



University Health Network

Toronto General Hospital Toronto Western Hospital Princess Margaret Hospital

## **Scientists activate new cancer drug using light and oxygen**

*Controlling the drug's activation limits damage to normal neighbouring cells*

**(Toronto – May 14, 2007)** Researchers at the Ontario Cancer Institute at Princess Margaret Hospital have successfully proven that cancer cells alone can be killed by a new cancer drug that is triggered by a laser light, a process known as photodynamic therapy (PDT).

In a study published today in the *Proceedings of the National Academy of Sciences* (PNAS), Dr. Gang Zheng, Senior Scientist - Division of Biophysics and Bioimaging, Joey and Toby Tanenbaum/Brazilian Ball Chair for Prostate Cancer Research - Ontario Cancer Institute, Associate Professor, Medical Biophysics - University of Toronto, and Dr. Brian Wilson, Head - Division of Biophysics and Imaging - Ontario Cancer Institute, Professor - Department of Medical Biophysics - University of Toronto, describe the PDT process that they have collaborated on over three years. The collaboration began before Dr. Zheng was recruited to OCI from the University of Pennsylvania in August 2006.

Their paper describes how these new photosensitizer drugs can only be activated by light once they have been localized in the target tumour cells. For the first time Zheng and Wilson have demonstrated that tumour cells can be selectively attacked using a PDT. When the light activates this new drug, it then works to produce a reactive form of oxygen, which destroys only the cells that have been marked by the cancer-fighting drug, thereby sparing other normal healthy neighbouring cells.

“The process really is about controlling the drug’s ability to produce this reactive form of oxygen, explains Dr. Zheng. “For the first time, using mouse models and on separate cells, we have shown that it is possible to limit the collateral damage to surrounding normal cells using this approach.”

Clinical trials in patients are still a year or two away.

“This is an exciting step in the fight against cancer”, said Dr. Wilson. “This process should greatly enhance the therapeutic window, making tumors much more susceptible for PDT damage than normal cells and tissues.”

This study is a follow-up to Dr. Zheng’s and Dr. Wilson’s 2004 concept paper, published in the *Journal of the American Chemical Society*, that describes the theory of what they have now proven in the lab.

“The Ontario Cancer Institute at Princess Margaret Hospital is one of the world leaders in terms of PDT delivery,” said Dr. Christopher Paige, Vice President, Research and Senior Scientist Division of Stem Cell and Developmental Biology, Ontario Cancer Institute. “The cooperation between Dr. Zheng and Dr. Wilson, even before Dr. Zheng joined us at OCI, demonstrates the incredible spirit of collaboration that we pride ourselves on at University Health Network.”

This research was partially supported by funds from National Institutes of Health (US), the Canadian Cancer Society, the Muzzo Fund of the Princess Margaret Hospital Foundation and the U.S. Army.

**About the Ontario Cancer Institute:** Princess Margaret Hospital and its research arm, Ontario Cancer Institute, have achieved an international reputation as global leaders in the fight against cancer. Princess Margaret Hospital is a member of University Health Network, which also includes Toronto General Hospital and Toronto Western Hospital. All three are teaching hospitals affiliated with the University of Toronto.

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