

Sox13 Cas9-CKO Strategy

Designer:

JiaYu

Reviewer:

Xiaojing Li

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Project Overview

Project Name

Sox13

Project type

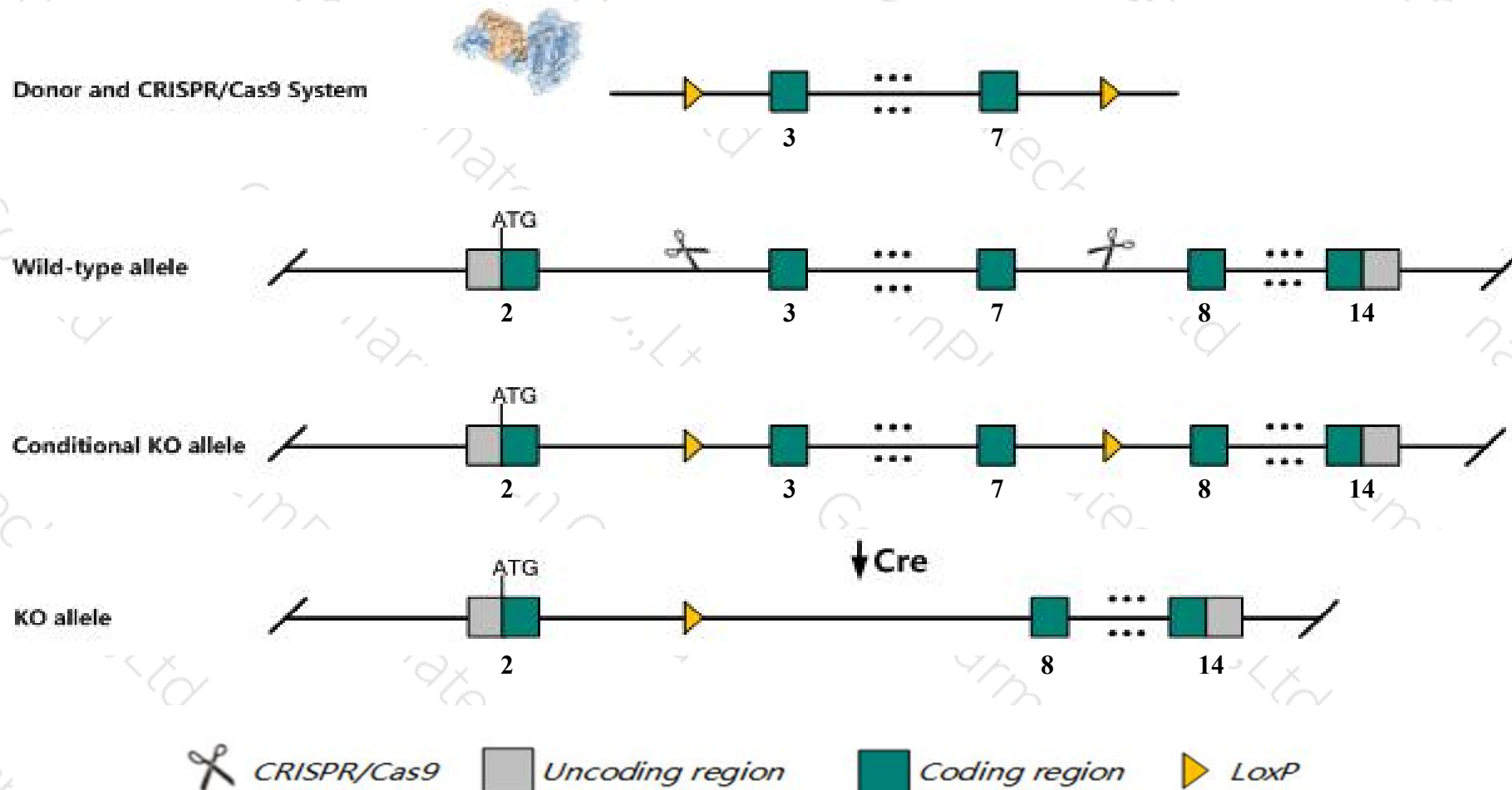
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sox13* gene. The schematic diagram is as follows:



Technical routes

- The *Sox13* gene has 5 transcripts. According to the structure of *Sox13* gene, exon3-exon7 of *Sox13*-205 (ENSMUST00000153799.7) transcript is recommended as the knockout region. The region contains 556bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Sox13* 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 display impaired development of gamma-delta T cells and severe postnatal growth defects.
- The *Sox13* gene is located on the Chr1. 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)

Sox13 SRY (sex determining region Y)-box 13 [Mus musculus (house mouse)]

Gene ID: 20668, updated on 31-Jan-2019

Summary



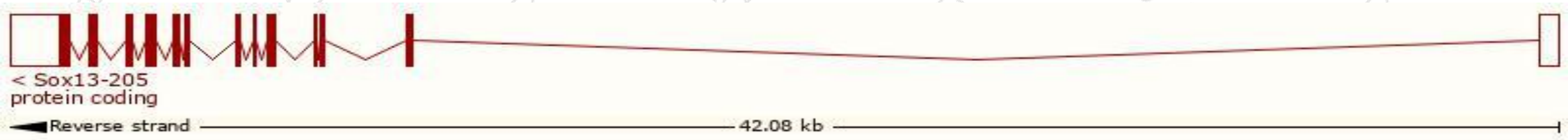
Official Symbol	Sox13 provided by MGI
Official Full Name	SRY (sex determining region Y)-box 13 provided by MGI
Primary source	MGI:MGI:98361
See related	Ensembl:ENSMUSG00000070643
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA407916, AW259412, AW540933, Sox-13
Expression	Broad expression in lung adult (RPKM 49.3), small intestine adult (RPKM 36.4) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

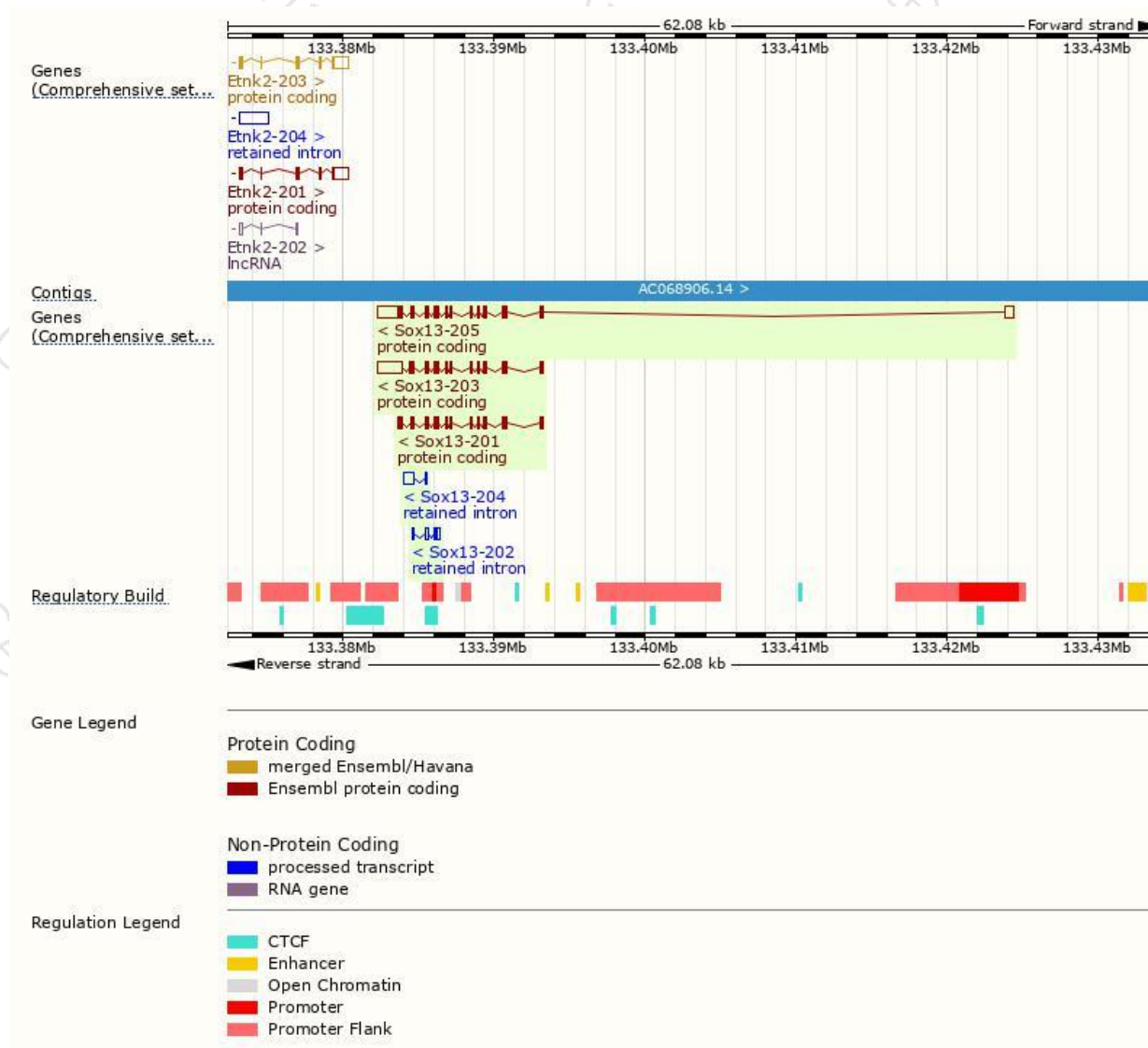
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sox13-205	ENSMUST00000153799.7	3693	613aa	Protein coding	CCDS48363	Q04891	TSL:1 GENCODE basic APPRIS P2
Sox13-201	ENSMUST00000094551.4	1842	613aa	Protein coding	CCDS48363	Q04891	TSL:1 GENCODE basic APPRIS P2
Sox13-203	ENSMUST00000144386.7	3179	504aa	Protein coding	-	D3Z7I3	TSL:1 GENCODE basic APPRIS ALT2
Sox13-204	ENSMUST00000145922.1	757	No protein	Retained intron	-	-	TSL:1
Sox13-202	ENSMUST00000126530.1	628	No protein	Retained intron	-	-	TSL:3

