibrillation devices (CIEDs) has been an outstanding success. All courses have been fully subscribed and have been generously supported by industry. Gareth is the chair of the Cardiac Society and Health Department committee for the accreditation of "lead extractor" practitioners. Use of laser and other sophisticated percutaneous extraction methods allows for most patients with infected or dysfunctional pacing devices to avoid sternotomy with extraction.

GRANT APPLICATIONS

Dr Ximena Cid

Led the application for an MRFF grant for a definitive multicenter randomized trial assessing the impact of adding clinical ultrasound for patients admitted to the hospital with shortness of breath. We have applied for a $2 million grant, and we expect to receive the results of this application by the end of the year.

Additionally, I led a consensus process among internal medicine physicians to define the scope of clinical ultrasound for their practice. The methodology used was the Delphi method, and the results will be published in a peer-reviewed medical journal shortly.

OTHER ACTIVITIES

NACCHO

In 2023 we were engaged by National Community Controlled Health Organisation (NACCHO) with key personnel from the Aboriginal Community Controlled (ACCO) sector, to co-design an on-line course to scan and identify patients that present with Rheumatic Heart Disease.

Acute rheumatic fever (ARF) and rheumatic heart disease (RHD) are preventable diseases that disproportionately affect Aboriginal and Torres Strait Islander communities. The most important diagnostic and monitoring tool for ARF and RHD is an ultrasound of the heart (echocardiography). Difficulty and access to this technology can lead to delays in diagnosis, potentially leading to worse long-term outcomes, especially in remote locations.

NACCHO

Course development included the online course, and written materials associated with the course and a series of face-to-face workshops where MLU team members work with the ACCHO's to operate ultrasound equipment and build confidence in scanning hearts.

In 2023/24 we have delivered familiarisation sessions in Darwin and Perth with over 30 local indigenous participants. Presented a face-to-face practical version of the online course in Cairns with 15 Participants and in the full course and workshop in Broome, where we visited two local Indigenous communities with the AHW where they scanned patients. The program has been expanded to a pilot with 5 ACCHO sites across Northern Australia and University of Melbourne is the training provider.

PROMOTIONS AND GRADUATIONS

Dr David Canty Associate Professor and Academic Director of Ultrasound Simulation was promoted to level D

Justin Ren is in the final year of his PhD at the Department of Surgery, Cardiothoracic Unit, under the supervision of Professor Alistair Royse.

His research on total arterial coronary artery bypass grafting has garnered significant international recognition, with presentations at prestigious congresses such as the European Association of Cardiothoracic Surgery (EACTS), the American Association of Thoracic Surgery (AATS), the Society of Thoracic Surgery (STS), and the European Society of Cardiology (ESC). Justin's groundbreaking work led to him being honoured as the first Australian recipient of the EACTS Young Investigator Award.

In addition to these achievements, Justin has been recognized on the Dean's Honors List at MDHS and received the Best Student Publication Prize from the International Society of Heart Research. His highly impactful publication in the European Heart Journal, titled "*Multiple arterial vs. single arterial coronary artery bypass grafting: sex-related differences in outcomes,*" has further solidified his reputation, contributing to the field with a journal impact factor of 39.

Justin Ren receiving the 2023 Deans Award for Excellence in Graduate Research.

PUBLICATIONS 2023

1. AG. Royse, E. Lui, D. Gai, X. Cid, D. Canty, A Wang, L. Bridgford, CF. Royse. Three Zone Scanning Protocol For Lung Ultrasound: An Anatomical Basis. Heart Lung Circ. 2023 Feb;32(2):247-251.

2. Doran J, Canty D, Dempsey K, Cass A, Kangaharan N, Remenyi B, Brunsdon G, McDonald M, Heal C, Wang Z, Royse C, Royse A, Mein J, Gray N, Bennetts J, Baker R, Stewart M, Sutcliffe S, Reeves B, Doran U, Rankine P, Fejo R, Heenan E, Jalota R, Ilton M, Roberts-Thomson R, King J, Wyber R, Doran J, Webster A, Hanson J. Surgery for rheumatic heart disease in the Northern Territory, Australia, 1997– 2016: what have we gained? BMJ Global Health 2023;8:e011763. doi:10.1136/bmjgh-2023-

3. Justin Ren, BBiomedSc (Honors); David H. Tian, MD, PhD; Mario Gaudino, MD, PhD; Stephen Fremes, MD, MSc; Christopher M. Reid, MSc, PhD; Michael Vallely, MBBS, PhD*; Julian A. Smith, MBBS, MSurgEd; Nilesh Srivastav, MBBS; Colin Royse, MBBS, MD; Alistair Royse, MBBS, MD. Survival Benefit of Multiple Arterial Revascularization With and Without Supplementary Saphenous Vein Graft .J Am Heart Assoc. 2023;12:e031986. DOI: 10.1161/JAHA.123.031986

4. Damjan Vukovic, Andrew Wang, Maria Antico, M. Marian Steffens, Igor Ruvinov, Ruud JG van Sloun, David Canty, Alistair Royse, Colin Royse, Kavi Haji, Jason Dowling, Girija Chetty & Davide Fontanarosa et al. Automatic deep learning-based pleural effusion segmentation in lung ultrasound images. BMC Med Inform Decis Mak 23, 274 (2023). https://doi.org/10.1186/s12911-023-02362-6

5. Justin Ren, Colin Royse and Alistair Royse. Late Clinical Outcomes of Total Arterial Revascularization or Multiple Arterial Grafting Compared to Conventional Single Arterial with Saphenous Vein Grafting for Coronary Surgery J. Clin. Med. 2023, 12, 2516. https://doi.org/10.3390/jcm12072516

6. Guy Ludbrook, PhD; Michael P. W. Grocott, MD; Kathy Heyman, BSN; Sandy Clarke-Errey, PhD; Colin Royse, MD; Jamie Sleigh, MD; L. Bogdan Solomon, PhD. Outcomes of Postoperative Overnight High-Acuity Care in Medium-Risk Patients Undergoing Elective and Unplanned Noncardiac Surgery. JAMA Surg. 2023;158(7):701-708. doi:10.1001/jamasurg.2023.1035

7. Jared Ou-Young, Stuart Boggett, Sandy Clarke-Errey, Colin F. Royse, Doa El Ansary and Andrea J. Bowyer. Identifying risk factors for poor multidimensional recovery after major surgery: A systematic review. Acta Anaesthesiol Scand. 2023;67:1294–1305.

8. Pranata, Adrian ; Farragher, Joshua ; Perraton, Luke ; El-Ansary, Doa ; Clark, Ross ; Meyer, Denny ; Han, Jia ; Mentiplay, Benjamin ; Bryant, Adam L. ; 2023. Impaired Lumbar Extensor Force Control Is Associated with Increased Lifting Knee Velocity in People with Chronic Low-Back Pain, Sensors, Vol. 23, no. 21 (Oct 2023), 8855. https://doi.org/10.3390/s23218855

9. X. Shi, Z. Cao, C. Ganderton, D. El-Ansary, Tirosh, O, Adams, R and Han J. Ankle proprioception in table tennis players: Expertise and sport-specific dual task effects, Journal of Science and Medicine in Sport, https://doi.org/10.1016/j.jsams.2023.06.010

10. Xiaojian Shi, Charlotte Ganderton, Oren Tirosh, Roger Adams, Doa El-Ansary, Jia Han: Test-retest reliability of ankle range of motion, proprioception, and balance for symptom and gender effects in individuals with chronic ankle

Justin Ren receiving Young Investigator Award – Adult Cardiac with his work "Sex Stratified analysis of late survival after total arterial revascularisation"

instability, Musculoskeletal Science and Practice, Volume 66, 2023,102809,ISSN 2468-7812, https://doi.org/10.1016/j.msksp.2023.102809.

11. Marshall, Charlotte J. ; Ganderton, Charlotte ; Feltham, Adam ; El-Ansary, Doa ; Pranata, Adrian ; O'Donnell, John ; Takla, Amir ; Tran, Phong ; Wickramasinghe, Nilmini ; Tirosh, Oren ; 2023. Smartphone Technology to Remotely Measure Postural Sway during Double- and Single-Leg Squats in Adults with Femoroacetabular Impingement and Those with No Hip Pain, Sensors, Vol. 23, no. 11 (May 2023), 5101. https://doi.org/10.3390/s23115101

12. Truong, Dominic ; Abo, Shaza ; Whish-Wilson, Georgina A. ; D'Souza, Aruska N. ; Beach, Lisa J. ; Mathur, Sunita ; Mayer, Kirby P. ; Ntoumenopoulos, George ; Baldwin, Claire ; El-Ansary, Doa ; Paris, Michael T. ; Mourtzakis, Marina ; Morris, Peter E. ; Pastva, Amy M. ; Granger, Catherine L. ; Parry, Selina M. ; Sarwal, Aarti ; 2023. Methodologic and Clinimetric Evaluation of Inspiratory Respiratory Muscle Ultrasound in the Critical Care Setting: A Systematic Review and Meta-Analysis. Critical Care Medicine, Vol. 51, no. 2 (Feb 2023), pp. e24-e36. https://doi.org/10.1097/CCM.0000000000005739

13. Elizabeth Potter, Ximena Cid Serra and Douglas Johnson. Point-of-care ultrasound: ready for prime time in internal medicine? Intern Med J. 2023 Nov;53(11):1942-1945. doi: 10.1111/imj.16272.

14. E Tan, D Liu, L Perry, J Zhu, X Cid-Serra, A Deane, C Yeo, and A Ajanid. Cell-free DNA as a potential biomarker for acute myocardial infarction: A systematic review and meta-analysis.Int J Cardiol Heart Vasc. 2023 Aug; 47: 101246.

15. Wong C, Vijayakumar R, Canty DJ, Royse CF, Yang Y, Royse AG, et al. Impact of focused cardiac and lung ultrasound screening performed by a junior doctor during admission to the surgical ward on patients before emergency non-cardiac surgery: A pilot prospective observational study. Australasian journal of ultrasound in medicine. 2023.

16. Deschamps, J., Denault, A., Galarza, L., Rola, P., Ledoux-Hutchinson, L., Huard, K., Gebhard, C. E., Calderone, A., Canty, D., & Beaubien-Souligny, W. Venous doppler to assess congestion: a comprehensive review of current evidence and nomenclature. Ultrasound in Medicine & Biology. 2023;49(1):3-17.

2024 PUBLICATIONS

(As at 30 August 2024)

1. Ren J, Bowyer A, Tian DH, Royse C, El-Ansary D, Royse A. Multiple arterial vs. single arterial coronary artery bypass grafting: sex-related differences in outcomes. Eur Heart J. 2024 Jul 21;45(28):2536-2544. doi: 10.1093/eurheartj/ehae294.

2. Ren J, Bowyer A, Tian DH, Reid CM, Hwang B, Royse C, El-Ansary D, Royse A. Sex differences in long-term survival after total arterial coronary artery bypass grafting. Eur J Cardiothorac Surg. 2024 Mar 29;65(4):ezae106. doi: 10.1093/ejcts/ezae106.

3. Ren J, Smith JA, Tian DH, Royse C, Royse A. Multiple Arterial Grafting And Late Survival. Ann Thorac Surg. 2024 Mar 11:S0003-4975(24)00187-5. doi: 10.1016/j.athoracsur.2024.03.004.

4. Royse C. Is It Time to Embrace the Erector Spinae Plane Block (ESP) for Cardiac Surgery? Ann Card Anaesth. 2024 Jul 1;27(3):187-188. doi: 10.4103/aca.aca_115_24. Epub 2024 Jul 4.

5. Siderakis C, Royse C, Ren J, Tian DH, Clarke-Errey S, Srivastav N, Royse A. From a Position of Known Angiographic Perfect Patency: What Happens Next? Heart Lung Circ. 2024 Jun;33(6):890-897. doi: 10.1016/j.hlc.2024.01.026. Epub 2024 Mar 19.

6. Ren J, Royse C, Siderakis C, Srivastav N, Royse A. Long-term observational angiographic patency and perfect patency of radial artery compared with saphenous vein or internal mammary artery in coronary bypass surgery. J Thorac Cardiovasc Surg. 2024 Apr;167(4):1293-1302.e4. doi: 10.1016/j.jtcvs.2022.08.047. Epub 2022 Sep 15.

7. Wang XQ, Wang YL, Witchalls J, Han J, Zhang ZJ, Page P, Zhu Y, Stecco C, Lin JH, El-Ansary D, Ma QS, Qi Q, Oh JS, Zhang WM, Pranata A, Wan L, Li K, Ma M, Liao LR, Zhu YL, Guo JW, Chen PJ. Physical therapy for acute and sub-acute low back pain: A systematic review and expert consensus. Clin Rehabil. 2024 Jun;38(6):715-731. doi: 10.1177/02692155241229398. Epub 2024 Feb 5.

8. Farragher JB, Pranata A, Williams GP, El-Ansary D, Parry SM, Clark RA, Mentiplay B, Kasza J, Crofts S, Bryant AL. Neuromuscular Control and Resistance Training for People With Chronic Low Back Pain: A Randomized Controlled Trial. J Orthop Sports Phys Ther. 2024 May;54(5):350-359. doi: 10.2519/jospt.2024.12349.

9. Chen Z, Tirosh O, Han J, Adams R, El-Ansary D, Pranata A. Lower Limb Proprioception in Low Back Pain and Its Relationship With Voluntary Postural Control. J Mot Behav. 2024 May 2:1-12. doi: 10.1080/00222895.2024.2341712.

10. Chen Z, Tirosh O, Han J, Adams RD, El-Ansary D, Pranata A. Voluntary postural sway control and mobility in adults with low back pain. Front Neurosci. 2024 Jan 3;17:1285747. doi: 10.3389/fnins.2023.1285747. eCollection 2023.

11. Chen Z, Tirosh O, Han J, Adams R, El-Ansary D, Pranata A. Kinematic changes of the trunk and lower limbs during voluntary lateral sway postural control in adults with low back pain. Front Bioeng Biotechnol. 2024 Feb 27;12:1351913. doi: 10.3389/fbioe.2024.1351913. eCollection 2024.

Centre for Eye Research Australia

The Royal Victorian Eye and Ear Hospital

Message

Professor Keith Martin,
Ringland Anderson Chair Of Ophthalmology

The Centre for Eye Research Australia is co-located with the Department of Surgery (Ophthalmology) within the Royal Victorian Eye and Ear Hospital and at 200 Victoria Parade where cutting edge new discovery laboratories and research support facilities have recently been completed. Through our longstanding and world-class partnership, we are deepening our research impact while increasing access to sight-saving clinical trials.

In 2023 we celebrated a $10 million investment from Breakthrough Victoria – the Government's innovation investment fund – in our new clinical trials centre.

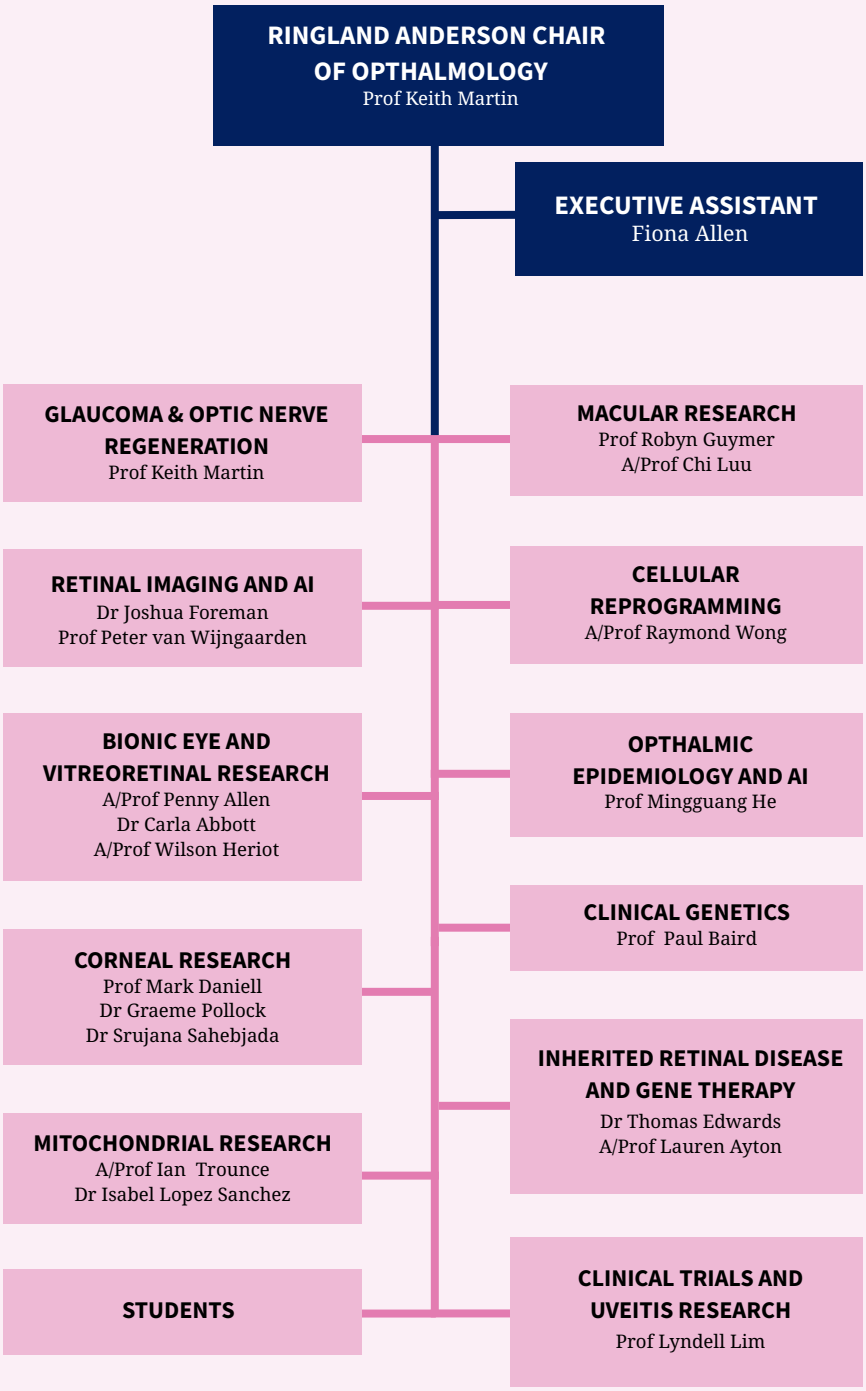
The new centre – Cerulea Clinical Trials – is helmed by digital health expert Michelle Gallaher, opened in 2024 and will enhance Victoria's status as a go-to location for international trials of innovative new treatments.

As Cerulea has taken shape, we have also moved into CERA's new discovery labs in East Melbourne that include a state-of-the-art genetic engineering hub.

These new facilities will boost the culture of innovation that saw several CERA teams win competitive funding or secure international research agreements.

This has included a National Health and Medical Research Council Ideas Grant for our Genetic Engineering Unit to research RNA editing and inherited retinal disease, a partnership between our Genetic Engineering Unit and Oculus Biomed to develop an eye drop alternative to injections and our Retinal Gene Therapy Unit becoming the first Australian site for Uni-Rare – a global registry to improve understanding of inherited retinal diseases and boost potential therapies.

PRECINCT OVERVIEW



Key staff

Prof Keith Martin
Ringland Anderson Chair of Ophthalmology

Fiona Allen
Executive Assistant

Dr Carla Abbott
A/Prof Lauren Ayton
Prof Paul Baird (until November 2023)
Dr Thomas Edwards
Dr Joshua Foreman
Prof Robyn Guymer AM
Prof Mingguang He (until March 2023)
Prof Lyndell Lim
A/Prof Chi Luu
Dr Graeme Pollock (until August 2023)
Dr Srujana Sahebjada (until April 2023)
Dr Isabel Lopez Sanchez (until January 2023)
Prof Peter van Wijngaarden
A/Prof Raymond Wong

339
Publications of CERA from Web of Science

275
Publications of CERA affiliated with UoM from Web of Science

21
successful grants

$6,852,601
total grant funding

12
UoM paid staff

60
UoM honorary appointments

CERA & ROYAL VICTORIAN EYE and EAR HOSPITAL

Cerulea Clinical Trials

CERULEA TO BOOST ACCESS TO SIGHT-SAVING THERAPIES

Cerulea Clinical Trials will bring more international trials to Victoria and give people living with vision loss and blindness early access to sight-saving therapies.

