

Cd80 Cas9-CKO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2019-11-14

Project Overview

Project Name

Cd80

Project type

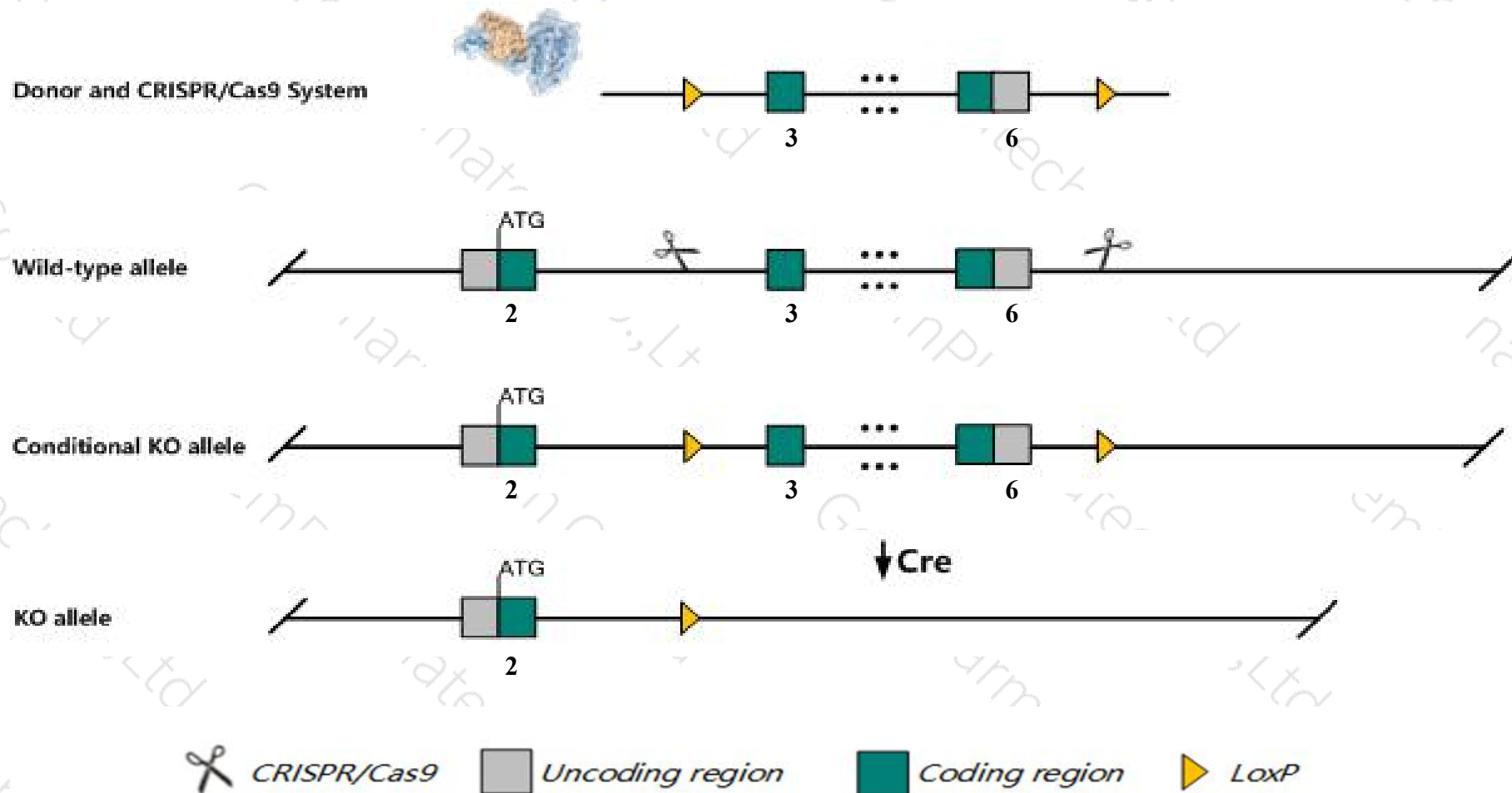
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd80* gene. The schematic diagram is as follows:



Technical routes

- The *Cd80* gene has 3 transcripts. According to the structure of *Cd80* gene, exon3-exon6 of *Cd80-202* (ENSMUST00000231716.1) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cd80* 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 mutation of this gene results in a 70% reduction in the mixed lymphocyte response in LPS- and dextran sulfate-stimulated B cells.
- The *Cd80* gene is located on the Chr16. 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)

Cd80 CD80 antigen [Mus musculus (house mouse)]

Gene ID: 12519, updated on 12-Feb-2019

Summary



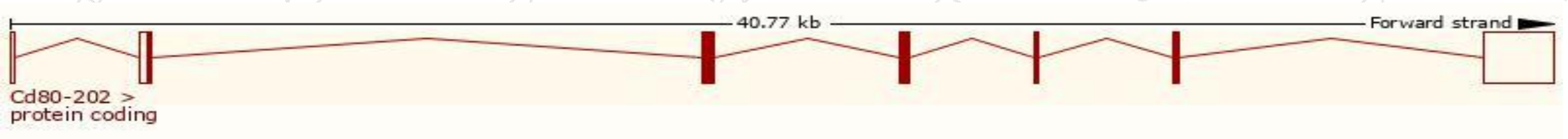
Official Symbol	Cd80 provided by MGI
Official Full Name	CD80 antigen provided by MGI
Primary source	MGI:MGI:101775
See related	Ensembl:ENSMUSG00000075122
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	B71, Cd28l, Ly-53, Ly53, MIC17, TSA1
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Transcript information (Ensembl)

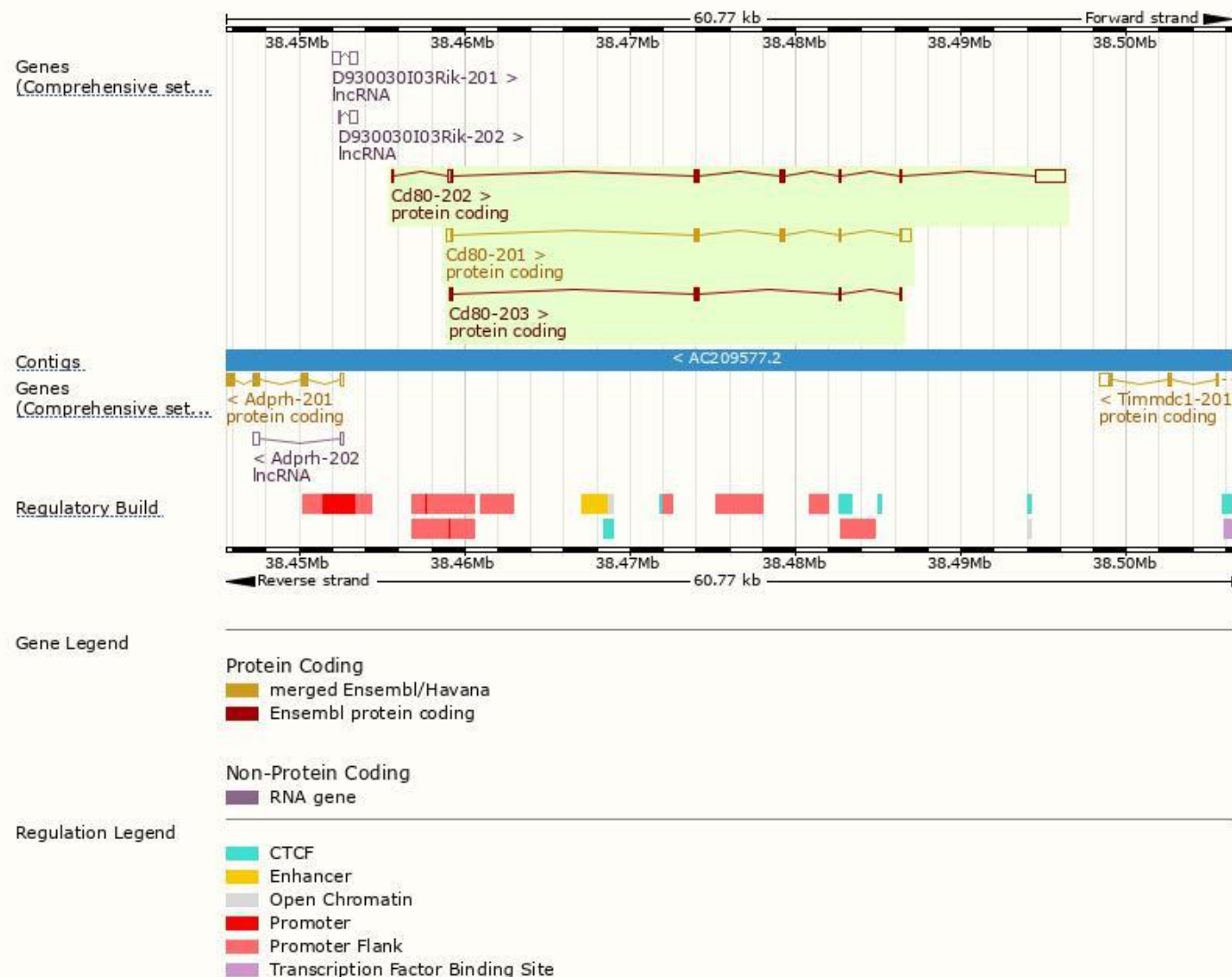
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd80-202	ENSMUST00000231716.1	3173	306aa	Protein coding	CCDS28168	Q00609 Q549R2	GENCODE basic APPRIS P1
Cd80-201	ENSMUST00000099816.2	1701	306aa	Protein coding	CCDS28168	Q00609 Q549R2	TSL:1 GENCODE basic APPRIS P1
Cd80-203	ENSMUST00000232409.1	748	212aa	Protein coding	-	Q00609	GENCODE basic

