PharmaCoLogic: Preclinical Cardiac Drug Screening

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ABSTRACT

Researchers at the University of California, Davis have developed PharmaCoLogic: a computer based preclinical screening model to predict the effects of developmental drugs and drug induced cardiotoxicity.

FULL DESCRIPTION

Cardiotoxicity is one of the most common and dangerous risks in the development of new drugs. Due to the association between prolonged QT intervals and drug-induced proarrhythmias, QT intervals have become widely accepted as markers for cardiac arrhythmia. QT intervals, however, have become problematic as they are neither sensitive nor selective in cardiotoxicity identification. This results in the unnecessary elimination of potentially useful drugs.

Researchers at the University of California, Davis have developed PharmaCoLogic: a computer based multiscale model to predict the effects of developmental drugs and drug induced cardiotoxicity. The model uses dynamic interactions of drugs and ion channels (at the atomic level) to generate kinetic function parameters. These parameters are then integrated into predictive models at the channel, cell and tissue scales, to expose fundamental arrhythmia vulnerabilities and complex emergent behaviors. The model can be used to predict inherently coexistent risk factors during preclinical drug screening and drug rehabilitation.

APPLICATIONS

- Preclinical drug screening
- Drug rehabilitation
- Drug induced cardiac arrhythmias
- Drug interaction with inherently coexistent risk factors

FEATURES/BENEFITS

- Predictive computer based model
- Able to predict drug effects over multiple time and spatial scales

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,749,383	09/05/2023	2016-665
United States Of America	Published Application	20240127910	04/18/2024	2016-665
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CONTACT

Raj Gururajan
rgururajan@ucdavis.edu
tel: 530-754-7637.



INVENTORS

- Clancy, Colleen
- DeMarco, Kevin
- Yang, Pei-Chi

OTHER INFORMATION

KEYWORDS

safety pharmacology, multiscale, cardiotoxicity, PharmaCoLogic, computational model

CATEGORIZED AS

- **Medical**
  - Diagnostics
  - New Chemical Entities, Drug Leads
  - Screening
- **Research Tools**
- Other

RELATED CASES

2016-665-0

University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel: 530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax: 530.754.7620

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