**Cellular and Molecular Cardiovascular Physiology**: pathophysiology of abnormal cardiac excitation-contraction (E-C) coupling in diabetes, hypertension, obesity, alcoholism and aging. Our work focuses on whole heart and single ventricular myocyte function, intracellular calcium homeostasis and various subcellular signaling pathways related to nitric oxide and cell stress. Cellular physiology combined with molecular biology, transgene and gene transfer techniques are employed. Vascular biology and alternative medicine are also studied under these disease conditions.