# *Dctn5* Cas9-KO Strategy

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# Project Overview

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|---|---|
| **Project Name** | ***Dctn5*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dctn5* gene. The schematic diagram is as follows:

# Technical routes

➢ The *Dctn5* gene has 4 transcripts. According to the structure of *Dctn5* gene, exon3 of *Dctn5-201* (ENSMUST00000033156.4) transcript is recommended as the knockout region.The region contains 119bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Dctn5* gene. The brief process is as follows: CRISPR/Cas9 system

# Notice

➢ According to the existing MGI data,Mice homozygous for an ENU-induced mutation exhibit double outlet right ventricle (DORV), overriding aorta, and ventricular septal defect (VSD). Micrognathia, microcephaly/anencephaly and holoprosencephaly are also observed.

➢The konckout region near to the 5'UTR of *Palb2* gene.Knockout the region may affect the regulatory function of the 5'UTR of *Palb2* gene.

➢Transcript *Dctn5*-204 may not be affected.

➢ The *Dctn5* gene is located on the Chr7. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.

➢ This Strategy is designed based on genetic information in existing databases.Due to the complexity of biological processes,all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information（NCBI）

集萃药康 GemPharmatech

## Dctn5 dynactin 5 [Mus musculus (house mouse)]

Gene ID: 59288, updated on 31-Jan-2019

### Summary

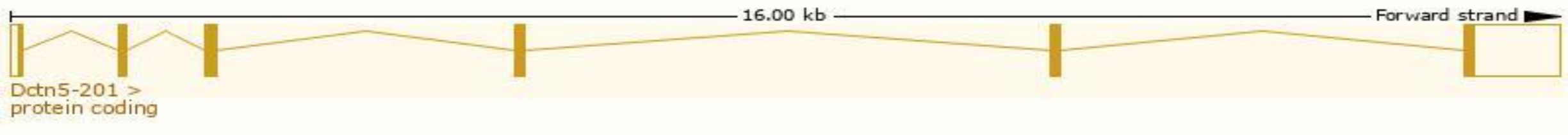
| | |
|---|---|
| **Official Symbol** | Dctn5 provided by MGI |
| **Official Full Name** | dynactin 5 provided by MGI |
| **Primary source** | MGI:MGI:1891689 |
| **See related** | Ensembl:ENSMUSG00000030868 |
| **Gene type** | protein coding |
| **RefSeq status** | VALIDATED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | 4930427E12Rik, C78178, b2b315Clo |
| **Expression** | Ubiquitous expression in whole brain E14.5 (RPKM 35.2), CNS E18 (RPKM 35.1) and 28 other tissues See more |
| **Orthologs** | human all |

# Transcript information（Ensembl）

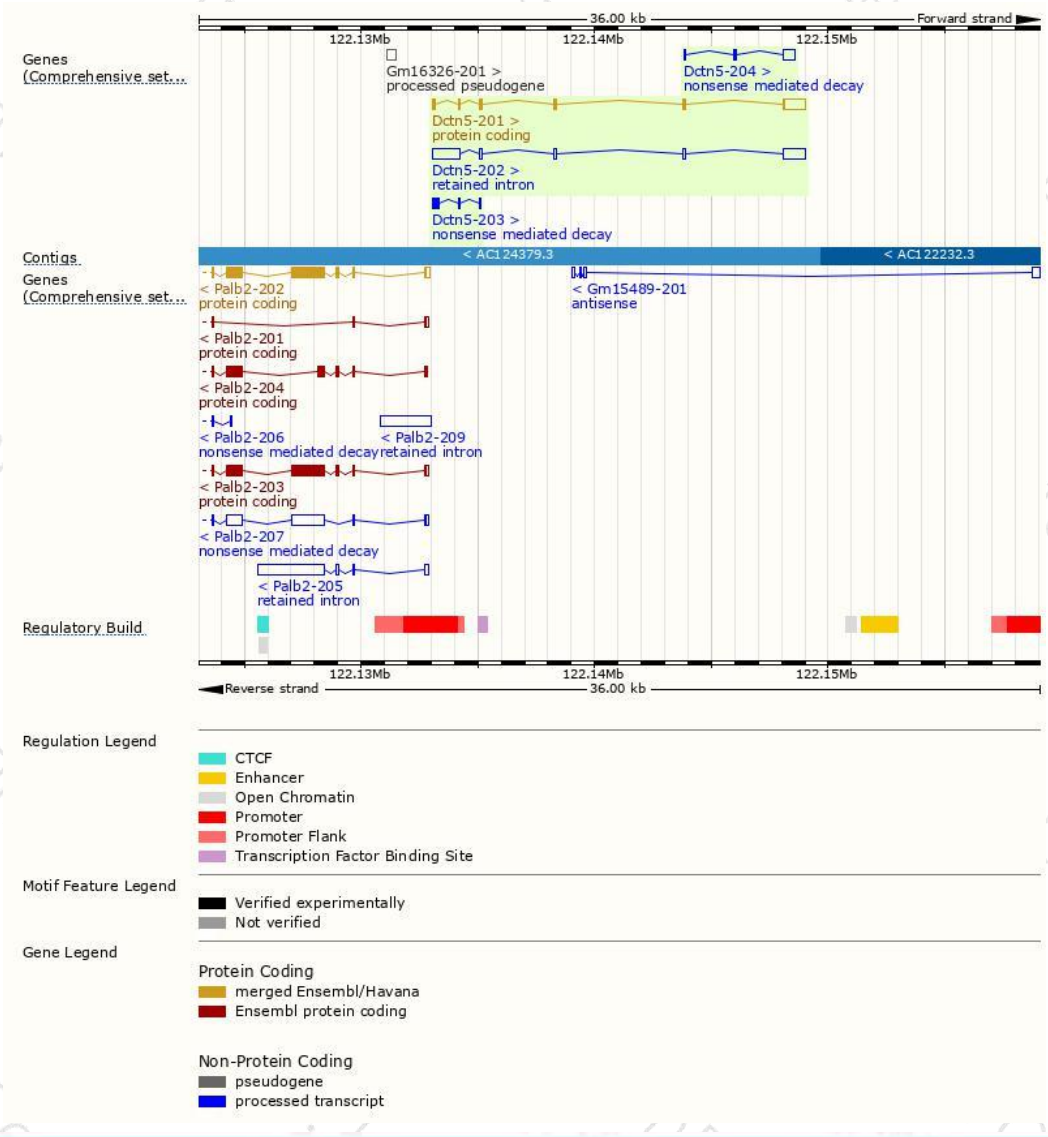
The gene has 4 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| Dctn5-201 | ENSMUST00000033156.4 | 1532 | 182aa | Protein coding | CCDS21811 | Q9QZB9 | TSL:1 GENCODE basic APPRIS P1 |
| Dctn5-204 | ENSMUST00000176295.1 | 734 | 43aa | Nonsense mediated decay | - | H3BKU6 | CDS 5' incomplete TSL:3 |
| Dctn5-203 | ENSMUST00000176193.1 | 416 | 54aa | Nonsense mediated decay | - | H3BJ75 | TSL:2 |
| Dctn5-202 | ENSMUST00000123602.1 | 2506 | No protein | Retained intron | - | - | TSL:1 |

