Nup210 Cas9-CKO Strategy

Designer: Daohua Xu
Reviewer: Huimin Su

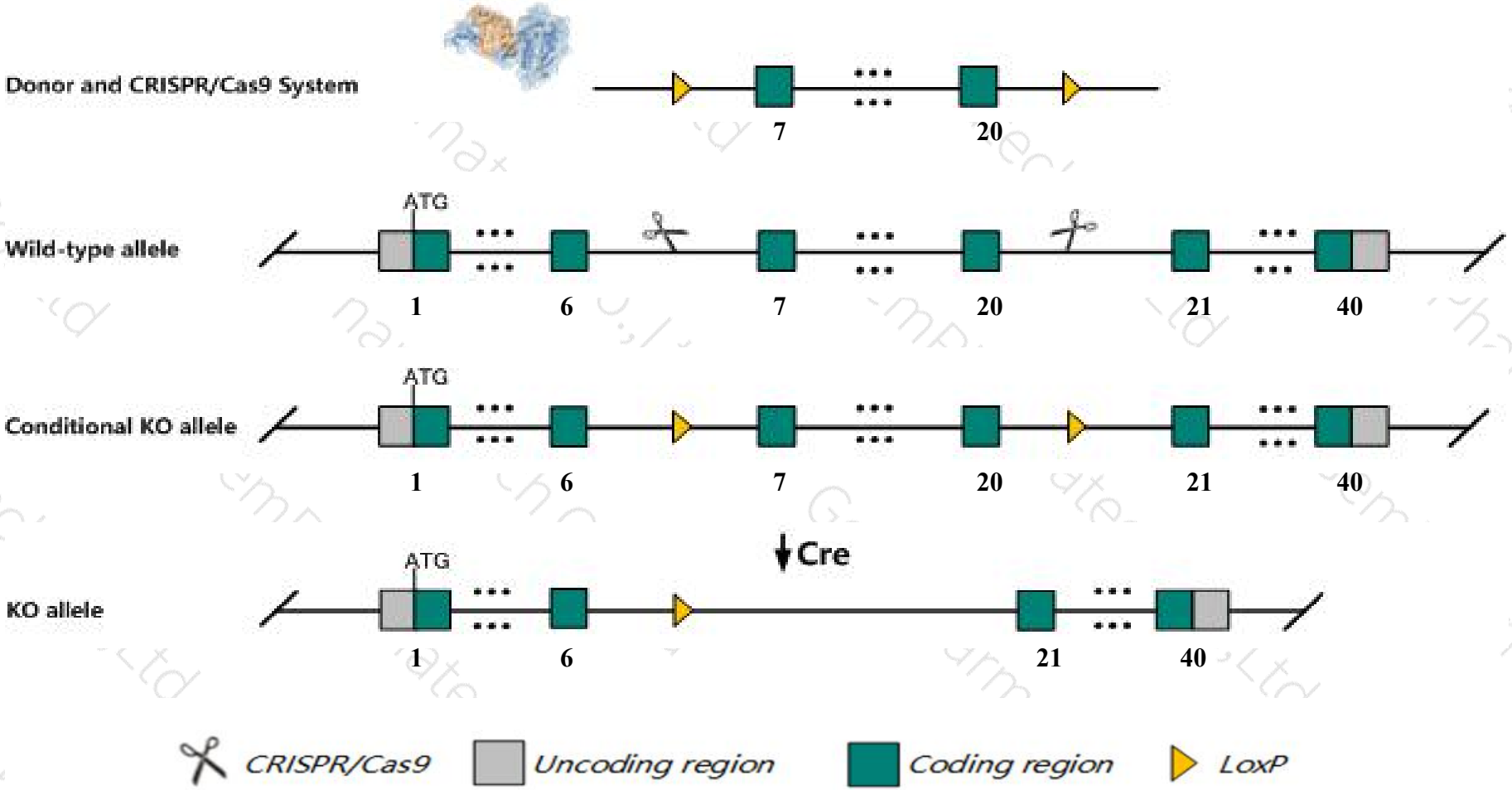
Design Date: 2020-3-9

Project Overview

Project Name	***Nup210***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nup210* gene. The schematic diagram is as follows:



Technical routes

- The *Nup210* gene has 11 transcripts. According to the structure of *Nup210* gene, exon7-exon20 of *Nup210-201* (ENSMUST00000032179.13) transcript is recommended as the knockout region.The region contains 2018bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Nup210* 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 null allele exhibit decreased naive T cells and increased activated T cells due to impaired peripheral T cell development.

