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# POSTER ABSTRACTS

## Quantitation of Estrogen and Progesterone Receptors by Immunocytochemical and Image Analyses

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**Abstract** The ability to detect estrogen and progesterone receptors by immunocytochemical analysis in formalin-fixed, paraffin-embedded sections has clear advantages over other techniques, including the ability to assay small biopsy specimens, fine needle aspirate samples, and archival material. Twenty-two cases of breast carcinoma were evaluated for estrogen and progesterone receptors by immunocytochemical analysis and enzyme immunoassay. Using a true color-based image analysis system, histograms of area versus the optical density of the positive staining nuclei were generated. A binary decision algorithm was derived from these histogram parameters by the Classification and Regression Trees (CART) computer program. Estimates generated by the algorithm for image analysis/immunocytochemical analysis had a 90% concordance with the enzyme immunoassay values. We conclude that quantitative immunocytochemical results for estrogen and progesterone receptor content in formalin-fixed, paraffin-embedded tissue can be generated using image analysis. 

## Reflexive Algorithmic Approach to Clinical Decision Making: Breast Cancer as a Model

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**Abstract** The number of tests available for the prognostication of patients with breast cancer, (*e.g.*, estrogen and progesterone receptor, DNA ploidy, % S-phase analysis, HER-2/*neu*, EGFR, p53, cathepsin D, pS2, PCNA, *etc.*) is staggering. Many published studies statistically prove the prognostic significance for each independent test, but the situation becomes confusing and empirical for the clinician making a decision for a particular patient, particularly when test utilization and cost considerations must be weighed into the equation. Other factors such as the pathological stage, histological grade, vascular and lymphatic invasion, and the age and wishes of the patient should all be taken into consideration in arriving at the optimal treatment protocol. We have applied a Bayesian probability approach to published data in order to derive a branched tree algorithm to predict the survival rates for both lymph node-positive and lymph node-negative women with breast cancer. Specimen quality and test results suggested which subsequent tests were most clinically useful. The size of the algorithm was reduced to minimize the number of tests requested and thus reduce costs. This type of analysis is necessary to ensure that the most information is obtained at the lowest cost, and serves as a model for other diagnostic situations. 