To mark World Clinical Trials Day 2024, Victorian Deputy Premier and Minister for Medical Research, the Hon Ben Carroll, launched Cerulea Clinical Trials – a new specialist ophthalmic clinical trial facility established by the Centre for Eye Research Australia (CERA).

Cerulea Clinical Trials is supported by a $10 million investment from Breakthrough Victoria and is expected to deliver clinical trials to more than 2500 Victorians a year over the next decade and create 50 new jobs.

A fully owned, not-for-profit subsidiary of CERA, Cerulea Clinical Trials will specialise in advanced therapeutics to prevent and treat blindness, including gene and cell therapies, biologics and medical devices.

Cerulea will collaborate with pharmaceutical and medtech companies from around the world and be the home of clinical research conducted by scientists from CERA and ophthalmology researchers from the University of Melbourne's Department of Surgery.

It will test new therapies for eye conditions such as age-related macular degeneration, diabetic eye disease, glaucoma, inherited retinal disease and other rare genetic eye conditions – with a major focus on trialling new therapies for diseases that currently have no treatment or cure.

Cerulea will also boost local research, ensuring that new eye treatments and devices developed in Australia are trialled here where they can benefit local patients first.

The state-of-the art centre, which houses next generation eye photography and imaging suites, vision lanes, as

Royal Victorian Eye and Ear Hospital 200 Victoria Parade East Melbourne

Cerulea Clinical Trials

well as laser and treatment rooms in which therapies can be administered and monitored, is located at the Royal Victorian Eye and Ear Hospital in East Melbourne.

It will also expand access to the community by delivering trials via a growing network of suburban and regional eye clinics and a planned tele-trials service.

Cerulea Clinical Trials CEO Michelle Gallaher said the new centre would harness the growing investment in the global ophthalmic research market to bring more clinical trials to Australia.

“There is a growing pipeline of discovery, with new medicines and devices being developed around the world and Cerulea Clinical Trials provides the perfect location to conduct these trials.

“Our aim is to build a specialist clinical trial centre that cements Victoria’s reputation as a world leader in preventing blindness and reducing the impact of vision loss.

“Cerulea aims to provide the best possible experience for patients, researchers, clinicians and industry partners.”

Professor Keith Martin, Cerulea Clinical Trials Chair, CERA Managing Director and University of Melbourne Professor and Head of Ophthalmology, said investment in the new centre was a major boost for eye care and eye research in Victoria.

“Cerulea will support the work of lab-based scientists to develop innovative new treatments to prevent vision loss and restore sight,’ he said.

“It will also benefit local eye care professionals who will be able to improve the quality of care they provide to their patients by providing them access to emerging treatments in clinical trials.’’

Minister for Medical Research Ben Carroll said: “We’re backing life changing research and therapy for eye disease which is a testament to Victoria’s world class medical research sector. This will be developed locally for the benefit of Victorians and patients around the world.”

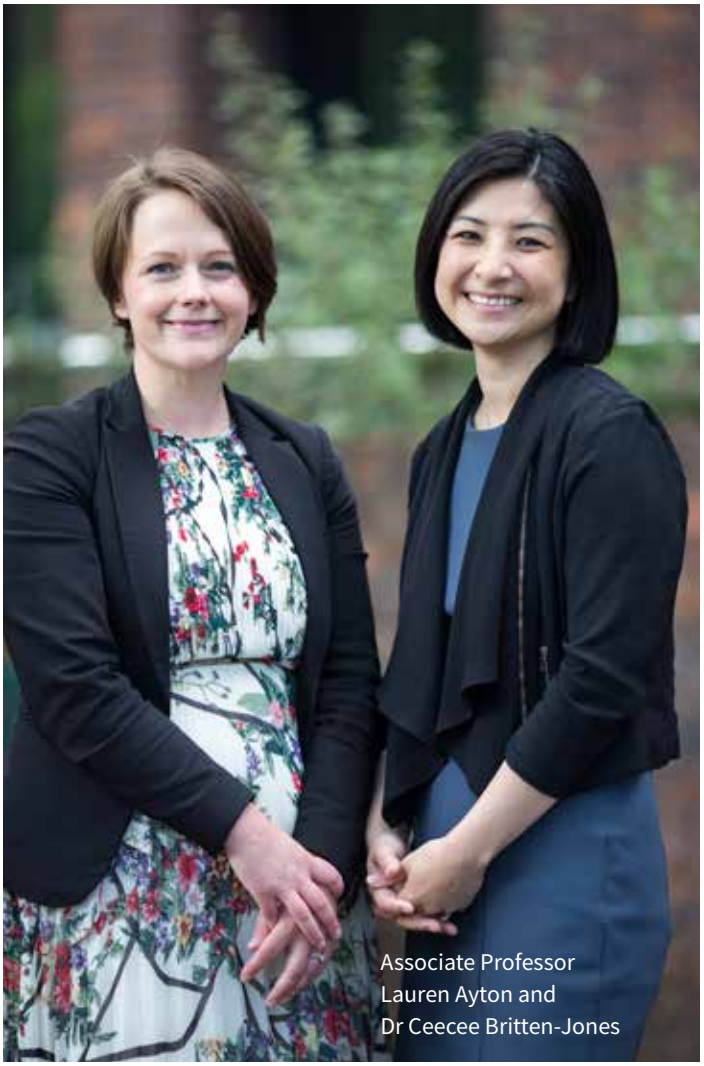
Breakthrough Victoria CEO, Grant Dooley said: “Cerulea’s opening is exactly the outcome we wanted out of Breakthrough Victoria’s investment – to accelerate and help commercialise existing world-class medical research in the state.

“This dedicated eye clinical trials centre will not only benefit local researchers and healthcare innovators in Victoria but also provide patients with access to new eye treatments and technologies.’’

Minister Carroll, John Brumby and trial participant Kate with CERA, Cerulea and RVEEH representatives

CERA & ROYAL VICTORIAN EYE and EAR HOSPITAL

Finding answers to unknown IRDs



Associate Professor Lauren Ayton and Dr Ceecee Britten-Jones

A new project is using cutting-edge DNA sequencing technology to find the genetic cause of not-yet-understood inherited retinal diseases.

New funding is supporting researchers from CERA and The University of Melbourne to find answers for the 40 per cent of people who are diagnosed with inherited retinal diseases (IRDs), but do not have a genetic diagnosis.

Their work has the potential to find targets for breakthrough treatments and help people access future clinical trials.

The Advanced Genomics Collaboration (TAGC) – a partnership between Illumina and The University of Melbourne – is supporting a team led by Associate Professor Lauren Ayton and Dr Ceecee Britten-Jones to access cutting-edge DNA sequencing technology to look for answers.

“Until quite recently there were no treatments at all for inherited retinal diseases, so all we could offer people would be things like canes, guide dogs and extra mobility training,” says Associate Professor Ayton.

“Now we are actually at the precipice of a whole raft of new treatments, and with TAGC support we’re now going to be able to learn more about these people and their genetic differences, hopefully target new treatment options and identify people who could go into clinical trials.”

“Genomics is transforming healthcare. It’s revolutionising our ability to be able to understand the causes of different diseases,” says Dr Ceecee Britten-Jones.

“For the inherited diseases we work with, its helps give us information about family planning, but also gives those affected the ability to understand what is causing their conditions – and that knowledge is powerful.”

While the genetic source of a number of IRDs have been identified, 40 per cent of people who are diagnosed with an IRD still cannot be told the precise genetic cause.

The support from TAGC will allow them to access a world-leading genomics hub to build a comprehensive genetic database of these IRDs and drive towards new treatments and clinical trials.

This project complements the work of the VENTURE study, which is helping people with better understood IRDs access research opportunities as well as clinical trials.

Associate Professor Ayton says this work is important for the wave of new and emerging treatments for these conditions.

“It’s quite amazing to see how quickly this field has changed from where we were 10 or 15 years ago,” says Associate Professor Ayton.

“The fact that we can now look at somebody’s whole genetic information and have that explain what they’re experiencing is just mindboggling.”

TAGC is a partnership between the University of Melbourne and global biotech company Illumina.

Funding for the 2024 TAGC Innovation Projects has been made possible with the support of Invest Victoria.

CERA & ROYAL VICTORIAN EYE and EAR HOSPITAL

Space-Age Alzheimer's test & new gene therapy method

Professor Peter van Wijngaarden and Dr Xavier Hadoux

BOOSTS FOR SPACE-AGE ALZHEIMER'S TEST AND NEW METHOD TO DELIVER GENE THERAPY

Two transformative projects at CERA have received Ideas grants funding from the National Health and Medical Research Council to accelerate their development.

A collaboration between eye researchers and astronomers to develop an eye scan that can combine three Alzheimer's disease tests into one, and a project aiming to find a new way of treating inherited retinal diseases, have received funding in the National Health and Medical Research Council's 2023 round of Ideas Grants.

Space-age test

A team led by Professor Peter van Wijngaarden from CERA and the University of Melbourne has received an Ideas Grant to expand research to develop an eye test to identify three known indicators of Alzheimer's disease – amyloid beta, tau tangles and neurodegeneration.

Professor van Wijngaarden said currently three separate brain scans were needed to obtain this information about a patient's brain health – but if the research is successful this could be replaced by a single, simple eye test.

"Our research will compare the effectiveness our novel eye scanning technology with state-of-the-art brain scanning technologies to detect Alzheimer's disease," he says.

"If we can identify three of the key biomarkers of Alzheimer's disease in a single eye test rather than three separate brain scans it will be a game-changer for patients, their families and the broader health system."

Professor van Wijngaarden's research utilises a hyperspectral camera – developed at CERA using technology similar to that used in satellites.

Unlike traditional eye tests which use a single white light flash – the new approach captures 30 images of the eye with different colours of light.

To analyse the wealth of information contained in these images, Professor van Wijngaarden's team is collaborating with astronomer Associate Professor Edward Taylor from the Centre for Astrophysics and Supercomputing at Swinburne University of Technology.

Associate Professor Taylor, an observational astronomer who specialises in galaxy formation and evolution, will apply his experience analysing galactic data to the eye's intricate structures.

Previous research by Professor van Wijngaarden's team has shown the potential of hyperspectral imaging of the retina to distinguish between people with and without Alzheimer's disease based on a scan for amyloid.

The new research will determine if the eye scan can also detect signs of tau tangles and neurodegeneration – a key step towards a test can be used in the clinic.

"With many emerging treatments for Alzheimer's disease on the horizon, a simple test would streamline clinical trials, and help to identify people who may benefit from early treatment," he said.

Associate Professor Guei-Sheung (Rick) Liu

RNA editing

Associate Professor Guei-Sheung (Rick) Liu and his team will study whether RNA editing can be used as a new way of treating inherited retinal diseases.

Inherited retinal diseases (IRDs) are a family of diseases that together are the most common cause of legal blindness among working-age Australians.

They include conditions like retinitis pigmentosa, Usher syndrome and Stargardt's disease, as well as many others.

IRDs are caused by a change or 'mistake' in one or more genes that leads to cells in the retina not working as they are supposed to, which leads to vision loss.

A lot of current research looking at treatments for IRDs is focused on gene replacement therapies, which use a safe virus to deliver a correct version of gene.

However, many IRDs are caused by genes that are too big to fit in the delivery virus that is currently used, preventing them from ever being treated with this method.

Associate Professor Liu and his team will research whether RNA editing can be used as a treatment instead.

RNA – ribonucleic acid – is a molecule that 'reads' the instructions of DNA and then tells the body what to do.

By correcting the genetic code error in a person's RNA, potential new treatments won't be limited by the size of the gene that causes the disease.

Another advantage of RNA editing is that changes to RNA are only temporary since RNA has a short lifespan.

If successful it would mean that new treatments for IRDs would be possible.

"RNA editing is an exciting technology that enables ophthalmologists to have more tools to manage IRD clinically," says Associate Professor Liu.

"In the future, someone will hopefully be able to go to the clinic, receive a genetic test, and their ophthalmologist will have a whole selection of treatments, so they can choose the right one for them."

CERA & ROYAL VICTORIAN EYE and EAR HOSPITAL

Funding boost for sight-restoring research

Associate Professor Raymond Wong

GENE THERAPY RESEARCH that aims to replace damaged cells in the retina takes a step forward with new funding.

A $600,000 grant from the Australian Government's Medical Research Future Fund (MRFF) will help to refine a new gene treatment that could restore lost vision.

The funding from the MRFF's Stem Cells Therapies Mission will support CERA's Cellular Reprogramming Research, led by Associate Professor Raymond Wong.

Associate Professor Wong is working on a way to regenerate dead retinal cells using the retina's own stem cells – the Müller glia cells.

Millions of tiny light-sensing cells known as photoreceptors line the retina at the back of the eye and send visual signals to the brain, enabling us to see.

When they are damaged or die, vision loss occurs.

The loss of photoreceptor cells is common in many retinal diseases, including retinitis pigmentosa and age-related macular degeneration (AMD).

An estimated 190 million people worldwide have retinal degenerative diseases with photoreceptor losses.

So far there is no effective treatment or cure to treat the blindness caused by these diseases.

However, Associate Professor Wong is working on a gene therapy solution.

Although some animals such as fish and birds have a natural ability to regenerate cells in the retina if they are damaged, this ability has been either lost or suppressed in humans, says Associate Professor Wong.

"Our aim is to develop a gene therapy to stimulate retinal regeneration in people.

"The MRFF's funding provides critical support to optimise what we have learned in the lab, which we need to do before we can translate it into a therapy that can be tested in a clinical trial with patients."

Associate Professor Wong says this new project will build on five years of promising preclinical research into reprogramming cells using genes to control how the cells behave.

"The new funding will help us to improve the technology we use to reprogram stem cells – the Müller glia cells in the retina – to become photoreceptors.

"We are using human Müller glia cells in lab dishes to optimise the best genes for reprogramming. Then we test the best genes in preclinical studies using animal models," explains Associate Professor Wong.

"Our goal is to be as specific as we can when we deliver the gene therapy to target the retina. We are doing more experiments to optimise this, to make sure it is as safe and efficient as possible."

Associate Professor Wong is also leading collaborative research with the University of Melbourne, the Lions Eye Institute and other national collaborators to identify the role of different genes associated with AMD.

In 2023 Associate Professor Wong and his team published two papers that focused on two genes, TMEM97 and POLDIP2, and their role in AMD.

To identify the genes' function, the team created a lab model of human retinal pigment epithelium cells (RPE) – the cells affected in AMD.

Then they used gene editing technology to 'switch off' the two genes and discovered they had a key role in maintaining cell health.

Both genes help manage oxidative stress in cells, which increases as we get older, and can damage cells in the retina, leading to vision loss.

"For the first time, we understand the function of these genes that are associated with AMD in human retinal cells. This means we have identified potential gene targets for drug treatments to delay or halt the disease," says Associate Professor Wong.

Otolaryngology

The Royal Victorian Eye and Ear Hospital

Message

Professor Stephen O'leary

William Gibson Chair of Otolaryngology

The Royal Victorian Eye and Ear Hospital is a world leader in treating hearing loss and ear (otological) surgery. The Department plays a pivotal part in ensuring that new innovations are brought into surgical practice.

We interface lab-based and clinical research, producing highly productive translational research outcomes. We are at the forefront of research into cochlear implantation, and the preservation of hearing and balance function while operating on the inner ear.

Our laboratory research seeks to understand the biological response of the inner ear to surgery and other types of stress, and applies drug delivery, gene therapy and regenerative strategies to the protection and restoration of hearing and vestibular function.

We had reason to celebrate in 2023 with a Royal Visit from Princess Astrid of Belgium. This was an opportunity to celebrate and highlight our successes in clinical translation, notably with intraoperative monitoring during cochlear implant surgery, which is now FDA-approved and EU-marked. The Princess met recipients of this technology, who could relate how this had improved their quality of life.

Academic Titles Committee

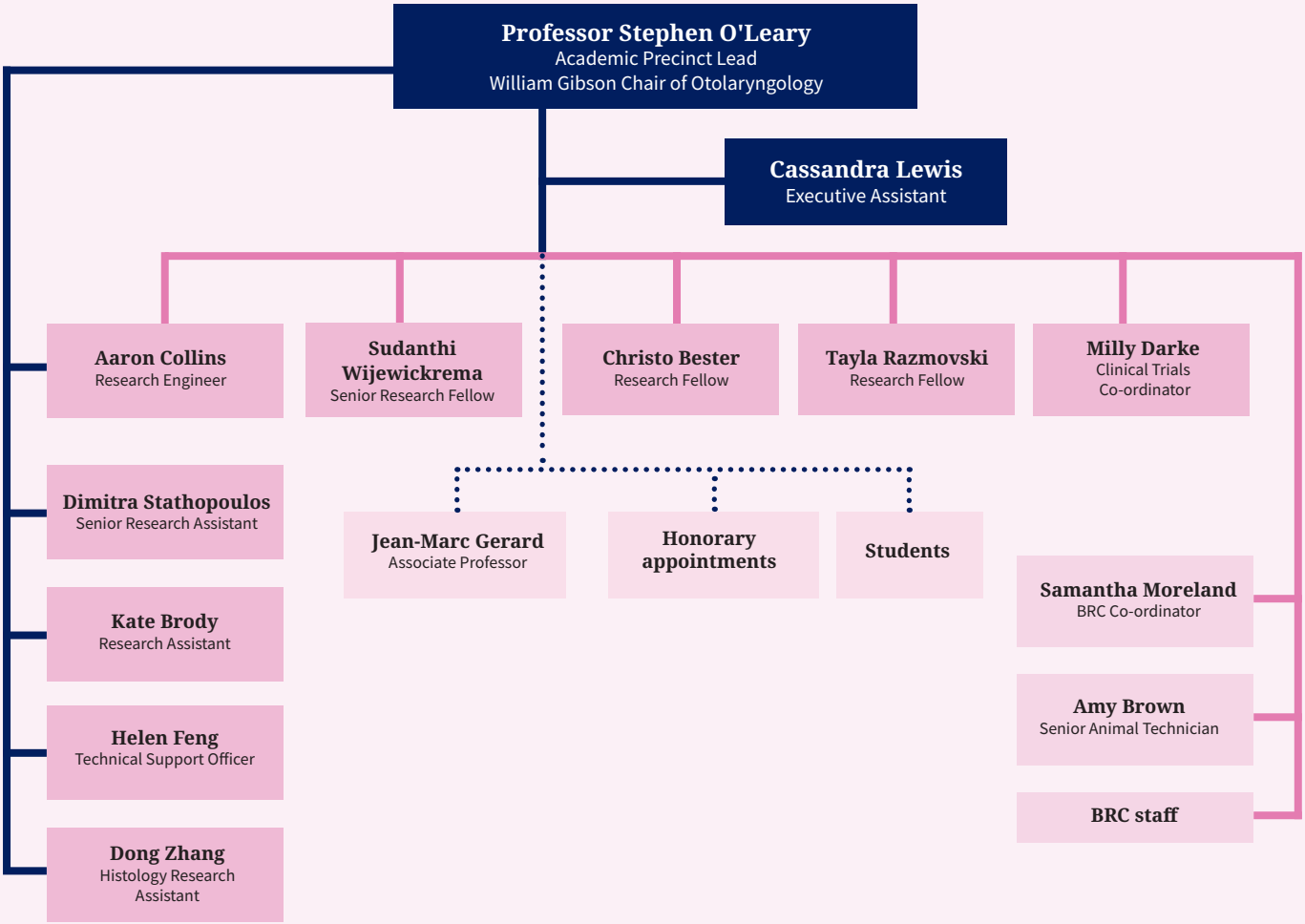
The Academic Titles Committee is chaired by Professor Stephen O'Leary (the William Gibson Chair of Otolaryngology), who is based at the Royal Victorian Eye and Ear Hospital. This committee provides advice to the Head of Department on whether new and renewal appointments for Honoraries and paid promotions at Levels D and E should receive Departmental support. If so, the application progresses through the University processes. If not, advice is given to applicants on how to improve their track record to meet the promotion criteria.

