Gabpb2 Cas9-CKO Strategy

Designer: JiaYu

Reviewer: Xiaojing Li

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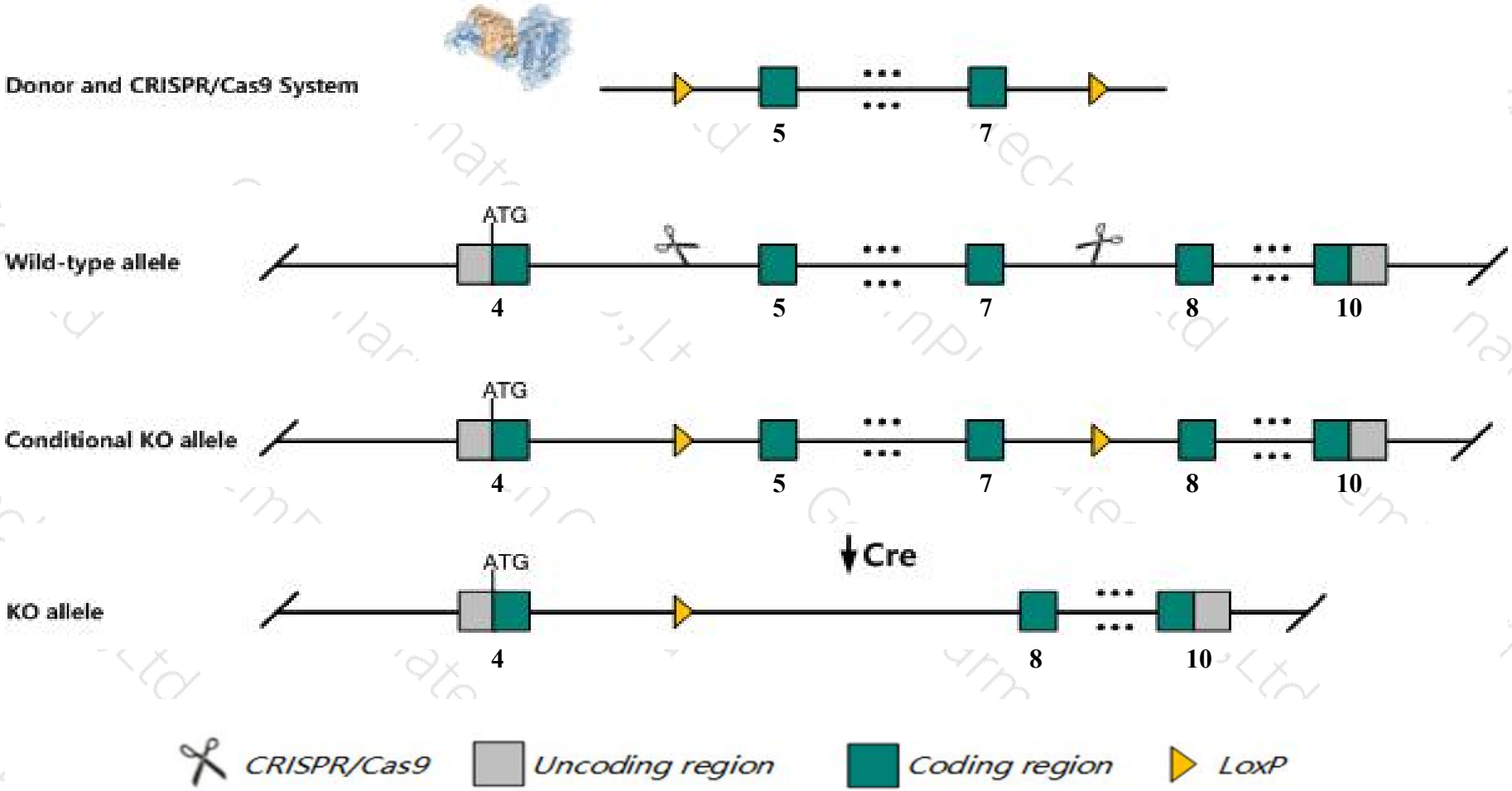
Project Overview

Project Name	***Gabpb2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gabpb2* gene. The schematic diagram is as follows:



Technical routes

- The *Gabpb2* gene has 9 transcripts. According to the structure of *Gabpb2* gene, exon5-exon7 of *Gabpb2-205* (ENSMUST00000136139.7) transcript is recommended as the knockout region.The region contains 514bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gabpb2* 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.

