

***Dusp16* Cas9-CKO Strategy**

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Project Overview

Project Name

Dusp16

Project type

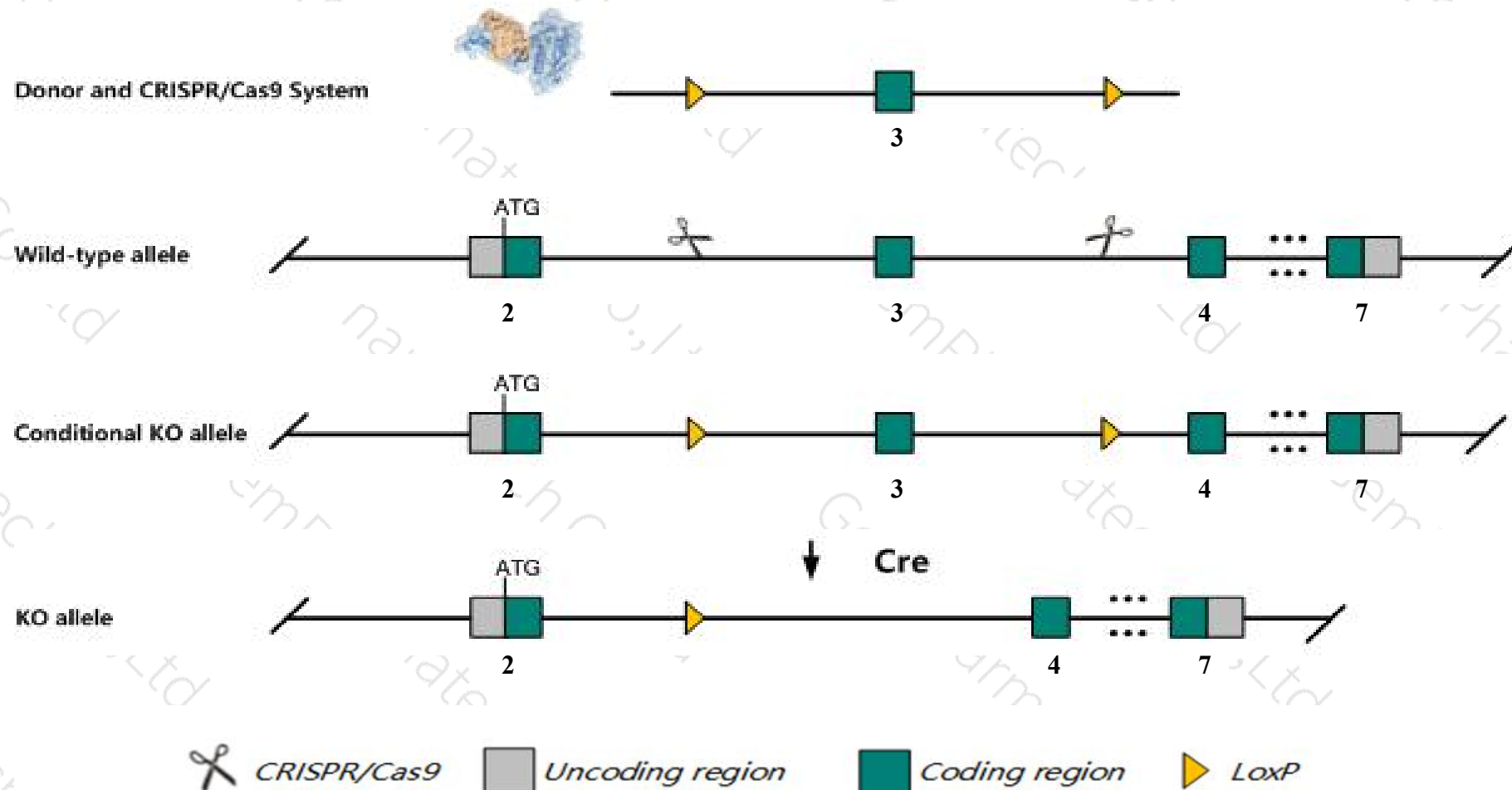
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dusp16* gene. The schematic diagram is as follows:



