

## Animals in cardiovascular research: important role of rabbit models in cardiac electrophysiology

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Online publish-ahead-of-print 15 May 2020

This commentary refers to 'Animals in cardiovascular research: Clinical relevance and translational limitations of animal models in cardiovascular research', by N. Cesarovic et al., 2020;41:200–203.

With great interest we have read the comprehensive review by Cesarovic et al.<sup>1</sup> on animal models in cardiovascular research. While the important role of several species for different cardiovascular disease entities has been highlighted, one important species, which is highly relevant for disease-models of inherited 'electrical' cardiac disorders, and for safety pharmacology for detection of potential proarrhythmia, has been omitted: the rabbit.

In contrast to rodents, the rabbit mimics human cardiac electrophysiology surprisingly well. Key electrical features show pronounced similarities in the two species, such as the shape of action potential, the biophysical properties of the underlying cardiac ion channels/currents, and the responses to electrophysiologically relevant pharmacological interventions.

Many of the recent advances in our understanding of inherited arrhythmia disorders stems from transgenic rabbits models for long-QT and short-QT syndrome that mimic the human disease phenotypes on multiple levels of complexity with alterations of cardiac repolarization on cellular, whole heart and *in vivo* levels, spontaneous atrial and ventricular arrhythmias and sudden arrhythmogenic cardiac death. These rabbit models have been instrumental in increasing our understanding of mechanisms initiating and sustaining ventricular arrhythmias, to study mechanisms underlying hormonal influences

on the disease phenotype (as seen in humans), mechanical consequences of electrical alterations, and beneficial pharmacological interventions to rescue the phenotype (reviewed in Ref.<sup>5</sup>). Further insights into risk stratification and mechanism-based therapies are likely to be obtained with these (and future) rabbit models for inherited arrhythmia disorders.

Conflict of interest: none declared.

## References

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