The strategy is based on the design of *Dctn5-201* transcript,The transcription is shown below

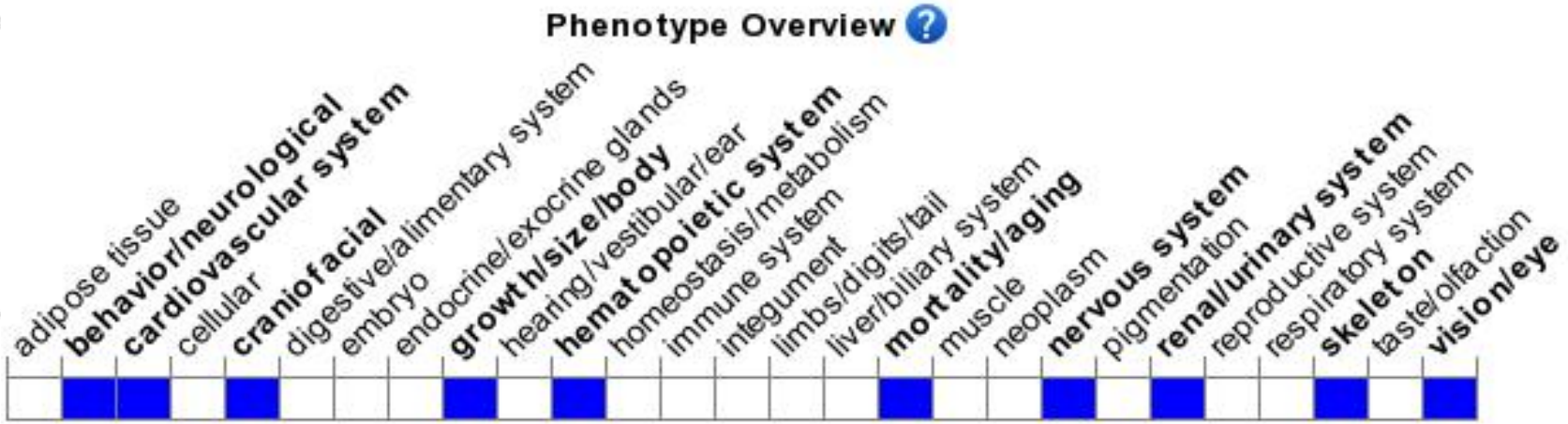


# Genomic location distribution



# Protein domain

# Mouse phenotype description(MGI )




*Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).*

According to the existing MGI data,Mice homozygous for an ENU-induced mutation exhibit double outlet right ventricle (DORV), overriding aorta, and ventricular septal defect (VSD). Micrognathia, microcephaly/anencephaly and holoprosencephaly are also observed.

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If you have any questions, you are welcome to inquire.

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