Georg F. Weber, J Mol Biomark Diagn 2011, 2:4
doi: http://dx.doi.org/10.4172/2155-9929.S1.3

OMICS Group Conferences
Accelerating Scientific Discovery

2nd World Congress on
Biomarkers & Clinical Research

12-14 September 2011 Baltimore, USA

A novel marker for breast cancer progression

Georg F. Weber

University of Cincinnati, USA

The early detection of tumor dissemination is a challenge in cancer diagnosis because biomarkers for invasiveness are largely lacking in clinical medicine. Osteopontin is frequently secreted by cancer cells and plays important roles in their ability to metastasize. According to a meta-analysis, Osteopontin is significantly associated with decreased patient survival. Osteopontin levels are also markers for stage, grade, and early tumor progression, reflecting a common molecular underpinning for distinct clinical measures (Weber et al. Brit J Cancer 2010;103:861). However, Osteopontin physiologically acts as an inducer cytokine for cellular immunity, which may protect from cancer through immune surveillance. The structural basis for the discrepant effects between tumor- and host-Osteopontin had long not been elucidated. Because we have identified the genetic basis of metastasis as aberrant expression or splicing of stress response genes, we have studied Osteopontin splice variants in malignant tumors. Osteopontin is subject to alternative splicing, which yields three messages, Osteopontin-a, -b and -c. The shortest form, Osteopontin-c is selectively expressed in invasive, but not in non-invasive, breast tumor cell lines, and it effectively supports anchorage independence. Osteopontin-c is present in 75-80% of breast cancers and 0% of normal breast tissues. Furthermore, Osteopontin-c detects a higher percentage of breast cancers than ER, PR, or HER2. In particular, a fraction of triple-negative breast cancers stains positively for Osteopontin-c (Mirza et al. Int J Cancer 122:889). Due to its absence from normal tissue, Osteopontin-c may be a superior biomarker for cancer progression. Its measurement in blood as a means of early detection is currently under investigation.

Biography

Georg F. Weber attended medical school in Wuerzburg, Germany. He worked at the Dana-Farber Cancer Institute, Harvard Medical School from 1990 through 1999 and is currently on the faculty at the University of Cincinnati. Georg F. Weber has published around 70 scientific reports, including many in the most respected professional journals, and various monographs, most recently a textbook on molecular oncology. He holds several patents. As a component of his mission to research cancer dissemination, Georg F. Weber is the founder and chief executive officer of MetaMol Theranostics, a company specialized in diagnosis and treatment of cancer metastasis.