

Il27ra Cas9-CKO Strategy

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Project Overview

Project Name

Il27ra

Project type

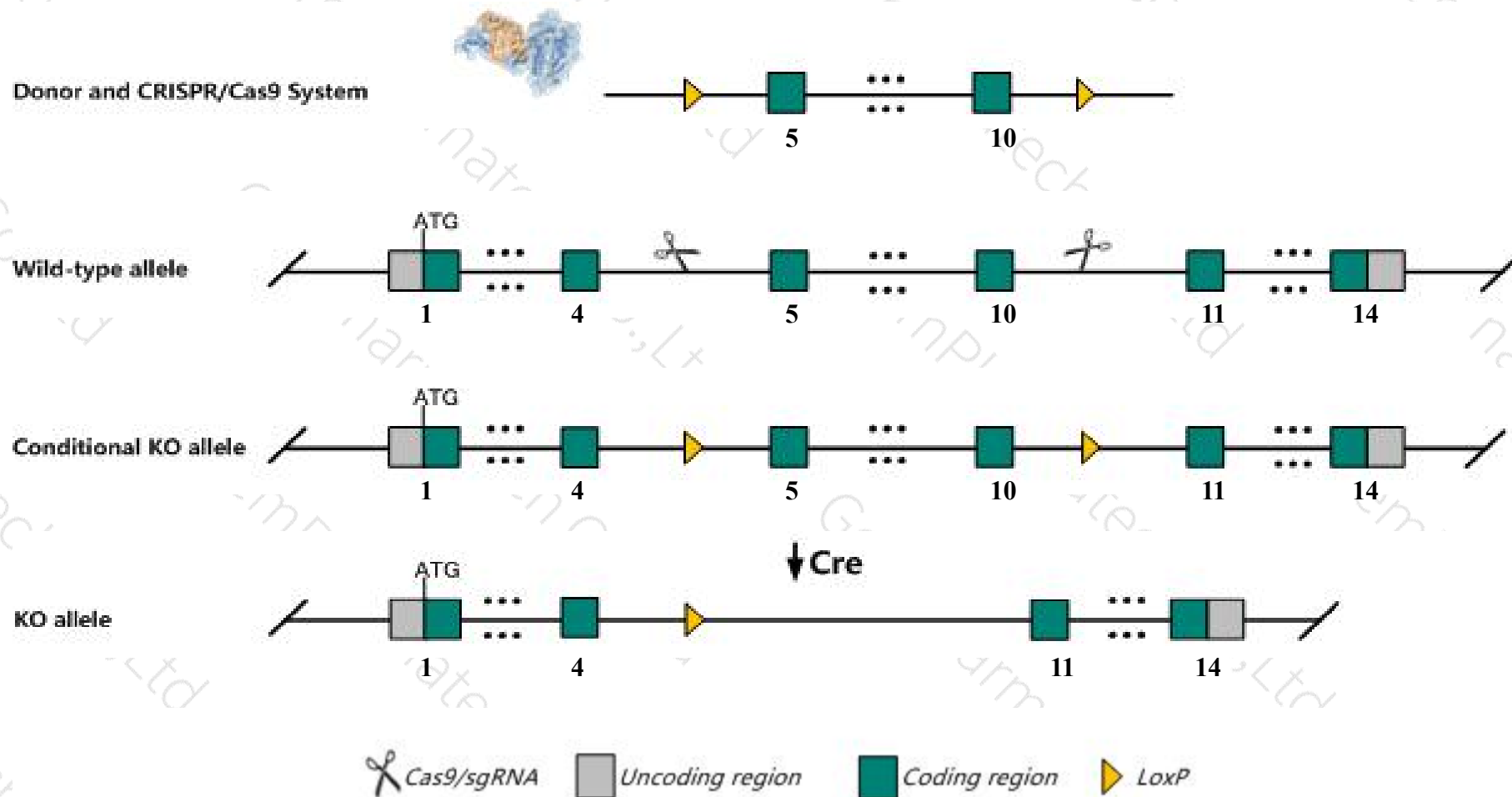
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il27ra* gene. The schematic diagram is as follows:



- The *Il27ra* gene has 3 transcripts. According to the structure of *Il27ra* gene, exon5-exon10 of *Il27ra-201* (ENSMUST00000005601.8) transcript is recommended as the knockout region. The region contains 865bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Il27ra* 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/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 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.