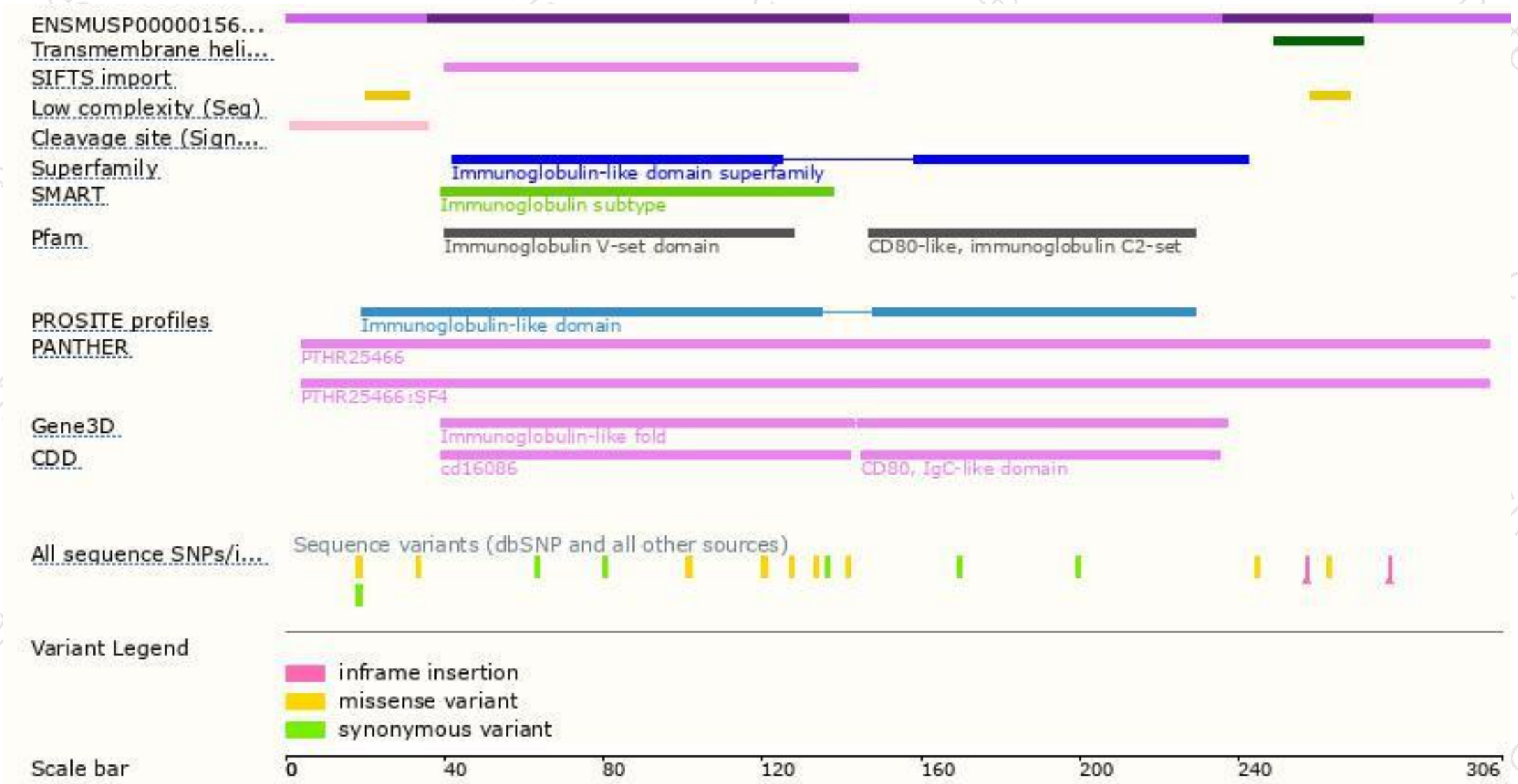
The strategy is based on the design of *Cd80-202* transcript,The transcription is shown below



