

Associate Professor James S Wilmott

Principle Investigator, Personalised Immunotherapy Program

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james.wilmott@sydney.edu.au <http://orcid.org/0000-0002-6750-5244>**SUMMARY STATEMENT**

I am a senior scientist in a translational research laboratory, where I collaborate with clinical and patient groups to identify areas of need, discover solutions, and implement research to improve patient outcomes. My work has led to the development of tools that support clinical decision making around melanoma diagnosis, prognosis, and the personalisation of immunotherapy for cancer patients. I am passionate about the integration of clinicopathology, genomics, gene expression, and high-dimensional spatial pathology to develop tools that improve treatment selection and aid in the understanding of drug resistance. I am the group leader of the following major programs of research that exemplify these approaches:

Personalised Immunotherapy Program (PIP): This program aims to revolutionize the way immunotherapies are used in clinical trials and how specific treatments are selected for each patient in routine clinical care. The program aims to disrupt the current "one-size-fits-all" approach to immunotherapies and personalize each treatment to the specific patient's tumour characteristics and microenvironment. [The Personalised Immunotherapy Program is funded by the Cancer Institute of New South Wales \(CINSW\) for \\$3.7 million over four years \(2022-2026\).](#)

Effective Therapies for Patients with High-Risk Disease: This program focuses on developing effective therapies for patients with in-transit melanoma. This work is funded by the [Melanoma Research Alliance Team Science Award \(\\$1.4 million, 2020-2023\)](#). The team brings together clinicians and researchers from the Garvan Institute of Medical Research, QIMR Berghofer, The Melanoma Institute Australia and The University of Sydney. This study integrates bulk whole genome and transcriptome sequencing with single cell RNAseq and high dimensional tissue imaging of melanoma biopsies from immunotherapy treated patients. This integration is yielding insights into the mechanisms of [drug resistance on the single cell level](#).

Genomic Etiology of Rare Melanomas: This program conducts research into the genomic etiology of rare melanomas from acral, mucosal, and uveal sites. This work now encompasses a nature paper, four Nature Communication papers outlining the whole genomes, transcriptomes and methylomes of [570 melanomas](#) and is the most comprehensive overview of melanoma genomics to date.

I am committed to making a difference in the lives of cancer patients, and I believe that these programs will help to improve patient outcomes.

RESEARCH METRICS [*Scopus](#)

| Publications | H-index | Average citation per publication | Field-weighted citation per pub | Publication in top 10% | International collaborations |
|--------------|---------|----------------------------------|---------------------------------|------------------------|------------------------------|
| 192 | 62 | 114 | 9.4 | 83% | 56% |

PRIZES AND AWARDS

2022 [NSW Premier's Awards for Excellence in Translational Cancer Research](#), PMID: 30753825
2021 [NSW Premiers Wildfire Highly Cited Publication Award](#)
2021 [Young Researcher of the Year- Society of Melanoma Research General Meeting](#)
2020 [NSW Premier's Awards for Excellence in Translational Cancer Research](#), PMID: 28467829.
2017 NSW Premier's Awards for Excellence in Translational Cancer Research
2016 [NSW Premier's Awards for Excellence in Translational Cancer Research](#) , PMID: 23026937.
2012 American Association for Cancer Research's "Most highly cited paper", PMID: 22156613.

Appointments

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| 2022- current | Associate Professor, The University of Sydney Principle Investigator of the Personalised Immunotherapy Program |
| 2021- 2022 | Centre of Research Excellence in Melanoma Chair of genomics and biomarkers. |

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| 2021-2025 | Melanoma Research Alliance <i>Young Investigator</i> . |
| 2020-2024 | NHMRC <i>Investigator research fellow</i> |
| 2015-2019 | NHMRC <i>Early career research fellow</i> |
| 2015-2018 | CINSW early career research fellow <i>Chief investigator: Genomics of adolescent and youth melanoma.</i> |
| 2013-2014 | Lecturer, The University of Sydney |
| 2013 | PhD “Biomarker and biology of BRAF mutant BRAF inhibitor-treated melanoma” |
| 2008 | Bachelor of Science (Hons 1st class) |

PUBLICATION HIGHLIGHTS

CANCER CELL, Gide TN...**Wilmott JS (Senior author)**. Distinct immune cell populations define response to anti-PD-1 monotherapy and anti-PD-1/anti-CTLA-4 combined therapy. 2019

Landmark study which developed transcriptomic and immune profiles of response to immunotherapies. This study provided the basis for the development of the Personalised Immunotherapy Platform which has been piloted as a feasibility study in over 280 melanoma patients as a prospective biomarker testing cohort study (RG19-15). (372 citations since 2019).

