

Fcgrt Cas9-CKO Strategy

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Project Overview

Project Name

Fcgrt

Project type

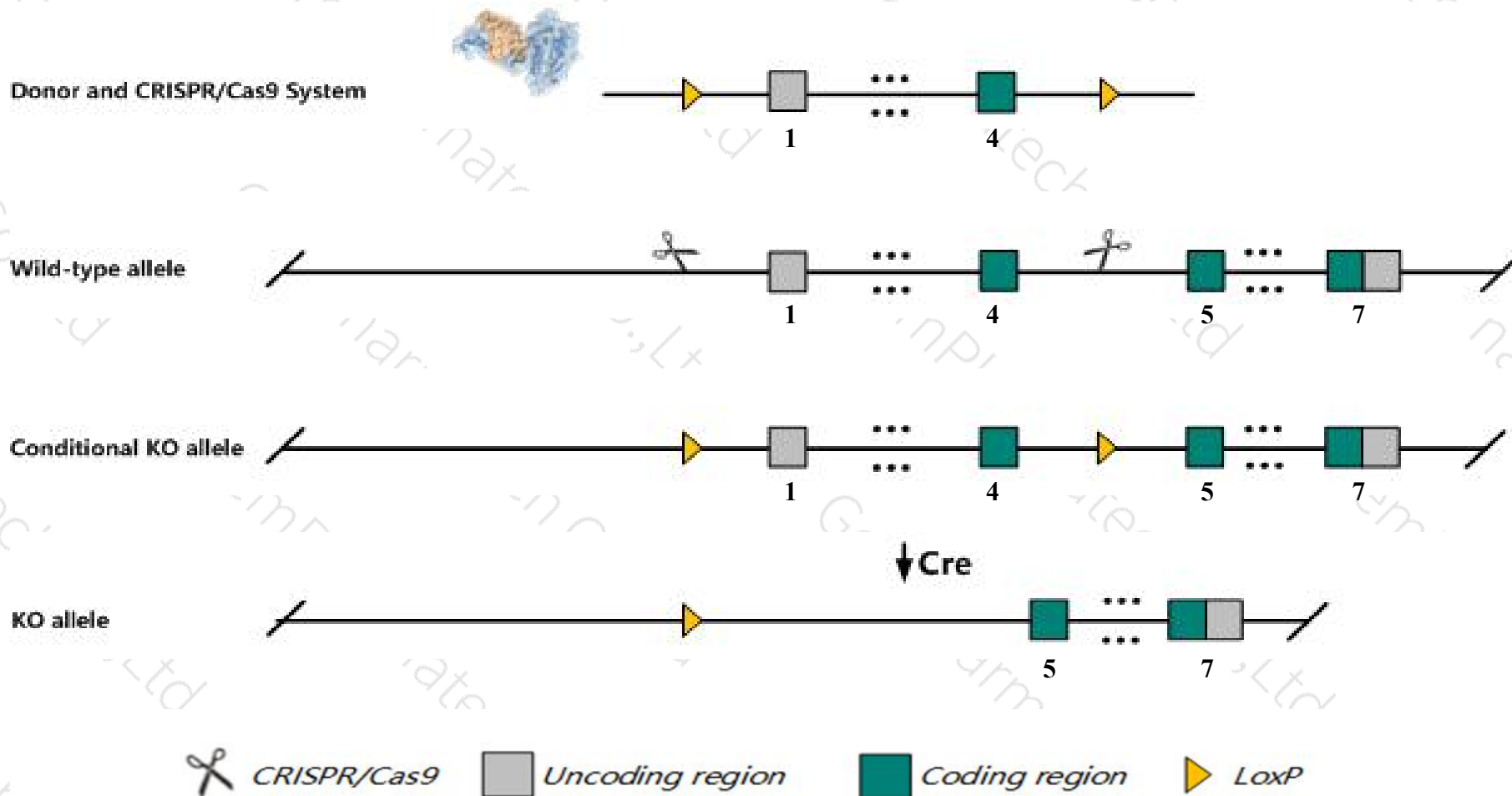
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Fcgrt* gene has 6 transcripts. According to the structure of *Fcgrt* gene, exon1-exon4 of *Fcgrt-201* (ENSMUST00000003512.8) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fcgrt* 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 defective perinatal transport of maternal IgG, increased clearance of IgG, and diminished IgG antibody response after immunization.
- The *Fcgrt* 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)