The committeee's work has been well received by Faculty who place confidence in Surgery's recommendations when determining appointments. It also serves to provide advice to Precinct Leaders on supporting staff in their areas meet the requirements for promotion.

Committee members

Prof Stephen O'Leary (Chair) - Otolaryngology
Prof Robyn Guymer - Ophthalmology
Prof Anthony Penington - Royal Children's Hospital
Prof Alistair Royse Royal - Melbourne Hospital

PRECINCT OVERVIEW



Key staff

Professor Stephen O'Leary
William Gibson Chair of Otolaryngology

Cassandra Lewis
Executive Assistant

Christo Bester
Kate Brody
Amy Brown
Aaron Collins
Michael Caven
Milly Darke
Helen Feng
Samantha Moreland
Tayla Razmovski
Elizabeth Rose
Dimitra Stathopoulos
Emma Watson
Sudanthi Wijewickrema
Dong Zhang

14
publications

$1.05m
total grant funding

13
research staff

12
research students

ROYAL VICTORIAN
EYE and EAR HOSPITAL

Preventing hearing loss

The Department of Otolaryngology's major focus is researching approaches to operate on the inner ear without damaging it. This is the key to saving natural hearing during cochlear implantation, and the foundation for emerging regenerative treatments of deafness and drug delivery to the inner ear. The work covers a broad program – basic sciences, preclinical research and clinical studies.

We continue to make significant inroads into monitoring hearing and the biological response of the cochlea to implants, with measurements made directly from cochlear implants. This has enabled intraoperative monitoring of hearing. Our current NHMRC Development Grant, with commercial partner Cochlear, has succeeded im generating algorthims to automate the detectionof damage to the sensitive hearing structures, so that the surgeon can intervene to protect hearing. It is now being commercialised by Cochlear Ltd.

The Department's novel method for sampling inner ear fluids for detection of drugs or other biomarkers has been used successfully by the pharmaceutical company, Sensorion, to detect a new therapeutic drug within the human inner eear. Professor O'Leary is the lead investigator on this global clinical trial.

Cochlear Ltd undertook their first pre-market clinical trial on a drug-eluting cochlear implant. the concept arose from Prof O'Leary's laboratories, and much of the preclinical work was undertaken at the University, supported by the Hearing CRC. Prof O'Leary leed this first global clinical trial as principal investigator for the sponsors, Cochlear Ltd.

With colleagues from Hong Kong Polytechnic University, have been exploring how flexible polymeric optical fibres can measure the position of therapeutic devices entering the inner ear, such as cochlear implants. This work is set to revolutionise intraoperative shape and force sensing with cochlear prosthesis.

ROYAL VICTORIAN
EYE and EAR HOSPITAL

SPARK innovation projects

Dr Aaron Collins was included in the SPARK Innovation Program for 2022-23 for his work in developing novel solutions to medical problems. This program, offered by the Faculty of Medicine, Dentistry and Health Sciences, seeks to engage researchers to commercialise their work. Although the program has now concluded, Dr Collins has continued to develop the inter departmental connections to further drive interdisciplinary research projects.

ROYAL VICTORIAN
EYE and EAR HOSPITAL

Hearing research

SURGICAL TECHNIQUES FOR COCHLEA IMPLANTATION

Dr Aaron Collins has begun a detailed study on the correct positioning of cochlear implants to improve the perception of speech in recipients. As the technology matures it is imperative that we improve the efficacy of the devices that we are introducing to patients. This work has found clear links between the final position of an implant in the cochlea and the outcomes experienced. It has also delivered preliminary results and recommendation to surgeons to deliver improved outcomes in a consistent manner.

CHANGES OF COCHLEAR COLLAGEN AFTER COCHLEAR IMPLANTATION AND ITS POTENTIAL IMPLICATION ON RESIDUAL HEARING LOSS

Dong Zhang and Kate Brody have investigated collagen changes in the tissue response and basilar membrane following cochlear implantation. These changes may impact residual hearing by affecting basilar membrane stiffness and thus vibration.

Using the Genesis200 (for imaging and characterisation of fibrillar collagen—type I. II and III) and immunohistochemistry, they are currently characterising the distribution and dynamic changes of collagen over time. While collagen increases in time in the tissue response overall, it gradually decreases in the basilar membrane. There appears to be a dynamic process in which fibroblasts are active for up to 4 weeks, becoming less active over time, being eventually replaced by collagen.

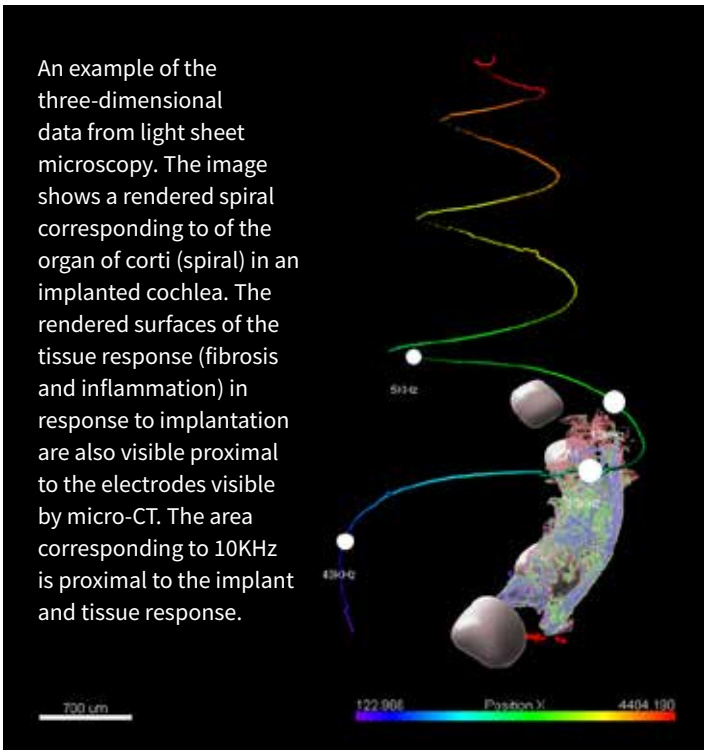
TISSUE RESPONSE AFTER COCHLEAR IMPLANTATION

Dr Tayla Razmovski and Kate Brody are continuing to explore how cochlear implants can detect the severity of the tissue response following cochlear implantation by measuring electrical impedance from the implant itself to determine what aspect of the tissue response affects these measures. Light sheet microscopy is used to visualise and analyse the 3D structure and the components of the tissue response in relation to the electrodes in-situ with are subsequently imaged using micro-CT.

Recently the health of the hair cells and pre-synaptic synapses have been analysed in detail by dissecting the cochleae which have been previously imaged via light sheet microscopy, the pre-synaptic synapses are labelled using CtBP2 immunofluorescence the whole mount preparations were then imaged using confocal microscopy. Any loss of hair cells and synapses in the implanted ear was found to be related to the size of the tissue response and the position of the implant within the cochlea.

NEW IMAGING TECHNIQUE

For our work with industry partner Cochlear Ltd, we required a solution to view the metal electrode within the implant in conjunction with light sheet microscopy to view the tissue response to the implant. Our imaging capability has attracted international attention, with commercial research contracts and advice to both academic and commercial entities. We have been applying this technology to the fundamental questions underpinning cochlear implantation and how to assess the effects of inner ear surgery on in humans.



An example of the three-dimensional data from light sheet microscopy. The image shows a rendered spiral corresponding to of the organ of corti (spiral) in an implanted cochlea. The rendered surfaces of the tissue response (fibrosis and inflammation) in response to implantation are also visible proximal to the electrodes visible by micro-CT. The area corresponding to 10KHz is proximal to the implant and tissue response.

SIMULATION-BASED SURGICAL TRAINING

Dr Sudanthi Wijewickrema, Associate Professor Jean-marc Gerard and Professor Stephen O'Leary have continued to harness simulation technologies for surgical education in a multidisciplinary project that spans the areas of surgery, education and computer science.

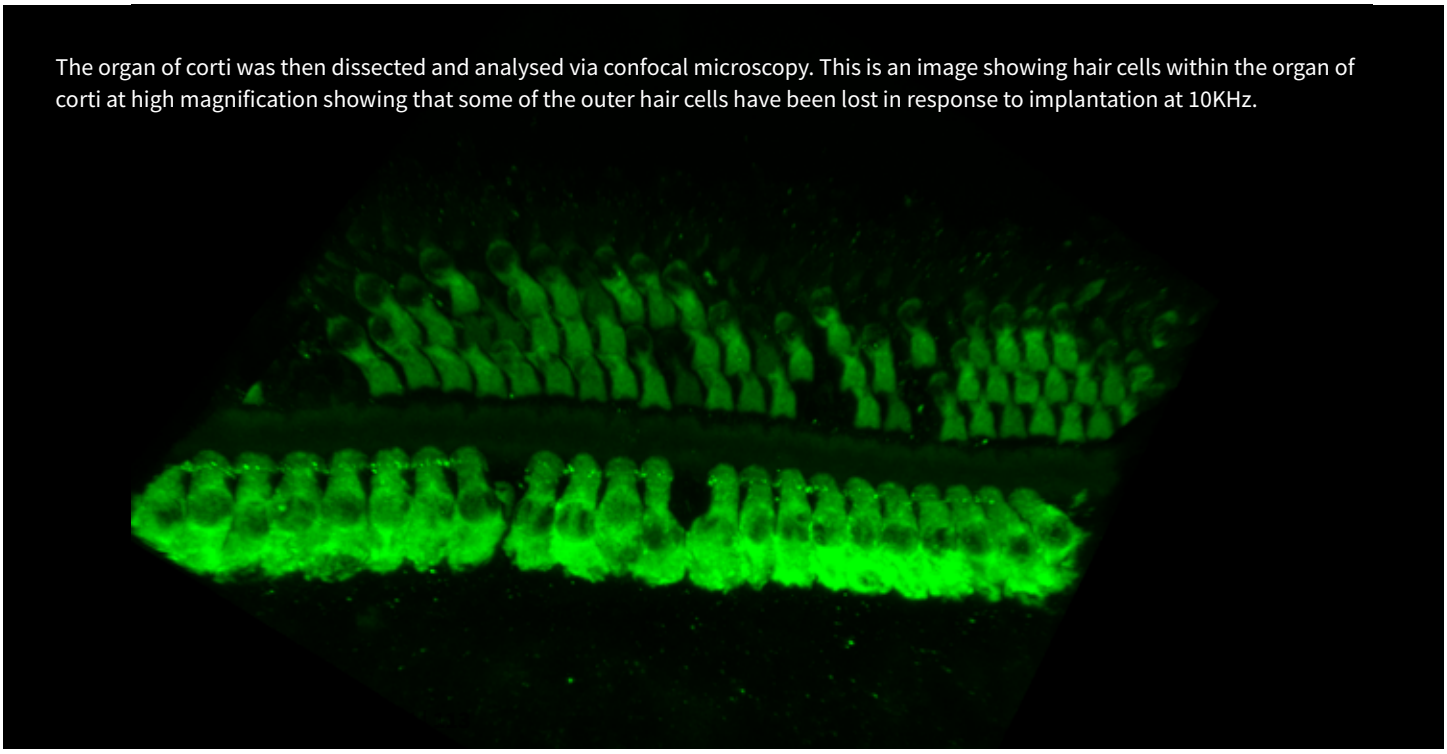
This has led to the completion of several research projects such as the provision of automated feedback and assessment during training, generation of cochlear implant electrode trajectory, and the development of a simulation-based module for teaching clinically oriented temporal bone anatomy. PhD student Jesslyn Lamtara is now working on the development of a surgical curriculum that integrates simulation media such as virtual reality and 3D printed specimens.

ARTIFICIAL INTELLIGENCE

Dr Sudanthi Wijewickrema leads research in the use of artificial intelligence in medicine and surgery. This work includes disease diagnosis, medical image classification, registration, and segmentation, landmark detection, and timeseries analysis. PhD student Zhixuan Wei works on automated detection of intra-cochlear electrode position using pre- and post-operative patient scans (CT and MRI). PhD student Yuansan Liu completed his work this year on using timeseries analysis to provide automated guidance during cochlear implant surgery.

ABORIGINAL EAR HEALTH

Otolaryngology is committed to supporting Indigenous ear health. In 2023 we undertook a molecular analysis of the microbiology of middle ear fluids and the nasal cavity from a large, multi-site national study on the success of surgical treatments for young Indigenous children who have otitis media, which was led out of the Department. This work was done in collaboration with Dr Ruth Thornton at UWA. This research has provided evidence for specific bacteria - Nontypable Haemophlus Influenzae – having a significant effect on the hearing outcomes and control of otitis media after ENT surgery.



The organ of corti was then dissected and analysed via confocal microscopy. This is an image showing hair cells within the organ of corti at high magnification showing that some of the outer hair cells have been lost in response to implantation at 10KHz.

Northern Health

Message

Professor Shekar Kumta

The Northern Precinct continues to grow, particularly since Northern Health has taken over Kilmore Regional Hospital. The growth in the Northern region brings in diversity and an ever-increasing pool of clinical cases. As a consequence, The Hospital has been an active site for clinical trials and is a popular choice for student placements – not only in the clinical school but across all disciplines in the healthcare landscape.

An increasing demand for teaching and research support has also seen an increase in requests for honorary appointments in the department.

Key staff

Prof Shekar Kumta
Precinct Lead

Dr Russell Hodgson
Surgical Lead

Ms Michelle Marcola
Executive Administrator

12
publications

17
research staff

International Student Avni Patil
Performing Lipid Analytics

Teaching

As the new MD curriculum has been rolled out the Department supports student placements and teachings across the MD-2, MD-3 and MD-4 cohorts. Student teaching is supported by a host of enthusiastic teachers and senior registrars (Russell Hodgson, Karen Barclay, Krinal Mori, Kang Chiu, Toan Pham and others). Students are also given opportunities to pursue research participation either through the Research Scholar Pathway program or individually through their own interests and likings. The Department has a number of active on-going research projects with student engagement and participation.

The department has continued its strong emphasis on teaching and training.

The following workshops have been conducted:

- **1st Surgical Training Workshop – Jointly with the Western precinct – 15 May 2024**
  - Krinal Mori, Justin Yeung, Shekhar Kumta
- **Hands on Orthopedic Plasters and Bandaging Skills – 2nd September**
  - Shekhar Kumta
- **2nd Surgical Training Workshop – Jointly held with the Western – 12-September 2024**
  -Krinal Mori, Justin Yeung, Shekhar Kumta

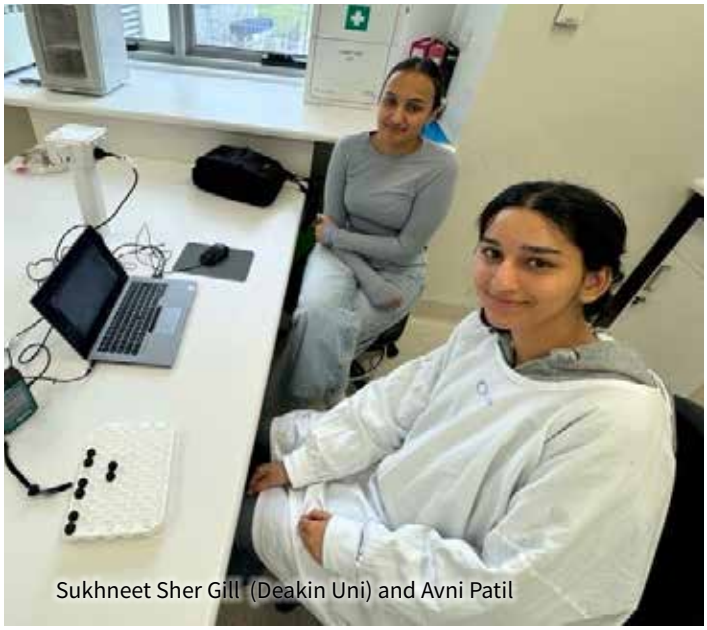
SIMULATION-BASED TRAINING

Simulation-based training at the Northern precinct is facilitated through a well-developed Sim-Lab at the Northern Centre for Health Education Research (NCHER) complex in the Northern Hospital precinct. Krinal Mori and Chiu Kang conduct laparoscopic skills training at the Sim-Lab for registrars and junior surgical trainees every Friday afternoon.

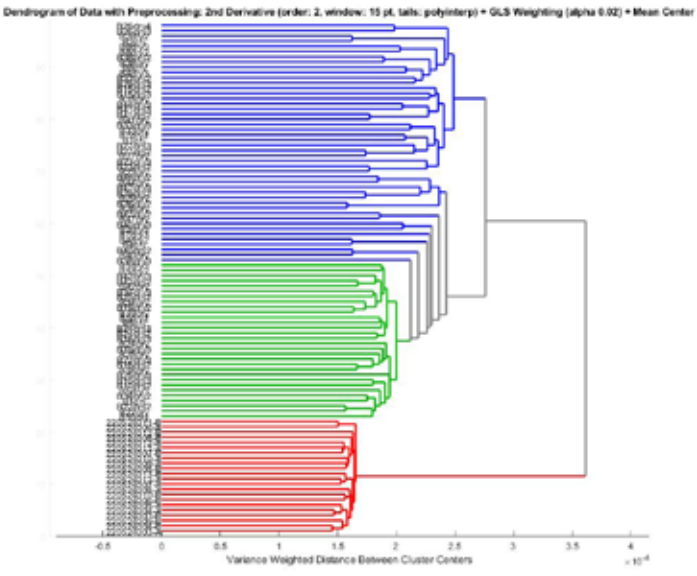
Low-fidelity simulation training has been conducted using patient volunteers and helps in peer-to-peer and facilitator-led musculoskeletal skills assessment – this was well received by MD-2 students and some of the Interns attached to the Orthopaedic unit.

VIRTUAL REALITY TRAINING

The Northern precinct has acquired a Virtual Reality Surgical Trainer and is now a regular part of the “surgical skills” Training workshop arranged for medical students and interns attached to Northern. Northern has also been selected by Apple Australia to roll out their **Apple Pro Vision VR headsets** for Surgical Simulation training. This is indeed an exciting development as it will involve development support from Apple. **Watch this space!**



Sukhneet Sher Gill (Deakin Uni) and Avni Patil



Machine Learning Classification

Research


Machine Learning Models

The growth of Spectroscopy has been a notable feature of Research at the Northern.

Some exciting spectroscopy projects are being conducted and have shown promising early results - these may have potential ground-breaking clinical potentials.

- **The Spectral Signature of Joint Aspirates**
  - This is an HREC approved collaborative project with Orthopaedics, Rheumatology and Microbiology. – for the early detection of sepsis and other Arthropathies
- **The Spectral Signature of Sepsis**
  - A collaborative project with Austin Health (Prof Jairaman, NH Microbiology – Yvonne Hersuianto, and DOS – Shekhar Kumta – with a view to detect early signs of sepsis from patient plasma, using Spectroscopy)
- **Early Diagnosis and Differentiation of Myeloma**
  - This project has demonstrated the powerful utility of FTIR Laser Spectroscopy and Machine Learning towards the early detection and Classification of Myeloma and Monoclonal Gammapathy of Uncertain significance). This is the only technique that yields such a classification in the early stages of the disease – since both conditions have almost identical biochemical parameters that do not allow easy distinction.
- **Detection of Infliximab Drug Levels**
  - Spectroscopy may potentially replace the expensive and time-consuming methods of detecting levels of biological agents such as Infliximab.
- **Identifying Spectral Biomarkers for the detection of Thrombotic Risk**
  - FTIR Spectroscopy has enabled us to identify and classify patients with high risk for Thrombosis - regardless of their disease condition. A collaborative project with Haematology.

