

Usp44 Cas9-CKO Strategy

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Project Overview

Project Name

Usp44

Project type

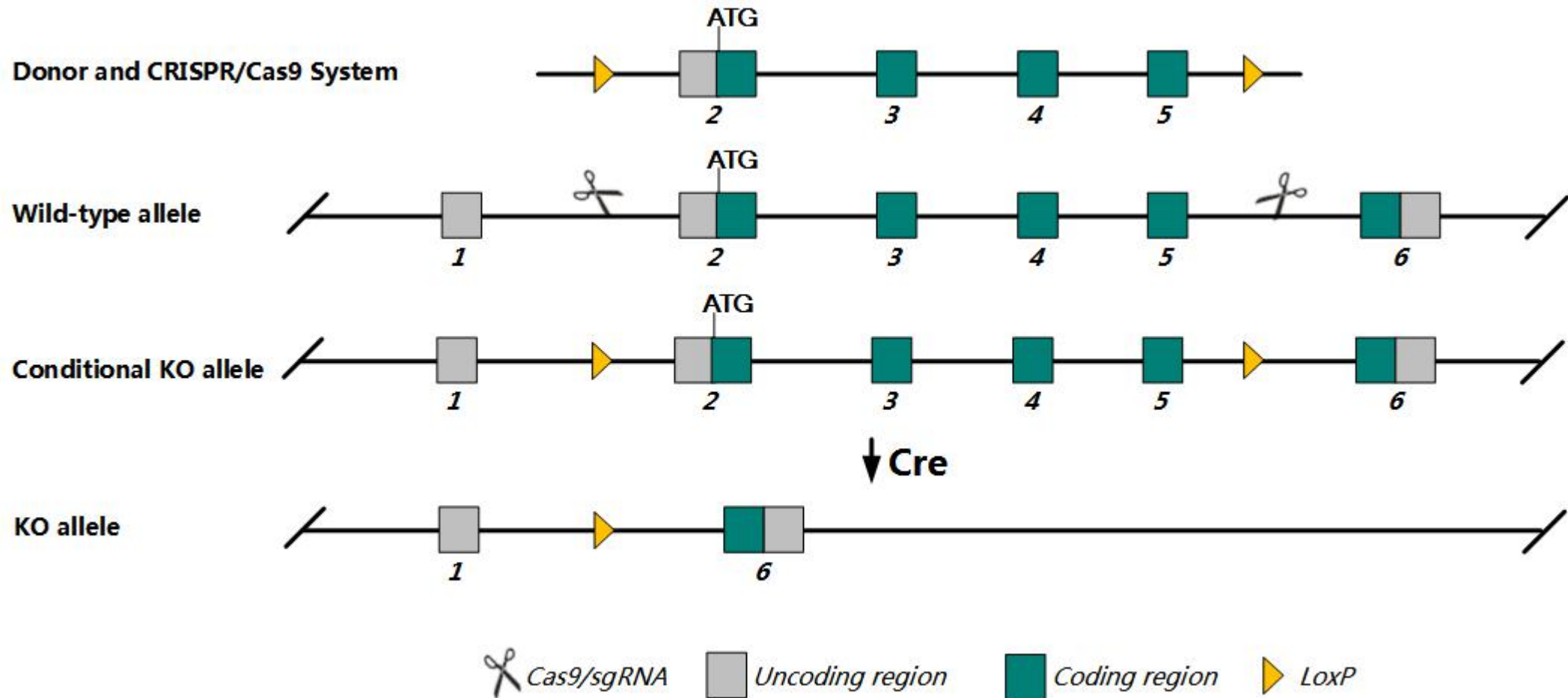
Cas9-CKO

Strain background

C57BL/6J

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp44* gene. The schematic diagram is as follows:



- The *Usp44* gene has 2 transcripts. According to the structure of *Usp44* gene, exon2-exon5 of *Usp44-202* (ENSMUST00000216224.1) transcript is recommended as the knockout region. The region contains ATG initiation codon. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp44* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.
- The flox mice was 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.

- The *Usp44* gene is located on the Chr10. 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.
- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit chromosomal instability, aneuploidy and increased tumor incidence.
- 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)

Usp44 ubiquitin specific peptidase 44 [*Mus musculus* (house mouse)]

Gene ID: 327799, updated on 21-Aug-2019

Summary

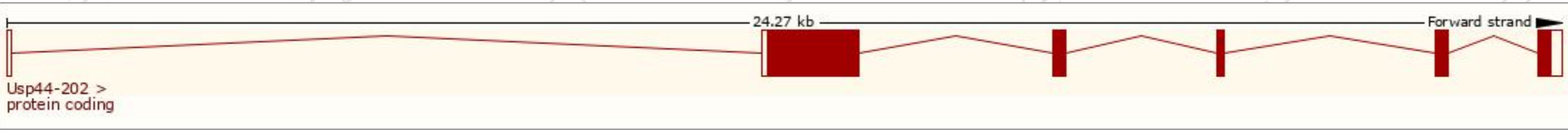
Official Symbol	Usp44 provided by MGI
Official Full Name	ubiquitin specific peptidase 44 provided by MGI
Primary source	MGI:MGI:3045318
See related	Ensembl:ENSMUSG00000020020
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	E430004F17Rik
Expression	Biased expression in testis adult (RPKM 24.5), CNS E11.5 (RPKM 1.5) and 1 other tissue See more
Orthologs	human all

Transcript information (Ensembl)

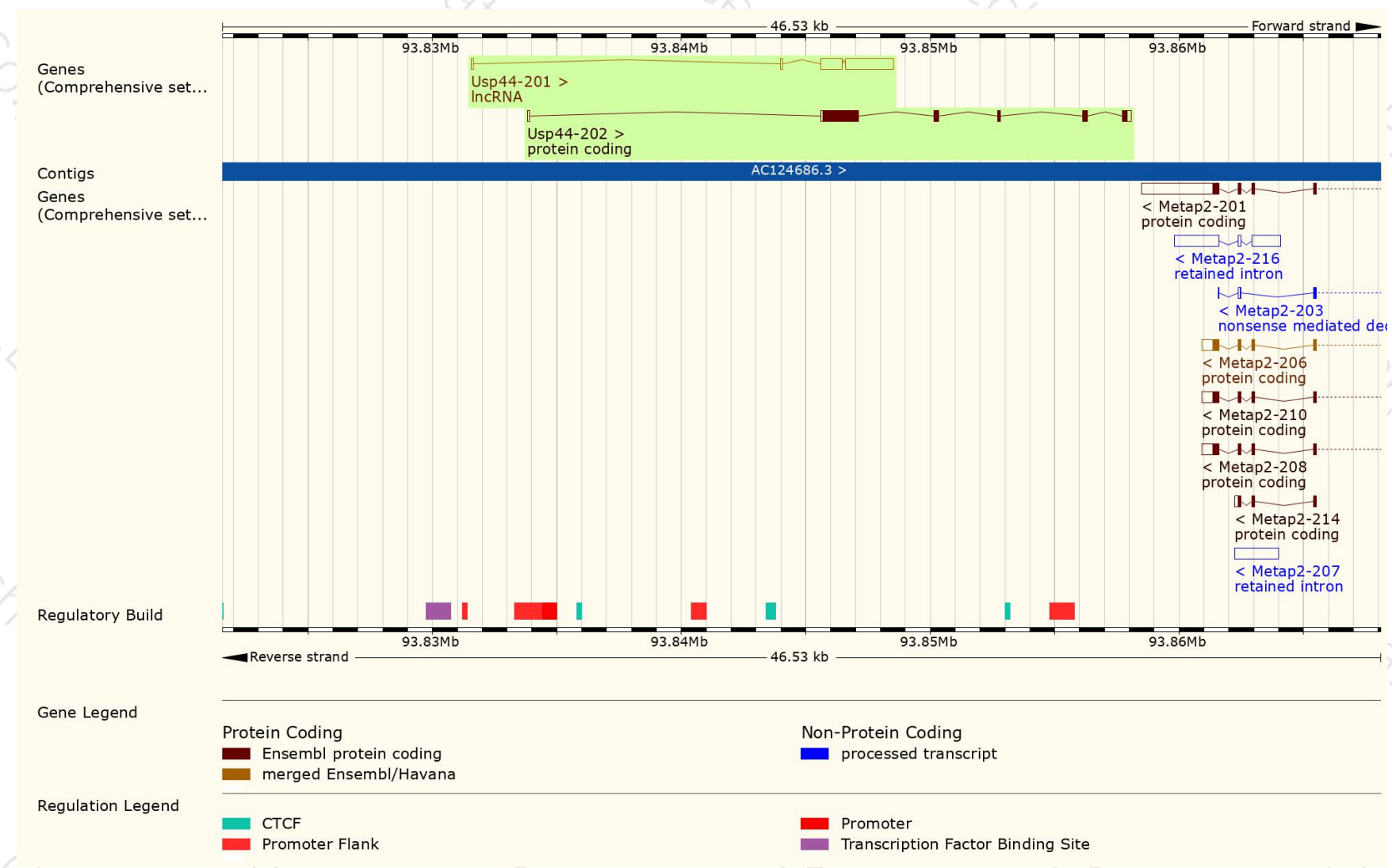
The gene has 2 transcripts,all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Usp44-201	ENSMUST00000095333.5	2946	No protein	IncRNA	-	-	TSL:1
Usp44-202	ENSMUST00000216224.1	2449	711aa	Protein coding	-	Q8C2S0	TSL:5 Gencode basic APPRIS P1

