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ZEBRAFISH MODELS FOR DRUG DISCOVERY AND GENETIC EPILEPSIES

Tech ID: 25129 / UC Case 2015-026-0

INVENTION NOVELTY

Novel Zebrafish epilepsy models carrying the same genetic mutations found in the human population make excellent tools for high-throughput drug screening, *in vivo* toxicology studies and basic research purposes.

VALUE PROPOSITION

There are currently very few animal models for genetic epilepsies or autism spectrum disorders with epilepsy. The few genetically modified rodent models that exist are costly, difficult to develop and not suitable for large-scale drug discovery. Furthermore, *in vitro* cultures do not provide the same level of information as *in vivo* model organisms, particularly in network disorders such as epilepsy or autism. The genetically modified Zebrafish models generated by researchers at the University of California San Francisco (UCSF) provide the following advantages:

- • Low cost approach to *in vivo* drug screening

- • Rapid proliferation and generation of model organism in a precision medicine manner

- • Amenable to genetic, behavioral, electrophysiological, imaging and molecular manipulations

TECHNOLOGY DESCRIPTION

Using CRISPR/Cas9 gene editing or ENU-based mutagenesis, researchers at UCSF have created stable transgenic Zebrafish models representing genetic mutations found in children with catastrophic childhood epilepsies and/or autism spectrum disorders with epilepsy. Zebrafish models have been generated and characterized for four genes, with an additional fish under development. To date, over 1300 drugs have been screened using a Zebrafish mutant for Dravet syndrome (scn1 mutation). The ease of generating Zebrafish mutants and a two-stage screening process allow for thorough and rapid drug candidate screening.

APPLICATION

Research models and screening tools for genetic epilepsies and autism spectrum disorder with epilepsy

LOOKING FOR PARTNERS

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OTHER INFORMATION

KEYWORDS

Zebrafish, Epilepsy, Drug Discovery, High-Throughput Screening, Precision Medicine, Research Tool, scn1, lis1, stxbp1, GABRB3

CATEGORIZED AS

▶ Research Tools

▶ Animal Models

RELATED CASES

2015-026-0

To utilize Zebrafish models to develop or discover new treatments for genetic epilepsies

STAGE OF DEVELOPMENT

Model organisms developed and characterized

RELATED MATERIALS

▶ Animal models in epilepsy research: legacies and new directions - 02/24/2015

DATA AVAILABILITY

Transgenic Zebrafish lines available

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