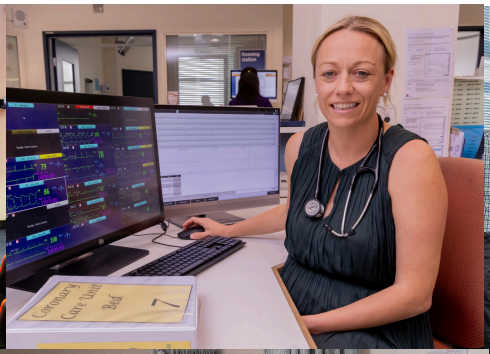
RPA
Institute for
Academic Medicine

2023

ANNUAL RESEARCH ACTIVITY REPORT

RPA DIVISION OF MEDICINE





RPA Institute for Academic Medicine

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INTRODUCTION

In 2023, the RPA Institute for Academic Medicine (IAM) was established as a research-focused organisational body to support and strengthen research engagement, productivity and expertise across the RPA Division of Medicine. The IAM works closely with the Division to identify synergies for research collaboration, provide strategic advice and advocacy and assist with tailored support for bespoke research programs.

The vision of the IAM is to improve patient care and clinical outcomes through the promotion and support of education and research. The Division encompasses the 17 RPA departments under the remit of medicine, listed below. During 2023, the specialties of Dermatology and Rehabilitation Medicine were added.

- ADDICTION MEDICINE, PHARMACOLOGY AND TOXICOLOGY
- AW MORROW GASTRONENTEROLOGY AND LIVER CENTRE
- CARDIOLOGY
- CELL AND MOLECULAR THERAPIES
- CLINICAL HAEMATOLOGY
- CLINICAL IMMUNOLOGY AND ALLERGY
- DERMATOLOGY
- ENDOCRINOLOGY
- GERIATRICS
- INFECTIOUS DISEASES AND MICROBIOLOGY
- MEDICAL GENOMICS
- NEUROLOGY
- REHABILITATION MEDICINE
- RENAL MEDICINE
- RESPIRATORY AND SLEEP MEDICINE
- RHEUMATOLOGY
- SUPPORTIVE CARE AND PALLIATIVE MEDICINE

The 2023 Research Activity Summary Report has been compiled by the IAM for the Division of Medicine, RPA and SLHD senior leadership. It provides an overview of research activity reported for a 12-month period from January to December 2023. This report will be tabled at the IAM Advisory Council.

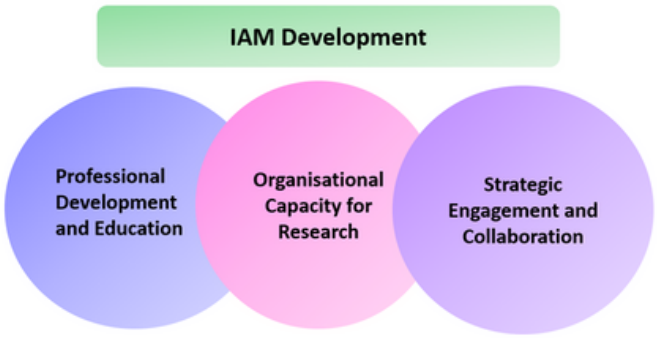
NSW GOVERNMENT Sydney Local Health District

RPA Institute for Academic Medicine

RESEARCH AT THE IAM

Research Portfolio

The **Organisational Capacity for Research** is one of four IAM portfolios, as demonstrated below:

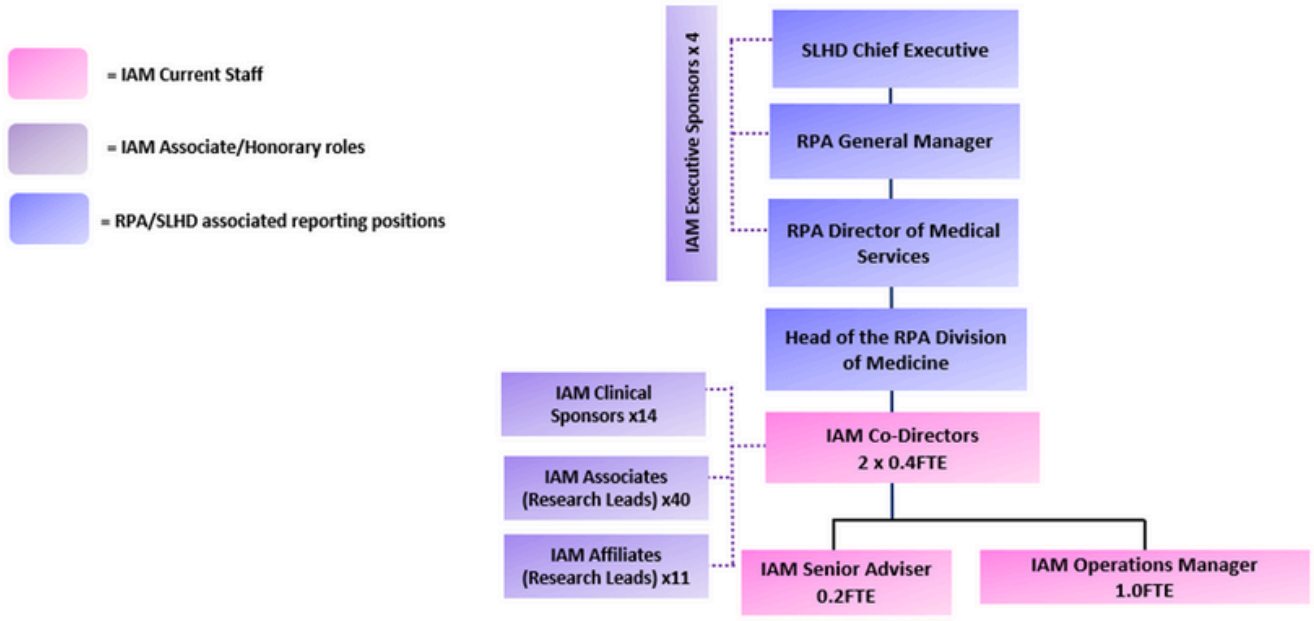


Organisational capacity for research focuses on:

- Maximising capacity for research across all departments and underrepresented groups in the Division
- Supporting a wide range of research including health system research and implementation science
- Identifying barriers faced by clinicians in undertaking and/or sustaining research activity and seeking opportunities to overcome these barriers
- Support, promote and advocate for women in research
- Facilitating links between the Division of Medicine and the Sydney Biomedical Accelerator research teams to promote research translation and improved patient care

NSW GOVERNMENT
Sydney Local Health District

RESEARCH GOVERNANCE AT RPA

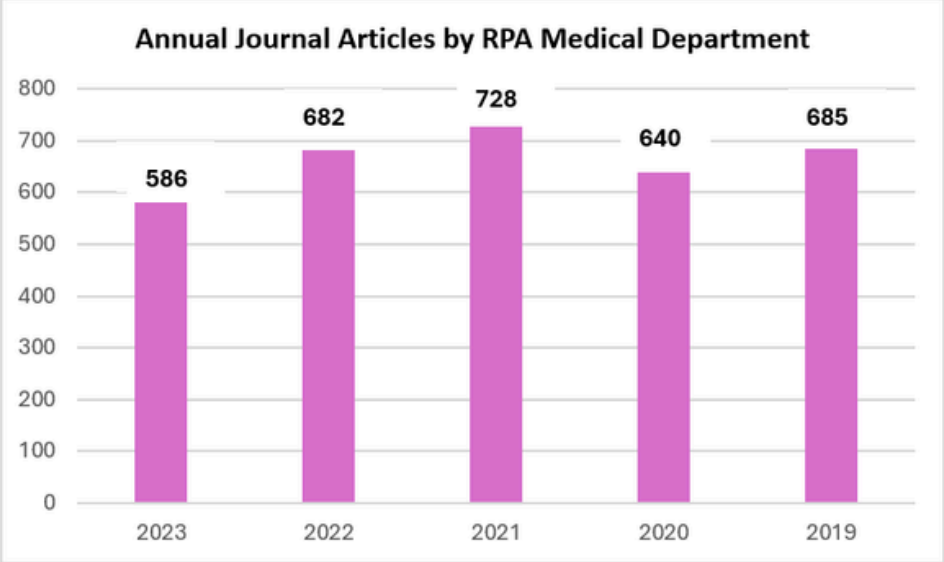


RESEARCH METRICS

The total number of annual journal articles published by the RPA Division of Medicine was **586** in 2023. **Cardiology, Neurology** and **Respiratory and Sleep Medicine** were the top performing medical departments in terms of research output. Only four medical departments increased their publication output in comparison to last year.

Annual Journal Articles by RPA Medical Departments						
RPA Medical Departments	**Trend 2023 vs 2022**	**2023**	**2022**	**2021**	**2020**	**2019**
Addiction Medicine, Toxicology and Pharmacology	Decrease	81	97	119	104	137
AW Morrow Gastroenterology and Liver Centre	Decrease	40	69	35	43	58
Cardiology	Increase	114	105	171	153	108
Cell and Molecular Therapies	Decrease	8	15	10	13	6
Clinical Haematology	Decrease	19	20	9	12	23
Clinical Immunology and Allergy	Decrease	19	38	43	13	22
Dermatology	Decrease	9	12	6	7	6
Endocrinology	Decrease	41	52	43	51	48
Geriatric Medicine	Increase	1	0	3	0	6
Infectious Diseases	Decrease	16	30	20	6	14
Medical Genomics	Steady	2	N/A	15	2	6
Neurology	Decrease	98	121	132	131	119
Rehabilitation Medicine	Steady	0	0	0	0	0
Renal Medicine and Nephrology	Decrease	23	27	26	37	40
Respiratory and Sleep Medicine	Increase	95	73	76	43	68
Rheumatology	Increase	17	15	20	22	23
Supportive Care and Palliative Medicine	Decrease	3	8	0	3	1
TOTAL		**586**	**682**	**728**	**640**	**685**

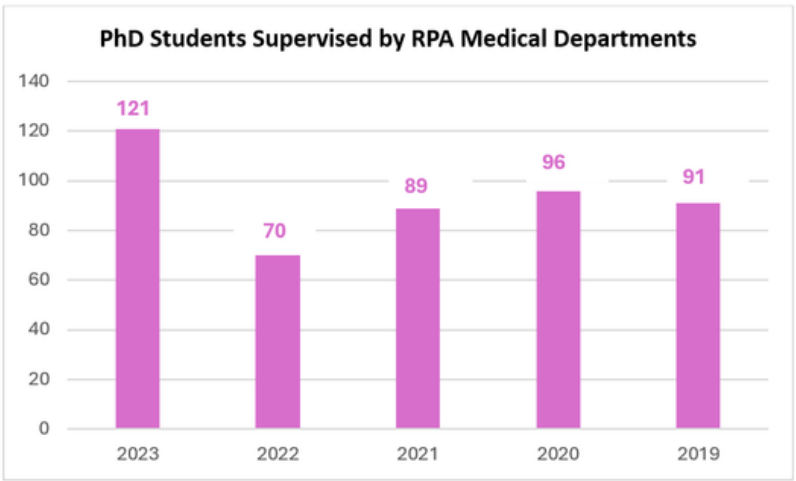
**The above metrics are self-reported and collated through the SLHD Clinical Research Centre. This table represents a sum of department totals for the Division of Medicine and may not remove all duplicates where researchers have collaborated across departments.*



The total number of **Phd students supervised by the RPA Division of Medicine in 2023** was **121,** the highest ever attained over the past five years. The top three departments were **Addiction Medicine, Neurology** and **Respiratory and Sleep Medicine** who collectively supervised a total of 73 students. Overall, the Division increase its PhD supervision by 51 students.

