

Tollip Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Tollip

Project type

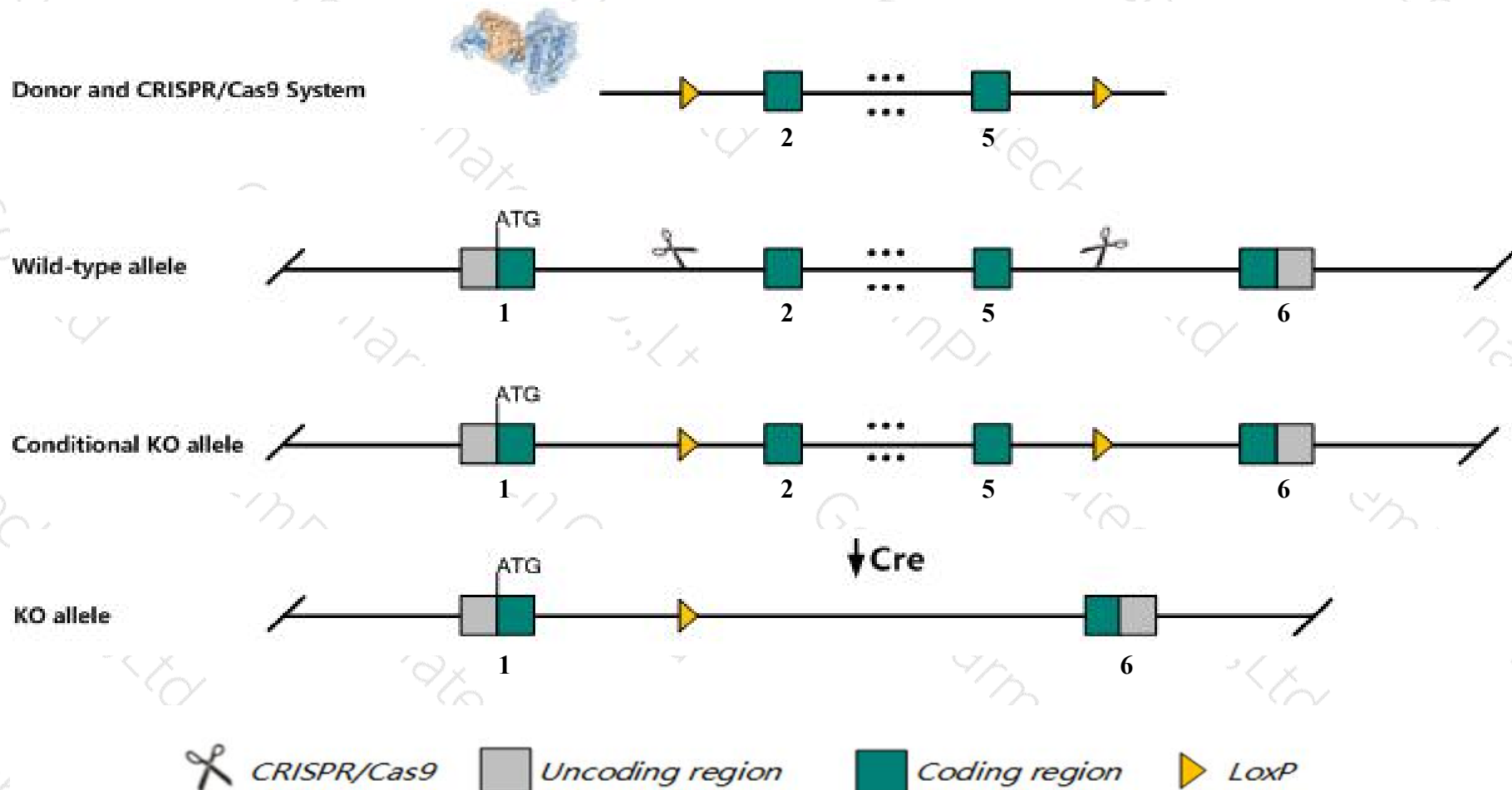
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Tollip* gene has 5 transcripts. According to the structure of *Tollip* gene, exon2-exon5 of *Tollip*-201 (ENSMUST00000001950.11) transcript is recommended as the knockout region. The region contains 577bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tollip* 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, Homozygous null mice display normal immune cell composition but reduced cytokine production when stimulated with low concentrations of some inducers.
- The *Tollip* gene is located on the Chr7. 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)

