



2022 ANNUAL REPORT

CENTRE FOR PRECISION HEALTH

Our research is improving patient outcomes through the ethical application of biological data to inform and enhance personalised healthcare.

Centre for
Precision Health
STRATEGIC RESEARCH CENTRE



CONTENTS

About the Centre for Precision Health	3
Message from the Director	4
2022 at a Glance	6
American Society for Human Genetics Annual Meeting	7
Centre for Precision Health showcased at the American Society for Human Genetics Annual Meeting	7
Featured Research Projects	8
Trailblazing a new field of research	8
Predicting therapy toxicity in lung cancer patients	10
Alzheimer's breakthrough: genetic link to gut disorders confirmed	12
Supporting Research	14
CPH has invested in key strategic areas towards growing research quality and capacity	14
Attracting Research Support	16
Communicating our Research Findings	18
2022 Publications	18
Communicating our Research Findings beyond publications	26
Engaging the Community	27
Contributing to Research Culture	28
Centre for Precision Health Seminar Series – 7 seminars held	28
CPH Professional Development workshops	29
End of Year Showcase Event	30
Governance	32
Organisational structure	32
The 2022 Scientific Management Committee	33
External Advisory Board	34

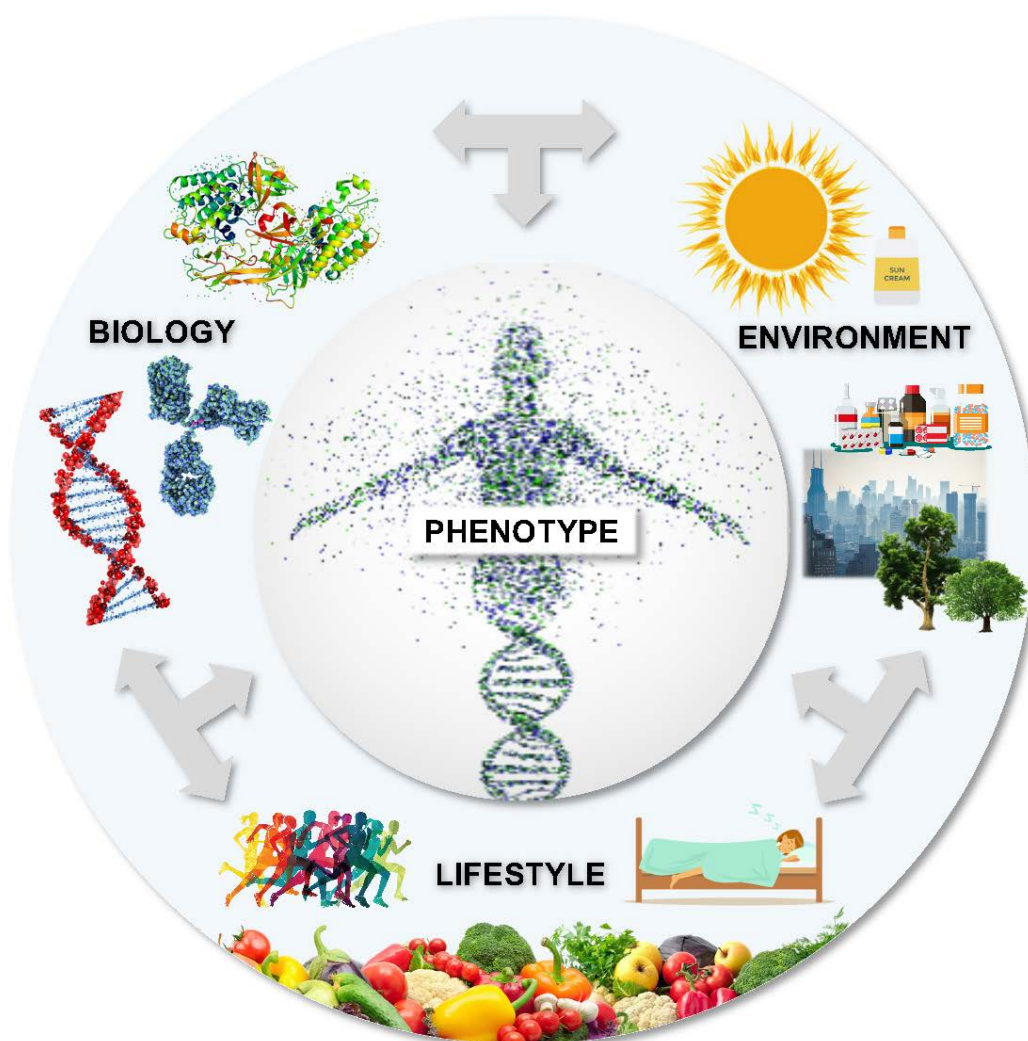
ABOUT THE CENTRE FOR PRECISION HEALTH

The Centre for Precision Health (CPH) is a Strategic Research Centre at Edith Cowan University (ECU). It consists of a multidisciplinary group of researchers focusing on key health priorities of cancer, neurological conditions, and global and suboptimal health.

Precision Health offers the promise of moving from a 'one-size-fits-all' approach to more effective, personalised solutions to improve the health and well-being of an individual. Precision Health considers an individual's unique biology, such as genetics, in combination with their lifestyle and the environment around them.

Our combined knowledge and expertise across Genomics, Glycomics and Proteomics are applied to these health conditions with the ultimate goal of improving patient outcomes and quality of life.

This is all undertaken in a supportive research environment that will facilitate the professional and scientific development of all of our members to ensure sustainable ongoing research excellence.



MESSAGE FROM THE DIRECTOR



*This year was, without doubt, a success...
I am confident things can only get better
in 2023 and that this time next year, I will
be stating all the success of 2023 and
writing about what 2024 will hold.*

The second year of the Centre for Precision Health has raised some very high bars in almost every metric. It is impossible in such a short message to cover all the highlights, so I mention a few, but every single CPH member has contributed to the success of 2022. Our Centre Higher Degree by Research (HDR) completions continue to rise, now sitting at 7 with 3 in 2022 and another 5 theses submitted for examination. Likewise, so does our research funding grow – well above all expected Key Performance Indicators (KPIs) and Returns On Investment (ROI). We have increased our research outputs from 2021 with over 90 publications in 2022, impressive being that nearly 90% are in Q1 journals and over a quarter of these are led by HDR students.

The highly impactful research at the CPH has gained significant media attention – including one being awarded a high commendation at the ECU media awards. This research by Dr Emmanuel Adewuyi was the second biggest research media “campaign” at ECU in 2022, reaching more than 920 million people and worth an estimated \$8.5 million in advertising spend to ECU. This media attention drew the attention of the American Society of Human Genetics (ASHG) and the Centre was showcased as part of their *Thought Leadership Film Series* at the ASHG Conference in Los Angeles in late October.

I am also thrilled with the launch of our new website landing page this year, and continued community engagement that our Centre engages in – particularly highlighting the work of Monique Garcia and the SPIN research team.

“The strength of the team is each individual member. The strength of each member is the team.”

– Phil Jackson

I continue to be particularly proud of the CPH initiatives that we carried through into 2022, including the HDR student grants and our ongoing professional development workshops, the latter having a strong focus on the research journey and engaging with essential service centres of ECU.

I am delighted to see the HDR student leads drive an initiative that has developed an HDR Student resource that will help students from start to finish along their research journey – so a massive thanks to these 2022 HDR leads; Shane Fernandez, Neha Pulyani and Zhiyuan Wu.

Finally, I am over the moon with the success of our new Summer Vacation Scholarships initiative. We doubled the amount we planned to give out and still could only fund just over 50% of those who applied, with 13 awarded. This allows prospective HDR students to experience research and get a jump start on their research journey working with our awesome Early-to-Mid-Career Researchers (EMCRs).

“Tell me and I forget, teach me and I may remember, involve me and I learn.”

– Benjamin Franklin

A final highlight of 2022 was the absolute success of the 2022 CPH End of Year Showcase, with a fantastic turnout of over 70 attendees who were treated to the research highlights of 2022 and presentations by HDR and EMCR members of the Centre. This year we had Associate Professor Michelle Lupton as keynote speaker flying across from the QIMR Berghofer Medical Research Institute in Brisbane to not only present but spend a day building research collaborations. We introduced EMCR and HDR poster prizes judged and awarded by DVCR Professor Caroline Finch; and a publication award presented by Emeritus Professor John Finlay-Jones.

This year was, without doubt, a success – and to inaccurately quote Professor Brian Cox (in his former non-science role), I am confident *Things can only get better* in 2023. I am confident that this time next year, I will be stating all the success of 2023 and writing about what 2024 will hold.



Professor Simon Laws

Director, Centre for Precision Health

2022 AT A GLANCE



PUBLICATIONS:
90 JOURNAL ARTICLES

26%
HDR-led

14%
EMCR-led

1
Book Chapter

85% Q1 Journals



3 HDR COMPLETIONS IN 2022



8 NEW HDR ENROLMENTS



EDITORIAL CONTRIBUTIONS

21 Editorial Roles



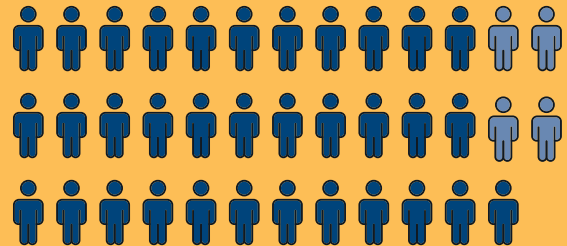
7
Seminars held

4
Professional development workshops held

38 HDR STUDENTS SUPERVISED BY CENTRE MEMBERS

34 PhD

4 Masters by Research



NEW GRANTS AWARDED

COMMITTEE MEMBERSHIP



11
International



7
National



17
State-based



5
ECU

CONFERENCE PRESENTATIONS



5
International



5
National



11
State-based



8
Conference Posters

AMERICAN SOCIETY FOR HUMAN GENETICS ANNUAL MEETING

CENTRE FOR PRECISION HEALTH SHOWCASED AT THE AMERICAN SOCIETY FOR HUMAN GENETICS ANNUAL MEETING

The Centre for Precision Health had a starring role at the American Society of Human Genetics, the world's biggest human genetics and genomics meeting, held in Los Angeles recently, attracting more than 7000 industry professionals from 84 countries.

The CPH's multidisciplinary work in improving diagnosis, treatment and prevention of cancer, neurological conditions, and suboptimal health saw it approached to take part in ASHG's *Thought Leadership Film Series*, an offer extended to only a select number of global institutions.

ASHG says the series aims to "raise the international visibility of those that are striving to revolutionize biomedical research, transform medical care, and improve the lives of people across the globe through education, innovation, research, and the formulation of healthcare policy".

It saw ASHG produce a short film profiling the ECU Centre and its ground-breaking work, which was showcased live at the event and can be viewed below.

CPH director Professor Simon Laws said the select invitation showed how the Centre's reputation was gaining global recognition, due to research such as optimizing lung cancer treatment and establishing a genetic link between gut disorders and Alzheimer's Disease.