Notice

➢ According to the existing MGI data,Mice homozygous for a gene trapped allele are viable with normal T and B cell development but show increased B cell proliferation in response to B cell receptor stimulation, and moderately increased antibody production and germinal center responses when challenged with T-dependent antigens.

➢ The *Gabpb2* gene is located on the Chr3. 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）

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Gabpb2 GA repeat binding protein, beta 2 [Mus musculus (house mouse)]

Gene ID: 213054, updated on 31-Jan-2019

Summary

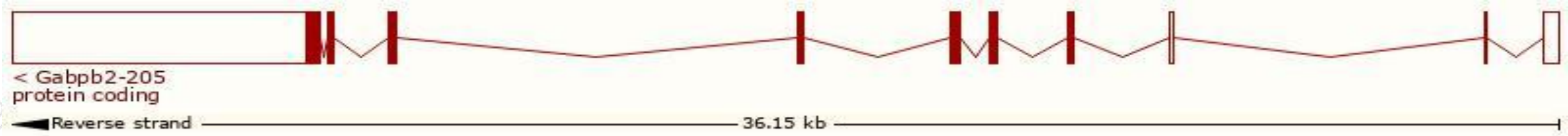
Official Symbol	Gabpb2 provided by MGI
Official Full Name	GA repeat binding protein, beta 2 provided by MGI
Primary source	MGI:MGI:95612
See related	Ensembl:ENSMUSG00000038766
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1810015F01Rik, 5830427M07, 9430006E19Rik, A430024B14Rik, AV050852, Gabpb2-1
Expression	Ubiquitous expression in thymus adult (RPKM 10.1), liver E14 (RPKM 9.3) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

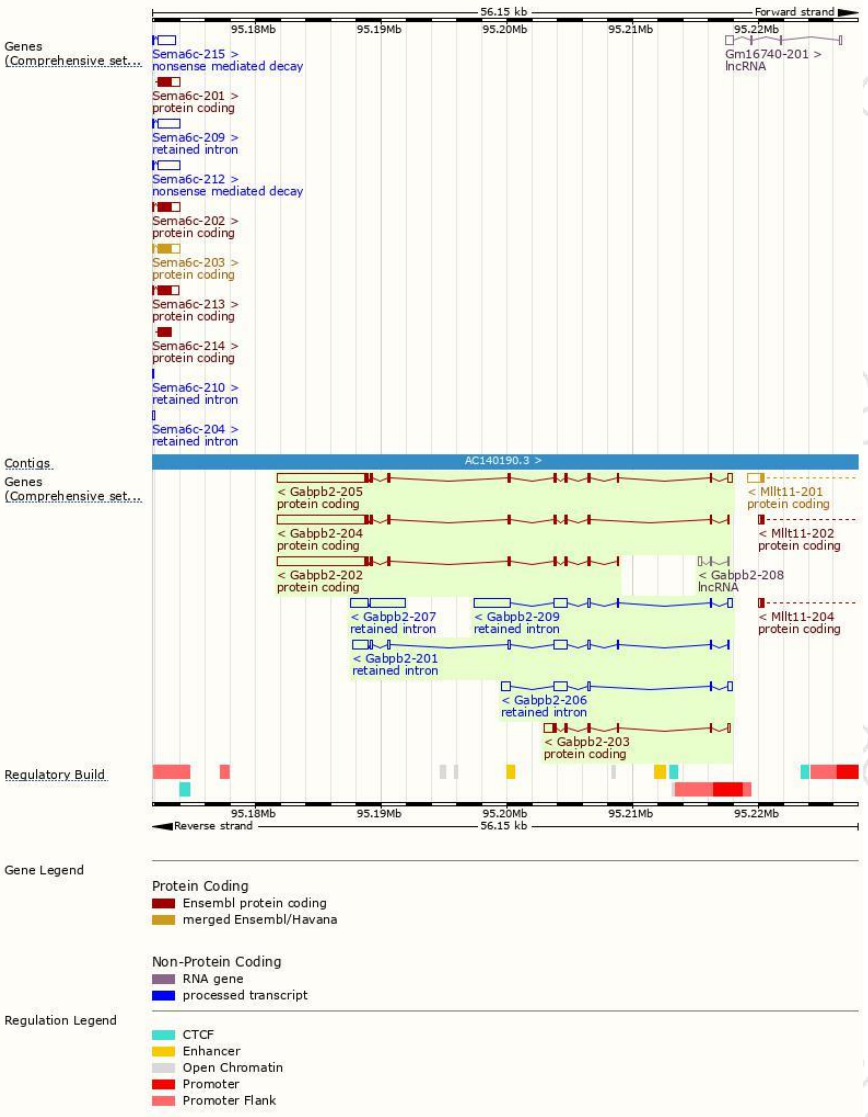
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gabpb2-205	ENSMUST00000136139.7	8661	414aa	Protein coding	CCDS17605	P81069	TSL:1 GENCODE basic APPRIS P2
Gabpb2-204	ENSMUST00000107209.7	8357	414aa	Protein coding	CCDS17605	P81069	TSL:1 GENCODE basic APPRIS P2
Gabpb2-202	ENSMUST00000098873.10	8272	414aa	Protein coding	CCDS17605	P81069	TSL:5 GENCODE basic APPRIS P2
Gabpb2-203	ENSMUST00000107204.7	1539	167aa	Protein coding	-	Q8C2T8	TSL:1 GENCODE basic APPRIS ALT2
Gabpb2-209	ENSMUST00000155555.7	4552	No protein	Retained intron	-	-	TSL:1
Gabpb2-207	ENSMUST00000141645.1	4132	No protein	Retained intron	-	-	TSL:1
Gabpb2-201	ENSMUST00000070774.13	3210	No protein	Retained intron	-	-	TSL:1
Gabpb2-206	ENSMUST00000138862.7	2323	No protein	Retained intron	-	-	TSL:1
Gabpb2-208	ENSMUST00000145272.1	400	No protein	lncRNA	-	-	TSL:1