Technical routes

- The *Dusp16* gene has 7 transcripts. According to the structure of *Dusp16* gene, exon3 of *Dusp16-201*(ENSMUST00000100857.9) transcript is recommended as the knockout region. The region contains 139bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dusp16* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, mice homozygous for a gene trap allele exhibit complete neonatal lethality and decreased birth weight.
- The *Dusp16* gene is located on the Chr6. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Dusp16 dual specificity phosphatase 16 [*Mus musculus* (house mouse)]

Gene ID: 70686, updated on 11-Jul-2020

Summary



Official Symbol Dusp16 provided by [MGI](#)

Official Full Name dual specificity phosphatase 16 provided by [MGI](#)

Primary source [MGI:MGI:1917936](#)

See related [Ensembl:ENSMUSG00000030203](#)

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 MKP7; Mkpm; MKP-7; AW558566; D6Ert213e; 3830417M17Rik

Expression Ubiquitous expression in bladder adult (RPKM 11.4), mammary gland adult (RPKM 7.2) and 28 other tissues [See more](#)

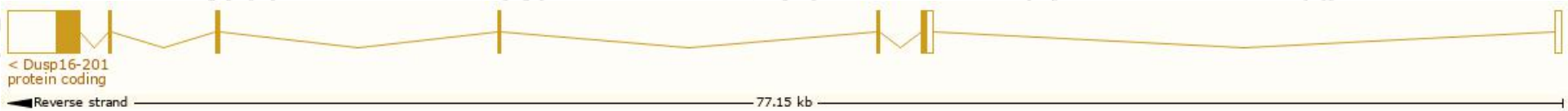
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

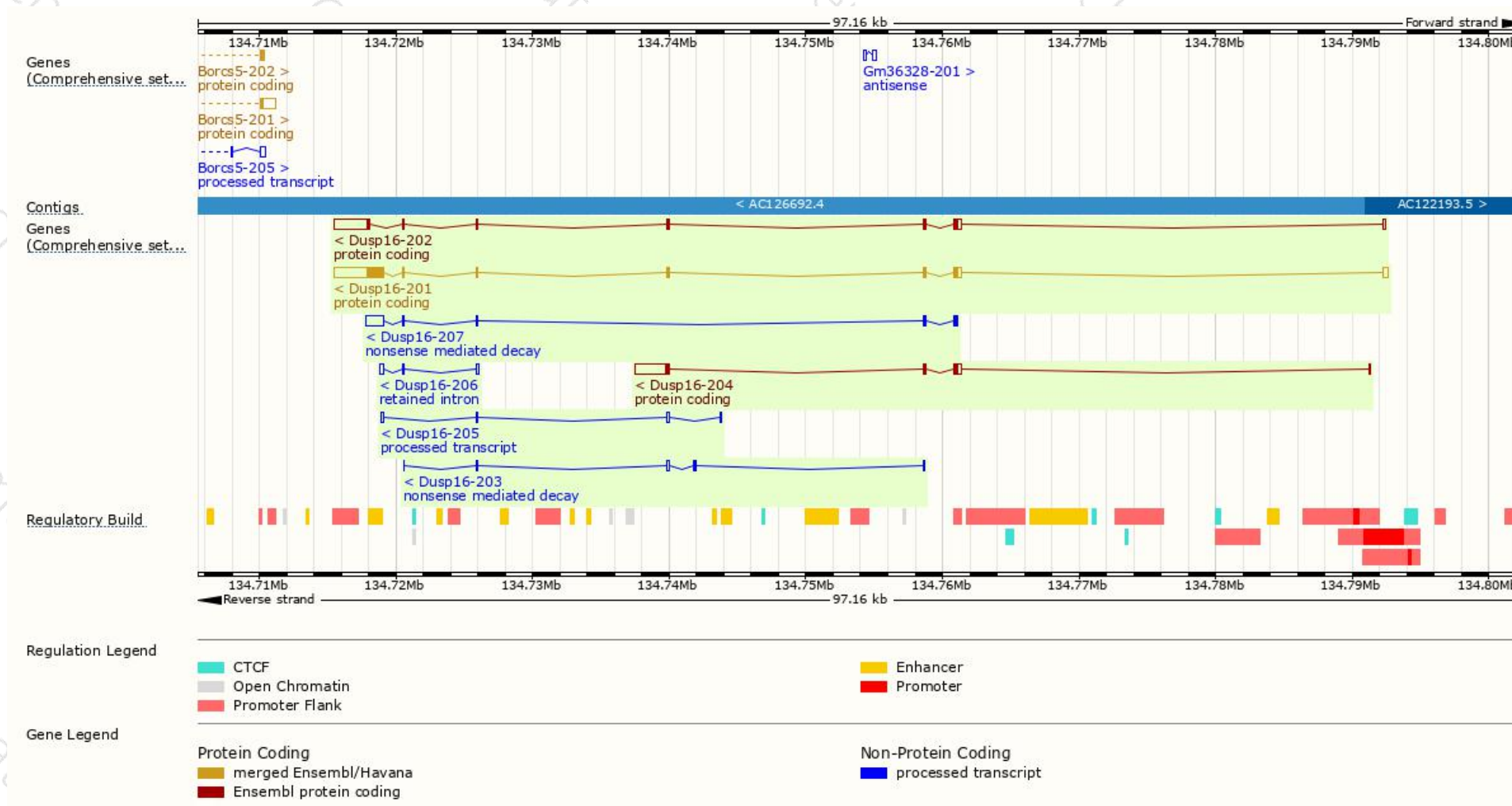
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dusp16-203	ENSMUST00000148926.1	579	51aa	Nonsense mediated decay	-	A0A0N4SV20	CDS 5' incomplete TSL:3
Dusp16-207	ENSMUST00000204083.2	1915	143aa	Nonsense mediated decay	-	A0A0N4SUV2	TSL:5
Dusp16-204	ENSMUST00000149776.2	3305	206aa	Protein coding	-	Q8BZE4	TSL:1 GENCODE basic
Dusp16-202	ENSMUST00000129433.3	3993	338aa	Protein coding	CCDS85175	F6UIK0	TSL:1 GENCODE basic APPRIS ALT2
Dusp16-201	ENSMUST00000100857.9	5104	660aa	Protein coding	CCDS39679	Q6PCP3	TSL:1 GENCODE basic APPRIS P3
Dusp16-205	ENSMUST00000203452.2	553	No protein	Processed transcript	-	-	TSL:5
Dusp16-206	ENSMUST00000203651.1	629	No protein	Retained intron	-	-	TSL:2