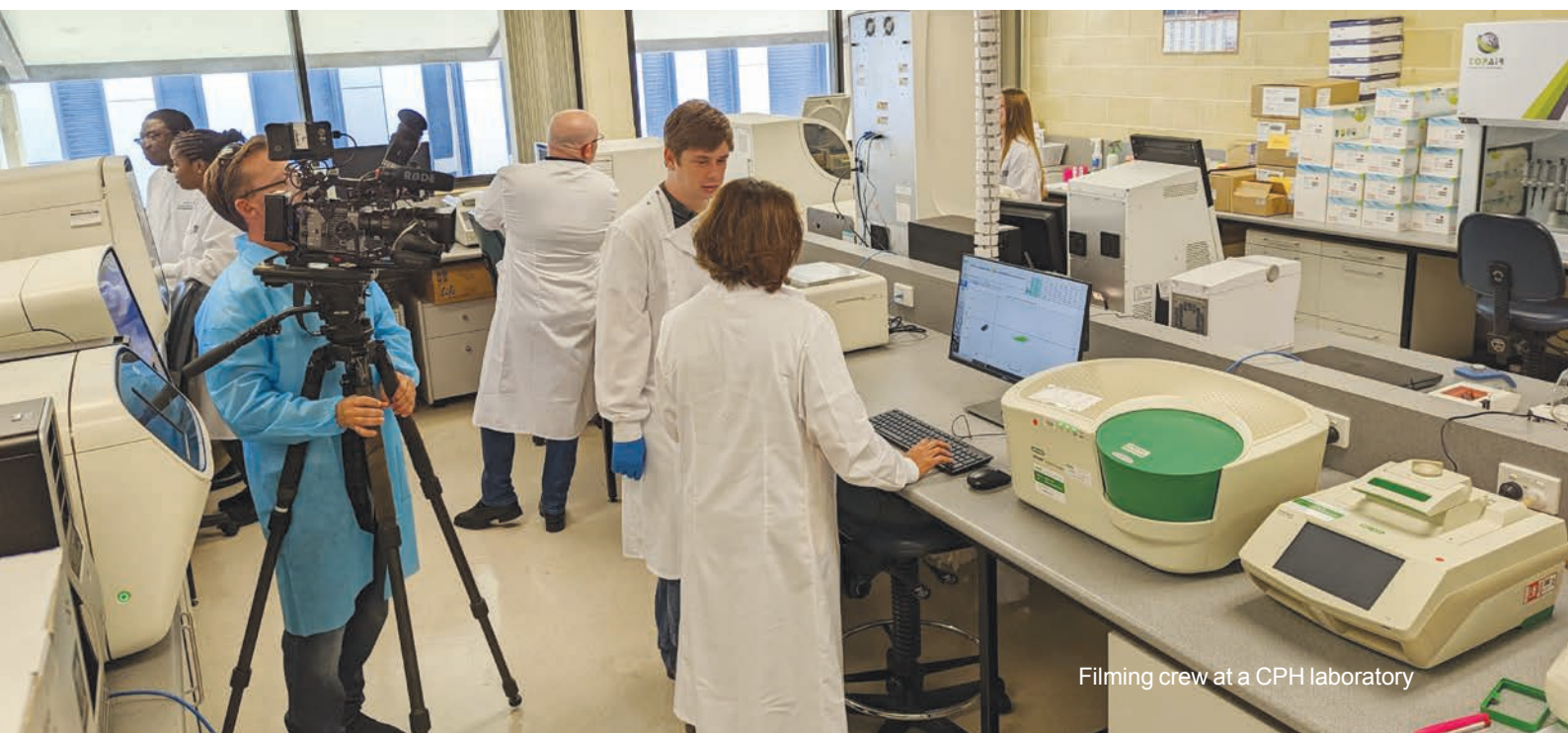
"This acknowledgment from one of the world's leading genetics societies is wonderful recognition of our work and comes off the back of the growing awareness and implementation of our research around the world this year," Professor Laws said.

"I am very proud of the excellent impactful research that the Centre has and continues to undertake."

– Professor Laws



Number of Views: >1.5K



Filming crew at a CPH laboratory

FEATURED RESEARCH PROJECTS

TRAILBLAZING A NEW FIELD OF RESEARCH

“Life requires more than nucleic acids and proteins; sweet sugar molecules could be another life code beyond the central dogma of molecular biology”

There are four equally important major building blocks of life: nucleic acids (DNA and RNA), proteins, carbohydrates (glycans), and lipids.

Nucleic acids and proteins are also known as the first and second alphabets of biology, following the principle of the “central dogma” of transcription (DNA to RNA) and translation (RNA to protein). However, glycans and lipids, are missing from biology’s central dogma.

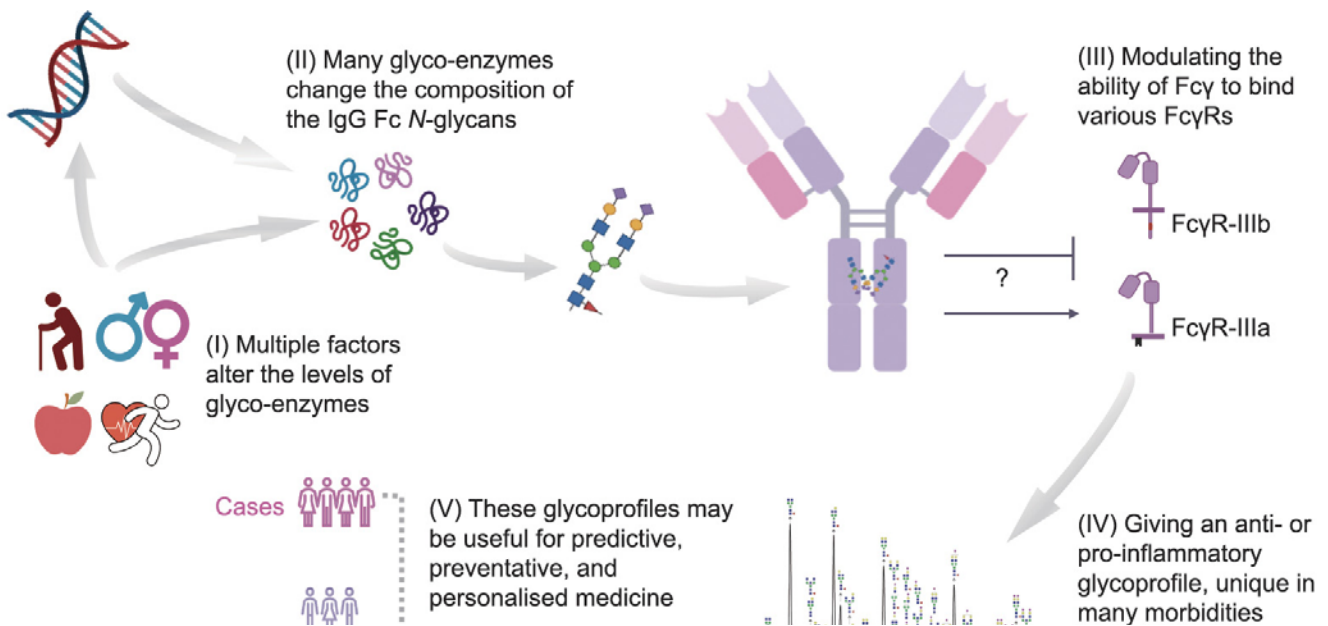
Regarding communication between glycans and lipids, there may be a yet-to-be-discovered law: Does a paracentral dogma exist?

The commentary by Professor Wang published in *Engineering*¹ focuses on glycans, the third alphabet of life, and their role in the sociomateriality of the cell, which provides a novel dimension of medical science – glycomedicine. This is an allied new discipline that employs glycomics approaches with the aim of better targeting disease diagnostics, as well as drug discovery, prescription choice, and dosing based on individual glycomics profiles to enable preventive, predictive, and precision medicine.

“Glycans are directly involved in the pathophysiology of every major disease... Unraveling of the sugar code will chart a robust future for glycomedicine and its application potential for personalised medicine.” Prof Wang said.

“Glycans are directly involved in the pathophysiology of every major disease... Unraveling of the sugar code will chart a robust future for glycomedicine and its application potential for personalised medicine.”

– Professor Wang



¹ Wang, W. Glycomedicine: The Current State of the Art. *Engineering* (2022)

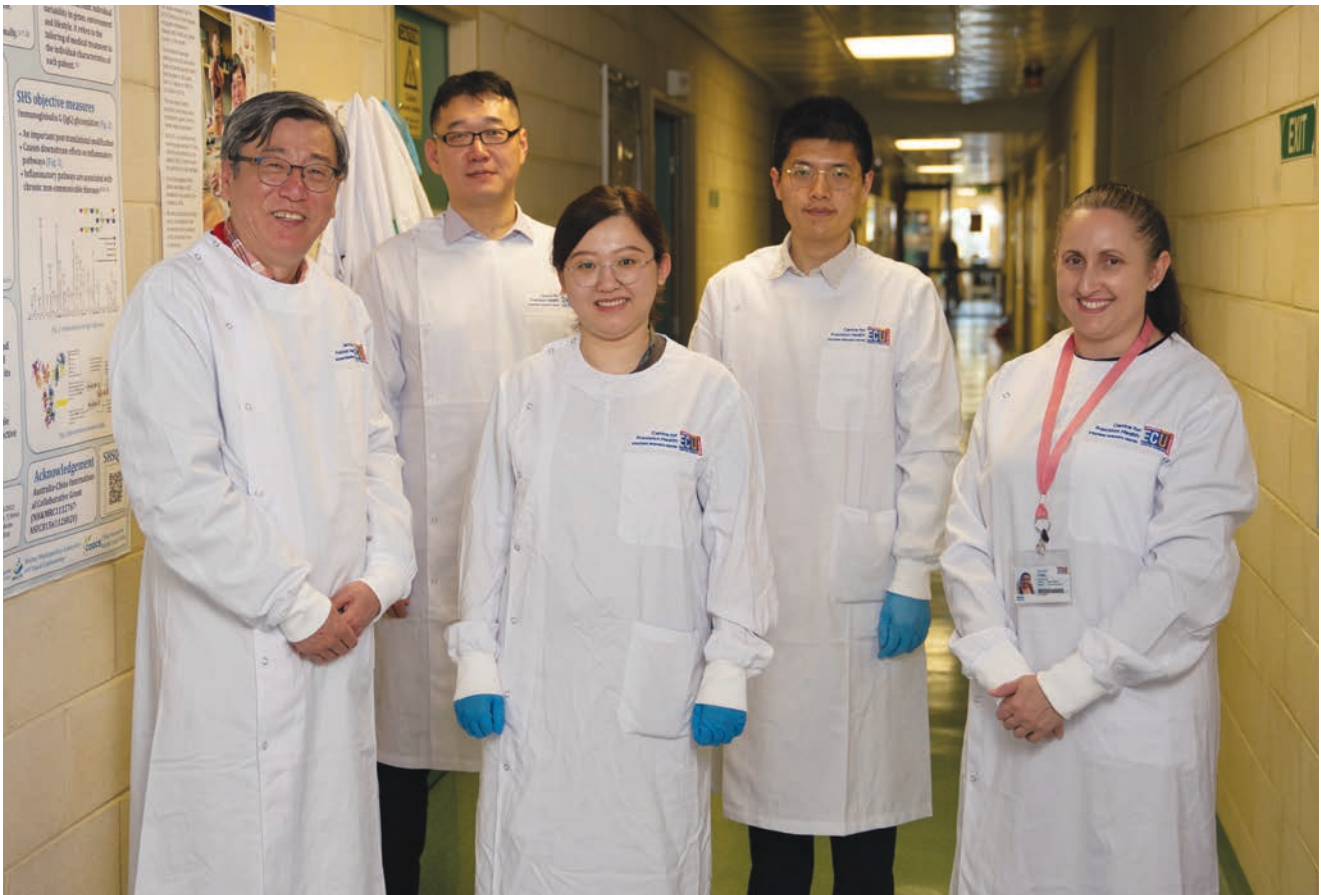
Genetics and other factors influence glycosylation, which in turn can affect whether glycoproteins will elicit an anti-inflammatory or pro-inflammatory response. It is important to underscore these processes when considering the use of glycoprotein moieties as an indication of disease presence, progress, or response to therapeutics, as well as when considering the therapy itself. In addition, glycomedicine provides a clinical-translational platform for glycomic studies.

The commentary highlights that there is a lot of work to be done in this incipient field. Most glycomics analytical tools are unable to detect glycan concentration on a microscale level. Heterogeneity and the complexity of glycan structures make glycome analysis difficult,

warranting the need for a new glycan analytical platform and automated glycobioinformatics resources. Moreover, only a few laboratories with advanced tools and expertise are able to analyse glycan structures, which poses another challenge for clinical application.

The lessons learned from the unravelling of the sugar code, and the innovative advances highlighted in the publication are instructive in charting a robust future for glycomedicine and its application potential in medicine.

“Glycomedicine” is an academic term that has been coined by Prof Wang’s team. Para-central dogma-supporting the central dogma with sugar codes – has also been proposed by the team.



Pictured: Professor Wei Wang (Left), Dr Ivan Li, Yulu Zheng, Zheng Guo and Monique Garcia

PREDICTING THERAPY TOXICITY IN LUNG CANCER PATIENTS

Lung cancer is the deadliest form of cancer, accounting for an estimated 1.8 million deaths worldwide. Treatment for the condition has improved in recent years – and a new study at the CPH has found how to make it even more effective.

Immunotherapy has emerged as a major weapon in the battle against non-small cell lung cancer, which makes up 80-85 per cent of all lung cancer diagnoses. Unfortunately, immunotherapy can also result in severe side effects for patients: at least 74 per cent of those treated will experience immune-related adverse reactions. Up to 21 per cent will develop grade three or four toxicity, which can lead to lifelong complications affecting the skin, gut, liver or endocrine system.

These adverse reactions can result in cancer treatment having to be discontinued, which risks allowing the disease to progress further. But, somewhat contradictorily, people who experience these immunotherapy side effects tend to have more positive results with their cancer progression than those who don't.

Research by PhD candidate Afaf Abed and the Cancer Stream team have made a critical breakthrough. The study was published in the *European Journal of Cancer*¹.

“Our research shows for the first time that certain genetic features predispose cancer patients to develop side effects or toxicities to anti-cancer therapy”, Dr Abed said.

