

Abcg8 Cas9-CKO Strategy

Designer:

Reviewer:

Design Date:

Yang Zeng

Jia Yu

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Project Overview

Project Name

Abcg8

Project type

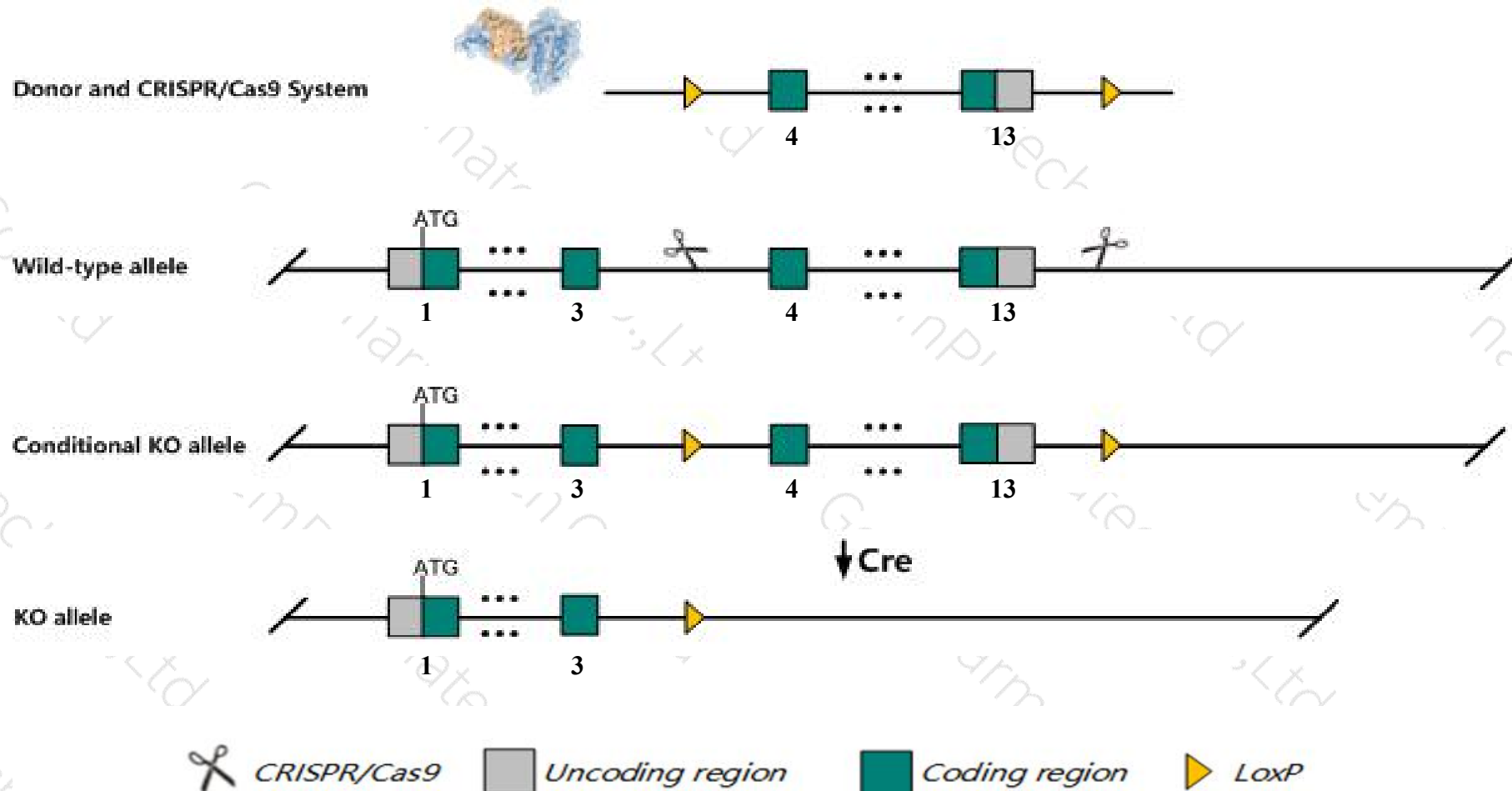
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Abcg8* gene. The schematic diagram is as follows:



Technical routes

- The *Abcg8* gene has 3 transcripts. According to the structure of *Abcg8* gene, exon4-exon13 of *Abcg8-201* (ENSMUST00000045714.14) transcript is recommended as the knockout region. The region contains 1697bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Abcg8* 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, Homozygous mutants fail to secrete cholesterol into bile and exhibit increased plasma and tissue plant sterol levels.
- The *Abcg8* gene is located on the Chr17. 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.