➤ According to the existing MGI data, T helper 1 response and responses to parasitic and bacterial infection are altered in homozygous mutant mice.

➤ Transcript *Il27ra-203* may not be affected. The KO region is close to 3'UTR region of the *Palm3* and *Rln3* gene.

Knockout the region may affect the regulation of *Palm3* and *Rln3* gene.

➤ The *Il27ra* gene is located on the Chr8. 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)

Il27ra interleukin 27 receptor, alpha [Mus musculus (house mouse)]

Gene ID: 50931, updated on 9-Apr-2019

Summary



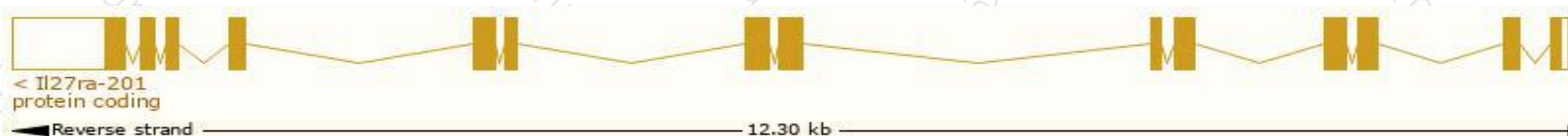
Official Symbol	Il27ra provided by MGI
Official Full Name	interleukin 27 receptor, alpha provided by MGI
Primary source	MGI:MGI:1355318
See related	Ensembl:ENSMUSG00000005465
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CRL1, IL-27R, Tccr, WSX-1, Wsx1, zcytor1
Expression	Biased expression in spleen adult (RPKM 26.4), thymus adult (RPKM 23.9) and 8 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