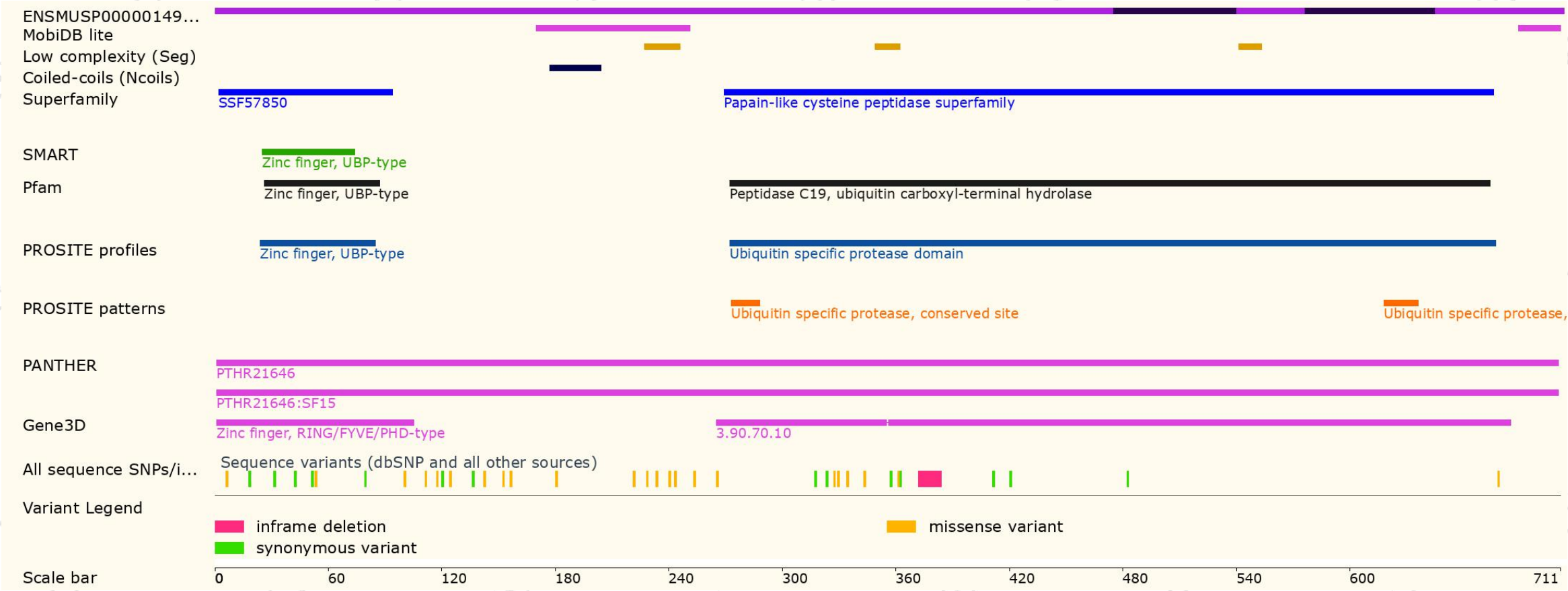
The strategy is based on the design of *Usp44-202* transcript,The transcription is shown below