Tollip toll interacting protein [Mus musculus (house mouse)]

Gene ID: 54473, updated on 24-Feb-2019

Summary



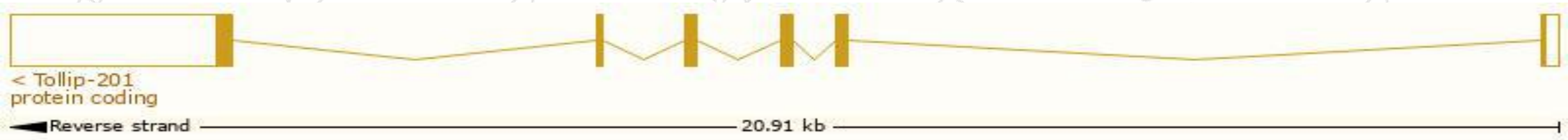
Official Symbol	Tollip provided by MGI
Official Full Name	toll interacting protein provided by MGI
Primary source	MGI:MGI:1891808
See related	Ensembl:ENSMUSG000000025139
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930403G24Rik, 4931428G15Rik
Expression	Ubiquitous expression in testis adult (RPKM 75.3), cerebellum adult (RPKM 36.5) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

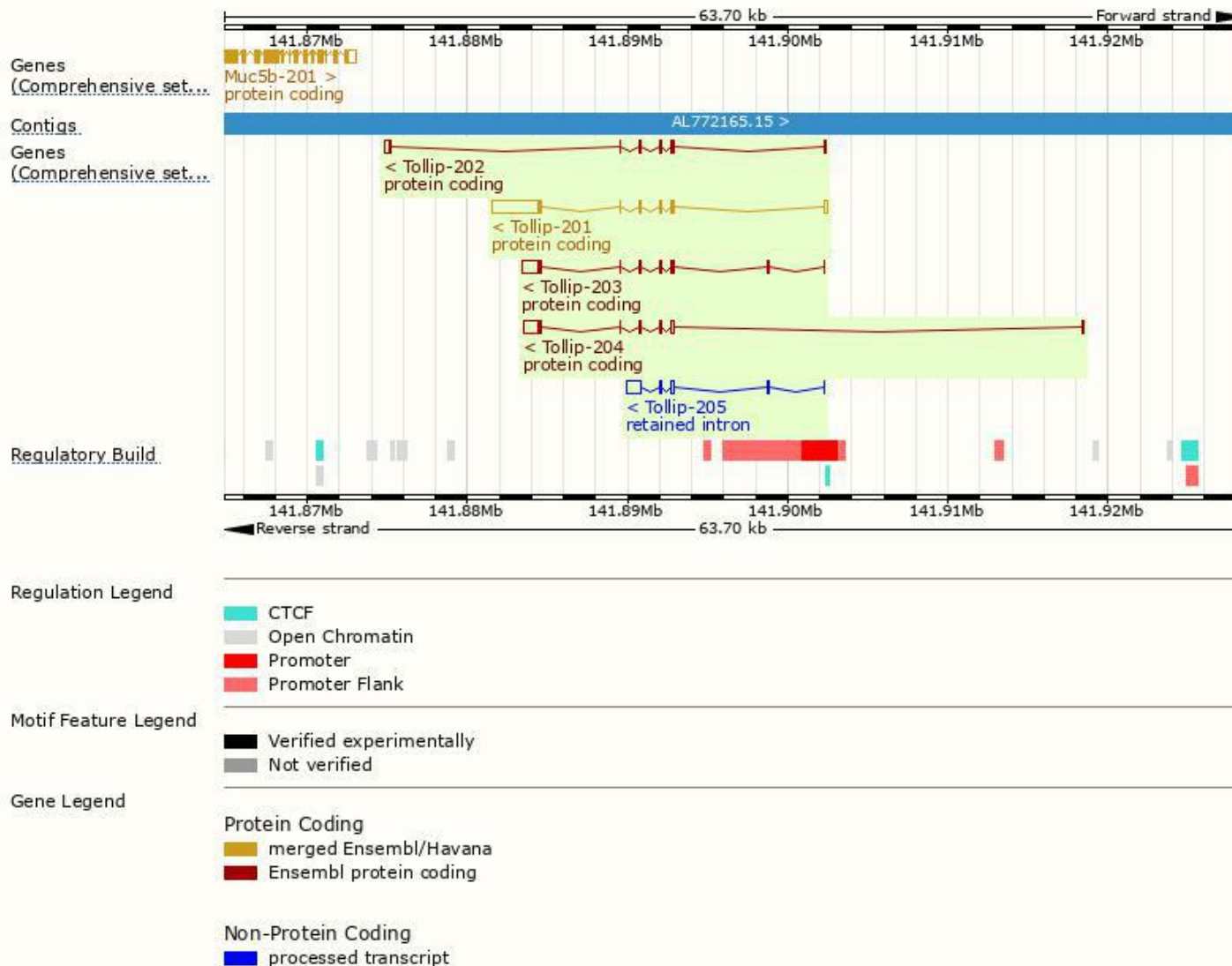
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tollip-201	ENSMUST00000001950.11	3788	274aa	Protein coding	CCDS222020	Q9QZ06	TSL:1 GENCODE basic APPRIS P1
Tollip-203	ENSMUST00000130439.2	1892	270aa	Protein coding	CCDS85459	F7AT44	TSL:5 GENCODE basic
Tollip-204	ENSMUST00000151890.2	1753	205aa	Protein coding	-	A9JEI5	TSL:1 GENCODE basic
Tollip-202	ENSMUST00000055819.12	1100	220aa	Protein coding	-	Q8C5G6	TSL:1 GENCODE basic
Tollip-205	ENSMUST00000211231.1	1334	No protein	Retained intron	-	-	TSL:5