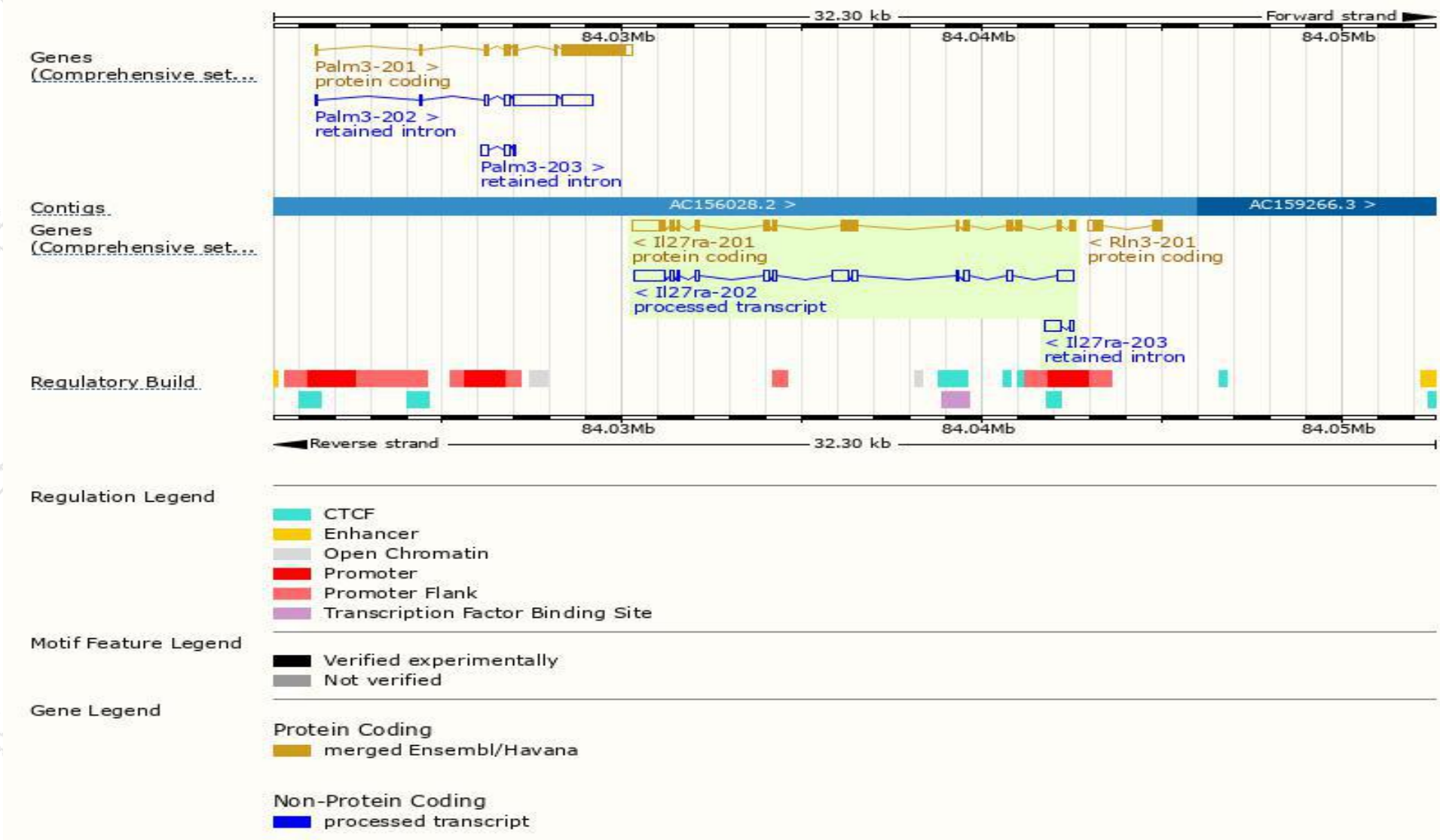
The gene has 3 transcripts, all transcripts are shown below:

Name ▲	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Il27ra-201	ENSMUST00000005601.8	2664	623aa	ENSMUSP00000005601.7	Protein coding	CCDS22465	Q70394	TSL:1 GENCODE basic APPRIS P1
Il27ra-202	ENSMUST00000210245.1	2931	No protein	-	lncRNA	-	-	TSL:2
Il27ra-203	ENSMUST00000210790.1	527	No protein	-	Retained intron	-	-	TSL:2