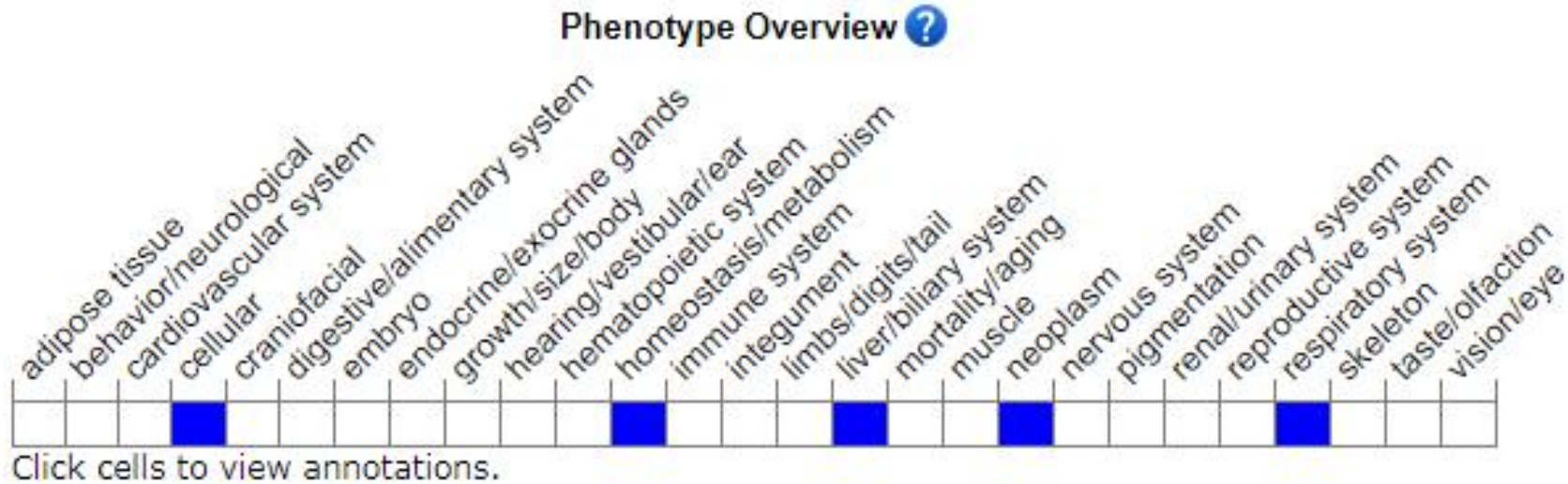
Genomic location distribution



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/>).

Mice homozygous for a knock-out allele exhibit chromosomal instability, aneuploidy and increased tumor incidence.

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

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