PhD Students Supervised by RPA Medical Departments					
RPA Medical Departments	**2023**	**2022**	**2021**	**2020**	**2019**
Addiction Medicine, Toxicology and Pharmacology	29	23	28	22	15
AW Morrow Gastroenterology and Liver Centre	8	9	0	3	3
Cardiology	8	5	8	17	12
Cell and Molecular Therapies	2	1	0	0	0
Clinical Haematology	3	2	2	2	2
Clinical Immunology and Allergy	2	0	3	5	11
Dermatology	3	1	0	1	0
Endocrinology	12	11	20	13	14
Geriatric Medicine	0	0	1	0	2
Infectious Diseases	0	0	0	0	1
Medical Genomics	1	N/A	0	0	0
Neurology	28	14	11	20	11
Rehabilitation Medicine	0	0	0	0	0
Renal Medicine and Nephrology	5	5	0	0	6
Respiratory and Sleep Medicine	16	18	16	13	13
Rheumatology	4	4	0	0	1
Supportive Care and Palliative Medicine	0	0	0	0	0
TOTAL	**121**	**70**	**89**	**96**	**91**

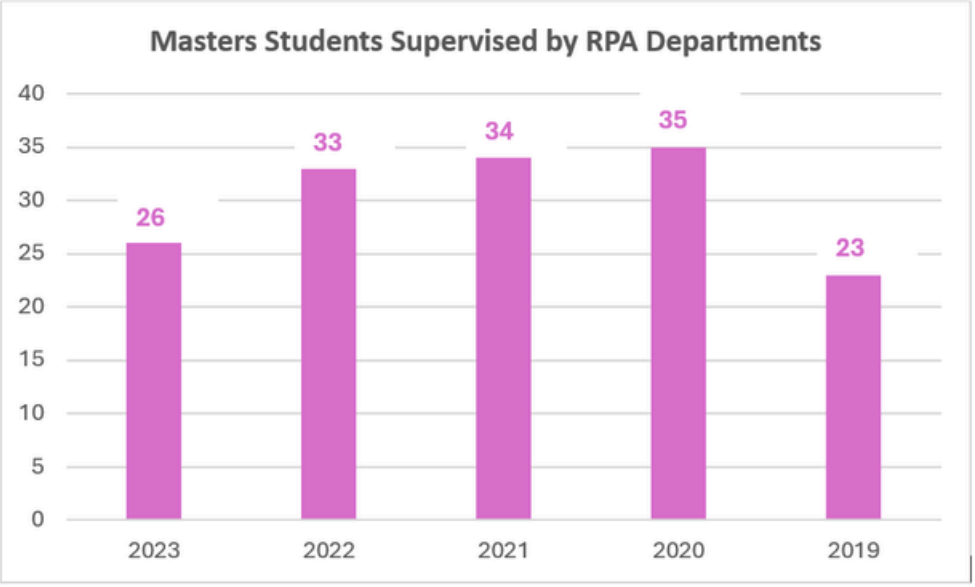
**Note the above metrics are self-reported and collated through the SLHD Clinical Research Centre of the annual SLHD activity report.*



The total number of **Masters students supervised by the RPA Division of Medicine in 2023** was **26,** a decrease from the 33 and 34 masters students in the previous two years. It is noted that Masters students often transition from a Masters degree into a PhD which may impact the output demonstrated below.

Masters Students by Medical Departments					
RPA Medical Departments	**2023**	**2022**	**2021**	**2020**	**2019**
Addiction Medicine, Toxicology and Pharmacology	5	15	17	18	9
AW Morrow Gastroenterology and Liver Centre	4	1	0	3	4
Cardiology	5	2	1	4	1
Cell and Molecular Therapies	0	0	0	0	0
Clinical Haematology	0	3	3	3	3
Clinical Immunology and Allergy	2	0	0	0	0
Dermatology	1	1	2	1	1
Endocrinology	1	4	6	1	3
Geriatric Medicine	0	0	0	0	0
Infectious Diseases	0	0	0	0	0
Medical Genomics	0	0	0	0	0
Neurology	4	0	0	2	0
Rehabilitation Medicine	0	0	0	0	0
Renal Medicine and Nephrology	0	1	0	0	0
Respiratory and Sleep Medicine	4	4	4	2	2
Rheumatology	0	1	1	1	0
Supportive Care and Palliative Medicine	0	1	0	0	0
TOTAL	**26**	**33**	**34**	**35**	**23**

**Note the above metrics are self-reported and collated through the SLHD Clinical Research Centre of the annual SLHD activity report.*



HIGHLIGHTS

During its inaugural year in 2023, the IAM established a dedicated research education program for advanced trainees, appointed 41 research leads and launched its annual research competition, My Research Rules. The Institute was also formally integrated into the governance structure for Gloucester House as part of the Sydney Biomedical Accelerator.

ADVANCED TRAINEE RESEARCH EDUCATION PROGRAM

The 2023 program was designed as a bespoke education series which targeted advanced trainees (AT) due to commence their research project with the Royal Australasian College of Physicians. The IAM sourced a myriad of speakers across hospital disciplines including allied health, medicine and the ethics and governance departments of SLHD.

The sessions were held once a month and focused on topics that had been identified as critically in need of support by advanced trainees through an IAM needs analysis survey. The 2023 program is demonstrated below (Parts A and B):

RESEARCH LEADS

In June 2023, the IAM finalised its Research Canvassing Exercise across the Division. Consultation included meeting with each Head of Department and research stakeholders embedded into current RPA structures. The canvassing exercise identified multiple individuals within departments who were pioneering clinical and laboratory research at RPA.

Following an expression of interest, a total of 41 research leads were appointed. This included 40 associates (consultants, allied health and nursing) and 11 affiliates (advanced trainees and basic physician trainees).

IAM Research Leads often teach at the monthly AT series and provide departmental updates on research news. The IAM Research and Innovation Forum was established in 2023 to specifically cater to the needs of leads, with a focus on research pearls of wisdom, advice sought for trainee projects and the opportunity to connect with hospital support services who work in the research space.

MY RESEARCH RULES

In December, the IAM hosted My Research Rules (MRR), a combined research competition and end of year celebration for the RPA Division of Medicine. MRR was hosted by Dr Michael Spies, Network Director of Physician Training of the RPA BPT Network and targeted advanced trainees and PhD or MPhil candidates.

Six entrants were selected to present their research projects in the standard format of an oral presentation, following the circulation of an expression of interest across the Division. The judging panel included Professor Jenny Alison (SLHD Allied Health), Professor Stephen Twigg (Head of the Central Clinical School), A/Prof Rachael Cordina (RPA Cardiology) and Professor Michael Frommer (IAM Senior Adviser).

The first prize winner, Dr Lucy Geraghty of RPA Cardiology, was awarded $500 for research related expenses. The people's choice nominee, Dr Alex Stoyanov of RPA Immunology, was awarded a one-on-one mentoring session with the Head of the RPA Division of Medicine. The venue, SLHD's Innovation Hub in Gloucester House was at full capacity for attendance.

MRR will be repeated as an annual research competition across the Division and has been designed to complement the annual Patron's and President's prize for clinical research at RPA.

WINNER OF 2023 MY RESEARCH RULES,
DR LUCY GERAGHTY- RPA CARDIOLOGY

GLOUCESTER HOUSE MANAGEMENT COMMITTEE

Finally, in 2023 the Gloucester House Management Committee was established by SLHD and RPA Executive. The committee is responsible for supporting and vetting planning and design proposals for levels 2 – 7 of Gloucester House. It then makes recommendations to the RPA General Manager in relation to the clinical research environment of Gloucester House as adjacent to the Sydney Biomedical Accelerator (SBA).

These recommendations include how to engage comprehensively with clinical units, researchers and trainees to ensure sufficient structures are in place to best support local RPA research and education. This advice will inform part of RPA's expansion strategy for research infrastructure, technology and commercialisation over the next five years as the SBA and RPA Redevelopment progress.

Together, these infrastructure projects mean that RPA's local precinct will become an international destination for the rapid acceleration and translation of biomedical research discovery into healthcare solutions.

As such, the criticality of Gloucester House's physical location and opportunity cannot be overstated. The Committee is co-chaired by the RPA Director of Medical Services, Professor Michael Hensley and IAM Co-Director, A/Prof Lauren Troy, with secretariat duties undertaken by the IAM Operations Manager.

RPA Institute for Academic Medicine

ADDICTION MEDICINE, TOXICOLOGY AND PHARMACOLOGY

CONSULTANT PROFILE

RPA MEDICAL DEPARTMENT	CONSULTANTS	#
Addiction Medicine, Pharmacology and Toxicology	Paul Haber (Head of Department and Conjoint Position)	9
	Andrew Dawson (Clinical Professor)	
	Nick Buckley (Clinical Academic and Professor)	
	Kate Conigrave (Conjoint Position)	
	Darren Roberts	
	Alicia Foran (Research Affiliate)	
	Anastasia Volovets (Clinical Lecturer)	
	Joshua Watt	
	Nazila Jamshidi (Clinical Senior Lecturer)	

RESEARCH FOCUS

- Clinical Toxicology and Pharmacology
- Aboriginal Australians and Torres Strait Islander and other priority populations Substance Use
- Alcohol Biology, and Genetics of Liver Disease
- Clinical Research in Alcohol, Addictive Behaviours & Treatment
- Illicit Drug Use

IAM RESEARCH LEAD

Professor Kirsten Morley

RESEARCH SUMMARY 2023

The Edith Collins Centre (ECC) is a Translational Research in Alcohol Drugs and Toxicology, established to increase clinical research capacity in the alcohol, drugs and toxicology fields as a partnership between RPA Hospital/Sydney Local Health District and the University of Sydney.

The ECC's multi-disciplinary research ranges from early interventions for drug and alcohol use, genetic and molecular mechanisms of tissue injury, clinical trials in the treatment of substance use disorders and encompasses a broad range of disciplines including clinical toxicology, addiction medicine, public health, epidemiology, hepatology, mental health and Aboriginal and Torres Strait Island health.

EDUCATION HIGHLIGHTS

Addiction Medicine, Pharmacology and Toxicology is involved in continuously training and teaching medical and science graduates (Honours, Masters, MPhil and PhD) and students in Aboriginal health promotion (GradDipIndigHP).

Group members are engaged in the placement of overseas trainees/students, teaching/training of GPs and Aboriginal drug and alcohol workers and other clinicians across Australia.

The department has developed a Masters in Clinical Toxicology distance learning course and Open-source curriculum, Master of Public Health unit of study "Alcohol, Drugs and Health" and the Addiction unit of study in the Brain and Mind Centre (BMC) post-graduate program. There are opportunities to undertake postgraduate studies in the above areas, from basic science, clinical or public health perspectives.

RESEARCH COLLABORATIONS

- NHMRC and NSW Ministry of Health
- NSW Drug and Alcohol Clinical Research and Improvement Network
- University of Sydney

RESEARCH OUTPUT

- **81** Publications
- **6** review articles
- **7** research letters/case reports
- **9** book chapters
- **43** presentations (national and international)

IAM RESEARCH LEAD
PROFESSOR KIRSTEN MORLEY

HIGHER DEGREES BY RESEARCH STUDENTS

29 PhDs
5 Masters

WEBSITE

https://www.edithcollinscentre.org.au/

HEAD OF DEPARTMENT
PROFESSOR PAUL HABER

RPA Institute for Academic Medicine

AW MORROW GASTROENTEROLOGY AND LIVER CENTRE

CONSULTANT PROFILE

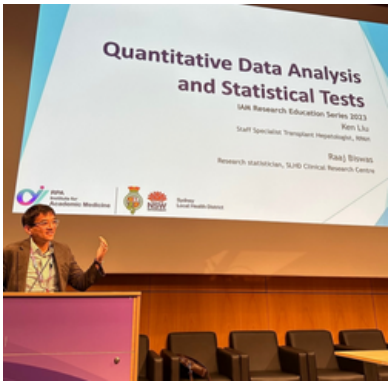
RPA MEDICAL DEPARTMENT	CONSULTANTS	#
AW Morrow Gastroenterology and Liver Centre	Geoff McCaughan (Head of Department) (IAM Clinical Sponsor) (Conjoint Professor)	17
	David Koorey (Clinical Associate Professor)	
	Simone Strasser (IAM Clinical Sponsor) (Clinical Associate Professor)	
	Ken Liu (IAM Research Lead) (Clinical Senior Lecturer)	
	Rachael Jacob	
	Peter Lim	
	Gokul Tamilarasan (Clinical Associate Lecturer)	
	Anastasia Volovets	
	David Bowen (Associate Professor of Medicine)	
	Sean Griffin	
	Arthur Kaffes (Clinical Associate Professor)	
	Payal Saxena (Clinical Associate Professor)	
	Kevin Choi	
	Crispin Corte (Clinical Associate Professor)	
	Madeleine Gill	
	Emilia Prakoso	
	Cositha Santhakumar	

RESEARCH FOCUS

- Immune responses in the liver to improve treatments for various conditions such as malaria, viral hepatitis, transplantation, and gene therapy.
- Type II Diabetes associated with liver disease, liver cancer and liver fibrosis.
- The development of developing ex-vivo normothermic perfusion of human livers with the ultimate goal of using these livers in liver transplantation to improve access and outcomes of this life-saving therapy
- Novel endoscopic techniques to treat patients with benign and malignant bile duct strictures of novel biologic therapies and treatment approaches for patients with ulcerative colitis and Crohns disease

IAM RESEARCH LEAD

A/Prof Ken Liu



Sydney Local Health District

RESEARCH SUMMARY 2023

The AW Morrow Gastroenterology and Liver Centre continued to report local data and contribute to national and international collaborations on multiple aspects of liver disease and liver transplantation with important studies on Acute Chronic Liver Failure, complications and adverse outcomes of Liver Transplantation and Alcohol-related liver disease.

Active research studies into the impacts of frailty and sarcopenia and appropriate management strategies, and the mechanisms and pathogenesis of cardiovascular dysfunction in cirrhosis are ongoing. We continue to participate in clinical trials investigating new therapies for metabolic associated fatty liver disease, viral hepatitis, cholestatic liver disease and cirrhosis complications such as hepatic encephalopathy.