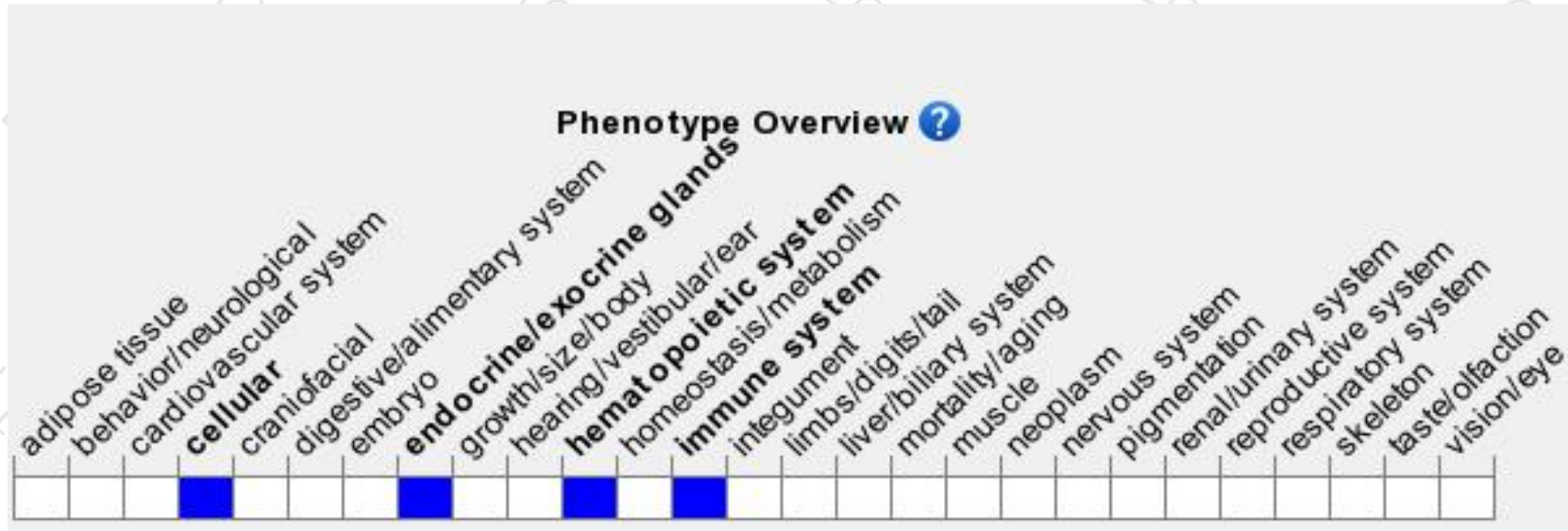
Genomic location distribution



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/>).

According to the existing MGI data, Homozygous mutation of this gene results in a 70% reduction in the mixed lymphocyte response in LPS- and dextran sulfate-stimulated B cells.

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

Tel: 400-9660890