Research by PhD candidate Afaf Abed and the Cancer Stream team have made a critical breakthrough.



Pictured: Dr Afaf Abed

¹ Abed, A., Law, N., Calapre, L., et al. Human leucocyte antigen genotype association with the development of immune-related adverse events in patients with non-small cell lung cancer treated with single agent immunotherapy. *European Journal of Cancer*, 172, 98-106 (2022).

“This discovery would benefit all non-small cell lung cancer patients, regardless of whether they were genetically predisposed to adverse reactions to immunotherapy or not.”

– Dr Abed

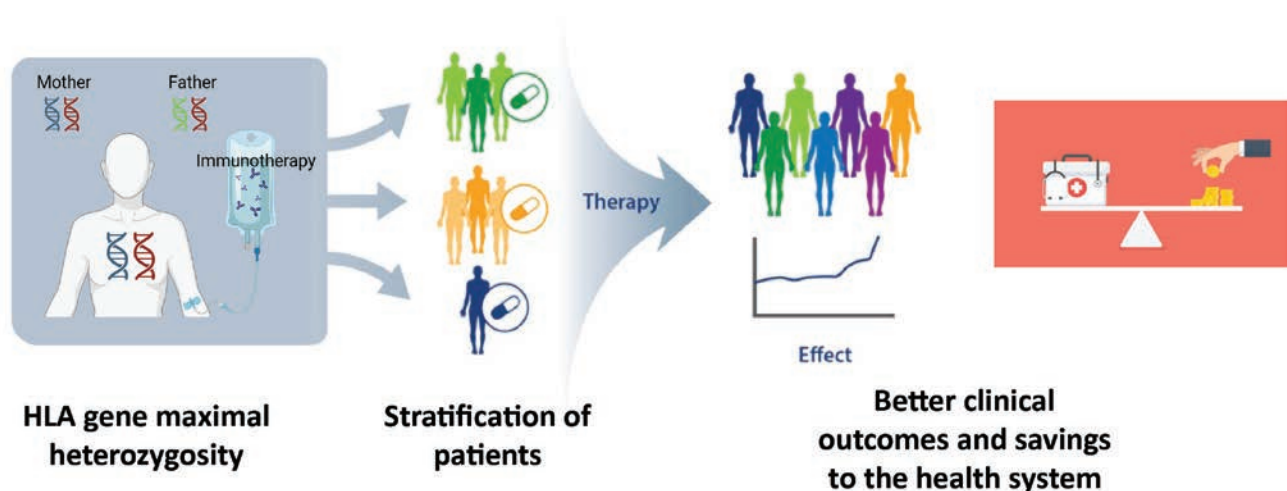
The key to the research are human leukocyte antigens, or HLAs, which are markers found in most cells in the body. The immune system uses HLAs to determine which cells do and don't belong in your body and are part of the alarm system which detects viruses, infections – and cancer.

The research team examined the HLAs of 179 non-small cell lung cancer patients and found a strong link between the genetic makeup of the HLAs and whether the person was likely to develop side effects from immunotherapy.

“This discovery would benefit all non-small cell lung cancer patients, regardless of whether they were genetically predisposed to adverse reactions to immunotherapy or not”.

“If someone is found to not be at risk of side effects, doctors can ramp up the treatment and be more aggressive in fighting the disease. If they are found to be at a higher risk, doctors can take it easier with the treatment, monitor it and intervene before patients develop grade 3 or 4 toxicity,” said Dr Abed, who is also an oncology consultant.

Either way, biomarkers that predict the risk of these immune-mediated adverse events among patients may reduce the risks associated with these treatments.



ALZHEIMER'S BREAKTHROUGH: GENETIC LINK TO GUT DISORDERS CONFIRMED

Alzheimer's Disease (AD) destroys memory and thinking ability and is the most prevalent form of dementia. It has no known curative treatments and is expected to affect more than 82 million people and cost US\$2 trillion by 2030.

People with gut disorders may be at greater risk of developing AD. A world-first study at the Centre for Precision Health (CPH) has confirmed the link between the two, which could lead to earlier detection and new potential treatments.

Previous observational studies have suggested a relationship between AD and gastrointestinal tract disorders, but what underpins these relationships had been unclear – until now.

Research at the CPH has now provided new insights into these relationships by confirming a genetic link between AD and multiple gut disorders. The study analysed large sets of genetic data from AD and several gut-disorder studies – each of about 400,000 people.

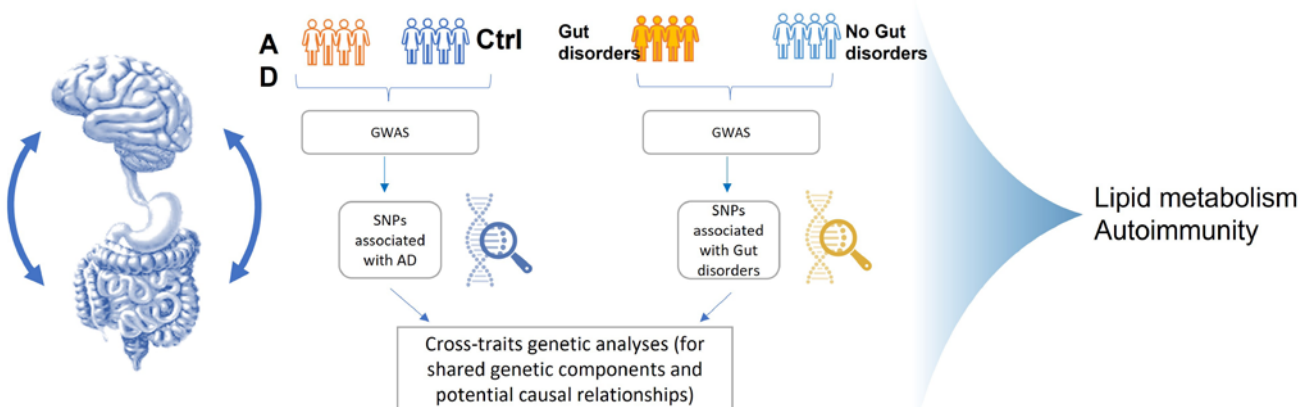
Research lead Dr Emmanuel Adewuyi said it was the first comprehensive assessment of the genetic relationship between AD and multiple gut disorders. The team discovered people with AD and gut disorders have genes in common - which is important for many reasons.

“The study provides a novel insight into the genetics behind the observed co-occurrence of AD and gut disorders,” Dr Adewuyi said.

“This improves our understanding of the causes of these conditions and identifies new targets to investigate to potentially detect the disease earlier and develop new treatments for both types of conditions.”

“The study provides a novel insight into the genetics behind the observed co-occurrence of AD and gut disorders.”

– Dr Adewuyi



Centre for Precision Health Director and study supervisor Professor Simon Laws said whilst the study didn't conclude gut disorders cause AD or vice versa, the results are immensely valuable.

Dr Adewuyi said abnormal levels of cholesterol were shown to be a risk for both AD and gut disorders. "Looking at the genetic and biological characteristics common to AD and these gut disorders suggests a strong role for lipids metabolism, the immune system, and cholesterol-lowering medications," he said.

"Whilst further study is needed into the shared mechanisms between the conditions, there is evidence high cholesterol can transfer into the central nervous system, resulting in abnormal cholesterol metabolism in the brain.

"There is also evidence suggesting abnormal blood lipids may be caused or made worse by gut bacteria (*H.pylori*), all of which support the potential roles of abnormal lipids in AD and gut disorders.

"For example, elevated cholesterol in the brain has been linked to brain degeneration and subsequent cognitive impairment."

The cholesterol link could prove vital in treating AD in the future. While there are currently no known curative treatments, the study's findings suggest cholesterol lowering medications (statins) could be therapeutically beneficial in treating both AD and gut disorders.

"Evidence indicates statins have properties which help reduce inflammation, modulate immunity and protect the gut," Dr Adewuyi said.

However, he said there was a need for more studies and patients needed to be assessed individually to judge whether they would benefit from statin use.

The research also indicated diet could play a part in treating and preventing AD and gut disorders.

'A large-scale genome-wide cross-trait analysis reveals shared genetic architecture between Alzheimer's disease and gastrointestinal tract disorders' was published in *Communications Biology*[#].



Pictured: Dr Emmanuel Adewuyi

[#] Adewuyi, E.O., O'Brien, E.K., Nyholt, D.R. et al. A large-scale genome-wide cross-trait analysis reveals shared genetic architecture between Alzheimer's disease and gastrointestinal tract disorders. *Commun Biol* 5, 691 (2022).

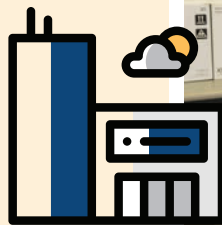
SUPPORTING RESEARCH

CPH HAS INVESTED IN KEY STRATEGIC AREAS TOWARDS GROWING RESEARCH QUALITY AND CAPACITY

RESEARCH INFRASTRUCTURE

\$260,199

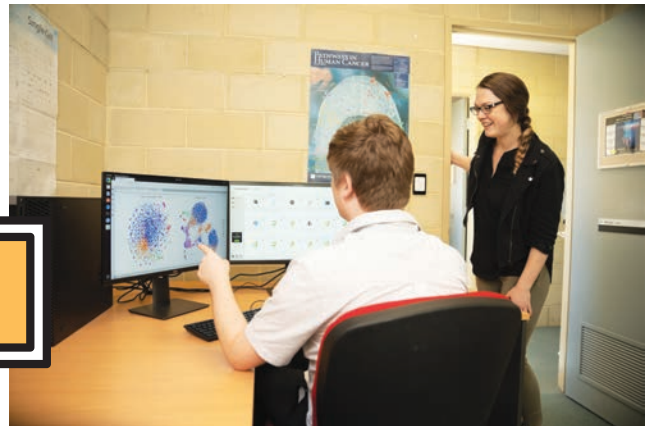
2022 (\$138,223)
2021 (\$121,976)



HIGH-PERFORMANCE COMPUTING

\$31,356

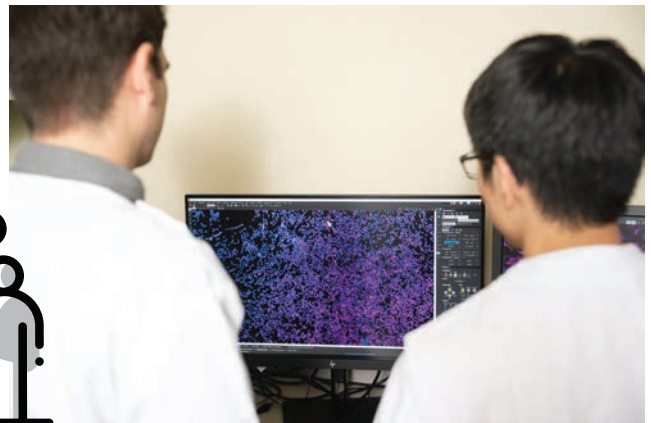
2022 (\$2,000)
2021 (\$29,356)



STAFF SUPPORT

\$388,024

2022 (\$144,984)
2021 (\$243,040)



**HDR STUDENT
PROJECT AWARDS**

\$68,638

**2022 (\$33,653)
2021 (\$34,985)**



Awardees not featured: Neha Pulyani and Yulong Lan



Manjot Singh



Monique Garcia



Sanjay Adhikari

**SUMMER VACATION
RESEARCH
SCHOLARSHIPS**

\$39,000

IN 2022



*Awardees not featured:
Artika Kirby, Del Pereira, Eleanore Daines,
Fiston Kalau, Tim Lewis-Carroll, Nicholas Stritof, Karyn West,
Phoebe Carr, Isaac Barry, and Hermes Rodriguez*



Danny Baker



Ethan Lee-Visser



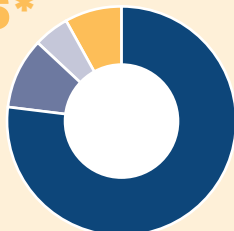
Sarah Scott

ATTRACTING RESEARCH SUPPORT

RESEARCH FUNDING IN 2022

\$1,964,236*

- Cat 3 Philanthropy **(77%)**
- Cat 3 Industry **(10%)**
- Cat 3 USA NIH/DoD **(5%)**
- Cat 1 **(8%)**



* Proportion of the total funding received by ECU

Active projects

National Health and Medical Research Council (NHMRC) Boosting Dementia Research Grant

Professor Simon Laws – *E-DADS: Early Detection of Alzheimer's disease Subtypes*

NHMRC International Joint Call

Professor Wei Wang – *N-glycan profiling as a risk stratification biomarker for type 2 diabetes (NHMRC)*