NATURE, **Wilmott JS**...Mann G, Scolyer RA. Whole-genome landscapes of major melanoma subtypes, 2017. *I comprehensively detailed the genomic alterations of 183 melanoma patients that confer sensitivity or resistance to approved therapeutics. This project demonstrates my ability to lead a high-profile collaborative research program. (1,066 citations since 2017).*

CELL, The Cancer Genome Atlas Network. Genomic Classification of Cutaneous Melanoma. 2015. *I co-developed the immune scoring system and oversaw the expert pathological case review finding immune infiltration as the most prognostic factor of all the multi-omic analyses. (2,343 citations since 2015).*

Publications of melanoma diagnosis, prognosis, and response to immunotherapy (First or senior):

- Int J Cancer, 2019: Whole genome sequencing of melanoma in AYAs ([PMID: 30178487](#)).
- Nature Communications, 2019: Whole genome sequencing in mucosal melanoma ([PMID: 31320640](#)).
- Nature Communications, 2020: Whole genome sequencing in acral melanoma ([PMID: 33067454](#)).
- Nature Communications, 2020: Whole genome sequencing in uveal melanoma ([PMID: 32415113](#)).
- Cancer Cell, 2022: Multi-omic profiles of ICB response in metastatic melanoma ([PMID: 34951955](#)).
- Cancer Discovery 2022: Multi-omics of 570 Australian melanoma ([PMID: 36098958](#))

GRANTS AND FELLOWSHIPS (past 5 years)

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|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 2022-2027 | CINSW Translational Program Grant (PI) “Personalised Immunotherapy Program – Precision immunotherapies for multiple solid tumours using a biomarker driven adaptive enrichment clinical trials platform.” | \$3,748,550 |
| 2021-2025 | Young Investigator, Melanoma Research Alliance “Effective therapies for patients with high risk in-transit disease” | \$1,400,000 |
| 2022 | NHMRC Equipment Grant (CIB) “Illumina NextSeq 1000 benchtop sequencer” | \$286,725 |
| 2021-2023 | PIP-MATCH, Ramaciotti Foundations Health Investment Grant “Precision ex vivo testing platform to match novel drug immunotherapy combinations with advanced cancer patients (PIP-MATCH).” | \$150,000 |
| 2021 | NHMRC Equipment Grant (CIC) “BD Rhapsody™ Single-Cell Analysis System” | \$143,630 |
| 2020-2024 | Investigator grant, <u>Personalised immunotherapies</u> , NHMRC (CIA) “Personalised immunotherapies to match profiles with response” | \$1,504,485 |
| 2019-2022 | RG19-15 CCNSW Project Grant- <u>personalised immunotherapies</u> , (CIA) “Personalised immunotherapies: A clinical feasibility clinical trial” | \$425,095 |
| 2019-2022 | Ainsworth Foundation-Accurate diagnosis of Primary Melanoma | \$837,000 |
| 2018-2021 | APP1144829 NHMRC Project Grant (CIE) | \$613,848 |
| 2017-2020 | APP1129422 CCNSW Project Grant (CIB) | \$449,174 |
| | APP1123217 NHMRC Project Grant (AI) | \$1,456,823 |
| 2016-2019 | APP1111678 NHMRC ECF fellowship (CIA) | \$314,644 |
| | ECF 15/ECF/1-57 Cancer Institute NSW ECF fellowship (CIA) | \$429,481 |
| 2019 | Ross Trust- Foundation funding children’s health research | \$30,000 |
| 2015 | Sydney Local Area Health District Project Grant (CIA) | \$60,000 |

INVITED PRESENTATIONS (past 5 years)

