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Blood based biomarkers for diagnosis, prognosis and monitoring of patients with melanoma

Current methods of melanoma diagnosis and prognosis are at times problematic and limited to observation of tumor tissue by histology or imaging. The analysis of blood based, tumor specific products including autoantibodies, circulating tumor DNA (ctDNA) and circulating tumor cells (CTCs), now provides early rapid, accurate and quantitative measurements of tumor presence and/or burden. In our studies, we utilized protein arrays, mutation-specific droplet digital PCR and microfluidic devices to measure autoantibodies, mutant tumor DNA (ctDNA) and circulating tumor cells (CTCs), respectively, in patients with very early to advanced stage metastatic melanoma. Autoantibodies were detected in very early stage patients (n=150) at significantly higher concentrations than those in healthy controls (n=150). A diagnostic combination of 10 autoantibodies has been identified that can be utilized as an accompaniment to current clinical measures. For metastatic melanoma we utilized ctDNA and CTCs to detect and monitor tumour burden during treatment of patients with targeted therapies (n=47) and/or immunotherapies (n=48). CTCs and/or ctDNA were detected in 70% to 80% of samples prior to treatment. Levels of ctDNA and CTCs decreased in response to therapies, prior to, or concurrently with radiographic response. Moreover, patients with no, or low, levels of ctDNA and CTCs at baseline had significantly longer PFS. In addition, CTC subtypes, including those positive for PDL1, predicted response. In conclusion, our studies demonstrate the utility of blood based liquid biopsies to assist with diagnosis, prognosis and monitoring of melanoma patients.

Biography

Mel Ziman is an Associate Dean of Research and Chair of the HREC at Edith Cowan University. Her research focuses on blood based biomarkers for melanoma. Her team has been awarded with more than \$7 million in funding from the National Health and Medical Research Foundation as well as international funding agencies and pharmaceutical companies and collaborates closely with world leading clinicians and researchers. In 2016, she received the Vice Chancellor's Award for Research. She has been a member of the Parliamentary Committee on Skin Cancer, and is a member of grant review panels for national federal agencies, cancer councils and international review panels. She has published over 100 papers and has over 2000 citations.

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