RESEARCH STUDENTS:

- **Farida Darmani** –University of Melbourne Honors Student – working on Isolation and Characterization of Lipids from Plasma.
- **Rowena Brooks** – Ph.D Student Jointly supervised with Prahlad Ho (Department of Medicine University of Melbourne) working on Spectral Biomarkers of Thrombosis and Thrmoboembolism.

RESEARCH DEVELOPMENT AND ORGANISATION

Shekhar's professorial role at the Northern precinct has led him to participate in a wider effort at the Northern to stimulate and encourage clinical research across departments. He leads the Research Strategy and Development portfolio as part of the Northern Hospital's Research Executive Committee. He is also in charge of the Research Grand Rounds and will be leading the Northern Hospital precinct's Research Week 2024 program.

In the recent Research Assessment Exercise Northern Health was awarded **Level-3 Status** (The highest category – indicating that it is a **Research Mature Institution**).

THE NCHER LAB

The University of Melbourne research lab at the Northern Centre for Health Education & Research (NCHER) continues to buzz with activity.

We have had enthusiastic student/Intern attachments

- **James Grant** - Intern St Vincent's Hospital (Ex UoM student)
- **Sarina Mosfegh** - Intern Austin Health Ex UoM student)
- **Sukhneet Sher Gil** - Chemistry Student (Deakin University)
- **Avni Patil** - Chemistry Student (International Student Exchange Programme- HKU)

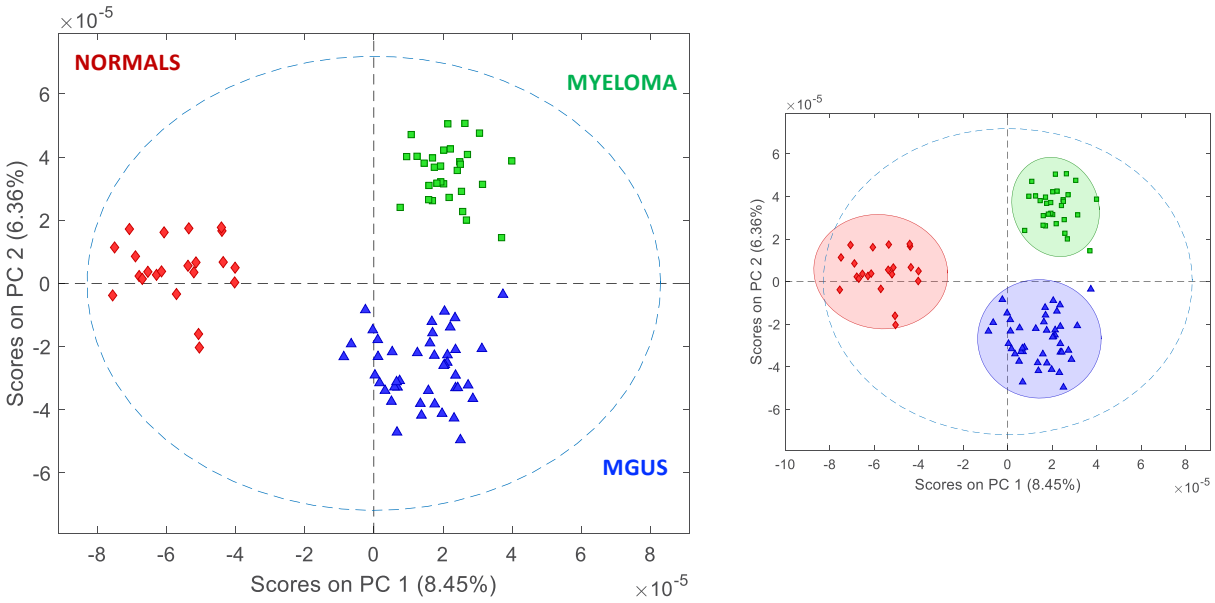
These enthusiastic students have taken up the challenge to learn and understand the nuances of spectroscopy as applied to clinical biofluids. Their lab inductions have made it easy for them to understand basic laboratory procedures and they have all become skilled in using spectral scanning equipment along with complex chemometric analytical software.

The Department has also appointed 2-honorary Research staff with outstanding credentials.

- **Sanjana Prasad** - Completed PhD - RMIT
- **Teng Yi Cai** - Completed PhD - MCRI-UoM.

Sanjana and Teng Yi bring in a high level of skill discipline and technology to the NCHER Lab. In particular the isolation of potential biomarker targets using Solvent extraction techniques – this has enabled us to isolate Fibrinogen and Lipids from plasma samples for Spectral analysis using Raman, and FTIR spectroscopy.

PRINCIPLE COMPONENT ANALYSIS : SEPERATING MYELOMA•MGUS•NORMALS



RESEARCH COLLABORATION

The Department has actively pursued multidisciplinary collaboration within and outside the precinct.

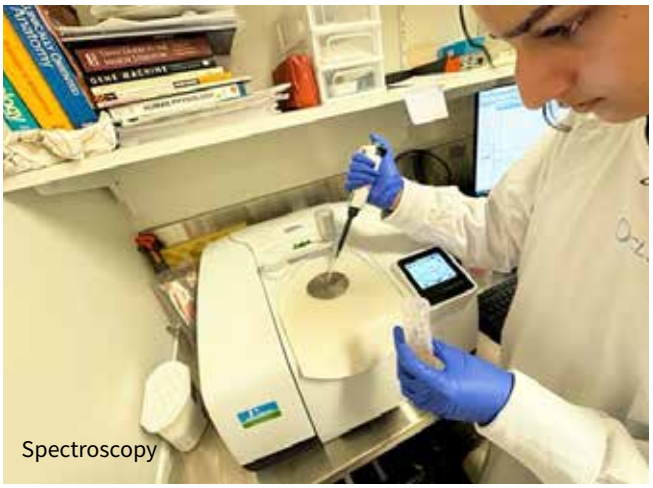
- Rheumatology and Microbiology for the Joint Fluid Project
- NH Haematology - Venous Thrombo-embolism Project
- NH Haematology/Cancer Services – Myeloma and MGUS project
- With NH Gastroenterology Inflammatory Bowel Diseases Project (Infliximab Levels)
- Austin (ICU-Research) and Microbiology NH, Signature of Sepsis
- Swinburne University (Paul Stoddart) on the Raman Fibre Probe development
- Vipul Bansal – RMIT – Early Detection of GBS – This project has been awarded a CRC-P Grant (7.3 M).

PUBLICATIONS:

- Mathew Muir, Amanda Baric, Shekhar Kumta, David Watters, Russell Hodgson, Measuring and reporting theatre utilization and efficiency, **British Journal of Surgery**, Volume 111, Issue 1, January 2024,
- Moses Li ML, Wong KC, Chiu WK, Kumta S. Intermediate-term results and risk factors analysis of tumor endoprosthesis in paediatric patients after the resection of lower extremity bone sarcoma. **Journal of Orthopaedic Surgery**. 2022;30(3).
- Wan, Zihao & Chen, Yu-Fan & Pan, Qi & Wang, Yiwei & Yuan, Shuai & Chin, Hui & Wu, Hao-Hsiang & Lin, Wei-Ting & Cheng, Po-Yu & Yang, Yun-Jung & Wang, Yu Fan & Kumta, Shekhar & Lee, Chien-Wei & Lee, Kuang-Sheng. (2023). Single-cell transcriptome analysis reveals the effectiveness of cytokine priming irrespective of heterogeneity in mesenchymal stromal cells. **Cytotherapy**. 25. 10.1016. 2023

Industry engagement:

- **Perkin Elmer**
  - We had a visit from the Asia Pacific VP of Perkin Elmer to see potential areas of support and development in terms of advanced spectrosocopy.
- **Life Health Care**
  - Marc Farrugia Regional Manager visited the Department with a view to set up a joint VR Platform for Surgical Education and Plannning of Complex Surgeries.


Spectroscopy

Western Health

Message

Professor Justin Yeung

I am proud of the academic activities at Western Precinct, in preparation for the new Footscray hospital move next year. In particular, our precinct has focused on two main areas. Firstly, it has been the development of workshops and mentorship programs, as well as promotion of senior medical leaders within our precinct, in order to help medical students and junior doctors develop their surgical interest and career in surgery.

We have been particularly proud of the two "pan-precinct" surgical career skills workshops which have been jointly hosted by Western and Northern Precincts as well as incorporation of Robotic skills experience, provided by IMRA, our robotic training partner in Melbourne.

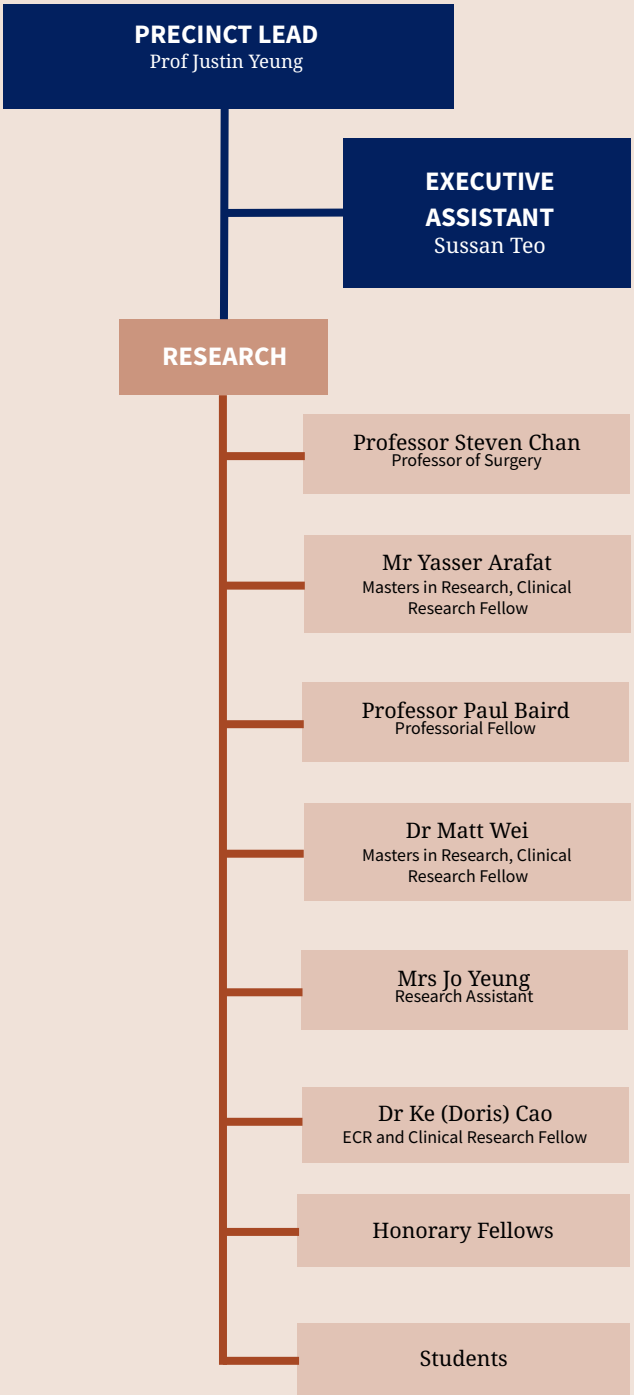
Secondly, we have established a 50% clinical and 50% academic program for early career academic trainee surgeons keen to pursue a career in surgery. This program has helped these academic surgeons to develop both teaching and research skills, whilst they are emersed in clinical training.

Finally, I look forward to our end of year research forum – The Kendall Francis. This year, we have the pleasure of Associate Professor Cherry Ko who will be presenting her work on Prehabilitation in Surgery. This is the highlight for research being carried out jointly at both Western Health and Western Precinct.

Can I congratulate all our staff at Western Precinct for their achievements.

Kendall Francis Surgery Forum Oct 23

PRECINCT OVERVIEW



Key staff

Professor Justin Yeung
Precinct Lead

Susan Teo
Executive Assistant

Professor Paul Baird
Dr Aditya Sakalkale
Dr Ke (Doris) Cao
Dr Matthew Wei
Mr Bill Karanatsios
Mrs Jo Yeung
Dr Shriranshini (Shri) Satheakeerthy

19
publications

8
research staff

5
research students

Highlights

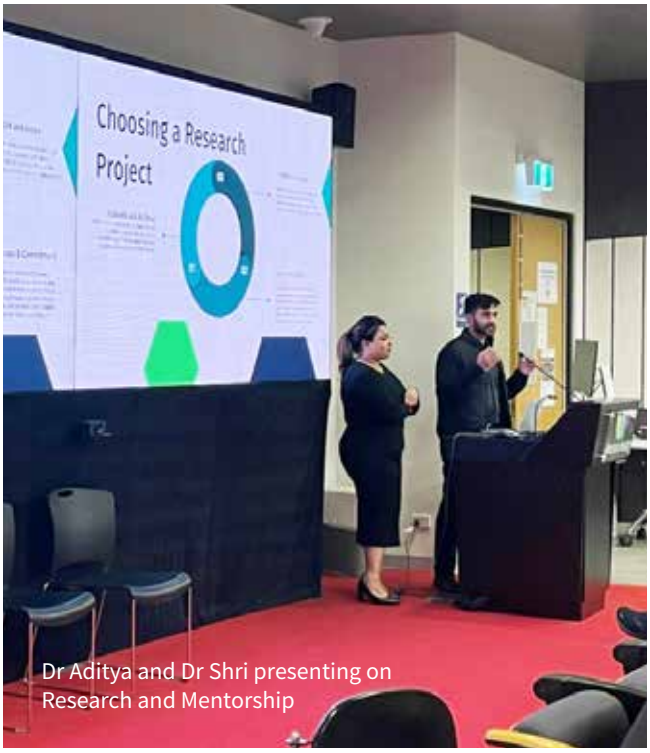
ARLENE WAKE FELLOWSHIP AWARD 2023-2024

The fellowships at Western Health are named in honour of Dr. Arlene Wake, who previously served as Western Health's Chief Medical Office. Dr. Wake is a passionate supporter of Western Health and the people of the west, especially those impacted by some of Australia's highest rates of chronic disease. These fellowships allow Western Health clinical staff to help provide support for clinically important research as part of a post graduate degree.

Dr. Matthew Wei, clinical colorectal research fellow was one of the award winners this year. Matthew's project is a digital health solution that utilises AI to predict colorectal cancer patient response to chemotherapy. This data is used to create tailored treatment plans, allowing Western Health staff and University of Melbourne researchers to provide individualised care. The funding from the Fellowship will allow Dr. Wei to integrate his research into surgery, which he hopes will translate into real-world outcomes and benefits for patients.

50 : 50 ACADEMIC CLINICAL POSITION

Western Precinct has been instrumental in the development and support of a novel 50:50 academic and clinical position. This year, following competitive selections, we have two junior trainees, Dr Aditya Sakalkale and Dr Shri Ranshini join our 12 month program which has allowed them to dive into the world of surgery, involving 6 months of clinical experience in colorectal and general surgery, helping develop and deliver surgical innovative teaching as well as consolidate on robotic and colorectal cancer research using AI and radiomics. They have already over a short period of time, been successful with publication of manuscripts.



Dr Aditya and Dr Shri presenting on Research and Mentorship

WESTERN HEALTH

International Fellowship

WESTERN HEALTH

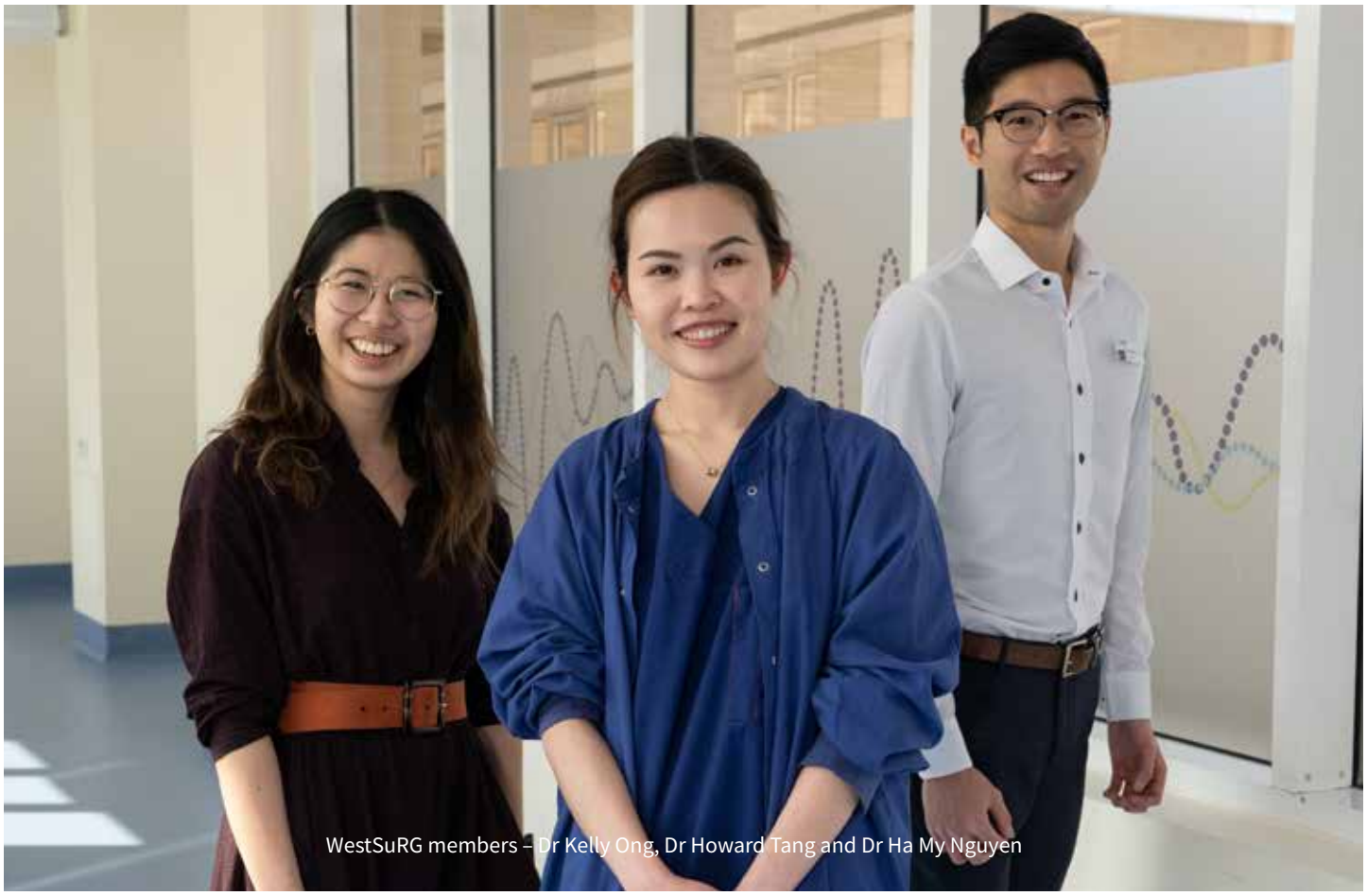
Research and Collaboration

OVERSEAS COLORECTAL FELLOW IN ADVANCED COLORECTAL CANCER AND ROBOTICS

The colorectal unit at Western Health in collaboration with Western Precinct has developed a new international fellowship starting August 2024. This year, Dr Rory Kochelaar has been selected to be our inaugural fellow from the United Kingdom. Rory will be developing his further experience in advanced colorectal cancer management as well as robotic surgery. Rory comes from a background of medical education and research and we look forwards to having him being involved in the further development of his academic interests at Western Precinct.

WesTSuRG

Western Health Surgical Research Group, the Western Health research collaborative program has continued to grow. In conjunction with Dr Russell Hodgson and Northern Health, WestSuRG is leading the national study – SoCS-Free-OT. This study is looking at the impact of sequential compression alone for the prevention of deep venous thrombosis in operating theatres. West SuRG has been supporting the numerous Australian teams who have been involved in this exciting study. In addition, several trials which WestSuRG has been involved with over the last year have been accepted in high impact surgical journals.



