HERG-1 Transfected HEK 293 Cell Line B

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Technology description

Re-polarization of the cardiac action potential, which plays a critical role in maintaining normal cardiac rhythm, occurs mainly due to the action of potassium ion (K+) currents in the heart. The most important of these currents is the delayed rectifier current I_K, which has two components, I_{Ks} and I_{Kr}. In long Q-T (LQT) syndrome, the electrocardiographic Q-T interval is increased due to delayed re-polarization of the cardiac action potential, leading in some cases to potentially fatal arrhythmias. Drugs that cause LQT syndrome act by inhibiting I_{Kr}, which is encoded by HERG (human eag-related gene). UW-Madison researchers have cloned the full-length cDNA of the HERG-1 cardiac potassium channel gene into human embryonic kidney (HEK 293) cells, allowing expression of these channels in an experimental system. Since unintended block of HERG channel activity by drugs can lead to potentially fatal arrhythmias, this system provides an important screening tool for drugs in development.
The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in the full-length cDNA of the HERG-1 cardiac potassium channel gene, which has been cloned into human embryonic kidney (HEK 293) cells.

Application area

Testing lead compounds and drugs for their potential to block activity of the HERG-1 cardiac potassium channel

Advantages

Cells are of human lineage and can be studied at body temperature, providing the highest stringency assay (channel defects may be suppressed at room temperature)
The HEK 293 cell line is stable, providing a constant source of material
Cell line has tested mycoplasma-free in an assay performed by a third-party laboratory

Institution

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