

***Gab1* Cas9-CKO Strategy**

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Project Overview

Project Name

Gab1

Project type

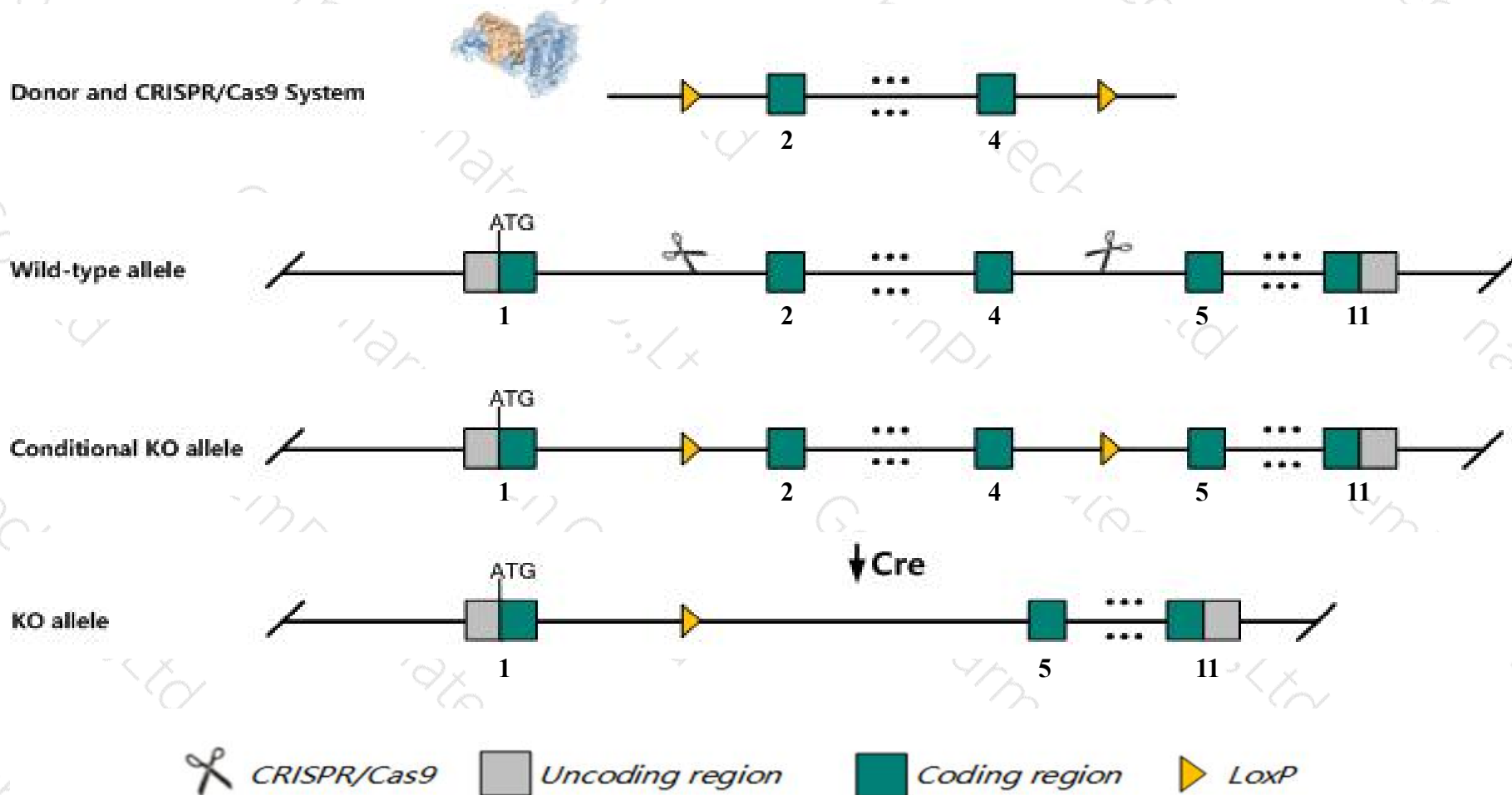
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gab1* gene. The schematic diagram is as follows:



- The *Gab1* gene has 3 transcripts. According to the structure of *Gab1* gene, exon2-exon4 of *Gab1*-202 (ENSMUST00000210676.1) transcript is recommended as the knockout region. The region contains 1126bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gab1* 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.