NHMRC/MRFF – Genomics Health Futures Mission

Associate Professor Elin Gray – *Integrated multimodal precision liquid biopsy to enhance Melanoma and NSCLC Treatment (IMPLEMENT)*

NHMRC Ideas Grant

Professor Simon Laws – *Imaging, fluid and genetic markers of Alzheimer's disease*

NHMRC Project Grant

Professor Simon Laws – *Genetic and lifestyle susceptibility and resilience factors affecting rates of change in preclinical Alzheimer's disease*

Department of Health WA Near Miss Merit Award

Dr Tienielle Porter – *Defining genetic, epigenetic and transcriptomic profiles of progression in preclinical Alzheimer's disease*

Department of Health WA Near Miss Merit Award

Dr Tienielle Porter – *The interaction of genetic and lifestyle factors affecting progression in neurodegenerative disorders*

Department of Health WA Future Health Research & Innovation Fund – Biobank Interim Support

Associate Professor Elin Gray – *Cancer Blood Biomarkers Study – Biobank*

ANZ Gynaecological Oncology Group

Associate Professor Elin Gray – *Circulating tumour DNA as a biomarker of treatment response for patients with advanced high grade serous ovarian cancer receiving neoadjuvant chemotherapy with and without durvalumab and tremilimumab*

Australian Alzheimer's Research Foundation – PhD Projects

Professor Simon Laws – *Investigating changes in DNA Methylation age in Alzheimer's disease*

Australian Melanoma Research Foundation

Dr Pauline Zaenker – *Early Career Researcher Grants Scheme*

Cancer Council of WA Collaborative Cancer Grant

Dr Weitao Lin – *Exploring therapeutic targets for the treatment of metastatic uveal melanoma*

Cancer Council of WA Fellowship

Associate Professor Elin Gray – *Developing blood tests to guide treatment of melanoma*

Cancer Council of WA Research Project Grant

Associate Professor Elin Gray – *Circulating melanoma cells as predictive biomarkers of response to immune checkpoint blockade*

Florey Institute of Neuroscience and Mental Health

Professor Simon Laws – *Genetic contributions to Alzheimer's disease risk and progression in the AIBL cohort*

International Association for the Study of Lung Cancer Fellowship Award

Dr Afaf Abed – *Genomic HLA and pre-treatment TCR repertoire as biomarkers of response to immunotherapy in advanced non-small cell lung cancer patients*

Multiple Sclerosis Society of WA (MSWA)

Professor Simon Laws and Dr Travis Cruickshank – *MSWA: Systematic Profiling in Neurological Conditions (SPIN) Research Program*

National Institutes of Health (NIH) U.S grant

Professor Simon Laws – *Alzheimer's dementia and progression in international cohorts*

Oncomine Clinical Research Grant – ThermoFisher

Associate Professor Elin Gray – *TCR repertoire in combination with HLA and TMB as predictor of response to immune checkpoint blockade in melanoma and lung cancer*

Perron Institute for Neurological and Translational Science

Dr Travis Cruickshank – *The effectiveness of a 12-week remote-delivered green-blue light therapy intervention on daytime sleepiness, fatigue, work productivity and quality of life outcomes in individuals following traumatic brain injury*

Shantou University Medical College, China – PhD Program

Professor Wei Wang – *Shantou Cooperative Research in Medical Sciences and Health Service Delivery*

WA Cancer and Palliative Care Fellowships

Associate Professor Elin Gray and Dr Pauline Zaenker – *Autoantibodies as Biomarkers of Onset of Immune-related Adverse Events in Cutaneous Melanoma Patients*

THE FOLLOWING GRANTS WERE AWARDED TO STAFF IN CPH IN 2022:

CATEGORY 1

NHMRC/MRFF – Dementia, Ageing and Aged Care Mission

- **Professor Simon Laws** – *Getting to the heart of healthy ageing: a behaviour change program to promote dietary pattern changes*, Amount awarded: \$507,000 (\$466,065 ECU portion)
-

CATEGORY 3 – PHILANTHROPY

MSWA

- **Professor Simon Laws and Dr Travis Cruickshank** – *Systematic Profiling in Neurological Conditions (SPIN) Research Program*, Amount awarded: \$940,000 funding extension grant

Spinnaker Health Research Foundation – Janine Chalwell Gift

- **Associate Professor Elin Gray and Dr Adnan Khattak** – *Multimodal liquid biopsy to predict response to melanoma to Immuno-Oncology*, Amount awarded: \$50,000

Spinnaker Health Research Foundation – Innovation Grants

- **Dr Lydia Warburton and Dr Aaron Beasley** – *Extracellular vesicles profiling as a signature of response to immunotherapy*, Amount awarded: \$24,610

Cancer Council of WA – Research Project grant

- **Associate Professor Elin Gray and Dr Lydia Warburton** – *Developing a blood test for predicting the response to treatment with immunotherapies in melanoma patients*, Amount awarded: \$96,483

MSWA and Perron Institute for Neurological and Translational Science

- **Professor Simon Laws and Dr Travis Cruickshank** – *Joint funding for establishing a Neuro Hub Data Registry*, Amount awarded: \$300,000 (\$150,000 ECU portion)
-

CATEGORY 3 – INTERNATIONAL

US Department of Defense – Melanoma Research Program Team Science Award

- **Associate Professor Elin Gray and Professor Michael Millward (adjunct)** – *Multimodal Precision Liquid Biopsy to predict the risk of Melanoma Recurrence*, Amount awarded: \$180,095 – ECU portion
-

ECU INTERNAL GRANTS

Edith Cowan University - Early to Mid-Career Researcher Kickstart project

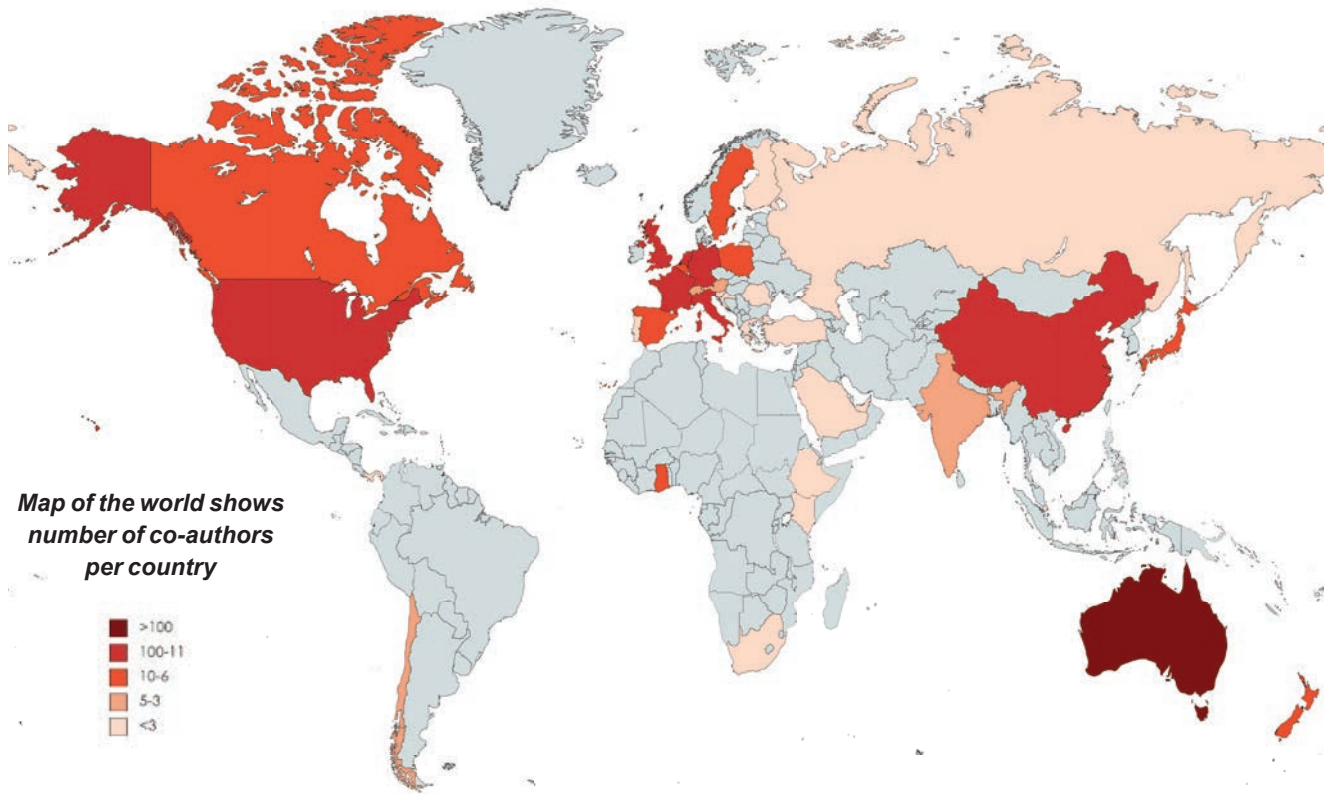
- **Dr Ivan Li** – *Developing a tool to predict the likely occurrence of stroke*, Amount awarded: \$39,571

Edith Cowan University - Early to Mid-Career Researcher Kickstart project

- **Dr Aaron Beasley** – *Predicting prognosis using circulating tumour DNA in uveal melanoma*, Amount awarded: \$36,312
-

COMMUNICATING OUR RESEARCH FINDINGS

2022 PUBLICATIONS



We are actively collaborating with researchers and organisations around the world on precision health related projects and consortiums.

1. ***Abed, A.**, Law, N., Calapre, L., Lo, J., Bhat, V., Bowyer, S., **Millward, M.**, & **Gray, E.** (Sept 2022). HLA genotype association with the development of immune related adverse events (irAE) in patients with non-small cell lung cancer (NSCLC) treated with single agent immunotherapy. *European Journal of Cancer*, 172, 98-106, doi: 10.1016/j.ejca.2022.05.021
2. ***Acheampong E, Abed A**, Morici M, Spencer I, **Beasley A**, Bowyer S, **Asante D**, Lomma C, **Lin W, Millward M, Gray ES.** (Mar 2022). Evaluation of PD-L1 expression on circulating tumour cells in small-cell lung cancer. *Translational Lung Cancer Research*, 11(3): 440-451, doi.org/10.21037%2Ftlcr-21-819
3. ***Acheampong, E.**, Morici, M., **Abed, A.**, Bowyer, S., **Asante, D.**, **Lin, W.**, **Millward, M.**, **Gray, E.**, **Beasley, A.** (28 July 2022). Powering single-cell genomics to unravel circulating tumour cells subpopulations in non-small cell lung cancer patients. *Journal of Cancer Research and Clinical Oncology*, doi:10.1007/s00432-022-04202-y
4. ***Adewuyi E, O'Brien E, Nyholt D, Porter T, Laws SM.** (18 Jul 2022). Cross-trait analysis of Alzheimer's disease and gastrointestinal tract disorders identifies shared loci highlighting immune-related and statin pathways. *Communications Biology*, 5, Article number 691, doi.org/10.1038/s42003-022-03607-2

[bold] CPH members [*] Q1 journal [underlined] HDR students [#] paper with an international collaborator



5. ***Adewuyi, EO, O'Brien, EK, Porter, T., & Laws, SM.** (19 Dec 2022). Relationship of cognition and Alzheimer's disease with Gastrointestinal Tract Disorders: A large-scale Mendelian Randomisation Analysis. *International Journal of Molecular Sciences*, 23(24): 16199, doi.org/10.3390/ijms232416199
6. ***#Adua, E., Afrifa-Yamoah, E., Pepra-Yamoah, E., Anto, E., Acheampong, E., Awuah-Mensah, K., & Wang, W.** Multi-block data integration analysis for identifying and validating targeted N-glycans as biomarkers for type II diabetes mellitus. *Scientific Reports*, 12, Article number 10974, doi.org/10.1038/s41598-022-15172-z
7. ***#Anto, E., Coall, D., Akomanin Asiamah, E., Afriyie, O., Addai-Mensah, O., Wiafe, Y., Owiredu, W., Obirikorang, C., Annani-Akollor, M., Titiloye, N., Adua, E., Acheampong, E., Adu, E., Anto, A., Tawiah, A., Wang, Y., & Wang, W.** (21 March 2022). Placental lesions and differential expression of pro-and anti-angiogenic growth mediators and oxidative DNA damage marker in placentae of Ghanaian suboptimal and optimal health status pregnant women who later developed preeclampsia. *Plos One*, 17(3), e0265717, doi.org/10.1371/journal.pone.0265717
8. **#Anto EO, Ofori Boadu WI, Opoku S, Senu E, Tamakloe V, Tawiah A, Ankobea F, Acheampong E, Anto AO, Appiah M, Wiafe YA, Annani-Akollor ME, Obirikorang C and Addai-Mensah O.** Prevalence and Risk Factors of Preterm Birth Among Pregnant Women Admitted at the Labor Ward of the Komfo Anokye Teaching Hospital, Ghana. *Front Glob Womens Health*. 2022; 3:801092 10.3389/fgwh.2022.801092
9. ***#Arance, A., de la Cruz-Merino, L., Petrella, T., Jamal, R., Ny, L., Carneiro, A., ... Khattak, M., ... & Long, G.** Phase II LEAP-004 Study of Lenvatinib Plus Pembrolizumab for Melanoma with confirmed progression on a programmed cell death protein-1 or programmed death Ligand 1 inhibitor given as monotherapy or in combination. *Journal of Clinical Oncology*, DOI: 10.1200/JCO.22.00221

