

A new cancer research tool enabling better patient outcomes

As a result of ground breaking research conducted at the University Health Network's (UHN), Princess Margaret Hospital in Toronto, it is now possible to perform critical cancer research in the laboratory which more directly corresponds to actual image-guided radiotherapy treatments (IGRT) done on patients.

Over the last four years a team of scientists at the Princess Margaret Hospital has developed, in partnership with Precision X-Ray Inc (PXI), the first commercially produced pre-clinical Image Guided X-Ray Irradiation System, the X-RAD 225Cx. The system combines cone-beam CT imaging technology with X-ray irradiation capability all housed within a self-shielded cabinet and controlled by a proprietary imaging software. The integration of these two capabilities adds sub-millimeter targeting accuracy to high-dose pre-clinical radiation therapy research. The Netherlands Cancer Institute at Antoni van Leeuwenhoek Hospital in Amsterdam, Maastricht University in The Netherlands as well as others, are scheduled to receive deliveries of the unit very soon, with the first unit already operational at Princess Margaret Hospital.

“This work came about from UHN's own need of having pre-clinical cancer research tools which mirror IGRT treatments done in the clinic” says Dr. David Jaffray, co-inventor and Head of the Radiation Physics Department at the Princess Margaret Hospital. Richard Hill, another co-inventor and senior scientist at UHN's Ontario Cancer Institute, adds “it takes a multi-disciplinary team of scientists, engineers and physicists working together to create an innovation such as this. We are fortunate to have this critical mass here at UHN.”

The X-RAD 225Cx employs UHN-developed concepts, intellectual property and imaging software. UHN's office of Technology Development & Commercialization (UHN-TDC) has worked closely with PXI and UHN researchers to develop the technology and build the most appropriate strategy for transferring this innovation into the marketplace. Mark Taylor at UHN-TDC emphasizes that “in order to successfully commercialize UHN research in medical devices and software, understanding the needs of our commercial partner and what the industry requires is critical for a successful relationship. You need both the successes and the scars to know what works and what doesn't in this dynamic environment.”

Precision X-Ray's President, Brian Dermott says “PXI is a leading provider of X-ray irradiators for cancer research, and with the development of the X-RAD 225Cx, we are now defining the new standard of treatment accuracy in preclinical radiation research.”

UHN's, Princess Margaret Hospital's main objective is to conquer cancer, not just locally but globally. Uniting the pre-clinical radiation therapy and cancer research fields around the X-RAD 225Cx speaks to achieving global impact through technology developed at UHN.