WestSuRG members – Dr Kelly Ong, Dr Howard Tang and Dr Ha My Nguyen

Highlights

UNIVERSITY OF MELBOURNE DISCOVERY PROGRAMS - RESEARCH

Western Precinct has been strongly supporting the new Discovery Research Program of the Medical School Curriculum. Projects in the field of pancreatic and colorectal surgery which has led to the development of systematic reviews and retrospective cohort research projects over the last year.

EARLY CAREER RESEARCHER SUCCESS

Dr Doris Cao, an early career researcher in the Department of Surgery has been instrumental in the success of the department. In particular, she has been awarded two awards over the last year – including the EMCR project catalyst grant and the MDHS innovation seed grant from the University of Melbourne.

COLLABORATION WITH VICTORIA UNIVERSITY AND UNIVERSITY OF MELBOURNE DEPARTMENTS

The Department of Surgery have been collaborating with the Masters in Data Science as a host industry partner for the second year. Previous projects have included the utilisation of AI in the solution of clinical problems in surgery. In addition, in collaboration with Professor Yuan Miao, Head of the Department of Information Technology, Victoria University.

SUSTAINABILITY PROGRAM

Sustainability at Western Health and Western Precinct has been a priority. In collaboration with Associate Professor Forbes McGain, Associate Dean Healthcare Sustainability and the sustainability team at Western Health, new projects within surgery have been in development, including in colorectal surgery and diagnostic tests for cancer which in addition has been nominated for innovation development by the University of Melbourne.

In conjunction with the Education Committee, Surgical Students Society and the Department of Surgery, a sustainability forum to showcase innovative solutions to healthcare problems will be hosted in spring this year.

DR LINCOLN J LIM	
Research Group	Western Health Medical Imaging Research Committee
Research progress in the past year	Since 2023, the WHMI Research Committee has successfully published **18** journal articles and conference papers with approximately **25** ongoing projects. Through the research projects, there have also been successful international and inter-specialty research collaborations with China and Singapore with the publication of **2** PhD theses and **1** journal article. Going forward, there are upcoming collaborative research projects with Belgium and Norway in the field of Biohacking devices.

A/PROF CHENG HEAN LO	
Department	Dept of Plastic & Reconstructive Surgery
Highlights	A feasibility trial of tranexamic acid for necrotising soft-tissue infections: TRITON study.
Funding & Grants	Molecular analysis of bioengineered skin grafting in a pig model. Australian Society of Plastic Surgeons 2023 Grant (**$30,000**).
Publications	8
Podium / Poster Presentations	5

JOINT WESTERN & NORTHERN SURGERY SKILLS WORKSHOP APRIL 2024

Epworth HealthCare

Message

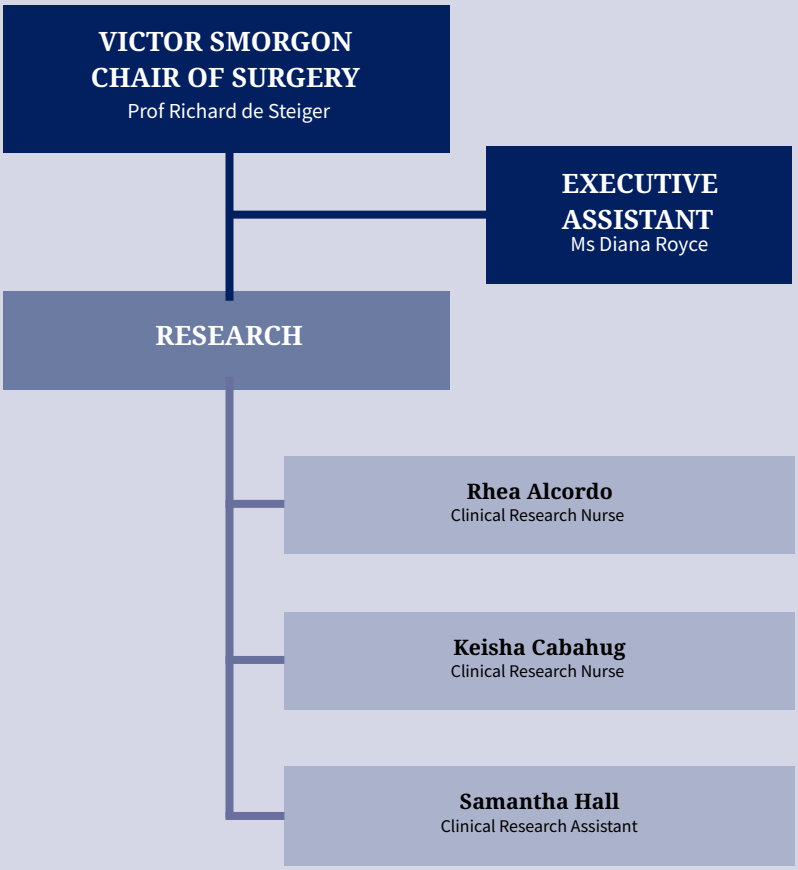
Professor Richard De Steiger

Victor Smorgon Chair of Surgery

The new management at Epworth HealthCare has reinforced commitment to Research in the private sector with an overhaul of the Clinical Trials Group and Governance Committee. This will help surgeons who have research ideas to gain appropriate help with ethics and planning of their research.

There is increasing demand for the MD Students at the Epworth Clinical School for research projects in their final year. I would like to express my gratitude to all those surgeons who give up their time from private practice to teach and supervise students and allow their patients to be recruited into clinical trials.

PRECINCT OVERVIEW



Key staff

Prof Richard de Steiger
Precinct Lead

Diana Royce
Executive Assistant

Rhea Alcordo
Keisha Cabahug
Samantha Hall

27
publications

3
successful grants

$7.6m+
total grant funding

3
research staff

3
research students

EPWORTH

Research

The Epworth HealthCare Department of Surgery is a small group that concentrates on musculoskeletal (MSK) research.

The research group focuses on clinical trials, taking advantage of Epworth HealthCare's large population of MSK patients to enrol in clinical studies. We seek to answer specific research questions that have significant impact on the patient population.

The Department has been involved in several large multi-centre research studies and current research is focused on periprosthetic joint infection- the most common reason why implants undergo revision surgery, and evaluating the use of new technology for joint replacement.

SUCCESSFUL GRANTS 2023:

MRFF - 2030986
Improving Hip Dysplasia Outcomes for Children and Adolescents
Joanne Kemp (CIA) Richard de Steiger (CIB) et al
$2,700,000

NHMRC Clinical Trials and Cohort Studies, 'ROADMAP trial: 2023
RandOmised Arthroplasty infection worldwide Multidomain Adaptive Platform trial',
CIA J Davis, CIB Laurens Manning, CIC R de Steiger et al
$4.9 million over 5 years.

Australian Orthopaedic Association Research Foundation Grants 'Pain Tracker App'
CIA R de Steiger
$29,330 over two years.

ONGOING RESEARCH

mymobility™ Clinical Study

This is a prospective multi-centre longitudinal cohort study of the mymobility platform for recovery after TKR.

This study determines if exercise and education provided through a mobile application can provide a superior model of care when compared to current standard of care models for hip and knee arthroplasty. Recruitment has now finished at Epworth HealthCare, with 64 patients enrolled, and the final analysis one year from the date of initial surgery has commenced. This research forms part of a PhD thesis by Mr Cam Fary on Analysis of Technology Assisted Total Knee Replacement

Pain App

In conjunction with Mr Andrew Beischer, a pain tracker app has been developed using a multimedia approach to measure patient pain in a peri-operative setting. Patients undergoing total hip or knee replacement, or complex foot and ankle surgery have been recruited. The aim of the study is to measure patients' pain using the pain app compared to a standardized VAS scoring system. We aim to validate the pain app and to document the preference for either the visual scale or the use of an app for documenting patients' pain. ICC will be used to evaluate the two technologies. If the pain app is successful and preferred by patients, then this pilot study will be used to leverage further grant funding to develop a program to document a patients' personalized pain scoring system with the amount of analgesic use in a peri-operative setting.

Short Stay Surgery Research

The Department has been involved with Monash University and an HCF grant examining the use of short stay arthroplasty which resulted in three publications and a fourth one submitted examining the cost of effectiveness of short stay joint replacement surgery.

- Epworth HealthCare has examined a model for reducing length of stay in hip and knee arthroplasty in a prospective cohort of patients with mobilization on day of surgery and enhanced physiotherapy. This has resulted in a reduction to 3.1 bed days compared to an average length of stay of over 7 days 10 years ago.

It has been acknowledged that education, both for patients and carers, is an important part of this program, and further research will focus on pre-operative education based on both patient and carer consultation

Distinct Trial

This is a randomised trial of dual mobility versus standard total hip replacement for fractured neck of femur.

Dual mobility cup (DMC) total hip replacements are a commonly used total hip replacement design that allow an increased range of motion in all directions before dislocation occurs. Further evidence is required to determine whether DMC total hip replacements can reduce the number of dislocations and revision surgeries for patients who have a hip fracture compared to the use of a conventional hip replacement. This trial completed recruitment at the end of 2023 and our final follow-up will be comparing the dislocation rate between the two interventions. The expected final patient follow-up at Epworth HealthCare will be at the end of December 2024.

Basic science

The Department continues its long-standing cooperation with Professor John Hamilton and his research group in the Department of Medicine at Melbourne University. Tissue from both control and patients with severe osteoarthritis undergoing total knee replacement have been provided by the Department to examine the link between obesity associated arthritis and the GM-CSF/CCL17 pathway. Two papers have been published in Osteoarthritis and Cartilage in 2023 and a further grant has been submitted to continue this research.

Professor de Steiger continues his work with the International Society of Arthroplasty Registries with the aim of improving worldwide outcomes of arthroplasty. There have been several publications with collaborations from multiple registries and he leads the international working group on early signal detection of devices.

Prof Richard de Steiger

Submitted Grants

MRFF Research Data Infrastructure Initiative Project Plan – [MRFRDIII000073]
Title: PILBARA: Prosthesis Infection Linking dataBAses for Research Asset
de Steiger CIA et al

IDEAS Grants Application ID: 2036744
Title: A novel mechanism for both chronic pain and Fibrosis
Kevin Lee (CIA) Richard de Steiger (CIC)

CLINICAL TEACHING

Professor Richard de Steiger's commitment to clinical teaching includes:

- Taking 24 Melbourne University MD2 students for Foundation tutorials and weekly bedside tutorials at the Epworth Clinical School
- Design and teaching of Introductory Teaching modules for Joint Examination
- Monthly executive meetings of Epworth Clinical School to discuss student progress
- Weekly clinical supervision of accredited orthopaedic surgical trainees and regular tutorials
- Organising monthly journal club meetings attended by approximately 10 surgeons.

Professor de Steiger also supervises PhD and Masters students.

AWARDS

- Australian Orthopaedic Association Research Award 2023
  - Awarded to Professor Richard de Steiger.
- This award recognises significant contribution by an AOA member to international orthopaedic research, which has contributed to the orthopaedic and wider community
- ASAP (Australian Surgical Antibiotic Prophylaxis) Trial: 'Multicentre Randomised Double-Blind Placebo Controlled Trial of Combination Vancomycin and Cefazolin Surgical Antibiotic Prophylaxis'
  - Awarded Trail of the Year at the Australian Clinical Trials Alliance (ACTA) Awards 2024
  - Publication

    Peel T.N., Astbury S., Cheng A.C., Paterson D.L, Buising K.L., Spelman T., Tran-Duy A., Adie S., Boyce G., McDougall C., Molnar R., Mulford J., Rehfisch P., Solomon M., Crawford R., Harris-Brown T., Roney J., Jessica Wisniewski J., and de Steiger R.N., for the ASAP Trial Group

    Trial of Vancomycin and Cefazolin as Surgical Prophylaxis in Arthroplasty

    N Engl J Med 2023; 389:1488-1498

Royal Children's Hospital

Message

Professor Anthony Penington

Jigsaw Professor of Paediatric Plastic and Maxillofacial Surgery

The Royal Children's Hospital, the Murdoch Children's Research Institute and the University of Melbourne together make an interwoven, symbiotic relationship delivering high-quality clinical services underpinned by research and education.

Collectively, the independent entities contribute to a paediatric health sciences precinct which is greater than the sum of the parts. The presence of each benefits the other, ensuring the primary focus of each entity is achieved.

The delivery of innovative, high-quality paediatric care is unsustainable without the input of research and education. World standard research into paediatric diseases and education of medical students and other health care professionals in paediatric health is not possible without access to a paediatric clinical environment. Hence the interdependence of the three partners.

Key staff

Prof Anthony Penington
Jigsaw Professor of Paediatric Plastic and Maxillofacial Surgery

Caron Israelsohn
Department Administrator

Prof Sebastian King
A/Prof Warwick Teague
A/Prof Erich Rutz
Prof Kerr Graham
Prof Christian Brizard
Prof Igor Konstantinov
Dr Edward Buratto
A/Prof Nicky Kilpatrick

ROYAL CHILDREN'S HOSPTAL

Colorectal and Pelvic Surgical Research


Prof Sebastian King

Under the leadership of Professor Sebastian King and Associate Professor Warwick Teague, surgical research has grown over the past two years. Our group comprises of clinicians, researchers and students from Surgical Research (Clinical Sciences, Murdoch Children's Research Institute), the Colorectal and Pelvic Reconstruction Service (Royal Children's Hospital) and the University of Melbourne.

We have a diverse range of projects that focus on complex colorectal conditions, such as anorectal malformations (ARM), Hirschsprung disease (HD) and chronic constipation. Across all our projects, the main goal is to provide a better understanding of these conditions, provide better care and improve outcomes for patients and their families.

PROJECTS

Patient and parent outcomes of children with ARM / HD

This is a longitudinal cohort study that commenced in 2019. It aims to explore patient quality of life and parent mental health and experience of illness. We have completed data collection for over 50 ARM and HD participants who have undergone surgery. Several students have been involved as part of their honours or masters degree. One student has published her work from data collected in 2021, which focused on parentreported quality of life for children with HD. Data collection and analysis is ongoing.

Understand ing the parental experience of the colorectal journey

This PhD project aims to understand the experience of being a parent caring for a child with a complex colorectal condition. Fifty parents of children with an ARM or HD were interviewed. Interviews have been transcribed and analysis is ongoing.

Psychological care of children and families in the Colorectal and Pelvic Reconstruction Service

Delivery of targeted psychological support is important for families with children recently diagnosed with complex colorectal conditions. Through surveys, this study gathers information aimed at identifying parent preferences for support to better address the needs of these families. Data has been collected from 90 families (ARM and HD) with analysis underway.

Anal dilatations for children with ARM

This PhD project will explore the experience of anal dilatations from a parent perspective. It will include a survey evaluating parent satisfaction with anal dilatation education and support in hospital and at home. Interviews will also be conducted to further explore the parental experience. Data collection is due to commence early next year.

HD pathology

In collaboration with senior investigators across the Melbourne Children's Campus and the Monash Institute of Pharmaceutical Sciences, this basic science project aims to understand the mechanisms behind HD. Tissue and blood samples have been collected from 20 patients and data collection and analysis is ongoing.

2022-23 FUNDING

Professor Sebastian King was awarded two philanthropic grants in 2022, distributed by the Royal Children's Hospital Foundation:

- $470,000 over five years for the project 'Enhancing colorectal surgical research at RCH and MCRI'
- $38,880 (one year) for 'Enhancing care through postgraduate colorectal research'.

PhD student Hannah Evans-Barns was awarded the following funding across 2022-23 for the project 'Colonic and anorectal motility of patients with bowel dysfunction following surgical correction of Hirschsprung disease or anorectal malformation':

- $8,000, Donovan-Johnston Memorial Scholarship, the University of Melbourne (2023)
- $4,988, Henry and Rachel Ackman Travelling Scholarship (2022)

ROYAL CHILDREN'S HOSPTAL

Colorectal and Pelvic Surgical Research

- $15,000, Donovan-Johnston Memorial Scholarship, The University of Melbourne (2022)
- $2,500, Student Conference Award, Murdoch Children's Research Institute (2022)

Hannah also received a $5000 Top-Up Scholarship from the One in 5000 Foundation for her project on understanding the parental experience of raising children with complex colorectal conditions.

Other funding awarded in 2022:

- PhD student Jessica Taranto received $20,000 over two years from the Rosemary Norman Foundation, Australian Nurses Memorial Centre for the project 'Parents experience of anal dilatations for children with an anorectal malformation'.
- Kim-Michelle Gilson received a $10,000 Murdoch Children's Research Institute Small Research Grant for the project 'Improving the Psychological Care of Children and Families affected by Complex Colorectal Conditions'.

HIGHLIGHTS

- Professor Sebastian King was invited to present at seven events, both nationally and internationally.
- Members of the research group were involved in four international conference presentations.
- The group collectively published 13 manuscripts and four book chapters.

ROYAL CHILDREN'S HOSPTAL

Orthopaedics

Research of the Paediatric Orthopaedic Department at the Royal Children's Hospital is co-led by Associate Professor Leo Donnan and Associate Professor Erich Rutz. In March 2022 Associate Professor Rutz was appointed as inaugural Bob Dickens Chair for Paediatric Orthopaedic Surgery at the University of Melbourne.

This year, Associate Professor Rutz and the team of the Hugh Williamson Gait Laboratory, including Elyse Passmore PhD and Pam Thomason, were successful in securing a $2.5 million MRFF grant (in collaboration with multiple sites in Australia led by Associate Professor Chris Carthy from the Griffith University). The grant covers research across six clinical gait analysis services in Australia (national data infrastructure to inform treatment in cerebral palsy) commencing 2024. The Department also received a grant of $70,000 from the University of Melbourne for a pilot study on 3D printed ankle-foot orthoses.

In 2022-23, Associate Professor Rutz and Professor Kerr Graham had a combined total of 27 publications in highly ranked journals such as Developmental Medicine & Child Neurology, Archives of Orthopaedic and Trauma Surgery, and the Journal of Children's Orthopaedics.

The Lorenzo and Pamela Galli Medical Research Trust List has funded several active research projects and registries led by students, registrars or fellows:

- Dr Daniel Gould – Project: Determining the efficacy and optimal dosing regimen of tranexamic acid (TXA) to reduce blood loss in children with cerebral palsy (CP) undergoing major bony hip reconstructive surgery.
- Dr Norine Ma – Projects: Bibliometric analysis of SEMLS in cerebral palsy and 3D ultrasound.
- Dr Ken Ye – Project: Avoiding osteotomies by using guided growth in cerebral palsy.
- Dr Chenxi Peng – Project: Smart – 3D-printed AFO project.
- Jessica Pascoe – Project: Children with cerebral palsy become adults with cerebral palsy.
- Rashida Ali – Project: Data Manager VicHip Registry. Kevin Truong – Project: Normative running data.

Peter MacCallum Cancer Centre

Message

Professor Alexander Heriot

The Division of Cancer Surgery at Peter MacCallum Cancer Centre strives to foster a strong culture of academic excellence that underpins our collective motivation to provide and improve upon the world's best cancer care.

Our research covers the complete range of surgical oncology (excluding neurosurgery and bone sarcoma) and is structured across multidisciplinary tumour streams. The approach encompasses the spectrum of clinical trials and clinical, translational, and basic science research, with important interactions with other clinical disciplines across the multidisciplinary teams, and the laboratories within the Research Division at Peter MacCallum.

Maintaining a rigorous research program requires a strong supporting and collaborative team to optimise ethics processes, recruitment and data collection. Our team of committed research nurses is central to the success of this research effort.

Key staff

Prof Alexander Heriot
Clinical Director of Cancer Surgery

Dennise Salter
Administrative Assistant

37
publications

PETER MACCALLUM CANCER CENTRE

Urology and Genitourinary

After the COVID-19 pandemic, the Urology team at Peter Mac has continued to grow its clinical and laboratory research program this past year. With a small team of six part-time urologists, the team has been incredibly productive and highly impactful under the leadership of Professor Declan Murphy, Head of Urology and Director of GU Oncology at Peter Mac. Their strong collaboration with the Prostate Theranostics and Imaging Centre of Excellence (ProsTIC) has resulted in practice-changing multidisciplinary clinical trials.

