



Stable Cell Lines Expressing hERG1a and 1b

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a line of cultured mammalian cells that express both the hERG1a and 1b subunits.

Overview

Cardiac I_{Kr} channels are targets associated with inherited and acquired long QT syndrome (LQTS), a disorder that can lead to ventricular arrhythmias. Previously, I_{Kr} channels were thought to be composed solely of subunits encoded by the '1a' transcript of the human ether-a-go-go-related gene, or HERG.

Since drugs designed for other therapeutic targets may unintentionally block I_{Kr} channel activity and cause acquired LQTS, commercially available systems that stably express HERG1a have been used to screen all drugs in development. However, recent studies have shown that I_{Kr} channels include subunits encoded by both HERG1a and 1b, which are alternative transcripts of the HERG gene. Together these subunits produce the biophysical and pharmacological properties characteristic of the native cardiac I_{Kr} channel.

The Invention

UW-Madison researchers have developed a line of cultured mammalian cells that express both the HERG1a and 1b subunits. In addition, they developed the only known antibody specific for the HERG1b isoform (which cross-reacts with ERG1b of rat and canine as well), and a line of cultured mammalian cells that express HERG1b but not HERG1a.

Applications

- Testing lead compounds and drugs for their potential to block activity of the HERG-1-encoded cardiac I_{Kr} channel
- Screening LQTS patients for mutations in the HERG1b-specific exon
- Anti-ERG1b antibody can be used to localize the ERG1b isoform *in vivo*, probe Western blots for ERG1b, and immunoprecipitate ERG1b protein from cell lysates

Key Benefits

- *More closely mimics the I_{Kr} channel behavior and subunit composition of cardiac myocytes than do commercially available cell lines*
- Allows characterization of phenotypes associated with HERG1a mutations in the context of a cardiac ion channel that more closely resembles I_{Kr}
- The anti-ERG1b antibody recognizes HERG1b from both humans and non-human animals.

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For More Information About the Inventors

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Tech Fields

- [Drug Discovery & Development : Preclinical testing](#)
- [Research Tools : Cell lines](#)

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854

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