

Novel prognostic test for breast cancer patients

BIOMARKED, a consortium of research laboratories of Ghent University, is seeking partners interested in developing and commercializing a novel test for breast cancer prognosis.

Introduction

Estrogen Receptor (ER) positive breast cancers, which comprise the majority of breast malignancies, carry a better prognosis for disease-free survival and overall survival than ER-negative breast cancers. Nevertheless, some ER-positive breast cancers are more invasive and tend to metastasize more frequently than other ER-positive tumors. Research at Ghent University indicates that biomarker Rab27B can be used to identify this subgroup of patients with ER-positive breast cancers but a worse prognosis.

Technology

Researchers at Ghent University identified Rab27B expression as a key factor for the increased invasiveness, tumor size and metastasis of various ER-positive breast cancer cell lines, both in vitro and in vivo. Importantly, in human breast cancer specimens the presence of Rab27B protein proved to be associated with a low degree of differentiation, lymph node metastasis and a positive ER-status. In agreement, levels of Rab27B mRNA were highest in ER-positive breast cancers with lymph node metastasis and lowest in ER-negative tumors. Based on this body of evidence, we conclude that Rab27B is as a major effector of invasiveness and metastasis, and can serve as a marker of ER-positive breast cancers with poor prognosis.

Applications

Assays for the detection and/or quantification of Rab27B protein or mRNA in breast cancer biopsy samples or circulating breast cancer cells.

Advantages

- + Novel test will enable physician to better evaluate prognosis, resulting in better treatment of breast cancer patients (personalized medicine) and health economics benefit.
- + Single protein marker will allow fast test development using known testing principles.
- + Well-documented molecular action mechanism of Rab27B will facilitate adoption of test by clinicians and support regulatory procedures.

Status of development

Rab27B's role in tumor invasion and proliferation was studied extensively in vitro in human breast cancer cell lines and in vivo in human breast cancer xenografts. Rab27B measurements were performed in approx. 100 human primary breast tumors; the presence of Rab27B protein in primary tumors

proved to be associated with a low degree of differentiation, lymph node metastasis and a positive ER-status. Additional validation studies are ongoing.

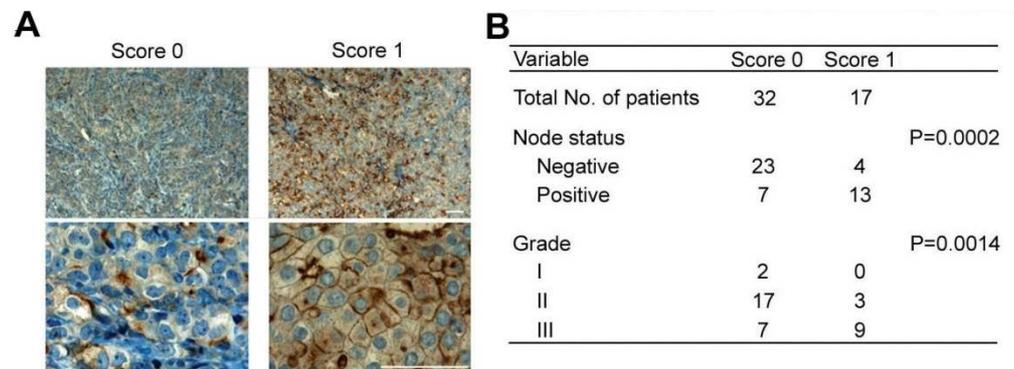
Partnership

Ghent University is seeking a partner for further validation of the use of Rab27B as a prognostic marker and development of a commercial assay.

Intellectual property

A PCT application covering the use of Rab27B as a prognostic marker for breast cancer was filed on 12 May 2010 (priority date 12 May 2009). Patent applications are pending in Europe, US and Canada.

Figure 1 Rab27B expression in clinical breast cancer specimens. (A) Representative Rab27B stained primary breast cancer samples illustrating immunohistochemical score 0, and 1. Scale bar, 100 μ m. (B) Frequency tables of the Rab27B immunohistochemical score and clinicopathological data for 49 primary breast tumors. The chi-square test was used to test for differences between categorical variables.



The Inventor(s)

An Hendrix, Olivier De Wever, Marc Bracke, Wendy Westbroek

References

Hendrix A et al. Effect of the secretory small GTPase Rab27B on breast cancer growth, invasion and metastasis. *J Natl Cancer Inst* 2010; 102(12):866-80.

Keywords

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Contact

Dr. Daisy Flamez - Technology Developer
 Biomarked Consortium Ghent University
 Coupure Links 653, B-9000 Ghent, BELGIUM
 +32 9 264 99 12 - Daisy.Flamez@UGent.be