Research Report for ANZHNCS Grant Program 2016

Bruce Ashford FRACS

Unravelling genetic markers of progression and metastases in Head and Neck Cutaneous Squamous Cell Carcinoma

This research is complete and was enabled by grants including from ANZHNCS. The project looked at the differential expression of genes of interest in the metastatic process. This was achieved by using RNA from normal skin, primary cSCC and metastatic tumour deposits. The RNA was processed using the Nanostring platform to identify variant expression patterns in genes that we had previously identified as highly or recurrently mutated in our whole genome sequencing of metastatic tumours.

An example of the Nanostring output is included to outline the nature of reports and the utility of the platform and use of the ANZHNCS grant. Specifically, the grant paid for a Nanostring run of primary vs metastatic tumours.
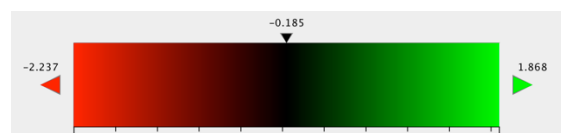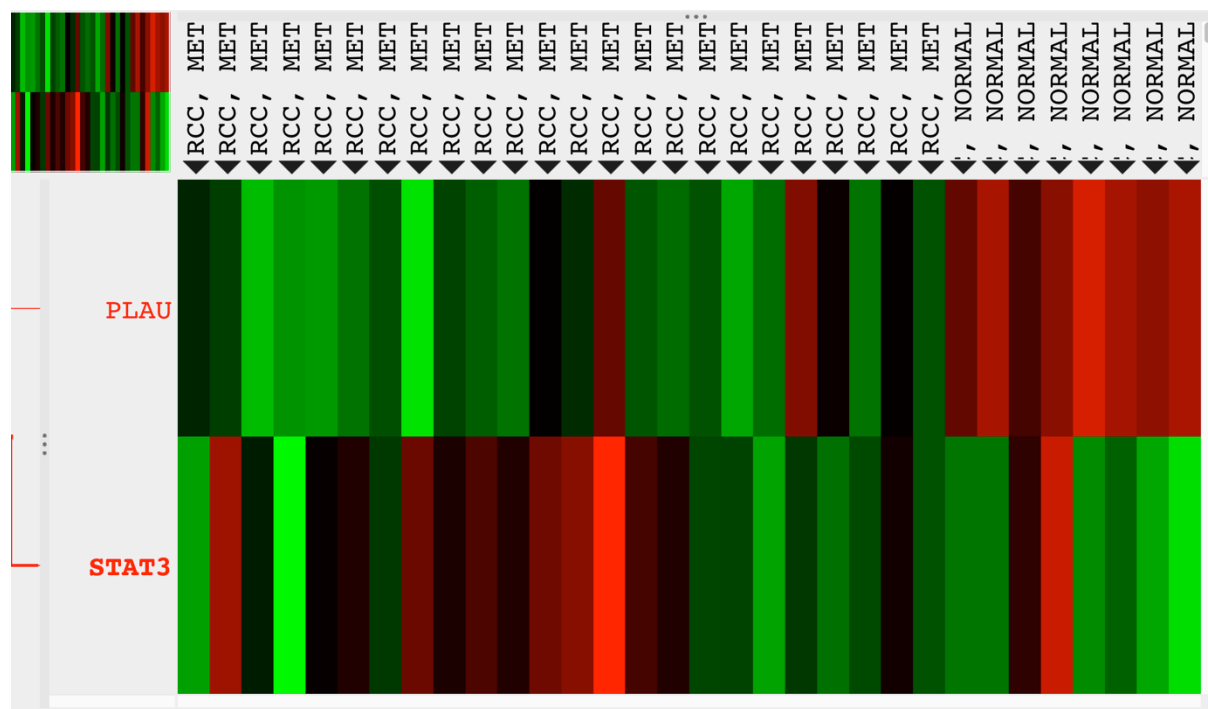
Nanostring panel comparing expression of *PLAU* vs *STAT3* in metastatic cSCC vs normal skin. Green = overexpressed.

The separation of tumour types related to their differential expression of these 2 genes of interest is demonstrated. We have used this tool on 770 genes for in excess of 50 tissue samples, generating a large pool of data for ongoing analysis.

Presentations

ANZHNCS ISMR Joint Meeting 2018
MULTIPLEX GENE ANALYSIS OF HIGH RISK AND METASTATIC CSCC

Thomas, Louise *, Ashford, Bruce., Perry, Jay., Gauthier, Maely., Ranson, Marie., Menaei, Elahe., Gayevskiy, Vel., Clark, Jonathan., Iyer, N Gopalakrishna., Gupta, Ruta., Cowley Mark
Illawarra Health and Medical Research Institute
Wollongong, Australia

Papers

1: Zilberg C, Lee MW, Yu B, Ashford B, Kraitsek S, Ranson M, Shannon K, Cowley M, Iyer NG, Palme CE, Ch'ng S, Low TH, O'Toole S, Clark JR, Gupta R. Analysis of clinically relevant somatic mutations in high-risk head and neck cutaneous squamous cell carcinoma. Mod Pathol. 2018 Feb;31(2):275-287. doi: 10.1038/modpathol.2017.128. Epub 2017 Oct 6. PubMed PMID: 28984303.

2: Roper E, Lum T, Palme CE, Ashford B, Ch'ng S, Ranson M, Boyer M, Clark J, Gupta R. PD-L1 expression predicts longer disease free survival in high risk head and neck cutaneous squamous cell carcinoma. Pathology. 2017 Aug;49(5):499-505. doi: 10.1016/j.pathol.2017.04.004. Epub 2017 Jun 27. PubMed PMID: 28666643.

3: Satgunaseelan L, Chia N, Suh H, Virk S, Ashford B, Lum T, Ranson M, Clark J, Gupta R. p16 expression in cutaneous squamous cell carcinoma of the head and neck is not associated with integration of high risk HPV DNA or prognosis. Pathology. 2017 Aug;49(5):494-498. doi: 10.1016/j.pathol.2017.04.002. Epub 2017 Jun 26. PubMed PMID: 28663082.