

Repolarization Assay Using Human Cardiomyocytes

Beginning in the first quarter of 2007, Cellular Dynamics International, Inc. (CDI) will offer a new *in vitro* test for drug candidates for cardiac toxicity using cardiomyocytes produced from human embryonic stem cells.

Introduction

Cardiac toxicity of candidate drugs is currently evaluated in several surrogate systems, because human heart tissue is not easily available in the quantities needed to perform research studies. Thus current *in vitro* studies are performed using cells engineered to model-specific cardiac ion channels (e.g. hERG channel block studies) or are performed using cardiac tissues from animal models (e.g. rabbit or dog Purkinje fibers and or ventricular myocytes).

The advent of the technology of human embryonic stem cells makes possible for the first time the production of large numbers of human cardiomyocytes.

Cardiomyocyte Testing

The availability of human cardiomyocytes for drug toxicity screening is here. It is now possible to perform a repolarization assay on human cardiomyocytes produced from *in vitro* culture. This assay has been designed in consultation with experts in both electrophysiology and the culture of human embryonic stem cells.

CDI's non-GLP human cardiomyocyte repolarization assay will include:

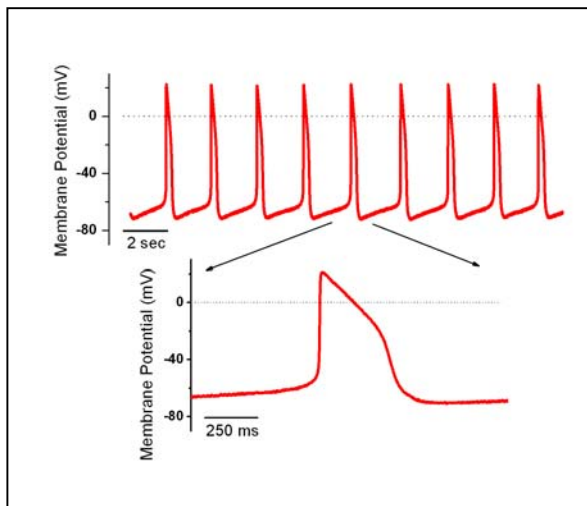
- A state-of-the-art patch clamp assay
- Human cardiomyocytes derived from human embryonic stem cells
- A minimum of 3 drug concentrations tested
- 4 cells tested at each concentration
- Testing at near physiological temperatures
- Assistance in report analysis

Advantages

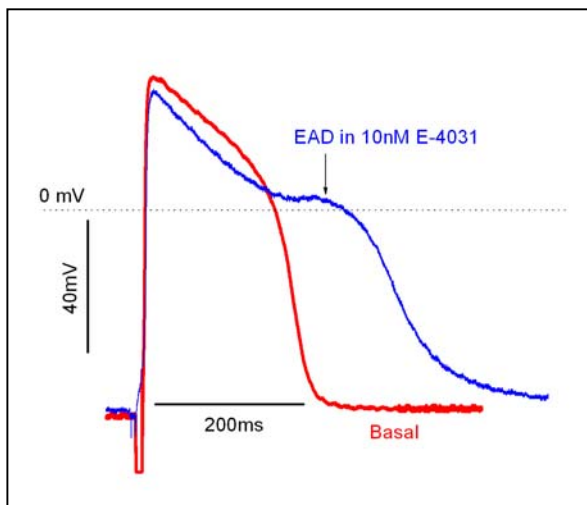
CDI Services for Drug Safety Screening & Discovery

- Human cardiomyocytes used
- Accelerated drug development in key therapeutic target areas
- Extensive experience with drug-induced effects on ion channels
- Accurate, reliable screening results
- Rapid turnaround





Action potential from human cardiomyocyte derived from ES cells.



Demonstration of prolonged action potential in human cardiomyocytes.

References

He JQ, Ma Y, Lee Y, Thomson JA, Kamp TJ. 2003. Human embryonic stem cells develop into multiple types of cardiac myocytes: action potential characterization. *Circ Res.* 93:32-39.

For More Information

Add your name to our mailing list! Full details about this assay will be available late in 2006.

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