Vezf1 Cas9-KO Strategy

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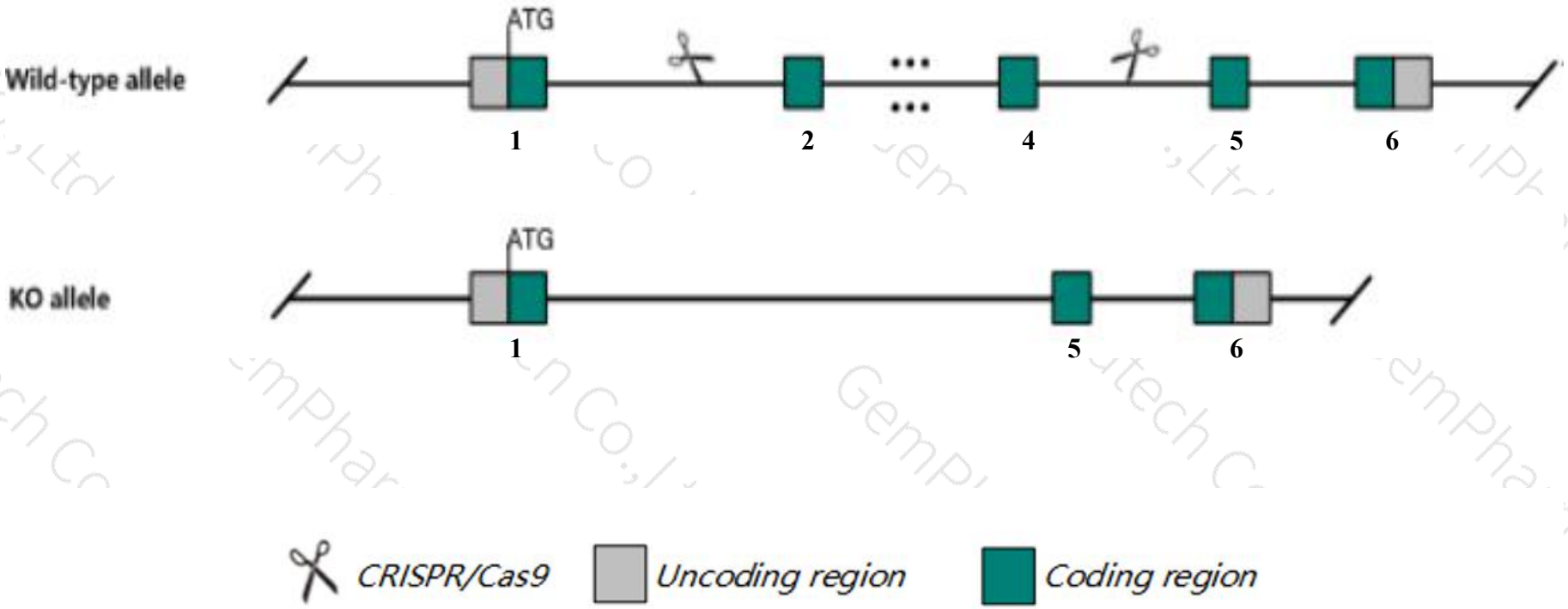
Design Date: 2020-7-22

Project Overview

Project Name	***Vezf1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vezf1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Vezf1* gene has 2 transcripts. According to the structure of *Vezf1* gene, exon2-exon4 of *Vezf1-201*(ENSMUST00000018521.10) transcript is recommended as the knockout region.The region contains 943bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Vezf1* gene. The brief process is as follows: CRISPR/Cas9 system 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,homozygous null mice die at midgestation due to angiogenic remodeling defects and loss of vascular integrity leading to hemorrhaging in the head, heart and trunk. One fifth of heterozygous null embryos show lymphatic hypervascularization associated with hemorrhaging and edema in the jugular region.

➢ The *Vezf1* gene is located on the Chr11. 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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Vezf1 vascular endothelial zinc finger 1 [Mus musculus (house mouse)]

Gene ID: 22344, updated on 13-Mar-2020

Summary

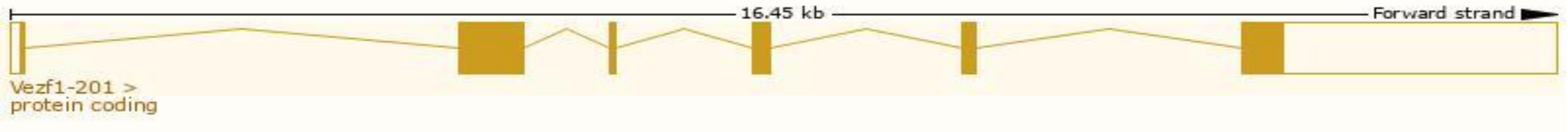
Official Symbol	Vezf1 provided by MGI
Official Full Name	vascular endothelial zinc finger 1 provided byMGI
Primary source	MGI:MGI:1313291
See related	Ensembl:ENSMUSG00000018377
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI848691, AW046909, db1
Expression	Ubiquitous expression in CNS E11.5 (RPKM 16.4), CNS E14 (RPKM 15.8) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

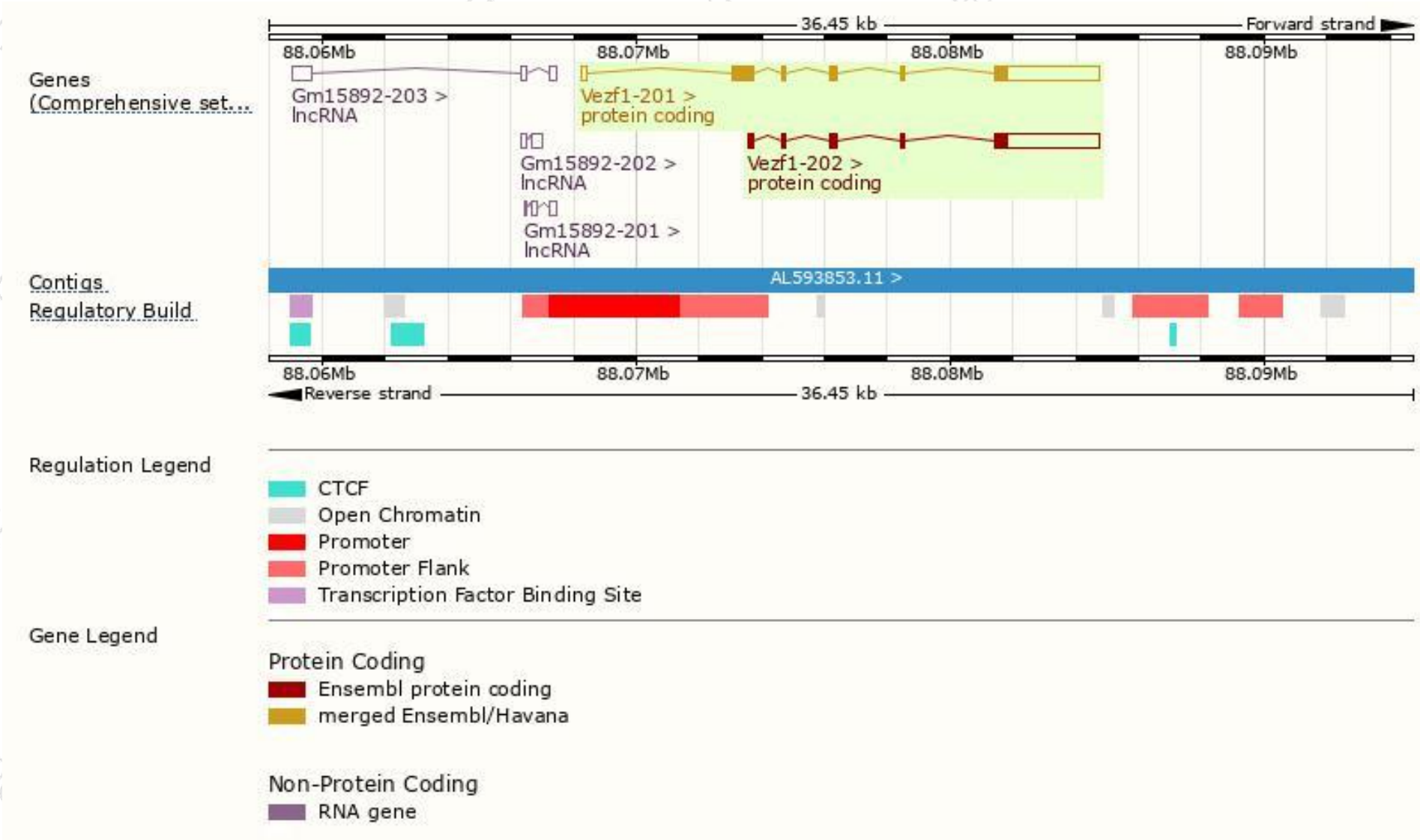
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Vezf1-201	ENSMUST00000018521.10	4583	518aa	Protein coding	CCDS48880	Q5SXC4	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Vezf1-202	ENSMUST00000143052.1	3915	336aa	Protein coding	-	Q5SXC3	CDS 5' incomplete TSL:5

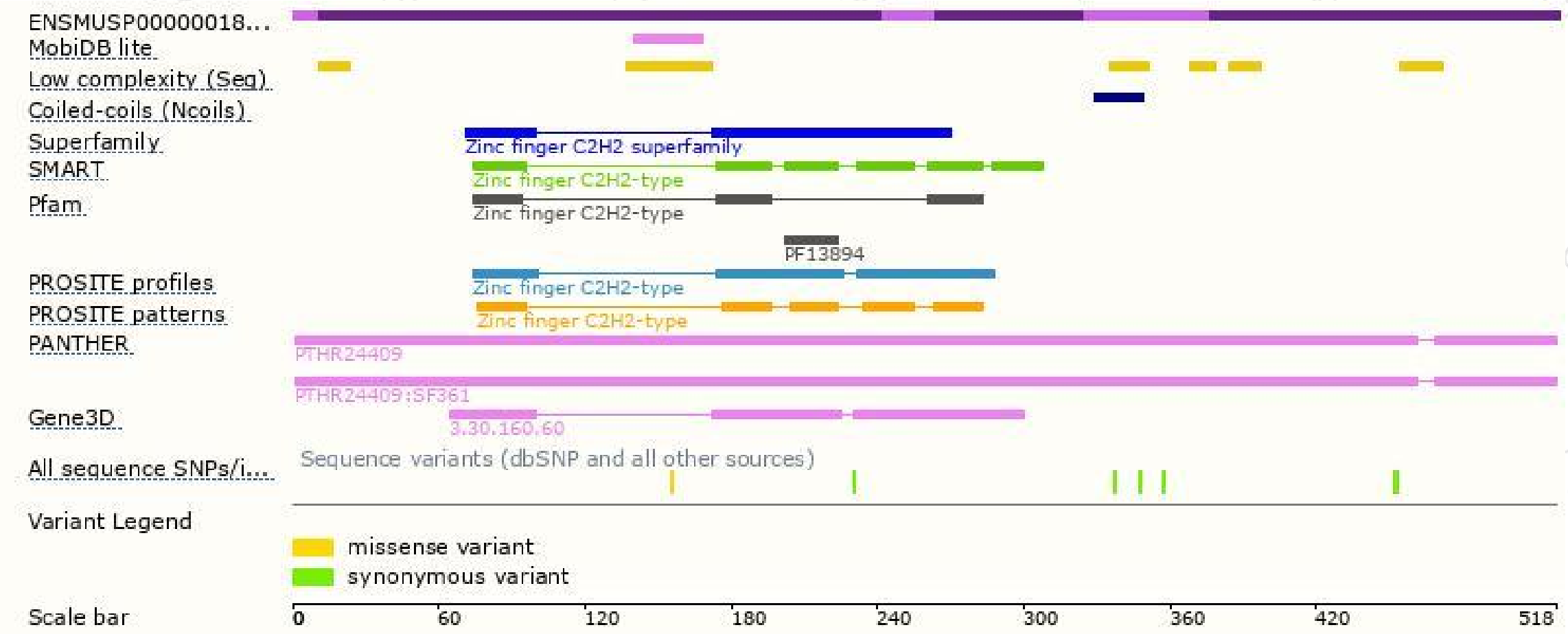
The strategy is based on the design of *Vezf1-201* transcript,the transcription is shown below:



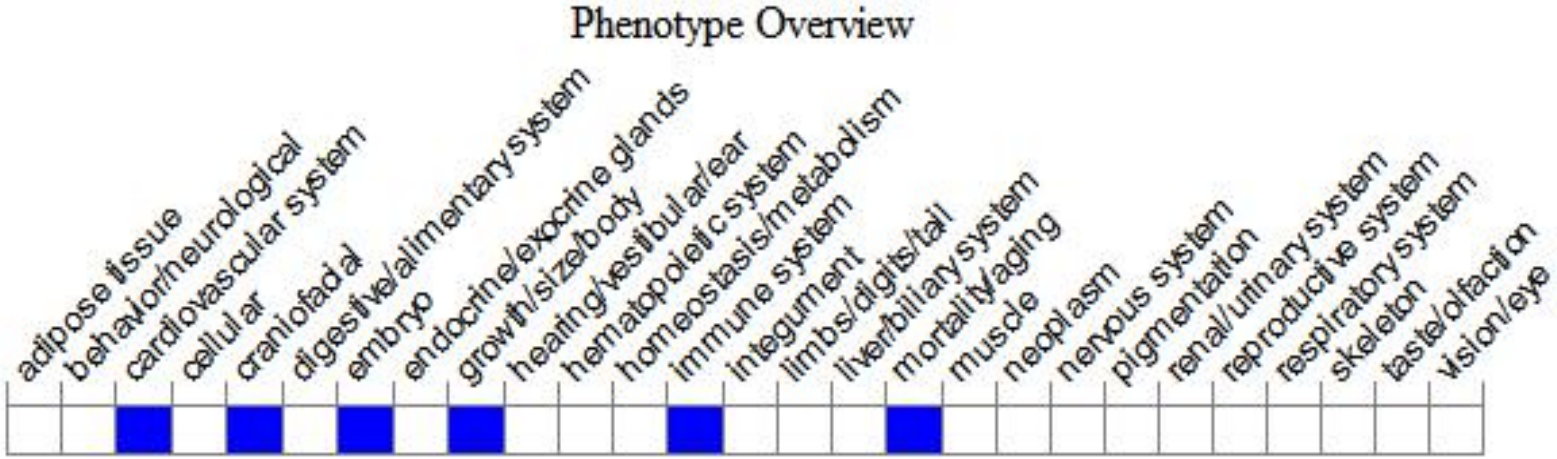
Genomic location distribution



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.

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