- According to the existing MGI data, Homozygotes for targeted null mutations exhibit developmental defects in the placenta, heart, eye, muscle, and skin, and die between embryonic day 13.5 and 18.5.
- The *Gab1* gene is located on the Chr8. 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)

Gab1 growth factor receptor bound protein 2-associated protein 1 [*Mus musculus* (house mouse)]

Gene ID: 14388, updated on 14-Oct-2019

Summary

Official Symbol	Gab1 provided by MGI
Official Full Name	growth factor receptor bound protein 2-associated protein 1 provided by MGI
Primary source	MGI:MGI:108088
See related	Ensembl:ENSMUSG00000031714
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	AA408973; AW107238
Expression	Ubiquitous expression in placenta adult (RPKM 12.3), lung adult (RPKM 10.9) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 8; 8 C2

See Gab1 in [Genome Data Viewer](#)

Exon count: 16

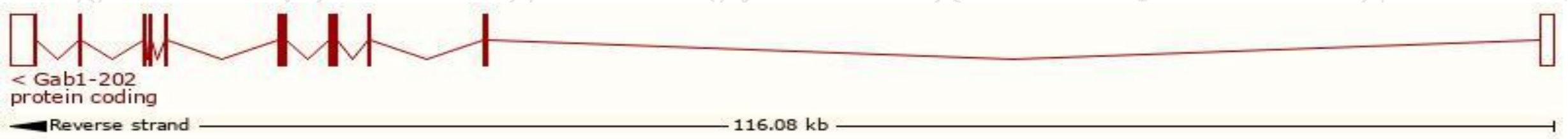
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	8	NC_000074.6 (80764431..80880519, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	8	NC_000074.5 (83288333..83404378, complement)

Transcript information (Ensembl)

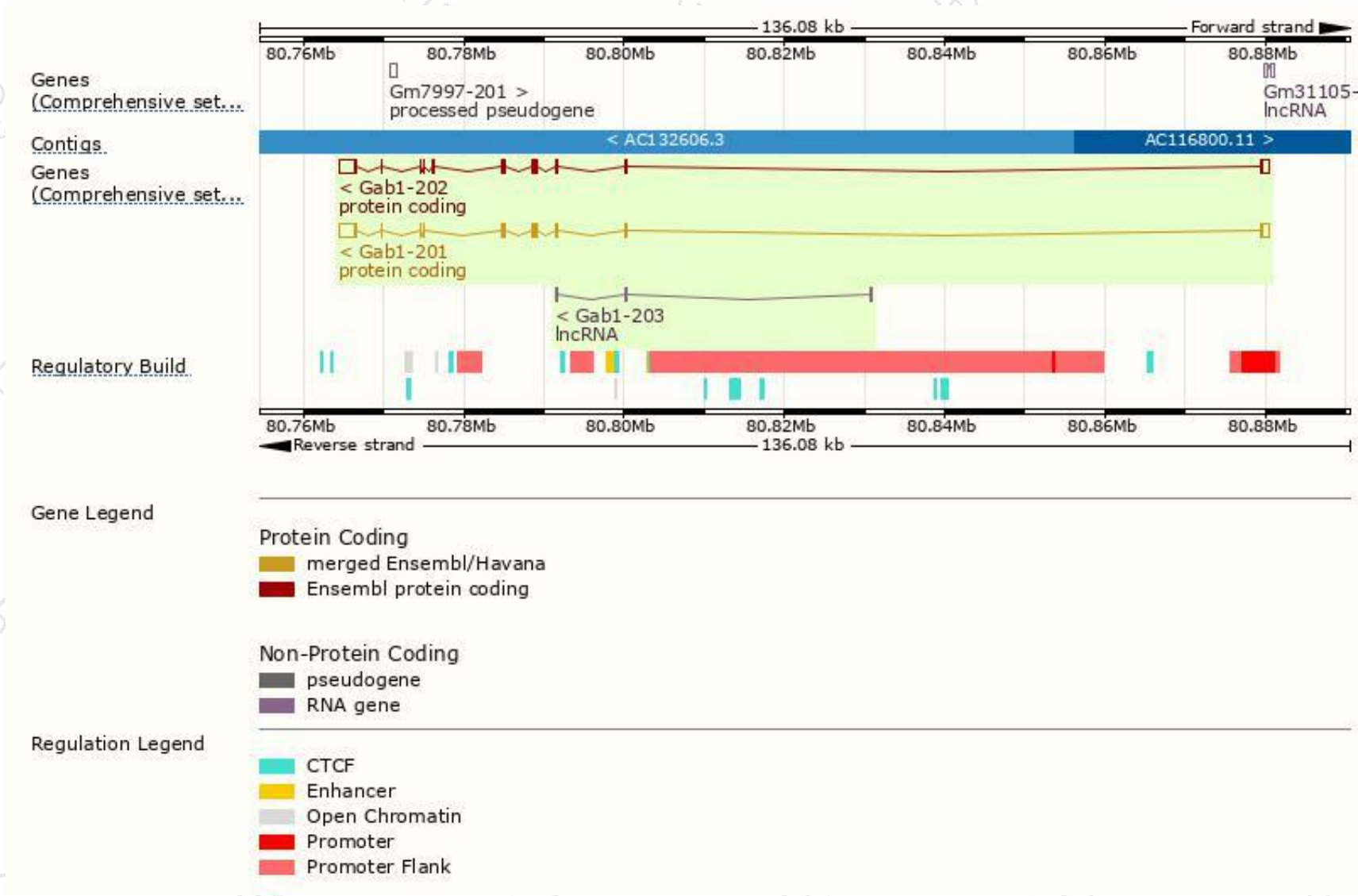
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gab1-202	ENSMUST00000210676.1	4985	725aa	Protein coding	CCDS85569	A0A1B0GS41	TSL:1 GENCODE basic APPRIS ALT1
Gab1-201	ENSMUST00000034150.9	4870	695aa	Protein coding	CCDS22443	Q505A4 Q9QYY0	TSL:1 GENCODE basic APPRIS P3
Gab1-203	ENSMUST00000211018.1	445	No protein	lncRNA	-	-	TSL:3

