

## **DermPath Update**

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### **Tyrosinase mRNA by RT-PCR Detects Circulating Melanoma Cells**

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Tyrosinase is an enzyme of melanin synthesis found only in melanin-producing cells. Melanin producing cells are not normally found in the peripheral blood. The presence of tyrosinase messenger RNA (mRNA) in the peripheral blood of melanoma patients is an indicator of circulating melanoma cells.<sup>1</sup> The reverse transcription-polymerase chain reaction based assay (RT-PCR) for tyrosinase mRNA is highly sensitive, allowing detection of 1 melanoma cell in 5 cc of blood. The presence of peripheral blood tyrosinase mRNA by RT-PCR has been demonstrated to correlate with the clinical stage of melanoma and survival. In stage II-II melanoma patients, the recurrence rate and disease-free survival were significantly worse in patients positive for peripheral blood tyrosinase mRNA by RT-PCR.<sup>2,3</sup>

Adjuvant therapy is being strongly promoted for melanoma patients thought to be at risk for metastatic disease.<sup>4</sup> Traditionally, patients with Stage I melanoma of intermediate (Breslow thickness 1.5mm to 4 mm) and advanced (Breslow thickness > 4 mm) thickness have been considered candidates for adjuvant therapy. The recent results of interferon trials have encouraged the use of adjuvant therapy for melanoma patients with thinner melanomas. Interferon treatment is particularly helpful to patients with local lymph node metastasis.<sup>5</sup> Sentinel lymph node biopsy is being advocated as a staging tool to detect early metastasis and identify patients who might benefit from adjuvant therapy. Traditional laboratory and radiographic tests for monitoring melanoma patients have not been shown to be of special value in early detection of metastatic disease. Newly developed methods which may be of value in detecting or predicting recurrence include peripheral blood tyrosinase mRNA and the PET scan.

Molecular Pathology Laboratory of Maryville, Tennessee, under the direction of Dr. Roger Hubbard, has developed a RT-PCR tyrosinase assay. Blood samples from melanoma patients are being sought to begin validating the clinical utility of the assay. In these early phases of development, blood samples from patients with metastatic melanoma are particularly needed. Two 5 cc purple topped tubes (EDTA) are requested from each patient. Specific directions for submitting samples may be obtained by calling Molecular Pathology Laboratory, 423-981-2332.

Patients with melanoma are also being sought for a study "**Tyrosinase mRNA amplification and Positron Emission Tomography (PET) for detecting Recurrent or Metastatic Melanoma.**"

This study, under the direction of Dr. Karl F. Hubner ,University of Tennessee Medical Center Knoxville, PET Center, aims to use the RT-PCR tyrosinase mRNA assay and FDG PET scan to identify early metastasis in melanoma patients. For more information or to enroll a patient in this study, call Dr. Karl Hubner, 423-544-9662.

Two recent papers have suggested that the RT-PCR tyrosinase mRNA assay is not sensitive enough to be used as a progression marker or to monitor the effect of therapy.<sup>6,7</sup> None the less, it may still be of sufficient predictive value to identify melanoma patients who may benefit from adjuvant therapy or additional imaging studies such as PET scan. It is very exciting to have PET scan and the RT-PCR tyrosinase mRNA assay available for melanoma patients in our region. By participating in these preliminary studies, we may be able to significantly improve the care of our melanoma patients.

PBG

## References

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