- The *Nup210* gene is located on the Chr6. 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）

集萃药康 GemPharmatech

Nup210 nucleoporin 210 [Mus musculus (house mouse)]

Gene ID: 54563, updated on 31-Jan-2019

Summary

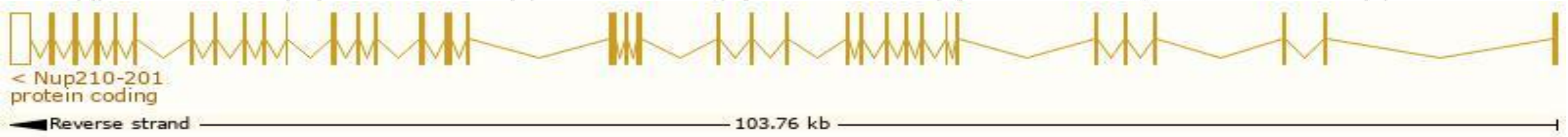
Official Symbol	Nup210 provided by MGI
Official Full Name	nucleoporin 210 provided by MGI
Primary source	MGI:MGI:1859555
See related	Ensembl:ENSMUSG00000030091
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9830001L10, AI836801, Pom210, gp190, gp210
Expression	Broad expression in thymus adult (RPKM 32.3), spleen adult (RPKM 28.8) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

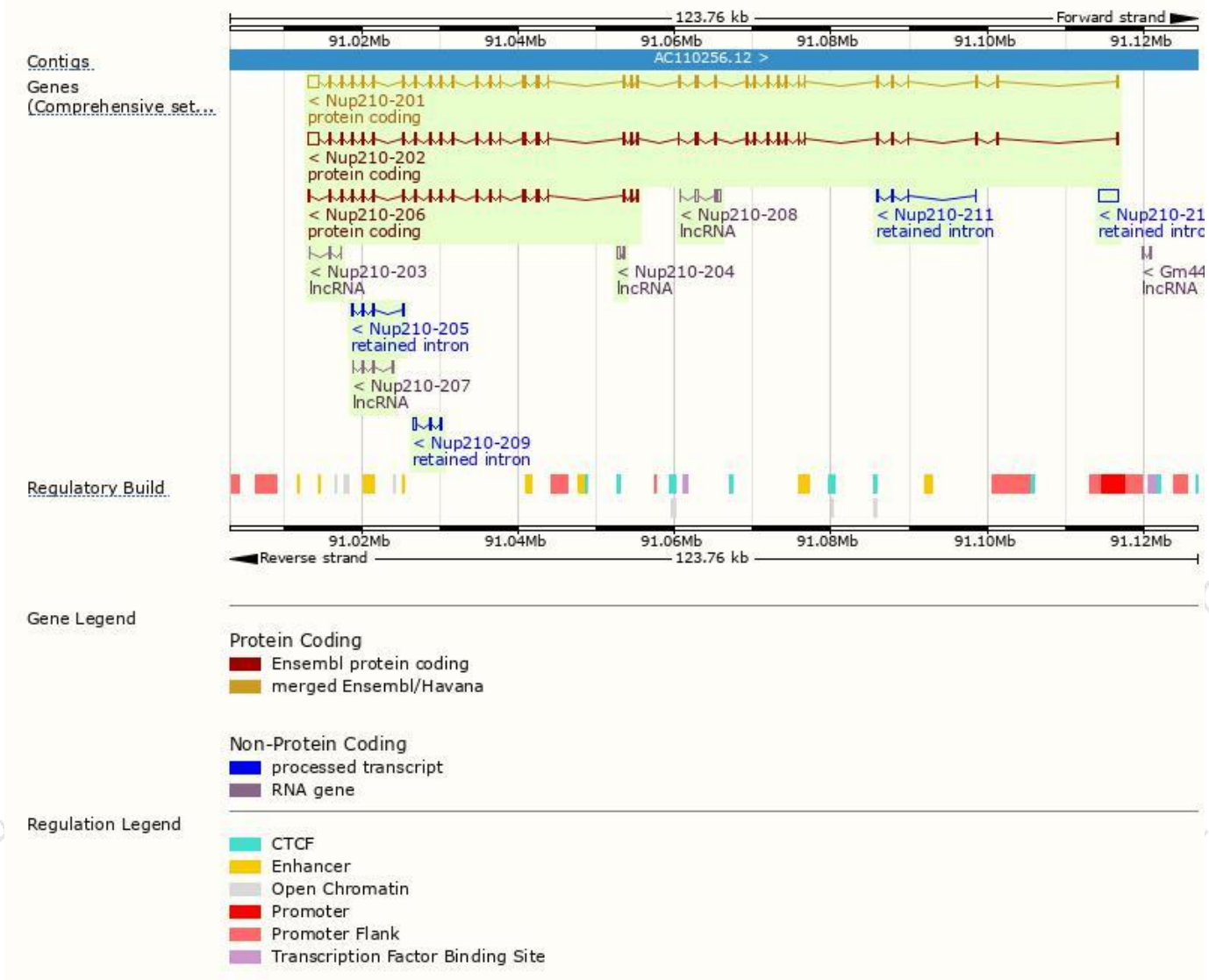
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nup210-201	ENSMUST00000032179.13	7037	1886aa	Protein coding	CCDS39565	Q9QY81	TSL:1 GENCODE basic APPRIS P2
Nup210-202	ENSMUST00000113509.1	6893	1842aa	Protein coding	-	A0A0R4J1I6	TSL:1 GENCODE basic APPRIS ALT2
Nup210-206	ENSMUST00000142951.8	3449	1076aa	Protein coding	-	F6XGN0	CDS 5' incomplete TSL:1
Nup210-210	ENSMUST00000203434.1	2440	No protein	Retained intron	-	-	TSL:NA
Nup210-205	ENSMUST00000141952.7	799	No protein	Retained intron	-	-	TSL:3
Nup210-209	ENSMUST00000153350.1	751	No protein	Retained intron	-	-	TSL:3
Nup210-211	ENSMUST00000204740.1	488	No protein	Retained intron	-	-	TSL:3
Nup210-204	ENSMUST00000139051.1	640	No protein	lncRNA	-	-	TSL:3
Nup210-208	ENSMUST00000151437.1	621	No protein	lncRNA	-	-	TSL:5
Nup210-207	ENSMUST00000146397.1	420	No protein	lncRNA	-	-	TSL:3
Nup210-203	ENSMUST00000123340.1	369	No protein	lncRNA	-	-	TSL:2