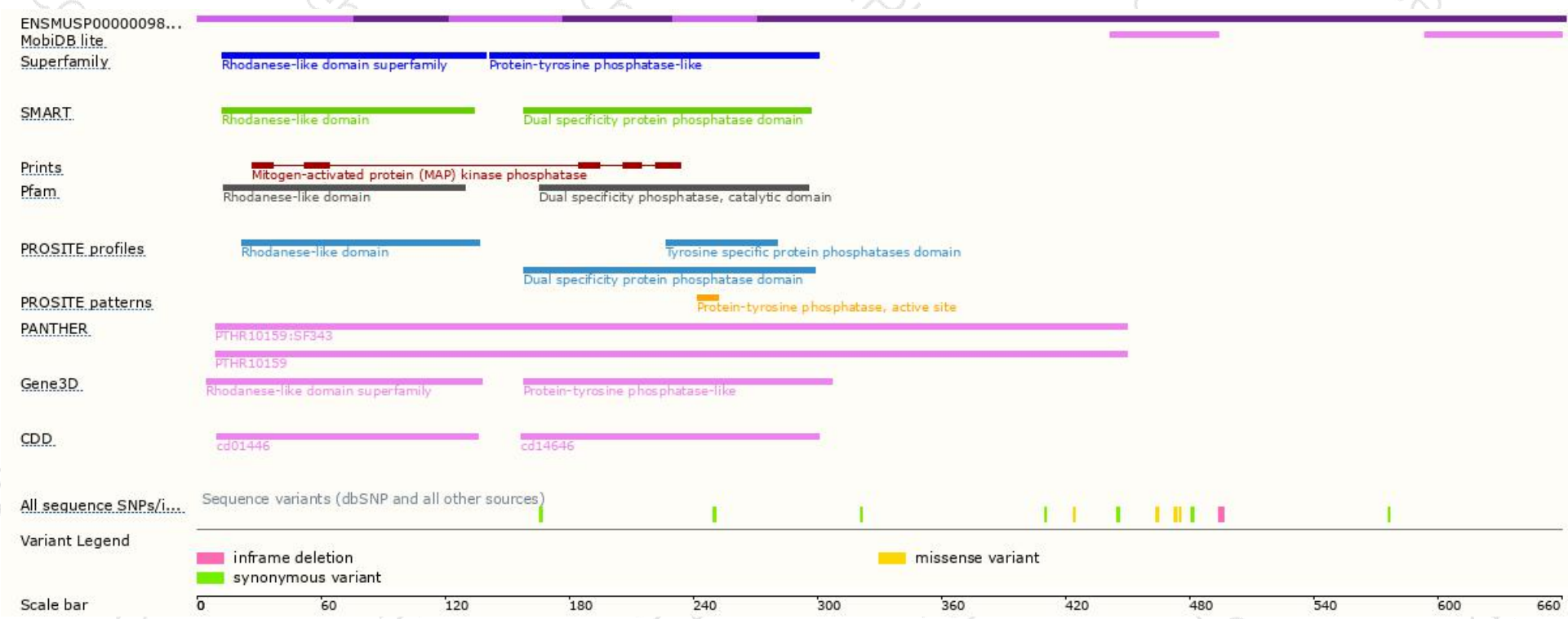
The strategy is based on the design of *Dusp16-201* transcript,the transcription is shown below:



