

Hnf1b Cas9-CKO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

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Project Overview

Project Name

Hnf1b

Project type

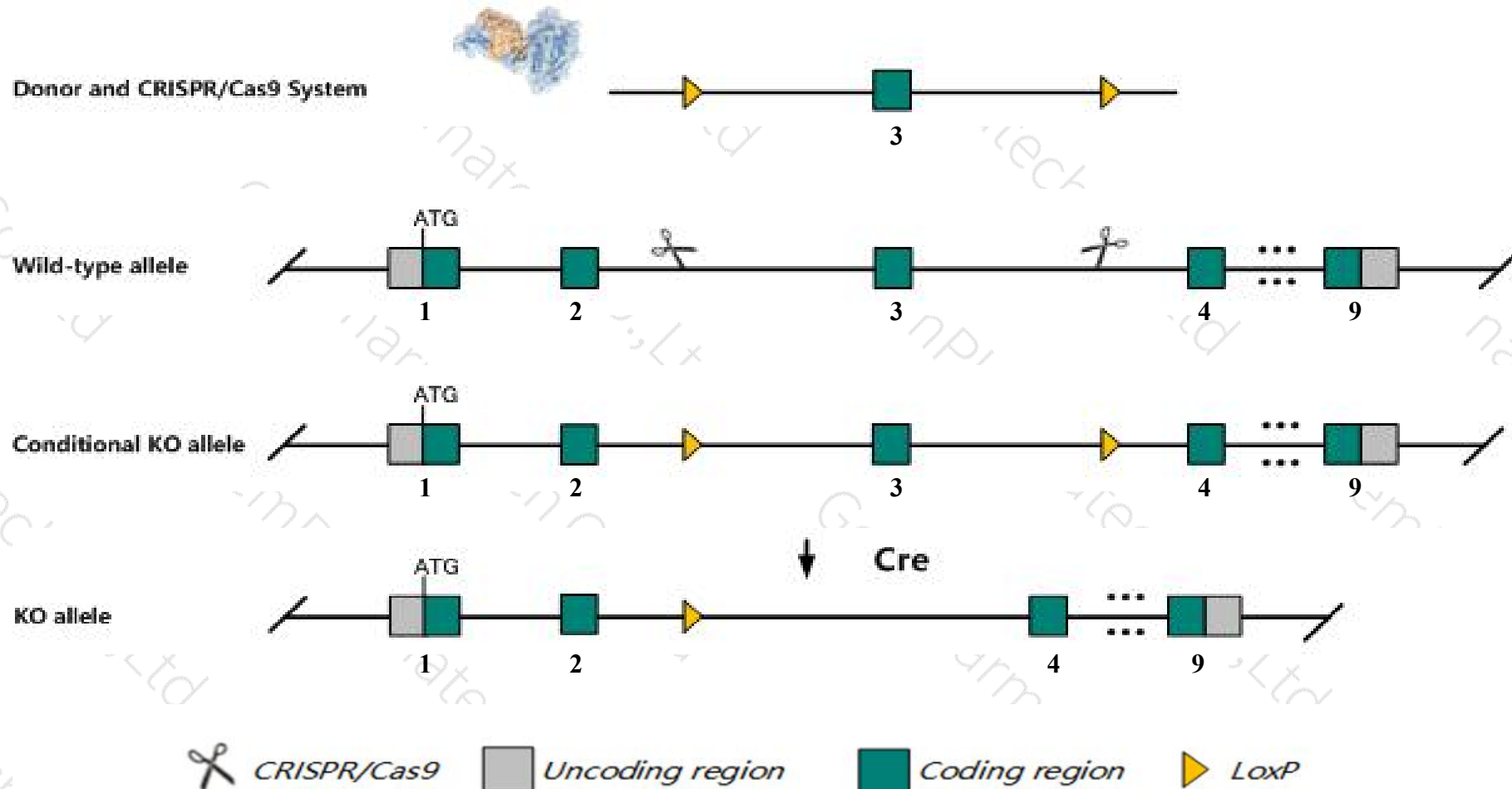
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Hnflb* gene has 5 transcripts. According to the structure of *Hnflb* gene, exon3 of *Hnflb-201* (ENSMUST00000021016.9) transcript is recommended as the knockout region. The region contains 265bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hnflb* 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 reduced size, impaired development of extraembryonic membranes, lack of visceral or parietal endoderm, and early post-implantation lethality.
- The *Hnflb* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Hnf1b HNF1 homeobox B [Mus musculus (house mouse)]