85% Q1 Journals

26%
HDR-led

14%
EMCR-led

10. ***Akosile, W., & Adewuyi, E.** Genetic correlation and causality assessment between post-traumatic stress disorder and coronary artery disease-related traits. (30 Oct 2022). *Gene*, 842, Article 146802, 10.1016/j.gene.2022.146802
11. ***Beasley AB, Isaacs T, Chen FK, Gray ES.** Future Perspectives of Uveal Melanoma Blood Based Biomarkers. (21 Feb 2022). *Br J Cancer*, 126, 1511-1528, doi.org/10.1038/s41416-022-01723-8
12. ***Brown B, de Frutos Lucas J, Porter T, Frost N, Vacher M, Pfeiffer JJ, Laws SM.** (Aug 2022). Moderating effects of age, sex, genetics on the relationship between physical activity and brain volume: A UK Biobank study. *Journal of Alzheimer's Disease*, 88(3):1091-1101 doi: 10.3233/JAD-220114
13. ***#Bhave, P., Ahmed, T., ... Khattak, A., ... & Carlino, M.** (Jul 2022). Efficacy of anti-PD-1 and ipilimumab alone or in combination in acral melanoma. *J Immunother Cancer*, 10(7): e004668, doi: 10.1136/jitc-2022-004668
14. ***#Cadby G, Giles C, Melton PE, Huynh K, Mellett NA, Duong T, ... Laws SM, Porter T, Vacher M, Bush AI, Rowe CC, Villemagne VL, ... & Moses EK.** (6 June 2022). Comprehensive genetic analysis of the human lipidome identifies novel loci controlling lipid homeostasis with links to coronary artery disease, *Nature Communications*, 13, Article number 3124, doi.org/10.1038/s41467-022-30875-7

15. *#Cai, Y., Liu, M., Wu, Z., Tian, C., Qiu, S., Li, Z., Xu, F., Li, W., Zheng, Y., Xu, A., Xie, L., & Tan, X. (Dec 2022). Diagnostic accuracy of autoverification and guidance system for COVID-19 RT-PCR results. *EPMA J*, 1-11, doi: 10.1007/s13167-022-00310-4
16. *#Chino B, Cuesta P, Pacios J, **de Frutos-Lucas J**, Torres-Simon L, Doval S, Marcos A, Bruna R and Maestu F. Episodic memory dysfunction and hypersynchrony in brain functional networks in cognitively intact subjects and MCI: a study of 379 individuals. *Geroscience*. 2022; 45(1), 477-489, 10.1007/s11357-022-00656-7
17. *#Chino B, Zegarra-Valdivia J, **de Frutos-Lucas J**, Paredes-Manrique C and Custodio N. Impact of Sociodemographic Features and Lifestyle on Cognitive Performance of Peruvian Adults. *J Alzheimers Dis*. 2022; 90(2):599-608 10.3233/JAD-220428
18. *#**Cruickshank, T.**, Flores, M., Tuesta, M., & Reyes, A. (30 Apr 2022). Reproducibility of maximum respiratory pressure assessment: A systematic review and metaanalysis. *Chest Journal*, 162(4), 828-850, doi.org/10.1016/j.chest.2022.04.144
19. *#de Bruyn, D., **Beasley, A.**, Verdijk, R., van Poppelen, N., Paridaens, D., de Keizer, R., Naus, N., **Gray, E.**, de Klein, A., Brosens, E., & Kilic, E., on behalf of the Rotterdam Ocular Melanoma Study Group. (2022). Is Tissue Still the Issue? The Promise of Liquid Biopsy in Uveal Melanoma. *Biomedicines*, 10(2), 506, doi.org/10.3390/biomedicines10020506
20. Dyke, J., Calapre, L., **Beasley, A., Gray, E.**, Allcock, R., & Bentel, J. Application of multiplex ligation-dependent probe amplification (MLPA) and low pass whole genome sequencing (LP-WGS) to the classification/characterisation of low grade glioneuronal tumours. *Pathol Res Pract*, 229, 153724, doi.org/10.1016/j.prp.2021.153724
21. #Eggermont, A., Ascierto, P., Khushalani, N., Schadendorf, D., Boland, G., Weber, J., ... **Khattak, A.** ... & Diab, A. (Mar 2022). PIVOT-12: a phase III study of adjuvant bempegaldesleukin plus nivolumab in resected stage III/IV melanoma at high risk for recurrence. *Future Oncology*, 18(8): 903-913, doi: 10.2217/fo-2021-1286
22. *#Elijah, I., Amsalu, E., Jian, X., Cao, M., Mibei, E., Kerosi, D., Mwatsahu, F., **Wang, W.**, Onyangore, F., & **Wang, Y.** (27 June 2022). Characterization and determinant factors of critical illness and in-hospital mortality of COVID19 patients: A retrospective cohort of 1792 patients in Kenya. *Biosafety and Health*, 4(5), 330-338, doi.org/10.1016/j.bsheal.2022.06.002
23. *#Guo Z, Wen J, Zheng D, **Yulu Z, Hou H, Wang W** and Suboptimal Health Study C. Proposing an avenue for suboptimal health research through the lens of tourism. *J Glob Health*. 2022; 12:03058 10.7189/jogh.12.03058
24. *#**Guo, Z.**, Meng, R., **Zheng, Y.**, Li, X., Zhou, Z., Yu, L., Tang, Q., Zhao, Y., **Garcia, M.**, Yan, Y., Song, M., **Balmer, L.**, Wen, J., **Hou, H.**, Tan, X., & **Wang, W.** (1 Oct 2022). Translation and cross-cultural validation of a Precision Health Tool, the Suboptimal Health Status Questionnaire-25 (SHSQ-25), in Korean. *Journal of Global Health*, 12, Article number 04077, doi: 10.7189/jogh.12.0407
25. *Hill, C., Shafaei, A., **Balmer, L.**, Lewis, J., Hodgson, J., Millar, A., Blekkenhorst, L. (5 April 2022). Sulfur compounds: From plants to humans and their role in chronic disease prevention. *Critical Reviews in Food Science and Nutrition*, doi.org/10.1080/10408398.2022.2057915
26. *#Hou J, Hess J, Bis J, Grenier-Boley B, Karlsson I, Leonenko G, **O'Brien E.**, ... **Laws SM.**, ... and Glatt SJ. (2022). Polygenic Resilience Scores Capture Protective Genetic Effects for Alzheimer's Disease. *Transl Psychiatry*, 12(1):296. doi: 10.1038/s41398-022-02055-0.
27. *Jacob Y, Anderton RS, Cochrane Wilkie JL, Rogalski B, **Laws SM**, Jones A, Spiteri T, Hince D, Hart NH. (2022). Genetic Variants within NOGGIN, COL1A1, COL5A1, and IGF2 are Associated with Musculoskeletal Injuries in Elite Male Australian Football League Players: A Preliminary Study. *Sports Med Open*, 8(1):126. doi: 10.1186/s40798-022-00522-y
28. *Jacob, Y., Hart, N., Cochrane, J., Spiteri, T., **Laws, S.**, Jones, A., Rogalski, B., Kenna, J., & Anderton, R. (2022). ACTN3 (R577X) genotype is associated with Australian Football League players. *J Strength Cond Res*, 36(2): 573-576, DOI: 10.1519/JSC.0000000000003458

[bold] CPH members [*] Q1 journal [underlined] HDR students [#] paper with an international collaborator

29. **#Jiang Y, Zhou X, Wong AHY, Ouyang L, Ip FC, Chau VMN, ... O'Brien E, Porter T, Laws SM, ... & Ip NY.** (15 Jul 2022). An IL1RL1 genetic variant lowers soluble ST2 levels and attenuates the impact of APOE-ε4 in Alzheimer's disease. *Nature Aging*, 2, 616-634, doi.org/10.1038/s43587-022-00241-9
30. **#Jiang, Y., Wen, J., Zheng, D., Phau, I., & Wang, W.** Pandemic prevention via tourism: A conceptual framework. *Annals of Tourism Research*, 96, Article 103463, doi.org/10.1016/j.annals.2022.103463
31. **#Kennedy, O., Kicinski, M., Valpione, S., Gandini, S., Suci, S., Blank, C., Long, G., ... Khattak, A., ... & Mandala, M.** (Apr 2022). Prognostic and predictive value of β-blockers in the EORTC 1325/KEYNOTE-054 phase III trial of pembrolizumab versus placebo in resected high-risk stage III melanoma. *Eur J Cancer*, 165: 97-112, doi 10.1016/j.ejca.2022.01.017
32. **#Khattak, M.,** Luke, J., Long, G., Ascierto, P., Rutkowski, P., Schadendorf, D., ... & Kirkwood, J. (3 Oct 2022). Adjuvant pembrolizumab versus placebo in resected high-risk stage II melanoma: Health-related quality of life from the randomized phase 3 KEYNOTE-716 study. *Eur J Cancer*, 176, 207-217, doi: 10.1016/j.ejca.2022.08.004
33. **#Kim JS, Taaffe DR, Galvao DA, Hart NH, Gray E, Ryan CJ, Kenfield SA, Saad F and Newton RU.** Exercise in advanced prostate cancer elevates myokine levels and suppresses in-vitro cell growth. *Prostate Cancer Prostatic Dis.* 2022; 25(1):86-92 10.1038/s41391-022-00504-x
34. **#Kim, M., Singh, M.,** Lee, B., Hibbs, M., Richardson, K., Ellies, L., ... & **Woo, A.** (7 Oct 2022). A MYC-ZNF148-ID1/3 regulatory axis modulating cancer stem cell traits in aggressive breast cancer. *Oncogenesis*, 11, Article number 60., doi.org/10.1038/s41389-022-00435-1
35. **#Krishnadas N, Doré V, Laws SM, Porter T, Bozinovski S, Villemagne VL, Rowe CC.** (26 Aug 2022). Exploring discordant low amyloid-beta and high neocortical tau PET cases. *Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring*, 14(1), e12326, doi: 10.1002/dad2.12326
36. **#Krishnadas N, Huang K, Schultz SA, Doré V, Bourgeat P, Goh AMY, ... Burnham SC, Robertson JS, Laws SM, Maruff P, Masters CL, Villemagne VL, Rowe CC.** (2022). Visually identified tau 18F-MK6240 PET patterns in symptomatic Alzheimer's disease. *Journal of Alzheimer's disease*, 88(4), 1627-1637, doi: 10.3233/JAD-215558
37. **#Li Y, Huang X, Fowler C, Lim YY, Laws SM, Faux N, ... Villemagne VL, Rowe CC, Wiley JS, Maruff P, Masters CL, Gu BJ.** (2022). Identification of Leukocyte Surface P2X7 as a Biomarker Associated with Alzheimer's Disease. *Int J Mol Sci*, 23(14):7867. doi: 10.3390/ijms23147867
38. **#Li Z, Liu M, Wu Z, ... Wang W, et al.** (16 May 2022) Association between ambient air pollution and hospital admissions, length of hospital stay and hospital cost for patients with cardiovascular diseases and comorbid diabetes mellitus: Based on 1,969,755 cases in Beijing, China, 2014-2019. *Environment International*. 165, Article 107301, doi.org/10.1016/j.envint.2022.107301
39. **#Li, X., Zhang, J., Hou, R., Zheng, M., Singh, M., Li, H., Li, C., Zhang, X., Yang, X., Wu, L., Wang, Y., & Zheng, D.** Bidirectional associations of intellectual and social activities with cognitive function among middle-aged and elderly adults in China. *Journal of Affective Disorders*, 319, 83-89, doi.org/10.1016/j.jad.2022.09.031
40. **#Li, Z., Liu, M., Wu, Z.,** Liu, Y., Li, W., Liu, M., Lv, S., Yu, S., Jiang, Y., Wang, X., Li, X., **Wang, W.,** Lin, H., Guo, X., & Liu, X. (July 2022). Association between ambient air pollution and hospital admissions, length of hospital stay and hospital cost for patients with cardiovascular diseases and comorbid diabetes mellitus: Base on 1,969,755 cases in Beijing, China, 2014-2019. *Environment International*, 165, Article 107301, doi.org/10.1016/j.envint.2022.107301
41. **#Li J, Wei C, Yang Y, Gao Z, Guo Z and Qi F.** (2022). Apoptotic bodies extracted from adipose mesenchymal stem cells carry microRNA-21-5p to induce M2 polarization of macrophages and augment skin wound healing by targeting KLF6. *Burns*, 48(8), 1893-1908, 0.1016/j.burns.2021.12.010

