

Detection and quantification of circulating melanoma cells in patients with cutaneous malignant melanoma

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Our research is aimed at detection, characterisation and quantification of circulating melanoma cells in patients with Cutaneous Malignant Melanoma. This research will assist with development of a prognostic blood test for the detection of melanoma micrometastases in patients before and after surgery and during therapy to assess efficacy. To date we have used qRT-PCR to assess circulating melanoma cells in 300 melanoma patients and 100 healthy volunteers. The frequency and level of expression of markers was correlated to Breslow tumour thickness and tumour progression and results were statistically analysed. Control blood samples spiked with cells from metastatic melanoma cell lines were used as positive controls. Antibodies to melanoma cell markers have also been used in flow cytometry and immunomagnetic bead capture experiments to isolate circulating cells from patient blood samples. Our results clearly demonstrate the presence of circulating melanoma cells in 79% of patients with stage III and IV disease whilst these markers were observed in only 20-30% of early stage patients. Assay sensitivity tests showed that markers can be detected from as few as 5 cells per blood sample. Surprisingly, melanoma cells are found in peripheral blood of patients with early stage tumours and in patients from whom tumours were removed several years previously. Using immunomagnetic bead capture we have quantified the circulating cells in patient blood and found that cell number correlates with disease stage particularly when specific cell surface markers are used to isolate cells. Further research will clarify the molecular signature of metastatic circulating melanoma cells.

Biography

Mel Ziman completed her Ph.D at the University of Cape Town and postdoctoral studies from the University of Western Australia School of Medicine. She is the director of ECU Melanoma Research Foundation, a leading melanoma research group in Western Australia. She has published more 70 papers in reputed journals and serves as a reviewer for several journals and grant review panels worldwide.