

# Chronic cardiotoxicity testing in human-induced pluripotent stem cell-derived cardiomyocytes using impedance and multielectrode array

**Commonly used acronym:** Chronic cardiotoxicity testing in hiPSC-CMs using impedance and MEA

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## Organisation

**Name of the organisation** Janssen Pharma of JNJ

**Department** Research and Development

**Country** Belgium

**Geographical Area** Flemish Region

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human health
<b>The Method is situated in</b>	Translational - Applied Research, Other: Safety pharmacology/toxicology testing
<b>Type of method</b>	In vitro - Ex vivo
<b>Specify the type of cells/tissues/organs</b>	human induced pluripotent stem cell-derived cardiomyocytes

## DESCRIPTION

## **Method keywords**

in vitro assay

multi electrode array

predictivity

hiPSC-CMs

## **Scientific area keywords**

drug-induced cardiotoxicity

arrhythmias

Cardiac electrophysiology

Drug safety

## **Method description**

Human-induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) were seeded in 48-well multielectrode array (MEA) plates and were treated with four doses of reference compounds (covering and exceeding clinical free plasma peak concentrations) and MEA recordings were conducted for 4 days. Functional-electrophysiological (field-potentials) and viability (impedance) parameters were recorded with a MEA machine.

## **Lab equipment**

Multielectrode array

## **Method status**

Internally validated

Published in peer reviewed journal

## **PROS, CONS & FUTURE POTENTIAL**

### **Advantages**

Human-based model, repeated and non-invasive recordings, chronic

## Challenges

Cell maturation

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### References

Altrocchi C, Van Ammel K, Steemans M, Kreir M, Tekle F, Teisman A, Gallacher DJ and Lu HR (2023) Evaluation of chronic drug-induced electrophysiological and cytotoxic effects using human-induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs). Front. Pharmacol. 14:1229960. doi: 10.3389/fphar.2023.1229960

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