

# ***Fkbp6*** Cas9-CKO Strategy

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# Project Overview

**Project Name**

***Fkbp6***

**Project type**

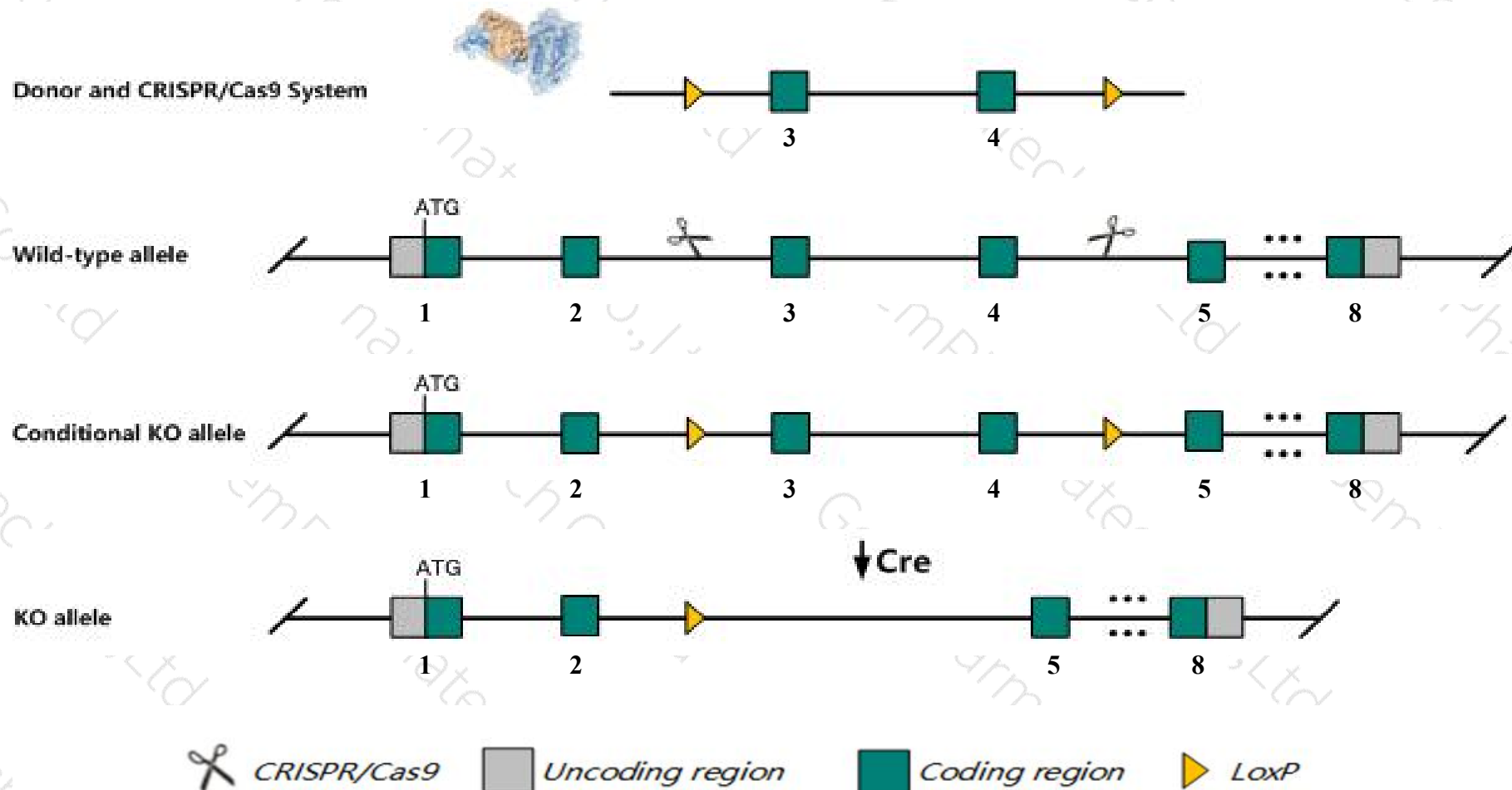
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fkbp6* gene. The schematic diagram is as follows:



# Technical routes

- The *Fkbp6* gene has 4 transcripts. According to the structure of *Fkbp6* gene, exon3-exon4 of *Fkbp6*-201 (ENSMUST00000044972.10) transcript is recommended as the knockout region. The region contains 293bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fkbp6* 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 azoospermia and male infertility associated with arrest of male meiosis at the pachytene stage, and increased apoptosis of meiotic spermatocytes.
- The *Fkbp6* gene is located on the Chr5. 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)

## Fkbp6 FK506 binding protein 6 [ *Mus musculus* (house mouse) ]

Gene ID: 94244, updated on 27-Feb-2020

### Summary

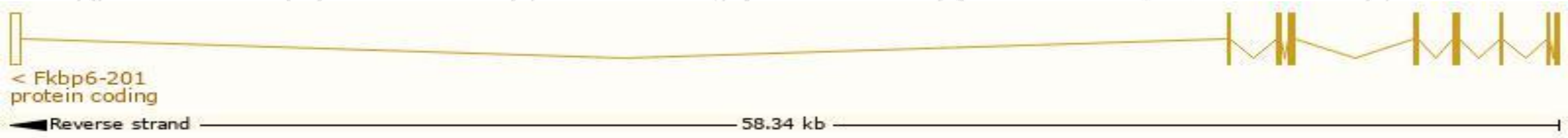
Official Symbol	Fkbp6 provided by <a href="#">MGI</a>
Official Full Name	FK506 binding protein 6 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:2137612</a>
See related	<a href="#">Ensembl:ENSMUSG000000040013</a>
Gene type	protein coding
RefSeq status	REVIEWED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	36kDa; FKBP-6; FKBP-36; AU017274; D5Erd724e; 1700008G22Rik
Summary	This gene is a member of the FK506-binding protein (Fkbp) family. The encoded protein plays a role in male-specific fertility and homologous pairing of chromosomes during meiosis. The protein may also be involved in LINE1 transposon silencing and binding to Hsp90 as a co-chaperone. Alternative splicing of this gene results in multiple transcript variants encoding different isoforms. [provided by RefSeq, Apr 2013]
Expression	Restricted expression toward testis adult (RPKM 22.2) <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