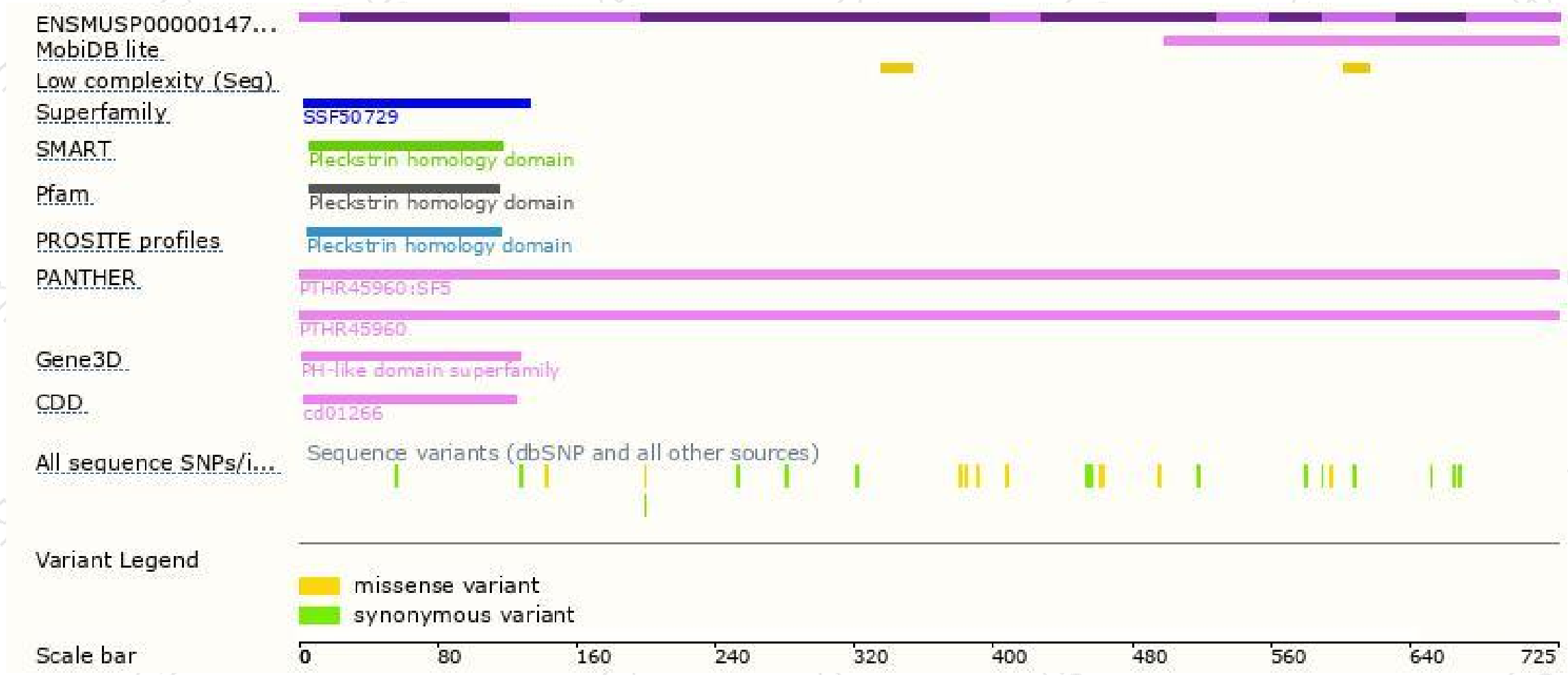
The strategy is based on the design of *Gab1-202* transcript,The transcription is shown below



