



RACP Foundation Research Awards

PROGRESS REPORT

Project / Program Title		Novel biomarkers for melanoma immunotherapy
Name		Dr Annie Ngai Man Wong
Award Received		2017 New Zealand Fellows Research Entry Scholarship
Report Date		27 July 2017
Chief Investigator / Supervisor		Professor Grant McArthur
Administering Institution		Peter MacCallum Cancer Centre
Funding Period	Start Date:	1 January 2017
	Finish Date:	31 December 2017

PROJECT SUMMARY

Melanoma 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 find ways to identify those who are likely to respond, and also to stop futile treatment as soon as possible. This project aims to use functional positron emission tomography (PET) scans 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 incorporate them into a clinical utility index which can then be used in the clinic to 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-PDI) 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 to validate these findings have been established, and we are in the process of analysing this data.

Clinical data of patients with advanced melanoma who were treated with immunotherapy at Peter MacCallum Cancer Centre has contributed to a number of retrospective studies assessing efficacy and toxicity in special patient cohorts, including:

- Patients with rheumatoid arthritis treated with anti-CTLA4
- Patients with underlying auto-immune conditions treated with anti-PDI
- Patients with brain metastases treated with anti-P 1
- Patients with poor performance status treated with anti-PDI

Findings of the comparison of immune-profile of U related skin cancers will be presented at the World Congress of Melanoma ASM 2017.

PUBLICATIONS / PRESENTATIONS

2017: Clinical and palliative care outcomes for patients of poor performance status treated with anti-programmed death 1 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 Jun 29. doi: 10.1111/ajco.12702

2017: The Advantages and Challenges of Using FDG 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 Apr 7. 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, 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.

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.J. 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: CD271 Expression on Patient Melanoma Cells Is Unstable and Unlinked to Tumorigenicity.

Boyle SE, Fedele CG, Corbin V; Wybacz E, Szeto P, Lewin , Young RJ, Wong A, Fuller R, Spillane J, Speakman D, Donahoe S, Pohl M, Gyorki D, Henderson MA, Johnstone RW, Papenfuss AT, Shackleton M.

Cancer Res. 2016 Jul 1;76(13):3965-77 PMID: 27325642

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 multispectral immunohistochemistry (mIHC)

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

World Congress of Melanoma ASM (Poster)

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 (awarded Merit Award)

2016: 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

Medical Oncology Group of Australia ASM (Poster)

2016: Anti-PD1 therapy in patients with advanced melanoma and persisting autoimmune disorders (AD) or major toxicity with ipilimumab (IPI)

Menzies A, Johnson D, Ramanujam S, Aktinson V, Wong A, Park J, McQuade J, Shoushtari A, Tsai K, Eroglu Z, Klein O, Hassel J, Sosman J, Guminski A, Sullivan R, Ribas A, Carlino M, Davies M, Sandhu S, Long G.

American Society of Oncology ASM (Poster discussion)

American Society of Clinical Oncology Merit Award 201 J, awarded for poster abstract, 'Spleen to liver ratio (SLR) Novel PET imaging biomarker for prediction of overall survive I after ipilimumab and anti-PD1 in patients with metastatic melanoma.'