HIGHLIGHTS

- The LuTectomy phase I/II clinical trial is a world-first study of 177Lutetium-PSMA-617 prior to radical prostatectomy in high-risk localised prostate cancer, the earliest use yet of this targeted radioligand therapy. The trial is complete and the final results were presented at the 'game changing' plenary session at European Association of Urology (EAU) meeting in Milan 2023. The manuscript is being published in European Urology.
- Dr Renu Eapen, consultant urologist, was awarded the prestigious Michael and Lori Milken Prostate Cancer Foundation (PCF) Young Investigator Award in 2022 for her translational work from the LuTectomy trial.
- The PRIMARY trial, a prospective trial of PSMA PET/CT in the early detection of prostate cancer, is now complete. The success of this trial has now led to a multi-centre prospective randomised trial (PRIMARY 2) of PSMA PET/CT with normal or equivocal MRI scans in people with suspected prostate cancer.
- PRIMARY 2 is sponsored by Peter MacCallum Cancer Centre and will recruit more than 650 men over the next two years.
- Professor Nathan Lawrentschuk took up a position as Head of Urology at the Royal Melbourne Hospital, while continuing his significant clinical and research activity at Peter Mac.
- Professor Murphy and Professor Lawrentschuk are Chief Investigators on grants totalling more than $10 million which have been awarded in 2020-22.
- The Urology team have published more than 150 peer-review papers in this period, many in very high- impact factor journals. They also have prolific editorial board involvement in the world's leading journals.
- In 2022, Professor Declan Murphy was named Australia's top researcher in urology based on his publications and citations in the world's Top 20 journals.
- The weekly multidisciplinary meeting continues to be a collaboration between the different specialties of the GU oncology tumour stream with active involvement by nuclear medicine physicians and translational scientist to allow evidence-based patient care and top tier research opportunities.
- GU Cast, the podcast hosted by Professor Declan Murphy and Dr Renu Eapen, continues to be very successful. With over 100 episodes now recorded, and thousands of global listeners every month, they regularly engage with key opinion leaders in GU Oncology. This year they have expanded to a state- of-the-art studio, a partnership program and posting on a new platform – YouTube. **Catch episodes of GU Cast**.

PETER MACCALLUM CANCER CENTRE

Plastic and Reconstructive Surgery

The Plastic and Reconstructive Surgery Unit have published and presented multiple papers, including invited speakers to the Royal Australasian College of Surgeons Annual Scientific Meeting. The team also oversaw plastic surgery trainees throughout Victoria and Tasmania.

KEY RESEARCH AREAS

- Modern paradigm of treatment for cutaneous squamous cell carcinoma (SCC)
- Non-melanoma cutaneous malignancies in general Breast reconstruction.
- RESEARCH PROJECTS
- Cutaneous SCC database established with funded research database assistant
- Multi-site BREAST-Q and breast reconstruction registry established.

PETER MACCALLUM CANCER CENTRE

Colorectal Surgery

Our research program includes clinical and translational research across all the tumours dealt by the stream, with strong laboratory collaboration. It focuses on patient stratification, including prehabilitation augmented by key surgical outcome research.

KEY RESEARCH AREAS

- Rectal cancer – prognostication, response, and novel neoadjuvant therapy and genomics
- Peritoneal disease – clinical outcomes and translational work across colorectal cancer, appendiceal cancer and pseudomyxoma peritoneii
- Anal cancer – translational models and optimisation of therapy
- Colon cancer – vaccine study
- Prehabiliation and per ioperative outcomes including sarcopenia
- Robotic training in colorectal surgery
- Implementation of advanced applications of robotic surgery for advanced cancers
- 3D modelling in surgical strategy Exenterative surgery outcomes.

CURRENT RESEARCH COLLABORATORS

- In 2022-23, the Colorectal Unit published numerous publications in all areas of colorectal surgery. Research collaborators included:
- Professor Robert Ramsey (Differentiation and Transcription) – Rectal cancer prognostication; immune landscape colorectal cancer metastases; peritoneal disease; colorectal cancer vaccine and clinical trial.
- Professor Wayne Phillips, (Surgical Oncology) – Anal cancer.
- Professor Frederic Hollande (VCCC) – Molecular landscape for colorectal cancer liver metastases.

HIGHLIGHTS

- Dr Kasmira Wilson won the translational research prize at Peter MacCallum Cancer Centre, as well as the prestigious Mark Killingback research prize at the ASC 2022.

PETER MACCALLUM CANCER CENTRE

Hepato-Pancreato-Biliary Surgery

KEY RESEARCH AREAS

- Pancreatic cancer outcomes
- Improving care for borderline resectable and locally advanced pancreatic cancer
- Molecular and immune landscape of colorectal cancer liver metastases
- Outcomes after trauma
- Development of operative autonomy in surgical training
- Improving education literacy to optimise learning in the operating room.

RESEARCH COLLABORATORS

- Professor Frederic Hollande (VCCC) – Molecular landscape for colorectal cancer liver metastases; molecular landscape for pancreatic cancer
- Dr Belinda Lee (Walter and Eliza Hall Institute) – Irreversible electroporation for locally advanced pancreatic cancer – clinical trial
- Dr Hyun Soo Ko (Radiation Oncology and Cancer Imaging) – Radiomic profile of colorectal cancer liver metastases; standardisation of radiology reporting for pancreatic cancer
- Dr Julie Chu (Radiation Oncology and Cancer Imaging) – Stereotactic radiotherapy for pancreatic cancer – MASTERPLAN Phase II clinical trial
- Associate Professor Grace Kong (Oncology) – HepaSMART – Hepatocellular carcinoma imaging using PSMA PET/CT – A prospective pilot trial
- Dr Keith Roberts (University of Birmingham) – PARANOIA (Pancreatic Anastomosis Audit) International Study Group
- Dr Harry Spiers (University of Manchester) – An international multi-centre appraisal of the management of acute cholecystitis during the COVID- 19 pandemic: The CHOLECOVID Audit.

PETER MACCALLUM CANCER CENTRE

Melanoma

- Peter Mac is one of the lead sites in the international Melanoma Margin Trial supported by a $2.7million NHMRC project grant led by Professor Michael Henderson. The trial is likely to define practice in the management of primary cutaneous melanoma.
- Associate Professor David Gyorki is working closely with the Gebhardt laboratory at the Peter Doherty Institute to investigate tumour dormancy and the behaviour of melanoma micrometastasis. This collaboration has seen publications in the *Journal of Experimental Medicine and Immunology and Cell Biology*.
- Associate Professor Gyorki was the only Australian invited to join the American Society of Clinical Oncology Systemic Therapy for Melanoma guideline panel. The revised guidelines will reflect the rapid progress in this exciting field.
- Peter Mac is one of several high-volume melanoma units internationally that have pooled their clinical resources to create a high-quality dataset of patients with positive sentinel lymph nodes. This has allowed a number of high impact publications defining the contemporary management of this patient population with regards to the use of active surveillance, implementation of surveillance in clinical care, and international centre-level variation in practice.

PETER MACCALLUM CANCER CENTRE

Sarcoma

The MRFF Rare Cancer and Disease of Unmet Need scheme has funded Australian participation in the global STRASS 2 trial, which is studying the role of neoadjuvant chemotherapy for patients with retroperitoneal sarcoma at high risk of recurrence after primary surgery. The trial opened in early 2022. Investigators at Peter Mac are leading two sub studies including defining the role of FDG-PET scans as a biomarker of clinic response and understanding patient preferences for selection of treatment. Associate Professor David Gyorki is the Australian lead investigator and a member of the global trial management committee.

Associate Professor Gyorki and Dr Hayden Snow are members of the Transatlantic Australasian Retroperitoneal Sarcoma Working Group. Through this collaboration, they have contributed to global consensus guidelines for the Management of Locally Recurrent Retroperitoneal Sarcoma (Annals of Surgical Oncology, 2022).

Academic Networks

VERITAS

Victorian collaborative for Education, Research, Innovation, Training and Audit by Surgical trainees

VERITAS

The research collaborative model draws together the resources of trainees based nationally and internationally to recruit large groups of patients. High profile successes of this model include the COVIDSurg studies coordinated by the GlobalSurg Collaborative based in the UK. Within Australia, this model has gradually picked up momentum. A number of Australian trainee research collaboratives that have made their mark across several states, being involved in national and international studies.

The Austin Northern Surgical trainee Association (ANSA) is the representative body for general surgical trainees at the Austin-Northern Training Hub (ANTH). To further research opportunities for trainees at ANTH, ANSA established a Victorian-based trainee-led research collaborative, VERITAS, to carry out the large population-based studies to better inform surgical practice. VERITAS engages with trainees across Australia as well as internationally to develop meaningful, impactful surgical research projects. Beginning with an institutional study on outpatient experience (SOS) to state and national (PROTECTinG, COVIDCare, POPPIES), and international collaborations (SUNRRISE, COVIDSURG, POSTVenTT, OPERAS, HIPPO).

VERITAS established its role in co-ordinating trainee-led collaborative research with the PROTECTinG study. This was a multi-centre, Victorian based, retrospective observational cohort trial that examined the timing of chemical thromboprophylaxis in general surgery, and its impact on bleeding and venous thromboembolism. With a total of ten papers published across a number of journals, including Surgery, it was a true showcase of the power of trainee research collaboratives.

More recently, VERITAS led another trainee initiated multi-centre study, POPPIES. A retrospective cross-sectional observation study looking at post-operative opioid prescription, POPPIES successfully collected over 5000 patient records from over 22 hospitals across metropolitan and regional Victoria and Tasmania during a four-months. Over 200 collaborators ranging from medical students to surgical registrars across the spectrum of surgery, anaesthesia and pharmacy supported the study. The POPPIES manuscript is currently being developed.

Co-Chairs - Dr Michael Issa and Dr Zarif Yahya

In 2023, VERITAS ventured into its first attempt at prospective randomised research. Drawing on previous work from the POSTVenTT prospective audit, POSTVenTT-RCT will investigate the impact of intravenous iron on haemoglobin levels in anaemic post-operative patients.

VERITAS has evolved in to a truly inclusive and trainee led research collaborative with the inclusion of trainees from other training hubs, nurses and representation from medical students student surgical societies at University of Melbourne (SSSM), Monash University (MUSIG) and Deakin University (DSIG).

Executive Committee

Dr Michael Issa
Co-Chair
Dr Zarif Yahya
Co-Chair
Dr Candyce Cheng
Secretary
Dr Sonia Gill
Education
Kat Hall
Ethics
Dr Jess Paynter
Regional Lead
Dr Wael Jameel
Metro Lead
Daniel You
University of Melbourne Student Lead
Aya Basam
Monash University Student Lead
Fred Gorma
Deakin University Student Lead
Sonia Gill
Website
Luke Bromley
General Committee

SSSM

Surgical Students' Society of Melbourne

HIGHLIGHTS

1. The Surgical Students' Society of Melbourne (SSSM) has had a successful year with expanding the range of events and workshops organised for students! Thank you to the Department of Surgery for their continued support in making the annual Poster Competition and other events across the clinical sites possible.

2. SSSM's annual Technical Innovation in Surgery Poster Competition has continued to provide valuable opportunities for students to develop their research and presentation skills and receive feedback from a panel of expert judges. The competition's theme was Sustainability in Surgical Practice in 2023 and Medicine in Space in 2024! This year, the competition was opened to undergraduate students and participants were encouraged to form groups with students from different faculties! Twelve groups entered the competition in 2024, and SSSM plans to expand the competition to increase the number of entries.

3. SSSM hosted the first laparoscopic competition between medical students at the Royal Melbourne Hospital (RMH) and Austin Health with Dr Sean Stevens. The competition considered technical and non-technical competencies, including collaboration and communication. After an intense day of competition, the 2024 winner was RMH! SSSM plans to expand the competition to include other clinical sites.

4. SSSM has continued to run a range of practical workshops that help students develop their surgical skills under the guidance of surgical registrars and consultants. Suturing and laparoscopic surgery workshops are the most popular workshops across the clinical sites. Thank you to everyone on the SSSM committees for their hard work in organising events at and across clinical sites!

5. SSSM has also collaborated with other student societies to organise events for students across different medical schools. SSSM also collaborated with the Australasian Students' Surgical Association (ASSA), Monash University Surgical Interest Group, and Deakin Surgical Interest Group to organise the Victorian Surgical Hub Surgical Skills Workshop.

Further information:
www.sssmelbourne.com

Committee Members

Zhou-Ai Wang
President
Phillipe Adamtchek
Vice President External
Joel Hannan
Vice President Internal
Navrit Brar
Executive Secretary
Deng Yong Deng
Executive Treasurer
Albert Shen
Executive Education Officer
Daniel You
Department of Surgery Liaison Officer

Grace Wang
Diversity Officer
Janice Soo & Rachel Ko
Executive Publications & Promotions Officers

Daniel You and Lawson Seddon
Austin Site Chairs
Zhou-ai Wang and Chuanxin (Tony) Jia
Epworth Site Chairs
Joel Hannan and Hongyi (Vivian) Wu
Northern Site Chairs
Navrit Brar and James Fung
Royal Melbourne Site Chairs
Deng Yong Deng and Cindy Doyle
Rural Site Chairs
Albert Shen
St Vincent's Site Chair
Phillipe Adamtchek and Cindy Zhang
Western Site Chairs

SSSM Celebrating Women in Surgery Panel 2024

SSSM Poster Competition Banner 2024

SSSM Celebrating Women in Surgery 2024

SSSM Poster Competition Night 2024

SOMA

Student Orthopaedic and Musculoskeletal Association

THE ORTHOPOD

The OrthoPod is a student podcast focussing on musculoskeletal health and orthopaedic surgery developed by SOMA in 2021. Produced and hosted by Liam Fernando-Canavan (SOMA President, 2023), we have released close to 30 episodes of 30-40 minutes duration with 3,000 downloads and are in the top 200 most popular medical podcasts in Australia.

We have been well supported with discussions between Liam and University of Melbourne Department of Surgery guests which include Professor Peter Choong, Associate Professors Erich Rutz and Claudia Di Bella, and Dr Sean Stevens. Other guests include two of Australia's most cited researchers, Professors David Hunter (University of Sydney) and Professor Rachelle Buchbinder (Monash University).

The OrthoPod can be found on **Apple Podcasts** and **Spotify**.

Committee members

Liam Fernando-Canavan
President and Podcast Officer
Andy Liang
Vice-President
Sarnti Sornpaisarn
Treasurer
James Wang
Secretary
Thomas Chow
Education Officer
Tony Huang
Research Liaison Officer
Sid Rele
HomeTheatre Content Editor

General committee members

Sarah Safavi
Mingrui Sun
Harry Driscoll
Lawson Seddon
Leonardo Grossi

SOMA sports injury event

SURGICAL *Mentor*

Surgical *Mentor* is a website dedicated to inspiring and educating future surgeons – 'See yourself further'.

Created and run by members of the Department of Surgery, the platform offers a 21st century approach to mentoring whereby aspiring surgeons can access advice and resources from multiple mentors to guide them on their career journey.

Students and junior doctors can watch on-demand interviews with top surgeons from around the world; read tips, advice and FAQs related to studying and working in surgery; and work their way through a curated collection of the best surgery-related podcasts, books, blogs and videos.

Get in touch with the editors if you're interested in mentorship, continual education and fostering emerging surgeons in your workplace.

Further information: **www.surgicalmentor.com.au**

Editors

A/Prof Sina Babazadeh
Dr Jarrad Stevens
Prof Michelle Dowsey
Prof Peter Choong AO

Contributors

Prof Julian Feller A/
Prof Claudia Di Bella Dr
Alison Taylor
Dr Gary Fettke
Prof Richard Page
Dr Adam Watson A/
Prof Sue Liew
Prof Ian Incoll

ST VINCENT'S ACADEMY OF SURGEONS

This group of like-minded surgeons was created in 2021 with a vision to foster a community providing leadership, teaching, research, mentorship, and fellowship for the practice of surgery at St Vincent's.

We continue to work closely the the PreSET and St V's surgical student societies.

Our annual welcome drinks enabled mingling of students, residents, surgeons and CEO. Prof Choong gave an inspiring speech to convince all to do surgery.

The traditional consultant led Registrar Ready Day gave medical students and junior doctors the opportunity to pick up clinical tips and technical skills for when they become registrars. Well supported by industry, highlights included access to the Da Vinci robot simulator, performing side-to-side bowel stapled anastamoses, orthopaedic external fixation, neuro-navigation and EVD /shunt insertion, and chest drain insertion on porcine ribs. Dr Dan Fleming, head of St Vincent's Ethics was our inaugural Guy Miller Trust Fund guest speaker, providing a provoking introduction to medical ethics.

Surgical careers night took on a light hearted flavour as we invited our physician colleagues to a humourous debate on the merits of a surgical vs. physician career.

Members

Dr Naveed Alam
A/Prof Sina Babazadeh
A/Prof Caroline Baker
Corina Behrenbruch,
Mr Kristian Bullus
Prof Peter Choong AO
Dr Anita Clarke
A/Prof Claudia Di Bella
A/Prof Ben Dixon
Jazmin Eckhaus
Glenn Guest
A/Prof Michael Hii
Dr Mary Ann Johnson
Mr Michal Johnston
Mr James Keck
Dr Dan Lenaghan
Dr Satomi Koide
Dr Tracey Lam
Dr Jocelyn Lippey
Mr Eldon Mah
A/Prof Andrew Newcomb
Mr Matthew Read
Miss Sophie Ricketts
Mr Kapil Sethi
Dr Leonard Shan
Dr Jarrad Stevens
Dr Nicole Winter
A/Prof Lih-Ming Wong
A/Prof Gavin Wright
Dr Lisa Wun

ST VINCENT'S MELBOURNE PreSET SOCIETY

The St Vincent's Melbourne PreSET Society was established in 2017 and serves to improve the education and opportunities for junior doctors interested in surgical training by:

- Surgical and peri-operative medicine teaching for St Vincent's Hospital Melbourne staff
- Surgical skills workshops and symposia for St Vincent's Hospital Melbourne staff
- Preparation courses for the Generic Surgical Sciences Examination (GSSE) – open to non-SVHM candidates
- Social events for junior surgical staff.

The Society supports junior surgical trainees with a network of peers and regularly offers training programs for members working towards accredited training positions in the Royal Australasian College of Surgeons (RACS), Surgical Education and Training (SET) program.

The Committee provides a tailored educational curriculum, including the popular and highly constructive GSSE Education program, interview training, and research and volunteer opportunities to Pre-SET Surgical Residents, interns and medical students. The Society welcomes interns with an interest in surgery, students of the St Vincent's Clinical School and members of the wider surgical community at St Vincent's to many of the educational programs and social events such as the annual Time Out Ball.

Further information: **www.svhmpresetpathway.com**

Time Out Ball

Committee Members

Aidan Jackson
Chief Surgical Resident
Mason Jong
Treasurer
Abhay Gupta
Secretary
Daniel Gould
Research Officer
Adrienne Lui & Rosalind Walmsley
Social Officers
Harry Christie & Angela Yang
GSSE Education Officers
Husein Al-Talib & Sam MacAlister
Medical Student Education Officers
Vanessa Rivera & Ashan Wimalaratne
HMO Education Officers
Josh Hong
Registrar Ready Officer
Elizabeth Bartetzko
Sustainability Officer
Kit Chong
Intern Representative
Claire Paulet
IT/Promotions Officer

Supervisors

Michael Hii
Co-Supervisor Pre-SET Training
Nicole Winter
Co-Supervisor Pre-SET Training

GENEYE

GENEYE is a surgical educational platform that integrates immersive educational strategies, high performance psychology and innovative surgical simulations to enable medical students and experienced consultants alike to continually improve their understanding and skills in surgery. It was founded in 2019 by Dr Jacqueline Beltz as part of education at the Royal Victorian Eye and Ear Hospital.

