

Cd3e Cas9-CKO Strategy

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Project Overview

Project Name

Cd3e

Project type

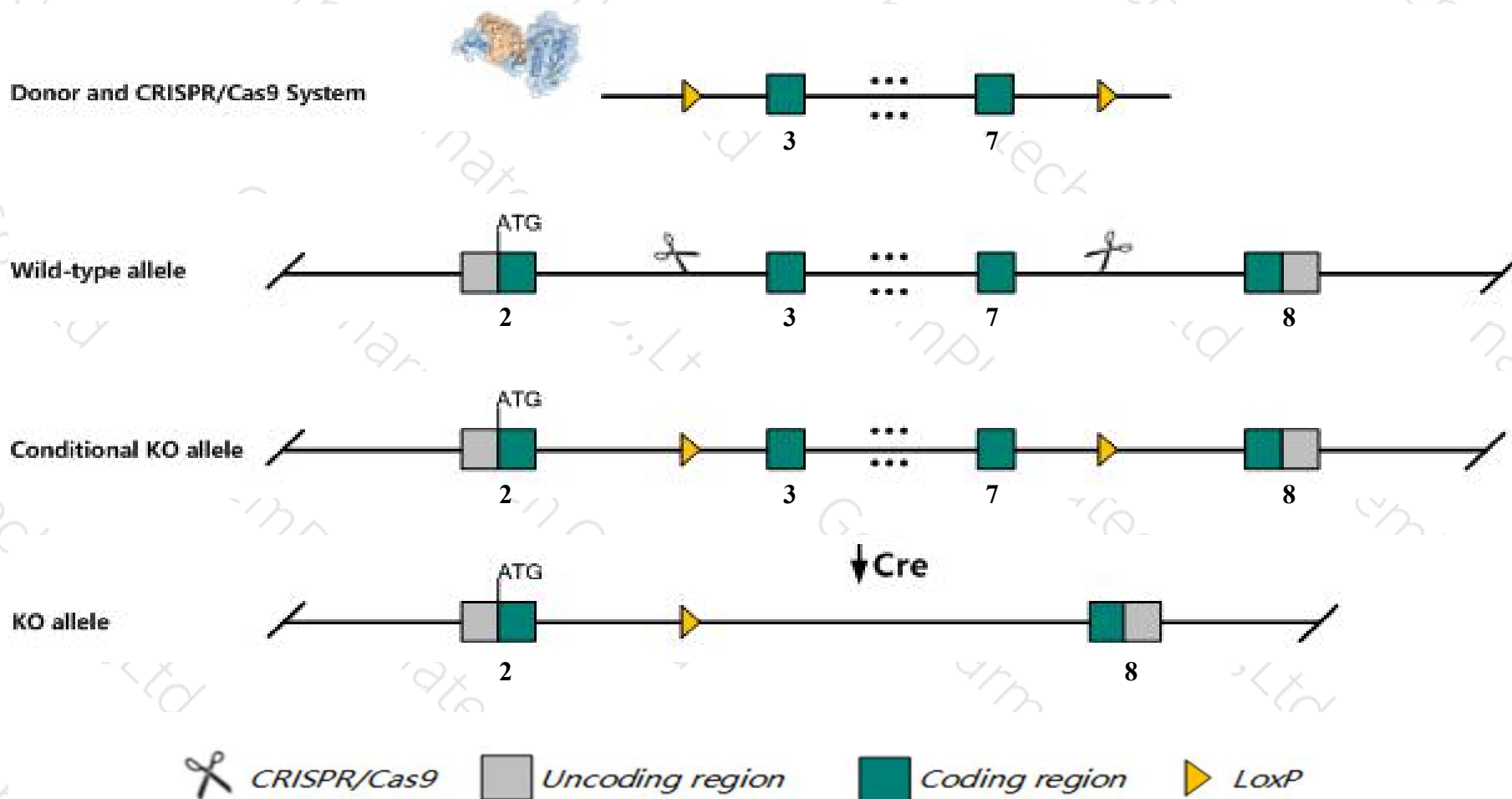
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd3e* gene. The schematic diagram is as follows:



- The *Cd3e* gene has 4 transcripts. According to the structure of *Cd3e* gene, exon3-exon7 of *Cd3e-201* (ENSMUST00000102832.2) transcript is recommended as the knockout region. The region contains 464bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cd3e* 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 null for this mutation lack peripheral T cells and have a block of thymocyte development at the DN3 stage.
- The *Cd3e* gene is located on the Chr9. 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)

Cd3e CD3 antigen, epsilon polypeptide [Mus musculus (house mouse)]

Gene ID: 12501, updated on 19-Mar-2019

Summary



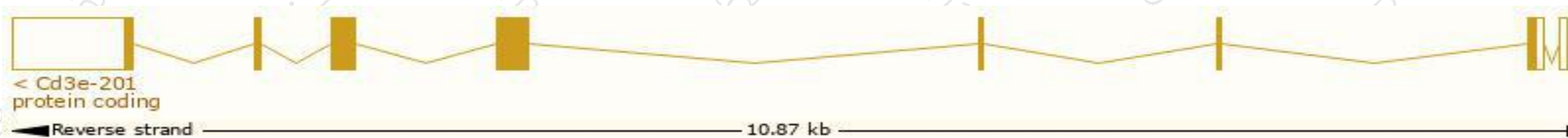
Official Symbol	Cd3e provided by MGI
Official Full Name	CD3 antigen, epsilon polypeptide provided by MGI
Primary source	MGI:MGI:88332
See related	Ensembl:ENSMUSG00000032093
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI504783, CD3, CD3epsilon, T3e
Expression	Biased expression in thymus adult (RPKM 115.4), spleen adult (RPKM 18.7) and 1 other tissue See more
Orthologs	human all

Transcript information (Ensembl)

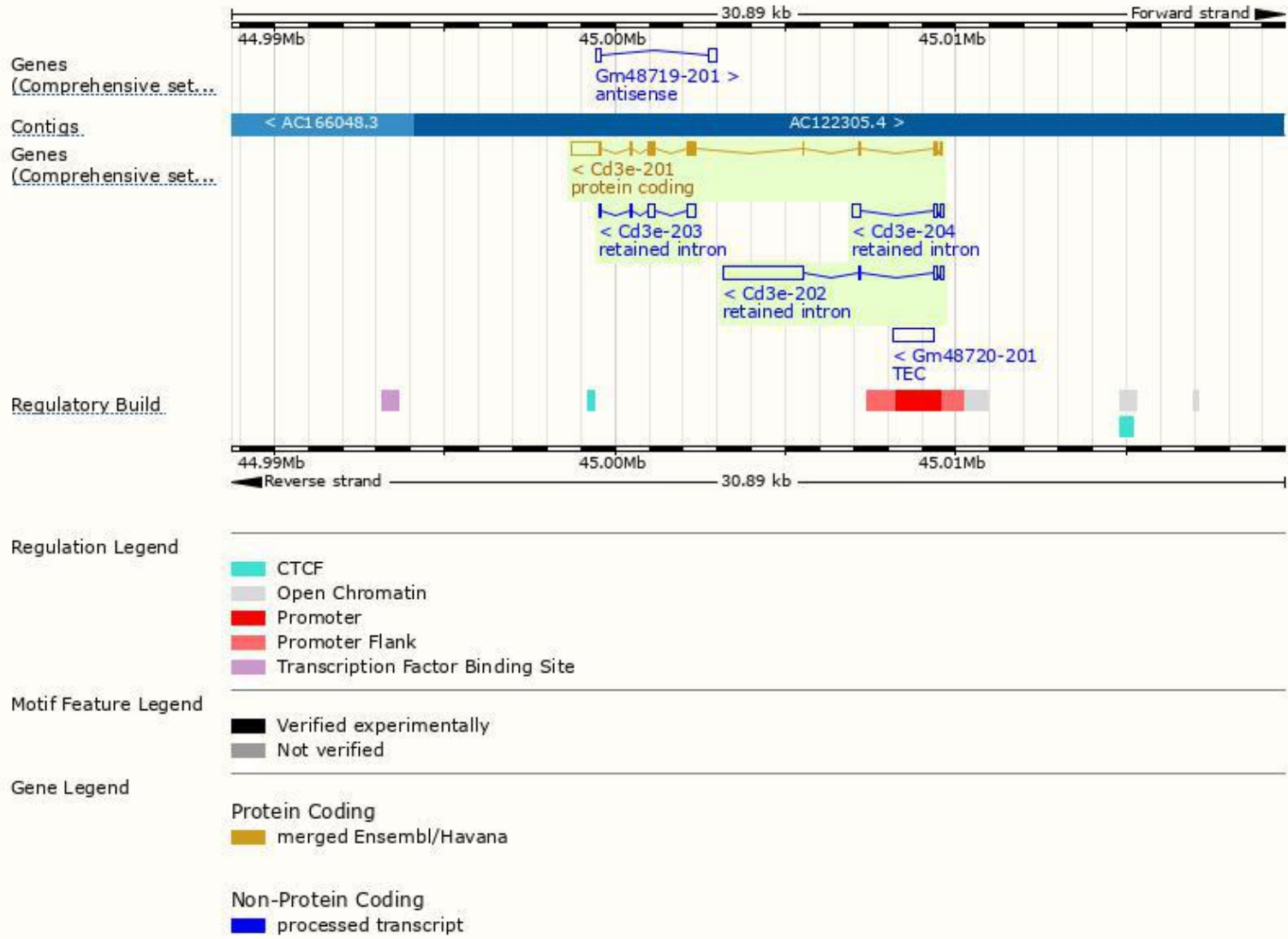
The gene has 4 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd3e-201	ENSMUST00000102832.2	1462	189aa	Protein coding	CCDS23125	A6H6M1 P22646	TSL:1 GENCODE basic APPRIS P1
Cd3e-202	ENSMUST00000214081.1	2550	No protein	Retained intron	-	-	TSL:1
Cd3e-203	ENSMUST00000214582.1	517	No protein	Retained intron	-	-	TSL:3
Cd3e-204	ENSMUST00000217486.1	394	No protein	Retained intron	-	-	TSL:3

