

# TIMOTHY A. JOHNSON MEDICAL SCHOLAR LECTURE SERIES

Presented by the Fralin Biomedical Research Institute at VTC and the Virginia Tech Carilion School of Medicine



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## *In Person Lecture: Insights into Arrhythmia Mechanisms and Therapies from Cardiac Reprogramming*

Research efforts in the Rentschler lab center on defining the transcriptional and epigenetic mechanisms underlying arrhythmias through studying cardiac physiology and regulation of gene expression in murine, porcine and human model systems. Dr. Rentschler's group has previously demonstrated that reactivation of developmental signaling pathways including Notch and Wnt can electrically remodel cardiomyocytes, or "reprogram" them, to adopt a new electrical phenotype in animal models. In the atria, Notch activation in response to pressure overload regulates a distinct transcriptional signature in the right versus left atrium and may predispose to atrial fibrillation. In contrast, Notch regulates a distinct transcriptional response in adult ventricular cardiomyocytes resulting in reprogramming to a Purkinje-like phenotype. Noninvasive radiation therapy is a novel treatment for ventricular tachycardia, and the lab recently demonstrated that a single high dose of radiation temporarily activates Notch signaling and results in long-term reprogramming of cardiac conduction in normal and diseased hearts. The lab's work aims to translate insights learned through the study of basic mechanisms of gene expression into novel therapies for arrhythmia.

FRIDAY, NOV. 18 at 1 p.m.

Room M203, 2 Riverside Circle.

Watch live via Zoom at <https://fralinbiomed.info/MedScholar-Join>.

