

Request Information

Permalink

Novel Dixdc1 Mouse Line for Study of Major Psychiatric Disorders and Cancer

Tech ID: 22402 / UC Case 2012-129-0

BACKGROUND

The Dixdc1 protein may play an important role in the pathogenesis of schizophrenia, major depressive disorder, bipolar disorder, autism and other major psychiatric disorders. In addition, Dixdc1 may also contribute to cancer metastasis, invasiveness and planar cell polarity. Molecular signaling pathways potentially involving Dixdc1 include the Wnt/ β -catenin, Nde1/CDK5 and the TGF- β pathways. Importantly, Dixdc1 protein is an established partner of the Disc1 protein, the product of one of the best-established neuropsychiatric susceptibility genes (DISC1). Previous studies have utilized RNA interference to knock down Dixdc1 protein. However, a genetic knockout in mice, an important research tool that would be very useful for studying Dixdc1 function in disease, has not been described in the scientific literature to date.

TECHNOLOGY DESCRIPTION

UCSF investigators have generated a Dixdc1 knockout mouse line by making a targeted mutation in the genetic locus corresponding to Dixdc1, a conserved homolog of the DIXDC1 gene found in homo sapiens and other vertebrates. This mutation was designed such that the essential exons B2, 2 and 3 of the gene were replaced by a piece of foreign DNA encoding the neomycin-resistance gene, which is predicted to render the allele non-functional by disrupting the translation of all characterized Dixdc1 transcripts. ES cells carrying this mutation were made by homologous recombination, and a mouse line derived from the correctly targeted ES cells was created using embryo manipulation techniques (Translational Psychiatry 2011 3(2):162-174). This invention is a valuable model that enables study of the roles of Dixdc1 gene and its RNA and protein products during development and postnatally.

APPLICATIONS

- ▶ Study Dixdc1's role in the pathogenesis of major psychiatric disorders, including schizophrenia, major depressive disorder, bipolar disorder and autism
- ▶ Study Dixdc1's role in cancer etiology, pathogenesis, metastasis and invasiveness
- ▶ Study Dixdc1's role in planar cell polarity pathways involved in wound healing and stem cell biology

RELATED MATERIALS

CONTACT

Shikha Sharma
shikha.sharma@ucsf.edu
tel: 415-502-1613.



OTHER INFORMATION

KEYWORDS

Psychiatric Disorders,

Dixdc1, Wnt Pathway, Planar

Cell Polarity

CATEGORIZED AS

- ▶ [Medical](#)
- ▶ [Disease: Cancer](#)
- ▶ [Research Tools](#)

RELATED CASES

2012-129-0

ADDRESS

UCSF

Innovation Ventures

600 16th St, Genentech Hall, S-272,
San Francisco,CA 94158

CONTACT

Tel:
innovation@ucsf.edu
<https://innovation.ucsf.edu>
Fax:

CONNECT

 Follow  Connect

© 2012, The Regents of the University of
California
[Terms of use](#) [Privacy Notice](#)