Fcgrt Fc receptor, IgG, alpha chain transporter [*Mus musculus* (house mouse)]

Gene ID: 14132, updated on 16-Feb-2020

Summary

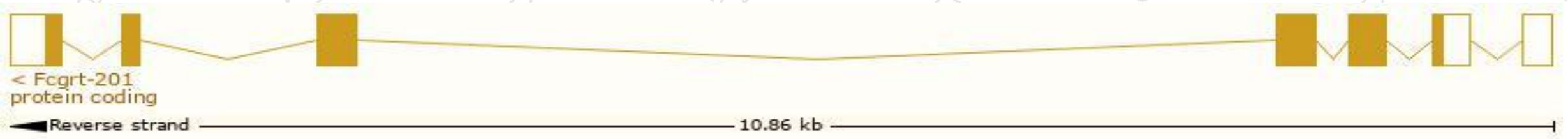
Official Symbol	Fcgrt provided by MGI
Official Full Name	Fc receptor, IgG, alpha chain transporter provided by MGI
Primary source	MGI:MGI:103017
See related	Ensembl:ENSMUSG000000003420
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	FcRn
Expression	Broad expression in placenta adult (RPKM 121.9), mammary gland adult (RPKM 87.9) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

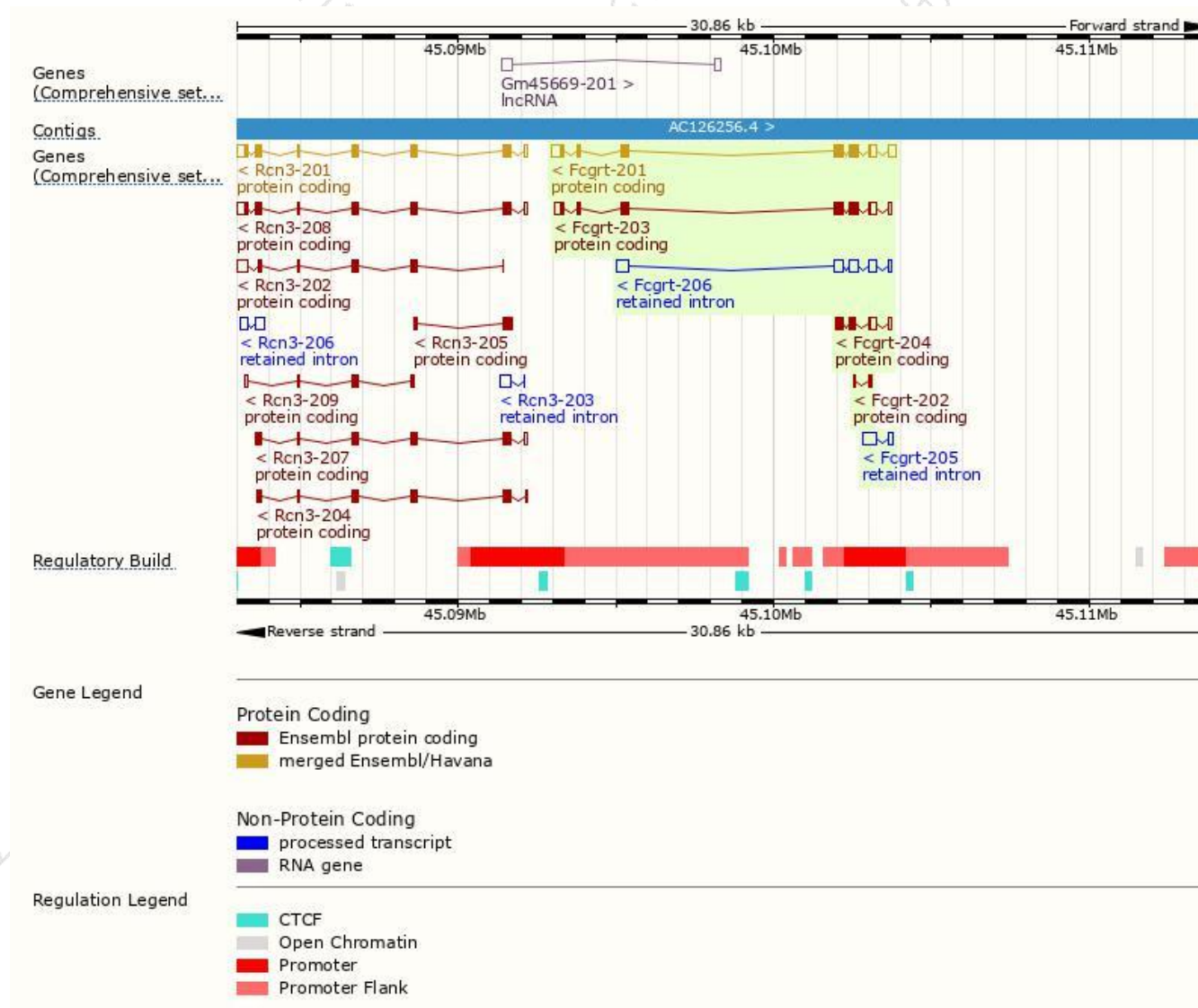
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fcgrt-201	ENSMUST00000003512.8	1770	365aa	Protein coding	CCDS52243	Q61559	TSL:1 GENCODE basic APPRIS P2
Fcgrt-203	ENSMUST00000210642.1	1602	369aa	Protein coding	-	Q6PKB0	TSL:1 GENCODE basic APPRIS ALT2
Fcgrt-204	ENSMUST00000211085.1	772	154aa	Protein coding	-	A0A1B0GSK0	CDS 3' incomplete TSL:5
Fcgrt-202	ENSMUST00000209830.1	127	36aa	Protein coding	-	A0A1B0GS17	CDS 3' incomplete TSL:1
Fcgrt-206	ENSMUST00000211668.1	1343	No protein	Retained intron	-	-	TSL:1
Fcgrt-205	ENSMUST00000211535.1	595	No protein	Retained intron	-	-	TSL:1