HIGHLIGHTS

- Liver immunobiology group led by Associate Professors David Bowen and Patrick Bertolino published in the prestigious journal Nature Communications, showing that while liver immune responses are initiated in lymphoid organs like most immune responses, they are further expanded in specialised liver areas.
- Dr Emilia Prakoso developed an algorithm for early capsule endoscopy in inpatient with active GI bleeding and negative gastroscopy.
- Dr Ken Liu and colleagues published the first Australian report on epidemiology, characteristics and outcomes of the emerging entity of Acute-on-Chronic Liver Failure.
- In collaboration with A/Prof Carlo Pulitano and colleagues from the RPA Transplant Institute, AW Morrow has continued the development of a novel method of ex-vivo normothermic machine perfusion

RESEARCH COLLABORATIONS

- Dr Kieran English and Associate Professor Patrick Bertolino co-authored a study that was published in the prestigious journal, Nature Immunology. This collaboration, also involving the Doherty Institute, the Malaghan Institute and Ferrier Research Institute, describes a new generation of mRNA vaccine targeting malaria that was bioengineered to target the liver and to simultaneously activate two immune cell types.
- Associate Professor Patrick Bertolino co-authored a study that was published in the prestigious journal, Cell in collaboration with investigators at the Garvan Institute (Assoc. Prof. Tri Phan). This study describes and characterises a new subset of macrophages in the spleen that effectively removes cells making antibodies during immune responses.

RESEARCH OUTPUT

40 Publications
4 Awards:

- Associate Professor Ken Liu: 2023 Peter Bancroft Prize for Research, University of Sydney
- Ms Yiqun Qu. University of Sydney International Scholarship. $35,000 pa. 2023-26
- Ms Jasmine Minh Hang Nguyen. Early-offer University of Sydney International Scholarship. $35,000 pa. 2023-26
- 2023. Ms Jasmine Minh Hang Nguyen. Awarded membership of the Deans Honours List of Best Fourth Year School of Medical Sciences students of The University of Sydney

HIGHER DEGREES BY RESEARCH STUDENTS

8 PhDs
4 Masters

GRANTS

- ***Medical Research Future Fund***

Improving Diagnosis in Cancers with Low Survival Rates : Microbial based biomarkers powered by artificial intelligence for early detection of liver cancer in Australia. The Australian Liver Cancer Microbiome Consortium. Chief Investigator: Associate Professor Amany Zekry; Geoff.McCaughan. 2021-2026

- **The IC3 Trial**: Identifying Cirrhosis and Liver Cancer in Primary Care Lead institution, University of Western Australia. Chief Investigator: Professor Leon Adams. Simone Strasser as CI.

- ***NSW Cancer Institute.***

The APRICA program - Accelerated translational research in Liver Cancer Chief Investigator: Jacob George. Geoff McCaughan and Simone Strasser as CIs

- ***Australian Cancer Research Foundation***

ACRF Molecular Theranostics Laboratory. PJ Hogg, J Simes, M Stockler, M Gorrell, G McCaughan, R Codd.

- ***Philanthropic funding:***

Immune interactions in hepatic portal tracts as predictors of therapeutic response in immune-mediated liver conditions CIA Patrick Bertolino, CIB David Bowen;

- ***RPATI Research support***

Development of a model to dissect immune mechanisms underlying tolerance in human liver transplantation. CIA David Bowen, CIB Patrick Bertolino, CIC Carlo Pulitano

- ***ACH2 project grant.***

Fibrosis in HBV. Avik Majumdar, Mark Gorrell, Jessica Howell, Geoff McCaughan.

- ***University of Sydney-University of Edinburgh Partnership Collaboration Award***. Understanding human enzymes in severe lung infections.

RPA Institute for Academic Medicine

WEBSITE

https://slhd.health.nsw.gov.au/rpa-hospital-research/aw-morrow-gastroenterology-liver-centre

DEPARTMENT REFLECTIONS ON 2023

'As judged by our publications and grants, our research is broad in nature ranging from in depth molecular and cellular studies in human and experimental disease models covering broad aspects in Gastroenterology, Liver diseases, Transplantation and cancer to improving models of care in the community'

Professor Geoff McCaughan
Head of Department

CARDIOLOGY

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANT	#
CARDIOLOGY	Mark Adams (Head of Department)	30
	James Weaver (Clinical Senior Lecturer)	
	Martin Ng (Conjoint Professor)	
	Pankaj Jain (Clinical Senior Lecturer)	
	Caroline Medi	
	Sanjay Patel (Clinical Professor)	
	Jordan Fulcher (Senior Lecturer Research)	
	Kim Chan (Clinical Senior Lecturer)	
	Ray Sy (Clinical Associate Professor)	
	Mark McGuire (Clinical Professor)	
	Caroline Medi (Conjoint Senior Lecturer)	
	Michael Kilborn (Clinical Associate Professor)	
	Lisa Simmons (Clinical Associate Professor)	
	Imre Hunyor (Clinical Senior Lecturer)	
	Clare Arnott (Clinical Senior Lecturer) (IAM Research Lead)	
	Belinda Gray (Associate Professor) (IAM Research Lead)	
	David Baker (Clinical Senior Lecturer)	
	Rachael Cordina (Clinical Associate Professor) (IAM Research Lead)	
	Raj Puranik (Clinical Professor)	
	Mark Dennis (Senior Lecturer)	
	Elizabeth Robertson	
	Jo-Dee Lattimore (Clinical Associate Professor)	
	Ian Wilcox (Clinical Professor)	
	Michelle McGrady (Clinical Associate Professor)	
	David Celermajer (Professor) (IAM Research Lead and Clinical Sponsor)	
	Anthony Keech (Professor)	
	Richmond Jeremy (Professor)	
	Sean Lal (Associate Professor)	
	John O'Sullivan (Professor)	
	Christopher Semsarian (Professorial and NHMRC Practitioner Fellow)	

RESEARCH FOCUS

All aspects of heart disease, including congenital, genetic, valvular and myocardial, vascular and aortic; from basic science through clinical and translational research to public health and clinical trials.

RESEARCH SUMMARY 2023

RPA Cardiology has a sustained track record of major grants, publications and other research contributions, across many research domains.

RESEARCH OUTPUT

114 Publications
5 Masters Students
8 PhD Students

GRANTS

Prof David Celermajer

- Establishing a National Registry for Congenital Heart Disease – Medical Research Future Fund - $4.8M from 2020 to 2025
- Creating a National Congenital Heart Disease (CHD) “Knowledge Bank”. Medical Research Future Fund (MRFF) Research Data Infrastructure Grant, 2023 - $ $2,487,189.00.
- Vasudhara Foundation - $900K over 3y to study “Disability in Children with CHD”.
- Anonymous foundation - $1.6M over 3y to DC and partners at USyd – to study Carbon Emissions in HealthCare.

A/Prof Rachael Cordina

- NSW Health EMCR Grant 2021 - Brain injury and dysfunction in young adults with complex congenital heart disease: Defining the natural history and potentially modifiable contributors, $450k .
- Additional Ventures Expansion Award 2021 – MRI Substudy for CH-FIT $90k.
- MRFF 2020 - Congenital Heart Fitness Intervention Trial (CH-FIT) $3.32 million, >5 Million including partner cash contributions.

A/Prof Rajesh Puranik

- 2023 Endothelial origin of left ventricular non compaction, Francois M, Puranik R, National Health and Medical Research Council (NHMRC)/Ideas Grant

A/Prof Belinda Gray

- 2023 The Elusive Hearts Study: Using genomics to diagnose and manage inherited cardiovascular diseases, Ingles J, Semsarian C, Stark Z, Zentner D, Konstantinov I, Atherton J, MacArthur D, Bagnall R, Gray B, Skinner J, Deveson I, Siggs O, G.Weintraub R, McGaughran J, Vandenberg J, Department of Health and Aged Care (Federal - administered by NHMRC)/Cardiovascular Health Mission - 2022 Cardiovascular Health Grant

Prof Anthony Keech

- 2023 A randomised clinical trial of a digital self management program for people with Interstitial Lung Disease (REBUILD-SM trial), Corte T, Holland A, Chambers D, Palmer A, Glaspole I, Moodley Y, Keech A, Laranjo L, Knibbs L, Troy L, Cox N, Cox I, Goh N, Troy L, Department of Health and Aged Care (Federal - administered by NHMRC)/MRFF 2021 Chronic Respiratory Conditions

A/Prof Sean Lal

- R.T. Hall Trust Research Grants 2022, Chief Investigator (CI-A), $500,000 for molecular mechanisms of cardiac ageing and human heart failure - lead institution University of Sydney.
- Zuckerberg-Chan US Research Grants 2023, Chief Investigator (CI-E), $2.7 million for creating a cardiac paediatric atlas – in conjunction with Harvard Medical School (lead institution).
- NHMRC MRFF Cardiovascular Health Grant 2023 Chief Investigator (CI-B), $1.5 million for replenishing enzymatic cofactor NAD+ in heart failure - lead institution University of Sydney.
- Academy of Finland Grants 2023, Chief Investigator (CI-D), $1.14 million for development of near infrared spectroscopy for diagnosis of tissue fibrosis – in conjunction with University of Eastern Finland (lead institution).
- National Heart Foundation Vanguard Grant 2023, Chief Investigator (CI-B), $150,000 for developing therapeutic drugs that target neutrophil myeloperoxidase to improve heart failure amongst survivors of heart attack - lead institution University of Sydney.
- TEM Research Infrastructure Grant 2023, Chief Investigator (CI-A), $10,000 for electron microscopy analysis of human cardiac mitochondria in cardiac ageing and heart failure.
- MRFF/NHMRC Targeted Translation Research Accelerator 2024, Chief Investigator (CI-D), $979,000 for glycaemic variability as a culprit cause of heart disease in diabetes – in conjunction with the University of Queensland (lead institution).
- NHMRC Ideas Grant 2022, Associate Investigator, $1.5 million for targeting novel protagonists of cardiac hypertrophy (collaboration with Baker Institute).
- MRFF Grant 2023, Associate Investigator, $1.5 million for using genomics to diagnose and manage inherited cardiac diseases (collaboration with Victor Chang Cardiac Research Institute).
- 2023 Baird Institute of Applied Heart and Lung Research Grant $490,000, Aortic diseases research.
- 2024 Baird Institute of Applied Heart and Lung Research Grant $460,000, Human heart failure and ageing research.
- 2024 Baird Institute of Applied Heart and Lung Research Christmas Philanthropy Drive $96,000, Human heart failure and cardiac regeneration research.
- 2024 Baird Institute of Applied Heart and Lung Research Grant $310,000, Human heart biobanking.

A/Prof Belinda Gray
IAM Research Lead

Dr Sanjay Patel

- 2023 Nanomedicine to treat advanced atherosclerotic plaques, Misra A, Patel S, Gu S, National Heart Foundation of Australia/Vanguard Grant

AWARDS

Prof David Celermajer

- 2023 "Landmark lecturer," World Congress of Pediatric Cardiology and Cardiac Surgery.
- Paediatric and Congenital Heart Disease, Best Young Investigator Award, CSANZ 2024, Mr Jason Chami

A/Prof Rachael Cordina

- Dr Sesh Ratwatte, Best Structural Case Presentation, CSANZ Scientific Sessions 2024 supervised by Prof David Celermajer and A/Prof Rachael Cordina 2024.
- Peter Bancroft Award for best thesis, Sydney Medical School Dr Charlotte Verrall supervised by A/Prof Rachael Cordina 2024 (primary).
- Peter Bancroft Award for best thesis, Sydney Medical School Dr Derek Tran supervised by A/Prof Rachael Cordina 2023 (primary).

'Cardiology at RPA has had a prodigious year of research outputs; grants, publications and HDR student trainees. Particularly pleasing is the contribution from many of our younger cardiologists, who have now become independent research leaders.'

Professor David Celermajer
IAM Clinical Sponsor and Research Lead

CELL AND MOLECULAR THERAPIES

CONSULTANT PROFILE

RPA DEPARTMNET	CONSULTANT	#
CELL AND MOLECULAR THERAPIES	John Rasko (Head of Department) (IAM Research Lead) (IAM Clinical Sponsor)	1

RESEARCH SUMMARY 2023

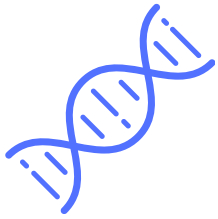
Throughout 2023, the RPA Department of Cell and Molecular Therapies (CMT) provided services to academic and industry partners for development, manufacture, clinical evaluation and implementation of cell and gene therapies. CMT has taken discovery research into clinical practice with robust cell manufacturing protocols to meet Therapeutic Goods Administration (TGA) requirements for biologicals.

