

Ly6k Cas9-CKO Strategy

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Project Overview

Project Name

Ly6k

Project type

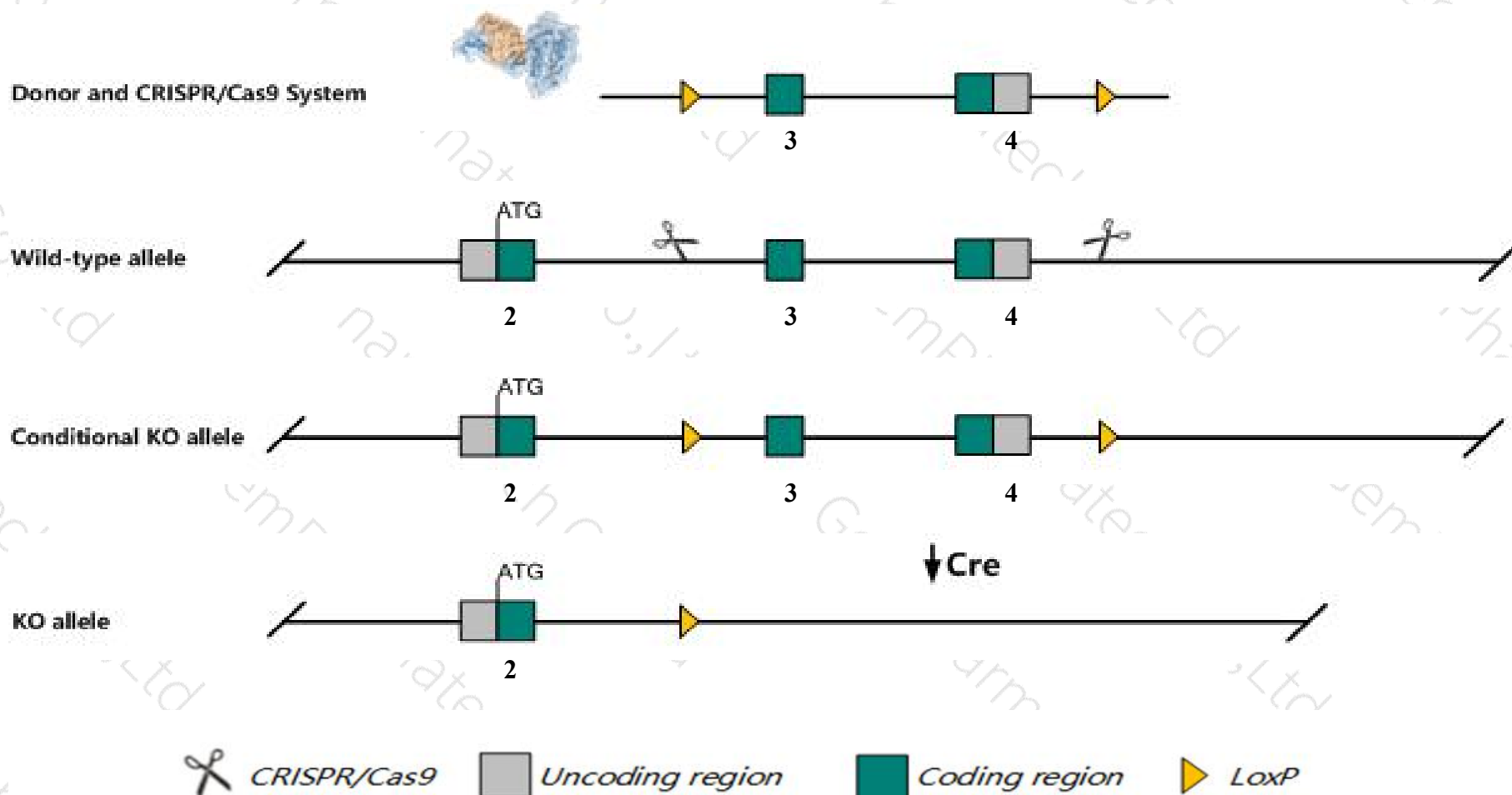
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ly6k* gene. The schematic diagram is as follows:



Technical routes

- The *Ly6k* gene has 2 transcripts. According to the structure of *Ly6k* gene, exon3-exon4 of *Ly6k-201*(ENSMUST00000060301.5) transcript is recommended as the knockout region. The region contains 407bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ly6k* 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 male infertility associated with impaired sperm migration into the oviduct.
- The flox region overlap with part of the Gm17189 gene, which may affect the regulation of this gene.
- The *Ly6k* gene is located on the Chr15. 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)

Ly6k lymphocyte antigen 6 complex, locus K [Mus musculus (house mouse)]

Gene ID: 76486, updated on 13-Mar-2020

Summary



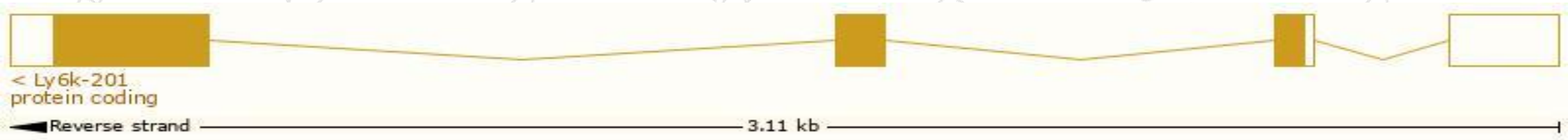
Official Symbol	Ly6k provided by MGI
Official Full Name	lymphocyte antigen 6 complex, locus K provided by MGI
Primary source	MGI:MGI:1923736
See related	Ensembl:ENSMUSG00000044678
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2410015A16Rik, 3110035B01Rik, mLy-6K
Expression	Biased expression in testis adult (RPKM 130.0), thymus adult (RPKM 15.7) and 1 other tissue See more
Orthologs	human all

Transcript information (Ensembl)