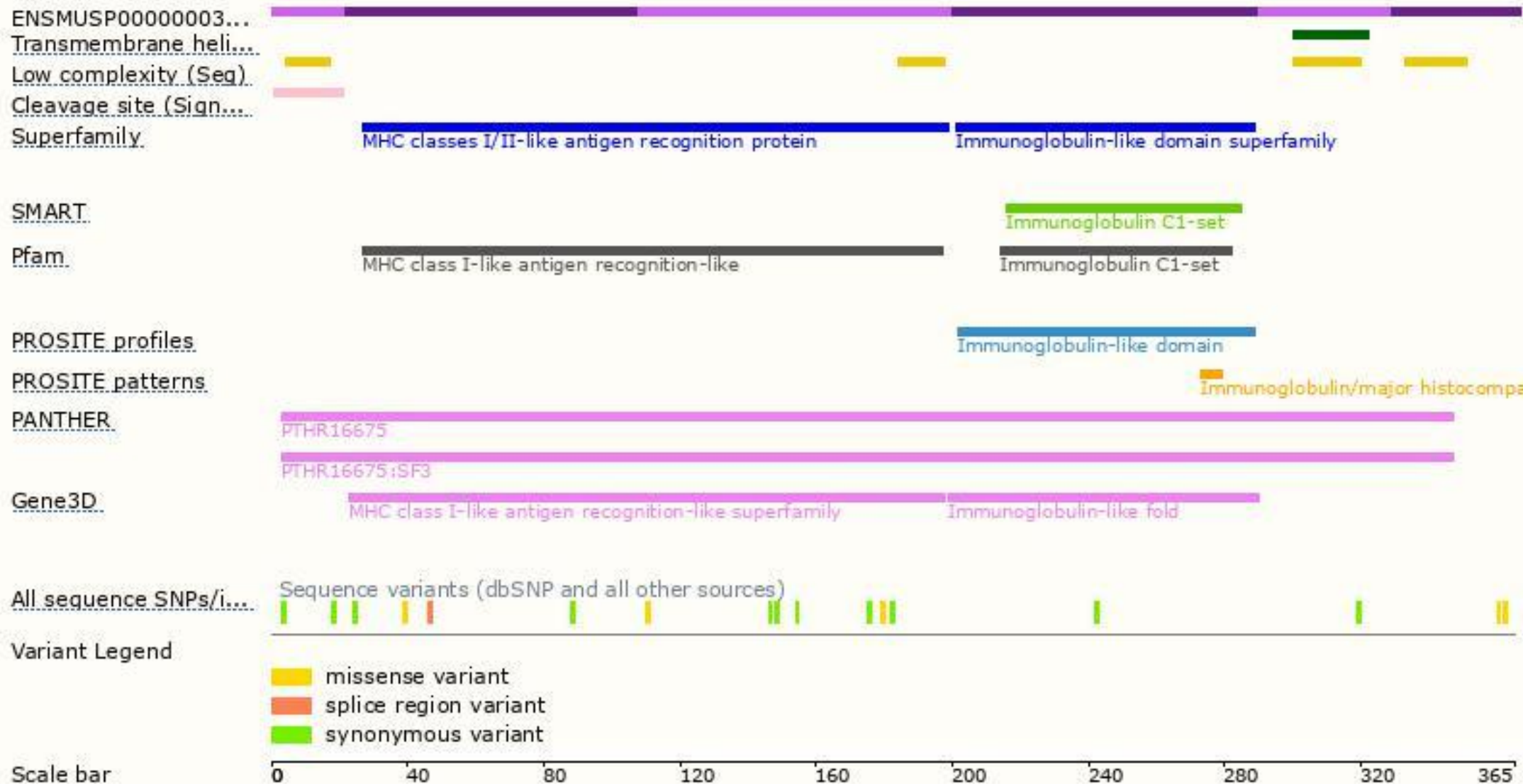
The strategy is based on the design of *Fcgrt-201* transcript,The transcription is shown below