GENEYE carries core values of:

- Innovation Excellence
- Collaboration
- High Performance Sustainability
- Wellbeing.

At the heart of GENEYE is a community of practice that seeks a positive, productive and innovative learning culture where wellbeing is promoted to ensure the right attitudes required of high performing surgeons. The introduction of mind or mental training into the formal surgical skills program at the Eye and Ear has been ground-breaking as professionals guide trainees through the process of high-performance psychological training in surgery.

The microsurgical training program at the Eye and Ear was overhauled to incorporate virtual reality and other simulation platforms with a merit-based transition to live surgery in 2018. The enforced break from the pandemic saw the training program shift to a digital, virtual reality and live surgical course to safely return trainees back to surgery, as well as the creation of the podcast series, GENEYE Pod.

New online learning programs have been created since, such as the GENEYE Presbyopia Correction training module. With the opening of the Eye and Ear Education Precinct in late 2022, GENEYE is continuing to create digital content while resuming live events.

Further information: **www.geneye.org.au**

Educators

Dr Jacqueline Beltz
Dr Ivo Ferreira Rios
Dr Rahul Chakrabarti
Dr Danielle Buck
A/Prof Diane Webster
Dr Bernardo Soares
Dr Mohamed El Nahrawy

PhD, Masters and Honours Students

AUSTIN HEALTH

PhD

- Arian Ansardamavandi – Targeting pancreatic cancer by modulating the tumour microenvironment.
- Daniel Cox – Individualising the management of hepatocellular carcinoma using novel circulating biomarkers
- Jennifer Xu – Common urological surgeries under local anaesthetic: An analysis of perioperative outcomes, theatre efficiency and cost within the Australian healthcare system
- Kathryn McLeod – Helping our future surgeons: enhancing performance of urological surgical trainees and factors associated with underperformance
- Matthew Farag – A matched pair comparison of treatment outcomes after extracorporeal shockwave lithotripsy versus flexible pyeloscopy in management of renal calculi
- Niranjan Sathianathen – Prostate cancer: Active surveillance and MRI-fusion biopsies
- Sean Stevens – Exploring the challenges of surgical education and training in Timor-Leste
- Varun Sharma – Metabolic and morphological tissue assessment and evaluation using multi-modal spectroscopy and computation
- Vered Buchholz Harai – The economic burden of major upper gastrointestinal procedures from cost predictors assessment to resource allocation and intervention policy
- Yi (Ray) Ma – Determining the antitumoral effect of cannabinoids on pancreatic ductal adenocarcinoma through cell-line and murine models
- Marc Seifman - Specialty surgical curriculum renewal - Identifying and implementing optimal processes
- Eleanor Watson – Optimising perioperative analgesia and trainee education in the surgical management of haemorrhoids

Master of Surgery

- Aly Fayed – Textbook outcomes in anti-reflux and hiatus hernia surgery
- Anne Hong – Intrarenal pressures during ureteroscopy
- Dominic Bagguley – Prostate cancer risk calculators – still relevant in the mpMRI/PSMA-PET era?
- Osamu Yoshino – Mitochondrial DNA and damage associated molecular pattern (DAMPs) in liver transplantation
- Thomas Kiong Sien Tiang – Tumour markers in colorectal cancer
- Vladimir Bolshinky – The use of prehabilitation in colorectal cancer surgery
- Matthew Alberto - Economic impact on the private and public health systems of a transformational technology for ureteric stenting in patients with acute renal colic Please add Matthew
- Daniel Crisafi - Assessing Australian urologists barriers to use of the novel hormone agents for the management of metastatic hormone sensitive prostate cancer
- Sulleyman Felemban - Delayed Presentation of LUTS (Lower Urinary Tract Symptoms) in Men
- Arjun Guduguntla - Use of artificial intelligence to perform cystoscopy and identify ureteral orifices (UO's)
- Arthur Yim - Evaluation of Spectroscopy in Bladder Cancer Diagnosis and Characterisation Please add Arthur

Master of Philosophy

- Hwa (Ian) Ong – Changing Outcomes after Low Anterior Resection(COALA)

Honours

- Kelly Jiang – Textbook outcomes in liver transplantation

EPWORTH HEALTHCARE

PhD

- Cam Fary – Critical analysis of enabling technologies in total knee replacement
- Christopher Wall – The impact of obesity on outcomes of primary total knee arthroplasty in Australia

Master of Surgery

- Richard Hannon – The oucomes of cemented femoral stems for THR using the French Paradox: A review of the data from the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR)

PETER MACCALLUM CANCER CENTRE

PhD

- Cori Behrenbruch – Personalising treatment in patients with metastatic colorectal cancer
- Toan Pham – Cancer vaccines and colorectal cancer Kasmira Wilson – Immunotherapy and rectal cancer
- Jiasian Teh – Establishment and characterisation of a panel of penile squamous cell carcinoma cell lines representing a spectrum of disease stage and treatment response
- Atandrila Das – Genomic and immune landscape of colorectal liver metastases
- Michael Flood – Refinement of care for peritoneal malignancy
- Wei Lim – The immunological landscape of perineal squamous cell cancers
- Tamara Vu – Radio-labelled Girentuximab as a theranostic agent in metastatic colorectal cancer
- Carlos Cabalag – Potential clinical utility of a targeted circulating tumor DNA assay in esophageal adenocarcinoma
- Emily Hapgood – Identifying patients at increased risk of melanoma in primary care and understanding patients experiences of using mobile apps to self- monitor their skin for melanoma between appointments
- Renu Eapen – The immune landscape of primary prostate cancer following luteium PSMA therapy
- Sean Ong – Circulating tumour cells in prostate cancer
- Michael Bozin – Fluorescent and molecular imaging-guided surgery in oesophagogastric cancer

Master of Surgery

- Vlad Bolshinsky – Prehabilitation and preoptimisation of GI cancer patients
- Angus Lee – Exercise and optimisation for surgery
- Nick Smith – Pelvic exenterative surgery
- Ben Cribb – Lateral pelvic sidewall lymph nodes in rectal cancer Courtney Hall – Breast reconstruction
- Dale Jobson – First case-controlled study to identify whether patients with treated CLL have worse melanoma outcomes in terms of overall survival
- Gideon Ptasznik – Prostate Cancer Outcomes Registry
- Andrew Zhang – The “no zone” approach in the management of penetrating neck injuries – An Australian major trauma service experience
- Rufi Chen – Quality of life of patients post total thyroidectomy with permanent hypoparathyroidism

Master of Philosophy

- Julie Flynn – Learning curve in robotic colorectal surgery
- Tomas Larach – Technical aspects of robotic colorectal cancer surgery
- Jean Wong – Sarcopenia and lower gastrointestinal cancer
- Ryan Gosavi – Management of advanced and recurrent colon cancer
- Ashraf Tokhi – Optimising quality of life and support post treatment for oesophageal cancer
- Master of Surgical Education
- Alexander Papachristos – Learning in the operating theatre: A thematic analysis of opportunities lost and found

Doctor of Medical Science

- Dominic Bagguley – Bladder and prostate cancer

ROYAL MELBOURNE HOSPITAL

PhD

- Kyle Brooks, Clinical ultrasound training for medical students
- Bethany Campbell, Molecular Drivers of Brain Metastasis
- Anis Hamid, Prostate Cancer Biology
- Rahaf Jawarneh, TGFb signalling in cancer biology
- Luyao Liu, Explore the non-functional P2X7 as a potential cancer therapeutic target
- Jianliang Liu, Solid tumours
- Xuan Rui Ong, Prostate cancer
- Jared Ou-Young, Advancing the Clinical Utility of the Postoperative Quality of Recovery Scale: Risk Prediction and Real-time Recovery Feedback
- Jiashu Ren, Total arterial revascularisation
- Christopher Soliman, Intensive care
- Nilesh Srivastav, Health services and systems
- Andrew Wang, Impact of point-of-care ultrasound on patient outcome after high-risk surgery
- Samuel StefanusWidodo, Deciphering
- Siqi Wu, TGFb signalling in cancer immunology

Master of Surgery

- Richard Hannan
- Frances Harley

Master of Philosophy

- Britt Haller, Identification and validation of biomarkers predictive of response to systemic therapy in prostate cancer

Doctor of Medical Science

- Krish Kulendran

ROYAL VICTORIAN EYE AND EAR HOSPITAL (OPHTHALMOLOGY)

PhD

- Abera Saeed – Novel retinal imaging biomarkers for the assessment and prevention of diabetes complications
- Catherine Jan – AI-assisted diagnosis as an innovative tool to standardize practice for optometry service
- Daniel Urrutia Cabrera – Using Cellular Reprogramming and CRISPR Technologies for the Study of Neurodegeneration and the Development of Cell-Based Therapies (completed in August 2023)
- Himeesh Kumar – Reticular Pseudodrusen and their Impact in Age-Related Macular Degeneration (completed in January 2024)
- Hsiang-Chi (Roxanne) Liou – Understanding retinal degenerative disorders using CRISPR-based technologies
- Jesse Gardner-Russell – Neurovascular communication: the role of interpericyte tunnelling nanotubes in ischemic retinopathy
- Jiahao Liu – Dietary, nutrient and circulating metabolite-wide association and network analysis for the risk of obesity and type 2 diabetes mellitus
- Kai Lyn Goh – Using multimodal imaging to predict progression in age-related macular degeneration (completed in November 2023)
- Layal El Wazan – Stopping the growth of leaky blood vessels in diabetic eyes with switchable gene therapy
- Li Li – Artificial intelligence driven analysis of meibomian gland and its clinical applications
- Luozixian Wang – Using transcription factors to promote neuronal reprogramming
- Mayinuer Yusufu – Ocular image as a biomarker for premature mortality
- Ruiye Chen – RetinaAGE as a biomarker for accelerated ageing and cardiovascular disease risk
- Sanil Joseph – Integration of artificial intelligence technology with Teleophthalmology
- Satheesh Kumar – Targeting RNA for therapeutic intervention of ocular diseases
- Tu Thanh (Crystal) Nguyen – Using genetic technologies to understand and treat retinal degeneration (completed in November 2023)
- Wenyi Hu – Deep learning risk assessment on cardiovascular events using ocular image biomarkers
- Yujie Wang – Artificial intelligence powered smart camera to screen red flags for life-threatening headache
- Liuhui Huang – Preventing vision loss in inherited retinal diseases using CRISPR RNA editing
- Mahmoud Haddara – Neurovascular coupling in the retina: interpericyte tunneling nanotubes, a new therapeutic target for glaucoma
- Mariam Mustapha – Development of an immune-responsive 3D corneal stromal model for drug validation
- Roshan Karri – Detecting Retinal Hypoperfusion using Hyperspectral Imaging and Deep Learning

Doctor of Medical Science

- Roderick O'Day – Advances in the detection and management of uveal tumours

Master of Philosophy

- Attiqa Chaudhary – Is Nocturnal Hypoxia a Novel Risk Factor for Age-Related Macular Degeneration?
- Antony Boynes – Human retina cell subtyping using single cell sequencing bioinformatics analysis
- Farzaneh Mohammadi – Outcomes of corneal cross-linking for progressive keratoconus in patients with thin corneas
- Gizem Hasimoglu – Multimodal retinal imaging in Alzheimer's disease (completed in August 2023)
- Jaime Ruiz-Montenegro Villa – Repairing cornea using biomaterial and human stem cells
- Phillip Rothschild – Embracing the future: An examination of the potential impact of artificial intelligence in ophthalmology (completed in August 2023)
- Roshan Karri – Colocalization correction between infrared reflectance imaging and optical coherence tomography for potential applications in the prognostication of age-related macular degeneration.

- Zoe Pasvanis – Preventing glaucoma blindness through a novel approach to antifibrosis
- Zixin Hong – Australian Experience with Dysthyroid Optic Neuropathy - A Multi-Centre Retrospective Analysis

Honours

- Amy Rives – RetinaAGE as a biomarker for accelerated ageing and cardiovascular disease risk
- Andrew Wang – Development of an anti-scarring factor for the cornea
- Bridget Toussaint – Development of a tissue- engineered 3D corneal stroma for drug validation
- Carrie Fei – Uveitic and steroid induced cataract
- Meghna Burmi – Precisely mapping choroidal tumour margins
- Kashmery Kame: Developing a target specific fibrosis treatment using gene therapy

ROYAL VICTORIAN EYE AND EAR HOSPITAL (OTOLAYRNGOLOGY)

PhD

- Jesslyn Lamtara – Development of Temporal Bone Surgery Virtual Simulator Curriculum
- Yuansan Lui – Probabilistic and Neural Modelling for Time Series Analysis
- Jared Panario – Detecting the presence of inner hair cells within the cochlea using electrocochleography
- Tayla Razmovski – Improving the preservation of acoustic hearing for cochlear implant recipients
- William Shute – Hearing Preservation in Cochlear Implantation Surgery
- Andrew Tan – Prediction of vestibular schwannoma tumour growth and its effect on hearing loss
- Shaw Zhixuan Wei – Automated detection of intra-cochlear electrode position and its effect on hearing outcomes

Master of Surgery

- Arvind Kumar – Application of optical fiber Bragg grating sensors in transverse force and pose detection in Cochlear Implants
- Eren Tan – Probabilistic and Neural Modelling for Time Series Analysis

Master of Clinical Research

- Shuang Geng – Hearing preservation of slim modiolar electrode and slim straight electrode

Honours

- Harry Schnieder – An audit of the paediatric ENT clinic between the Victorian Aboriginal Health Service and the Royal Victorian Eye and Ear Hospital (2018-2023).

ST VINCENT'S HOSPITAL, MELBOURNE

PhD

- Simon Maciburko – Characterising neural lymphatics and their role in human disease
- Jason Trieu – The clinical and cost effectiveness of total joint replacement
- Samantha Koschel – Utility of PSMA-PET as an imaging technique in the diagnosis and management of prostate cancer
- Ayeshah Rosdah – Novel mitochondrial Drp1 inhibitors for Cardioprotection
- Myles Davaris – The role of preoperative evaluation and health literacy in predicting clinical outcomes, complications and satisfaction in total joint replacement, in the context of reducing the health economic burden
- Daniel Gould – Optimising preoperative decision- making in total joint arthroplasty using a machine learning approach
- Cade Shadbolt – Discontinuing opioids prior to elective surgery: Is it a feasible and effective strategy to reduce postoperative complications?
- Siddharth Rele – The cost-effectiveness of reducing length of stay for total joint arthroplasty on long- term health outcomes
- Elise Naufal – Building an evidence base for the treatment of prosthetic joint infection through international collaboration
- Yushy Zhou – Predicting patient outcomes after knee replacement surgery
- Leonard Shan – The patient reported outcomes and economic evaluation of elective arterial surgery
- Henry Badgery – The use of machine learning to prevent complications in laparoscopic cholecystectomy

- Rita Kinsella – Prevalence and impact of greater trochanteric pain syndrome in individuals undergoing total hip arthroplasty
- Yali Deng - Cardioprotective effects of novel Drp1 inhibitors in anthracycline-induced cardiotoxicity.
- Jasmin Elkin - Building an evidence base to inform perioperative recommendations for patients prescribed GLP-1 receptor agonists.
- William Humble - D-PORT: Dynamic Patient-derived Osteosarcomas in Real-Time.
- Dariana Chesnokova - Biofabrication of a Personalised 3D Model of Osteosarcoma.
- Keith Tan - Harnessing the power of machine learning to enable personalised medicine and improve outcomes in oesophageal cancer.

Masters

- Oliver Miles – Characterisation of sensory corpuscles and mesenchymal stem cells in the injured scapho- lunate ligament.
- Vy Tran – A prospective single arm paired comparison of ability to diagnose and locate prostate cancer between multiparametric MRI and 18F-PSMA- PET/CT.
- Amy Wong – Surgical outcomes of extracapsular dissection parotidectomy for benign parotid tumours and correlation with imaging and histopathological findings.

WESTERN HEALTH

Master of Surgery

- Matthew Wei
- Yasser Arafat

PhD

- Alex Besson
- Bill Karanatsios

Doctor of Medical Science

- Azim Jalali

NORTHERN HEALTH

PhD

- Rowena Brooks – Ph.D Student Jointly supervised with Prahlad Ho (Department of Medicine University of Melbourne) working on Spectral Biomarkers of Thrombosis and Thrmoboembolism.

Honours

- Farida Darmani –University of Melbourne Honors Student – working on Isolation and Characterization of Lipids from Plasma.

Honorary Staff

PROFESSORIAL HONORARIES

- Paul Baird, Professorial Fellow, Ophthalmology
- Noel Alpins, Clinical Professor, Ophthalmology
- Jonathan Crowston, Professorial Fellow, Ophthalmology
- Mark Daniell, Clinical Professor, Ophthalmology
- Ecosse Lamoureux, Professorial Fellow (GO8/U21), Ophthalmology
- Rasik Vajpayee, Professorial Fellow (GO8/U21), Ophthalmology
- Tien Wong, Professorial Fellow, Ophthalmology
- Graeme Clark, Laureate Emeritus Professor, Otolaryngology
- Anthony Gummer, Professorial Fellow, Otolaryngology
- Paul Waring, Professorial Fellow (GO8/U21), Surgery
- Rinaldo Bellomo, Professorial Fellow, Austin Health
- Damien Bolton, Professorial Fellow, Austin Health
- Daryl Jones, Clinical Professor, Austin Health
- Kenneth Hardy, Professor Emeritus, Austin Health
- Gabriel Kune, Professor Emeritus, Austin Health
- Mauro Sandrin, Professorial Fellow, Austin Health
- Arthur Shulkes, Professorial Fellow (GO8/U21), Austin Health
- Niall Tebbutt, Clinical Professor, Austin Health
- Michael Reade, Professorial Fellow, Austin Health
- Mark Ashton, Clinical Professor, Royal Melbourne Hospital
- Anthony, Costello Professorial Fellow, Royal Melbourne Hospital
- Helen Danesh-Meyer, Professorial Fellow, Royal Melbourne Hospital
- Gregory Mann, Professorial Fellow, Royal Melbourne Hospital
- Benjamin Thomson, Clinical Professor, Royal Melbourne Hospital
- Ian Jones, Clinical Professor Royal Melbourne Hospital
- Nathan Lawrentschuk, Clinical Professor Royal Melbourne Hospital
- Daniel Moon, Principal Fellow Royal Melbourne Hospital
- Helen O'Connell, Clinical Professor Royal Melbourne Hospital
- James Tatoulis, Professorial Fellow Royal Melbourne Hospital
- Ray Swann, Clinical Fellow Royal Melbourne HospitalMilan Brandt, Professorial Fellow (GO8/U21), St Vincent's Hospital
- Gregory Dusting, Professorial Fellow, St Vincent's Hospital
- Michael Henderson, Professorial Fellow, St Vincent's Hospital
- Alexander Heriot, Clinical Professor, St Vincent's Hospital
- Gordon Wallace, Professorial Fellow, St Vincent's Hospital
- Jaishankar Raman, Clinical Professor, Northern Health
- Jai Raman, Professorial Fellow, Northern Health
- Steven Chan, Honorary Professor, Western Health

