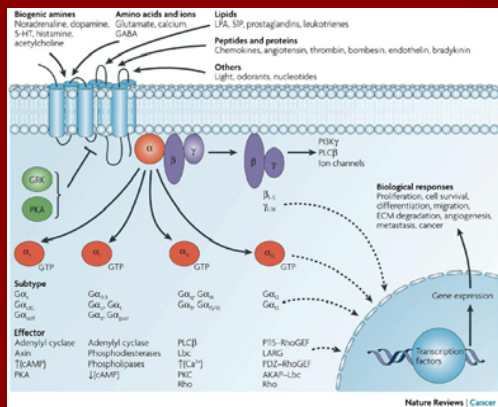


Prevalence By Race of the Novel Estrogen Receptor

GPR30 in Breast Cancer

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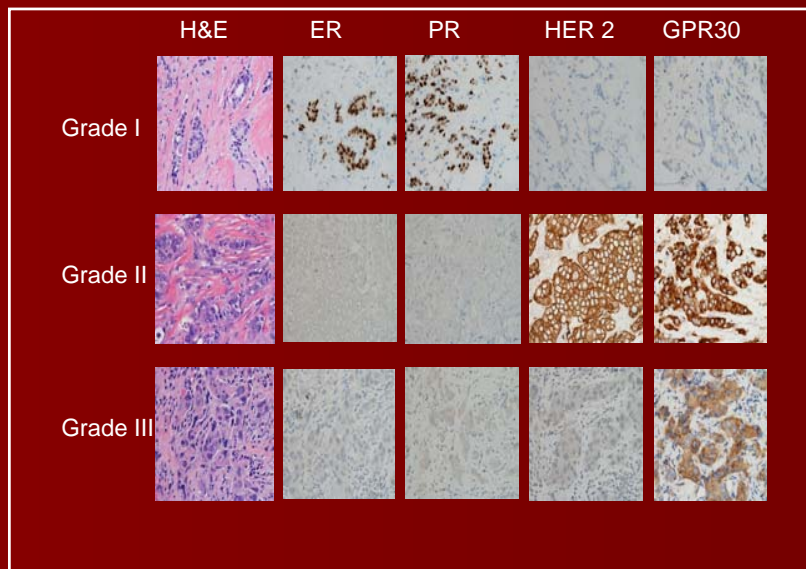
Introduction: African American women with breast cancer have a worse prognosis compared to white women, for their diagnosis is 10 years earlier and their stage and mortality are higher at diagnosis. One molecular difference is the high rate of difficult to treat “triple negative” breast tumors, which lack estrogen (ER), progesterone (PR) and human epidermal growth factor 2 (Her2) receptors. These hormone receptors drive breast cancer growth and have targeted therapies. Patients with triple negative tumors cannot receive the benefit of these therapies, leading to a search for alternatives.



Hypothesis: GPR 30, a G protein coupled receptor, is activated by estradiol and is expressed in various tissues including breast. The prevalence and exact significance of GPR30 is still largely unknown; however, our preliminary work showed that GPR30 was more prevalent in triple-negative tumors.

We hypothesized that GPR30 would be more common among black patients with breast cancer.

Results:



Hormone receptor status	Black women (%)	White women (%)	GPR 30 + (%)
ER +/Her 2 -neg	48 (p=0.03)	68	23 (p=0.004)
ER+/Her2+	7	16	46
ER-neg/Her2+	11	9	55
Triple Negative	34 (p=0.005)	7	48
GPR 30 + %	30	38	

56 cases and 56 controls

Mean age of 61 (21-91)

Methods: A retrospective case-control study was conducted searching for all black women listed in the hospital tumor registry who underwent surgery for invasive breast cancer between 1996-2006. The control group, matched for age and stage, was generated from randomly-selected cases of white female breast cancer patients. Tissue blocks were obtained from the hospital pathology archives. An immunohistochemical staining protocol for rabbit polyclonal GPR30 antibody [Novus Biological] was developed. Pathologists were blinded to the hormone receptor status and race. GPR30 staining of tumor cells was rated as present or absent. ER/PR/Her2Neu status was determined by chart review.

Conclusion: GPR30 appears to be frequently expressed in Her2+ and triple negative breast cancers regardless of race. These cancers are typically more aggressive and difficult to treat. Future studies are aimed at addressing the function of GPR30 in breast cells. If defined, GPR30 may represent a previously unknown estrogen receptor with clinical significance to breast cancer, providing a potential target for therapy.