An affordable and globally accessible immunohistochemistry-based assay for robust breast cancer molecular subtyping and prognostic stratification

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Presentation ID: RF4-3
Track: 2 Closing the gap: quality cancer treatment and diagnosis for all
Abstract presented before: N

Disclosure of interest: Patents related to FOXC1 in cancer, stock ownership in and consultant, Onconostic Technologies, Inc.
Simplifying PAM50 subtyping: *Stepwise vs. Simultaneous*

**Step 1**
Marker 1 positive

**Step 2**
Marker 2 positive

**Step 3**
Marker 3 positive

Molecular Portraits of Human Breast Tumors
Perou et al. Nature
406, 747-752 (17 August 2000)
http://www.nature.com/nature/journal/v406/n6797/full/406747a0.html
## Preset Cutoff Values: Single Sample Prediction

### Percent survival

N=1992

### Univariate Analysis

<table>
<thead>
<tr>
<th>Covariate</th>
<th>P</th>
<th>Hazard Ratio</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN_Status</td>
<td>&lt;0.0001</td>
<td>2.6872</td>
<td>2.1893 to 3.2983</td>
</tr>
<tr>
<td>Tumor_Size</td>
<td>&lt;0.0001</td>
<td>1.9245</td>
<td>1.5973 to 2.3187</td>
</tr>
<tr>
<td>PAM50</td>
<td>&lt;0.0001</td>
<td>1.429</td>
<td>1.3187 to 1.5486</td>
</tr>
<tr>
<td>Three_Marker</td>
<td>&lt;0.0001</td>
<td>1.4674</td>
<td>1.3465 to 1.5992</td>
</tr>
</tbody>
</table>

### Multivariate Analysis

<table>
<thead>
<tr>
<th>Covariate</th>
<th>P</th>
<th>Hazard Ratio</th>
<th>95% Confidence Interval</th>
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</thead>
<tbody>
<tr>
<td>LN_Status</td>
<td>&lt;0.0001</td>
<td>2.433</td>
<td>1.9755 to 2.9964</td>
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<tr>
<td>Tumor_Size</td>
<td>&lt;0.0001</td>
<td>1.6442</td>
<td>1.3606 to 1.9870</td>
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<tr>
<td>PAM50</td>
<td>&lt;0.0001</td>
<td>1.3834</td>
<td>1.2749 to 1.5010</td>
</tr>
<tr>
<td>Three_Marker</td>
<td>&lt;0.0001</td>
<td>1.4235</td>
<td>1.3056 to 1.5521</td>
</tr>
</tbody>
</table>
Global Relevance of Proposed 3 Marker Subtyping

Summary:
1. Simplified, IHC-based breast cancer molecular subtyping is possible.
2. Results are equivalent to PAM50 in terms of diagnosis and prognostic prediction.
3. Such protocols, by significantly mitigating cost, lend themselves to truly global implementation.
4. Implementation may help to achieve more uniform breast cancer survival outcomes across the world.

Molecular portrait of breast cancer in China reveals comprehensive transcriptomic likeness to Caucasian breast cancer and low prevalence of luminal A subtype
Huang et al Cancer Medicine
Volume 4, Issue 7, pages 1016-1030, 18 MAR 2015
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worldcancercongress.org