42. #Li, C., Niu, M., Guo, Z., Liu, P., Zheng, Y., Liu, D., Yang, S., **Wang, W.**, Li, Y., & **Hou, H.** (24 Feb 2022). A mild causal relationship between tea consumption and obesity in general population: A two-sample Mendelian Randomization Study. *Frontiers in Genetics*, 13, doi.org/10.3389/fgene.2022.795049
43. *#Liu D, Meng X, Tian Q, Cao W., Fan X, Wu L, Song M, Meng Q, **Wang W** and **Wang Y.** Vitamin D and Multiple Health Outcomes: An Umbrella Review of Observational Studies, Randomized Controlled Trials, and Mendelian Randomization Studies. *Adv Nutr.* 2022; 13(4):1044-1062 10.1093/advances/nmab142
44. *#Liu M, ..., **Wang W**, Guo X, Tao L. (March 2022) Association between temperature and COVID-19 transmission in 153 countries. *Environmental Science and Pollution Research*, 29(11):16017-16027. doi.org/10.1007/s11356-021-16666-5
45. *#Liu, D., ..., **Wang, W.**, Meng, Q. and **Wang, Y.** (1 June 2022) Genome-Wide Mapping of Plasma IgG N-Glycan Quantitative Trait Loci Identifies a Potentially Causal Association between IgG N-Glycans and Rheumatoid Arthritis. *The Journal of Immunology*, 208 (11), 2508-2514. doi.org/10.4049/jimmunol.2100080
46. #Long GV, Ferrucci PF, Khattak A, **Meniawy TM**, Ott PA, Chisamore M, Trolle T, Hyseni A and Heegaard E. KEYNOTE - D36: personalized immunotherapy with a neoepitope vaccine, EVX-01 and pembrolizumab in advanced melanoma. *Future Oncol.* 2022; 18(31), 10.2217/fo-2022-0694
47. *#Long, G., Luke, J., Khattak, M., ... Eggermont, A., Ascierto, P., & KEYNOTE-716 Investigators. (1 Nov 2022). Pembrolizumab versus placebo as adjuvant therapy in resected stage IIB or IIC melanoma (KEYNOTE-716): distant metastasis-free survival results of a multicentre, double-blind, randomised, phase 3 trial. *Lancet Oncol*, 23(11): 1378-1388, doi: 10.1016/S1470-2045(22)00559-9
48. #Lopez-Cuenca I, Salobar-Garcia E, Gil-Salgado I, Sanchez-Puebla L, Elvira-Hurtado L, Fernandez-Albarral JA, ... **de Frutos-Lucas J**, ... and de Hoz R. Characterization of Retinal Drusen in Subjects at High Genetic Risk of Developing Sporadic Alzheimer's Disease: An Exploratory Analysis. *J Pers Med.* 2022; 12(5) 10.3390/jpm12050847
49. *#Luke, J., Rutkowski, P., Queirolo, P., Del Vecchio, M., Mackiewicz, J., Chiarion-Sileni, V., de la Cruz Merino, L., Khattak, M., ... Eggermont, A., & KEYNOTE-716 Investigators. Pembrolizumab versus placebo as adjuvant therapy in completely resected stage IIB or IIC melanoma (KEYNOTE_716): a randomised, double-blind, phase 3 trial. *Lancet*, 399 (10336): 1718-1729, doi: 10.1016/S0140-6736(22)00562-1
50. *#Macdonald, S., Bosio, E., Shapiro, N., **Balmer, L.**, Burrows, S., Hibbs, ... & Fatovich, D. (24 May 2022). No association between intravenous fluid volume and endothelial glycocalyx shedding in patients undergoing resuscitation for sepsis in the emergency department. *Scientific Reports*, 12, Article 8733, doi.org/10.1038/s41598-022-12752-x
51. **#Mehramiz, M., Porter, T., Laws, S., & Rainey-Smith, S.** (2022). Sleep, Sirtuin 1 and Alzheimer's disease: A review. *Aging Brain*, 2, doi.org/10.1016/j.nbas.2022.100050
52. *#Meng, X., Cao, W., Liu, D., Maranga Elijah, I., Xing, W., **Hou, H.**, Xu, X., Song, M., & **Wang, Y.** (7 Dec 2022). Bidirectional causality between Immunoglobulin G N-Glycosylation and metabolic traits: A Mendelian Randomization Study. *Engineering*, doi.org/10.1016/j.eng.2022.11.004
53. *#Meng, X., Wang, B., Xu, X., Song, M., Hou, H., **Wang, W.**, and **Wang, Y.** (11 April 2022). Glycomic biomarkers are instrumental for suboptimal health status management in the context of predictive, preventive, and personalized medicine. *EPMA Journal*, 13, 195-207, doi.org/10.1007/s13167-022-00278-1

[bold] CPH members [*] Q1 journal [underlined] HDR students [#] paper with an international collaborator

54. *#Meng, X., Wang, F., Gao, X., Wang, B., Xu, X., **Wang, Y., Wang, W.**, & Zeng, Q. (24 Dec 2022). Association of IgG N-glycomics with prevalent and incident type 2 diabetes mellitus from the paradigm of predictive, preventive, and personalized medicine standpoint. *EPMA Journal*, doi.org/10.1007/s13167-022-00311-3
55. *#**Milicic, L., Vacher, M., Porter, T., Dore, V., Burnham, S., ... Villemagne, V., & Laws, S.** (21 April 2022). Comprehensive analysis of epigenetic clocks reveals associations. *GeroScience*, 44(3), 1807-1823, doi.org/10.1007/s11357-022-00558-8
56. *#Olutuase VO, Iwu-Jaja CJ, Akuoko CP, **Adewuyi EO** and Khanal V. Medicines and vaccines supply chains challenges in Nigeria: a scoping review. *BMC Public Health*. 2022; 22(1):11 10.1186/s12889-021-12361-9
57. *#**Porter T**, Sim M, Prince RL, Schousboe JT, Bondonno C, Lim WH, Zhu K, Kiel DP, Hodgson JM, **Laws SM**, Lewis JR. (1 Sept 2022). Abdominal aortic calcification on lateral spine images captured during bone density testing and late-life dementia risk in older women. *Lancet Regional Health – Western Pacific*, 26, Article 100502, doi.org/10.1016/j.lanwpc.2022.100502. [In collaboration with Nutrition Health & Innovation Research Institute]
58. *#Reece, A., Hulse, G., & **Wang, W.** (19 August 2022). Cannabis, Cannabidiol, Cannabinoids, and multigenerational policy. *Engineering*, doi.org/10.1016/j.eng.2022.07.012
59. *#Rosenich, E., Bransby, L., Yassi, N., Fripp, J., **Laws, S.**, Martins, R., ... & Lim Y. (26 Apr 2022). Differential Effects of APOE and Modifiable Risk Factors on Hippocampal Volume Loss and Memory Decline in AB- and AB+ Older Adults, *Neurology*. 98(17), 10.1212/WNL.0000000000200118.
60. #Sewell KR, Rainey-Smith SR, **Villemagne VL**, Peiffer J, Sohrabi HR, Taddei K, Ames D, Dore V, Maruff P, **Laws SM**, Masters CL, Rowe CC, Martins RN, Erikson KI, **Brown BB**. (11 Sept 2022). The interaction between physical activity and sleep on cognitive function and brain beta-amyloid in older adults. *Behavioural Brain Research*, 437: Article 114108, doi: 10.1016/j.bbr.2022.114108
61. *#**Sexauer, D., Gray, E., & Zaenker, P.** (12 Jan 2022). Tumour-associated autoantibodies as prognostic cancer biomarkers – a review. *Autoimmunity Reviews*, 21(4), Article number 103041, doi.org/10.1016/j.autrev.2022.103041
62. *#**Smith J**, Braithwaite J, O'Brien TA, Smith S, Tyrell VJ, Mould EVA, et al. (Oct 2022). The voices of stakeholders involved in precision medicine: the co-design and evaluation of qualitative indicators of intervention acceptability, fidelity, and context in PReclSion Medicine for Children with Cancer in Australia. *Qualitative Health Research*, 32(12): 1865-1880, doi.org/10.1177/10497323221120501
63. **Smith, J.**, Rapport, F., O'Brien, T. A., Smith, S., Tyrrell, J., Mould, V. A., Long, J. C., & Braithwaite, J. (31 May 2022). Re-imagining the data collection and analysis research process by proposing a rapid qualitative data collection and analytic roadmap applied to the dynamic context of precision medicine. *International Journal of Qualitative Methods*, doi.org/10.1177/16094069221103097
64. #**Smith, J.** (7 June 2022). Sentiment analysis for use within rapid implementation research. How far and fast can we go? In F. Rapport, R. Clay-Williams & J. Braithwaite (Eds), *Implementation Science: The Key Concepts*, (Ch.31), Routledge
65. *#Smith, S., Tallon, M., **Smith, J.**, Angelhoff, C., & Morelius, E. (25 Apr 2022). Parental sleep when their child is sick: A phased principle-based concept analysis. *Journal of Sleep Research*, 31(5), e13575, doi.org/10.1111/jsr.13575
66. #Tan, X., & **Wang, W.** Do not forget glycomics and theranostics for COVID-19 Drug and Vaccine development. (Letter to the Editor, 1 June 2022). *OMICS: A Journal of Integrative Biology*, 26(6), 10.1089/omi.2022.0052
67. *#**Tian, C.**, Yan, J., Tan, X., & **Wang, W.** (Dec 2022). Reap success from persistence. *Journal of Global Health*, 12: 03077, DOI: 10.7189/jogh.12.03077
68. *#Tie, J., Cohen, J., Lahouel, K., Lo, S., Wang, Y., Kosmider, S., ... **Khattak, A.**, ... Gibbs, P., & DYNAMIC Investigators. (16 Jun 2022). Circulating tumour DNA analysis guiding adjuvant therapy in stage II Colon Cancer. *N Engl J Med*, 386(24): 2261-2272. doi: 10.1056/NEJMoa2200075

[bold] CPH members [*] Q1 journal [underlined] HDR students [#] paper with an international collaborator






