

## Bankhead-Coley Cancer Research Program

***Abaffy, Tatjana***

*Molecular and Cellular Pharmacology  
University of Miami*

*2008 Program  
Bridge (1-year project)*

**Project Title:** Detection of Melanoma by Canine Olfactory Receptors

**Project Summary:** Melanoma is the most serious form of skin cancer. It has an aggressive course, and successful treatment requires early diagnosis. Current diagnosis is based on the results of biopsy analysis using a more than 100-year old method. Distinguishing between benign pigmented lesions and early melanomas can be difficult.

The central hypothesis is that melanoma tissue contains unique volatile compounds that can be recognized by olfactory receptors. We will identify volatile melanoma biomarkers and olfactory receptors that detect these biomarkers. The major innovation of this grant is to lay the foundation for the clinical diagnosis of melanoma based on volatile by-products of altered metabolism. Identification of the specific olfactory receptors that recognize melanoma biomarkers will enable future work—a biosensor for early detection of melanoma. Our long-term objective is the development of a safe and non-invasive diagnostic tool.

The profile that emanates from cancerous tissue forms an odor signature that is different from control tissue. In order to find a differential pattern, profiling melanoma volatiles is being done by gas chromatography and mass spectrometry. To identify “smell” receptors that respond to melanoma biomarkers, we are using two assays: electrophysiological assay for functional receptor expression and a gene expression microarray analysis.