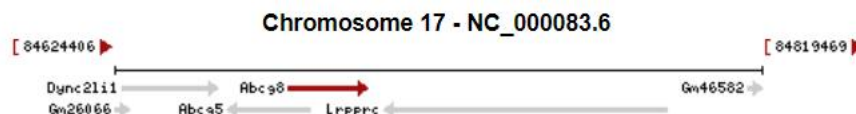
Gene information (NCBI)

Abcg8 ATP binding cassette subfamily G member 8 [*Mus musculus* (house mouse)]

Gene ID: 67470, updated on 10-Oct-2019

Summary

Official Symbol Abcg8 provided by [MGI](#)
Official Full Name ATP binding cassette subfamily G member 8 provided by [MGI](#)
Primary source [MGI:MGI:1914720](#)
See related [Ensembl:ENSMUSG00000024254](#)
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 A1114946; sterolin-2; 1300003C16Rik
Expression Biased expression in duodenum adult (RPKM 61.1), small intestine adult (RPKM 52.2) and 2 other tissues [See more](#)
Orthologs [human](#) [all](#)

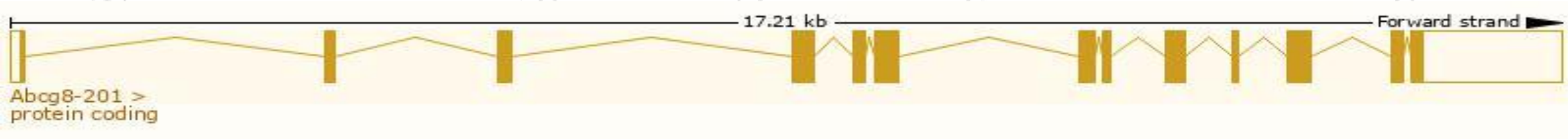


Transcript information (Ensembl)