Gene ID: 21410, updated on 19-Feb-2019

Summary



Official Symbol	Hnf1b provided by MGI
Official Full Name	HNF1 homeobox B provided by MGI
Primary source	MGI:MGI:98505
See related	Ensembl:ENSMUSG00000020679
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	HNF-1-beta, HNF-1B, HNF-1Beta, Hnf1beta, LFB3, Tcf-2, Tcf2, vHNF1
Expression	Biased expression in kidney adult (RPKM 51.9), colon adult (RPKM 15.8) and 11 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

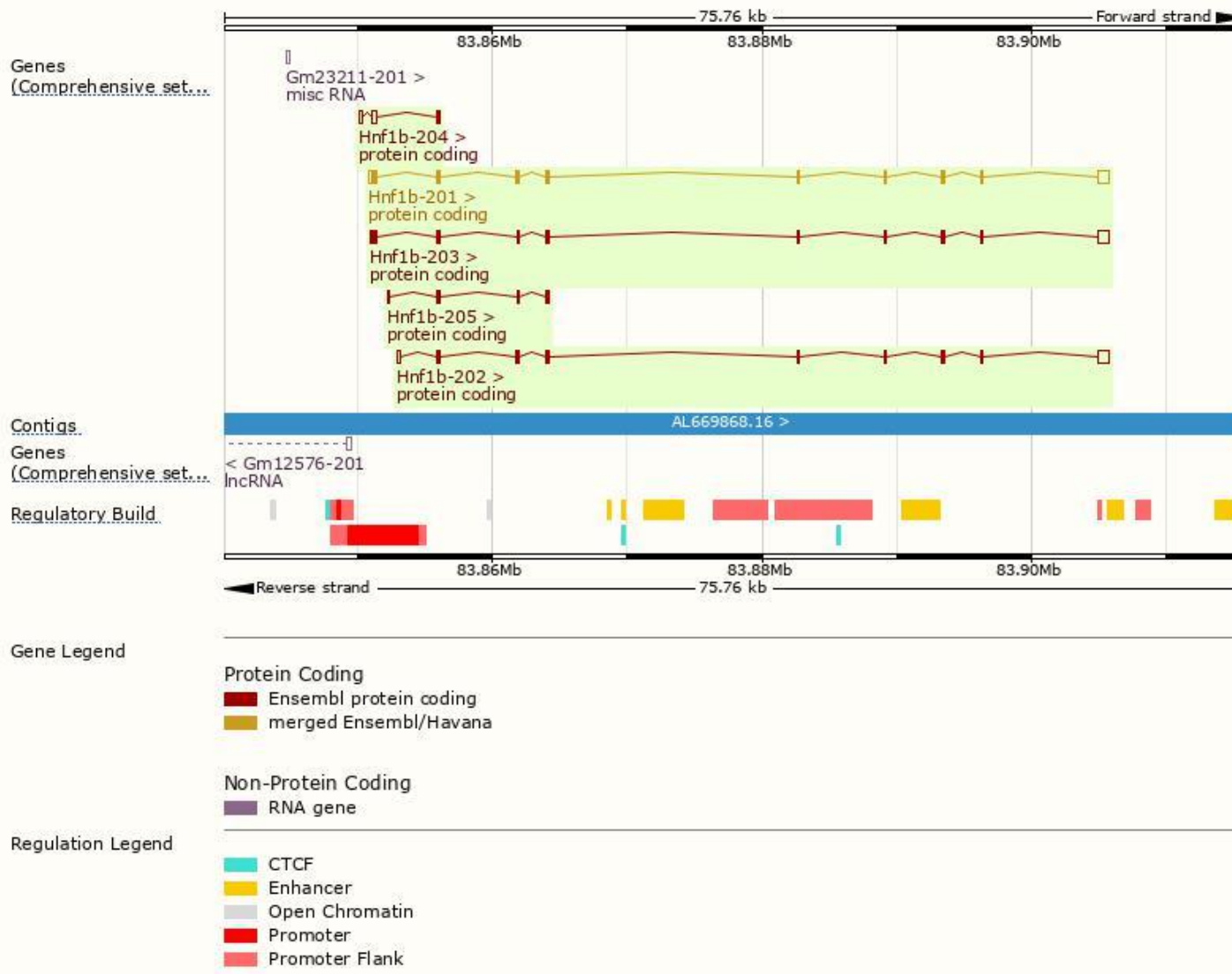
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hnf1b-201	ENSMUST00000021016.9	2759	558aa	Protein coding	CCDS25179	P27889	TSL:1 GENCODE basic APPRIS P3
Hnf1b-203	ENSMUST00000108114.8	2659	532aa	Protein coding	CCDS70271	P27889	TSL:1 GENCODE basic APPRIS ALT1
Hnf1b-202	ENSMUST00000108113.2	2376	435aa	Protein coding	CCDS70272	P27889	TSL:1 GENCODE basic
Hnf1b-204	ENSMUST00000135975.2	763	56aa	Protein coding	-	A0A0A0MQH4	CDS 3' incomplete TSL:3
Hnf1b-205	ENSMUST00000146786.7	671	199aa	Protein coding	-	F6XBL0	CDS 3' incomplete TSL:3

