

# ***Kdm4d* Cas9-CKO Strategy**

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# Project Overview

**Project Name**

***Kdm4d***

**Project type**

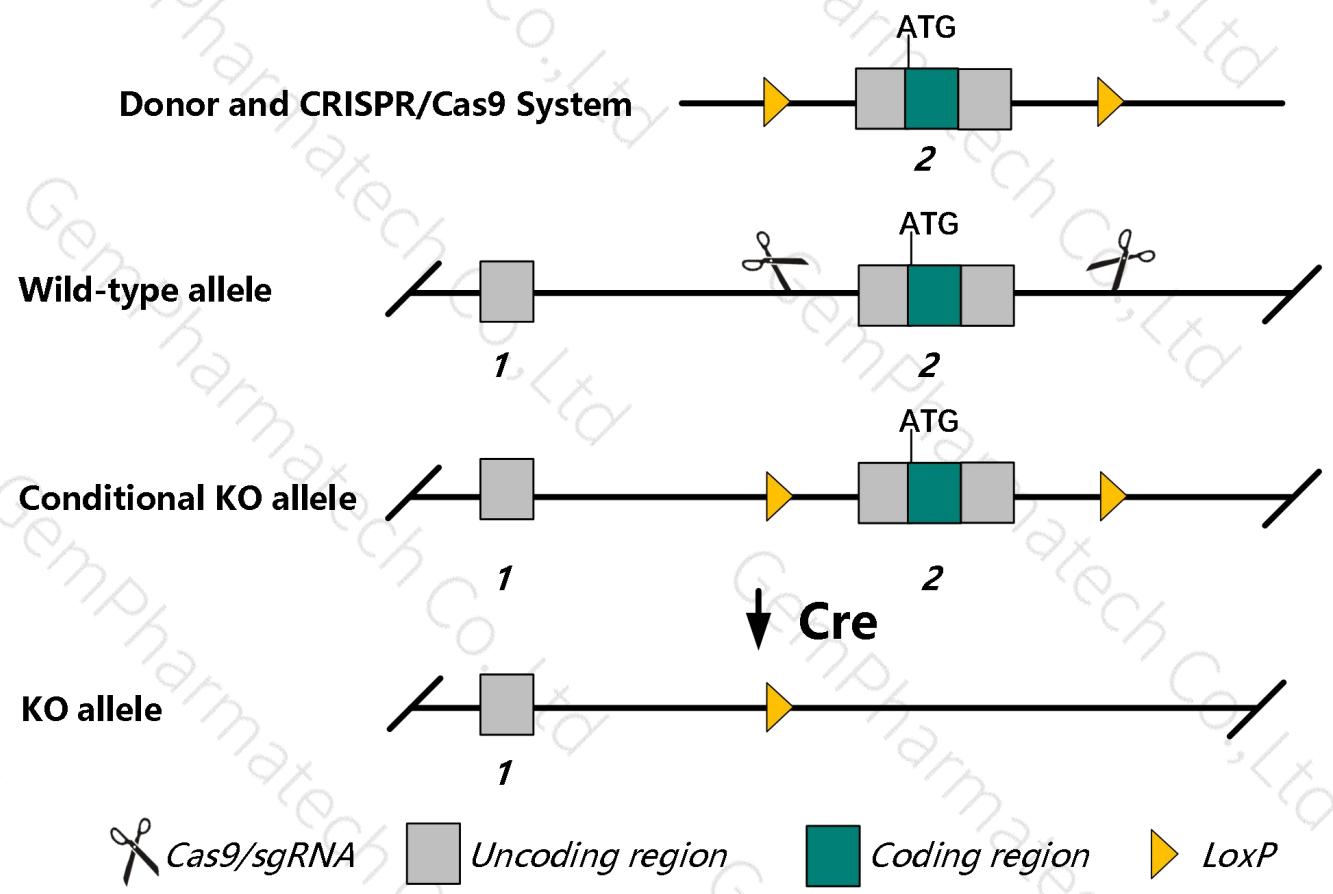
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kdm4d* gene. The schematic diagram is as follows:



# Technical routes

- The *Kdm4d* gene has 2 transcripts. According to the structure of *Kdm4d* gene, exon2 of *Kdm4d-201* (ENSMUST00000058796.6) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kdm4d* 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 knock-out allele exhibit accumulation of histone 3 methylation in spermatids, a transient increase in testes size, wider tubules, occasional male germ cell apoptosis, and decreased body weight. However, fertility is normal.
- The *Kdm4d* gene is located on the Chr9. 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)

## Kdm4d lysine (K)-specific demethylase 4D [ *Mus musculus* (house mouse) ]

Gene ID: 244694, updated on 16-Sep-2019

Summary

Official Symbol

Kdm4d provided by MGI

Official Full Name

lysine (K)-specific demethylase 4D provided by MGI

Primary source

[MGI:MGI:3606484](#)

See related

[Ensembl:ENSMUSG00000053914](#)

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

Jmjd2d; 4932416A15

Expression

Restricted expression toward testis adult (RPKM 31.3) [See more](#)

Orthologs

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

Genomic context

Location: 9; 9 A2

Exon count: 4

Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCm38.p6 ( <a href="#">GCF_000001635.26</a> )	9	NC_000075.6 (14462548..14500522, complement)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	9	NC_000075.5 (14267025..14304926, complement)

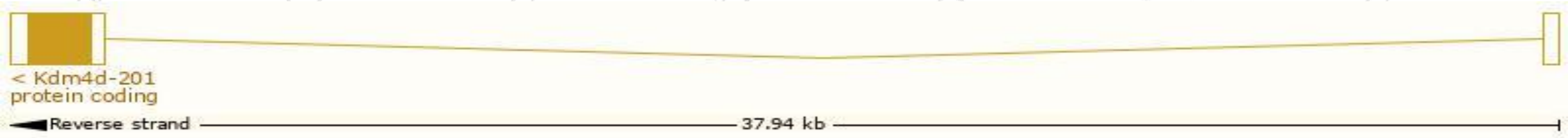
See Kdm4d in [Genome Data Viewer](#)

# Transcript information (Ensembl)

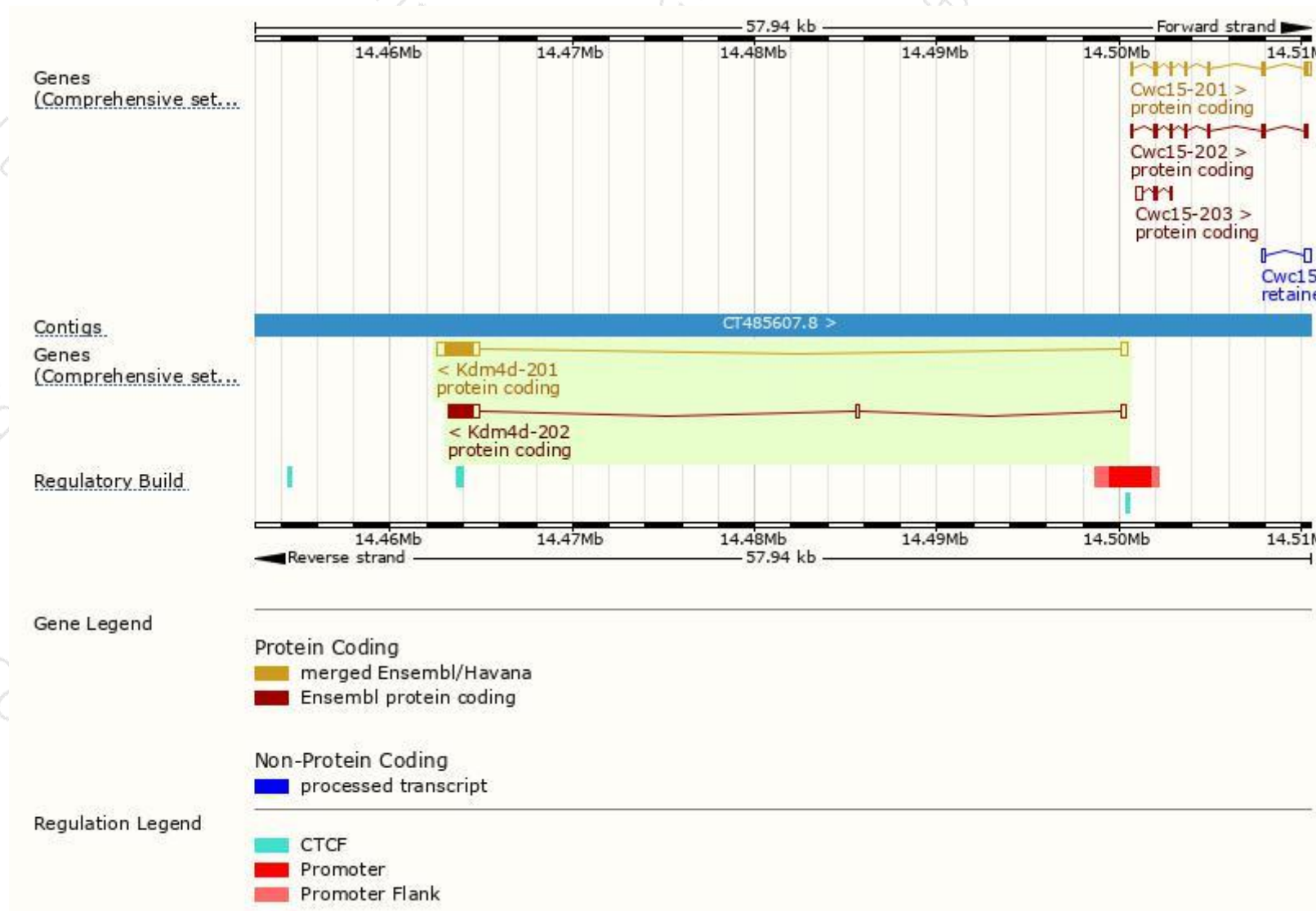
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kdm4d-201	<a href="#">ENSMUST00000058796.6</a>	2695	<a href="#">510aa</a>	Protein coding	<a href="#">CCDS22822</a>	<a href="#">Q3U2K5</a>	TSL:1 GENCODE basic APPRIS P1
Kdm4d-202	<a href="#">ENSMUST00000115647.2</a>	2117	<a href="#">450aa</a>	Protein coding	-	<a href="#">Z4YLE9</a>	CDS 3' incomplete TSL:1