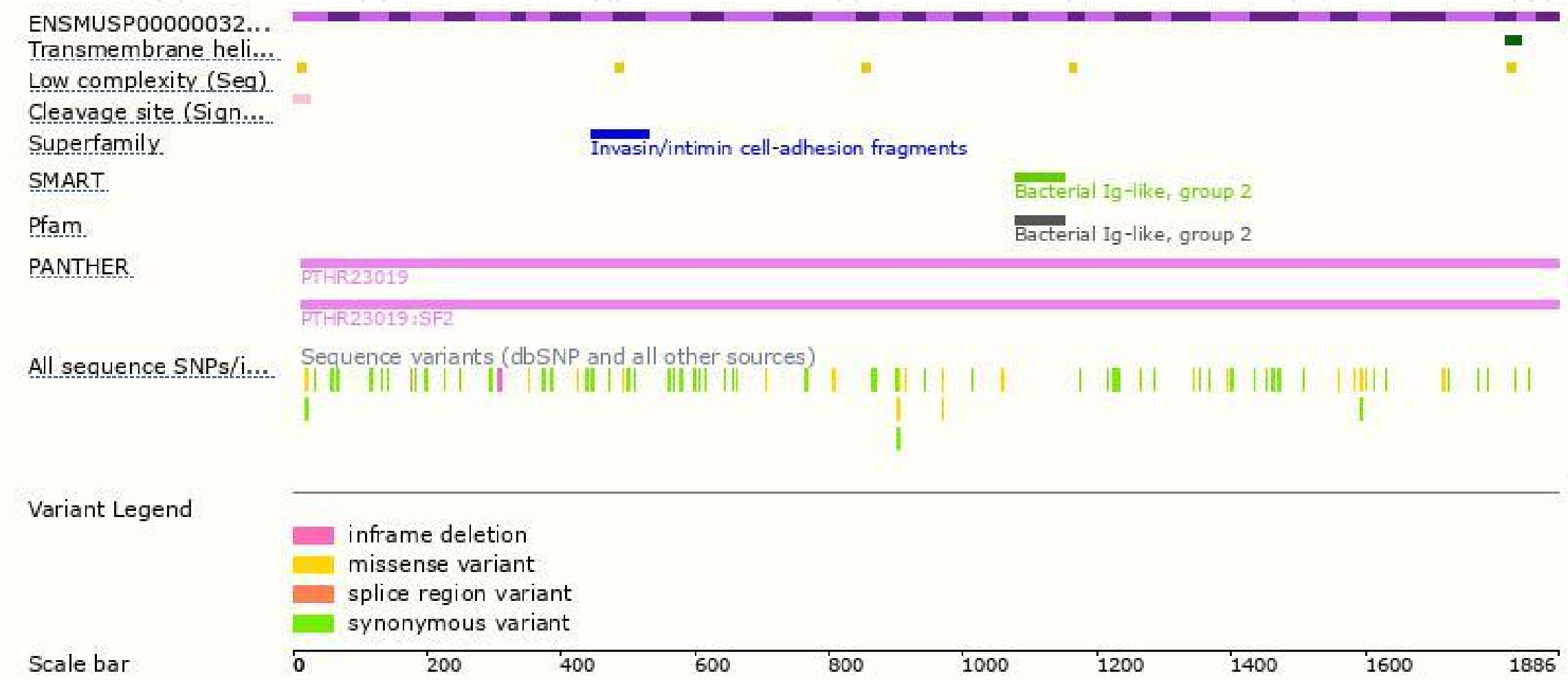
The strategy is based on the design of *Nup210-201* transcript,The transcription is shown below



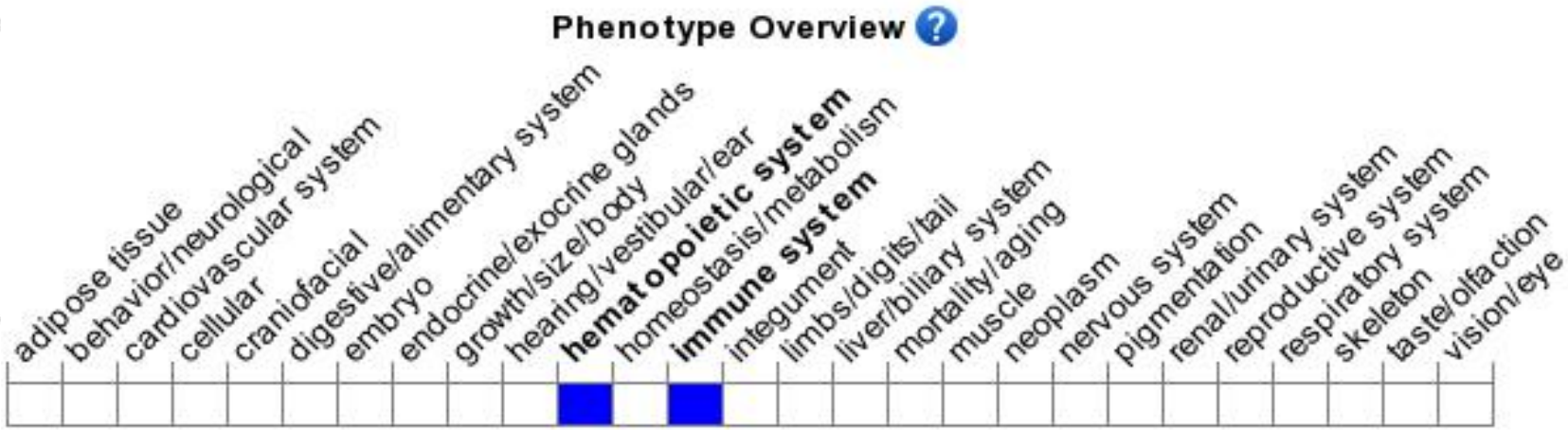
Genomic location distribution



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 for a null allele exhibit decreased naive T cells and increased activated T cells due to impaired peripheral T cell development.

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