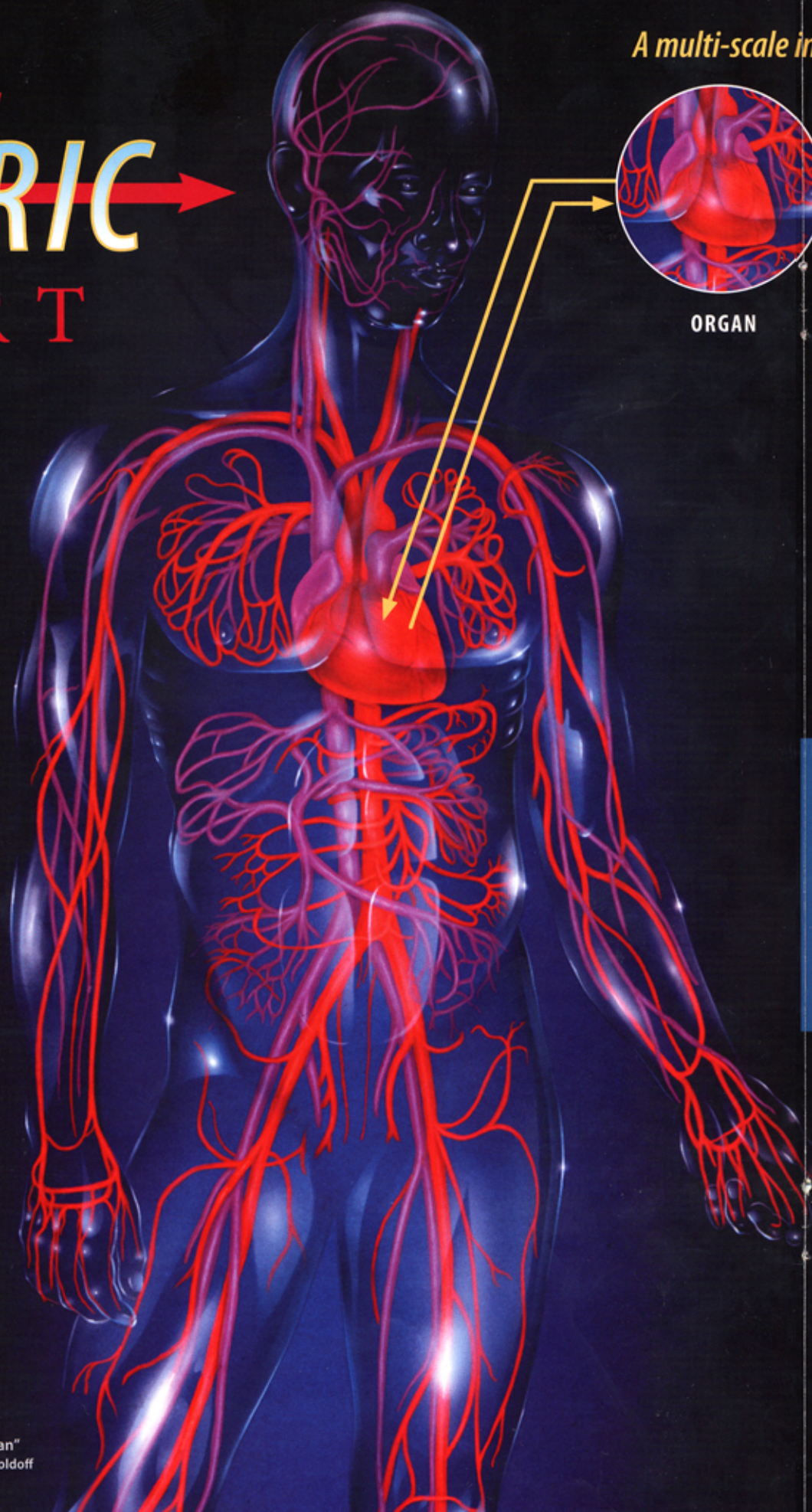
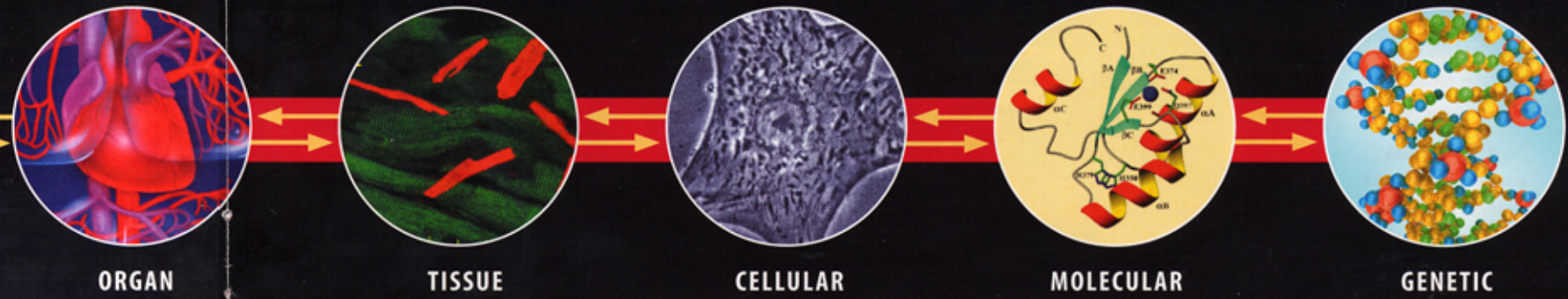


