

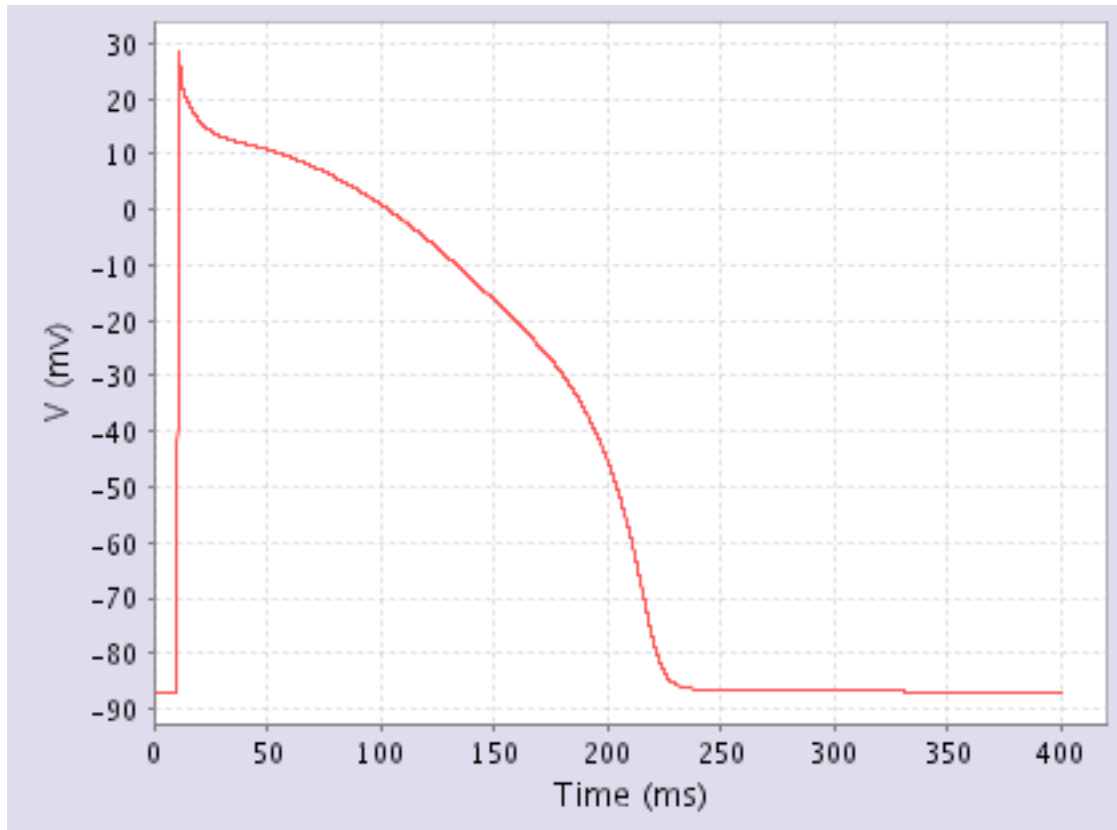
Canine Ventricular HR04-ESM

Enhanced Simucore Model Based Upon: Hund-Rudy Model of Canine Ventricular Cardiac Action Potentials, 2004; v. 2.0

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1. Description



Example action potential (BCL = 400 ms).

The model is used to simulate canine ventricular action potentials. It is similar to Luo-Rudy II guinea-pig ventricular model but includes two transient-outward currents (Ito1 and Ito2), late Na⁺ current (I_{NaL}), and Cl⁻-dependent background current and transporters. The Ca²⁺ handling was updated and includes Ca²⁺/calmodulin dependent protein kinase (CaMKII) Ca²⁺ binding and restricted Ca²⁺ subspace formulation.

Abstract excerpt: "A novel theoretical model of the canine ventricular epicardial action potential and calcium cycling was developed and used to investigate ionic mechanisms underlying Ca²⁺ transient (CaT) and action potential duration (APD) rate dependence. The Ca²⁺/calmodulin-dependent protein kinase (CaMKII) regulatory pathway was integrated into the model, which included a novel Ca²⁺-release formulation, Ca²⁺ subspace, dynamic chloride handling, and formulations for major ion currents based on canine ventricular data."

2. References

- Hund TJ, Rudy Y.
Rate dependence and regulation of action potential and calcium transient in a canine cardiac ventricular cell model.
Circulation. 2004 Nov 16;110(20):3168-74.
PMID: [15505083](#)

3. Ordering

- [Order this model](#) or [request further information](#).