HIGLIGHTS

- Service support for 12 ongoing clinical trials.The number of trials serviced is set to double in 2024. New trials will involve CAR-T cells, CAR-NK cells, iPSCs, gene therapies, and in vivo CRSPR therapies for a range of indications.
- CAR-T to treat the 100th patient with CAR T-cell products (Kymriah and Yescarta) for B-cell malignancies in November 2023
- Treated 4th patient with gene therapy for Haemophilia B resulting in the patient having no spontaneous bleed or requiring prophylaxis since treatment

RESEARCH OUTPUT

8 Publications
2 PhD Students



RPA Institute for Academic Medicine

CLINICAL HAEMATOLOGY

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANTS	#
CLINICAL HAEMATOLOGY	Phoebe Joy Ho (Head of Department) (IAM Research Lead and Clinical Sponsor) (Conjoint Alan Ng Chair)	11
	Christina Brown (Clinical Associate Professor)	
	Christian Bryant (Clinical Associate Professor)	
	Scott Dunkley	
	Edward Abadir	
	Harry Iland	
	Liane Khoo	
	Stephen Larsen (Clinical Associate Professor)	
	Derek McCulloch (Clinical Senior Lecturer)	
	Freda Passam (Clinical Academic Haematologist)	
	Vinay Vanguru (Clinical Senior Lecturer)	

RESEARCH SUMMARY 2023

Throughout 2023, the RPA Clinical Haematology Department continued to grow its wide range of trials covering both malignant and non-malignant haematology. The department leads early phase clinical trials through to randomised controlled studies. In 2023 this included:

- Haematologic malignancies, including multiple myeloma, non-Hodgkin lymphoma, acute lymphoblastic leukaemia, acute myeloid leukaemia and myeloproliferative neoplasms
- Red cell disorders, haemophilia and thrombosis
- Pre-clinical, malignant and non-malignant haematology trials with a focus on multiple myeloma and platelet disorders

RESEARCH OUTPUT

19 Publications
3 PhD Students
24 Presentations (national and international)

WEBSITE

https://slhd.health.nsw.gov.au/rpa-hospital-research/institute-of-haematology

HIGHLIGHTS

Yvonne Kong

- Eberhard F Mammen Young Investigator Award – international award for best presentation by a young investigator, awarded by the Journal Seminars in Thrombosis and and Haemostasis
- THANZ Scientific Medal, Blood 2023
- American Society of Hematology Abstract Achievement Award
- THANZ Scientific and Education Trust National/International. Research Grant
- $24,500 grant for research project: Role of altered platelet and megakaryocyte calcium flux in myeloproliferative neoplasms
- THANZ Travel/Conference Grant
- THANZ Travel Grant (to attend Blood 2023)
- Sydney Nano HDR Mobility Award
- ISTH Early Career Award (Travel Award)

Tracy King

- Successful recognition of research contribution by Sydney University - achieved affiliate position of Clinical Associate Professor
- Completing phase 3 of PhD research study - Steroid Symptom Questionnaire Multiple Myeloma (SSQ-MM): multi-centre study. Final analysis underway. Submitting abstracts to National and International Meetings 2024.
- Collaborator on SLAM-B: Self administration of bortezomib for patients with myeloma: A pilot study. CCLHD Caring for our Future - Grant. PI Jacqueline Jagger NP CCLHD $20,000
- X 3 publications with local clinician collaborators.
- Ongoing Chair HSANZ Myeloma Specialists Practice Network and Lead author on Best Practice Consensus Recommendations for optimal use and local management for people with relapsed or refractory multiple myeloma (RRMM) receiving Selinexor-based therapy
- Ongoing Board Member Sydney Blood Cancer Research Institute (SBCR) RPAH Haematology. Co-organiser of fundraiser with Merrivale - raising > $200,000
- Invited keynote nursing speaker HSANZ Annual Meeting NZ
- Invited keynote speaker Leukaemia ad Blood Cancer NZ Patient Annual Conference

Joy Ho

- Invited speaker at the International Myeloma Society meeting
- Invited plenary speaker on T cell re-directed therapies at National Myeloma meeting and ALLG national meeting
- Appointed co-chair of Australasian Leukemia and Lymphoma Group (ALLG) Myeloma Working group
- Recipient of MRFF collaborative grant (CIC) for MRFF grant on high risk myeloma (3.4M)

Christian Bryant

- Invited plenary speaker on National Haematology meeting on myeloma

Edward Abadir

- Invited speaker on myeloma minimal residual disease at Australasian cytometry society meeting

Freda Passam

- Successful in NHMRC Ideas Grant and Ministry of Health NSW Cardiovascular Collaborative grant

'The Institute of Haematology, RPA has a highly active research team encompassing both clinical and laboratory research. We are considered a leader in clinical trials in myeloma, lymphoma, leukemia and cellular therapies in NSW and Australia, and have gained an international reputation, bringing much needed therapeutic options to Australian patients.

In addition, our highly active laboratory research program has introduced state of the art technologies such as mass cytometry, single cell RNA sequencing, whole genome sequencing and spectral flow cytometry to achieve important advances in myeloma and leukemia.

Our clinical trials portfolio is also one of the most advanced in the field of haemophilia and haemoglobinopathies (thalassemia and sickle cell disease). Our research work in thrombosis and platelets has gained multiple international and national awards.'

Professor Joy Ho
Head of Department
IAM Clinical Sponsor and Research Lead

CLINICAL IMMUNOLOGY AND ALLERGY

CONSULTANT PROFILE

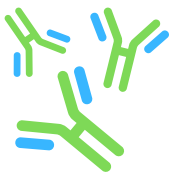
RPA DEPARTMENT	CONSULTANT	#
CLINICAL IMMUNOLOGY AND ALLERGY	Stephen Adelstein (Head of Department)	9
	(Clinical Associate Professor)	
	Frederick Lee (Clinical Senior Lecturer)	
	Nicolas Urriola (Clinical Senior Lecturer) (IAM Research Lead)	
	Roger Garsia (Conjoint Associate Professor)	
	Lisa Horgan (Clinical Lecturer)	
	Robert Loblay (Clinical Senior Lecturer)	
	Isabelle Bosi (Clinical Lecturer)	
	Shruti Swami (Clinical Lecturer)	
	Alex Stoyanov (IAM Research Lead)	

RESEARCH FOCUS

- Development of diagnostic tests for immune mediated diseases including autoimmune disorders
- Assessment of the emergency management of anaphylaxis
- Participation in the National Antibiotic Allergy network with a program to assess the delabelling of penicillin allergy in an in-patient population.
- Study of vaccine responses in immunocompromised persons
- Participation in a multisite epidemiological study characterising women living with HIV in Australia
- Assessment of the treatment and investigation of oral pemphigus
- Evaluation of cell-based assay in the diagnosis of autoimmune nodo-paranodopathy (immune mediated peripheral neuropathy)
- Recognition of common food allergens in an allergic population (DetemiNUT Study)
- ADAPT Study Looking at early introduction of peanut immunotherapy in peanut allergic children
- Management change project looking at management changes arising from obtaining a genetic diagnosis.

RESEARCH SUMMARY 2023

The RPA Department of Clinical Immunology and Allergy made ongoing progress throughout 2023 in developing novel tests to diagnose rare autoimmune diseases (such as alveolar proteinosis) and methods for the improved diagnosis of diseases related to auto antibodies related to the acetyl-choline receptor such as myasthemia gravis.



Immunology commenced comparing the immunogenicity and protective efficacy of nine different combination of antigens and adjuvants as part of our NIH contract "Advancing Vaccine Adjuvant Research for Tuberculosis".
The department is also developing a nasal vaccine for COVID-19 as part of the NSW Vaccine Accelerator Program. After delays due to the COVID-19 pandemic, Immunology has implemented a large community screening program for TB and leprosy in Kiribati, as part of the MRFF-funded PEARL project.

HIGHLIGHTS AND AWARDS

- NHMRC Postgraduate Scholarship awarded to Dr Alex Stoyanov
- RPA Institute for Academic Medicine Diagnostic Immunology Research Scholarship awarded to Dr Peter Bradhurst
- RPA Beard Fellowship awarded to Dr Peter Bradhurst

RESEARCH OUTPUT

19 Publications
2 PhD Students
2 Masters Students

WEBSITE

https://www.slhd.nsw.gov.au/RPA/Allergy/default.html

IAM Research Leads
Dr Peter Bradhurst
and Dr Alex Stoyanov

Dr Nicolas Urriola
IAM Research Lead

A/Prof Roger Garsia
IAM Clinical Sponsor

DERMATOLOGY

CONSULTANT PROFILE

RPA Department	Consultants	#
DERMATOLOGY	Professor Diona Damian (Head of Department) (IAM Research Lead) (IAM Clinical Sponsor)	13
	Dr Bruno Blaya Alvarez	
	Dr Andrew Chen	
	Dr Nita Agar	
	Dr Gloria Fong	
	Dr Ludi Ge	
	Dr Matthew Lin	
	A/Prof Patricia Lowe	
	Dr Margit Polcz	
	Dr Charlotte Thomas	
	Dr Angelica Tjokrowidjaja	
	Dr Gilberto Moreno Bonilla	
	Dr Tevi Wain	

RESEARCH FOCUS

- Sydney Cancer Partners Pilot Grant project underway (D Damian CIA; Prof Robyn Saw CIB) for ProCel study and immune microenvironment studies in primary melanoma.
- The results of the RPA-led multicentre Phase 3 trial of nicotinamide (vitamin B3) for skin cancer chemoprevention in transplant recipients were published in the New England Journal of Medicine.
- Work using the novel technology of imaging mass cytometry is ongoing in keratinocyte cancers and melanomas arising in immune suppressed and immune competent individuals.
- Collaborations with The Charles Perkins Centre (CPC) and the RPAH Department of Tissue Pathology and Diagnostic Oncology have enabled this work to be undertaken with MPhil student Dr Catherine Zilberg supervised by Prof Damian, A/Prof Ruta Guta (Tissue Pathology and Diagnostic Oncology) and Dr Angela Ferguson (CPC).
- Ongoing work in human oral squamous cell carcinoma is examining the role and nature of epithelial plasticity in cancer development and progression. We have established monoclonal cell lines from individual tumours and demonstrated that they interact with respect to cell growth and drug resistance. This suggests that a novel mechanism involving symbiosis between clones might promote tumour malignancy and resistance to therapy.

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- Ongoing work in human oral squamous cell carcinoma is examining the role and nature of epithelial plasticity in cancer development and progression. We have established monoclonal cell lines from individual tumours and demonstrated that they interact with respect to cell growth and drug resistance. This suggests that a novel mechanism involving symbiosis between clones might promote tumour malignancy and resistance to therapy.
- Studies with the Sydney Melanoma Diagnostic Centre are assessing the utility of new ex-vivo confocal microscopy for ensuring clear surgical margins and enabling rapid diagnosis of skin cancers, and a Medical Research Futures Fund supported clinical trial of topical sirolimus to reduce skin cancer incidence in transplant patients will commence soon.
- Investigator initiated trials include intralesional triamcinolone for lower leg squamous cell carcinomas in elderly patients, and perioperative propranolol and celecoxib to modify the tumour microenvironment and reduce recurrence in patients with nodal and cutaneous metastatic melanoma.
- The Department's psoriasis research program continued in 2023 with an evaluation of Drug survival of biologic treatments in patients with psoriasis. Investigators in this collaborative RPAH/Westmead project include A/Prof Patricia Lowe, MPhil candidate Samantha Ting, Prof Pablo Fernandez Penas and Dr Annika Smith.
- The PSoHO study of adults with moderate to severe plaque psoriasis has completed recruitment. The PSoHO study, an international observational study of health outcomes in the biological treatment of moderate to severe plaque psoriasis has now completed recruitment. The main purpose of the study is to compare how effective different biologic therapies are at treating plaque psoriasis over time, and to gain a better understanding of how plaque psoriasis affects overall health and quality of life.

RESEARCH SUMMARY 2023

Throughout 2023, the RPA Department of Dermatology focused on translational projects that enabled better understanding of the immune mechanisms of skin cancer and inflammatory skin diseases, better ways to prevent and treat these disorders and better understanding of the impact of skin disease on quality of life.
A key area of focus has been groups at extreme risk of skin cancer.

HIGHLIGHTS

· RPA-lead ONTRANS phase 3 clinical trial of nicotinamide for chemoprevention in transplant recipients is published in the New England Journal of Medicine
· RPAH dermatology is a study site for the Medical Research Futures Fund UQ-led clinical trial of topical sirolimus to reduce skin cancer in transplant recipients.

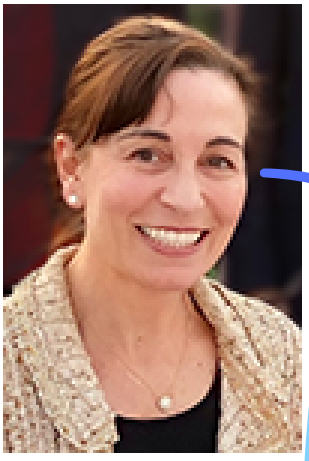
Professor Diona Damian
IAM Clinical Sponsor

RESEARCH OUTPUT

9 Publications
3 PhD Students
1 Masters Students

WEBSITE

https://www.slhd.nsw.gov.au/rpa/dermatology/Department-for-Patients.html



'The Department has continued to build on its clinical and research activity in the area of transplant dermatology, with the conclusion of the nicotinamide skin cancer prevention study in transplant recipients, and the commencement of the SiroSkin skin cancer prevention study in this high risk population.'

