Michelle McDonald

ANZBMS/Amgen Christine and TJ Martin Travel Award Report 2015.

The focus of my research is to determine how tumour cells and cells of the bone microenvironment interact. In addition, my research explores the potential for Wnt targeted therapeutics to prevent bone disease in multiple myeloma. This travel award provided me with an opportunity to build on my international profile as a mid-career researcher within this field and foster new international collaborations. My travels commenced in late March 2015 in Boston at the Dana Faber Institute at Harvard Medical School. Dr Michaela Reagan and Irene Ghobiral hosted my visit, inviting me to present my work on tumour cell dormancy and activation within the skeleton. I then spent 3 days with Dr Reagan in the lab discussing our common interests in understanding tumour cell growth in bone and how we can collaborate to use Wnt targeted agents to promote bone formation to treat bone disease in multiple myeloma. I also spent time learning about Dr Reagan's *in vitro* 3D silk scaffold co-culture technique, which allows visualisation of tumour cell growth in the presence of bone marrow stromal cells within a 3D matrix. Using confocal imaging we visualised the different distribution of myeloma cells when cultured with stromal cells. We are now optimising this co-culture technique in our lab in Sydney to examine further interactions between tumour cells and bone cells.

I then travelled to Portland, Maine to visit Professor Cliff Rosen at the Main Medical and Clinical Research Institute (MMCRI). Dr Michaela Regan re-located to commence her own research group alongside Cliff Rosen at the MMCRI in September 2015. We therefore felt a visit in April to meet with Professor Rosen would strengthen our future interactions. In Maine, I was again invited to present our work on tumour cell dormancy and activation within the skeleton. This received great interest and sparked interesting discussions with Professor Rosen and his team. Professor Rosen also provided me with some very valuable career advice and mentoring during my visit and offered his support for the collaborative efforts Michaela and I have planned. Dr Reagan and I have since commenced collaborative work using Sclerostin targeted antibodies to prevent bone disease in a range of murine multiple myeloma models. We are also applying for collaborative funding for this work.

From Maine I then travelled to Brussels in Belgium to visit Professor Karin Vanderkerken of the Department of Haematology and Immunology at the University of Brussels. Professor Vanderkerken is an established researcher in the field of multiple myeloma. Her group is the only one in the world with the 5T2MM murine model of myeloma established. This is the only model of myeloma capapble of producing osteolytic bone disease within an immunocompetent environment . I learnt the necessary techniques to allow us to establish the 5T2MM model in our lab in Sydney. This included cell production, whch requires *in vivo* passage, cell harvesting, re-injection of cells, flow analysis of harvested bone marrow and assessing tumour burden by cell morphology on cytospins. I was also given an opportunity to present our work covering tumour cell dormancy in bone and prevention of bone disease with Anti-Sclerostin to Professor Vanderkerken's research group. This led to an interactive discussion with this well renowned myeloma research team. We also planned a collaborative project using anti-Sclerostin in the 5T2MM model. This study is currently underway, and is due for completion in late 2015 and will be published alongside data from anti-Sclerostin treatment in the 5TGM1 myeloma model.

The final stage of my trip was to attend and present my work at the European Calcified Tissue Society (ECTS) Post Doc training Course and The combined ECTS and Cancer and Bone Society (CABS) Annual Scientific Meeting in Rotterdam. This meeting offered a great opportunity to present my research but also raise my profile at the international level. I presented my work on Anti-Sclerostin treatment in myeloma as a poster and I also presented our work on tumour cell dormancy in bone as a short oral presentation and was an invited chair in the CABS session. In addition, as co-chair of the International Bone and Mineral Society (IBMS) Young Investigator (YI) Committee over the last 2 years, I was heavily involved in the YI program which we organised in collaboration with the ECTS New Investigator Committee. This involved co-chairing the YI oral session, judging and awarding prizes to the best presentation during this session, attending all YI sessions and networking with YI to recruit new members for the IBMS YI committee. I was also given the opportunity to award a new initiative created by our committee, the IBMS YI travel award, to the awardee during the closing ceremony of the ECTS/CABS meeting. Further, I held meetings with collaborators from Germany and the USA, as well as Novartis, who continue to support our work through providing Sclerostin antibody.

I would like to thank Amgen and ANZBMS for their support of this great initiative in the career development of Young and Mid-career Australian bone research scientists. It allowed me to learn new techniques to drive my research in Australia. Importantly, it also provided an opportunity to strengthen my international profile and broaden my international collaborations. These are two aspects of my career development which will raise my competitiveness for grant and fellowship funding success. I highly recommend all eligible scientists to take advantage of the opportunities provided by this award.