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DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government Owned Inventions Available for Licensing: Generating Conditional and Reverse Conditional Loss-of-Function Alleles in Mouse Casq2

AGENCY: National Institutes of Health, HHS.

ACTION: Notice.

SUMMARY: The National Institute of Child Health and Human Development (NICHD), an institute of the National Institutes of Health (NIH), Department of Health and Human Services (HHS), is giving notice of the inventions listed below, which are owned by an agency of the U.S. Government and are available for licensing to achieve expeditious commercialization of results of federally-funded research and development.

FOR FURTHER INFORMATION CONTACT: Inquiries related to these licensing opportunities should be directed to: Heather Gunas, Ph.D., MPH, Technology Transfer Manager, NCI, Technology Transfer Center, Email: *gunash@mail.nih.gov* or Phone: 240-276-5534.

SUPPLEMENTARY INFORMATION: Cardiac calsequestrin (Casq2) plays an essential role in maintaining cardiac Ca^{2+} homeostasis. Human *CASQ2* mutations are associated with catecholaminergic polymorphic ventricular tachycardia (CPVT), a rare familial arrhythmogenic disorder within a group of diseases characterized as Sudden Arrhythmic Death.

The inventors have generated Casq2Flox and Casq2RevFlox mouse strains that model CPVT. The two novel strains successfully phenocopy aspects of CPVT, including stress-induced arrhythmias and reduced basal heart rates. The strains allow investigators to determine the importance of Casq2 gene function in specific tissues and at specific developmental time points. They also allow investigators to determine the efficacy of gene therapy and to address key mechanism questions. The materials are validated and fully functional and additional

information to access these strains can be found at: https://www.jax.org/strain/036291 and https://www.jax.org/strain/036290.

This Notice is in accordance with 35 U.S.C. 209 and 37 CFR Part 404.

NIH Reference Number: E-128-2024.

Product Type: Research Tool.

Therapeutic Area(s): Rare/Neglected Disease.

Potential Commercial Applications:

- Study of Casq2 function.
- Study of calcium storage in cardiac muscle and CPVT.
- Determining the efficacy of gene therapy for CPVT.

Competitive Advantages:

- Only available conditional and reverse conditional loss-of-function alleles in mouse Casq2.
- Allows the study of Casq2 gene function in specific tissues and at specific developmental points.

Publication:

- Knollmann BC, et al. *Casq2* deletion causes sarcoplasmic reticulum volume increase, premature Ca^{2+} release, and catecholaminergic polymorphic ventricular tachycardia. (https://pubmed.ncbi.nlm.nih.gov/16932808/).
- Flores DJ, et al. Conditional ablation and conditional rescue models for Casq2 elucidate the role of development and of cell-type specific expression of Casq2 in the CPVT2 phenotype. (https://pubmed.ncbi.nlm.nih.gov/29452352/).
- Blackwell DJ, et al. The Purkinje–myocardial junction is the anatomic origin of ventricular arrhythmia in CPVT. (PMID https://pubmed.ncbi.nlm.nih.gov/34990403/).

Patent Status: N/A

Development Stage: Discovery.

Collaboration Opportunity: NICHD seeks licensing for further developing or utilizing these Casq2 mouse strains.

Dated: September 30, 2025.

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National Cancer Institute.

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