

News Release

University of Toronto radiation oncologist investigates gold nanoparticles to enhance radiation therapy for cancer patients

VANCOUVER, September 8, 2010 – Dr. Jean-Philippe Pignol, a professor in the University of Toronto's Department of Radiation Oncology, is on the edge of discovery with his current study into the use of targeted gold nanoparticles as a cancer treatment.

Nanoparticles are made of millions of gold atoms that can be bound to antibodies, in order to adhere to the cancer tumour to amplify the effect of radiation therapy in destroying the cancer.

Dr. Pignol is a speaker at the annual scientific meeting of the Canadian Association of Radiation Oncology (CARO), taking place at the Vancouver Hyatt Regency Hotel from Sept. 22-25. Visit: www.caro-acro.ca. He will discuss advances in physics research related to enhancing the effectiveness of radiation oncology, together with colleague, Markus Albers.

Central to those advances are nanotechnologies.

"Nanotechnologies offer an exciting range of new therapeutic possibilities in medicine, and more specifically for cancer treatment," said Dr. Pignol, who is working with a team of University of Toronto researchers on the subject.

"Nanoparticles packed with large amounts of active drugs, such as chemotherapy drugs, can be bound to targeting molecules to build highly selective anti-cancer molecules," he added. "They have the potential to offer even more precise targeting and tumour destruction than current radiation therapies."

A new method of radio sensitization using these technologies is currently being evaluated in the laboratory in Canada. The technique uses gold nanoparticles that are tiny clusters of gold, a thousand times smaller than a cancer cell. They can be attached to molecules like antibodies that are directed against cancer cells. After being injected into the patient, these molecules bind to the cancer cell and are absorbed inside, delivering the gold nanoparticles into their target. When the organ is treated with radiation, the nanoparticles capture and concentrate the radiation around them, which in turn increases the specific killing of cancer cells.

"This novel therapy has the potential to change the way we treat cancer with radiation," said Dr. Pignol. "On one hand, it could more efficiently control cancers that are aggressive and difficult to eradicate locally, while on the other hand, it could dramatically reduce the dose required to treat cancers that are currently well controlled and reduce treatment side effects."



The doctor anticipates that his research would enter the clinical trial stage within two years.

About Dr. Pignol:

Jean-Philippe Pignol is an MD with a PhD in Nuclear Physics. Along with being a full professor at the University of Toronto, he is also a clinician scientist at the Sunnybrook Health Sciences Centre. Eighty per cent of his time is dedicated to research, and his clinical activity is exclusively focused on breast-cancer radiation therapy.

His research focuses on the reduction of treatment burden for early stages of breast cancer and improved outcomes for advanced stages. The research is conducted either in the physics lab or through clinical trials.

About the Canadian Association of Radiation Oncology – Association canadienne de radio-oncologie (CARO-ACRO) (www.caro-acro.ca)

Incorporated in 1988, CARO-ACRO is a national organization representing Canadian radiation oncologists, and other professionals in the radiation therapy field, to promote the interests of radiation oncology in Canada, and to represent the specialty to governments, The Royal College of Physicians and Surgeons of Canada and other national and international societies. The mission of CARO-ACRO is to: represent and support its membership nationally and internationally through the promotion of high standards of patient care in the practice of radiation oncology; to support excellence in professional standards: and to promote radiation oncology research and education.

CARO-ACRO is a partner with other disciplines in seeking to improve the outcomes of cancer patients, and provides a consultative authority to oncology related agencies, academic institutions and to the public in all matters pertaining to radiotherapy and oncology in Canada. Currently there are 320 radiation oncologists and 1,190 radiation therapists practicing at 35 centres across the country. CARO-ACRO has a total membership of 687 members from a variety of specialties within the field: radiation oncologists (physicians with specialized training in the care of patients with cancer and the use of radiation treatment), physicists, therapists, radiobiologists, fellows and residents.

**For more information, and to interview Dr. Pignol about his research, contact:
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