Objectives: 1. To provide a brief historical perspective on present-day knowledge of electrophysiological mechanisms of atrial fibrillation (AF), and introduce some of the investigators who have contributed to such knowledge.

2. To present the concepts of “phase singularity”, “wavebreak”, “rotor” and “fibrillatory conduction” in the mechanisms of initiation and maintenance of AF.

3. To present data supporting the idea that differences in myocyte sensitivity provide a robust mechanistic explanation for the mechanism of AF because they allow stabilization of a dominant rotor in the region of greatest APD abbreviation (i.e., the LA), with fibrillatory conduction toward the right atrium.

4. To utilize the acute model of cholinergically maintained AF as a paradigm in an attempt to understand mechanisms of chronic AF in humans.

This event is an Accredited Group Learning Activity as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.
José Jalife, M.D. is Professor and Chairman of Pharmacology, and Professor of Pediatrics and of Medicine at the SUNY Upstate Medical University. He completed his M.D. at the National University of Mexico in 1972. After clinical training in Spain, he conducted post-doctoral research in pharmacology at the National Institute of Cardiology in Mexico, Upstate Medical University, and at the Masonic Medical Research laboratory in Utica, NY. He joined the Department of Pharmacology at Upstate Medical University as a member of the faculty in 1980 and became its Chairman in 1988.

Jalife has endeavored to bring sophisticated cardiac electrophysiologic concepts from the cell to the bedside. His work has encompassed basic cellular electrophysiology and electropharmacology, the cellular and molecular bases of cell-to-cell communication in the heart, cellular mechanisms of arrhythmias, and non-linear mathematical models for cardiac rhythm disturbances. That work has led to major advances toward elucidating the molecular and cellular bases of the initiation and propagation of electrical impulses in the heart and the fundamental mechanisms of complex life-threatening arrhythmias and sudden cardiac death. He has published more than 200 papers and review articles, and has authored nine books, including the internationally acclaimed Cardiac Electrophysiology: From Cell to Bedside, now in its 3rd edition. His research is funded by more than 6.2 million in grants from the NIH.

Dr. Jalife is the recipient of numerous lectureships, honors and awards. Among these are the Lucian Award for Research in Circulatory Diseases from McGill University, the President’s Award for Research at SUNY Upstate Medical University, and the Professor Pierre Rijlant Award from the Académie Royale de Médecine de Belgique in Brussels, Belgium. He received the Distinguished Scientist Award from the American College of Cardiology in 2001 and the State University of New York Chancellor’s Award for Excellence in Scholarship and Creative Activities in 2002.