HONORARY TITLES LEVEL D

- Penelope Allen, Clinical Associate Professor, Ophthalmology
- Anne Brooks, Clinical Associate Professor, Ophthalmology
- Fred Chen, Clinical Associate Professor, Ophthalmology
- Elaine Chong, Clinical Associate Professor, Ophthalmology
- Deborah Colville, Principal Fellow, Ophthalmology
- Michael Coote, Clinical Associate Professor, Ophthalmology
- Rosie Dawkins, Clinical Associate Professor, Ophthalmology
- Ming He, Principal Fellow, Ophthalmology
- Wilson Heriot, Clinical Associate Professor, Opthalmology
- George Kong, Principal Fellow, Ophthalmology
- Guei-Sheung Liu, Principal Fellow, Ophthalmology
- Heather Mack, Clinical Associate Professor, Ophthalmology
- David Mackey, Principal Fellow, Ophthalmology
- Graeme Pollock, Principal Fellow, Ophthalmology
- Salmaan Quereshi, Clinical Associate Professor, Ophthalmology
- Julian Rait, Principal Fellow, Ophthalmology
- Ian Trounce, Principal Fellow, Ophthalmology
- Zhichao Wu, Principal Fellow, Ophthalmology
- Ehud Zamir, Principal Fellow, Ophthalmology
- Lisa Zhu, Principal fellow, Ophthalmology
- Bernard Chen, Principal Fellow, Otolaryngology
- Jean-Marc Gerard, Clinical Associate Professor, Otolaryngology
- Kumiko Orimoto, Clinical Associate Professor, Otolaryngology
- Ahmad Aly, Clinical Associate Professor, Austin Health
- Jason Chuen, Clinical Associate Professor, Austin Health
- Farshad Foroudi, Clinical Associate Professor, Austin Health
- Carlos Gonzalvo, Clinical Associate Professor, Austin Health
- Bulang He, Clinical Associate Professor, Austin Health

- Joseph Ischia, Clinical Associate Professor, Austin Health
- Ruth Lim, Clinical Associate Professor, Austin Health
- George Matalanis, Principal Fellow, Austin Health
- Paul Ramsland, Principal Fellow, Austin Health
- Sivendran Seevanayagam, Clinical Associate Professor, Austin Health
- Stephen Warrillow, Clinical Associate Professor, Austin Health
- Andrew Hardidge, Clinical Associate Professor, Austin Health
- Ronald Ma, Principal Fellow, Austin Health
- Yuto Shimamura, Clinical Associate Professor, Austin Health
- Sweet Ping Ng, Clinical Associate Professor, Austin Health
- Phillip Antippa, Clinical Associate Professor, Royal Melbourne Hospital
- Andrew Bucknill, Clinical Associate Professor, Royal Melbourne Hospital
- John Collins, Clinical Associate Professor, Royal Melbourne Hospital
- Gary Crosthwaite, Principal Fellow, Royal Melbourne Hospital
- Doa El-Ansary, Clinical Associate Professor, Royal Melbourne Hospital
- Ian Hayes, Clinical Associate Professor, Royal Melbourne Hospital
- Tim Iseli, Clinical Associate Professor, Royal Melbourne Hospital
- John Laidlaw, Clinical Associate Professor, Royal Melbourne Hospital
- Benjamin Loveday, Clinical Associate Professor, Royal Melbourne Hospital
- Julie Miller, Clinical Associate Professor, Royal Melbourne Hospital
- David Read, Clinical Associate Professor, Royal Melbourne Hospital
- Homayoun Zargar Shoshtari Clinical Associate Professor, Royal Melbourne Hospital
- Sina Babazadeh, Clinical Associate Professor, St Vincent's Hospital
- Caroline Baker, Clinical Associate Professor, St Vincent's Hospital
- Felix Behan, Principal Fellow, St Vincent's Hospital
- Michael Denton, Clinical Associate Professor, St Vincent's Hospital
- Benjamin Dixon, Clinical Associate Professor, St Vincent's Hospital
- Cuong Duong, Clinical Associate Professor, St Vincent's Hospital
- Miron Goldwasser, Clinical Associate Professor, St Vincent's Hospital
- David Gyorki, Principal Fellow, St Vincent's Hospital
- Michael Hii, Clinical Associate Professor, St Vincent's Hospital
- John Kennedy, Clinical Associate Professor, St Vincent's Hospital
- Shiang Lim, Principal Fellow, St Vincent's Hospital
- Bruce Love, Clinical Associate Professor, St Vincent's Hospital
- Bernard Lyons, Clinical Associate Professor, St Vincent's Hospital
- Gregory Malham, Clinical Associate Professor, St Vincent's Hospital
- David McCombe, Principal Fellow, St Vincent's Hospital
- Chris McCormack, Clinical Associate Professor, St Vincent's Hospital
- Michael Murphy, Principal Fellow, St Vincent's Hospital
- Peter Pivonka, Principal Fellow, St Vincent's Hospital
- Lih-Ming Wong, Clinical Associate Professor, St Vincent's Hospital
- Gavin Wright, Clinical Associate Professor, St Vincent's Hospital
- Raphael Hau, Clinical Associate Professor, Northern Health
- Wanda Stelmach, Clinical Associate Professor, Northern Health
- Johan Gani, Clinical Associate Professor, Western Health
- Phong Tran, Clinical Associate Professor, Western Health
- Val Usatoff, Clinical Associate Professor, Western Health
- Homi Zargar, Clinical Associate Professor, Western Health

HONORARY TITLES LEVEL C

- Luis Alarcon Martinez, Senior Fellow, Ophthalmology
- Brian Ang, Senior Fellow, Ophthalmology
- Jacqueline Beltz, Senior Fellow, Ophthalmology
- Elsie Chan, Senior Fellow, Ophthalmology
- Tom Edwards, Senior Fellow, Ophthalmology
- Colin Harper, Clinical Senior Fellow, Ophthalmology
- George Kong, Clinical Senior Fellow, Ophthalmology
- Rod O'Day, Senior Fellow, Ophthalmology
- Jonathan Ruddle, Senior Fellow, Ophthalmology

- Srujana Sahebjada, Senior Fellow, Ophthalmology
- Paul Sanfilippo, Clinical Senior Fellow, Ophthalmology
- Marc Sarossy, Clinical Senior Fellow, Ophthalmology
- David Sousa, Senior Fellow, Ophthalmology
- Richard Stawell, Senior Fellow, Ophthalmology
- Phoebe Ramos, Clinical Senior Fellow, Otolaryngology
- David Sly, Clinical Senior Fellow, Otolaryngology
- Christopher Brown, Clinical Senior Fellow Otolaryngology
- Bridget Copson, Clinical Senior Fellow, Otolaryngology
- Nathan Creber, Clinical Senior Fellow, Otolaryngology
- Guilliaume Gersdorff, Clinical Senior Fellow, Otolaryngology
- Adrian Dalbert, Clinical Senior Fellow, Otolaryngology
- Claire Iseli, Clinical Senior Fellow, Otolaryngology
- Fatima Moumèn Denanto, Clinical Senior Fellow, Otolaryngology
- Karina Needham, Senior Honorary Fellow, Otolaryngology
- Carrie Newbold, Senior Honorary Fellow, Otolaryngology
- Christopher, Clinical Senior Fellow, Otolaryngology
- Paul Turner, Senior Honorary Fellow, Otolaryngology
- Stefan Weder, Clinical Senior Fellow, Otolaryngology
- Benjamin Wei, Clinical Senior Fellow Otolaryngology
- Matthew Campbell, Senior Fellow, Austin Health
- Grace Chew, Senior Fellow, Austin Health
- Ranjan Guha, Clinical Senior Fellow, Austin Health
- Jwu Jin Khong, Clinical Senior Fellow, Austin Health
- Gerald Quan, Senior Fellow, Austin Health
- Graham Starkey, Clinical Senior Fellow, Austin Health
- Sean Stevens, Senior Fellow, Austin Health
- Dixon Woon, Clinical Senior Fellow, Austin Health
- Cilla Haywood, Clinical Senior Fellow, Austin Health
- Aspasia Pefanis, Clinical Senior Lecturer, Austin Health
- Kat Hall, Clinical Senior Lecturer, Austin Health
- Marc Seifman, Clinical Senior Lecturer, Austin Health
- Marlon Perera, Clinical Senior Lecturer, Austin Health
- Sally Ng, Clinical Senior Lecturer, Austin Health
- Toan Pham, Clinical Senior Lecturer, Austin Health
- Kathryn McLeod, Clinical Senior Lecturer, Austin Health
- Leonardo Zorron Cheng Tao Pu, Clinical Senior Lecturer, Austin Health
- Helen Chan, Clinical Senior Lecturer, Royal Melbourne Hospital
- Harsh Dubey, Clinical Senior Lecturer, Royal Melbourne Hospital
- Ben Dunne, Clinical Senior Lecturer, Royal Melbourne Hospital
- Darsim Haji, Clinical Senior Lecturer, Royal Melbourne Hospital
- Thomas Hardy, Clinical Senior Lecturer, Royal Melbourne Hospital
- Susannah Morris, Clinical Senior Lecturer, Royal Melbourne Hospital
- Gerald Power, Clinical Senior Lecturer, Royal Melbourne Hospital
- Anand Ramakrishnan, Senior Fellow, Royal Melbourne Hospital
- Fairleigh Reeves, Clinical Senior Lecturer, Royal Melbourne Hospital
- Mei Tan, Clinical Senior Lecturer, Royal Melbourne Hospital
- Patrick Tansley, Clinical Senior Lecturer, Royal Melbourne Hospital
- David Tian, Clinical Senior Lecturer, Royal Melbourne Hospital
- Martin Tymms, Senior Fellow, Royal Melbourne Hospital
- Allan Whitehead, Clinical Senior Lecturer, Royal Melbourne Hospital
- Gareth Wynn, Clinical Senior Lecturer, Royal Melbourne Hospital
- Yang Yang, Clinical Senior Lecturer, Royal Melbourne
- HospitalNuzhat Ahmed, Senior Fellow, St Vincent's Hospital
- Simon Banting, Clinical Senior Fellow, St Vincent's Hospital
- Anthony Dunin, Senior Fellow, St Vincent's Hospital
- Glen Guerra, Clinical Senior Fellow, St Vincent's Hospital
- Mary Ann Johnson, Clinical Senior Lecturer, St Vincent's Hospital
- James Keck, Clinical Senior Fellow, St Vincent's Hospital
- Satomi Koide, Clinical Senior Fellow, St Vincent's Hospital
- Joseph Kong, Clinical Senior Lecturer, St Vincent's Hospital
- Tracey Lam, Clinical Senior Lecturer, St Vincent's Hospital
- Jocelyn Lippey, Clinical Senior Fellow, St Vincent's Hospital
- Mark Lovelock, Senior Fellow, St Vincent's Hospital
- Eldon Mah, Clinical Senior Fellow, St Vincent's Hospital
- Geraldine Mitchell, Senior Fellow, St Vincent's Hospital
- Andrew Newcomb, Clinical Senior Fellow, St Vincent's Hospital
- Grant Pang, Clinical Senior Lecturer, St Vincent's Hospital
- Matthew Read, Senior Fellow, St Vincent's Hospital

- Domenic Robinson, Clinical Senior Fellow, St Vincent's Hospital
- Sophie Ricketts, Clinical Senior Fellow, St Vincent's Hospital
- David Scott, Senior Fellow, St Vincent's Hospital
- Paul Smith, Clinical Senior Fellow, St Vincent's Hospital
- John Spillane, Senior Fellow, St Vincent's Hospital
- Jarrad Stevens, Senior Fellow, St Vincent's Hospital
- Simon Tsao, Senior Fellow, St Vincent's Hospital
- Yi Yuen Wang, Clinical Senior Lecturer, St Vincent's Hospital
- Satish Warrier, Senior Fellow, St Vincent's Hospital
- Lisa Wun, Clinical Senior Fellow, St Vincent's Hospital
- Isaac Afara, Honorary Senior Fellow, Northern Health
- Jue Wang (Clinical Senior Lecturer, Northern Health
- Juliette Gentle, Clinical Senior Lecture, Northern Health
- Neil Strugnell, Clinical Senior Lecturer, Northern Health
- Russell Hodgson, Clinical Senior Lecturer, Northern Health
- Krinal Mori, Clinical Senior Lecturer, Northern Health
- Arun Dhir, Clinical Senior Lecturer, Northern Health
- Dennis Gyomber, Clinical Senior Lecturer, Northern Health
- Saam Tourani, Clinical Senior Lecturer, Northern Health
- Prassannah Satasivam, Clinical Senior Lecturer, Northern Health
- Bernard Allard, Senior Fellow, Western Health
- Darren Katz, Clinical Senior Fellow, Western Health
- Cheng Lo, Clinical Senior Lecturer, Western Health
- Meron Pitcher, Senior Fellow, Western Health
- Henry Yao, Clinical Senior Lecturer, Western Health
- Brendan Dias, Clinical Senior Lecturer, Western Health
- Fiona Reid, Clinical Senior Lecturer, Western Health
- Julian Choi, Clinical Senior Lecturer, Western Health
- Lincoln Jian Rong Lim, Clinical Senior Lecturer, Western Health
- Michael Hong, Clinical Senior Lecturer, Western Health
- Yahya Al-Habbal, Clinical Senior Lecturer, Western Health

HONORARY TITLES LEVEL B

- Martin Ashdown, Fellow, Ophthalmology
- Alauddin Bhuiyan, Fellow, Ophthalmology
- Karl Brown, Fellow, Ophthalmology
- Rahul Chakrabati, Clinical Fellow, Ophthalmology
- Elsa Chan, Fellow, Ophthalmology
- Devinder Chauhan, Fellow, Ophthalmology
- Terry Couper, Fellow, Ophthalmology
- Xavier Fagan, Clinical Fellow, Ophthalmology
- Flora Hui, Fellow, Ophthalmology
- Sandy Hung, Fellow, Ophthalmology
- Jonathan Kam, Clinical Fellow, Ophthalmology
- Katerina Kiburg, Fellow, Ophthalmology
- Grace Lidgerwood, Fellow, Ophthalmology
- Lance Liu, Fellow, Ophthalmology
- Anu Mathew, Fellow, Ophthalmology
- Mark McCombe, Fellow, Ophthalmology
- Myra McGuinness, Fellow, Ophthalmology
- Maisha Shah, Fellow, Ophthalmology
- Sandra Staffieri, Clinical Fellow, Ophthalmology
- Laurence Sullivan, Fellow, Ophthalmology
- Robyn Troutbeck, Fellow, Ophthalmology
- Mark Unger, Fellow, Ophthalmology
- Sloan Wang, Fellow, Ophthalmology
- Sanjeewa Wickremasinghe, Fellow, Ophthalmology
- Elaine Wong, Fellow, Ophthalmology
- Gink Yang, Fellow, Ophthalmology
- Luke Campbell, Senior Clinical Fellow, Otolaryngology
- Jordan Cory, Clinical Lecturer, Otolaryngology
- Goli Golpayegani, Clinical Fellow, Otolaryngology
- Jonathon Lo, Clinical Fellow, Otolaryngology
- Andrew Mclean, Senior Clinical Fellow, Otolaryngology
- Patorn Piromchai, Honorary Fellow, Otolaryngology
- Orit Samuel, Senior Clinical Fellow, Otolaryngology
- Justin Tan, Honorary Fellow, Otolaryngology
- Michelle Truong, Clinical Fellow, Otolaryngology
- Dan Cox, Clinical Lecturer, Austin Health
- Su Kah Goh, Clinical Lecturer, Austin Health
- Georgina Riddiough, Clinical Fellow, Austin Health
- Katrina Walsh, Fellow, Austin Health
- David Proud, Clinical Fellow, Austin Health
- Michele Gaca, Honorary Fellow, Austin Health
- Heidi Gaulke, Honorary Fellow, Austin Health
- Elizabeth Walkley, Clinical Lecturer, Austin Health
- Melanie Craig, Honorary Fellow, Austin Health
- Ruelan Furtado, Clinical Lecturer, Austin Health
- Monica Carrarini, Honorary Fellow, Austin Health

- Ashley Bigaran, Clinical Lecturer, Austin Health
- Jarryd Walkley, Clinical Lecturer, Austin Health
- Amanda Dalyell, Clinical Lecturer, Austin Health
- Shaunna Kenworthy, Clinical Lecturer, Austin Health
- Vivian Yu, Clinical Lecturer, Austin Health
- Kopiyawaththage Udari Perera, Honorary Fellow, Austin Health
- Kristy Mansour, Clinical Lecturer, Austin Health
- Timothy Chittleborough, Clinical Lecturer, Royal Melbourne Hospital
- Michael Clarkson, Fellow, Royal Melbourne Hospital
- James Dimou, Clinical Lecturer, Royal Melbourne Hospital
- Julia Matheson, Clinical Fellow, Royal Melbourne Hospital
- Thanh Nguyen, Fellow, Royal Melbourne Hospital
- Hong Nguyen, Clinical Fellow, Royal Melbourne Hospital
- Ian Birchall, (Fellow), Royal Melbourne Hospital
- Nilesh Srivastav, Fellow, Royal Melbourne Hospital
- Stanley Stylli, Fellow, Royal Melbourne Hospital
- Jessica Wong, Fellow, Royal Melbourne Hospital
- Lisa Brown, Fellow, Royal Melbourne Hospital
- Ravi Asopa, Fellow, St Vincent's Hospital
- Henry Badgery, Clinical Lecturer, St Vincent's Hospital
- Lachlan Batty, Clinical Lecturer, St Vincent's Hospital
- Alison Browning, Fellow, St Vincent's Hospital
- Lynn Chong, Fellow, St Vincent's Hospital
- Jazmin Eckhaus, Clinical Lecturer, St Vincent's Hospital
- Teagan Fink, Clinical Lecturer, St Vincent's Hospital
- Michael Flood, Clinical Lecturer, St Vincent's Hospital
- Ashok Gunawardene, Honorary Fellow, St Vincent's Hospital
- Ryan Hamer, Fellow, St Vincent's Hospital
- Santosh Kaur, Fellow, St Vincent's Hospital
- Brendan O'Brien, Fellow, St Vincent's Hospital
- Siddharth Rele, Honorary Fellow, St Vincent's Hospital
- Jonathan Sivakumar, Fellow, St Vincent's Hospital
- Nicole Winter, Fellow, St Vincent's Hospital
- Kiryu Yap, Fellow, St Vincent's Hospital
- Michael Yii, Fellow, St Vincent's Hospital
- Tengyi Cai, Honorary Fellow, Northern Health
- Oliver Cronin, Clinical Lecturer, Northern Health
- Yuen Chiu Kang, Clinical Lecturer, Northern Health
- Jawed Noori, Clinical Lecturer, Northern Health
- Vassili Mark Papageorge, Clinical Lecturer, Northern Health
- Sanjana Prasad, Honorary Fellow, Northern Health
- Bill Karanatsios, Fellow, Western Health
- Matthew Wei, Clinical Lecturer, Western Health
- Ranjit Singh, Clinical Lecturer, Western Health

HONORARY TITLES LEVEL A

- Sushma Anand, Clinical Tutor, Ophthalmology
- Chao (Candy) Cheng, Clinical Tutor, Austin Health
- Angela Cochrane, Clinical Tutor, St Vincent's Hospital
- Jonathan Goh, Clinical Tutor, Ophthalmology
- Rita Kinsella, Clinical Tutor, St Vincent's Hospital
- Catherine Ngan, Clinical Fellow, St Vincent's Hospital
- Samantha Phillips, Clinical Tutor, St Vincent's Hospital
- Michelle Sinclair, Clinical Tutor, Royal Melbourne Hospital
- Miguel Cabalag, Fellow, Royal Melbourne Hospital
- Amy Hampson, Honorary Fellow, Otolaryngology
- Manju Deena Mammen, Clinical Fellow, Otolaryngology
- Aditya Sakalkale, Clinical Tutor, Western Health
- Brendan Yanada, Clinical Tutor, Western Health
- Howard Tang, Clinical Tutor, Western Health
- Richard Gartrell, Clinical Tutor, Western Health
- Shriranshini Satheakeerthy, Clinical Tutor, Western Health

Life Outside the Lab

REMOD team December 2023

REMOD End ot the Year Celebration 2023

Bariatrics Research

Radiation Oncology

SERG

Dr Michael Johnston and
Professor Willem Bemelmen at the AFL

CARTWHEEL

CEADS

THE UNIVERSITY OF
MELBOURNE

Mailing address:
Department of Surgery
The University of Melbourne
Level 2, Clinical Sciences Building,
29 Regent Street, Fitzroy, VIC, 3065

Faculty of Medicine, Dentistry
and Health Sciences

Department of Surgery

This report is available at:
medicine.unimelb.edu.au/school-structure/surgery