

### **Microchip offers hope of better prostate cancer screening**

(November 24, 2011) - Sunnybrook's Dr. Robert Nam and the [University of Toronto](#)'s Dr. Shana Kelley have struck a partnership that may transform prostate cancer screening as we know it.

Backed by a grant from the [Canadian Institutes of Health Research](#), Drs. Nam and Kelley, along with leading Canadian experts in nanotechnology and bio-analytical chemistry, will refine Dr. Kelley's cancer-detecting microchip technology to develop a prostate cancer screening device that is fast, inexpensive and non-invasive.

Dr. Kelley's research on the technology turned heads in 2009 when she published an article in *Nature Nanotechnology*. And when Dr. Nam approached Dr. Kelley – a biochemistry and pharmaceutical sciences professor – about collaborating, they each found a match.

"Boom – it just fell into place," says Dr. Nam, a [Sunnybrook Research Institute](#), clinical epidemiologist and head of Sunnybrook's Odette Cancer Centre's [Genitourinary Cancer Care Team](#).

Dr. Kelley's technology consists of finely structured electrode probes on a chip of silicon. Each probe is coated in molecules designed to bind with the ribonucleic acid in cancer cells, enabling detection of small numbers of circulating cancer cells.

The chip's sensitivity is a major breakthrough, but a remaining challenge is specificity: it must distinguish cancer cells from a complex background of molecular material as the researchers shift their experiments from cancerous cell lines to human tissue biopsies and blood.

To detect prostate cancer reliably, and to establish whether it is slow growing or aggressive, the researchers will need a well-developed panel of prostate cancer-specific biomarkers. Dr. Nam will look for these using Sunnybrook Research Institute's DNA sequence analyzer and Sunnybrook's tumour bank. Meanwhile, Dr. Kelley and others will streamline the chip-based nanotechnology.

If all goes according to plan, the common PSA test (prostate-specific antigen) will be 'eclipsed'. While the test is the standard non-invasive screening tool for prostate cancer, its accuracy is limited and it doesn't discriminate between slow growing and metastatic cancer – a crucial distinction for catching aggressive forms of the disease at a treatable stage and for making therapeutic decisions.

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*Based on an article by Jim Oldfield, Sunnybrook Research Institute communications, written for [Nexus](#).*