Gata1 Cas9-CKO Strategy

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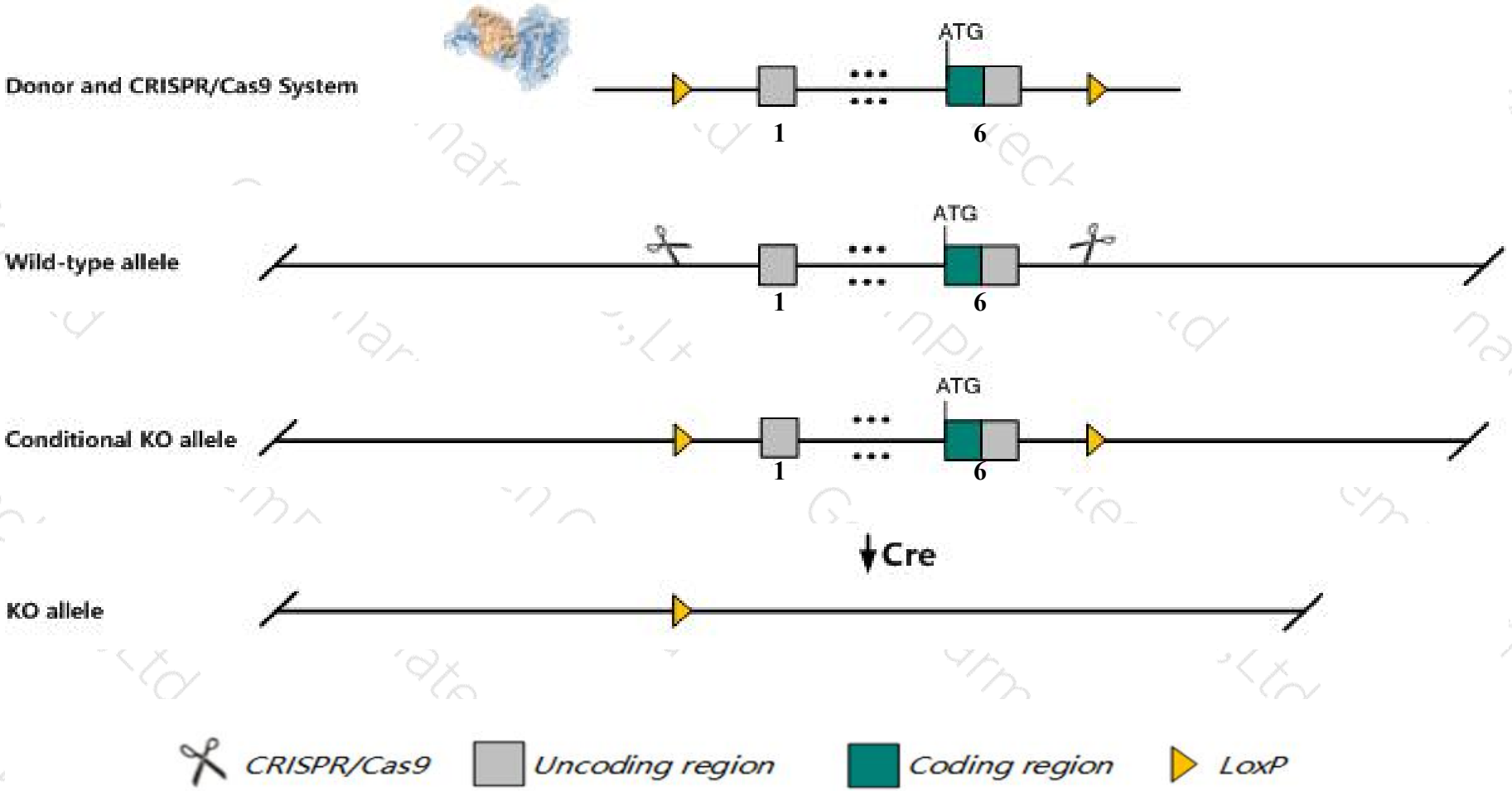
Project Overview

Project Name	***Gata1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gata1* gene. The schematic diagram is as follows:



Technical routes

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- The *Gata1* gene has 3 transcripts. According to the structure of *Gata1* gene, exon1-exon6 of *Gata1-201* (ENSMUST00000033502.13) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gata1* 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,Mutation of this locus affects hematopoiesis. Most hemizygous mutant males mice die at mid-gestation and exhibit blocked erythroid development. Female null and hypomorphic mutants survive birth but exhibit varying degrees of anemia and impaired hematopoiesis.