Professor Diona Damian
Head of Department
IAM Clinical Sponsor

ENDOCRINOLOGY

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANTS	#
ENDOCRINOLOGY AND METABOLISM	Stephen Twigg (Head of Department) (IAM Clinical Sponsor) (Kellion Professor in Endocrinology / Stan Clark Professor in Diabetes)	23
	Angela Lee (Clinical Lecturer)	
	Anne Maree Kean	
	Arianne Sweeting (Clinical Lecturer)	
	Arthur Conigrave (Emeritus Professor)	
	Ashish Gargya	
	Eddy Tabet (Clinical Lecturer)	
	Glynis Ross (Adjunct Associate Professor)	
	Ian Caterson (Professor Emeritus, Boden Professor of Human Nutrition)	
	Jencia Wong (IAM Research Lead) (Clinical Professor, Central Clinical School)	
	Katrin Kosbab-Jackson	
	Luigi Fontana (Professor of Medicine and Nutrition Leonard Pullman Chair in Translational Metabolic Health Director of the Healthy Longevity Research and Clinical Program)	
	Namson Lau	
	Nimalie Perera (Clinical Lecturer)	
	Pamela Jean Ho	
	Samantha Hocking (Associate Professor)	
	Albert Hsieh (Clinical Lecturer)	
	Senthil Thillainadesan	
	Tania Markovic (Clinical Associate Professor)	
	Ted Wu	
	Timothy Middleton (Clinical Lecturer)	
	Stephen Colagiuri	
	Xi May Zhen (Emeritus Professor of Metabolic Health)	

RESEARCH FOCUS

The Department of Endocrinology, with HoD Prof. Stephen Twigg, is comprised of:
1) The Diabetes Centre (addressing how different areas can help people with diabetes manage their condition and improve their quality of life)
2) Metabolism and Obesity Service
3) Endocrinology and Metabolism Centre
4) The CPC RPA Clinic (Endocrinology Node)
5) The Greg Brown Diabetes & Endocrinology Research Laboratory

RESEARCH SUMMARY 2023

RPA Endocrinology Department undertakes a broad range of research enquiry into a breadth of endocrine diseases. We focus on delivering excellence in research quality, with outcomes that always point towards improving patient care for people with lived experience of endocrine conditions. We run clinical trials, clinical cohort and other investigator driven studies, audits, case series and case studies, plus preclinical cell based and animal research that provides information to aid research translation in endocrine conditions.

We network extensively with many research bodies, including the University of Sydney Faculties and Schools, Departments in RPA and SLHD plus IAM, SOuRCe and IAS, Sydney Health Partners Obesity and Diabetes CAG, and non for profit national and international endocrine scientific organisations.

HIGHLIGHTS

Diabetes Centre

The Diabetes Centre is. These activities in 2023, are summarised below.

Technology: Focusing on how technology may serve to enhance care for patients recently discharged from RPAH and people living with type 1 diabetes and after hospital discharge in type 2 diabetes.
Mental Health: studying the impact of impact of both type 1 diabetes and the Covid-19 pandemic on people living with diabetes.
Food insecurity: A new area of study is exploring the link between food insecurity and glucose control.
Diabetes and liver disease: screening, predictive biomarkers, new interventions and triaging care in diabetes in pregnancy, improved maternal outcomes also in the longer term and optimising foetal outcomes.

We also undertook an audit of diabetic ketoacidosis presentations and outcomes across 2023.

Overall, our goal is to find ways to lighten the burden of diabetes for those living with it. Professor Stephen Twigg co-Chairs the newly formed Diabetes and Obesity Clinical Academic Group (DO-CAG) in Sydney Health Partners, is enhancing collaborations within and beyond the LHD. The leadership group includes Prof. Jencia Wong, A/Prof. Samantha Hocking, and A/Prof. Margaret McGill. The DO-CAG theme of focus is prediabetes - in enhancing community and clinician awareness, data development and new models of care.

Diabetes High Risk Foot Service (HRFS)

The Podiatry Department has services across Sydney Local Health District and provides both specialised and preventative foot management for people in the community.

The Concord Hospital High Risk Foot Service (HRFS) and the RPAH Diabetes Centre HRFS provide specialised interdisciplinary care for people with active diabetic foot ulcers and Charcot Arthropathy. These services are pivotal in the management of diabetes-related ulceration and represent a key strategy for the avoidance of unnecessary hospitalisation and amputation. Outpatient podiatry services assist patients to maintain independence, mobility, the early identification of foot disease to prevent serious foot complications and secondary prevention for patients who have had previous foot ulcers and/or amputations.

Our foot care research has focused on prevention or improvement of outcomes for patients with diabetes related foot disease. Clinical and investigator driven trials, and novel topical therapies are being studied. Our team continues to be actively involved in foot ulcer wound fluid biomarker research and collaborates closely with the RPAH Diabetes Centre and Greg Brown Diabetes & Endocrine Research Laboratory, Charles Perkins Centre, University of Sydney.

The Metabolism & Obesity Service (MoS):

1. The impact of the COVID pandemic and subsequent years of COVID-recovery on lifestyle habits in the clinical population.
2. Different treatment options for individuals with severe obesity (BMI > 50 Kg/m2 and comorbidities), including the use of severely energy restricted diets, pharmacotherapy and bariatric surgery.
3. The treatment and progression of Prader Willi Syndrome (PWS) in an audit;
4. Eating pathology in those with severe obesity including food addiction and binge eating.
5. Group interventions and novel e-apps to aid obesity care and outcomes.
6. Use of Pharmacotherapy in obesity
   a. The real world setting for the use of subsidised phentermine
   b. Real world outcomes in the use of semagultide
7. Psychological assessment processes
   a. Evaluation of switching to an online psychological assessment tool and process, in Arabic

The Endocrinology and Metabolism Centre (EMC):

1. Adrenal vein sampling for Conn's Syndrome and the steroid profile comparing mass spec. with immunoassay: A multicentre PROspective study on the diagnostic value of Steroid profiling in primary ALDOsteronism (The PROSALDO study) - ongoing since 2021.
2. Molecular genetics in Thyroid Cancer - ongoing research in collaboration with Department of Head & Neck Surgery and Department of Tissue Pathology and Diagnostic Oncology
3. Graves' disease and functional status of TSH receptor antibody
4. Establishment of an Identified Database of Adults with Turner Syndrome attending the Endocrine Clinic at RPAH - X 13-0066/ HREC/13/ RPAH/87- Study in progress / ongoing - 2013 to date.
5. Commencement of new study on "Evaluating clinical outcomes of patients presenting to hospital with acute adrenal insufficiency" - Ethics approval X19-0165 & 2019/ETH10544
6. Resting Prolactin Project - findings presented at the Endocrine Society of Australia & Endocrine Nurses' Society of Australasia 2023 Annual Scientific Meeting
7. A case series audit in adrenal cancer diagnosis and therapy.

Charles Perkins Centre Royal Prince Alfred Clinic (Prof Luigi Fontana)
Professor Luigi Fontana's research interests lie in preventive medicine and in the mechanisms mediating healthy longevity in humans. They focus primarily on the role of nutrition and physical exercise in retarding the aging process and in preventing the accumulation of metabolic and molecular damage leading to multiple age-associated chronic disease.

In particular, he is applying whole-body physiological and tissue-specific molecular approaches to investigate the effects of several clinical interventions, including calorie restriction, intermittent fasting, protein or amino acid restriction, phytochemical-rich plant-based diets, physical exercise, and CR mimetics, on outcomes such as cardiovascular function, glucose metabolism, inflammation, neuroendocrine and immune function, gut microbiome health and cancer biology. He is also interested in the endocrine role of abdominal fat storage and associated metabolic alterations as mediators of insulin resistance and accelerated aging.

The Greg Brown Diabetes & Endocrinology Research Laboratory: focuses on research into diabetes and its complications. These studies utilise strong links across clinical and academic spheres to integrate "bench-to-bedside" translational research. During 2023, our researchers continued their intervention studies on diabetes and fatty liver disease (NASH fibrosis) using an extended new mouse NASH fibrosis model to investigate pathological changes through either introducing gene knockout or undertaking exercise.

In addition, the research studies of exercises and fatty liver disease have been conducted in humans with international collaboration in prediabetes and diabetes (termed PACE-G).

Delayed ulcer healing has been studied in both humans and a diabetes preclinical models to investigate the underlying mechanisms. Study of how chronic inflammation, especially white blood cells, impact on diabetes complications has been deeply explored using cutting-edge techniques.

These studies are progressing into an exciting phase where the team can determine if it is possible to optimally prevent or even reverse complications in diabetes, using molecular transgenic technology to remove specific genes, as well as lifestyle approaches such as intensive exercise.

Several interventions have also proven to be successful and can now be undertaken in human studies, including in fatty liver complications. Additionally, blood and ulcer fluid markers are continuing to look promising for predicting foot ulcer healing outcomes in people. This is critical to expediating intensive interventions in assisting with timely mending.

The Greg Brown Diabetes & Endocrinology Research Laboratory is continuing to mentor the next generation of students and postdoctoral fellows.

RESEARCH OUTPUT

41 Publications
12 PhD students
1 Masters

AWARDS

- "Nurses in Action" Award at the 2023 ENSA / ESA combined meeting, Mrs Roghaya Fatouros, for the presentation of the Resting Prolactin Study, titled "The Rise & Fall of Serum Prolactin - To Rest or Not To Rest?".
- Mrs Sarah Manewell. Wounds Australia's 2023 literary award for best original research
- article - Length of stay and readmissions for people with diabetes-related foot ulceration
- admitted to two public tertiary referral hospitals in Australia. Wound Practice and Research
- Prof. S. Twigg Diabetes Feet Australia Inaugural "Outstanding Achievement in Diabetes Foot Health and Disease Award" for national service and academic achievement (2023).
- Prof. S. Twigg International Society for Diabetes Foot Disease 2023 (The Hague) Best Poster prize for presentation "Adverse and Protective Predictive Markers in An Audit of Foot Ulcer Healing Outcomes in People with Diabetes: Associations with Glucose-Lowering Agents."
- 2023-4 Prof. Stephen Twigg (Co-Chair with Prof. Louise Baur) Awarded Diabetes and Obesity Clinical Academic Group (DO-CAG) Sydney Health Partners extension;
- Dr Matilda Longfield was selected in Finalist of President's Poster Young Investigator Award in the Australasian Diabetes Congress 2023 (national).
- Luigi Fontana 2022 SUPRA Supervisor of the Year 2022 for Outstanding Knowledge, Commitment and Care, The University of Sydney

WEBSITE

https://www.slhd.nsw.gov.au/rpa/endocrinology/diabetes-services.html

'In 2023 we have succeeded in delivering high quality in research whilst mentoring the next generation of higher degree researchers and our clinical research staff, realising a quantum of 41 publications and ongoing research funding. High profile research presentation occurred across the year by numerous staff. We look forward to 2024 when we plan to enhance our clinical trials leadership and activity across the Department and in further networking extensively with many research bodies including the University of Sydney Faculties and Schools, Departments in RPA and SLHD, Sydney Health Partners Obesity and Diabetes CAG, and national and international endocrine scientific organisations.'

Professor Stephen Twigg
Head of Department
Head of Central Clinical School, USYD

GERIATRIC MEDICINE

CONSULTANT PROFILE

RPA Department	Consultants	#
GERIATRICS	George Szonyi	17
	Jennifer Benbow	
	Heike Burnet	
	Leemin Chan	
	Cristina Cristoloveanu	
	Liesl Ischia	
	Mark Latt (Clinical Associate Professor) (IAM Research Lead)	
	Scott Murray (Acting Head of Department)	
	Natasha Sequeira	
	Rihan Shahab (Clinical Senior Lecturer) (IAM Research Lead)	
	Daniel Simpkins	
	Melanie Wroth (Clinical Senior Lecturer)	
	Eve McClure	
	Aarti Samtani	
	Andreas Suryawan	
	Rosemary Sheehy	
	Samantha Thirunavukarasu	

RESEARCH FOCUS

The RPA Department of Geriatric Medicine has continued to support advance trainees in conducting research across a variety of topics including perioperative medicine, trauma geriatrics, antipsychotic use, and staff perceptions in delivering end of life care. Involvement in the ENRICH project and supporting research from Surgical Outcomes Research Centre (SOuRCe) in frailty in older cancer patients undergoing surgery.