The strategy is based on the design of *Kdm4d-201* transcript,The transcription is shown below

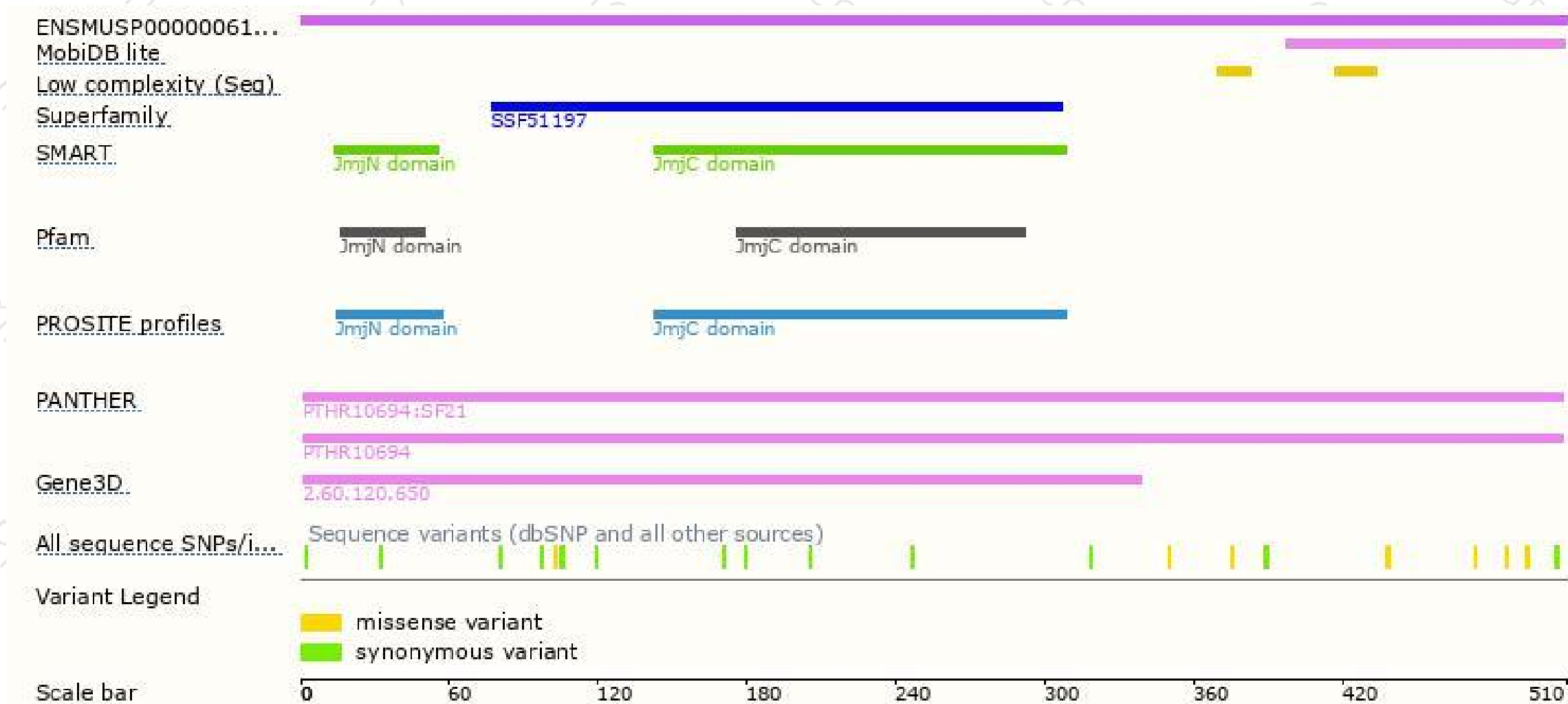


# Genomic location distribution

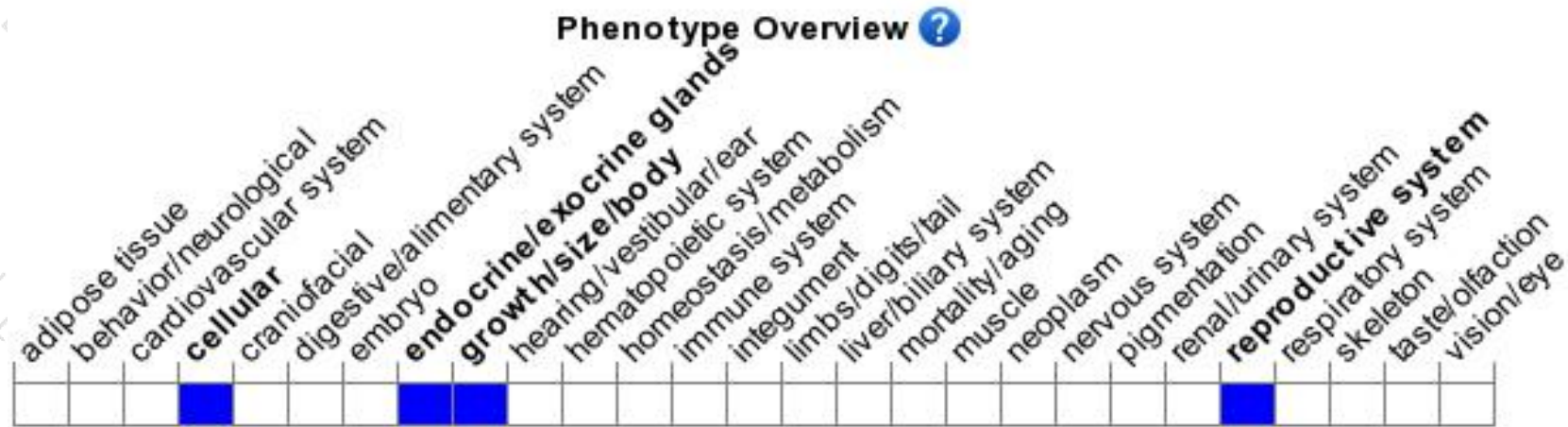




# Protein domain



# 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 knock-out allele exhibit accumulation of histone 3 methylation in spermatids, a transient increase in testes size, wider tubules, occasional male germ cell apoptosis, and decreased body weight. However, fertility is normal.

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

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