- The *Gata1* gene is located on the ChrX. 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）

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Gata1 GATA binding protein 1 [Mus musculus (house mouse)]

Gene ID: 14460, updated on 2-Apr-2019

Summary

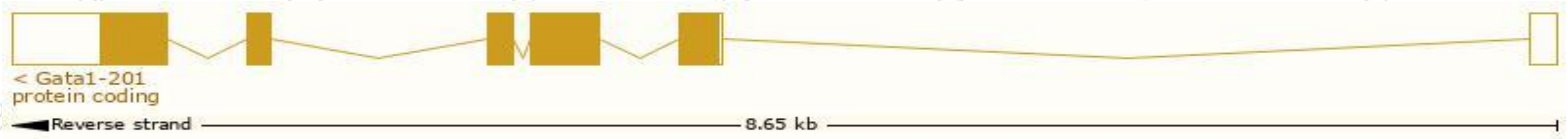
Official Symbol	Gata1 provided by MGI
Official Full Name	GATA binding protein 1 provided byMGI
Primary source	MGI:MGI:95661
See related	Ensembl:ENSMUSG00000031162
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gata-1, Gf-1, eryf1
Expression	Biased expression in liver E14.5 (RPKM 70.8), liver E14 (RPKM 62.6) and 3 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

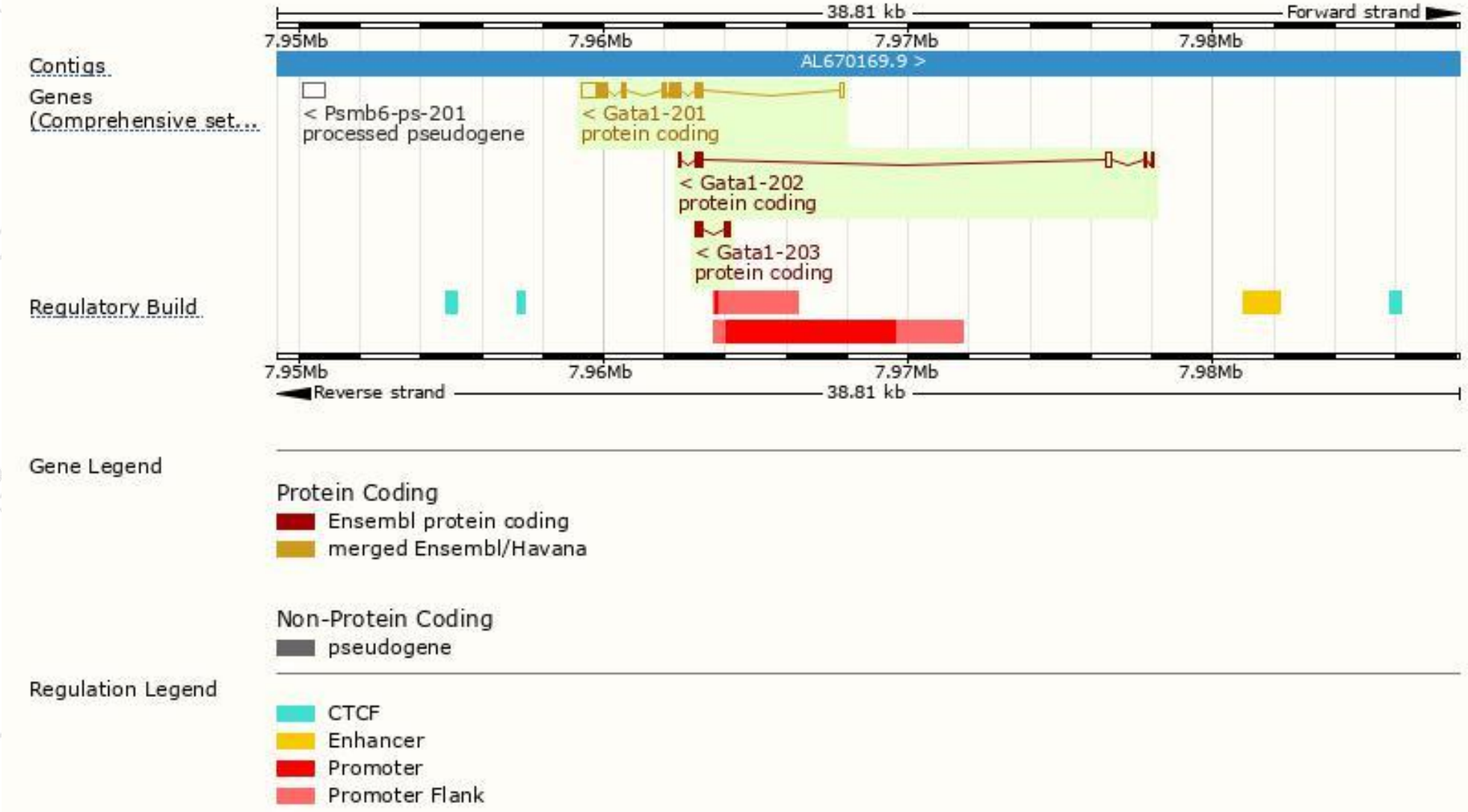
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gata1-201	ENSMUST00000033502.13	1902	413aa	Protein coding	CCDS29981	P17679	TSL:1 GENCODE basic APPRIS P1
Gata1-202	ENSMUST00000125418.1	676	109aa	Protein coding	-	B1AUB3	CDS 3' incomplete TSL:3
Gata1-203	ENSMUST00000128449.1	421	124aa	Protein coding	-	B1AUB4	CDS 3' incomplete TSL:3

