Il1a Cas9-KO Strategy

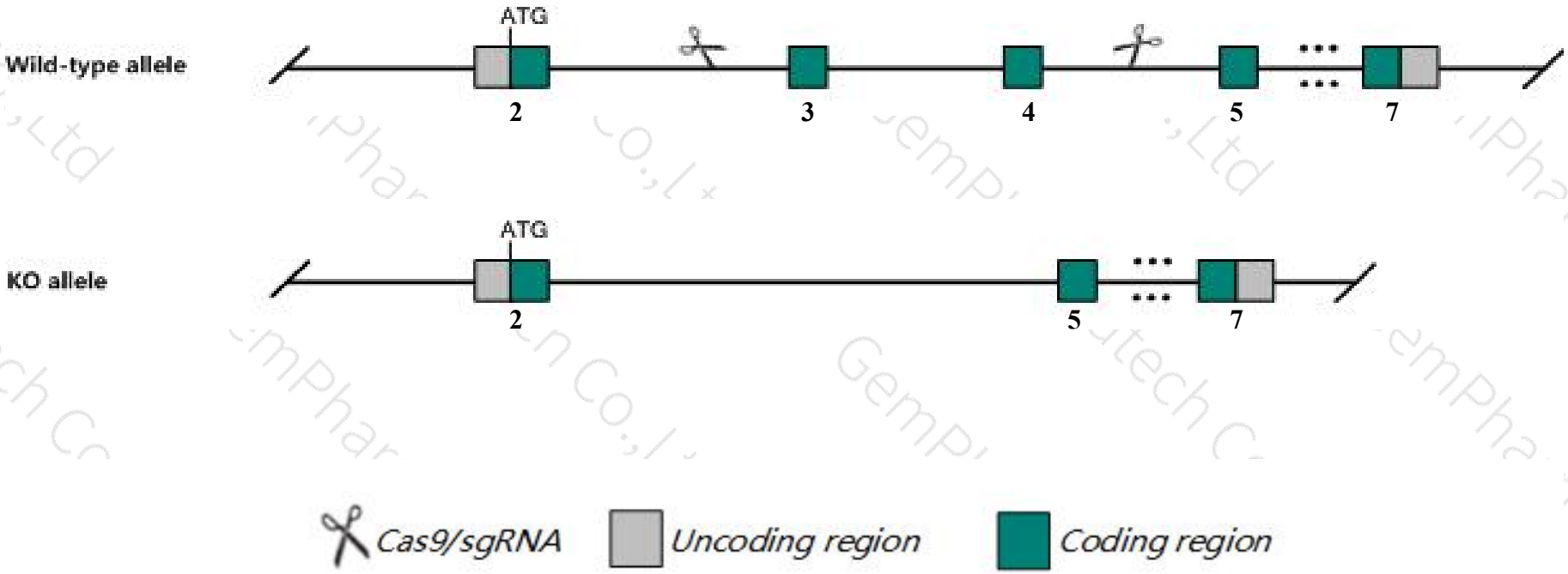
Designer:Yanhua Shen

Project Overview

Project Name	***Il1a***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il1a* gene. The schematic diagram is as follows:



Technical routes

➢ The *Il1a* gene has 1 transcript. According to the structure of *Il1a* gene, exon3-exon4 of *Il1a-201* (ENSMUST00000028882.1) transcript is recommended as the knockout region.The region contains 278bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Il1a* 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,Mice homozygous for a knock-out allele exhibit abnormal tumor vascularization, decreased metastatic potential, and decreased interleukin-1 beta secretion.

- The Il1a gene coincides with the Gm14023 gene, and the exon4 and exon5 of the Gm14023 gene are deleted at the same time, and it is uncertain whether the phenotype of the mouse is caused by knockout of which gene.

- The *Il1a* 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）

集萃药康 GemPharmatech

Il1a interleukin 1 alpha [Mus musculus (house mouse)]

Gene ID: 16175, updated on 9-Apr-2019

Summary

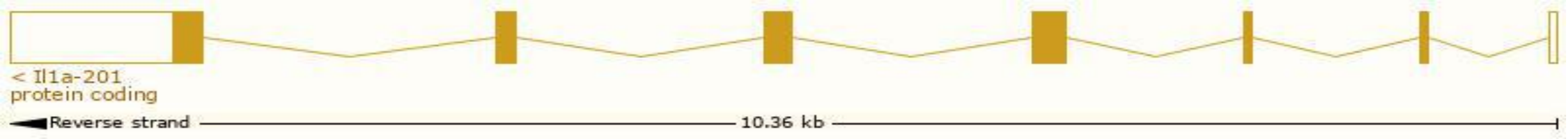
Official Symbol	Il1a provided by MGI
Official Full Name	interleukin 1 alpha provided byMGI
Primary source	MGI:MGI:96542
See related	Ensembl:ENSMUSG00000027399
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Il-1a
Expression	Broad expression in liver E18 (RPKM 1.2), liver E14 (RPKM 1.1) and 20 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

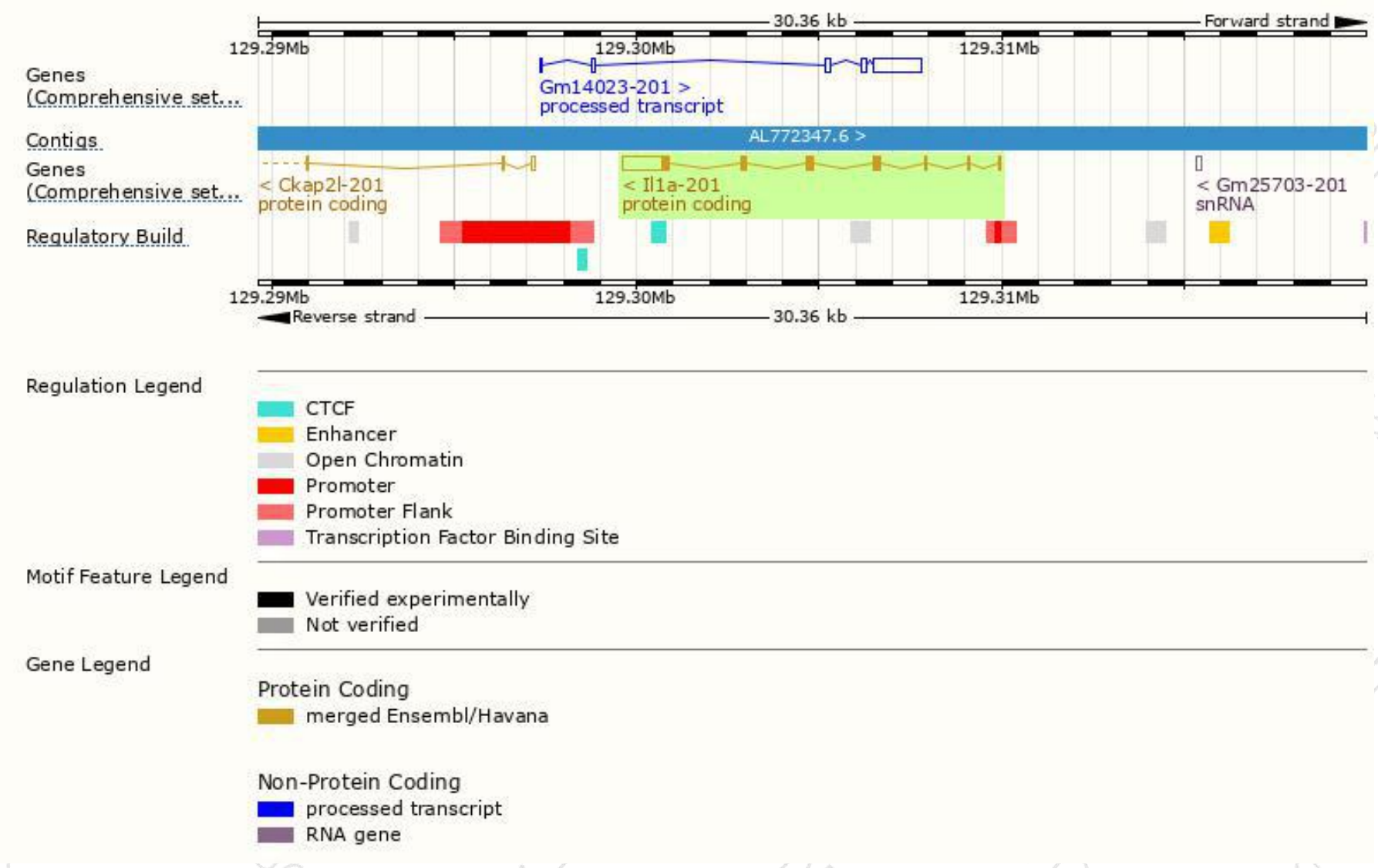
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Il1a-201	ENSMUST00000028882.1	1974	270aa	Protein coding	CCDS16725	P01582 Q3U0Y6	TSL:1 GENCODE basic APPRIS P1

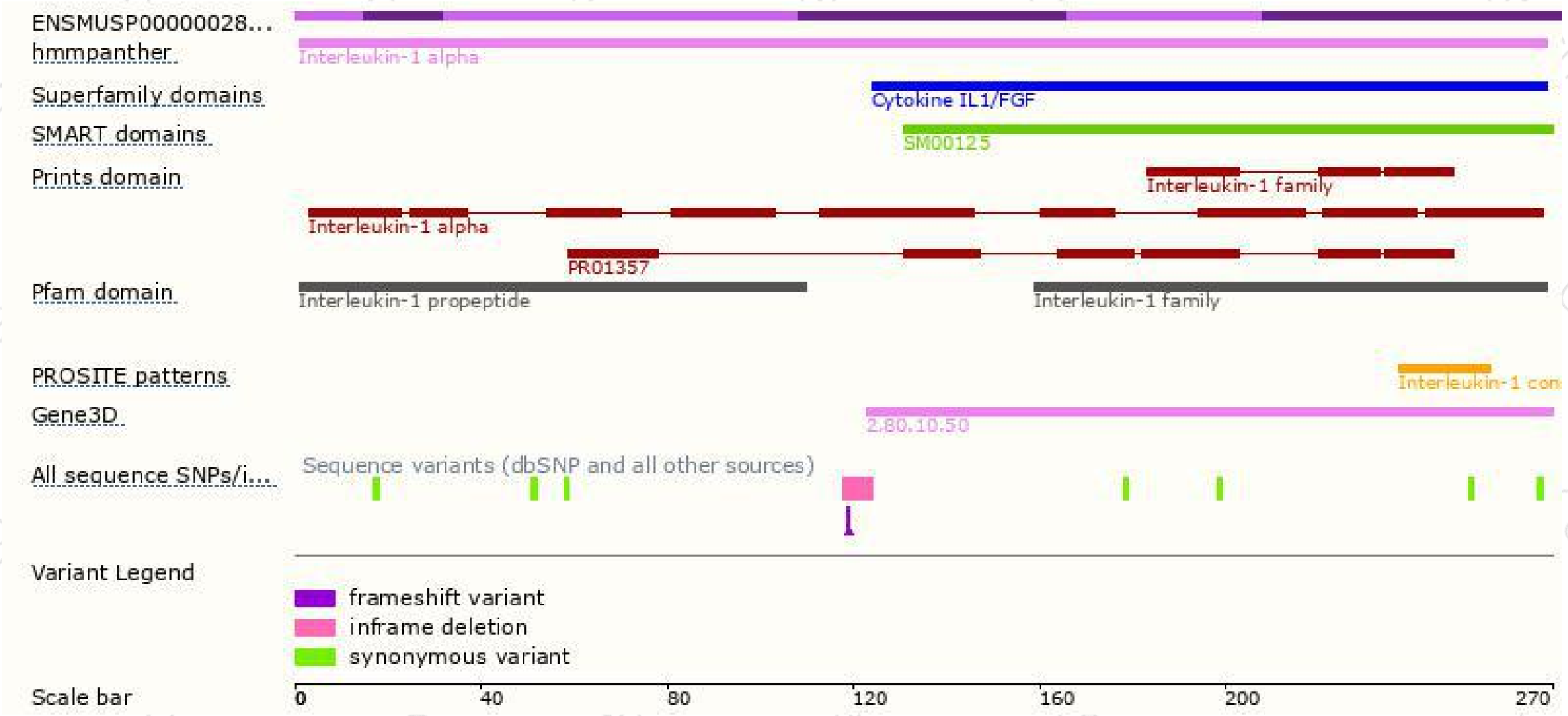
The strategy is based on the design of *Il1a-201* transcript,The transcription is shown below



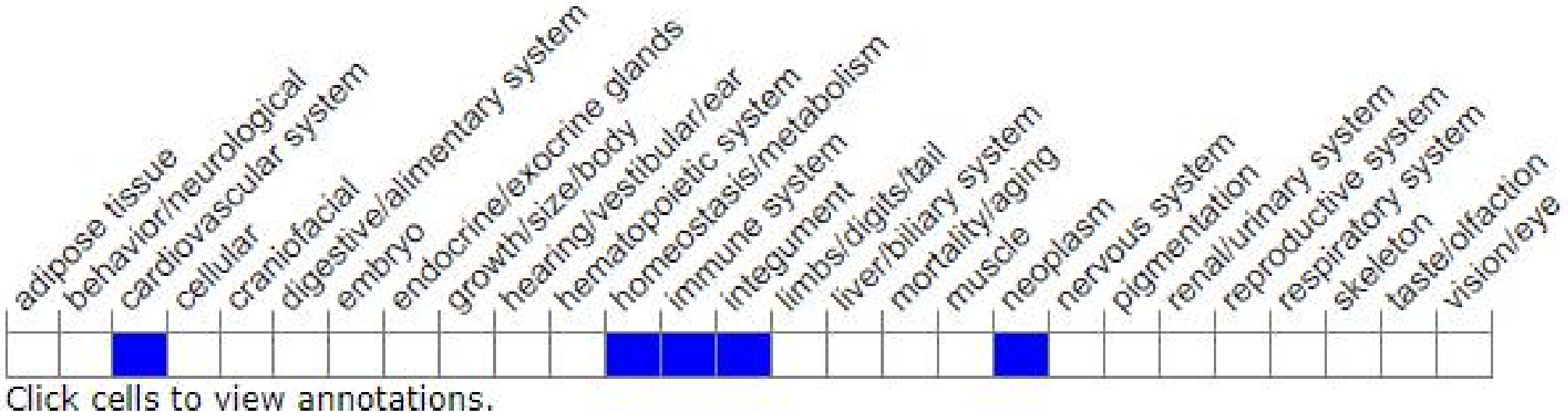
Genomic location distribution



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 knock-out allele exhibit abnormal tumor vascularization, decreased metastatic potential, and decreased interleukin-1 beta secretion.

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