

Dhx16 Cas9-KO Strategy

Designer: Daohua Xu

Reviewer: Huimin Su

Design Date: 2019-11-11

Project Overview



Project Name

Dhx16

Project type

Cas9-KO

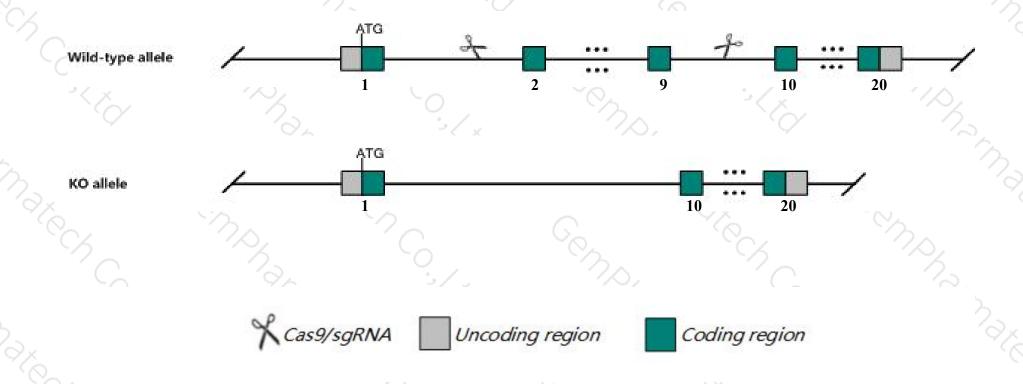
Strain background

C57BL/6J

Knockout strategy



This model will use CRISPR/Cas9 technology to edit the *Dhx16* gene. The schematic diagram is as follows:



Technical routes



- ➤ The *Dhx16* gene has 8 transcripts. According to the structure of *Dhx16* gene, exon2-exon9 of *Dhx16-201*(ENSMUST00000025292.14) transcript is recommended as the knockout region. The region contains 1346bp coding sequence Knock out the region will result in disruption of protein function.
- ➤ In this project we use CRISPR/Cas9 technology to modify *Dhx16* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6J mice.

Notice



- \gt The *Dhx16* gene is located on the Chr17. 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.
- \rightarrow Transcript *Dhx16-204* may not be affected.
- 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)



Dhx16 DEAH (Asp-Glu-Ala-His) box polypeptide 16 [Mus musculus (house mouse)]

Gene ID: 69192, updated on 31-Jan-2019

Summary

☆ ?

Official Symbol Dhx16 provided by MGI

Official Full Name DEAH (Asp-Glu-Ala-His) box polypeptide 16 provided by MGI

Primary source MGI:MGI:1916442

See related Ensembl: ENSMUSG00000024422

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 2410006N22Rik, DBP2, Ddx16, mKIAA0577

Expression Ubiquitous expression in thymus adult (RPKM 30.7), testis adult (RPKM 23.0) and 28 other tissuesSee more

Orthologs <u>human</u> all

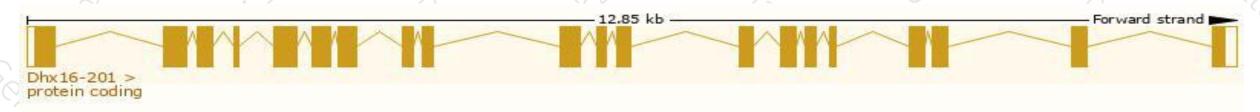
Transcript information (Ensembl)



The gene has 8 transcripts, all transcripts are shown below:

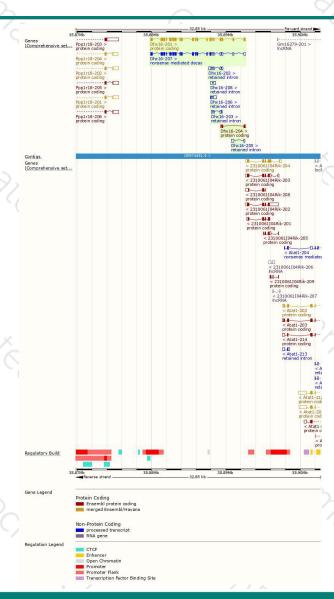
Name	Transcript ID	bp	Protein	Biotype	ccds	UniProt	Flags
Dhx16-201	ENSMUST00000025292.14	3351	1044aa	Protein coding	CCDS28710	G3X8X0	TSL:1 GENCODE basic APPRIS P1
Dhx16-204	ENSMUST00000173967.1	490	<u>123aa</u>	Protein coding		G3UXT5	CDS 5' incomplete TSL:3
Dhx16-207	ENSMUST00000174366.7	3275	<u>741aa</u>	Nonsense mediated decay	<u> </u>	Q05BH3	TSL:2
Dhx16-202	ENSMUST00000172730.7	825	No protein	Retained intron	84	2	TSL:2
Dhx16-208	ENSMUST00000174449.1	566	No protein	Retained intron	15		TSL:3
Dhx16-206	ENSMUST00000174330.1	562	No protein	Retained intron	. 19 .		TSL:2
Dhx16-205	ENSMUST00000174308.1	491	No protein	Retained intron	100	ē.	TSL:2
Dhx16-203	ENSMUST00000173596.1	462	No protein	Retained intron	12	2 1	TSL:2

The strategy is based on the design of Dhx16-201 transcript, The transcription is shown below



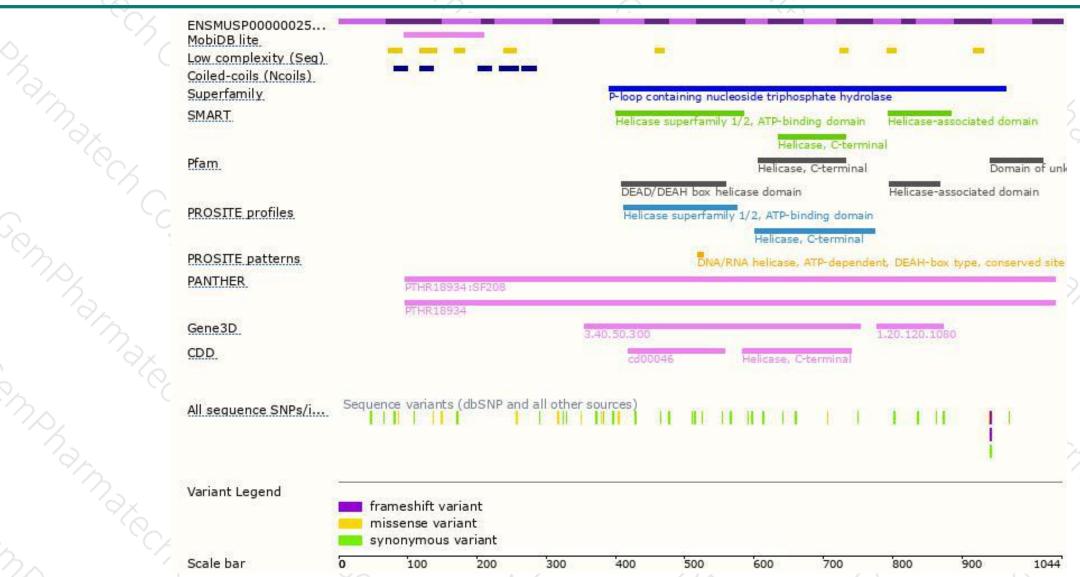
Genomic location distribution





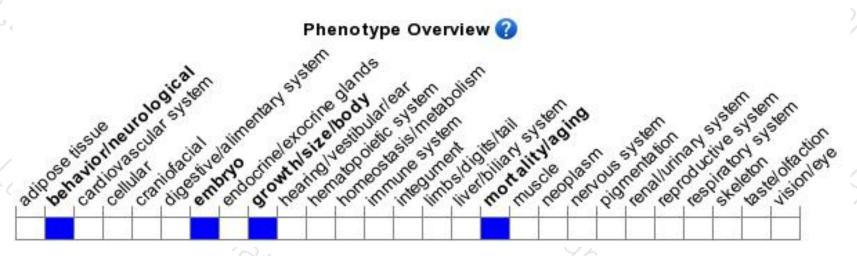
Protein domain





Mouse phenotype description(MGI)





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



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

Tel: 025-5864 1534