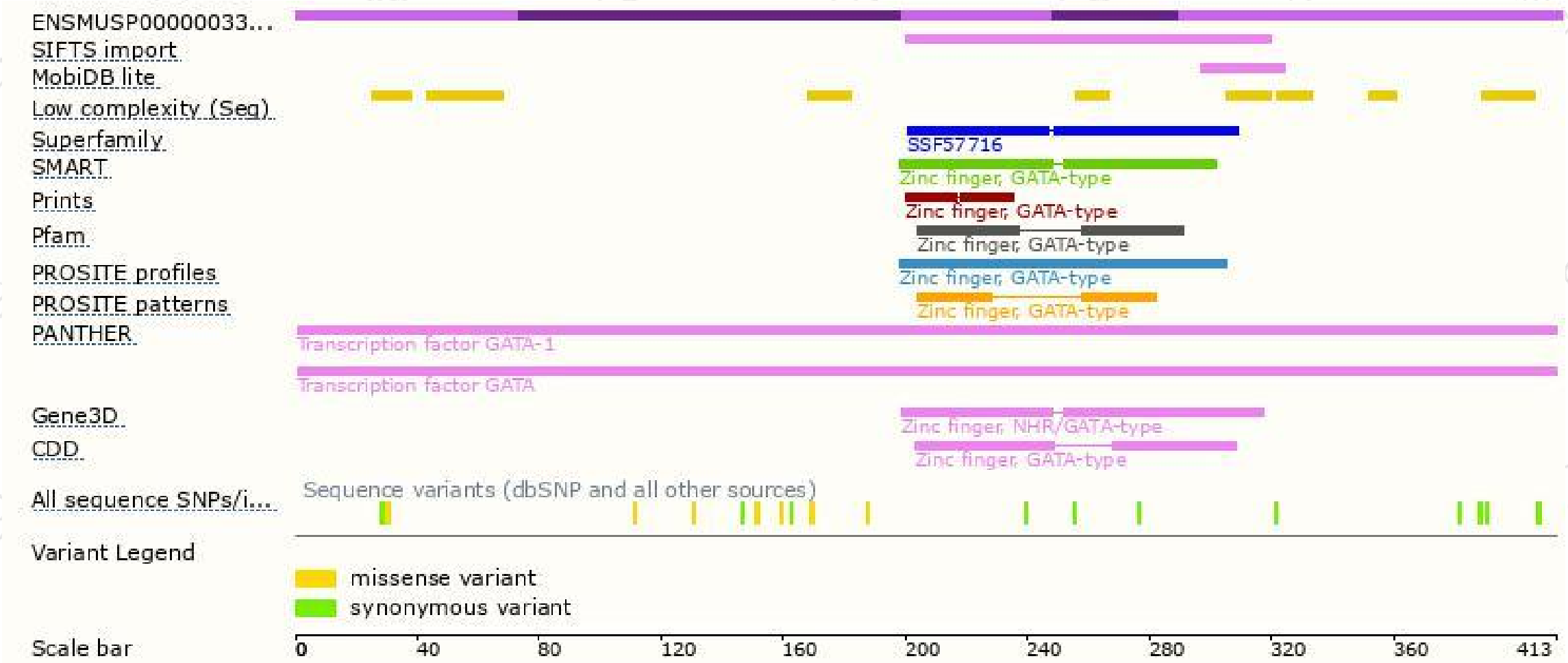
The strategy is based on the design of *Gata1-201* transcript,The transcription is shown below



