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Molecular and cellular determinants of cardiac tachyarrhythmias: from trigger to therapy

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Molecular and cellular determinants of cardiac tachyarrhythmias: From trigger to therapy.

1. In vitro modelling of cardiac arrhythmias provides a valuable tool in dissecting pro-arrhythmic mechanisms and pre-clinical testing of anti-arrhythmic strategies. (This thesis)
2. Phenotypically similar arrhythmias may arise as a consequence of dissimilar etiologies and therefore require distinct anti-arrhythmic therapies. (This thesis)
3. Spiral wave destabilization is an effective method of tachyarrhythmia termination. (This thesis)
4. Reversing the constitutive activation of the acetylcholine-dependent potassium current may serve as an atrium-specific means to prevent initiation of atrial fibrillation as well as to facilitate its termination. (This thesis)
5. The endogenously present electrochemical gradients in the myocardium can be exploited to elicit shockless defibrillation. (This thesis)
6. Altering the state of the core as a means to elicit termination of reentrant tachyarrhythmias requires tailoring of the anti-arrhythmic strategy to the pre-treatment state of the core; functional vs anatomical and refractory vs not excited. (Based on Comtois et al. Europace 2005;7:S10-S20)
7. Decreasing the complexity of pre-shock re-entrant activity leads to a decrease in defibrillation threshold and increases the probability of defibrillation success. (Based on Hillebrenner M.G. et al. Am J Physiol Heart Circ Physiol 2004; 286: H909-H917)
8. Without a predefined pathological context, no intervention that is purely pro- or anti-arrhythmic exists.
9. As the second law of thermodynamics states that order cannot arise from chaos without an external energy source, defibrillators will never go out of fashion.
10. The question: "What came first, the periphery or the core?" represents a classical philosophers' causality dilemma.
11. Those who sweat more during experimentation, bleed less during the review process.
12. In the beautiful world of research the force is with the scientist, but the power with the journals.