A pilot laboratory study comparing the 21-gene assay and PAM50-ROR.

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Background: The Onco*type* DX 21-gene Recurrence Score assay was developed in endocrine-treated patients (pts) and validated as a predictor of 10-yr distant recurrence risk and chemotherapy benefit in ER+ early-stage invasive breast cancer. The Prosigna assay (ROR) which uses 46 of the PAM50 genes, was validated on centrally processed samples as a prognostic assay only in endocrine treated, post-menopausal pts. To date no direct comparison data on paired samples from the same patients for these two assays has been reported and yet it's frequently believed that these assays are interchangeable. We performed a pilot study comparing test results from the two assays obtained from the same tumor blocks.**Methods:** Sequential breast cancer tumors from Marin Medical Laboratories with sufficient tumor material were tested with the standard 21-gene Recurrence Score assay. 40 cases stratified by the Recurrence Score (20 low, 10 intermediate and 10 high) were sent to an independent laboratory where the Prosigna assay for ROR and intrinsic subtype was performed with the operators blinded to the Recurrence Score results. Descriptive statistics were calculated for the results obtained from the two assays. **Results:** Of the 40 pts, 3 were excluded due to low RNA signal in the Prosigna assay and 4 were ER(-) by RT-PCR. Of the 33 remaining cases, 24 were ductal, 7 lobular and 2 other; 27 were N- and 6 were N+. The Spearman rank correlation between Recurrence Score and ROR was 0.40 (95% CI 0.06 – 0.65). Risk group assignment (low/intermediate/high) between Recurrence Score and ROR was in agreement in 56% (15/27) of N(-) pts. Prosigna classified 19 as luminal A, 12 as luminal B, 2 as HER2 enriched and 0 as basal. In both the luminal A and B groups there was a wide range of Recurrence Score results. **Conclusions:** Consistent with other comparisons between expression-based assays, it should not be assumed that these assays are interchangeable. While additional data from a larger independent analysis is needed, this pilot suggests that there is only a modest agreement between the Recurrence Score and ROR, with almost half of N(-), ER+ pts classified differently.