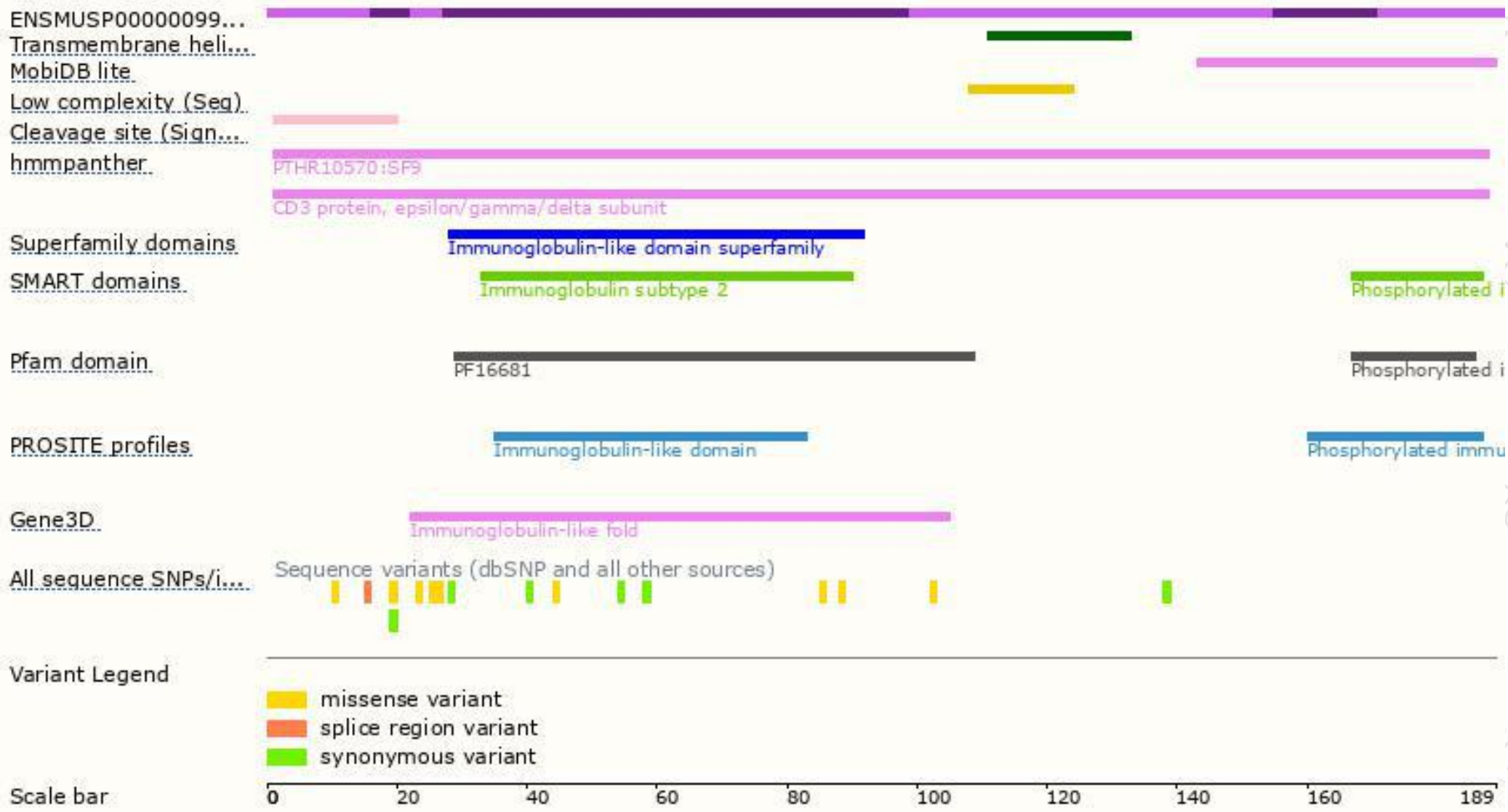
The strategy is based on the design of *Cd3e-201* transcript, The transcription is shown below



