



RACP Foundation Research Awards

FINAL REPORT

Project / Program Title		Novel biomarkers for melanoma immunotherapy
Name		Dr Annie Ngai Man Wong
Award Received		2018 NZ Odlin Research Entry Scholarship
Report Date		11 April 2019
Chief Investigator / Supervisor		Professor Grant McArthur
Administering Institution		Peter MacCallum Cancer Centre
Funding Period	Start Date:	5 February 2018
	Finish Date:	4 February 2019

PROJECT SUMMARY

Immunotherapy has dramatically improved the survival and quality of life for patients with advanced melanoma. However, not all patients respond to these treatments, and it can potentially cause severe side effects. These medicines are also extremely expensive. Therefore, it is important to identify those who are likely to respond and differentiate them from patients who will not benefit, thereby forgoing potential toxicity. This project aims to use cutting edge technology such as functional positron emission tomography (PET) scans, multi-spectral immunohistochemistry and cytokine profiling to identify patients who are likely to respond to these immunotherapies and also explore how these functional scans can be used to assess whether the treatments are working.

The aim of this PhD is to identify these novel biomarkers and learn how these tests can facilitate patient-clinician shared decision making about immunotherapy options for advanced melanoma.

PROJECT AIMS / OBJECTIVES

Specific aims:

- To identify novel clinical and imaging biomarkers for melanoma immunotherapy
- To identify biomarkers using novel translational immune-profiling technology
- To assess the clinical utility of biomarker driven therapeutic decision making for melanoma immunotherapy

SIGNIFICANCE AND OUTCOMES

The novel functional positron emission tomography parameter of high spleen to liver ratio was identified to be correlated with poor survival after immunotherapy (anti-CTLA4 and anti-PD1) for advanced melanoma. Results were presented at American Society of Clinical Oncology annual scientific meeting 2016, and was awarded a Merit Award for this poster abstract. International collaborations have been established as a result of this work and we have submitted our manuscript for publication.

My PhD research has led to 8 publications and 3 presentations as listed below. The final part of my PhD is to create a clinical utility index and patient decision aid to facilitate treatment decision making. My plan is to then pilot this tool locally in Wellington, with the intention of involving other sites of Melanoma and Skin Cancer Trials Limited (previously known as the Australian and New Zealand Melanoma Trials Group).

PUBLICATIONS / PRESENTATIONS

Publications

2019: Balancing the Hype with Reality: What Do Patients with Advanced Melanoma Consider When Making the Decision to Have Immunotherapy? A Wong, A, Billett, D Milne
Accepted for publication in *The Oncologist*

2018: Outcomes of Australian patients receiving non-funded anti" PD-1 immune checkpoint inhibitors for non "melanoma cancers. Tiu C, Wong A, Herschtal A, Mlleshkin L. *Asia-Pacific journal of Clinical Oncology* 2018Mar1. doi: 10.1111/ajco.12867

2017: Clinical and palliative care outcomes for patients of poor performance status treated with anti-programmed death1 for advanced melanoma
A.N.M. Wong, M. Williams, D. Milne, K. Morris, P. Lau, O Spruyt, S Fullerton and G McArthur
Asia-Pacific journal of Clinical Oncology 2017 Dec;13(6):385-390. doi: 10.1111/ajco.12 702

2017: The Advantages and Challenges of Using FOG PET /CT for Response Assessment in Melanoma in the Era of Targeted Agents and Immunotherapy
A.N.M. Wong, M. Hofman, G. McArthur, R. Hicks
European journal of Nuclear Medicine and Molecular Imaging 2017 Aug; 44 (Suppl 1):67- 77. doi: 10.1007 /s00259-017-3691- 7

2017: Efficacy of anti-PD-1 therapy in patients with melanoma brain metastases
S. Parakh, J. Park, S. Mendis, R. Rai, X. Xu, S. Lo, M. Drummond, C. Rowe, A. Wong, G. McArthur, H. Andrew, M. Andrews, J. Cebon, A. Guminski, R. Kefford, G. Long, A. Menzies, O. Klein, and M. Carlino
British journal of Cancer 2017 Jun 6;116(12):1558-1563. doi: 10.1038/bjc.2017.142.

2016: Anti-PD-1 therapy in patients with advanced melanoma and preexisting autoimmune disorders or major toxicity with ipilimumab
A. M. Menzies, D. B. Johnson, S. Ramanujam, V. G. Atkinson, A. N. M. Wong, J. J. Park, J. L. McQuade, A. N. Shoushtari, K. K. Tsai, Z. Eroglu, O. Klein, J. C. Hassel, J. A. Sosman, A. Guminski, R. I. Sullivan, A. Ribas, M. S. Carlino, M. A. Davies, S. K. Sandhu, G. V. Long
Ann Oncol (2017) 28 (2): 368-376.
DOI: <https://doi.org/10.1093/annonc/mdw443>

2016: Integration of Immuno-Oncology and Palliative Care
Wong A, Fullerton S, Spruyt O, Brady B, McArthur G and Sandhu S
Journal of Clinical Oncology. 2016 Feb 29 doi:10.1200/JCO.2015.64.4146

2016: The use of ipilimumab in patients with rheumatoid arthritis and metastatic melanoma
Lee B, Wong A, Kee D, Neeson P, Shackleton M, McArthur G and Sandhu S
Annals of Oncology. 2016 Feb 9. doi: 10.1093/annonc/mdw056

Presentations

2017: Comparison of primary Merkel cell carcinoma (MCC) and melanoma T-cell immuno-profile and PD-L1 expression by multi spectral immunohistochemistry (m-IHC)

Wong A, Waldeck K, Neeson P, Halse H, Angel C, Colebatch A, Raleigh J, Hatzimihalis A, Gyorki D, Fox S, Sandhu S, Johnston M, Cullinane C, Scolyer R, Wilmott J, Gill A, Becker J, Hicks R, Tothill R and McArthur G

World Congress of Melanoma/Society of Melanoma Research ASM 2017

2017: Understanding patients' real-world experience on pembrolizumab for advanced melanoma: a qualitative study

Wong A, Billett A, McArthur G, Milne D
Cancer Society of Australia ASM 2017

2016: Spleen to liver ratio (SLR): Novel PET imaging biomarker for prediction of overall survival after ipilimumab and anti-PD1 in patients with metastatic melanoma.

Wong A, Callahan J, Beresford J, Herschtal A, Fullerton S, Milne D, Hicks R, McArthur G
American Society of Clinical Oncology ASM 2016 (awarded Merit Award)

ACKNOWLEDGEMENTS

2019: Balancing the Hype with Reality: What Do Patients with Advanced Melanoma Consider When Making the Decision to Have Immunotherapy? A Wong, A, Billett, D Milne

Accepted for publication in The Oncologist All the posters have acknowledged RACP as the funding body for my stipend, with the RACP logo on the poster.