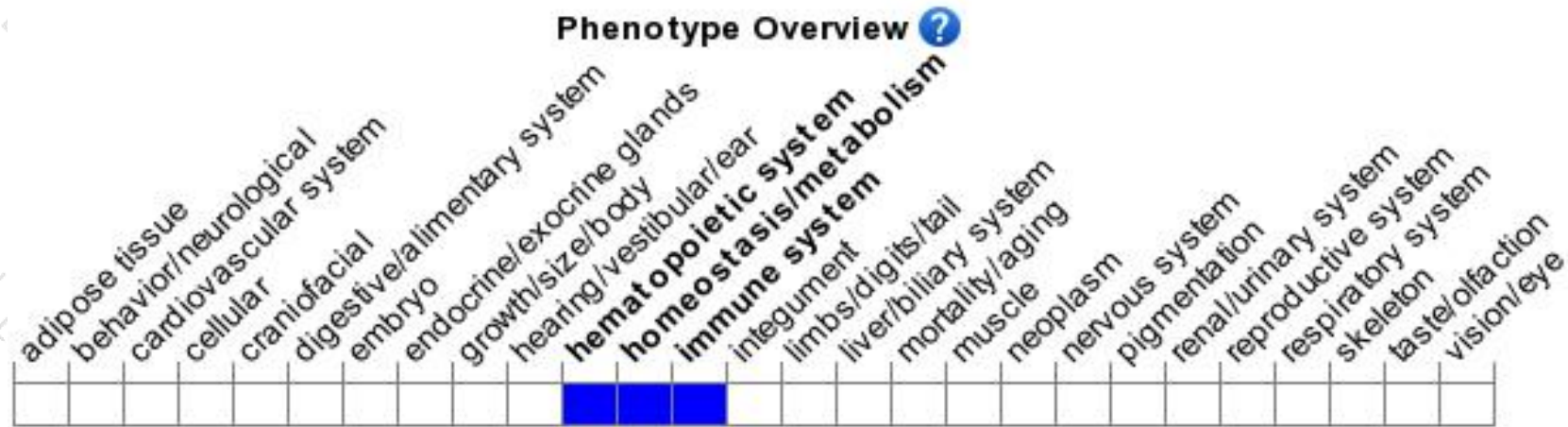
Genomic location distribution



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 mutation of this gene results in defective perinatal transport of maternal IgG, increased clearance of IgG, and diminished IgG antibody response after immunization.

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

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