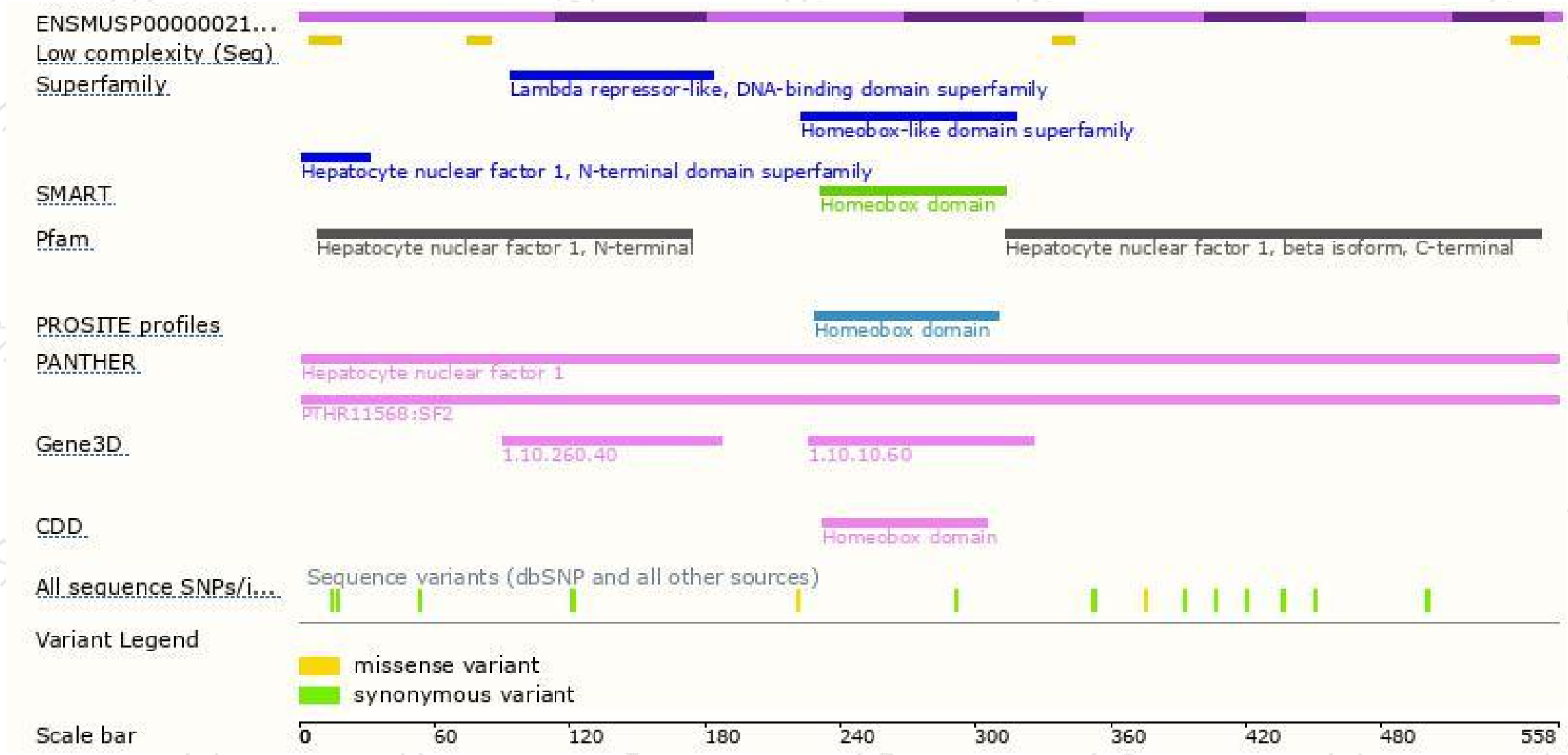
The strategy is based on the design of *Hnf1b-201* transcript,The transcription is shown below