THE ELECTRIC HEART

Though often thought of as a mechanical pump, the heart is controlled by waves of electricity. Most cardiac-related sudden deaths are due not to mechanical problems, but to failed synchronization of the electrical impulses. Understanding the nature of the heart's healthy and erratic electrical activity is the mission of the Cardiac Bioelectricity and Arrhythmia Center (CBAC).

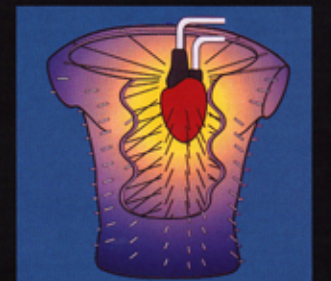
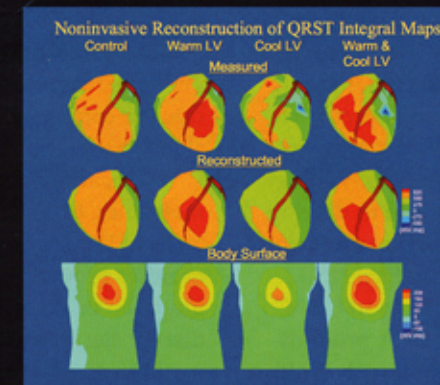
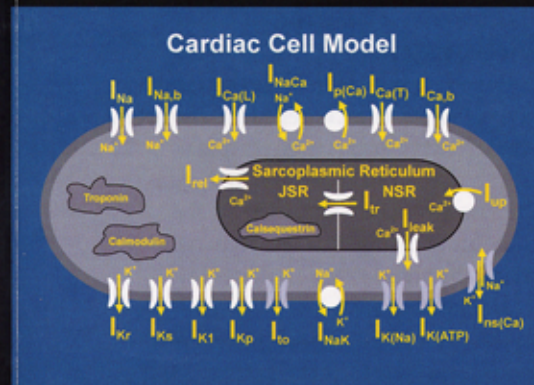
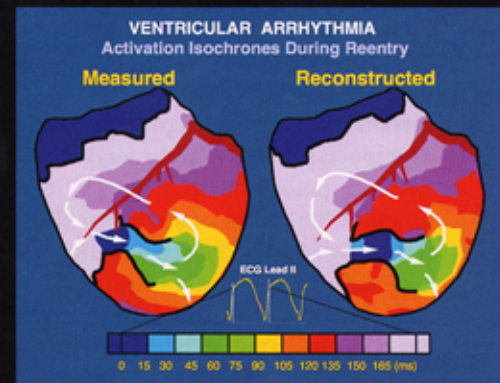


A multi-scale interdisciplinary effort to decipher the electro-physiological properties of the heart at all levels:



Studying the mechanisms of rhythm disorders

Millions of cells make up the heart, but the malfunction of just a small group of cells can create electrical waves that dangerously compete with the heart's normal electrical signals. Researchers aim to understand such complex biophysical processes by studying the whole heart as well as the genetic and molecular traits of individual cells. Computer models enable researchers to virtually examine the operation of cardiac cells and tissue, and systemic imaging helps integrate these components. The breadth and depth of the projects under way point to the convictions of CBAC investigators to grapple with this problem from every angle.



Developing new tools for diagnosis and treatment



As a more coherent picture of cardiac arrhythmias begins to emerge, new methods will help to pinpoint trouble areas and enable more precise diagnosis and treatment of bioelectrical-related health problems. An array of 250 data sensors — as portable as carry-on luggage — shows great potential to better the performance of the ubiquitous electrocardiogram, with its half-dozen or so sensors. The benefits of this and other developments will arrive through drug and interventional treatments as individual as a human heart.

