Il1b Cas9-KO Strategy

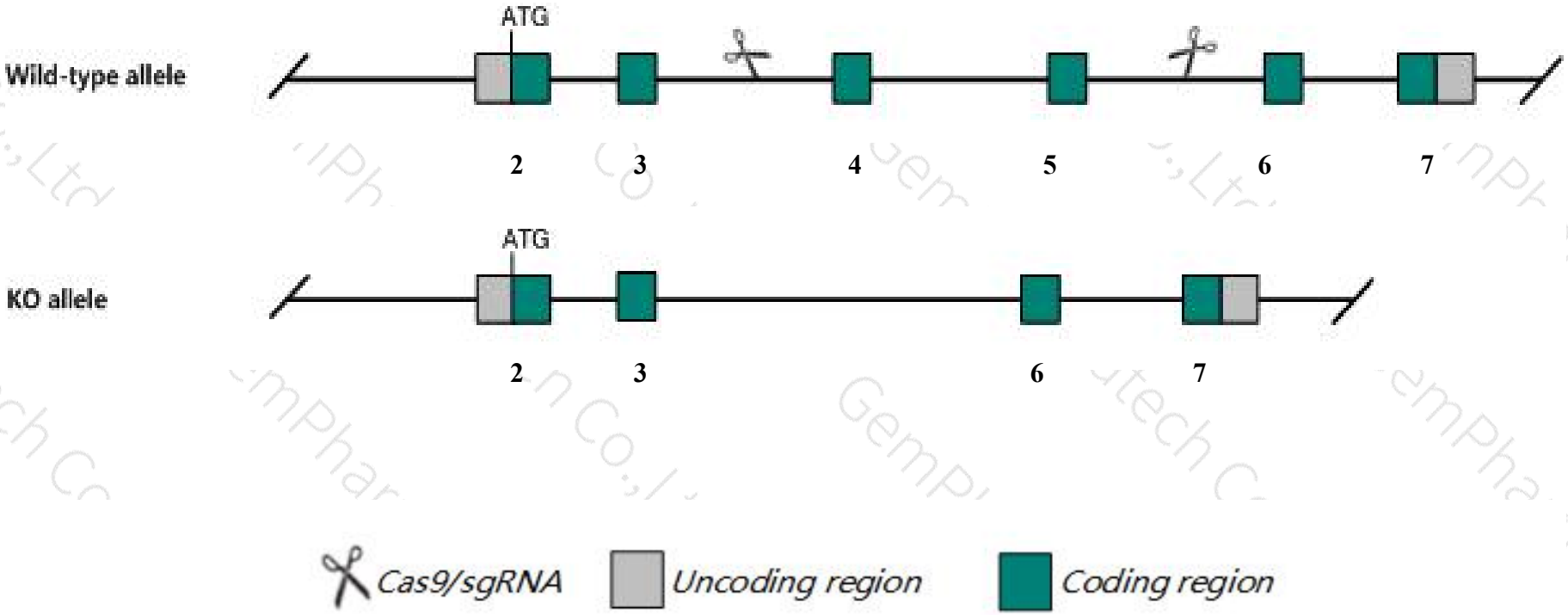
Designer:Xueting Zhang

Project Overview

Project Name	***Il1b***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il1b* gene. The schematic diagram is as follows:



Technical routes

- The *Il1b* gene has 3 transcripts. According to the structure of *Il1b* gene, exon4-exon5 of *Il1b-201* (ENSMUST00000028881.13) transcript is recommended as the knockout region.The region contains 373bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Il1b* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data,Homozygous null mutants show impaired contact hypersensitivity and reduced acute-phase inflammatory response. Lung tumors and metastases of B16 melanoma do not occur in null mutant mice, suggesting inability to support tumor invasiveness and angiogenesis.

- The *Il1b* gene is located on the Chr2. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Il1b interleukin 1 beta [Mus musculus (house mouse)]

Gene ID: 16176, updated on 9-Apr-2019

Summary

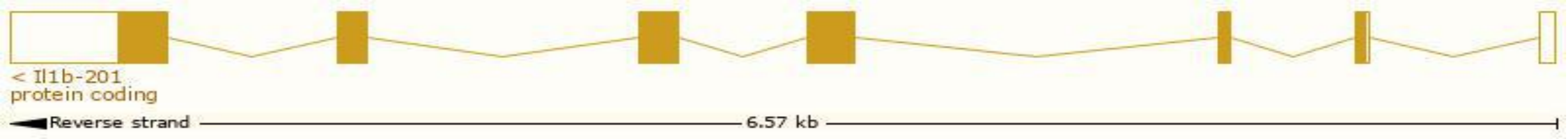
Official Symbol	Il1b provided by MGI
Official Full Name	interleukin 1 beta provided by MGI
Primary source	MGI:MGI:96543
See related	Ensembl:ENSMUSG00000027398
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IL-1beta, Il-1b
Summary	The protein encoded by this gene is a member of the interleukin 1 cytokine family. This cytokine is produced by activated macrophages as a proprotein, which is proteolytically processed to its active form by caspase 1. The encoded protein plays a role in thymocyte proliferation and is involved in the inflammatory response. [provided by RefSeq, Aug 2015]
Expression	Broad expression in spleen adult (RPKM 1.3), lung adult (RPKM 1.0) and 19 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

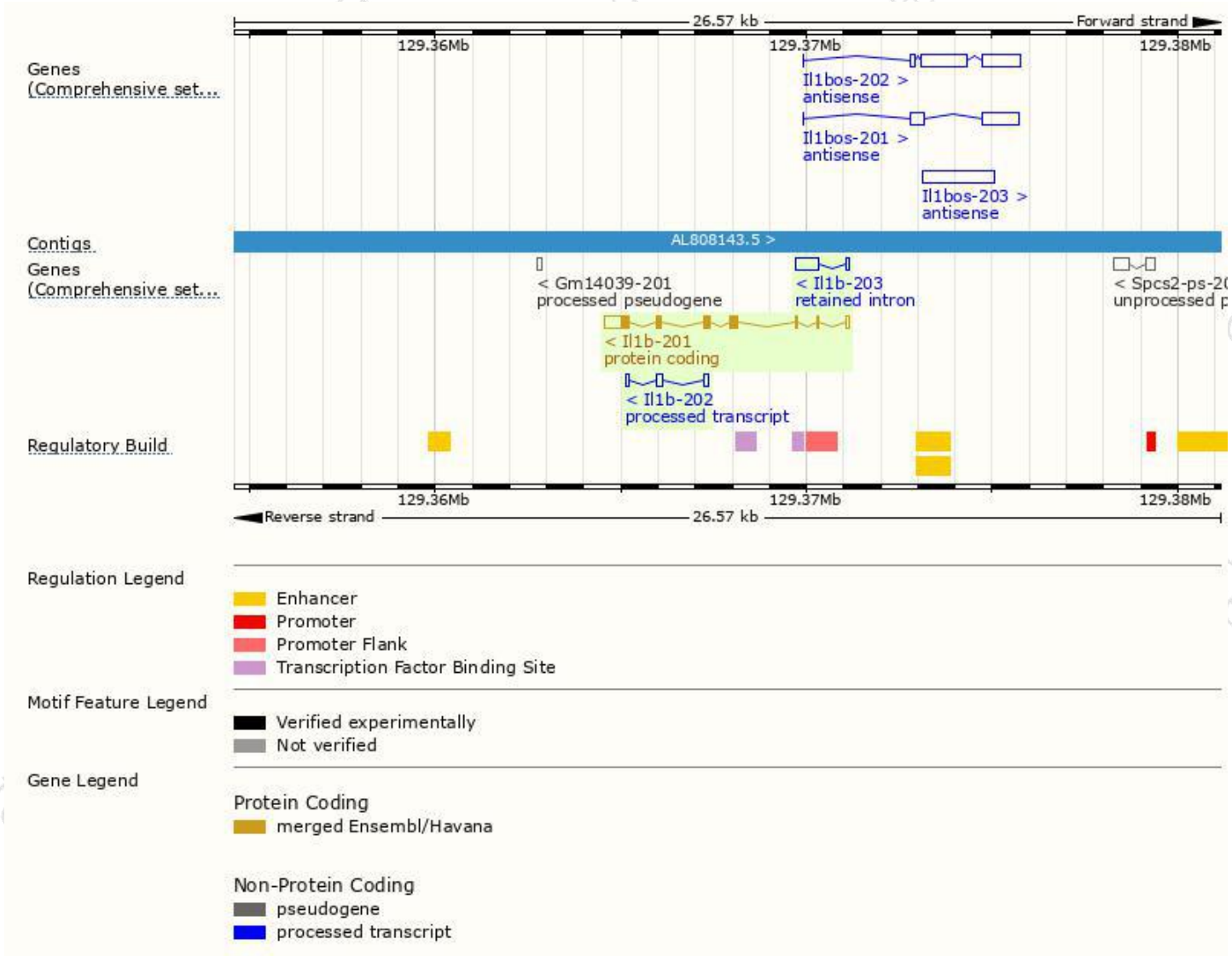
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Il1b-201	ENSMUST00000028881.13	1356	269aa	Protein coding	CCDS16726	P10749	TSL:1 GENCODE basic APPRIS P1
Il1b-202	ENSMUST00000141979.1	379	No protein	Processed transcript	-	-	TSL:1
Il1b-203	ENSMUST00000155994.1	689	No protein	Retained intron	-	-	TSL:2

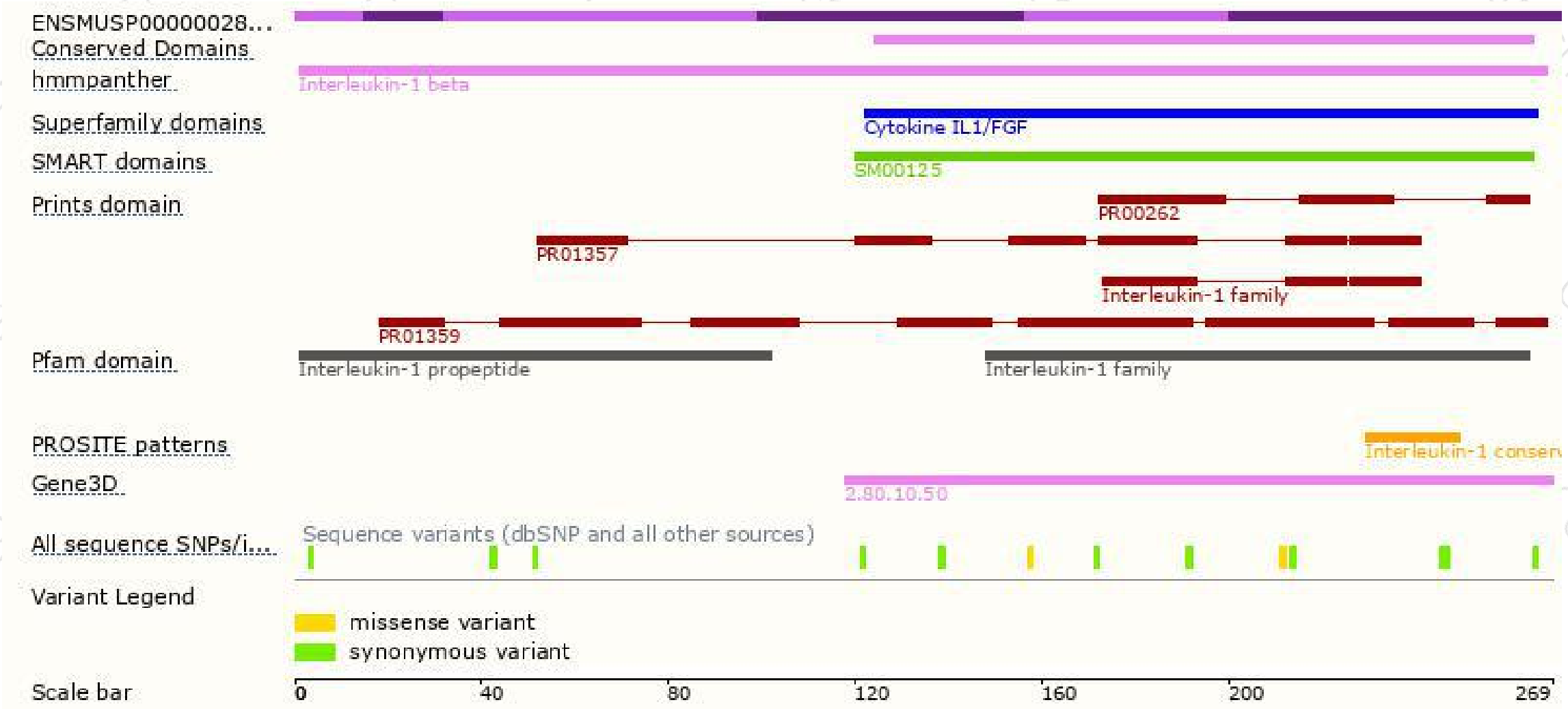
The strategy is based on the design of *Il1b-201* transcript,The transcription is shown below



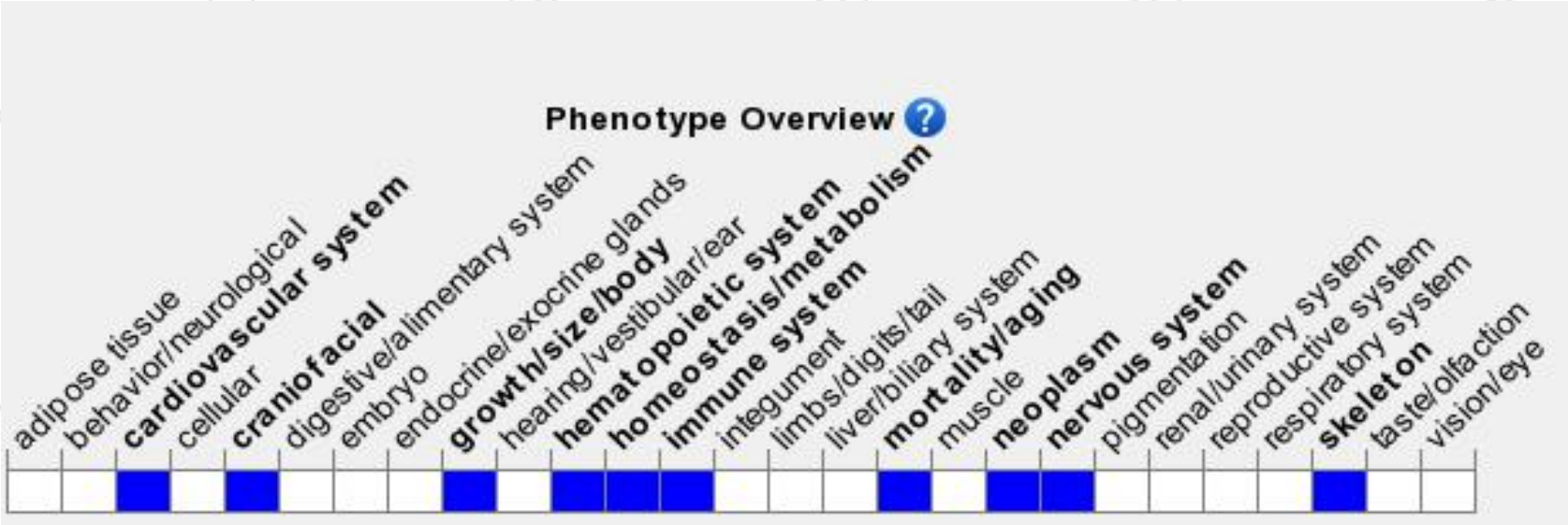
Genomic location distribution



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/).

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集萃药康
GemPharmatech

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

Tel: 025-5864 1534

集萃药康生物科技
GemPharmatech Co.,Ltd