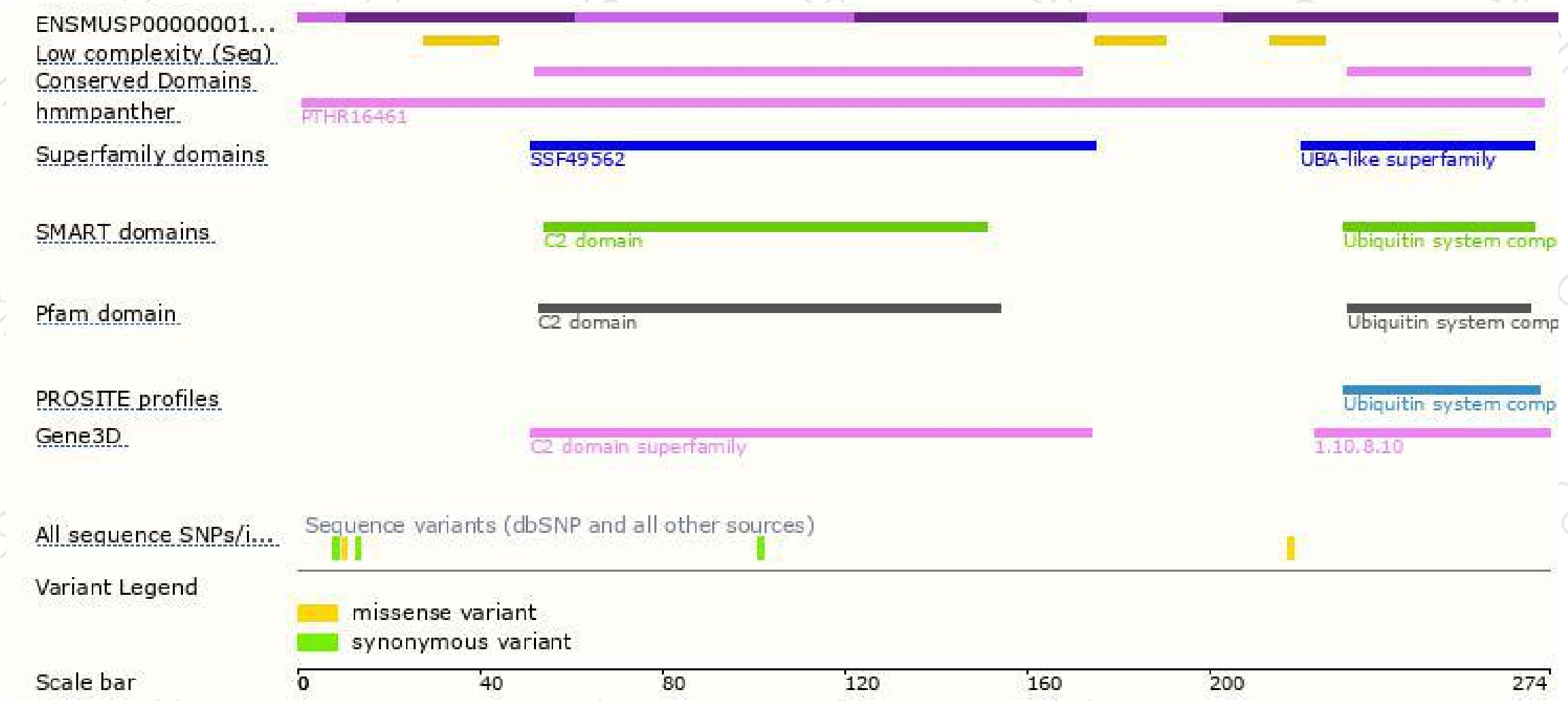
The strategy is based on the design of *Tollip-201* transcript,The transcription is shown below