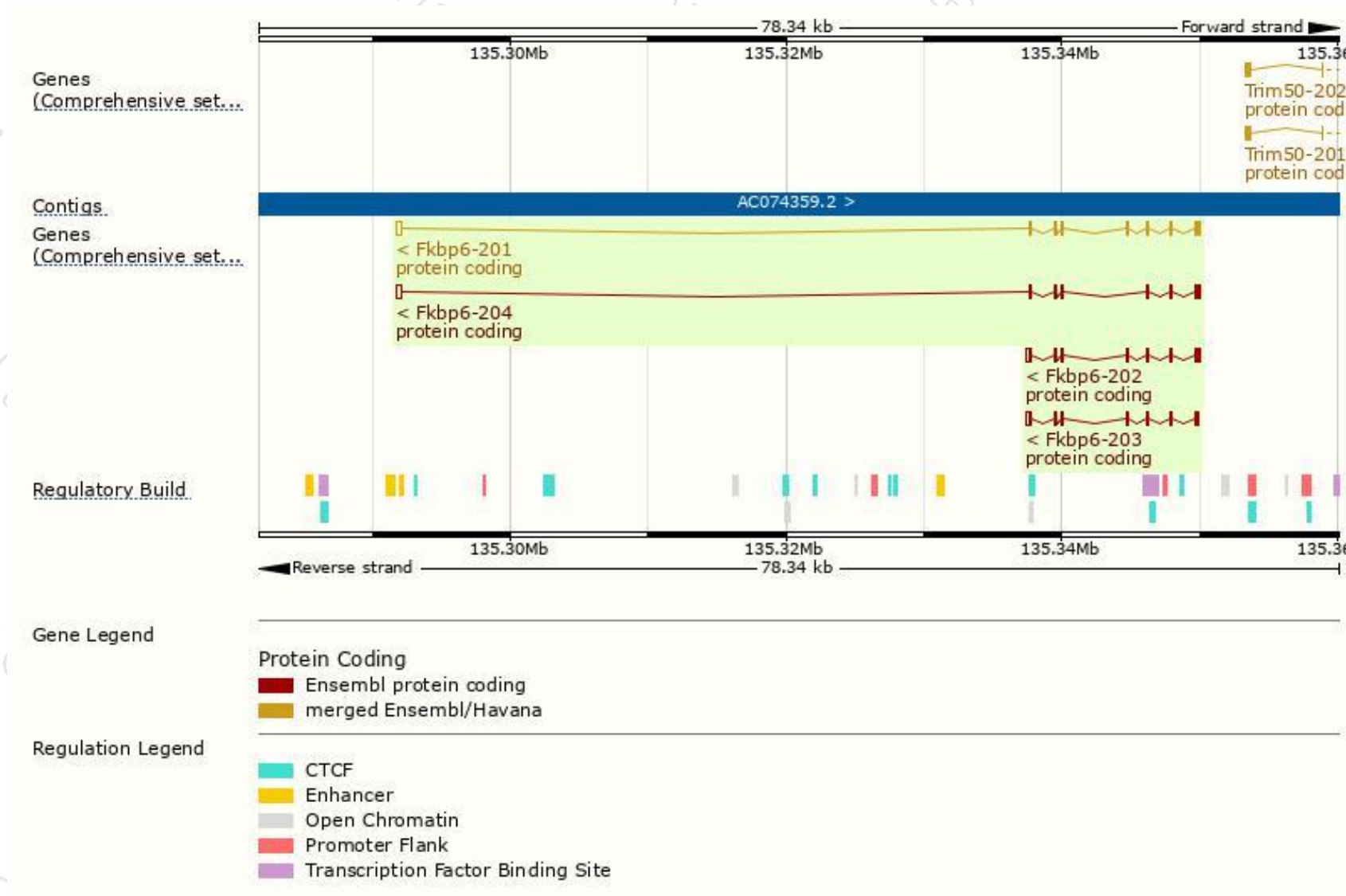
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fkbp6-201	<a href="#">ENSMUST00000044972.10</a>	1447	<a href="#">327aa</a>	Protein coding	<a href="#">CCDS19738</a>	<a href="#">Q91XW8</a>	TSL:1 GENCODE basic APPRIS P3
Fkbp6-204	<a href="#">ENSMUST00000201791.3</a>	1297	<a href="#">287aa</a>	Protein coding	<a href="#">CCDS80426</a>	<a href="#">Q91XW8</a>	TSL:1 GENCODE basic
Fkbp6-202	<a href="#">ENSMUST00000201534.1</a>	1287	<a href="#">327aa</a>	Protein coding	<a href="#">CCDS19738</a>	<a href="#">Q91XW8</a>	TSL:1 GENCODE basic APPRIS P3
Fkbp6-203	<a href="#">ENSMUST00000201784.3</a>	1235	<a href="#">327aa</a>	Protein coding	<a href="#">CCDS80425</a>	<a href="#">Q91XW8</a>	TSL:1 GENCODE basic APPRIS ALT 2

The strategy is based on the design of *Fkbp6-201* transcript,The transcription is shown below

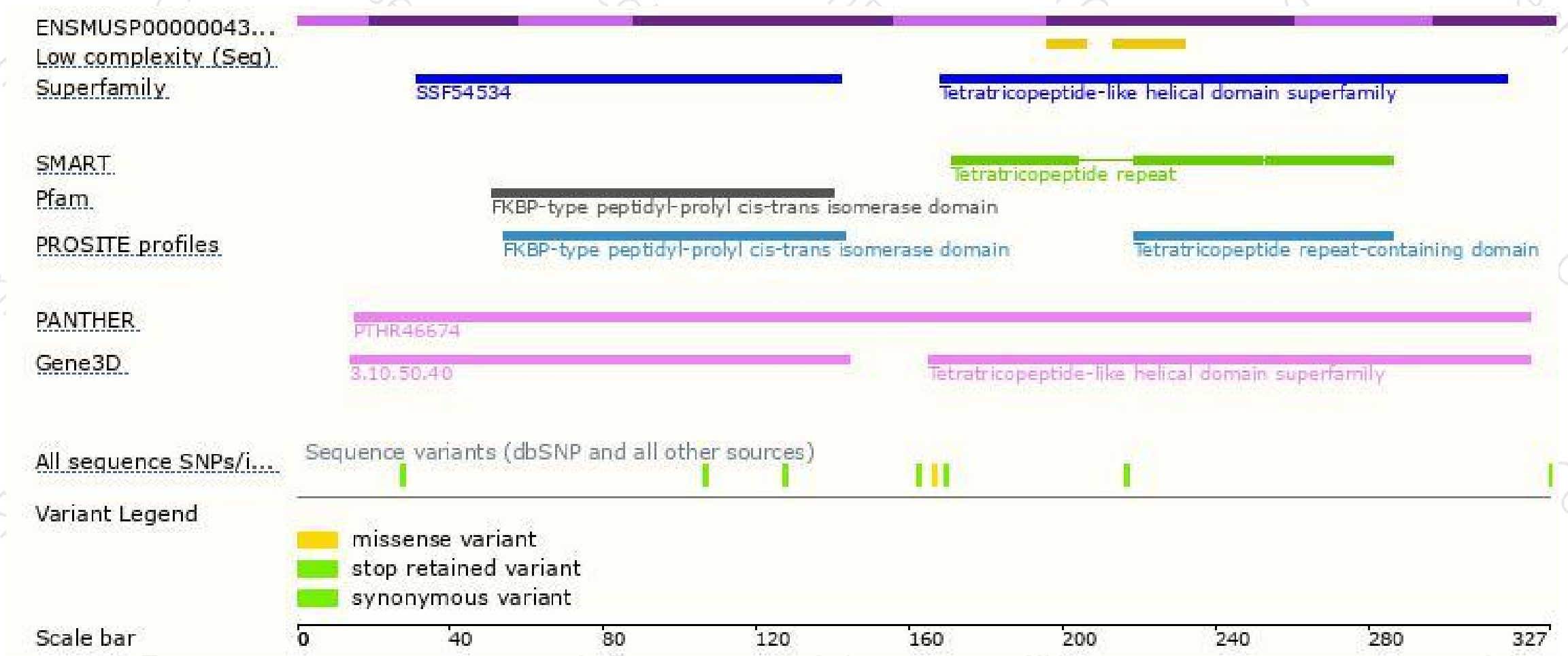


# Genomic location distribution

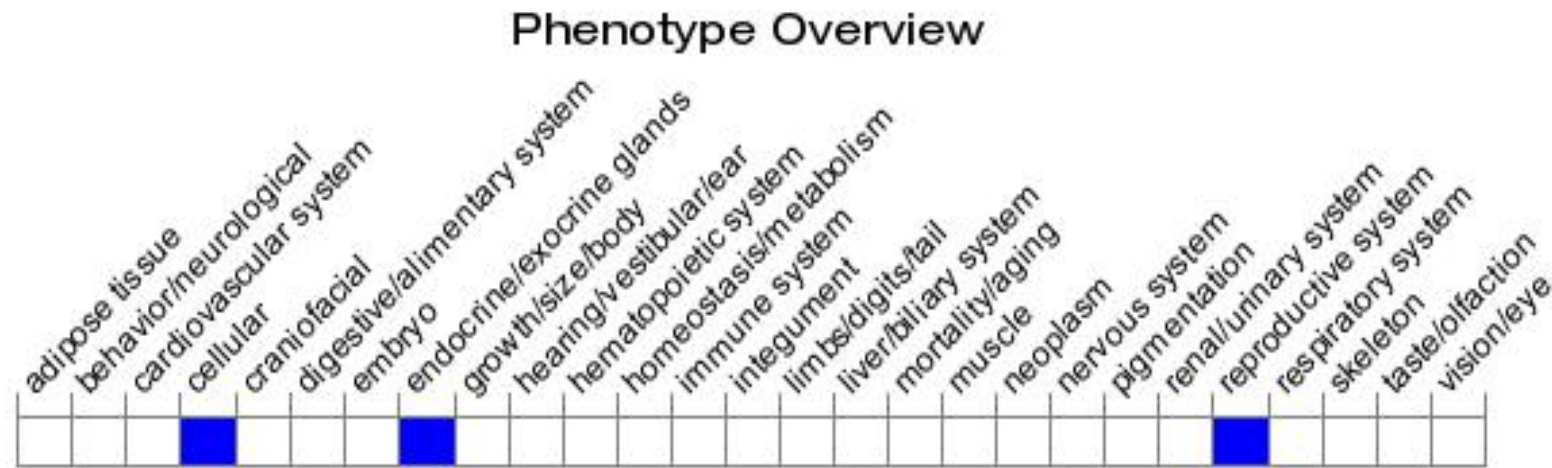




# Protein domain



# 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 azoospermia and male infertility associated with arrest of male meiosis at the pachytene stage, and increased apoptosis of meiotic spermatocytes.

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

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