69. **#Vacher M**, Dore V, **Porter T**, Milicic L, **Villemagne V**, Bourgeat P, ... & **Laws SM**. (2022). Assessment of a polygenic hazard score for pre-clinical diagnosis in the AIBL cohort. *BMC Genomics*, 23: 401, doi.org/10.1186/s12864-022-08617-2
70. **#Vacher, M.**, **Porter, T.**, Milicic, L., Bourgeat, P., Dore, V., **Villemagne, V.**, **Laws, S.**, & Doecke, J. (2022). A targeted association study of blood-brain barrier gene SNPs and brain atrophy. *J Alzheimers Dis*, 86(4), 1817-1829, 10.3233/JAD-210644
71. **#Vasantharajan, S.**, Barnett, E., **Gray, E.**, McCall, J., Rodger, E., Eccles, M., Munro, F., Pattison, S., & Chatterjee, A. (15 Jul 2022). Assessment of a size-based method for enriching circulating tumour cells in Colorectal Cancer. *Cancers*, 14(14), 3446, doi.org/10.3390/cancers14143446
72. **#Villemagne, V.**, Harada, R., Dore, V., Furomoto, S., Mulligan, R., Kudo, Y., Burnham, S., Krishnadas, N., Bourgeat, P., Xia, Y., **Laws, S.**, ... & Rowe, C. (Jan 2022). y The Journal of Nuclear Medicine, doi.org/10.2967/jnumed.121.263255
73. **#Wang, W.** Glycomedicine: The Current State of the Art. *Engineering*, doi.org/10.1016/j.eng.2022.03.009
74. **#Wang F**, Wang D, Wang Y, Li C, Zheng Y, Guo Z, Liu P, Zhang Y, **Wang W**, **Wang Y** and **Hou H**. Population-Based Incidence of Guillain-Barre Syndrome During Mass Immunization with Viral Vaccines: A Pooled Analysis. *Front Immunol*. 2022; 13:782198 10.3389/fimmu.2022.782198
75. **#Wang T**, Huynh K, Giles C, Mellett NA, Duong T, Nguyen A, ... **Laws SM**, Bush AI, Rowe CC, **Villemagne VL**, ... and Meikle PJ. APOE epsilon2 resilience for Alzheimer's disease is mediated by plasma lipid species: Analysis of three independent cohort studies. *Alzheimers Dement*. 2022; 18(11):2151-2166 10.1002/alz.12538
76. **#Wang, H.**, **Wang, Y.**, **Li, X.**, Deng, X., ... **Wang, W.**, & Zhou, Y. (23 Dec 2022). Machine learning of plasma metabolome identifies biomarker panels for metabolic syndrome: findings from the China Suboptimal Health Cohort. *Cardiovascular Diabetology*, 21, Article number 288, doi.org/10.1186/s12933-022-01716-0
77. **#Wang, T.**, ... Martins, I., **Laws, S.**, Bush, A., Rowe, C., **Villemagne, V.**, ... & Meikle, P. (25 Jan 2022). APOE ε2 resilience for Alzheimer's disease is mediated by plasma lipid species: Analysis of three independent cohort studies. *Alzheimer's & Dementia*, 18(11), 2151-2166, doi.org/10.1002/alz.12538
78. **#Wang H**, Guo Z, Zheng Y and Chen B. Genetic liability between COVID-19 and heart failure: evidence from a bidirectional Mendelian randomization study. *BMC Cardiovasc Disord*. 2022; 22(1):262 10.1186/s12872-022-02702-w
79. **#Wei T**, Guo Z, Wang Z, Li C, Zhu W, Zheng Y, Yin Y, Mi Y, Xia X, **Hou H** and Tang Y. Five Major Psychiatric Disorders and Alzheimer's Disease: A Bidirectional Mendelian Randomization Study. *J Alzheimers Dis*. 2022; 87(2):675-684 10.3233/JAD-220010
80. **#Wen, J.**, Zheng, D., Hou, H., Phau, I., & **Wang, W.** (Oct 2022). Tourism as a dementia treatment based on positive psychology. *Tourism management*, 92, 104556, doi.org/10.1016/j.tourman.2022.104556
81. **#Woodfield, A.**, Gonzales, T., Helmerhorst, E., **Laws, S.**, Newsholme, P., **Porter, T.**, **Verdile, G.** (13 Dec 2022). Current insights on the use of insulin and the potential use of insulin mimetics in targeting insulin signalling in Alzheimer's disease. *International Journal of Molecular Sciences*, 23(24): 15811, doi.org/10.3390/ijms232415811
82. **#Woodfield A**, **Porter T**, Gilani I, Noordin S., Li, Q., Collins, S., Martins, R., ... **Villemagne, V.**, ... **Laws, S.**, & **Verdile, G.** (2022). Insulin resistance, cognition and Alzheimer's disease biomarkers: Evidence that CSF Aβ42 moderates the association between insulin resistance and increased CSF tau levels. *Neurobiology of Aging*, 114, 38-48, doi.org/10.1016/j.neurobiolaging.2022.03.004
83. **#Wu, D.**, Lan, Y., Xu, Y., Xu, S., Huang, Y., **Balmer, L.**, Maharra, G., **Wang, W.**, Wu, S., & Xu, W. (3 Dec 2022). Association of cumulative monocyte to high-density Lipoprotein ratio with the risk of Type 2 Diabetes: a prospective cohort study. *Cardiovascular Diabetology*, 21, Article number 268, doi.org/10.1186/s12933-022-01701-7

[bold] CPH members [*] Q1 journal [underlined] HDR students [#] paper with an international collaborator

84. **Wu, Z.**, ..., **Wang, W.**, et al. (17 May 2022) Sex-specific Association of Subclinical Hypothyroidism With Incident Metabolic Syndrome: A Population-based Cohort Study. *The Journal of Clinical Endocrinology and Metabolism*. 107(6), e2365-32372. doi.org/10.1210/clinem/dgac110
85. **Wu, Z.**, Yu, S., Kang, X., Liu, Y., Xu, Z., ... **Wang, W.**, ... & Guo, X. (24 Feb 2022). Association of visceral adiposity index with incident nephropathy: a cohort study in the diabetic population. *Cardiovascular Diabetology*, 21, Article 32, doi.org/10.1186/s12933-022-01464-1
86. **Wu, Z.**, Yu, S., Zhu, Q., Li, Z., Zhang, H., Kang, X., Xu, Z., Miao, X., Liu, X., Li, X., Zhang, J., **Wang, W.**, Tao, L., & Guo, X. Association of baseline and cumulative remnant cholesterol with incidence of diabetic nephropathy: A longitudinal cohort study. *Diabetes Research and Clinical Practice*, 191, Article 110079, doi.org/10.1016/j.diabres.2022.110079
87. #Xu, X., **Balmer, L.**, Chen, Z., Mahara, G., & Lin, L. (7 Feb 2022). The role of IgG N-galactosylation in Spondyloarthritis. *Translational Metabolic Syndrome Research*, 5, 16-23, doi.org/10.1016/j.tmsr.2022.01.001
88. #Yang S, Zhang Y, Lyu X, Gu Y, Zhang G, Liu P, **Zheng Y.**, **Guo Z.**, Zhang Y and **Hou H.** The Association Between FGF21 and Diabetic Erectile Dysfunction: Evidence from Clinical and Animal Studies. *Front Endocrinol (Lausanne)*. 2022; 13:874796 10.3389/fendo.2022.874796
89. #Zhang, J., Eggink, E., Zhang, X., Li, X., Jiang, B., Liu, H., ... **Wang, W.**, **Wang, Y.**, ... Song, M, on behalf of the PRODEMOS consortium (2022). Needs and views on healthy lifestyles for the prevention of dementia and the potential role for mobile health (mHealth) interventions in China: a qualitative study. *BMJ Open*, 12(11): e061111, doi.org/10.1136/bmjopen-2022-061111
90. #Zhang, X., ..., **Song, M.**, **Wang, W.**, **Wang, Y.**, and Wang, B. (April 2022) Causal associations between COVID-19 and atrial fibrillation: A bidirectional Mendelian randomization study. *Nutr Metab Cardiovasc Dis*, 32(4), 1001-1009. doi.org/10.1016/j.numecd.2021.11.010
91. **Zheng, Y.**, **Guo, Z.**, Zhang, Y., Shang, J., Yu, L., Fu, P., Liu, Y., Li, X., Wang, H., Ren, L., Zhang, W., **Hou, H.**, Tan, X., **Wang, W.** on behalf of Global Health Epidemiology Reference Group (GHERG). (27 May 2022). Rapid triage for ischemic stroke: a machine learning-driven approach in the context of predictive, preventive and personalised medicine. *EPMA Journal*, 13(2), 285-298, doi.org/10.1007/s13167-022-00283-4

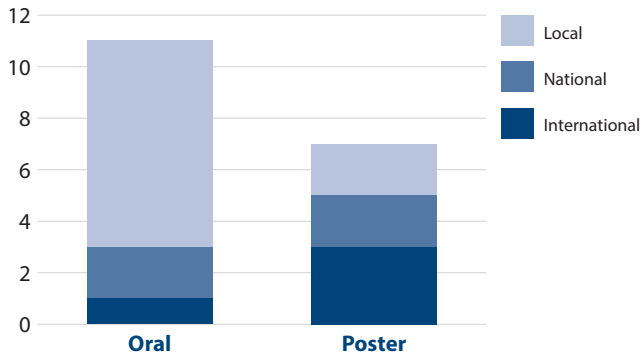


COMMUNICATING OUR RESEARCH FINDINGS BEYOND PUBLICATIONS

 <p>105 followers</p>	 <p>>1,520 media mentions</p>	 <p>>1.5 billion estimated audience</p>	 <p>>\$13,964,375 advertising estimate</p>	 <p>12 Newsletters with 110 subscribers</p>
--	---	---	---	--

Media exposure in 2022 was testament to the increasing recognition of the Centre's work and expertise. This year the Centre also launched a much-improved [website landing page](#). Google Analytics reported 7,191 page visits in 2022, with a peak in visits aligned with the launch of the new web landing page in September. Our social media channels are evolving, and the Centre distributes a monthly newsletter to update members and stakeholders of centre activities and achievements.

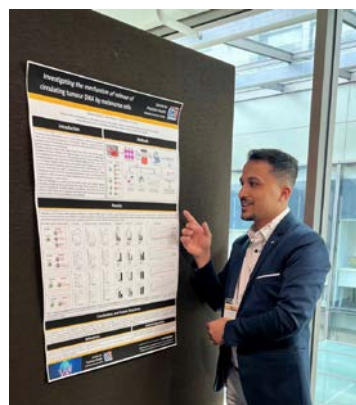
Conference presentations by HDR students



Pictured: Professor Simon Laws receiving an award from Professor Caroline Finch (DVCR). Prof Laws and Dr Emmanuel Adewuyi received the Highly Commended Award at the 2022 ECU Media Awards



Shane Fernandez, Symposium for WA Neuroscience

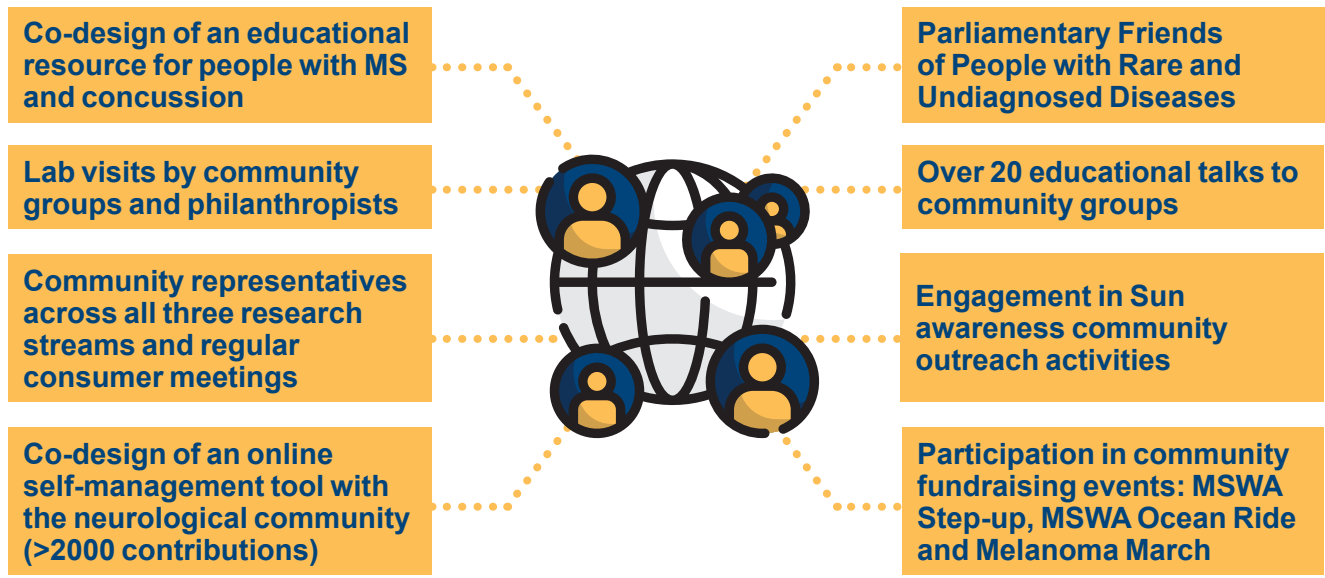


Sanjay Adhikari, Thomas Ashworth CTC & Liquid Biopsy Symposium



Monique Garcia, Sydney International Forum on Quality and Safety in Healthcare

ENGAGING THE COMMUNITY



Desiree Sexauer (left) and A/Prof Elin Gray (right) with Amanda Rowe (centre) from melanomaWA



Dr Aaron Beasley providing a lab tour to the Fairweather family (Donators to the melanoma team)



Members of the SPIN Program participating in the Step Up for MSWA event



Dr Lois Balmer (left) and Monique Garcia (2nd left) with Premier Mark McGowan and Ministers

CONTRIBUTING TO RESEARCH CULTURE

CENTRE FOR PRECISION HEALTH SEMINAR SERIES – 7 SEMINARS HELD

2022

FEBRUARY

Guest: Dr Syed Afaq Ali Shah – ECU School of Science – *Artificial Intelligence and its applications in the medical field*

CPH speaker: Dr Pauline Zaenker – *Multimodal biomarkers in cutaneous melanoma*

MAY

Guest: Professor Gareth Baynam – Medical Director, Rare Care Centre – *Getting precise about the common cause of suffering and death in kids*

CPH speaker: Monique Garcia – *Improving the lives of children and families living with rare diseases*

JULY

Guest: Maria Grammenou, Centre for Human Performance, SMHS – *Total Score of Athleticism; How much can it tell us for the recovery status of our athletes?*