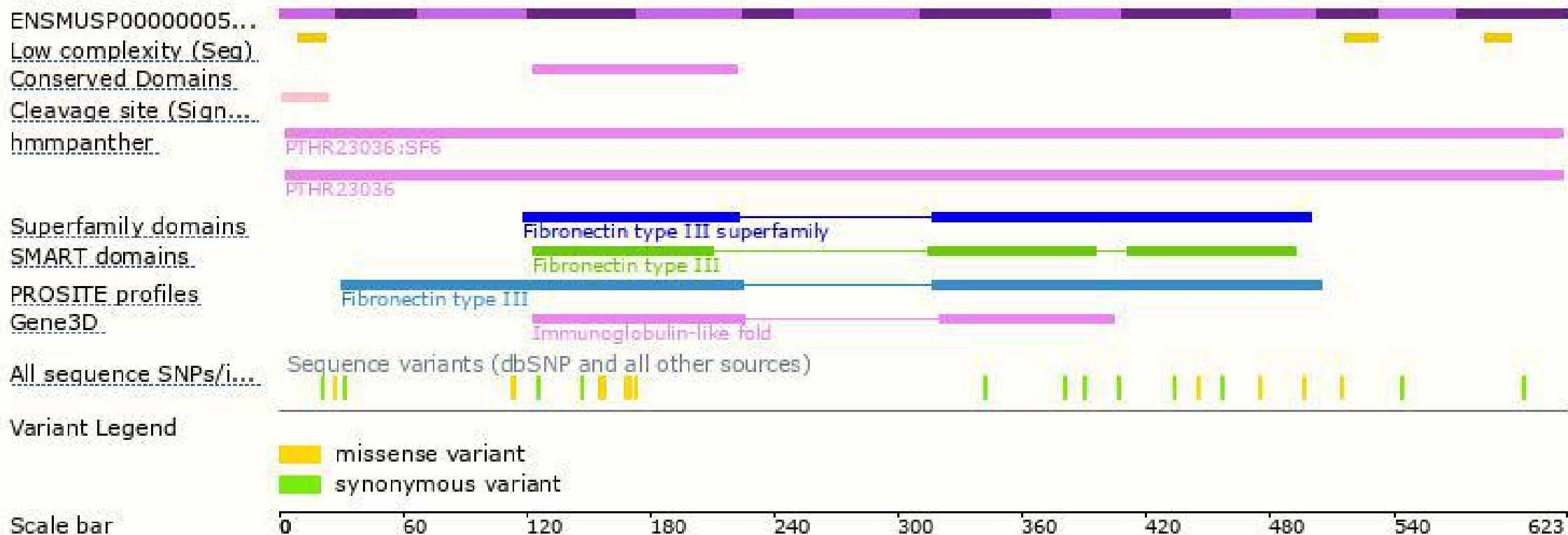
The strategy is based on the design of *Il27ra-201* transcript, The transcription is shown below



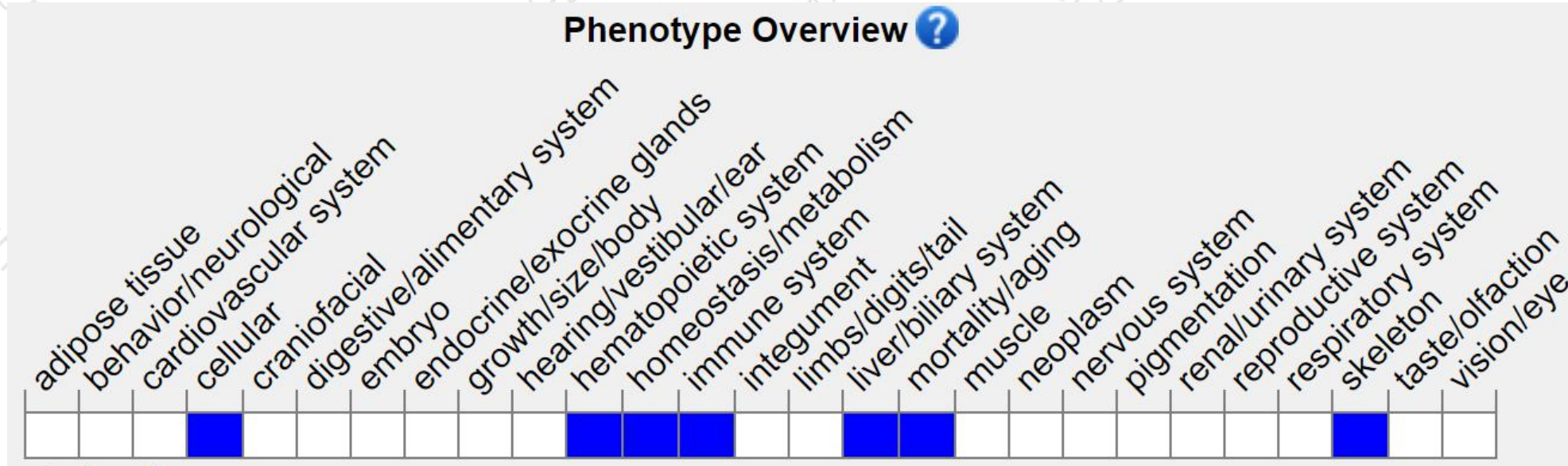
Genomic location distribution



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, T helper 1 response and responses to parasitic and bacterial infection are altered in homozygous mutant mice.

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

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