HIGHLIGHTS

Dr Liesl Ischia, Top 10 most cited papers from Australasian Journal of Ageing
Ischia L, Naganathan V, Waite LM, Le Couteur DG, Thillainadesan J. COVID-19 and geriatric medicine in Australia and New Zealand. Australas J Ageing. 2022; 41: 301–308. doi:10.1111/ajag.13027

RESEARCH OUTPUT

1 Publication

WEBSITE

https://www.slhd.nsw.gov.au/research/department_details.html?research=geriatric

RPA Institute for Academic Medicine

INFECTIOUS DISEASES AND MICROBIOLOGY

CONSULTANT PROFILE

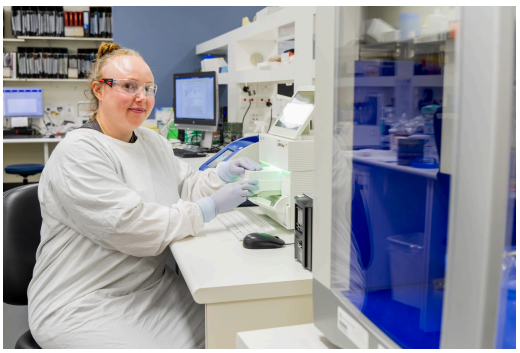
RPA DEPARTMENT	CONSULTANTS	#
INFECTIOUS DISEASES	Rebecca Davis (Head of Department) (Clinical Senior Lecturer)	11
	Nila Dharan (IAM Research Lead)	
	Amrita Ronnachit (Clinical Senior Lecturer)	
	Simeon Crawford (Clinical Lecturer)	
	Susan Harch (Clinical Lecturer)	
	Tina Marinelli (Clinical Senior Lecturer)	
	Feras Mirdad	
	Andie Lee (Clinical Senior Lecturer)	
	Blake Nield	
	Jeffrey Masters	
	Sebastiaan Van Hal (Associate Clinical Professor)	

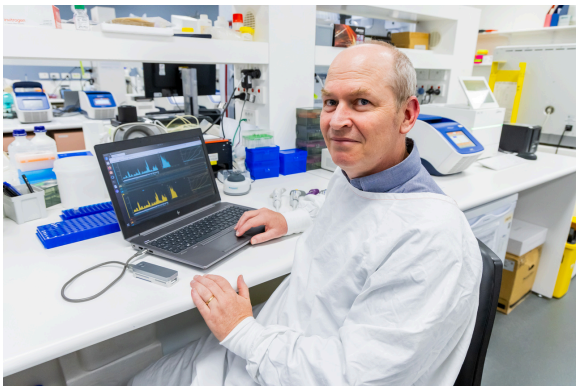
RESEARCH SUMMARY

RPA Infectious Diseases and Microbiology conducts research into various aspects of clinical infectious diseases and microbiology with a focus on: multidrug-resistant bacteria and healthcare-associated infections they cause; pathogen genomics; infections in immunocompromised individuals; invasive bacterial infections, such as infections in the blood stream, deep tissues, and bones or joints; and respiratory infections in hospitalised patients including COVID-19.

RESEARCH FOCUS

- Multidrug-resistant bacteria and the healthcare-associated infections they cause
- Pathogen genomics and state-of-the-art molecular epidemiological methods
- The development of highly specialised and locally optimised in-house bioinformatics pipelines and automated reporting systems
- Invasive bacterial infections





RPA Institute for Academic Medicine

RESEARCH ACTIVITY 2023

16 Publications
1 MD project under supervision
1 Pharmacy honours student

PRESENTATIONS

- Dr Tina Marinelli. Transplant Surgery and Infection Risk. Foundation Course in Infections in Immunocompromised Hosts. Melbourne. March 2023
- Dr Tina Marinelli. The Donor Call. Foundation Course in Infections in Immunocompromised Hosts. Melbourne. March 2023
- Dr Tina Marinelli. BK Virus in Renal Transplant. The Transplant Society – Immunocompromised Host Special Interest Group Symposium. Adelaide. April 2023
- Dr Tina Marinelli. COVID-19 in Solid Organ Transplantation. Donor and Recipient Issues. Organ and Tissue Donation Authority. Brisbane. May 2023
- Dr Tina Marinelli. COVID-19 and Increased Virologic Risk Donors. Transplant Society of Australia and New Zealand Post-Graduate Course. Brisbane. June 2023
- Dr Tina Marinelli. Antifungals Use in the Immunocompromised Host. Antifungal Forum. Sydney. July 2023
- Dr Tina Marinelli. Donor derived HHV-8 in liver transplant recipients. Toronto Transplant Infectious Diseases Symposium. August 2023

WEBSITE

https://www.slhd.nsw.gov.au/rpa/InfDiseases/default.html

'In 2023 our research program continued to build on our research strengths as outlined above, including publications, presenting at conferences and supervision of junior doctors. These activities have built the foundation for the development of collaborations and projects in 2024 as well as hiring our first dedicated Study Coordinator.'

Dr Nila Dharan, IAM Research Lead and Dr Rebecca Davis, Head of Department

NSW GOVERNMENT Sydney Local Health District

MEDICAL GENOMICS

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANTS	#
MEDICAL GENOMICS	Ronald Trent (Head of Department)	4
	Associate Professor Bing Yu (Academic and Honorary Principal Hospital Scientist)	
	Dr Anthony Cheong	
	Dr Lan Nguyen	

RESEARCH FOCUS

Basic research: examined the genotype/phenotype correlations in Huntington disease, as the underlying pathogenic triplet repeat expansion alone does not always correlate with disease severity (Collaborator C Loy).

Clinical research: introducing pharmacogenomics as a model of care involved addressing the challenges of how it can improve treatments while also reducing adverse events. The potential for gene markers in the treatment of alcoholism have also been explored (Collaborators T Lambert and P Haber).

Implementation research: worked with primary care to roll out preventive strategies for families with familial hypercholesterolaemia (Collaborator D Sullivan).

Research and Development: introduction of long read sequencing into clinical care (Collaborator I Deveson). Advancements in diagnostic and surveillance options for precision oncology are being made through the exploration of ctDNA (tumor DNA in blood), in collaboration with oncologists at Chris O'Brien Lifehouse. Associate Professor Bing Yu is continuing his research into how somatic mutations affect precision oncology, specifically targeting solid tumors.

RESEARCH SUMMARY

Members of the Department of Medical Genomics are strongly encouraged to be involved in research activities to complement their clinical, laboratory and other responsibilities at RPA Hospital. Members of the department affiliated with the University of Sydney are involved in research including the supervision of postgraduate students at various levels (Honours students, MD, MPhil and PhD degrees).

RESEARCH ACTIVITY

2 PUBLICATIONS
2 GRANTS
1 PHD STUDENT

SLHD Medical Genomics Lab

WEBSITE

Medical Genomics is a member of the Institute of Precision Medicine & Bioinformatics. To learn more about the Institute's research activities, visit:
https://slhd.health.nsw.gov.au/ipmb-research.

'During 2023, the pharmacogenomics initiative progressed, and a clinical model of care was developed with input from multiple disciplines, including pharmacy. The important CYP2D6 gene that impacts the metabolism of multiple drugs is a difficult gene to fully characterise as it has complex copy number variants and rearrangements.

Therefore, the focus on long read sequencing using Oxford Nanopore in collaboration with the Garvan Institute was initiated. Long read sequencing is also being investigated via Neurogenetics at Concord Hospital to assist with the investigation of nucleotide repeat disorders. Work in primary care continues with the implementation of familial hypercholesterolaemia (FH) testing by GPs, following the identification of family specific DNA changes that cause FH.'

Professor Ron Trent
Head of Department
Member of the IAM Advisory Council

NEUROLOGY

RESEARCH SUMMARY 2023

Associate Professor Rebekah Ahmed

- Principal Investigator for 3 Clinical Trials in Alzheimer's Disease and FTD
- Collaboration with FTD Prevention initiative
- Collaboration with University College London
- Member ANZAN SPC
- Expanded team Full-time Clinical Trial Nurse

HIGHLIGHTS

Professor Craig Anderson

- Publication "Yang P, et al. Intensive blood pressure control after endovascular thrombectomy for acute ischaemic stroke (ENCHANTED2/MT): a multicentre, open-label, blinded-endpoint, randomised controlled trial. Lancet. 2022 Nov 5;400(10363):1585-1596. doi: 10.1016/S0140-6736(22)01882-7. Epub 2022 Oct 28. Erratum in: Lancet. 2022 Dec 3;400(10367):1926. PMID: 36341753."
- Received an award from the Chinese Academy of Medical Sciences as the most significant scientific progress of 2022 and the top 3 medical achievements of the 21st century.

Professor Michael Barnett

- **Neuroimaging AI:** Completed the largest clinical validation of a fully automated solution for monitoring MRI disease activity in multiple sclerosis, using tools (now approved as a medical device by the FDA) developed by our research group. The work was published in Nature Portfolios's npj Digital Medicine.
- **MSBASE**
- **TRANSCEND**: Completed the MRFF-funded TRANSCEND Project, yielding privacy preserving infrastructure for multicentre AI training among healthcare provider networks. Created FLERA (Federated Learning Ecosystem For Research in Australia) as a primary outcome from the research.
- **Convened MS/Neuroimmunology Masterclass**/ANZAN Neuroimaging and Neuropathology Workshop
- **MS Clinical Trials**: The group continues to participate across a broad range of investigator- and pharma-sponsored clinical studies trials. A standout was completion of the Phase 2 Visionary-MS Study, for which Dr Heidi Beadnall was the Global PI. This data was presented by our team at PACTRIMS 2023 (and AAN 2024).

Dr Heidi Beadnall

- Lead site Primary Investigator for the VISIONARY-MS Clinical Trial
- Global Phase II clinical trial investigating the remyelinating properties of gold nanoparticles.
- Part of the leadership group that developed and runs the global MSBase Imaging Repository, which was deployed in 2021 to provide a curated, centralised imaging data source for MS and imaging researchers globally.
- Project Control Board member and the lead of clinical site integration [liaising with new and current contributing sites from around the world].

- Automated quantitative brain MRI metrics in clinical MS decision making:
- Chief Investigator for the project funded by a 2023 MS Australia Incubator Grant.
- TRANSCEND Clinical Validation Study:
- Leading the clinical validation study component of the TRANSCEND AI project, investigating the role of AI modelling in real-world clinical MS practice.
- Funded by a successful MRFF Neuroimaging-AI grant of >$4 million (CI - Michael Barnett).

Dr Chris Blair

- Four active grants
- **Collaborations**: multiple inter-institutional, interstate and international collaborations - principally through Sydney Brain Centre, Ingham Institute of Applied Medical Research.
- Fifteen active clinical trials

Professor Matthew Kiernan

Defining metabolite dysfunction in ALS: Investigations by Professor Kiernan's team have demonstrated the utility of combined transcranial magnetic stimulation (TMS) and magnetic resonance spectroscopy (1H-MRS) for monitoring and predicting clinical progression in ALS patients, specifically tracking neuronal glutamate (Glx/NAA) concentration of the cortical hand motor region.

Multi-centre validation of TMS/MRS metabolite quantification is currently underway as part of a new NHMRC Ideas Grant. A harmonized longitudinal MRI protocol has been developed in collaboration with industry partners GE Healthcare; SIEMENS and multi-centre acquisition is ongoing in Sydney/Brisbane/Melbourne.

Novel whole-slice MR spectroscopic imaging (MRSI) is under development to improve reproducibility of metabolite quantification. The sequence has been developed specifically for clinical implementation. MRSI testing has shown high reproducibility and an optimized clinically feasible acquisition time of <4min.

Asia-Pacific MND imaging initiative (AMII): Professor Kiernan's team has developed the first collaborative MRI repository for MND research across the Asia-pacific region. To date 300 scans have been ingested into the repository and analysis is underway for validation of quantitative imaging biomarkers for clinical monitoring and prospective inclusion as outcome measures for therapeutic trials in ALS.

Chemotherapy-induced neurotoxicity: Chemotherapy-induced neurotoxicity: In 2023, the In Focus Chemotherapy-induced peripheral neuropathy group published 13 peer-reviewed manuscripts. These studies included studies examining the burden of vincristine induced neuropathy in adults and children (Li et al 2023a,b) and a large scale study determining impact of neuropathy on sleep quality (Mahfouz et al 2023).

We completed a randomized controlled trial of exercise rehabilitation for cancer survivors with neuropathy. In 2023, our team presented research at a variety of forums including at international meetings including the World Congress of Neurology, Peripheral Nerve Society, and Multinational Association of Supportive Care in Cancer.

Cortical hyperexcitability associated glutamate abnormality in ALS: Cortical hyperexcitability is an early disease-specific marker of upper motor neuron dysfunction in ALS patients, which can be observed preceding clinical features. In combination with 1H MR Spectroscopy, we identified clinical phenotyping of ALS patients based on short-interval cortical inhibition (SICI) thresholds previously established by our group allows for accurate detection and longitudinal (~6month) tracking of metabolite abnormalities (Glx/NAA) as a novel objective biomarker of disease pathology.

Findings have been presented at national and international MND conferences; a manuscript is under preparation. Combined 1H-MRS and TMS holds significant potential for patient prognosis. Further longitudinal and multi-site data collection is ongoing.

