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Biomarkers for breast cancer: Where we are now

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Breast cancer is one of the leading causes of cancer death in women, but there has been a sustained decline in mortality rates over the last decades despite the increasing incidence of breast cancer. The effective adjuvant systemic treatment is one of the major contributors to this recent development. Breast cancer treatment has experienced several changes in the past decades due to the discovery of specific prognostic and predictive biomarkers that enable targeted therapies. In addition to the classical clinical prognostic factors of breast cancer, established biomarkers such as estrogen receptor and progesterone receptor have played a significant role in the selection of patients benefiting from endocrine therapy. More recently, the human epidermal growth factor receptor 2 (HER2) has been validated to be not only a prognostic factor, but also a predictor of response to HER2 targeting therapy. The marker of proliferation Ki67 has recently emerged as an important marker due to several applications in neoadjuvant therapy in addition to its moderate prognostic value. In the past two decades, the human genome project and the development of high-throughput technologies prompts the rapid emerging multi-gene signature for certain tumors with characteristic clinical behaviors to novel therapy strategies. The gene expression profiling of tumors allows the measurement of thousands of mRNA transcripts in one single experiment using DNA microarrays. In combination of rapidly developing bioinformatics technology, the novel multi-gene signatures play an increasingly important role in patient care. It is imperative for the practicing pathologists to keep updated knowledge of new development of biomarkers, the biological scenario of the development and their potential clinical applications.

Biography

Hong Amy Zhang is currently an Associate Professor in the Department of Pathology and Translational Molecular Pathology in University of Texas-MD Anderson Cancer Center in Houston, TX, specializing in Breast Cancer Pathology. Prior to joining UT-MDACC, she was an Assistant Professor in the Department of Pathology in the Baylor College of Medicine from 2006 to 2009. She is an American board certified practicing Pathologist since 2003. She has expertise in diagnosing breast cancers and the interpretation of the biomarkers relevant to breast cancers for patient care. She is also actively supervising research scientists and trainees on translational and laboratory research, focusing on the characterization of tumor markers significant for breast tumorigenesis and the development of small molecule inhibitors and potential novel molecular targets for breast cancer treatment.

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