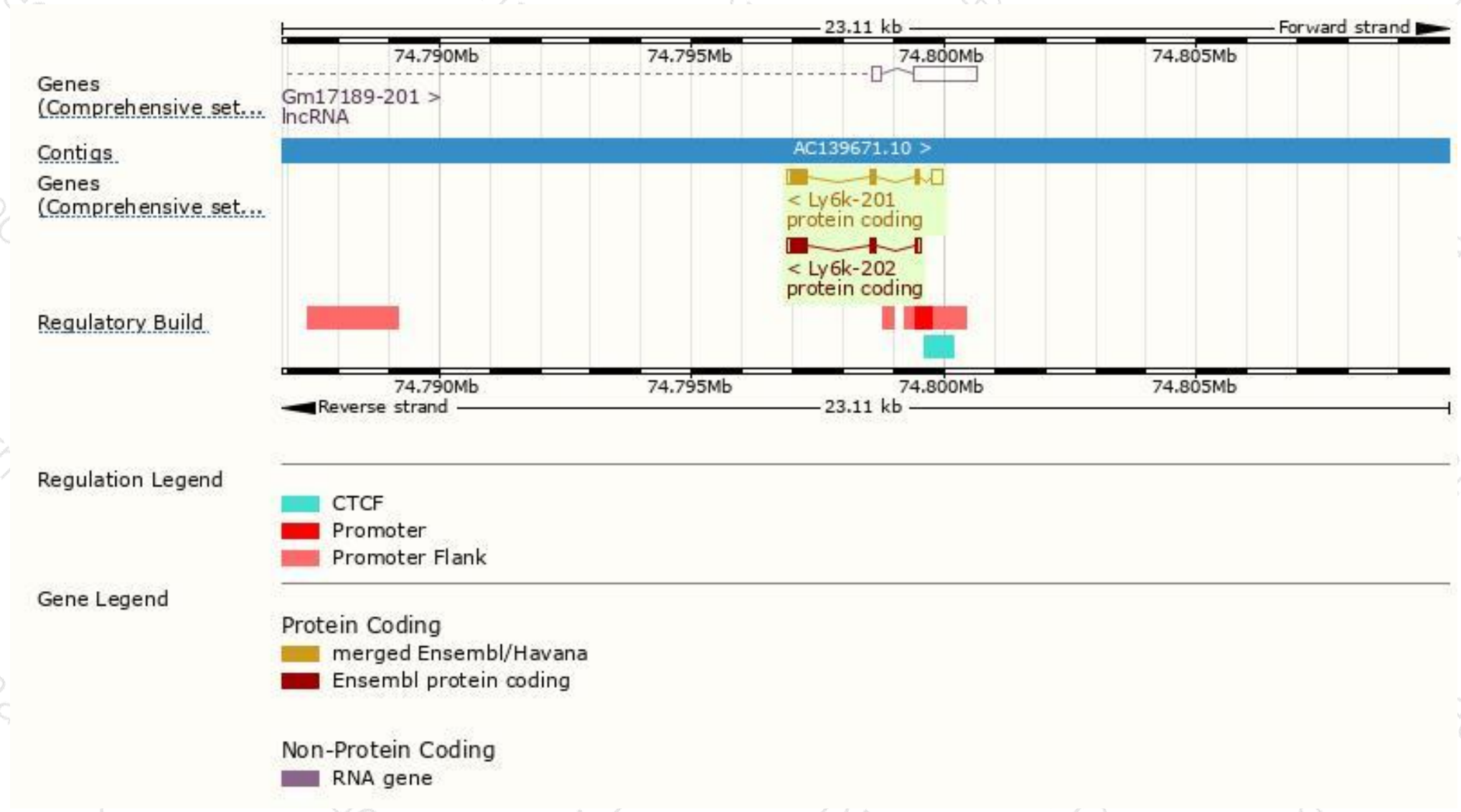
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ly6k-201	ENSMUST00000060301.5	791	154aa	Protein coding	CCDS27532	Q9CWP4	TSL:1 GENCODE basic APPRIS P1
Ly6k-202	ENSMUST00000168815.7	612	154aa	Protein coding	CCDS27532	Q9CWP4	TSL:1 GENCODE basic APPRIS P1

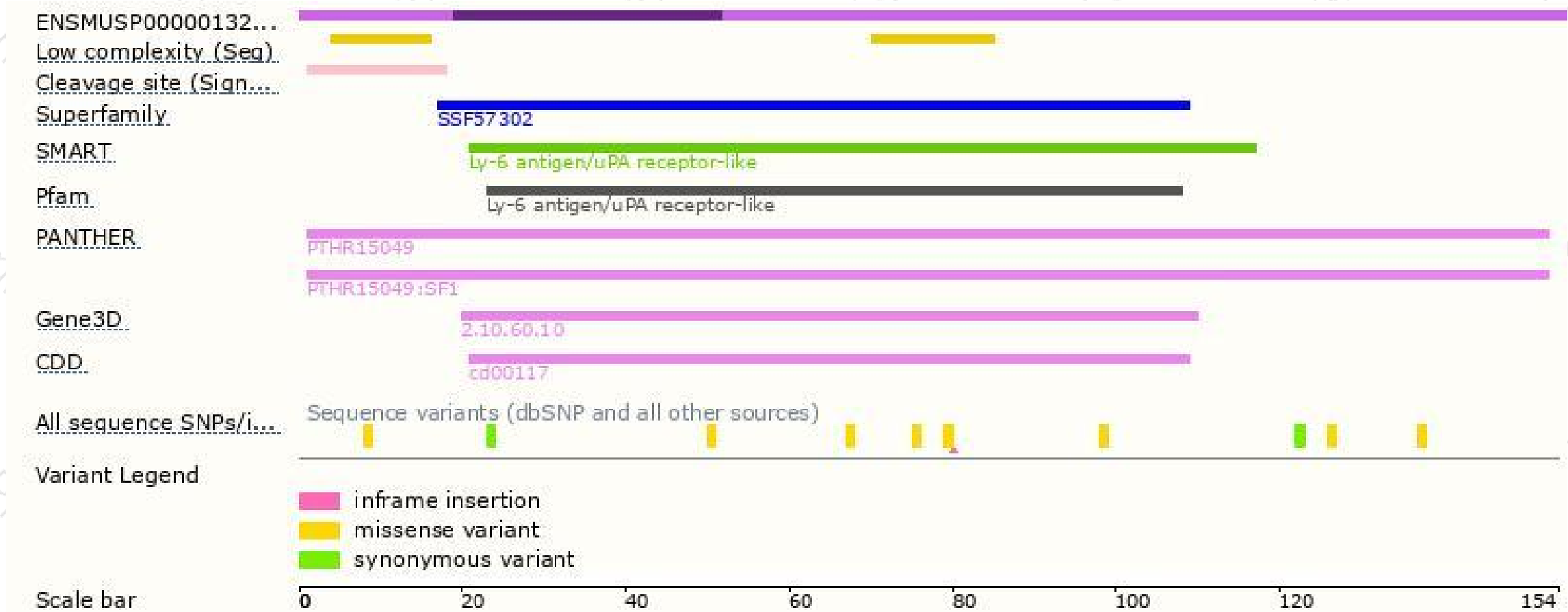
The strategy is based on the design of *Ly6k-201* transcript,the transcription is shown below:



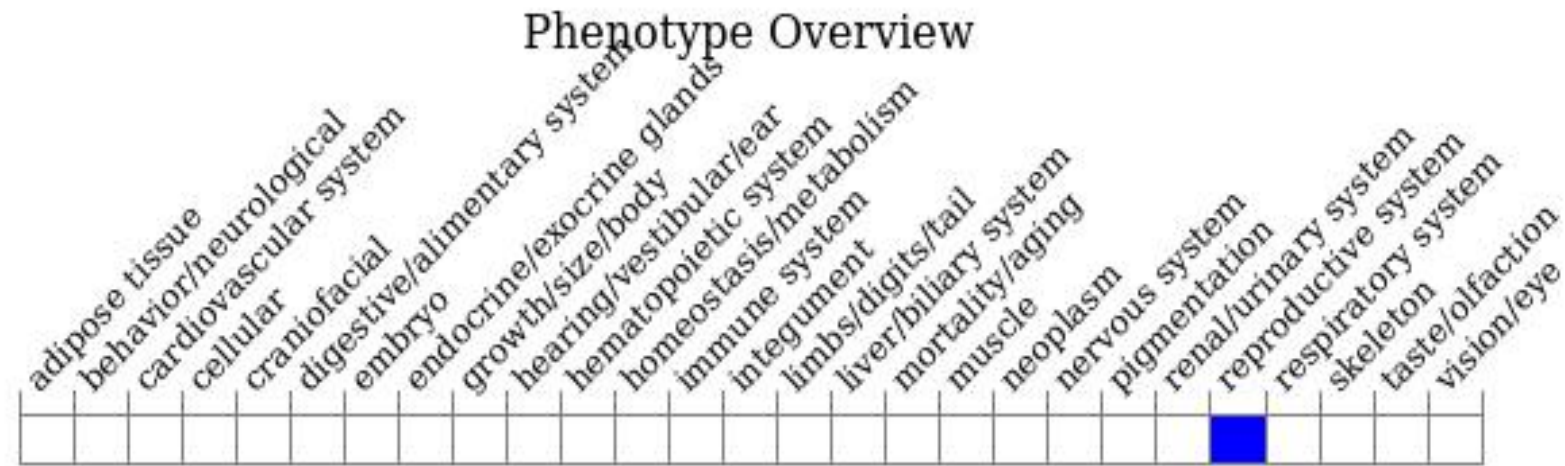
Genomic location distribution



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 male infertility associated with impaired sperm migration into the oviduct.

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

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