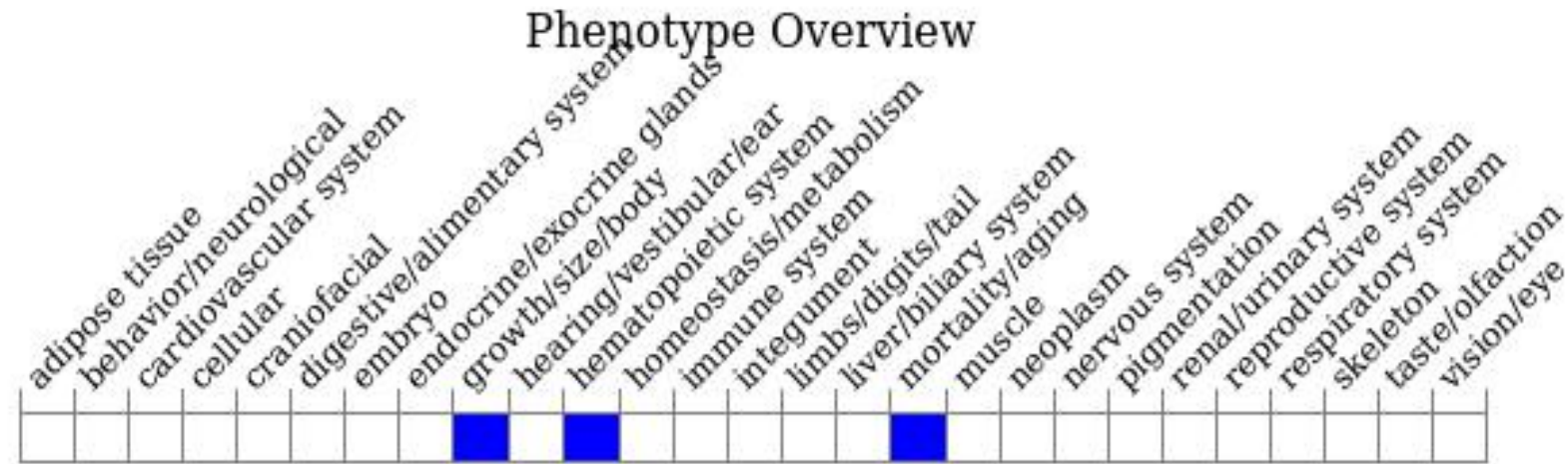
Genomic location distribution



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 gene trap allele exhibit complete neonatal lethality and decreased birth weight.

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

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