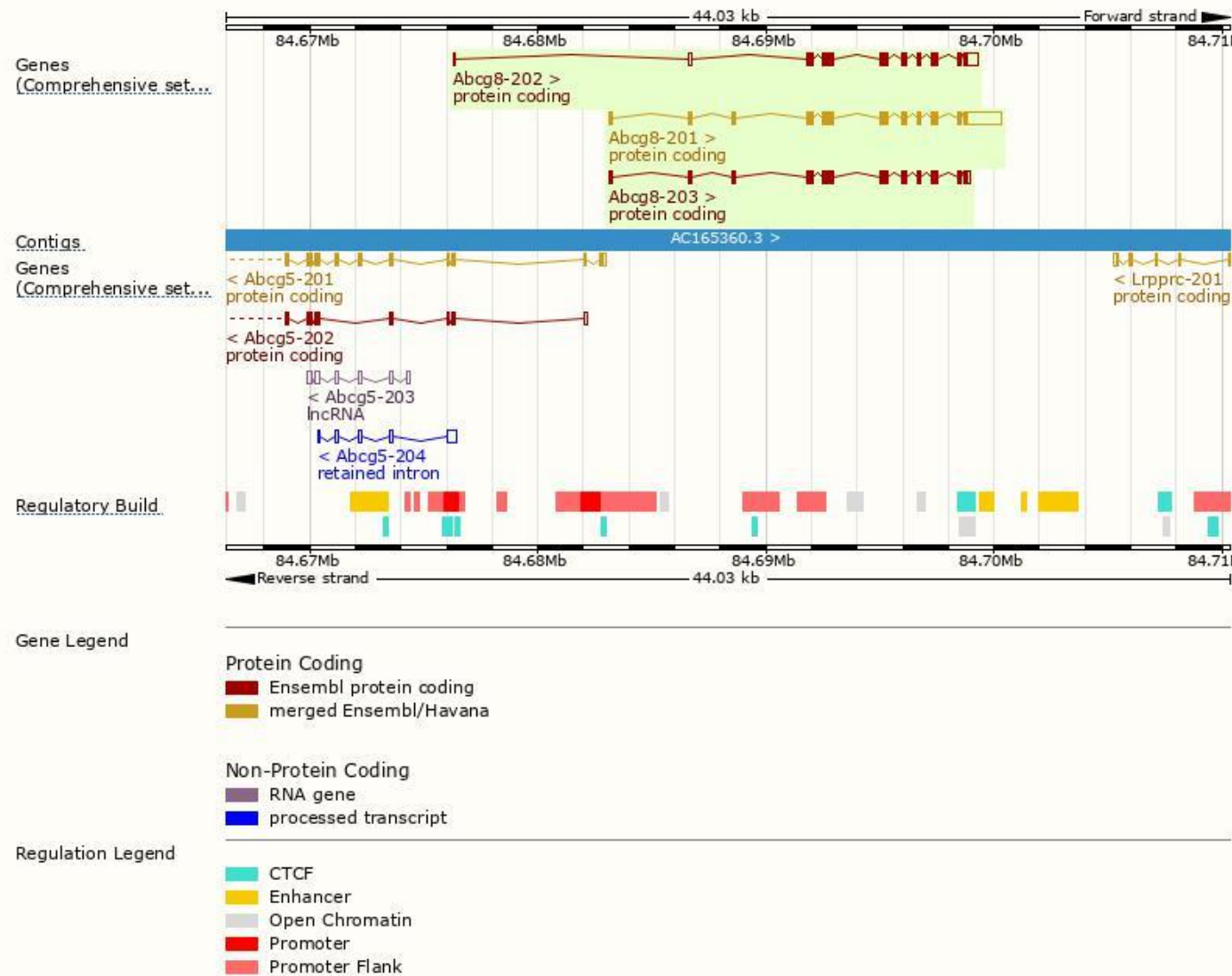
The gene has 3 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|-----------|---------------------------------------|------|-----------------------|----------------|---------------------------|------------------------|---------------------------------|
| Abcg8-201 | ENSMUST00000045714.14 | 3667 | 673aa | Protein coding | CCDS29002 | Q9DBM0 | TSL:1 GENCODE basic APPRIS P3 |
| Abcg8-202 | ENSMUST00000170725.7 | 2415 | 546aa | Protein coding | CCDS70849 | E9Q0P2 | TSL:1 GENCODE basic |
| Abcg8-203 | ENSMUST00000171915.1 | 2284 | 672aa | Protein coding | CCDS84337 | Q7TSR6 | TSL:1 GENCODE basic APPRIS ALT2 |

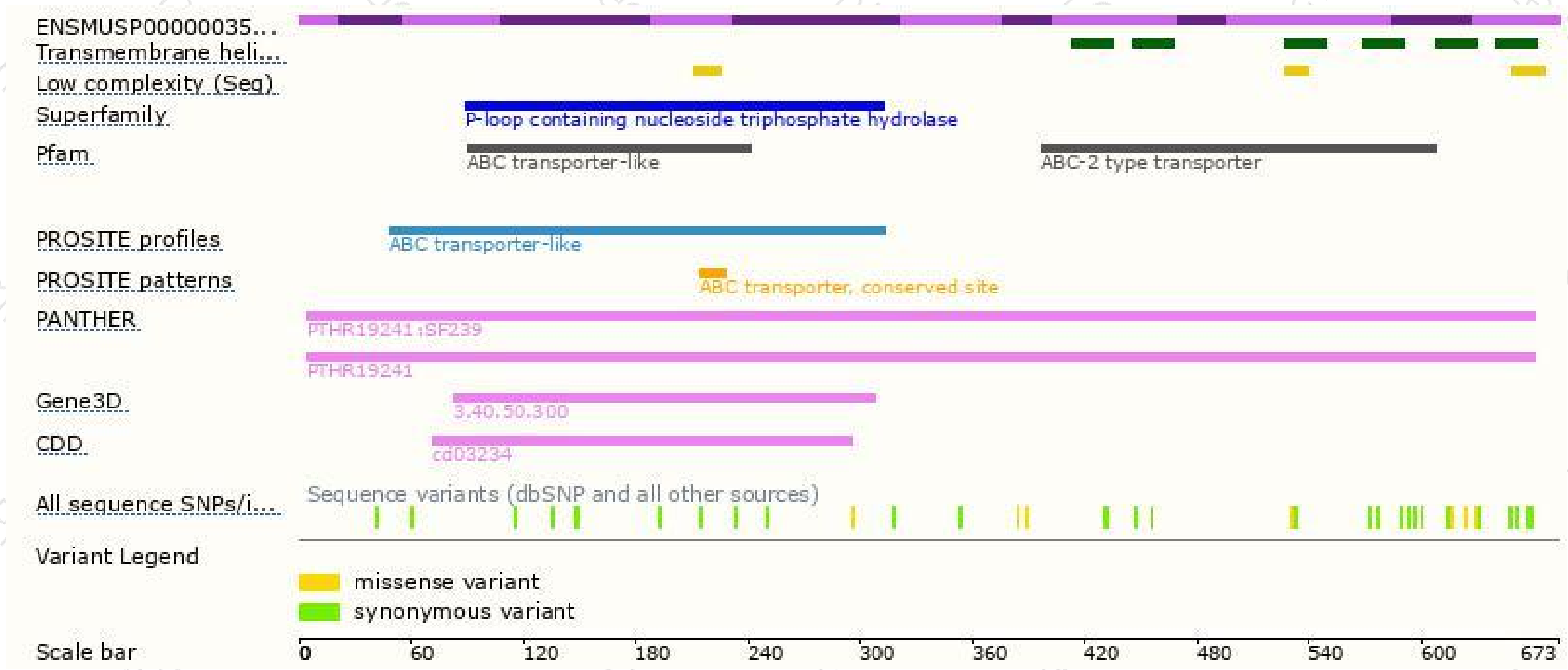
The strategy is based on the design of *Abcg8-201* transcript,The transcription is shown below