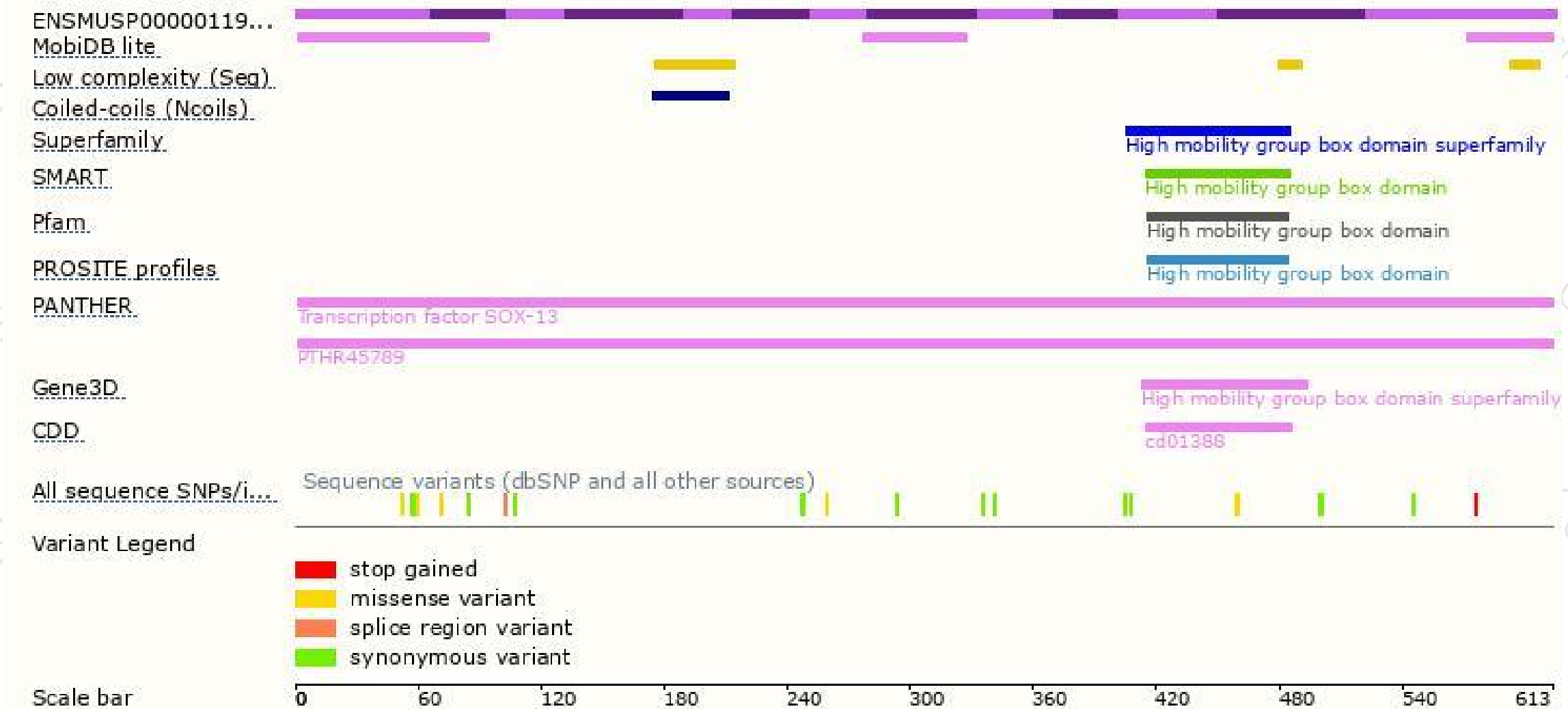
The strategy is based on the design of Sox13-205 transcript,The transcription is shown below



