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Sommario/riassunto	The effective management of cardiac arrhythmias, either of atrial or of ventricular origin, remains a major challenge. Sudden cardiac death due to ventricular tachyarrhythmias remains the leading cause of death in industrialized countries while atrial fibrillation is the most common rhythm disorder; an arrhythmia that’s prevalence is increasing and accounts for nearly one quarter of ischemic stokes the elderly population. Yet, despite the enormity of the problem, effective therapeutic interventions remain elusive. In fact, several initially promising antiarrhythmic agents were found to increase rather than decrease mortality in patients recovering from myocardial infarction. The question then is what went wrong, why have these interventions proven to be so ineffective? An obvious answer is the drugs were designed to attack the wrong therapeutic target. Clearly, targeting single ion channels (using either isolated ion channels or single myocytes preparations) has proven to be less than effective. What then is the appropriate target? It is well established that cardiac electrical properties can vary substantially between single cells and intact preparations. One obvious example is the observation that action potential duration is much longer in isolated cells as compared to multi-cellular preparations or intact hearts. Due to the low electrical resistance between adjacent myocytes, the cells act in coordinated fashion producing “electrotonic interdependence” between neighboring cells. Myocardial infarction and/or acute ischemia provoke profound

changes in the passive electrical properties of cardiac muscle. In particular, electrotonic uncoupling of the myocytes disrupts the coordinated activation and repolarization of cardiac tissue. The resulting compensatory changes in ionic currents decrease cardiac electrical stability increasing the risk for life-threatening changes in the cardiac rhythm. Thus, the electrical properties of myocardial cells must be considered as a unit rather than in isolation. It is the purpose of this Research Topic to evaluate the largely neglected relationship between changes in passive electrical properties of cardiac muscle and arrhythmia formation.