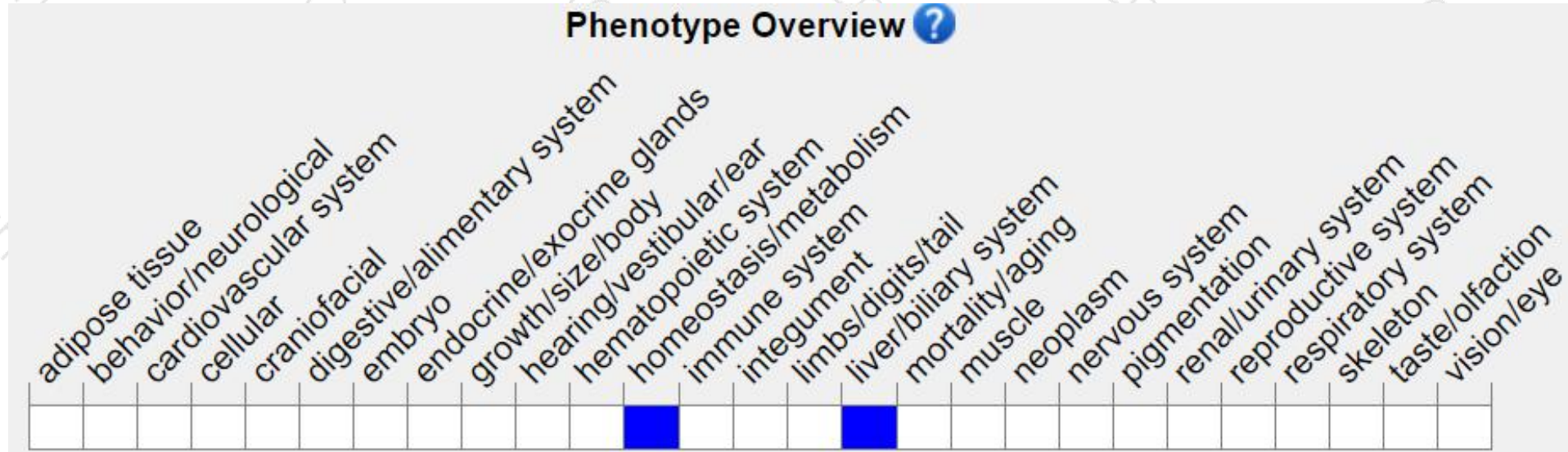
Genomic location distribution



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, Homozygous mutants fail to secrete cholesterol into bile and exhibit increased plasma and tissue plant sterol levels.

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

Tel: 400-9660890

