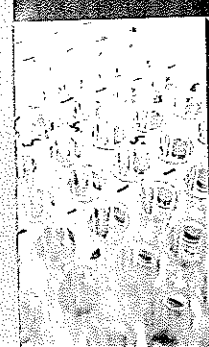
National Cancer Institute

ANNUAL REPORT FISCAL YEAR 2011

Center to Reduce Cancer Health Disparities

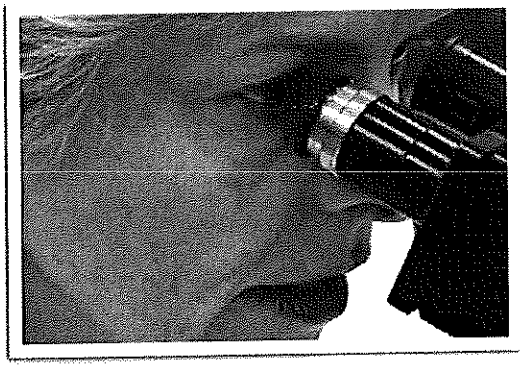


U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

The Role of Tumor Biology in Cancer Health Disparities

The research of Patricia E. Berg, Ph.D., falls under the category of tumor biology. Berg and colleagues are investigating the importance of cell development processes that increase cell motility and appear to promote very aggressive breast cancers among African American women.



Patricia E. Berg, Ph.D.

Berg's research has tremendous potential for exploring new approaches to interventions in cancer treatment.

With Berg's work in the vanguard of tumor biology research, her proposal was selected from among 45 applicants to be funded by CRCHD's R21 Exploratory Grant Award to Promote Workforce Diversity in Basic Cancer Research. In 2003, Berg and her team reported that the BP1 gene was active in 89% of the tumors of African American women, compared with 57% of the tumors of white women. High levels of BP1 also are associated with the larger, more aggressive tumors that more frequently occur in African American women, leading to their higher breast cancer mortality rates despite their lower incidence relative to white women. Berg conjectures that BP1 may enhance tumor aggressiveness by increasing the motility of malignant cells and, hence, leading to deadlier, more broadly metastasizing tumors. Berg hypothesizes that BP1 enhances the epithelial to mesenchymal transition (EMT) through its upregulation of the Twist gene. Her R21-funded research is examining whether African American women's breast tumors undergo EMT more frequently than tumors in white women, and whether these EMT processes are associated with high levels of BP1 expression.

Berg's research has tremendous potential for exploring new approaches to treatment. If BP1 is linked to upregulation in these cellular transition processes, and if the transitions occur more often in the tumors of African American women than in the tumors of Caucasian women, then the genes involved could be targeted for therapies and possibly reduce or prevent the malignant metastases so common in black women's breast cancers. Research like Berg's, which examines whether there are biological differentiators in the tumors experienced across racially and ethnically diverse populations, complements and expands our understanding of cancer health disparities. While Berg's work does not dismiss socioenvironmental issues, such as access to prompt screening, diagnosis, treatment, or follow-up, it does raise the issue that success in eliminating racial/ethnic disparities in survival potentially hinges on biological attributes, as well. Berg's research points the way toward treatments that are tailored for the specific types of genes expressed in the cancer pathway—a pathway that may differ across race and ethnicity.