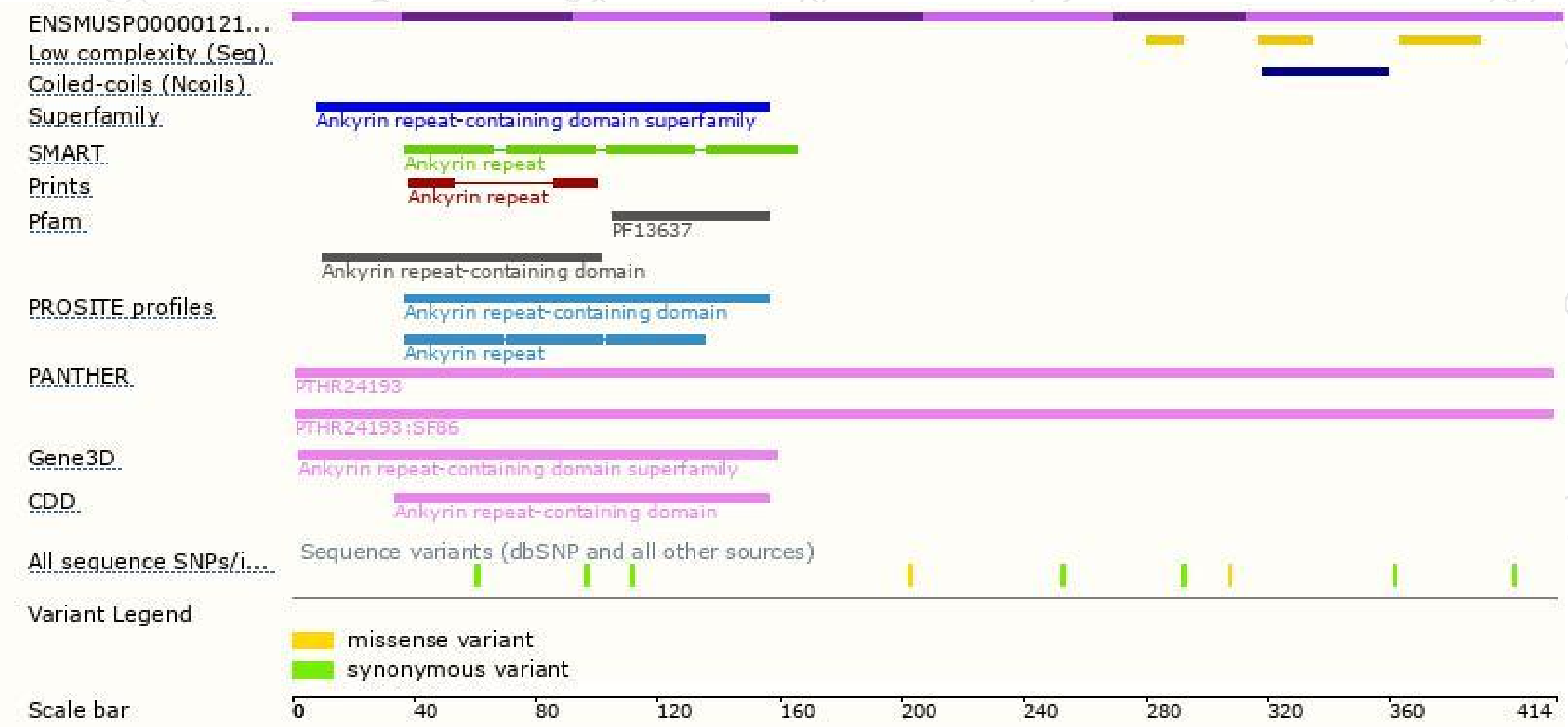
The strategy is based on the design of *Gabpb2-205* transcript,The transcription is shown below



