

Ddx5 Cas9-KO Strategy

Designer: Huimin Su

Reviewer: Ruirui Zhang

Design Date: 2022-1-24

Project Overview

Project Name

Ddx5

Project type

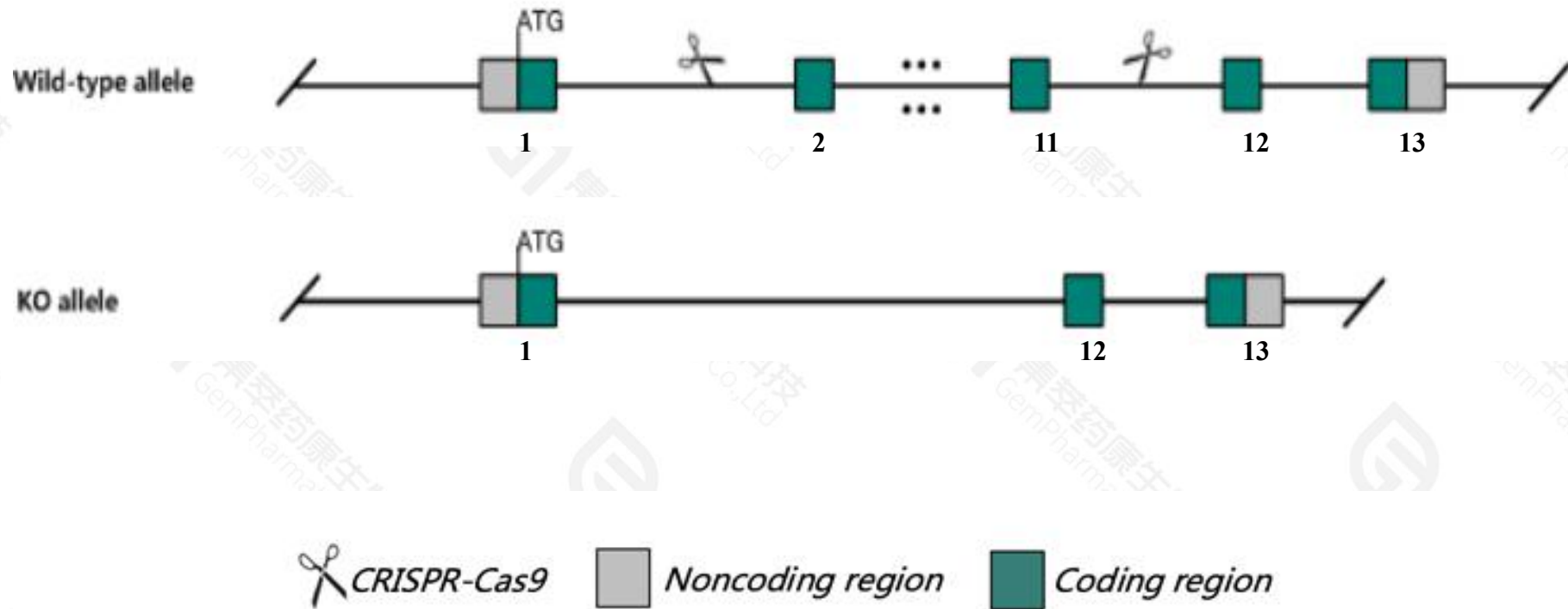
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR-Cas9 technology to edit the *Ddx5* gene. The schematic diagram is as follows:



- The *Ddx5* gene has 9 transcripts. According to the structure of *Ddx5* gene, exon2-exon11 of *Ddx5-201*(ENSMUST00000021062.12) transcript is recommended as the knockout region. The region contains 1172bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Ddx5* gene. The brief process is as follows: CRISPR-Cas9 system were microinjected into the fertilized eggs of C57BL/6JGpt 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/6JGpt mice.

- According to the existing MGI data, mice homozygous for a reporter/null allele die around E11.5 displaying blood vessel malformations.
- The KO region contains functional region of the *Ddx5* gene. Knockout the region may affect the function of *Cep95* gene.
- The *Ddx5* gene is located on the Chr11. 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.

Ddx5 DEAD box helicase 5 [Mus musculus (house mouse)]

Gene ID: 13207, updated on 3-Jan-2021

Summary



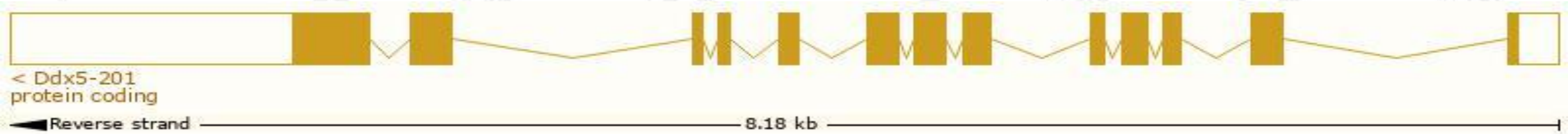
Official Symbol	Ddx5 provided by MGI
Official Full Name	DEAD box helicase 5 provided by MGI
Primary source	MGI:MGI:105037
See related	Ensembl:ENSMUSG00000020719
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2600009A06Rik, G17P1, HUMP68, Hl, Hlr1, p6, p68
Expression	Ubiquitous expression in adrenal adult (RPKM 253.6), CNS E14 (RPKM 165.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

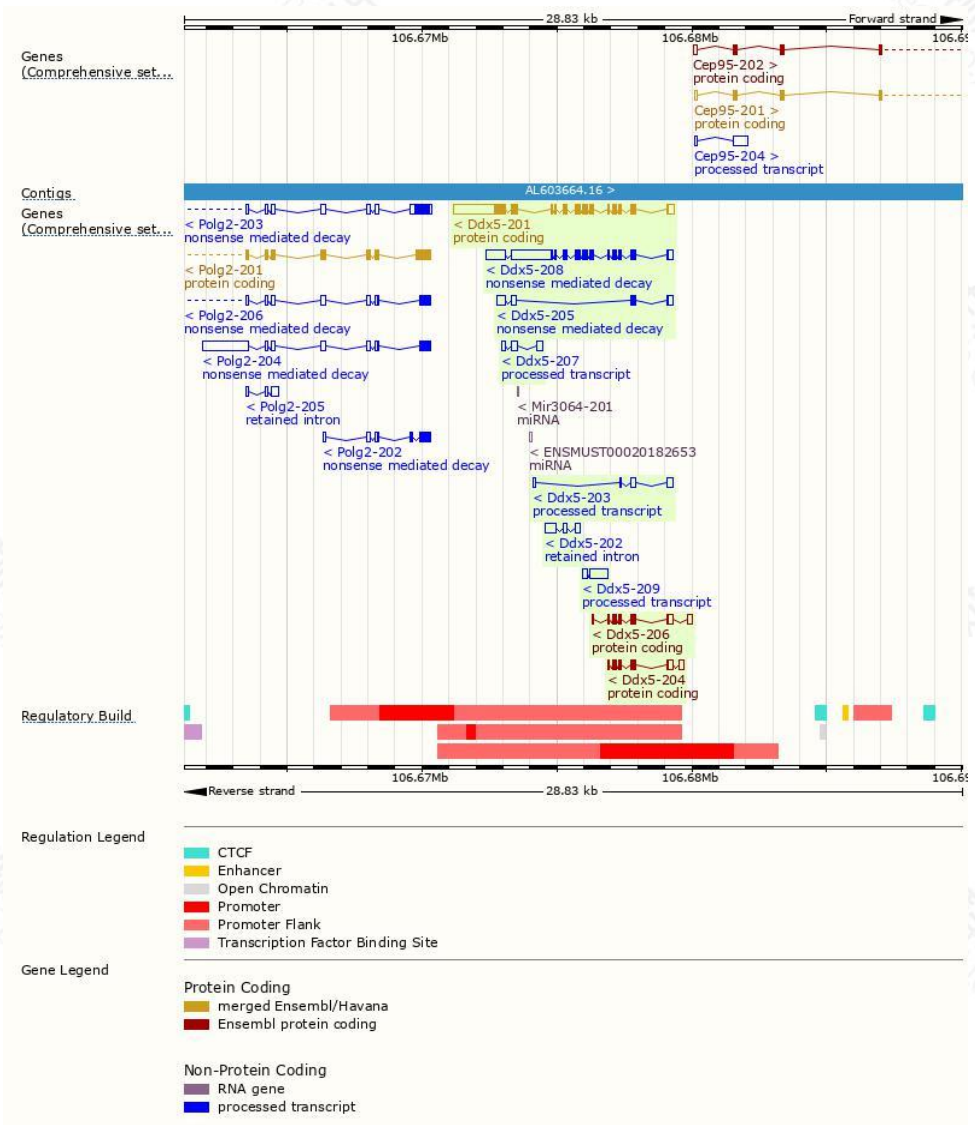
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ddx5-201	ENSMUST00000021062.12	3559	615aa	Protein coding	CCDS25562		TSL:1 , GENCODE basic , APPRIS P1 ,
Ddx5-206	ENSMUST00000129585.8	861	182aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Ddx5-204	ENSMUST00000123339.2	831	167aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Ddx5-208	ENSMUST00000133426.8	3593	406aa	Nonsense mediated decay	-		TSL:1 ,
Ddx5-205	ENSMUST00000127481.8	879	71aa	Nonsense mediated decay	-		TSL:5 ,
Ddx5-209	ENSMUST00000151741.2	810	No protein	Processed transcript	-		TSL:2 ,
Ddx5-207	ENSMUST00000130172.2	589	No protein	Processed transcript	-		TSL:3 ,
Ddx5-203	ENSMUST00000106779.4	496	No protein	Processed transcript	-		TSL:5 ,
Ddx5-202	ENSMUST00000106778.2	708	No protein	Retained intron	-		TSL:3 ,

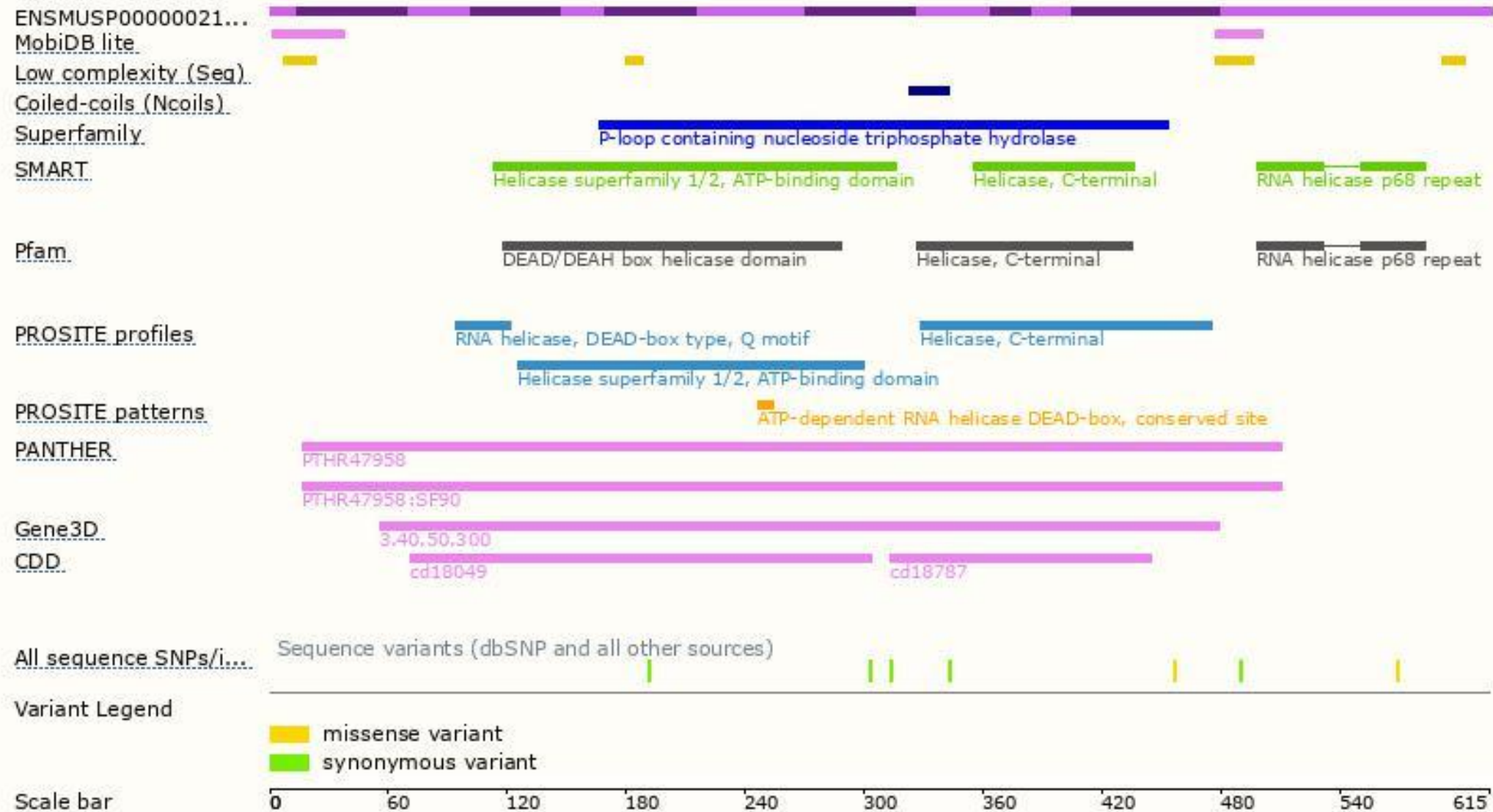
The strategy is based on the design of *Ddx5-201* transcript,the transcription is shown below:



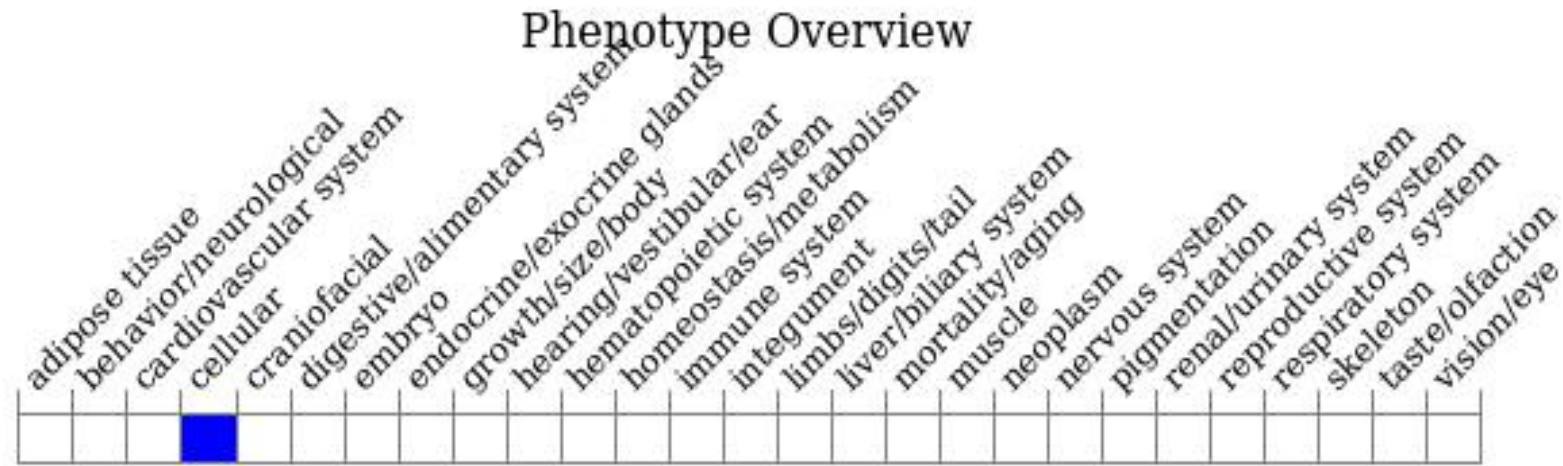
Genomic location distribution



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 a reporter/null allele die around E11.5 displaying blood vessel malformations.

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

Tel: 400-9660890