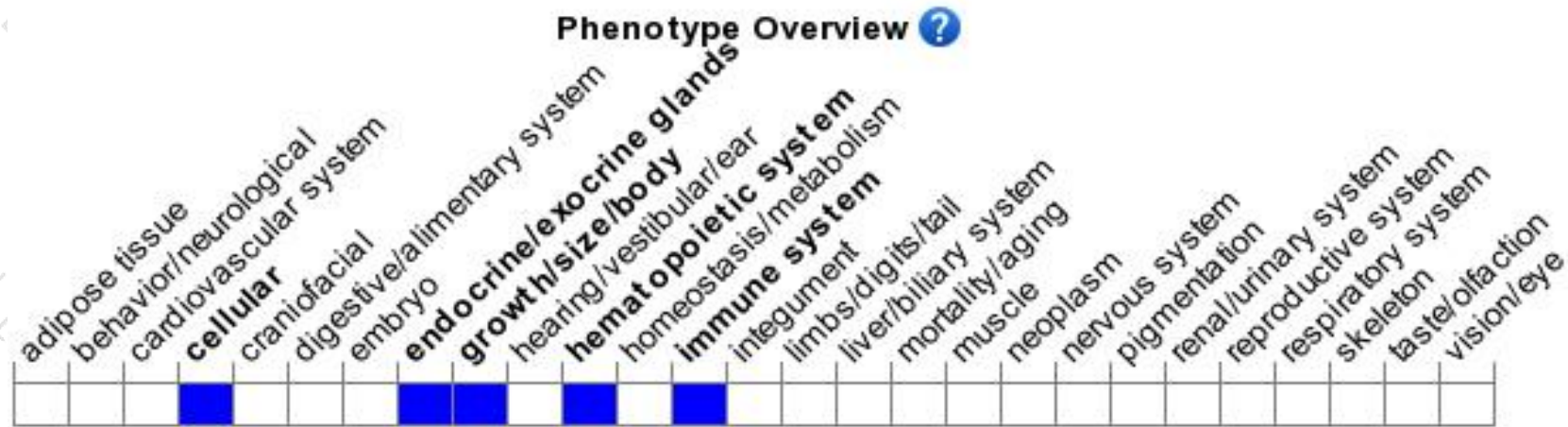
Genomic location distribution



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 display impaired development of gamma-delta T cells and severe postnatal growth defects.

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

Tel: 400-9660890

