TRM: Dishevelled Segment Polarity Protein 3 (Dvl3) Mutant Mice

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BACKGROUND

Dishevelled (Dvl) proteins are important signaling components of both the canonical β-catenin/Wnt pathway, which controls cell proliferation and patterning, migration, differentiation, stem cell renewal and the planar cell polarity (PCP) pathway. Mammals share three *Dishevelled* (*Dvl*) family members and while the roles of *Dvl1* and *Dvl2* have been described previously, the functions of *Dvl3* have remained an area of active research. The lack of *Dvl3* in mice affects the formation of the heart, neural tube, and inner ear and that the defects in these tissues are much more severe when the mice are deficient in more than one *Dvl* family member, indicating redundant functions for these genes. Congenital heart disease affects approximately 75 in every 1,000 live human births, and approximately 30% of these diseases are due to disruptions in the outflow tract, the region affected in mice lacking *Dvl* genes.

TECHNOLOGY DESCRIPTION

Homozygous embryos for this targeted mutation of dishevelled 3, dsh homolog (Drosophila) (*Dvl3*) exhibit cardiac conotruncal abnormalities such as persistent truncus arteriosis (PTA) and double outlet right ventricle (DORV), and cochlear defects (disoriented stereociliary bundles).

APPLICATIONS

This mutant mouse strain may be useful in studies of cardiac development, neural tube formation and development of the inner ear.

STATE OF DEVELOPMENT

The mice are designated Tangible Research Material (TRM). A complete description, including genotyping, phenotyping, etc is found at The Jackson Lab cat. No. 009083; https://www.jax.org/strain/009083

INTELLECTUAL PROPERTY INFO

Academic and non-profit institutions please order directly from The Jackson Laboratory. Commercial entities require a license from UC San Diego contact (https://innovation.ucsd.edu/contact/).

RELATED MATERIALS

- Etheridge SL, Ray S, Li S, Hamblet NS, Lijam N, Tsang M, Greer J, Kardos N, Wang J, Sussman DJ, Chen P, Wynshaw-Boris A. Murine dishevelled 3 functions in redundant pathways with dishevelled 1 and 2 in normal cardiac outflow tract, cochlea, and neural tube development. PLoS Genet. 2008 Nov;4(11):e1000259. doi: 10.1371/journal.pgen.1000259. Epub 2008 Nov 14. - 11/14/2008

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OTHER INFORMATION

KEYWORDS

Dishevelled proteins, Dvl3 , mouse models, Wnt Pathway, Congenital heart disease

CATEGORIZED AS

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  - Disease: Cardiovascular and Circulatory System
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