

Bankhead-Coley Cancer Research Program

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*Mechanical Engineering
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*2010 Program
New Investigator Research
(3-year project)*

Project Title: A Novel, Low Cost, Ultra-Sensitive Nanosensor for Early Detection of Ovarian Cancer

Project Summary: There is a tremendous need to develop a safe, simple, cost-effective, reliable method to detect early stage ovarian cancer. The lack of clear symptoms and the absence of a reliable screening test for ovarian cancer results in over 70 percent of women being diagnosed after the disease has spread beyond the ovary so that the prognosis is poor. Median survival time after diagnosis is short, and the five-year survival rate is less than 40 percent. Our goal in this project is to develop a prototype of a disposable, tiny nanosensor chip enabling early ovarian cancer detection by measuring urinary protein, Bcl-2. Advantages of our nanosensor are: 1) low cost (<\$1) and battery operation; 2) simple operation (reminiscent of a pregnancy test) not necessitating trained personnel; 3) cost-feasible, easy urinary test, allowing testing to be done at home, in a physicians' office, or at a patient's bedside. The research findings may significantly impact women worldwide including medically underserved locations and disparate groups.