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| AACR General Meeting- Invited speaker. | 2023 | USA, Orlando |
| Spatial Biology: Translating basic research into clinical insights. Speaker | 2023 | Singapore |
| Society of Melanoma Research General Meeting – Speaker | 2022 | Scotland |
| Australasian Society for Dermatology Research ASDR- Speaker | 2022 | |
| Inaugural Spatial Meeting QIMR Berghofer- Organiser/Speaker | 2022 | Brisbane |
| Pathology update-Royal College of Pathologists of Australasia | 2021 | Sydney, Australia |
| General Meeting- American Association for Cancer Research-poster | 2021 | USA, Virtual |
| Novel imaging technologies- Keynote Speaker-University of Mexico | 2021 | USA, Texas |
| InterMEL consortium- Keynote Speaker | 2021 | USA, Texas |
| Yale Postdoc Association- Keynote Speaker | 2021 | USA, Connecticut |
| Akoya Bioscience General meeting- Keynote Speaker | 2021 | USA, California |
| UniMelb cancer research webinar- Guest Speaker | 2021 | Melbourne, Aus |
| Cancer for Research Excellence- Invited speaker | 2021 | Sydney, Australia |
| Research retreat, Melanoma Institute Australia- Keynote Speaker | 2020 | Sydney, Australia |
| Biomedical Sciences Research Methods Day Seminar | 2020 | Sydney, Australia |
| Surgical Immunology- Student research seminar | 2020 | Sydney, Australia |
| Epigenetics User Group Symposium – Invited Speaker | 2020 | Otago, NZ |
| InterMel consortium general meeting- Panel member | 2019 | Santa Fe, USA |
| Australian Precision Oncology Symposium- Invited speaker | 2019 | Adelaide, Aus |
| Cancer Council Consumer Forum-Discussion- Panel member | 2019 | Sydney, Australia |
| Molecular and Experimental Pathology Society of Australasia- Speaker | 2019 | Sydney, Australia |
| Cantoo Winter Gala fundraising Dinner- Guest speaker | 2019 | Sydney, Australia |
| Melanoma March National Fundraiser, Invited Speaker | 2019 | Wollongong, Aus |
| Cancer Institute NSW research fellow's forum, Invited Speaker | 2018 | Sydney, Australia |
| Melanoma March National Fundraiser, Invited Speaker | 2017 | Newcastle |
| Ultimate Melanoma Masterclass | 2018 | Sydney |
| Society for Melanoma Research Congress, Invited Speaker | 2017 | Brisbane, Australia |

MENTORING AND TEACHING

I have taught a wide range of students from diverse training backgrounds and career stages. My students have consistently achieved excellence in research outcomes. I supervised 13 students since 2016, including 3 PhD students who have gone on to successful careers in medicine or research. I have also mentored many undergraduate students, including one who received the University Medal in 2022.

Postdoctoral students:

Dr Hansol Lee was awarded PhD thesis in 2022. Publication to arise from his thesis:

Clinical Cancer Research, 2023: Effect of steroids on MAPKi treated patients ([PMID: 36477181](#)).

Cancers, 2021: Review of NK-cell biology in the context of ICB treatment ([PMID: 33802954](#)).

Oncoimmunology 2019: NK cells in anti-PD-1 treated metastatic melanoma patients ([PMID: 30713793](#)).

Clinical Cancer Research, 2023: Macrophages in anti-PD-1 treated patients ([PMID: 36790412](#)).

Grace Attrill thesis under review 2023. Publication to arise from her thesis:

[Nature Cancer](#), 2020: Molecular analysis of primary melanoma T cells identifies high risk melanoma.

Pigment Cell and Melanoma Research, 2021: Review to TME in cutaneous melanoma ([PMID: 32939993](#))

Frontiers in Immunology, 2022: Spatial immunophenotyping of primary melanomas ([PMID: 36003398](#))

Journal for ImmunoTherapy of Cancer, 2022: CD39+ T-cells in adjuvant immunotherapy ([PMID: 35688560](#))

Rebecca Simpson, publication to arise thus far:

Nature Medicine 2022: Diet-driven microbial ecology underpins associations with ICB ([PMID: 36138151](#))

Dr Tuba Nur Gide as co-supervisor. Thesis 2019. Publications include [Cancer Cell](#), [Clinical Cancer Research](#) *2, [Modern pathology](#), [Histopathology](#) and [Oncoimmunology](#). Dr Gide now holds a prestigious [CINSW ECR fellowship](#) and is a CO-CI on the CINSW Translational Program Grant \$3,748,550.