CPH speaker: Prof. Simon Laws – *Personalised intervention studies in practice*

SEPTEMBER

Guest: Prof. Nina Tirnitz-Parker, Curtin Health Innovation Research Institute – *Developments and challenges for precision medicine approaches in chronic liver disease and cancer*

CPH speaker: Dr Weitao Lin – *Cell-to-cell communication in liver metastases of uveal melanoma*

MARCH

Guest: A/Prof. Giuseppe Verdile – Curtin Health Innovation Research Institute – *From Alzheimer's disease to Cancer: Important roles for the gamma secretase enzyme in disease*

CPH speaker: Dr Tenielle Porter – *Understanding the genetic architecture of Alzheimer's disease risk and progression, single variant to polygenic risk score approaches*

JUNE

Guest: Professor Michael Millward, UWA Linear Clinical Research – *Cancer: Molecular Profiling and Personalized Treatment*

CPH speaker: Dr Aaron Beasley – *Liquid biopsies in the era of Precision Oncology*

AUGUST

Guest: Yanshan Zhu, University of Queensland – *Ancestral SARS-CoV-2, but not Omicron, replicates less efficiently in primary pediatric nasal epithelial cells*

CPH speaker: Dr Hao Wang, CPH HDR alumni, Beijing Friendship Hospital – *China Screening multi-omics biomarkers for suboptimal health status*

CPH PROFESSIONAL DEVELOPMENT WORKSHOPS

2022

JANUARY

Goal setting for 2022 workshop

JUNE

The “YOU” in your grant application

MARCH

Networking 101 at conferences and beyond – how to make the most of meeting people and forming future collaborations

AUGUST

CPH workshop with ECU Research Services



CPH HDR students and researchers at a goal setting workshop

END OF YEAR SHOWCASE EVENT



The Annual Centre for Precision Health Showcase event was held on 6 December 2022 and celebrated achievements for the year as well as highlights of the exciting research happening across the Centre. The event was opened with a welcome by Professor Simon Laws and featured the official launch of the CPH Film, created as part of the American Society of Human Genetics Thought Leadership Series.

We were delighted to welcome our interstate Keynote speaker, Associate Professor Michelle Lupton from the QIMR Berghofer Institute of Medical Research in Queensland. A/Prof Lupton provided an inspiring talk about her research on genetic epidemiology in Alzheimer’s disease and the use of genetic risk prediction. A highlight of the day was the Poster Presentations session held in the foyer during the morning tea break, where attendees could view the CPH HDR and EMCR research posters and vote on

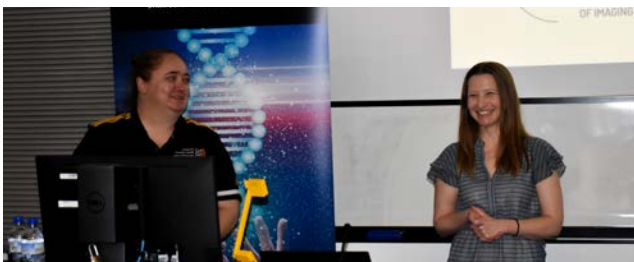
the people’s choice winner. We were also honoured to have Professor Caroline Finch, Deputy Vice-Chancellor (Research) attend as our official Judge of the poster prizes. Following the morning break was the EMCR and HDR presentation session. Thank you to our presenters: Dr Aaron Beasley, Manjot Singh, Dr Eleanor O’Brien, Lidija Milicic, Zhiyuan Wu and Dr Xingang Li on their excellent presentations of their work. The day finished with the award of certificates to our Summer Vacation Scholarship awardees, publication and poster prizes.



Introducing Keynote Speaker, Associate Professor Michelle Lupton



Emeritus Professor John Finlay-Jones with Yulu Zheng receiving a publication prize



Dr Lois Balmer and Dr Eleanor O'Brien



Associate Professor Elin Gray



Poster viewing



HDR Student Publication Prize Winner
Dr Afaf Abed (Clinician PhD student)



HDR Student Publication Prize Runner-Up
Yulu Zheng (PhD student)



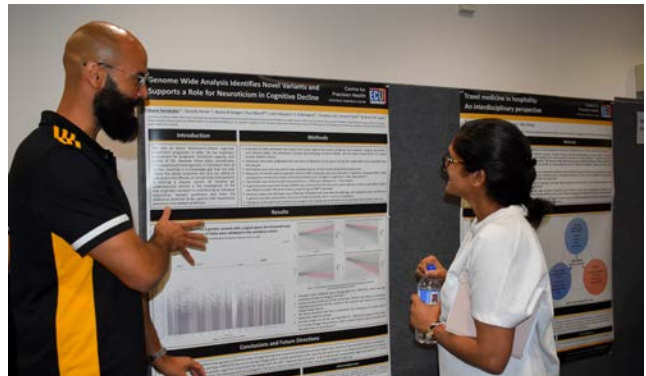
HDR Student Poster prize
Shane Fernandez



Early-Mid-Career Researcher Poster prize
Dr Weitao Lin



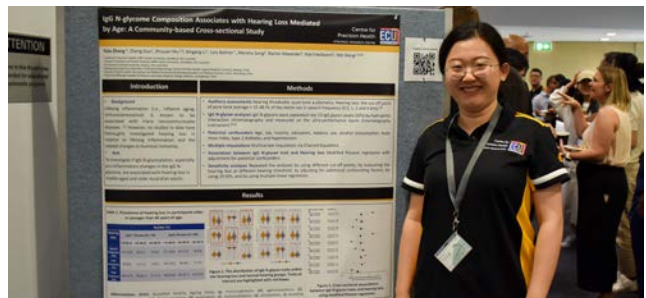
People's Choice Poster prize
Yulu Zheng



Shane Fernandez with his winning HDR poster



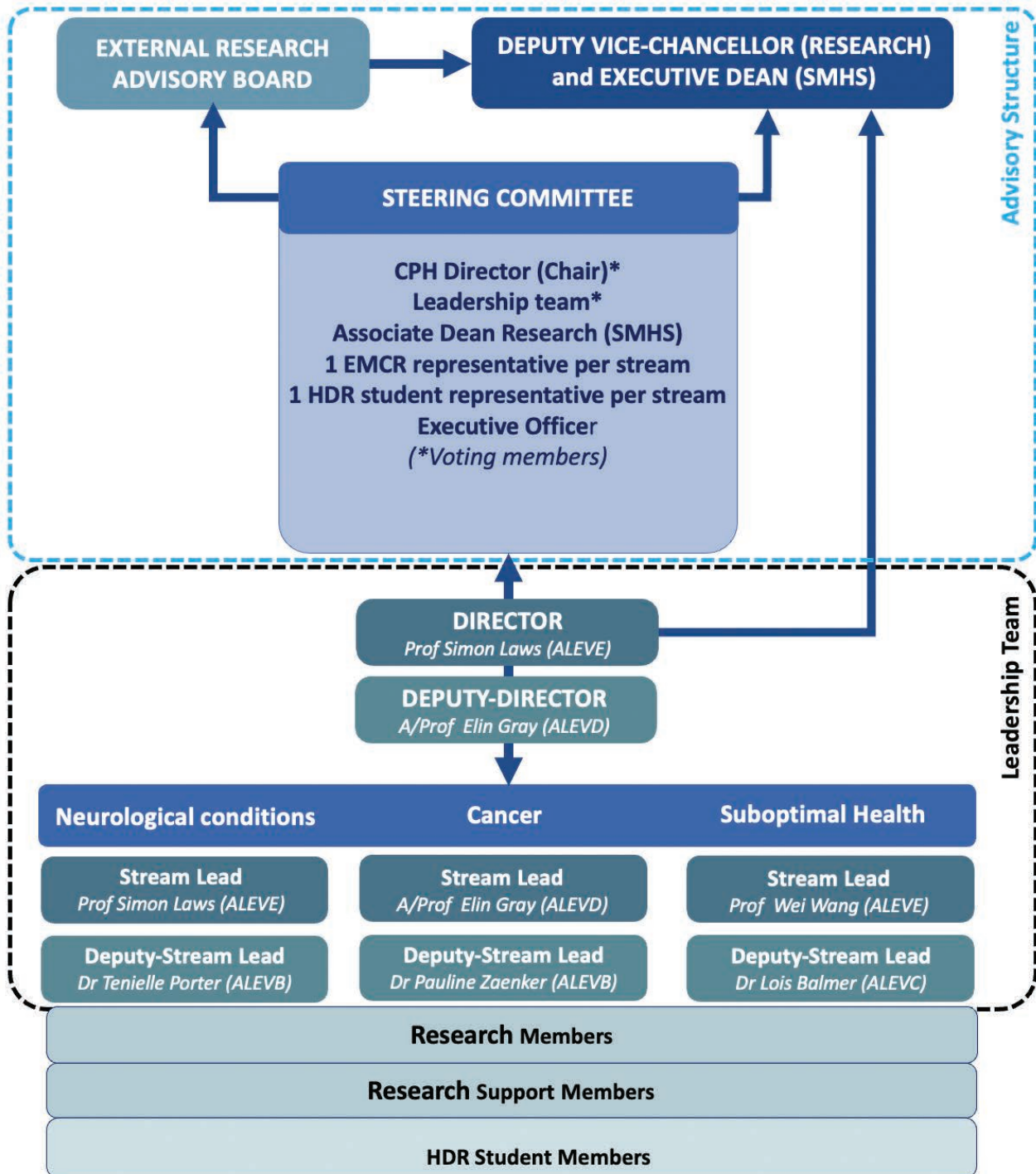
Professor Caroline Finch presenting the EMCR Poster prize to Dr Weitao Lin



Yulu Zheng (People's choice poster winner)

GOVERNANCE

ORGANISATIONAL STRUCTURE



THE 2022 SCIENTIFIC MANAGEMENT COMMITTEE

Leadership Group



Professor Simon Laws

Professor of Translational Genomics
Director / Neurological conditions Stream Lead



Assoc. Professor Elin Gray

CRT Fellow / CCWA Research Fellow
Deputy Director / Cancer Stream Lead



Professor Wei Wang

Professor of Public Health
Sub-optimal Health Stream Lead



Dr Tenielle Porter

Strategic Research Fellow
Neurological conditions Stream Deputy Lead



Dr Pauline Zaenker

Vice-Chancellor's Research Fellow
Cancer Stream Deputy Lead



Dr Lois Balmer

Senior Lecturer
Sub-optimal Health Stream Deputy Lead

EMCR Representatives



Dr Travis Cruickshank



Dr Aaron Beasley



Dr Ivan Li

HDR Representatives



Mr Shane Fernandez



Ms Neha Pulyani



Zhiyuan Wu



Ms Sharon Middleton

Research Support Officer



Dr Weitao Lin

Postdoctoral Research Fellow
Cancer Stream Deputy Lead (Acting)

EXTERNAL ADVISORY BOARD

The Centre for Precision Health External Research Advisory Board (ERAB) meets quarterly and held four meetings in 2022.

The ERAB provided significant advice into the strategic directions of the CPH, data management issues, the communication of our research, as well as assistance with shaping the CPH Business Plan and Terms of Reference.

In the second half of 2022 we welcomed two new members to the Board:

Professor Gareth Baynam as our Department of Health/ Clinical representative. Gareth is a clinical geneticist and holds numerous leadership positions in the rare diseases field, including being Medical Director of the new Rare Care Centre at Perth Children's Hospital.

Ms Annie Cordingley as our Consumer representative. Annie has been the consumer advisor for the Melanoma research group for many years and brings a wealth of experience as a member of the WA Consumer Reference Group.



Professor John Finlay-Jones

Inaugural Chair, Emeritus Professor, SMHS
Former ECU DVCR



Dr Kelly White

National Sales Manager,
Thermo Fisher Scientific



Dr Carolyn Williams

Former CEO, Centre for Entrepreneurial
Research & Innovation (CERI)



Professor Ryan Lister

Genome Biology and Genetics Program Head,
UWA/ HPMRI



Ms Annie Cordingley

Consumer Representative and Member of WA
Health Consumer Reference Group



Professor Gareth Baynam

Clinical Genomics Policy Advisor at
WA Health, Medical Director of the
Rare Care Centre at PCH



“In 2015 I had 5 brain aneurysms ... I am very honoured to be part of the SPIN research team. Being Indigenous, we miss out on a lot. I want to be a part of it, I want my DNA on the system, so if I ever have another incident or issues with my heart one day, or Alzheimers, or dementia, they structure personal care that specifically targets the criteria that you’re going through. They understand how to help you and support you as a person. That’s pretty cool.”

Joanne, research consumer representative

FURTHER INFORMATION

T: +61 (8) 6304 5607

E: cph@ecu.edu.au

W: bit.ly/CPHresearch

www.ecu.edu.au

Find us at

 [@CPH_ECU](https://twitter.com/CPH_ECU)