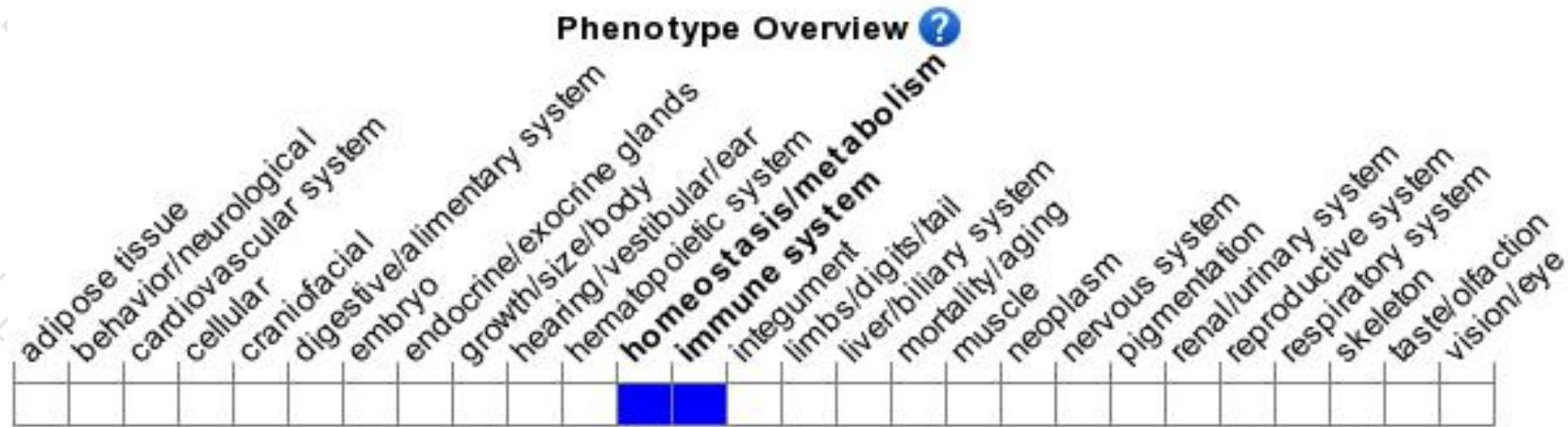
Genomic location distribution



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, Homozygous null mice display normal immune cell composition but reduced cytokine production when stimulated with low concentrations of some inducers.

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

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