

Upgraded Bruker BioSpec 7T MRI System

The upgraded Bruker BioSpec 7T MRI system is now available at UHN's STTARR facility.



The STTARR 7T small-bore MRI has been a work-horse platform for preclinical imaging research since its installation in 2007, supporting high-resolution imaging and advanced applications for around 25 research groups annually. The system also contributes to preclinical radiotherapy guidance, MR-guided focused ultrasound experimentation, novel contrast agent and theranostic agent development, and multi-modal imaging.

The original system components were transitioned to a retired lifecycle phase by Bruker in 2019. This CFI-funded upgrade is a comprehensive step forward from Bruker's AVANCE II standard to its state-of-the-art NEO architecture, including the replacement of all system hardware and accessories except for the magnet itself. The NEO platform, running Paravision 360 software, provides a dramatic improvement over its predecessor, enabling higher performance in general, but also best-in-class fast imaging, safer operation, and longer hardware lifetimes. The upgrade also accounts for the essential biannual service of the system's cold-head and refrigeration system through to the next decade, which has been the primary facility expense. A 15-year life cycle for the NEO architecture is anticipated.



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The lead researchers on the CFI John R. Evans Leaders Fund were Drs. , [Lothar Lilge](#), and [Gelareh Zadeh](#). Support for the CFI application as provided by the *Strategic Research Initiatives Development (StRiDe)* team. Operation and management of the 7T are provided by Dr. Warren Foltz, STTARR MRI physicist, and Dr. Naz Chaudary, STTARR Innovation core manager and research scientist, who provides oversight. The purchasing process was supported by Peter Ashton and Piryanka Sasidharan from *Research Facilities Planning and Implementation*, who worked in collaboration with *Research Laboratory Services* and *UHN Safety Services*.

Since 2007, the STTARR facility has supported more than 900 independent projects, involving up to 1500 researchers, and led by close to 400 principal investigators. The original 7T itself supported the production of more than 85 peer-reviewed papers, with many in high-impact factor journals. By renewing these systems, the STTARR facility is positioned to continue its service to the UHN and its external academic and industrial clientele, and the successful PIs have secured their leading-edge investigations into novel strategies for cancer therapy. Furthermore, these improved technologies provide a stronger foundation for building novel drug treatments and aid in the advancement and translation of preclinical imaging into better clinical care.

A big thank you to everyone involved in making these new resources available to UHN researchers. For more information, please visit the STTARR Facility website: www.sttarr.com or email sttarr.general@uhn.ca.