

NEW METHOD FOR PREDICTING A PATIENT'S RESPONSE TO DRUG THERAPY FOR TREATMENT OF IRREGULAR HEART RHYTHMS

[Naegle, Kristen, Silva, Jonathan, Zhu, Wandi](#)

[Weilbaecher, Craig](#)

T-018631

Value Proposition: *New process that uses ion channel voltage sensing parameters to predict antiarrhythmic drug response.*

Technology Description

Researchers at Washington University in St. Louis have developed a new process for predicting patients' response to mexiletine drug therapy. Mexiletine is prescribed to effectively suppress arrhythmic events in patients with Long QT syndrome Type 3 (LQT3). However, despite its overall efficacy, many patients display mutation-dependent responses, reflected in the magnitude of QT interval shortening after mexiletine therapy. This differential response to mexiletine is a consequence of altered Na⁺ channel voltage sensing domain (VSD) dynamics.

This process combats the ineffectiveness of treating patients with mexiletine by using channel molecular gating properties to predict patient response and regulate mexiletine blockade of the Na⁺ channel.

Stage of Research

Proof of concept - Quantified VSD dynamics in the presence of mexiletine and several LQT3 variants.

Applications

- Detecting effectiveness of mexiletine
- Genetic testing
- Treatment of Long QT Syndrome Type 3 and other types of ventricular arrhythmias

Key Advantages

- Improves mexiletine efficacy
- Informs physicians decisions

Patents

US Issued Patent - [12,117,453](#)

Related Web Links – [Jonathan Silva Profile](#); [Silva Lab](#)