# First images from medical beamline at Canadian Light Source

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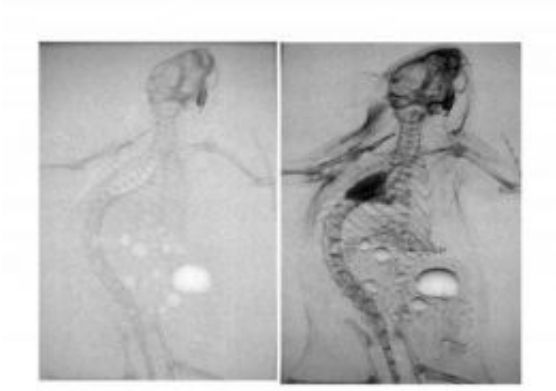

First images taken by the BioMedical Imaging and Therapy facility at the Canadian Light Source. The DEI image of a mouse (right) reveals soft tissues such as the lungs (dark triangular shape) and muscles that are obscure in the conventional X-ray radiograph. Credit: D. Chapman, University of Saskatchewan

A University of Saskatchewan (U of S)-led research team at the Canadian Light Source (CLS) synchrotron has received an early Christmas present. After several years of research, construction and testing, the unique-in-North-America BioMedical Imaging and Therapy facility (BMIT) captured its first X-ray images.

"Our entire team was just thrilled with what we saw – the images we're getting on BMIT are as good as any I've gotten at any other synchrotron. That's quite an achievement given that we had our first X-rays down the

beamline less than a month ago," said Dean Chapman, U of S Canada Research Chair in X-ray Imaging and BMIT team leader.

"The BMIT team is profoundly grateful to the staff of the CLS who have worked extremely hard over the past several years to bring this facility to fruition. In the coming months, we'll be working closely with the CLS, the U of S and the Saskatoon Health Region to build the local, national and international research capacity of this world-class facility."

"This is great news, both for the BMIT team and the Canadian Light Source," said CLS Executive Director Josef Hormes. "BMIT is such an important facility, not just for the CLS but for the future investigation and treatment of diseases that have an impact on Canadians and people around the world."

The X-ray images of a mouse were taken using a technique called diffraction-enhanced imaging (DEI), co-discovered by Chapman, U of S professor and former CLS Executive Director William Thomlinson, and U.S. researcher Zhong Zhong. The imaging team included Chapman, Thomlinson, CLS staff scientist Tomasz Wysokinski, U of S researcher David Cooper, graduate students Brian Bewer and Ying Zhu, and Dr. Sheldon Wiebe with the Saskatoon Health Region.

DEI uses the unique properties of synchrotron X-rays to produce images of soft tissues such as muscle, organs and tumours that do not readily absorb X-rays, making them cloudy or invisible to conventional X-ray radiographs and mammograms. For example, the mouse's lungs are clearly visible in the DEI image, but only appear as a faint blur in the conventional absorption image.

DEI imaging is proving to be a valuable tool in visualizing cancer, imaging bone cartilage and understanding the structure and function of reproductive organs. Other techniques planned for development at BMIT

include the delivery of precise beams of high energy X-rays for the treatment of cancer.

Source: Canadian Light Source