

2nd International Conference on Genomics & Pharmacogenomics

September 08-10, 2014 DoubleTree by Hilton Hotel Raleigh-Brownstone-University, USA

***BPI*: A potential oncogene overexpressed in cancer**

Patricia E Berg, Yan-gao Man, Samuel Simmens, Paul Levine, Sidney Fu, Christine Teal, Saurabh Kirolikar and Arnold Schwartz
George Washington University Medical Center, USA

BPI, a gene we identified and cloned, is a member of the homeobox gene family of transcription factors (TF). *BPI* is overexpressed in breast cancer, prostate cancer, ovarian cancer, acute myeloid leukemia, non-small cell lung cancer, and possibly other malignancies as well. Important characteristics of *BPI* in breast cancer includes (1) *BPI* is expressed in 80% of invasive ductal breast tumors, including 89% of the tumors of African American women compared with 57% of the tumors of Caucasian women. (2) *BPI* expression correlates with the progression of breast tumors, from 0% in normal breast tissue to 21% in hyperplasia and 46% in ductal carcinoma *in situ*. (3) Expression of *BPI* is associated with larger tumor size in both women and mice. (4) *BPI* appears to be associated with metastasis. Forty-six cases of inflammatory breast cancer were examined and all were positive for *BPI* expression, as well as matched lymph nodes in the nine metastatic cases. (5) *BPI* overexpression induces oncogene expression. *BPI* protein (pBP1) activates the *BCL-2* gene; high *BCL-2* protein levels are associated with resistance to drug and radiation therapy. *BPI* also activates *VEGF* and *c-MYC*, as well as other genes important in angiogenesis, invasion and metastasis. pBP1 down-regulates *BRCA1*. (6) *BPI* up-regulates ER alpha and induces estrogen independence. High pBP1 levels can lead to estrogen independence in ER positive breast cancer cells and tumors in mice. In summary, *BPI* appears to confer properties on breast cancer cells that lead to a more invasive and aggressive phenotype. Since the functions of homeotic TF are highly conserved, it is likely that *BPI* regulates many of the same processes and genes in other malignancies.

Biography

Patricia E Berg received her Bachelor's degree in Mathematics from the University of Chicago, PhD in Microbiology at the Illinois Institute of Technology in Chicago and then pursued Post-Doctoral studies at the University of Chicago in molecular biology. Further work at the National Institutes of Health followed, where she cloned the first repressor of the human beta-globin gene, with the idea of using it in therapy of sickle cell anemia to repress the mutant beta-globin gene. Currently, she is a Professor of Biochemistry and Molecular Medicine at the George Washington University in Washington, D.C., where she is Director of a cancer research laboratory. Her work centers on the *BPI* gene, which she cloned, and its involvement in breast cancer. Her research has been featured on network television and in the New York Times, Washington Post, Washington Times, Los Angeles Times, AP, and Reuters among other major media, and Hillary Clinton and congressional leaders have headlined an event supporting her work.

peb@gwu.edu