MiNDAUS Partnership: MiNDAUS is a partnership of Australian MND researchers, clinicians, and organisations, which aims to develop a nationally co-ordinated and patient-centred approach to MND research, care, and policy development. This partnership was founded in 2017 and funded by a 2018 National Health and Medical Research Council (NMRC) Partnership Grant (Kiernan, Wray et al. 2018), led by Principal Investigator Professor Matthew Kiernan.

A key component of the partnership is the MiNDAUS Registry, a clinical database that collects MND patient data. Since its launch in 2022, over 500 patients have been enrolled from 14 collaborative sites across Australia.

The Registry allows patients to keep track of healthcare information related to their MND care, offers people living with MND the option of sharing data with MND researchers so they can better understand the disease and ultimately develop effective treatments and allows for easier access to clinical trials for people with MND. The Registry database should also attract more overseas clinical trials to Australia.

Clinical drug trial and development in novel therapeutics.
ALSTA Clinical Trials Network: Prof Kiernan was awarded an MRFF grant to establish a Network of research sites specialising in conducting Motor Neurone Disease clinical trials. The aim is strengthen each of the sites and develop a cohesive network to make Australia an attractive location for large pharma sponsored Motor Neurone Disease clinical trials as well as provide funding to carry out smaller investigator initiated studies. The TEALS, MAGNET and AMBALS studies will capitalise on this network.

MAGNET: Prof Kiernan was awarded a clinical trial grant from FightMND to establish a platform study in Australia investigating new treatments for MND. The Multi-arm, Adaptive, Group sequential trial NETwork to evaluate drug efficacy in patients with MND is known as MAGNET. The platform study design is unique as it allows for multiple drugs to be investigated using the same overarching protocol. Furthermore, the MAGNET clinical trial will launch precision medicine in MND, by establishing whether an individual's unique genetic signature can be used to determine if they are more likely to benefit from the investigative drug's neuroprotective effects.

The first arm or subprotocol within the MAGNET study will investigate a well-known mood disorder treatment that. Previous research in patients with ALS has shown this drug is not effective in all patients with ALS, but it may have a beneficial effect in patients with a variation in the UNC13A gene (1 in 6 patients has this variation). The study will run for 24 months with 3 monthly assessments of clinical progression.

AMBALS: This is a double-blind, randomised, placebo-controlled Phase 2 clinical trial of a selective GBA2 inhibitor in ALS patients using clinical and novel electrophysiologic markers of disease progression. The selective GBA2 inhibitor has been found to correct glycosphingolipid (GSL) dysregulation, normalise lipid metabolism and improve symptoms and motor neuron pathology in ALS mouse models.

The study will be a dose escalating study carried out over a 24-week treatment period with clinical assessments carried out every 8 weeks. The clinical assessments include measures to assess patient functionality and quality of life as well as tests of muscle strength and electrophysiological markers of nerve function.

COURAGE ALS: COURAGE-ALS is an international, multi-site Phase 3, double-blind, randomized, placebo-controlled trial of Reldesemtiv.

Reldesemtiv is an investigational drug candidate intended to slow the rate of calcium release from the regulatory troponin complex of fast skeletal muscle fibres. By slowing the rate of calcium release, Reldesemtiv sensitizes the sarcomere to calcium, leading to an increase in muscle contractility.

The primary efficacy endpoint will be a slowing of disease progression based on the change from baseline to 24 weeks in ALSFRS-R. The phase 2 trial of this drug, which (FORTITUDE-ALS) demonstrated some encouraging the results validating the potential of skeletal muscle activation in treating patients battling ALS and subsequently leading to the phase 3 trial.

LIGHTHOUSE II: The Lighthouse II Project will investigate whether targeting HERVs with anti-retroviral therapy might slow disease progression in patients with MND/ALS. Phase 2 of the Lighthouse Trial showed that Triumeq, an anti-retroviral drug, could suppress this genetic reactivation and may slow disease progression in patients with ALS. Lighthouse II,is a multi-site, phase 3 randomised, double-blind, placebo-controlled study. The aim of this study is to determine if Triumeq improves survival in people with ALS/MND compared with placebo.

SEELOS: SLS-005 is an open-label basket study of an investigational therapy, trehalose, a low molecular weight disaccharide which can cross the blood-brain barrier. It is believed to stabilise proteins and trigger autophagy by activating Transcription Factor EB (TFEB), a crucial factor in lysosomal and autophagy gene expression. The open-label basket study will analyse SLS-005's impact on disease progression and severity. It will also assess the safety and tolerability of the therapy in participants with ALS, spinocerebellar ataxia and Huntington's disease.

RESCUE-ALS: This is a multi-centre randomised, double-blind, parallel group, placebo-controlled Phase 2 study of the efficacy, safety, pharmacokinetics, and pharmacodynamics of CNM-Au8.

CNM-Au8 is an oral, gold nanocrystal liquid suspension designed to assist cells with the energy they need to function well. It works by supporting bioenergetic cellular reactions and helping to remove the toxic by-products of cellular metabolism that add to the breakdown of motor neurons in ALS.

Exploratory measures showed that CNM-Au8 significantly slowed disease progression, as assessed with the ALS Functional Rating Scale-Revised (ALSFRS-R). In addition, quality of life at week 36 was significantly better in patients taking the investigational therapy, and there was evidence of benefit in long-term survival.

Dr Elie Matar

- Awarded Sydney University Horizon Fellowship - Continuing Academic Position. Level C, RSP $500'000
- Undertook an international academic and clinical secondment at the National Hospital for Neurology and Neurosurgery, Queen Square, London UK obtaining clinical expertise and expanding academic networks including collaborative projects with senior investigators in Cambridge University United Kingdom (Collaborator: Prof John O'Brien) and University College London (Collaborator: Dr Neil Oxtoby)
- Awarded US Department of Defense Congressionally Directed Medical Research Program - Parkinson's Research Program Investigator grant - $590'000
- Key PI for the University of Sydney-University College London Ignition Grane Scheme, with international collaborator and Senior Research Fellow Dr Neil Oxtoby (Computational Medical Imaging Centre, UCL)
- Convened and hosted the biannual NextGen DLB Conference
- Selected to be a core member of the Lewy body dementia clinical rating scale international working group

Associate Professor Miriam Welgampola

Research undertaken under 4 topics:

- **Vertigo diagnosis in Emergency Room:** 539 patients with acute vertigo underwent vestibular event monitoring and VOR testing. Stroke was separated from innocuous vestibular neuritis with 90% sensitivity and specificity.
- **Machine Learning Applications in vertigo diagnosis**: Data from 376 Acute Vestibular Syndromes, 274 patients with episodic spontaneous vertigo and 1000 with positional vertigo were compared using machine learning models. This work indicates that ML approaches the accuracy of blinded experts and will result in the development of a virtual vestibular expert.
- **Vestibular Rehabilitation using Virtual Reality:** in collaboration with Professor Juno Kim, we have built and offered VR based balance rehabilitation to 27 patients with unilateral or bilateral vestibular loss
- **Vestibular effects of Cochlear Implantation:** vestibular function was interrogated in 70 post CI patients and vestibular event monitoring undertaken in 23.patients, indicating delayed endolymphatic hydrops to be the major cause of post CI vertigo.

Associate Professor John Worthington's group has worked successfully with others to establish a now international database in paediatric stroke, with particular focus on reporting hyperacute treatment and outcomes. This has been in conjunction with local childrens' hospitals, Westmead Children's and Sydney Children's, and internationally the Hospital for Sick Children, Toronto.

The work has already resulted in one lead publication on paediatric thrombectomy published in 2023 and cited in Medscape, another accepted in 2023 and published this year and a further paper recently accepted in Stroke: Vascular and Interventional Neurology.

RESEARCH FOCUS

Associate Professor Rebekah Ahmed is an Associate Professor, at the Brain and Mind Centre, University of Sydney, and a Consultant Neurologist and Director of the Memory and Cognition Clinic at Royal Prince Alfred Hospital and Neurologist at FOREFRONT, a clinical research group dedicated to Frontotemporal dementia and motor neurone disease at the University of Sydney. Her research focuses on metabolic and physiological changes in neurodegeneration, particularly Frontotemporal dementia and Motor Neurone Disease. She is an internationally recognised leader in the neurobiology of younger-onset dementia.

Professor Craig Anderson is Professor of Neurology and Epidemiology, Faculty of Medicine, UNSW Sydney, and is in part-time clinical practice as a neurologist at Royal Prince Alfred Hospital, Sydney, Australia. He has published widely on the clinical and epidemiological aspects of stroke, cardiovascular disease and aged care, and has led several large-scale investigator-initiated epidemiological and clinical trials that have had a major influence on clinical practice guidelines for stroke treatment and prevention.

Professor Michael Barnett MBBS (Hons), FRACP, FRCP, PhD is a neurologist specialising in the management of neuroimmunological disorders. He is the Director of the Multiple Sclerosis (MS) and Neuroimmunology Service RPAH, Director of the MS Clinical Trials Unit at Brain and Mind Centre, Co-director of the MS Australia Brain Bank, Lead of the Computational Neuroimaging Team BMC, and Research Director at Sydney Neuroimaging Analysis Centre (SNAC).

Professor Barnett leads a comprehensive MS and related disorders research program that spans laboratory, imaging, translational and clinical trials research. He maintains an active investigator-driven research program, based around the academic RPAH MS service (the largest multidisciplinary MS clinic in NSW); and has published high impact neuroimaging research, relating primarily to the development of advanced and AI-based imaging biomarkers in MS and other neurological disorders.

Professor Matthew C. Kiernan's research team focused on the investigation of mechanisms and the possible prevention of neurodegeneration in frontotemporal dementia (FTD) and motor neurone disease (MND). Separate studies are also underway in patients diagnosed with Kennedy's disease, chemotherapy-induced neurotoxicity, inflammatory neuropathies, stroke, Machado-Joseph disease, spinal muscular atrophy, and other inherited neuropathies.

Associate Professor Armin (Mohamed) Nikpour is the Director of the Comprehensive Epilepsy Service at Royal Prince Alfred Hospital and University of Sydney. He is also a specialist in Positron Emission Tomography. A/Professor Nikpour is recognised for his expertise in epilepsy management, particularly imaging and surgical planning. His research involves the use of mathematical and engineering techniques to detect seizures and develop new methods for recording brain waves.

His other research interests include the detection and treatment of mood disorders and memory problems that often accompany epilepsy. He has also investigated novel radioligands for the imaging of the brain. As Head of the Epilepsy Unit, A/Professor Nikpour has developed close collaborations with other specialties including physics, engineering, psychology and neuropsychology.

Professor John Worthington - The Stroke Observatory is dry lab using routinely collected data to establish datasets, monitor quality and outcomes, translating research to improve bed-side and system wide services through feedback to clinicians, the Ministry, Health Pillars and other agencies. It has pioneered epidemiological/data analysis and reporting methods in stroke research.

RESEARCH ACTIVITY

98 Publications
28 PhD Students
4 Masters Students
4 Awards

REHABILITATION MEDICINE

CONSULTANT PROFILE

RPA MEDICAL DEPARTMENT	CONSULTANT	#
REHABILITATION MEDICINE	Ali Tahayori (Head of Department) (IAM Research Lead)	6
	Indu Nair	
	Patrick Arulanandam	
	Darren Lee	
	Jaya Ganeshkumar	
	Han Gyul (Betty) Jo	

RESEARCH SUMMARY

Throughout 2023, RPA Rehabilitation Medicine had a number of research projects active. Some have been completed, results analysed, and awaits publication while some have been in preparatory phase in 2023 and currently undergoing various stages of data collection, data analysis and/or publication.

FOCUS AND HIGHLIGHTS 2023

- **PrESS** (Proactive Rehabilitation Screening Tool) - multisite trial investigating use of a screening tool for early identification of patients who may require inpatient Rehabilitation. Dr Patrick Arulanandam is the RPA site principle investigator. Dr Jane Wu, is the principle investigator at St Vincent's Hospital.
- Dr Nair and Dr Arulanandam are Co-investigators in a study conducted by the Liver Transplant unit on Sarcopenia and Frailty in Chronic Liver Disease and Liver Transplantation: assessment pre- and post- liver transplant using prehabilitation and muscle biopsies. The project received HREC approval in May 2024.
- Dr Patrick Arulanandam received the 2023 RMSANZ annual scientific meeting best poster award for Concord NCVH neuropsychology project - its Concord research so not sure if you want to include it, but it seems to fit under some sections of the individual researcher form)
- Predicting disposition from hospital following acute subarachnoid haemorrhage; is it possible to identify which patients will require inpatient rehabilitation within 10 days of presentation? The project database is being set up on REDCap. Data collection is anticipated to commence shortly. Dr Nair
- Improving the patient journey with a visual ward orientation aid. Study has been completed and results analysed. Aim to publish findings in relevant rehabilitation journal. Dr Nair

Dr Jaya Ganeshkumar: A comparative open label study comparing the efficacy of structured physiotherapy vs non structured physiotherapy in reducing post-stroke spasticity related shoulder pain in patients treated with Botulinum toxin A.
·Dr Jaya Ganeshkumar: Benefits of Early Rehabilitation In An Acute Setting- A Retrospective Analysis.