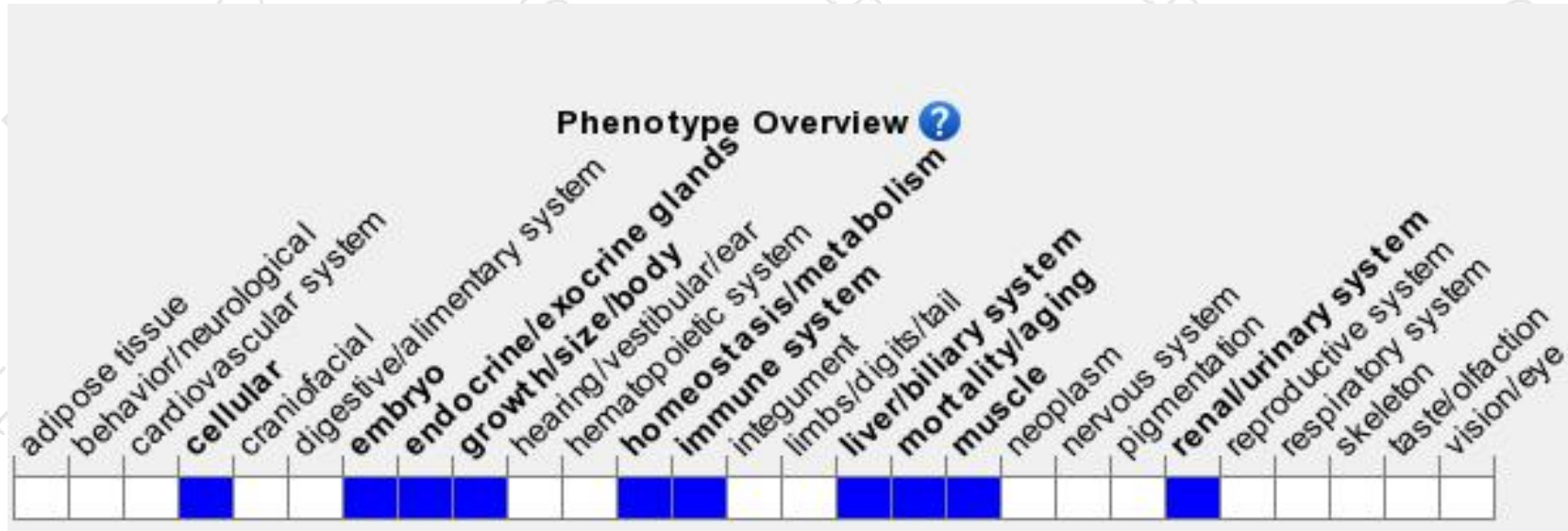
Genomic location distribution



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, Homozygotes for targeted null mutations exhibit reduced size, impaired development of extraembryonic membranes, lack of visceral or parietal endoderm, and early post-implantation lethality.

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

Tel: 400-9660890