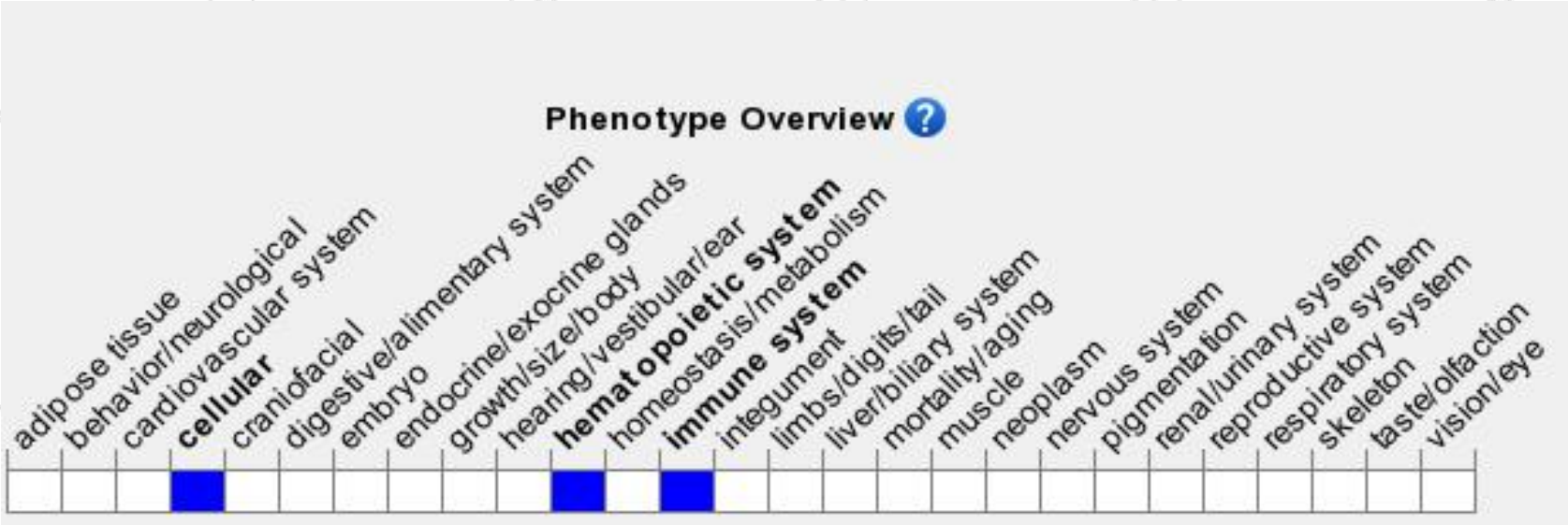
Genomic location distribution



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 for a gene trapped allele are viable with normal T and B cell development but show increased B cell proliferation in response to B cell receptor stimulation, and moderately increased antibody production and germinal center responses when challenged with T-dependent antigens.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd