

Il6ra Cas9-CKO Strategy

Designer:

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Design Date:

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Project Overview

Project Name

Il6ra

Project type

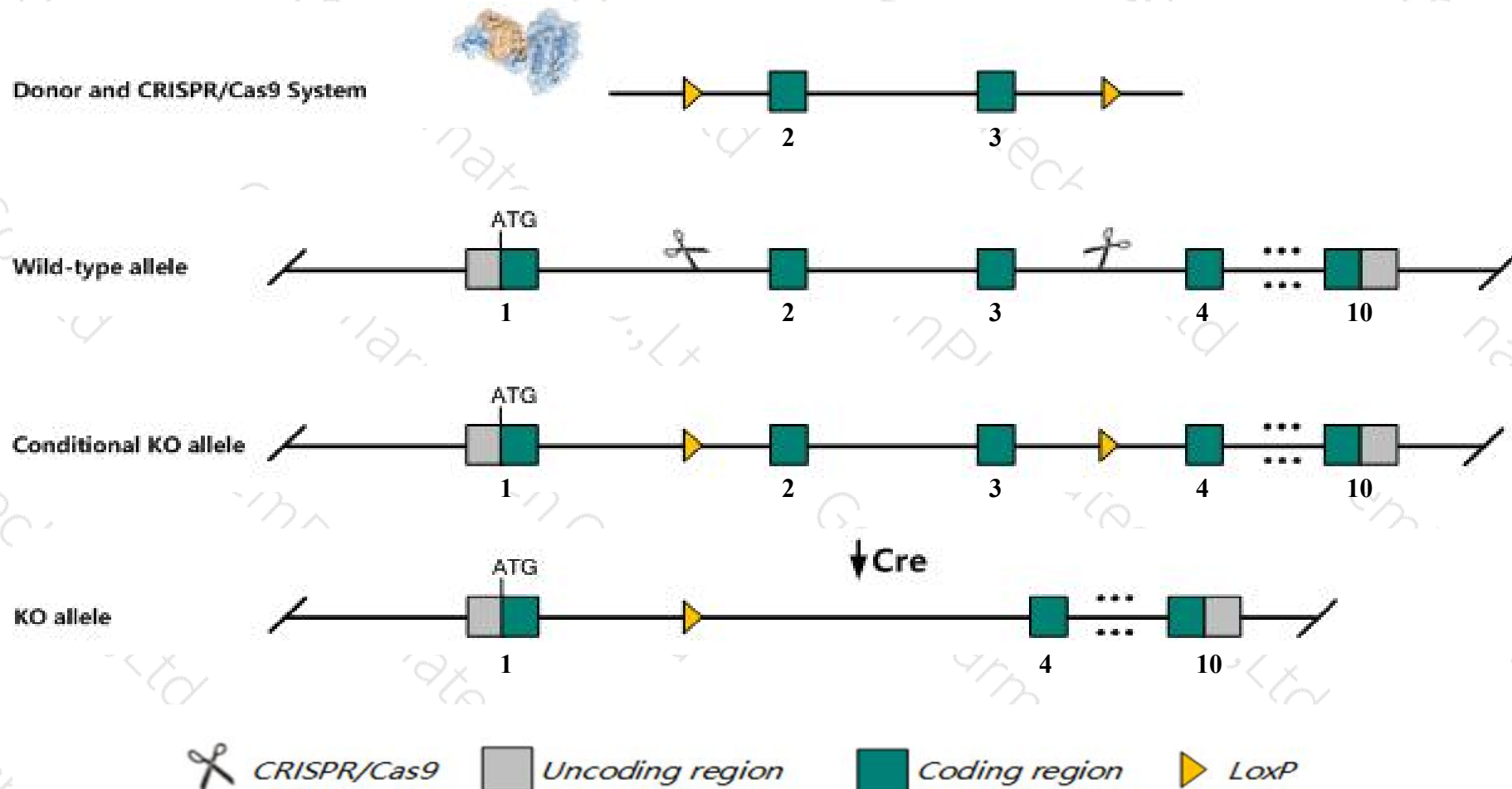
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il6ra* gene. The schematic diagram is as follows:



Technical routes

- The *Il6ra* gene has 2 transcripts. According to the structure of *Il6ra* gene, exon2-exon3 of *Il6ra-201* (ENSMUST00000029559.6) transcript is recommended as the knockout region. The region contains 361bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Il6ra* 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 null allele exhibit defective T helper 17 cells development. Mice homozygous for a different knock-out allele exhibit abnormal inflammatory response and abnormal wound healing.
- The *Il6ra* gene is located on the Chr3. 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)

Il6ra interleukin 6 receptor, alpha [Mus musculus (house mouse)]

Gene ID: 16194, updated on 9-Apr-2019

Summary



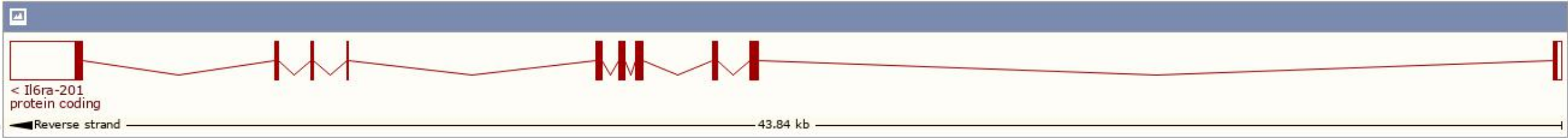
Official Symbol	Il6ra provided by MGI
Official Full Name	interleukin 6 receptor, alpha provided by MGI
Primary source	MGI:MGI:105304
See related	Ensembl:ENSMUSG000000027947
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CD126, IL-6R, IL-6R-alpha, IL-6RA, Il6r
Expression	Broad expression in spleen adult (RPKM 12.8), mammary gland adult (RPKM 10.6) and 20 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

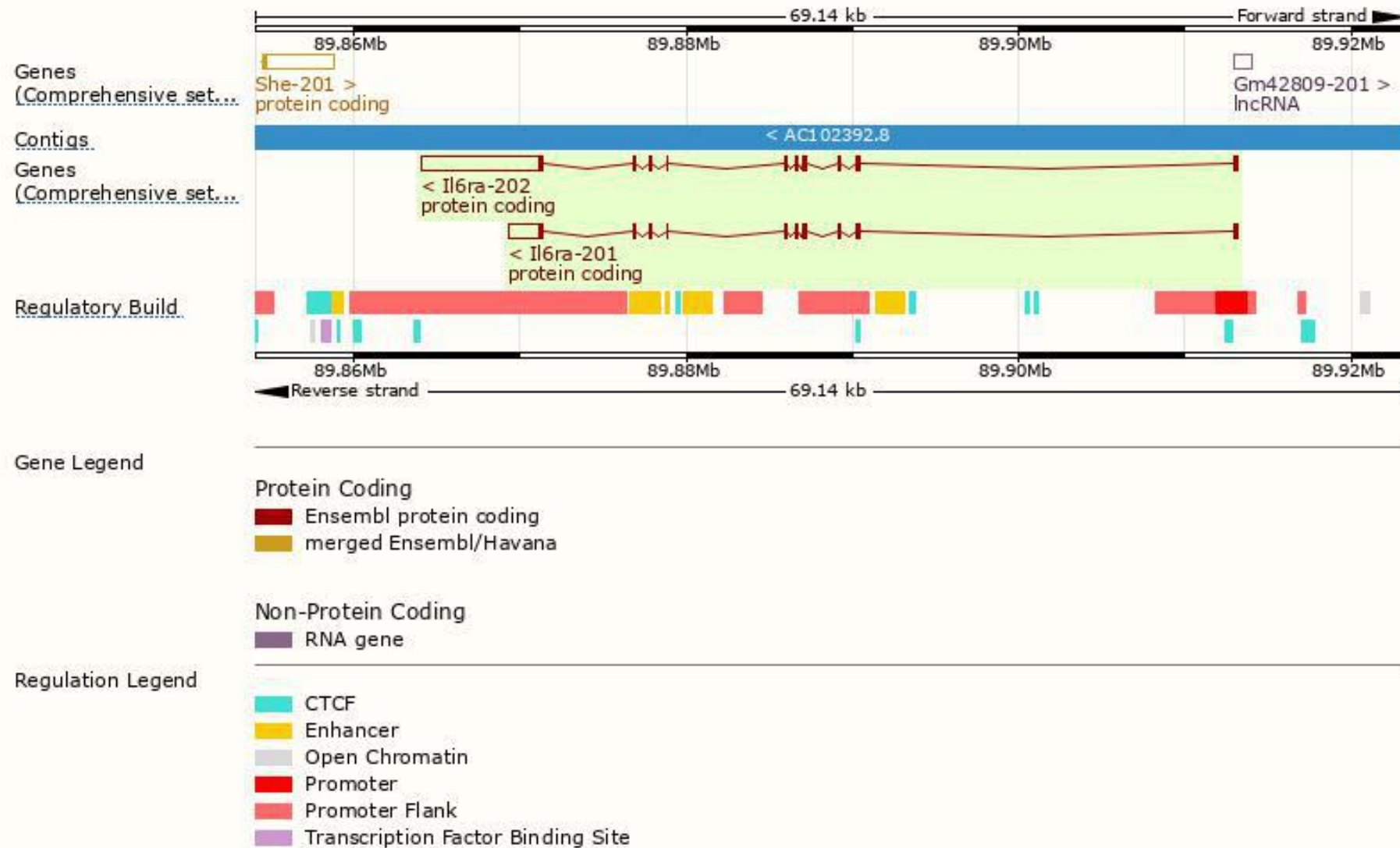
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Il6ra-202	ENSMUST00000197679.4	8639	459aa	Protein coding	CCDS79954	A0A0G2JGF1	TSL:1 GENCODE basic APPRIS ALT2
Il6ra-201	ENSMUST00000029559.6	3343	460aa	Protein coding	CCDS38496	P22272	TSL:1 GENCODE basic APPRIS P3

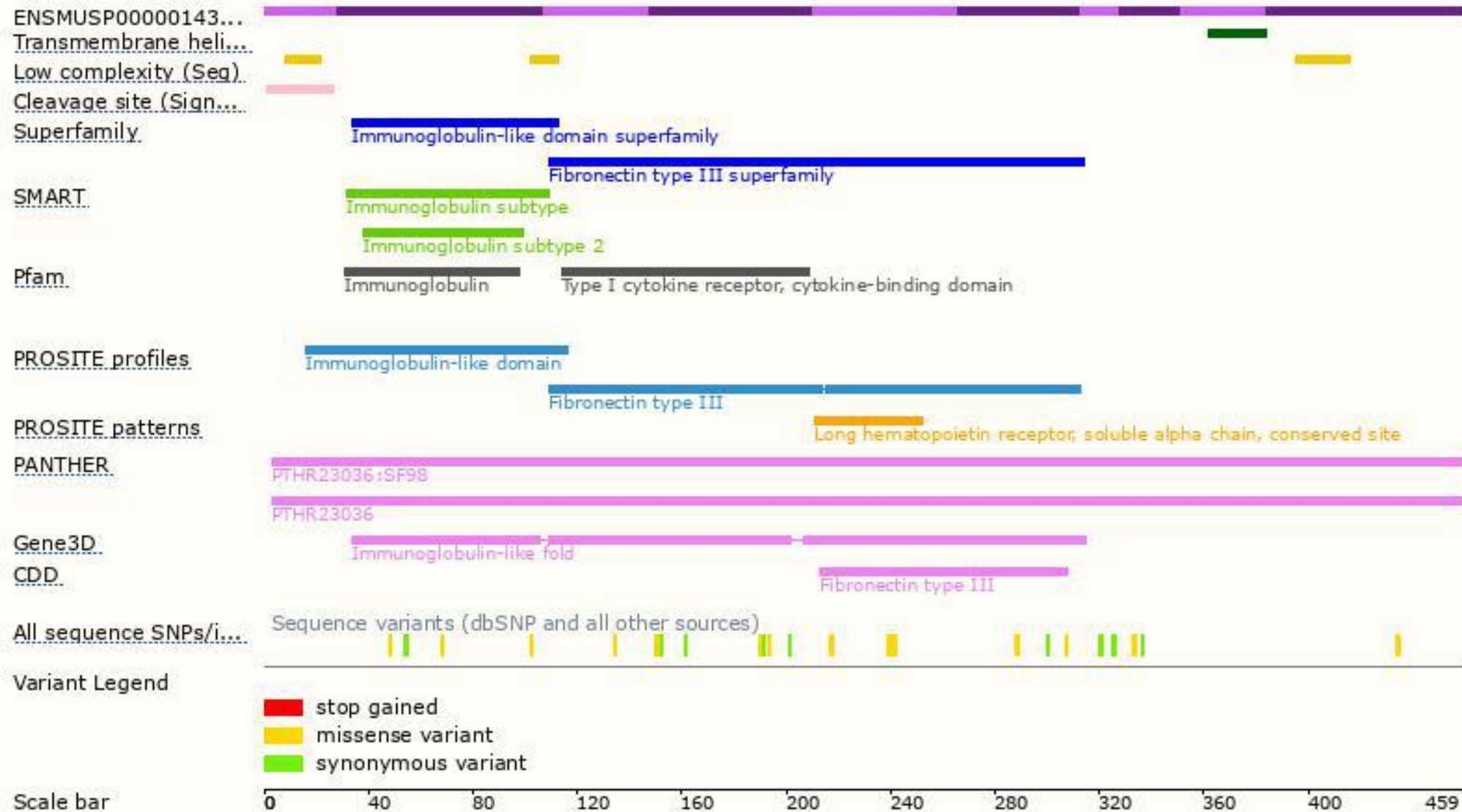
The strategy is based on the design of *Il6ra-201* transcript,The transcription is shown below