Dr Jarem Edwards as co-supervisor. Thesis awarded in 2021 with publications in [Nature](#), [Cancer Immunology Research](#) and 3* [Clinical Cancer Research](#).

Undergraduate students

Aubrey Wood was awarded hons 1st class and was the Dean's List of Excellence in Academic Performance. Aubrey is now studying medicine. (2021)

Catherine Bai was awarded 1st class honours, received a NHMRC PhD scholarship and is now a PhD candidate under my supervision. (2021)

Michael Xie, 1st class honours and University Medal. Studying Medicine (2022).

I am proud of my record of teaching and mentoring students. I am committed to providing my students with the knowledge and skills they need to succeed in their research careers.

PROFESSIONAL ACTIVITIES

- I am a founding member of the steering committee for the [International Cancer Genome Consortium's Melanoma project](#). This international committee pools together the whole genome sequencing data from the Australian Melanoma genome Project to make the data publicly available to all researchers. I form the part of the panel which reviews applications to access this patient derived genomic data.
- I am also a member of the [International neoadjuvant melanoma consortium](#), which is responsible for clinical trial design, activities and developing clinical guidelines (Co-authored output Doi: 10.1016/S1470-2045(19)30331-6 doi.org/10.1016/j.annonc.2020.07.016).
- I am also an international committee member for the [InterMEL project](#) which aims to improve primary melanoma prognostic accuracies. Within the role I contribute to members meetings, also as an invited speaker at the general meeting (New Mexico in 2019, 2020, 2021).
- I am also a core leader in the [Melanoma Center of Research Excellence \(APP1135285\)](#) as chair of the Biomarker implementation initiative. This involves developing the cores scientific design, chairing monthly meeting (1hr), member of weekly working groups (0.5hrs) and preparing presenters and presentation for the yearly general meeting (0.5 day). The aim of which is to identify and remove barriers for the implementation of cancer biomarkers into routine clinical practice for patients.
- I have been an invited peer reviewer for NHMRC Investigator Grants (2020-2023), Cure Cancer research grants, Sydney Cancer Partners Translational Partners Fellowship Scheme reviewer panel.
- I regularly review for high impact journals, including *Nature Communications*, *Cancer Discovery*, *Clinical Cancer Research*, *Nature Cancer* etc.
- I was on the organising committee for the inaugural Multi-Omics 2022 international meeting and the Australia Melanoma Conference (AMC) 2021
- Student completions include 3 PhD students and 4 honours students. With an students awarded Hons 1st class and one student receiving the University medal in 2022.
- Currently supervising 3 PhD and 1 hon student as primary supervisor, with 2 masters students and 4 PhD students as primary/joint supervisor.
- PhD Thesis reviewer, 2 annually 2021 and 2022

NATIONAL AND INTERNATIONAL PROFILE

Conference presentations and workshops

I have been an invited speaker at many national and international conferences, including the Society for Melanoma Research Congress, where I gave a keynote presentation. I have also presented on behalf of the Australian Melanoma Genome Project consortium at major genomic conferences, such as the International Cancer Genome Consortium. In addition, I have given talks and presentations to the community to raise awareness for melanoma research and preventative measures.

Research collaborations

I have led multiple international collaborations with the most prestigious researchers in melanoma. My leadership in the Australian Melanoma Genome Project was instrumental in its success, and the project's findings have already contributed to numerous highly impactful findings by the international research community. I am also a co-leader of the Australian, China mucosal melanoma project, which was published in *Nature Communications* in 2019.

Publications

I have published my work in top journals, and I have over 150 co-authors from around the world. My research has had a far-reaching impact on the progress towards a cure for cancer.

Community engagement

I am committed to communicating my research with the community. I have given talks, presentations, and interviews to raise awareness for melanoma research and preventative measures. I am also a member of the Melanoma Foundation of Australia and the Australian Cancer Research Foundation.