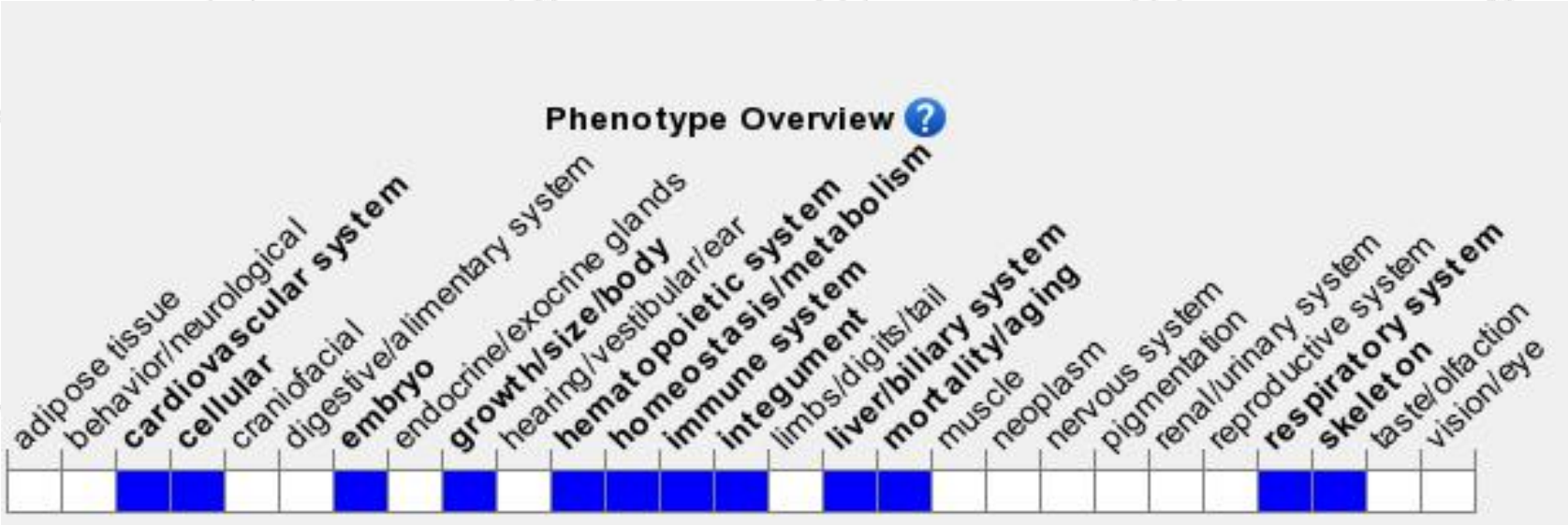
Genomic location distribution



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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