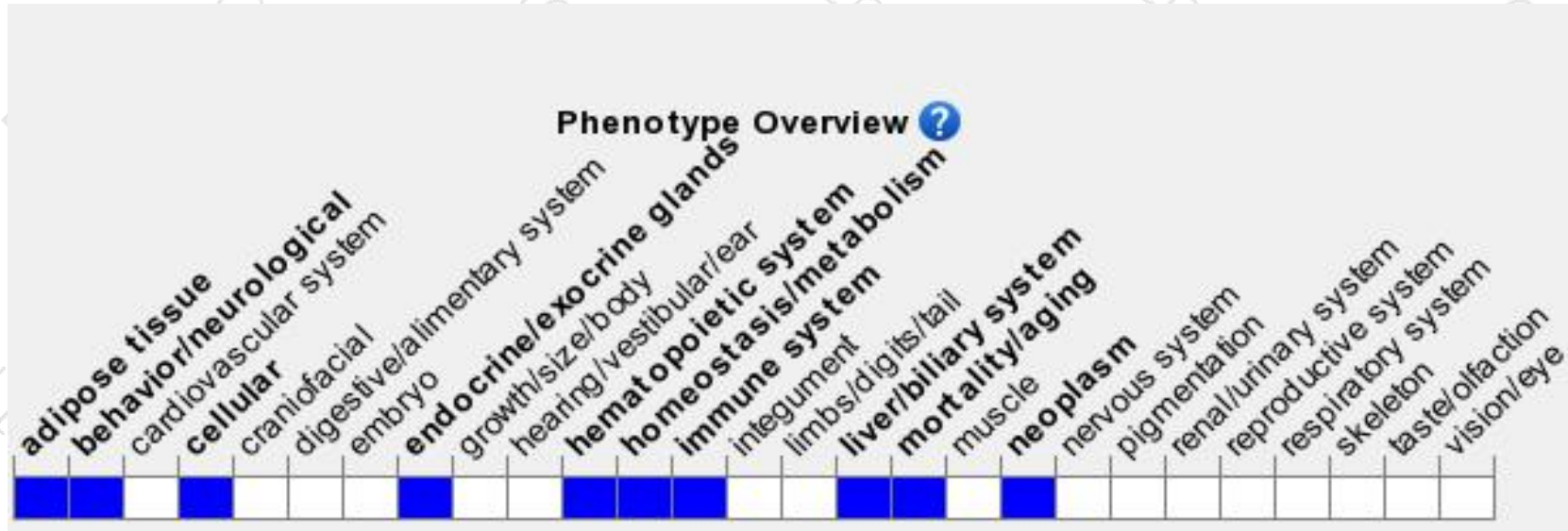
Genomic location distribution



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 null allele exhibit defective T helper 17 cells development.

Mice homozygous for a different knock-out allele exhibit abnormal inflammatory response and abnormal wound healing.

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

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