

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

Bingen, B.O.

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Author: Bingen, Brian O.

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Stellingen behorend bij het proefschrift

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

- 1. In vitro modelling of cardiac arrhythmias provides a valuable tool in dissecting proarrhythmic 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 pretreatment 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 antiarrhythmic 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.

Brian O. Bingen Leiden, 5 oktober 2016