Molecular Diagnosis And Classification Of Malignant Melanoma
Tech ID: 25325 / UC Case 2004-078-0

INVENTION NOVELTY
These novel sets of biomarkers predict the five year survival rate of melanoma patients.

VALUE PROPOSITION
Melanoma is the most serious form of skin cancer. More than 73,000 cases of melanoma are expected to be diagnosed in 2015. The 5-year survival rate can vary dramatically among melanoma patients. For example 97% of patients with Stage 1A melanoma are expected to survive for 5 years while the 5-year survival rate for patients with Stage IV melanoma is only 15-20%. The prediction of melanoma prognosis is crucial for identifying which patients should undergo adjuvant therapy. Thus, techniques to properly stratify melanoma patients are crucial.

TECHNOLOGY DESCRIPTION
UCSF investigators analyzed expression of various biomarkers using immunohistochemical analysis in tissue microarrays including cohorts of ~500 patients. Cox regression, Kaplan-Meier analysis, and logistic regression was used to determine the prognostic effect of several biomarkers. The following biomarker sets were identified to be predictive of melanoma stage:

1) Wnt-2, NCOA3, PHIP (pleckstrin homology domain interacting protein), osteopontin, WIF1, ARPC2, G1P3/IFN alpha inducible protein, MIP1 alpha, Bfl1/Bcl-2-related protein A1, RGS1, Fibronectin 1, and POU5F1/Oct3/4

2) ARPC2, FN1, NCOA3, RGS1, SPP1, and WNT2

The investigators analyzed samples 1,222 melanoma patients, who were grouped into low, medium, and high risk cohorts based on actual survival. The biomarkers listed above were found properly group patients into these three cohorts and were shown to increase prognostic potential when added to routinely used histological markers to develop a patient-centered prognostic model for melanoma. Furthermore, a three-marker assay tested from the list of markers independently predicted melanoma survival, validated in an external cohort. Thus diagnostic technique is more powerful predictor of survival than lymph node metastasis.

APPLICATION
- diagnosis of melanoma stage
- prediction of melanoma survival

LOOKING FOR PARTNERS
To perform these diagnostic techniques on samples from melanoma patients

STAGE OF DEVELOPMENT
Fully developed diagnostic techniques
RELATED MATERIALS

▶ A Multimarker Prognostic Assay for Primary Cutaneous Melanoma
▶ A multi-marker assay to distinguish malignant melanomas from benign nevi
▶ A Patient-Centered Methodology That Improves the Accuracy of Prognostic Predictions in Cancer
▶ Molecular diagnosis and classification of malignant melanoma
▶ Molecular diagnosis and classification of malignant melanoma (continuation)

DATA AVAILABILITY

Published in references cited above

PATENT STATUS

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>Number</th>
<th>Dated</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States Of America</td>
<td>Issued Patent</td>
<td>8,492,102</td>
<td>07/23/2013</td>
<td>2004-078</td>
</tr>
</tbody>
</table>