Diagnosis and Staging

Biomarkers

Current diagnostic standards are inadequate in identifying the approximately 30% of primary melanoma patients who have high risk of progression. MRA-funded researchers have recently identified molecular biomarkers associated with risk of metastasis. This work is being clinically developed by a company to build prognostic tests based on the molecular characteristics of early stage melanoma. Another project is focused on identifying and integrating biomarkers into the melanoma staging system to aid in assessment and clinical management of patients with early stage melanoma.

New DNA sequencing tools are being employed to reveal mutations and alterations in melanomas of different stages. The ultimate goal is to establish molecular diagnostic tools in which melanoma tumors will be subjected to a battery of tests that will identify the optimal targeted therapy for individual patients. Additional avenues are exploring whether so-called micro-RNAs (small pieces of genetic information) could be an ideal class of blood biomarkers for the early diagnosis and assessment of melanoma progression.

Imaging

New imaging technology is needed to aid in the detection of early and small metastatic tumors. In particular, molecular imaging agents are currently limiting the use of positron emission tomography (PET) for melanoma. A MRA-funded study developed PET probes that target the melanin pigment in melanoma cells. The new agents detected lung metastases in mouse models with excellent imaging quality and low accumulation in healthy organs. Continued testing and development will be required before they can enter the clinic.