‘2023 was a challenging and yet productive year from a research point of view for our department. A few of the projects that had been put on hold during the pandemic were restarted. A few projects that were at the level of research design, received ethics approval and some started recruitment. Now, with the fear of pandemic behind us, we are looking forward to some interesting projects in 2024 and 2025.’

Dr Ali Tahayori
Head of Department

RPA Institute for Academic Medicine

RENAL MEDICINE AND NEPHROLOGY

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANTS	#
RENAL MEDICINE AND NEPHROLOGY	Steve Chadban (Head of Department) (IAM Clinical Sponsor)	9
	Kate Wyburn (IAM Clinical Sponsor)	
	David Gracey	
	Leyla Aouad	
	Paul Snelling	
	Patrick Lam	
	Erin Vaughan	
	John Saunders	
	Tracey Ying (IAM Research Lead)	

HIGHLIGHTS 2023

Two MRFF grants, SLHD Excellence in Clinical Trial Award (Ellen Yeo, CTN), SLHD Clinical Trial of the Year (BEST Fluids, Chadban et al, Lancet 2023, MRFF funded) and Runner-up ATCA Clinical Trial of the Year (BEST Fluids)

RESEARCH ACTIVITY

23 Publications
5 PhD Students

Dr Tracey Ying
IAM Research Lead

'The team in renal medicine conduct research into kidney disease mechanisms, therapeutics and epidemiology across the range of chronic kidney disease, pregnancy, advanced kidney disease, dialysis and transplantation.
Our team members typically contribute to both research and patient care, seeking to integrate research within our everyday practice. We conduct a mixture of basic science, clinical trials and outcomes-based research, spanning investigator initiated studies through to multinational collaborations. Our outputs include papers in leading general journals, including Lancet and NEJM, and all of the major kidney and transplant journals.
Our work has been recognised by funding from MRFF, NHMRC and Industry sources, and rewarded with prizes including SLHD Trial of the Year. We see research as a means of maximising the care we can provide to our patients, but also a way for our patients to contribute to improving the lives of future patients.'

Professor Steve Chadban
Head of Department
IAM Clinical Sponsor

Sydney Local Health District

RPA Institute for Academic Medicine

RESPIRATORY AND SLEEP MEDICINE

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANTS	#
RESPIRATORY AND SLEEP MEDICINE	Paul Torzillo (Head of Department) (Clinical Professor)	25
	David Barnes (Clinical Professor)	
	Stephen McNamara (Clinical Senior Lecturer)	
	Brendon Yee (Clinical Professor)	
	Keith Wong (Clinical Associate Professor)	
	Tamera Corte (Clinical Professor) (IAM Clinical Sponsor) (IAM Research Lead)	
	Edmund Lau (Clinical Associate Professor) (IAM Research Lead)	
	Lauren Troy (Clinical Associate Professor) (IAM Co-Director)	
	Greg Fox (Clinical Academic) (Professor in Respiratory Medicine)	
	Helen Jo (Clinical Senior Lecturer)	
	Sheila Sivam (Clinical Senior Lecturer)	
	Simone Visser (Clinical Senior Lecturer) (IAM Research Lead)	
	Alan Teoh	
	Helen Reddel (VMO) (Conjoint Professor)	
	Kwok Yan (VMO)	
	Veronica Yozghatlian (VMO)	
	Michael Dodd (VMO) (Clinical Associate Professor)	
	Malcolm Ogborn (VMO)	
	Emma Gray (VMO)	
	Laura Glenn (VMO) (Clinical Associate Lecturer)	
	Anna McLean (VMO) (Clinical Associate Lecturer) (IAM Research Lead)	
	Aruvi Thiruvarudchelvan (VMO)	
	Adelle Jee (VMO)	
	Yasmin Al Hindawi (VMO)	
	Ben Nguyen (VMO) (Clinical Associate Lecturer)	

Professor Tamera Corte
IAM Clinical Sponsor
IAM Research LEad

Sydney Local Health District

RESEARCH SUMMARY 2023

Members of the RPA Respiratory and Sleep Medicine department are involved in the full spectrum of research from discovery science to translation and implementation. Research is an integral component of clinical care and patients are referred from around the state to access clinical trial participation through quaternary-level specialist clinics. The multidisciplinary research team include medical, nursing, allied health, and respiratory scientist staff.

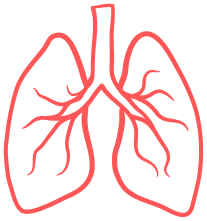
RESEARCH FOCUS

The department's clinical research program spans many disease areas: interstitial lung disease, pulmonary hypertension, cystic fibrosis, tuberculosis, interventional pulmonology, sleep medicine, respiratory failure, respiratory infections, lung cancer, bronchiectasis, and asthma.

RESEARCH COLLABORATIONS

Members of sub-specialty teams collaborate with national and international researchers through investigator-initiated research and industry sponsored clinical trials. Many in the department have international reputations for being leaders in their respective fields, with recognition through clinical guideline participation, scientific prizes, international conference presentations and competitive grant awards.

RESEARCH ACTIVITY 2023



95 Publications
7 Book Chapters
16 PhD Students
4 Masters Students

2 Awards:

- *Tamera Corte Hope Award, Lung Foundation Australia (national) 2023*
- *Greg Fox NHMRC David Cooper Award for Clinical Trials and Cohort Studies, 2023 Higher Degree by Research students*

'The Department of Respiratory and Sleep Medicine research activity remained fairly constant compared with previous years despite the continued impact of the pandemic on clinical load. Department and individual strengths in ILD, CF, PH, Sleep Medicine, asthma and TB resulted in high-impact research output and expert-guideline authorship for many in the department. Collaborations with clinical researchers across the SLHD, University of Sydney, Woolcock Institute of Medical Research and other MRIs contributed to our successes. We maintained a strong portfolio of industry-sponsored clinical trials in ILD, CF and PH.'

Professor Paul Torzillo, Head of Department
IAM Executive Sponsor
and
A/Prof Lauren Troy, IAM Co-Director

RHEUMATOLOGY

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANTS	#
RHEUMATOLOGY	Matthew Parker (Head of Department) (Clinical Lecturer) (IAM Research Lead)	9
	Bethan Richards (Clinical Senior Lecturer)	
	Peter Youssef (Clinical Professor) (IAM Research Lead)	
	Neil McGill (Clinical Associate Professor)	
	Jan Vaile (Clinical Associate Professor)	
	Christopher Needs (Clinical Senior Lecturer)	
	Michael Spies (Clinical Senior Lecturer)	
	Shikta Day (Clinical Lecturer)	
	Angela Fu	

RESEARCH SUMMARY

Throughout 2023, the Department of Rheumatology was involved in multiple clinical trials, non-clinical research studies and registries in the areas of inflammatory arthropathies, idiopathic inflammatory myopathies, connective tissue diseases, osteoarthritis, back pain, affordable healthcare, staff wellbeing and medical education.

RESEARCH FOCUS

Connective tissue diseases, systemic sclerosis, myositis, systemic lupus erythematosus, interstitial lung disease, inflammatory arthritis, back pain

RESEARCH COLLABORATIONS

Institute for Musculoskeletal Health

RESEARCH ACTIVITY

17 Publications
4 PhD Students

AWARDS

- Dr Bethan Richards – Makers and Shapers Award, University of Sydney (National)
- Dr Matthew Parker - New Investigator Award, Australian Rheumatology Association 2023 (National)
- Dr Matthew Parker - Brian Eaton Memorial PhD Scholarship, Lung Foundation Australia and Thoracic Society of Australia and New Zealand 2020-2023 (National)
- Prof Mandana Nikpour –Australian Academy of Health and Medical Sciences Fellowship (National)
- Dr Bethan Richards – Excellence in Teaching Awards, Royal Prince Alfred Hospital
- Dr Bethan Richards – Staff Member of the Year Finalist, Sydney Local Health District

PRESENTATIONS

- Dr Matthew Parker, Prof Mandana Nikpour - New Horizons in CTD-ILD, ARA ASM (National)
- Dr Matthew Parker, Prof Mandana Nikpour, Prof Peter Youssef - The performance of serum biomarkers in predicting mortality and disease progression in systemic sclerosis-associated interstitial lung disease, ARA ASM (National)
- Dr Darren Kong – The association of bushfire-associated air pollution and the incidence of giant cell arteritis in the Australian Capital Territory and surrounding regional New South Wales, ARA ASM (National)

'2023 marked the beginning of a planned major increase in research activity for the Department of Rheumatology. The appointment of an internationally renowned Clinical Academic (Prof Nikpour) and the creation of a clinical trials team (led by Prof Youssef) has helped in creating the infrastructure to foster research opportunities and attract commercial clinical trials. Our goal is to establish our Department as a leading academic centre for rheumatology research in Australia.'

Dr Matt Parker
Head of Department
IAM Research Lead

RPA Institute for Academic Medicine

SUPPORTIVE CARE AND PALLIATIVE MEDICINE

CONSULTANT PROFILE

RPA DEPARTMENT	CONSULTANT	#
SUPPORTIVE CARE AND PALLIATIVE MEDICINE	Anthoulla Mohamudally (Head of Department)	8
	Lynn Lim	
	Riona Pais (IAM Research Lead)	
	Corey Lau	
	Maria Cigolini	
	Alix Dumitrescu	
	In Sun Moon	
	Maryse Sophie Irvine	

RESEARCH SUMMARY

Throughout 2023, the RPA Department of Supportive Care and Palliative Medicine developed an evolving research agenda to contribute to best practice service delivery and patient care at a local, national and international level.

The Department expanded project interests to address acute hospital service agendas in Palliative Care, as well as exploring novel therapies, symptom management and participation in national (PaCCs, ImPaCCT, Sydney Catalyst) collaborations and international cooperative projects.

The department also supported and supervises research projects for advanced trainees completing Fellowship in Palliative Medicine.

RESEARCH FOCUS AND 2023 HIGHLIGHTS

2023 highlights included the development of Haematology Supportive Care plans, Prognostic Awareness and Supportive Care need in Allogeneic Haemopoietic Stem Cell Transplant and CAR-T Cell Therapy, improving patient experience and developing models in chronic disease(liver, renal and cardiac), demonstrating the usefulness of meditation in improving psychosocial distress, use of novel therapies for uraemic pruritus, reviewing standard practice in small bowel obstruction, and evaluating patient and carer experience in Oral Care and Chinese Australian population.

RESEARCH ACTIVITY

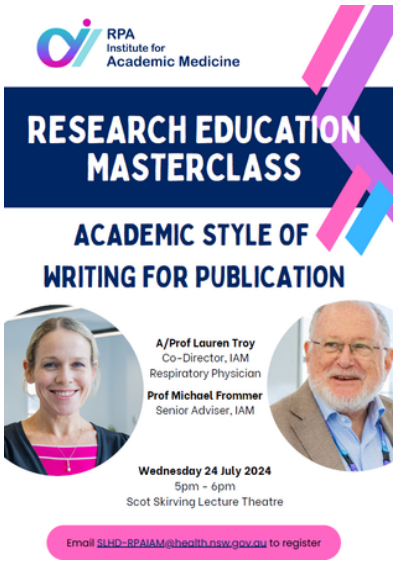
3 Publications

WHATS NEXT?

IAM RESEARCH EDUCATION MASTERCLASSES

In 2024, the RPA Division of Medicine will continue with the AT Research Education program provided through the Institute for Academic Medicine. This program will be rebranded as Research Education Masterclasses and open up to include Basic Physician Trainees, early to mid-career researchers, nursing, allied health, medical students and Junior Medical Officers at RPA.

The frequency of the program will extend to fortnightly, rather than the monthly sessions held in 2023. The RPA Institute for Academic Medicine conducted evaluation surveys for the 2023 program and have accordingly added additional topics of interest for 2024. The 2024 program is demonstrated below (Parts A and B).



IAM STRATEGIC PLAN 2024-29

The inaugural IAM Strategic Plan will be finalised in 2024. It will span 2024-29 and seek to build on and expand the foundations of research excellence at RPA. IAM research leads, clinical sponsors, the SLHD Planning Unit, RPA and SLHD executive, medical heads of department, research, ethics and governance units will be invited to attend a strategic planning session to inform our strategy framework for the future.

The Strategic Plan will outline IAM objectives for delivering comprehensive research support across its four portfolios. As a team, the IAM is excited to see what can be accomplished in the next five years.

EXPANDING THE IAM TEAM

Finally, in 2024 the IAM will progress with its proposal for an administration coordinator to work jointly in support of the Institute and the RPA Division of Medicine. This role will increase the IAM staffing base and create additional capacity to host research events, education workshops and promote the institute's online presence via social media and its website.