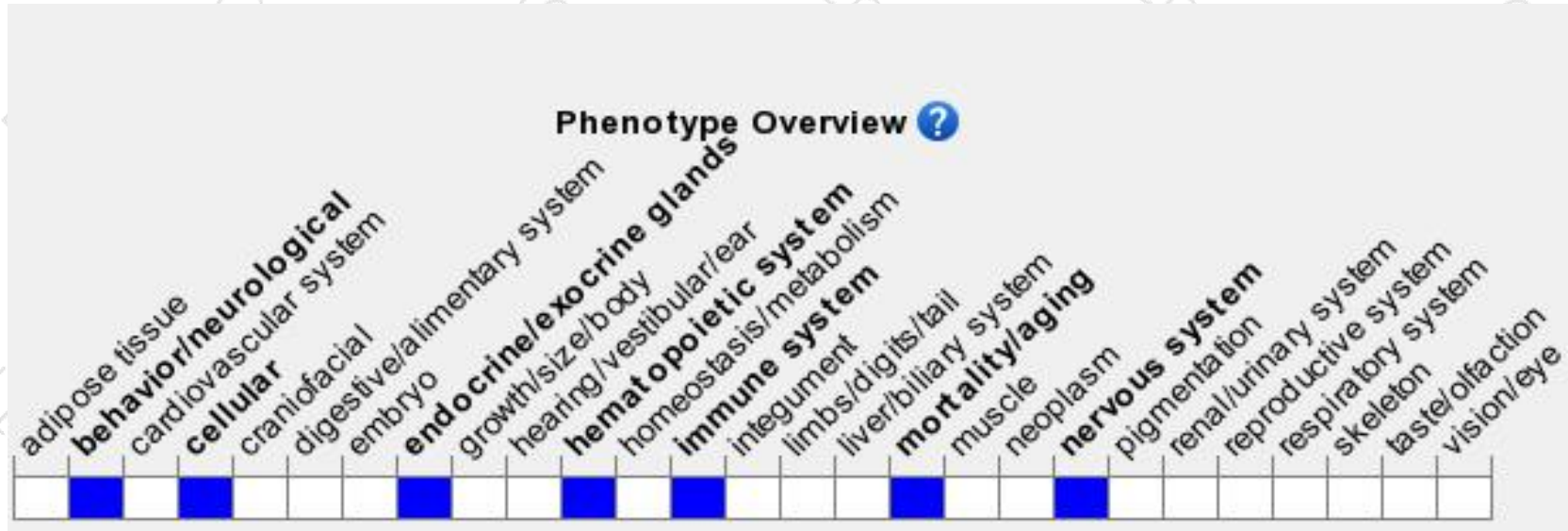
Genomic location distribution



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 null for this mutation lack peripheral T cells and have a block of thymocyte development at the DN3 stage.

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

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