Introduction
The incidence of melanoma has been increasing rapidly over the past four decades, accounting for a large majority of skin cancer related deaths.

Neuropilin-2 (NRP-2) is a cell surface receptor that is involved in angiogenesis, lymphangiogenesis and eventual tumor cell metastasis. NRP-2 is among the most highly upregulated genes in metastatic melanoma cells.

Therefore, NRP-2 was hypothesized to be a critical mediator for melanoma cell metastasis, and was proposed as a diagnostic biomarker for melanoma.

Objectives
To evaluate the utility of NRP-2 as a useful biomarker in melanoma using RNA isolation from archived formalin-fixed paraffin embedded tissues and qRT-PCR

Results
NRP-2 was over expressed in melanoma cells.

The melanoma cells also showed significant increased expression of the glycoprotein Melan-A which served as a control in this study.

This significantly increased expression of NRP2 in metastatic melanoma versus benign nevi suggests that NRP2 can be utilized as a novel biomarker in the identification of patients with metastatic melanoma disease.

Methods
The Arcturus Paradise PLUS WT-RT Reagent System was utilized to optimize RNA extraction, isolation and reverse transcription from archived formalin-fixed-paraffin embedded (FFPE) tissue samples. Normal skin, benign nevus, kidney and melanoma tissue samples were used cDNA was generated and used in qRT-PCR gene expression studies.

Summary
Our current data suggest that NRP-2 has a specific and increased expression in malignant melanoma tissue as compared to benign nevi and other tissue samples and therefore can be utilized as a diagnostic biomarker for metastatic melanoma.

The relative lack of gene expression in benign nevi suggests that NRP2 may also be clinically useful as a prognostic marker to help differentiate between benign lesions and malignant lesions, which can be difficult to differentiate from one another, leading to possible misdiagnoses.

Future Directions
NRP-2 as a novel biomarker for melanoma is extensively being studied in the Alani-Lab, and there are several future directions:

• Further optimization of NRP2 detection from FFPE samples using qRT-PCR
• To determine the clinical utility of NRP2 as a biomarker for circulating tumor cells in Melanoma

References

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