Vipr1 Cas9-KO Strategy

Designer: Jing Jin

Reviewer: Yang Zeng

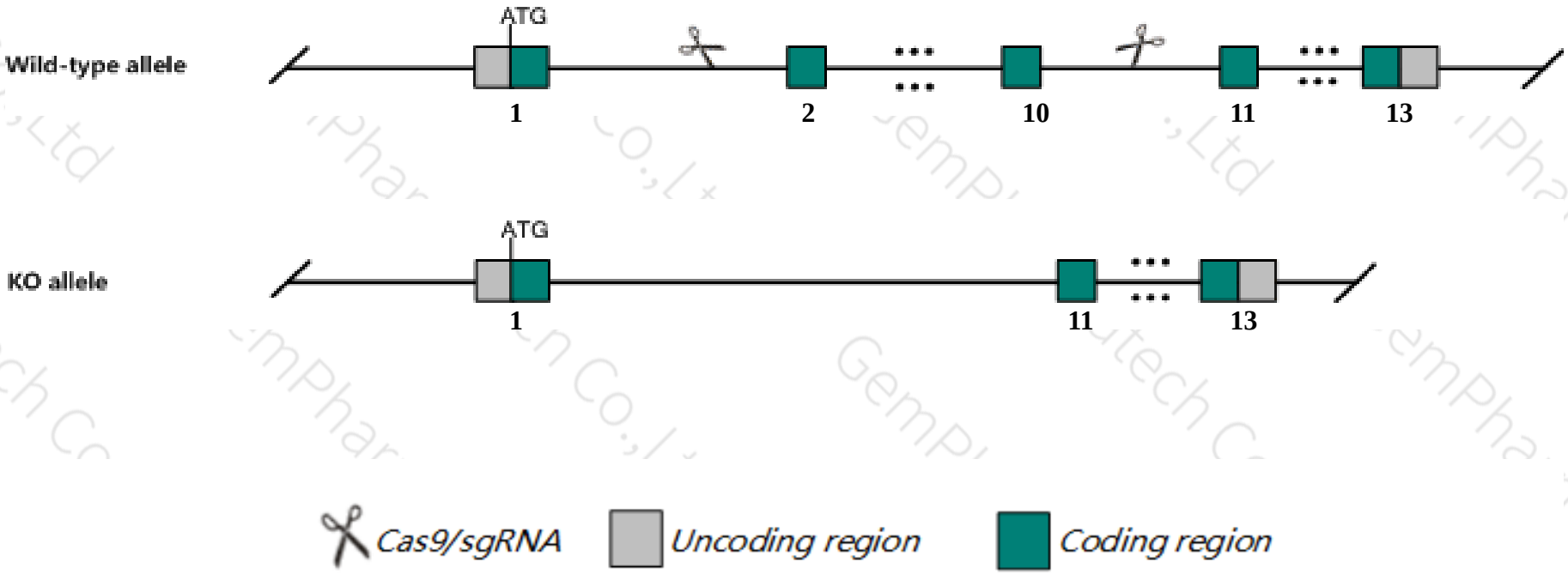
Design Date: 2018-7-6

Project Overview

Project Name	***Vipr1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vipr1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Vipr1* gene has 5 transcripts. According to the structure of *Vipr1* gene, exon2-exon10 of *Vipr1-201* (ENSMUST00000035115.4) transcript is recommended as the knockout region.The region contains 938bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Vipr1* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit prenatal lethality associated with severe neonatal growth failure, enlarged cecum, intestinal hemorrhage, and enterocyte hyperproliferation in addition to disorganized islets and impaired glucose homeostasisin surviving mice.

- Transcript *Vipr1-204* may not be affected.

- The *Vipr1* gene is located on the Chr9. 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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Vipr1 vasoactive intestinal peptide receptor 1 [Mus musculus (house mouse)]

Gene ID: 22354, updated on 19-Mar-2019

Summary

Official Symbol	Vipr1 provided by MGI
Official Full Name	vasoactive intestinal peptide receptor 1 provided by MGI
Primary source	MGI:MGI:109272
See related	Ensembl:ENSMUSG00000032528
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	AV071699, VIP-R1, VPAC1
Expression	Biased expression in colon adult (RPKM 47.0), small intestine adult (RPKM 34.2) and 8 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

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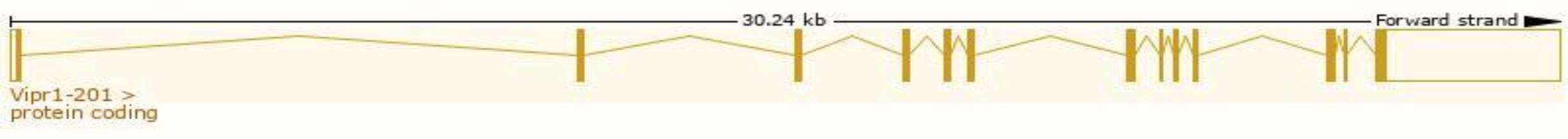
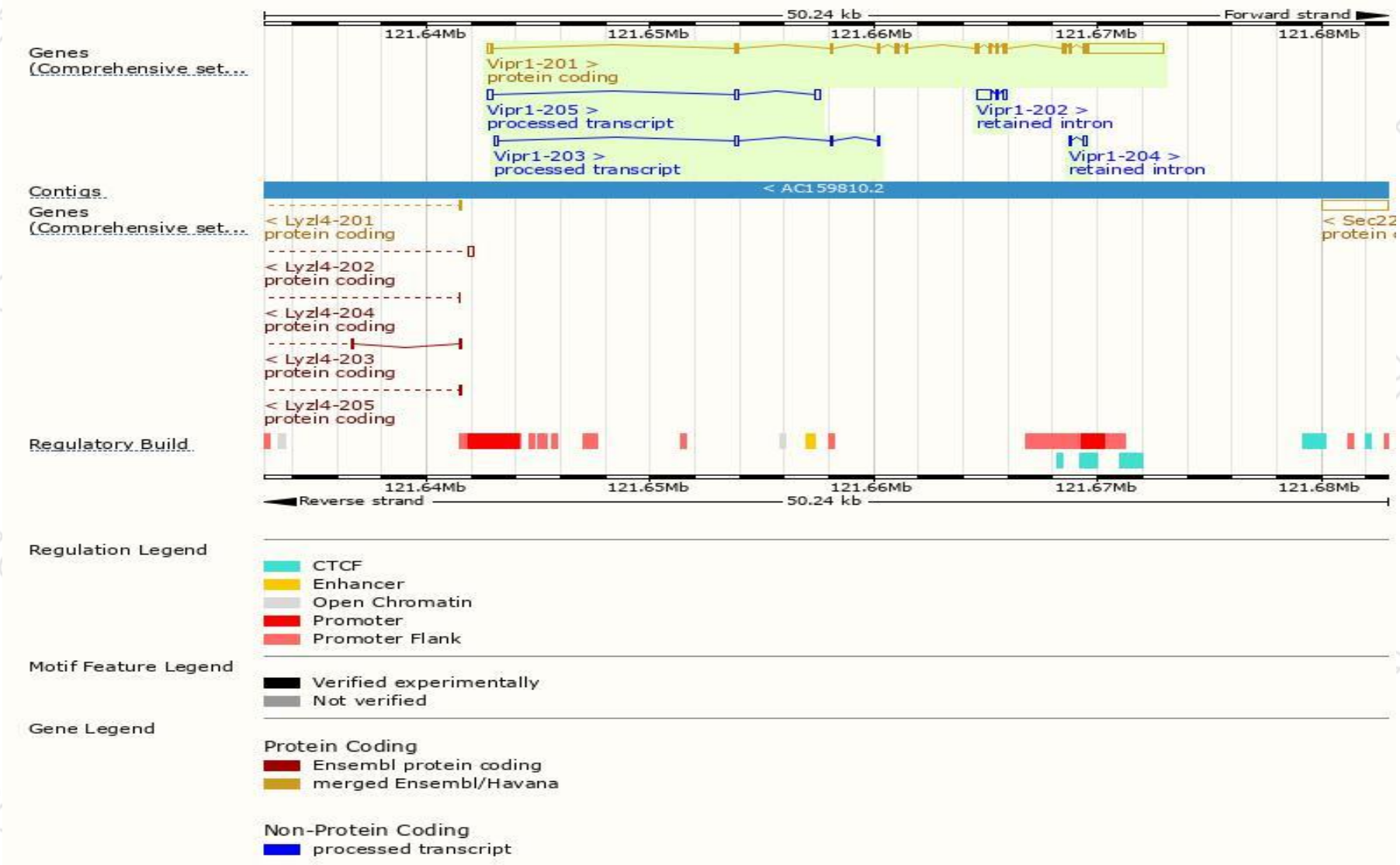
Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Vipr1-201	ENSMUST00000035115.4	4902	459aa	ENSMUSP00000035115.4	Protein coding	CCDS23633	P97751	TSL:1 GENCODE basic APPRIS P1
Vipr1-202	ENSMUST00000129394.1	763	No protein	-	Retained intron	-	-	TSL:3
Vipr1-203	ENSMUST00000139189.1	412	No protein	-	lncRNA	-	-	TSL:5
Vipr1-204	ENSMUST00000149959.1	224	No protein	-	Retained intron	-	-	TSL:5
Vipr1-205	ENSMUST00000213272.1	508	No protein	-	lncRNA	-	-	TSL:5

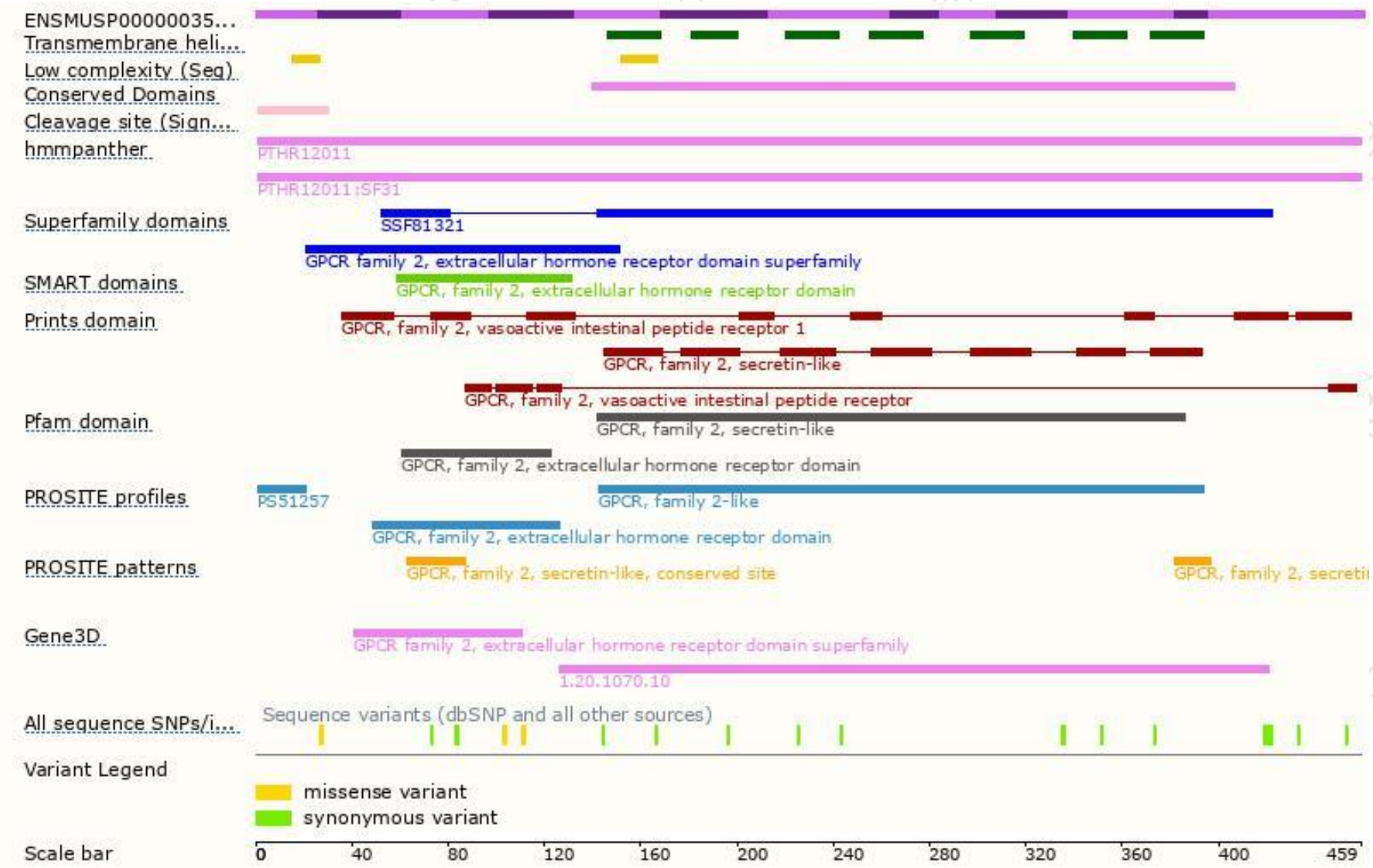
The strategy is based on the design of *Vipr1-201* transcript,The transcription is shown below



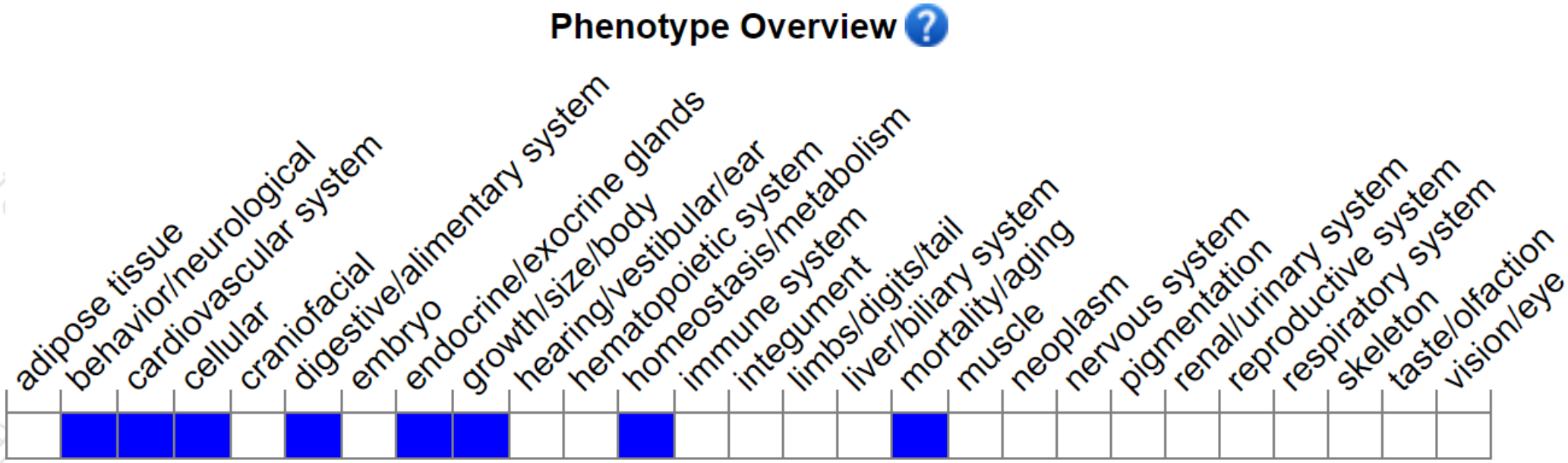
Genomic location distribution



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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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