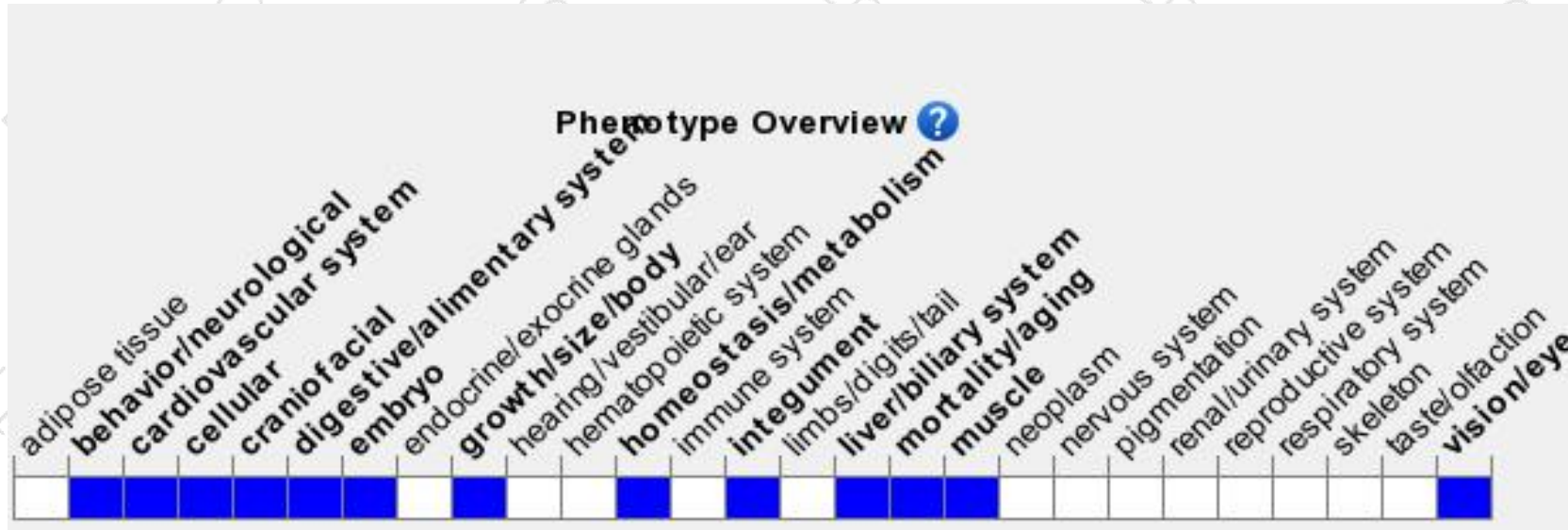
Genomic location distribution



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, Homozygotes for targeted null mutations exhibit developmental defects in the placenta, heart, eye, muscle, and skin, and die between embryonic day 13.5 and 18.5.

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

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