

**#59 NAF Biomarkers Predict Premenopausal and Serum Biomarkers Predict Postmenopausal Breast Cancer Risk.** Edward Richard Sauter, Inna Chervoneva, Anastasia Diamandis, Jahvad Khosravi, Samuel Litwin, and Eleftherios Diamandis. *Fox Chase Cancer Center, Philadelphia, PA, Mt. Sinai Hospital, Toronto, Canada, Thomas Jefferson University, Philadelphia, PA, and University of Toronto, Toronto, Canada.*

We previously demonstrated that nipple aspirate fluid (NAF) can be obtained from virtually all non-Asian women between the ages of 30 and 80. Insulin-like growth factor-1 (IGF-1) is an important growth factor for breast cancer cells and IGF binding protein-3 (IGFBP-3) is its most prevalent binding protein. Prostate-specific antigen (PSA) is a serine protease demonstrated to enzymatically cleave IGFBP-3. The objective of this report was to determine the association of these markers, as well as of fragmented IGFBP-3 (BP3-FR), with breast cancer risk and tumor progression. Analysis was performed on NAF from 175 subjects and serum from 215 subjects. PSA, IGFBP-3 and BP3-FR in NAF and PSA, IGFBP-3, BP3-FR and IGF-1 in serum were evaluated for their association with breast cancer risk. Low NAF levels of PSA ( $p < 0.0001$ ) and high levels of IGFBP-3 ( $p = 0.023$ ) were associated with in situ or invasive breast cancer. When the markers were analyzed based upon menopausal status, low PSA levels in both pre- ( $p < 0.0001$ ) and postmenopausal women ( $p = 0.01$ ) were associated with breast cancer risk. Postmenopausal women with low serum levels of PSA ( $p = 0.035$ ) and high levels of serum BP3-FR ( $p = 0.026$ ) were associated with breast cancer. Using logistic regression, each of the NAF markers were independently associated with breast cancer risk in pre- but not in postmenopausal women. None of the serum markers improved the ability to predict premenopausal breast cancer risk. In postmenopausal women, NAF and serum PSA and serum BP3-FR separately but not together were associated with risk. In conclusion, NAF markers were powerful predictors of breast cancer risk in premenopausal women, and cumulatively provided more information than any single marker. In postmenopausal women, serum markers and NAF PSA were associated with breast cancer risk.

**#60 Detection of HER-2/NEU Cell Membrane Receptor on Circulating Tumor Cells in Patients with Advanced Breast Cancer.** T. Mignon Walker, Daniel Hayes, Steve Gross, Madeline Repollet, Margaret Laurich, Gerald Doyle, and Leon W. M. M. Terstappen. *Georgetown University Medical Center, Washington, DC, and Immunicon, Huntingdon Valley, PA.*

The objectives of this study were to determine whether cells of epithelial origin exist in numbers significantly higher than background in patients with advanced breast cancer and if the presence of HER-2 cell membrane receptor could be assessed on these cells. Epithelial cells were immunomagnetically selected from 7ml of blood and the cells were fluorescently labeled with antibodies directed against cytokeratin, HER-2, CD45 and a nucleic acid dye. The immunomagnetically selected and fluorescently labeled cells were analyzed by flow cytometry. In