Virginia Tech Carilion Research Institute

Mission Statement

The Virginia Tech Carilion Research Institute makes transformative scientific advances to i) understand the fundamental processes of human health and disease; ii) apply those advances to the improvement of health through improved prevention, diagnostics and therapeutics; iii) train the next generation of biomedical science leaders; iv) enhance discovery-based medical education; and v) sustain and strengthen the Virginia Tech-Carilion academic medicine partnership, developing one of the nation's premier biomedical and health sciences research ecosystems.

About VTCRI

The Virginia Tech Carilion Research Institute is one of Virginia Tech's three thematic research institutes. It opened on Sept. 1, 2010, welcoming new faculty, postdoctoral fellows, students, and staff from across the United States and throughout the world. It grew rapidly to 26 research teams with more than 300 faculty, staff, and students by 2017 and almost $100 million in extramural research grant funding, primarily from the National Institutes of Health.

Based in Roanoke, Virginia, the institute was designed to accommodate interdisciplinary research to address contemporary challenges in health and disease through combinations of biological, behavioral, computational, and engineering approaches.
Key research focus areas include addiction and substance abuse, behavioral health, cardiovascular science, cancer including structural oncology, cognitive and computational neuroscience, decision-making, developmental and translational neurobiology, human development, neurorehabilitation, immunology, and regenerative/restorative medicine.

The institute is the hub for the worldwide hyperscanning network for interactive human functional brain imaging, which includes three research-dedicated 3.0 Tesla MRIs, an MR-guided human-focused ultrasound system, a high-field cryo-electron microscopy facility, multiple behavioral testing suites, a transcranial magnetic stimulation facility, laser scanning confocal and multi-photon imaging systems, molecular biology and electrophysiology suites, a state-of-the-art fluorescence activated cell-sorting facility, super resolution microscopy, and a new, optically pumped magnetometry suite.

Research Target Areas include Computational neuroscience; Developmental neurobiology; Translational neurobiology; Decision-making; Social cognition; Substance abuse; Addiction; Human development; Breast cancer biology; Brain tumor biology; Immunology; Cardiovascular science; Regenerative medicine; Wound healing; Critical Platform Technologies; Functional human brain imaging; Optical imaging; Multi-photon imaging; Electrophysiology; Human and animal behavior; Molecular genetics; Informatics; Hyperscanning; Cryo-electron microscopy; MR guided focused ultrasound; and Fluorescence activated cell-sorting

Leading Researchers, Life-Changing Research

The Virginia Tech Carilion Research Institute now has 26 research teams, each led by an internationally recognized principal investigator. Each team leader also holds a faculty appointment in a Virginia Tech academic department, including Biological Sciences, Biomedical Engineering and Mechanics, Biomedical Sciences and Pathobiology, Neuroscience, Physics, and Psychology. These departments are housed in the colleges of Engineering and of Science, as well as the Virginia-Maryland College of Veterinary Medicine and the VTC School of Medicine.

Research teams are composed of faculty members, postdoctoral fellows, graduate students, technicians, and medical students from the Virginia Tech Carilion School of Medicine, as well as undergraduate students from Virginia Tech and other universities.