

***Muc5b* Cas9-CKO Strategy**

Designer: Yanhua Shen

Project Overview

Project Name

Muc5b

Project type

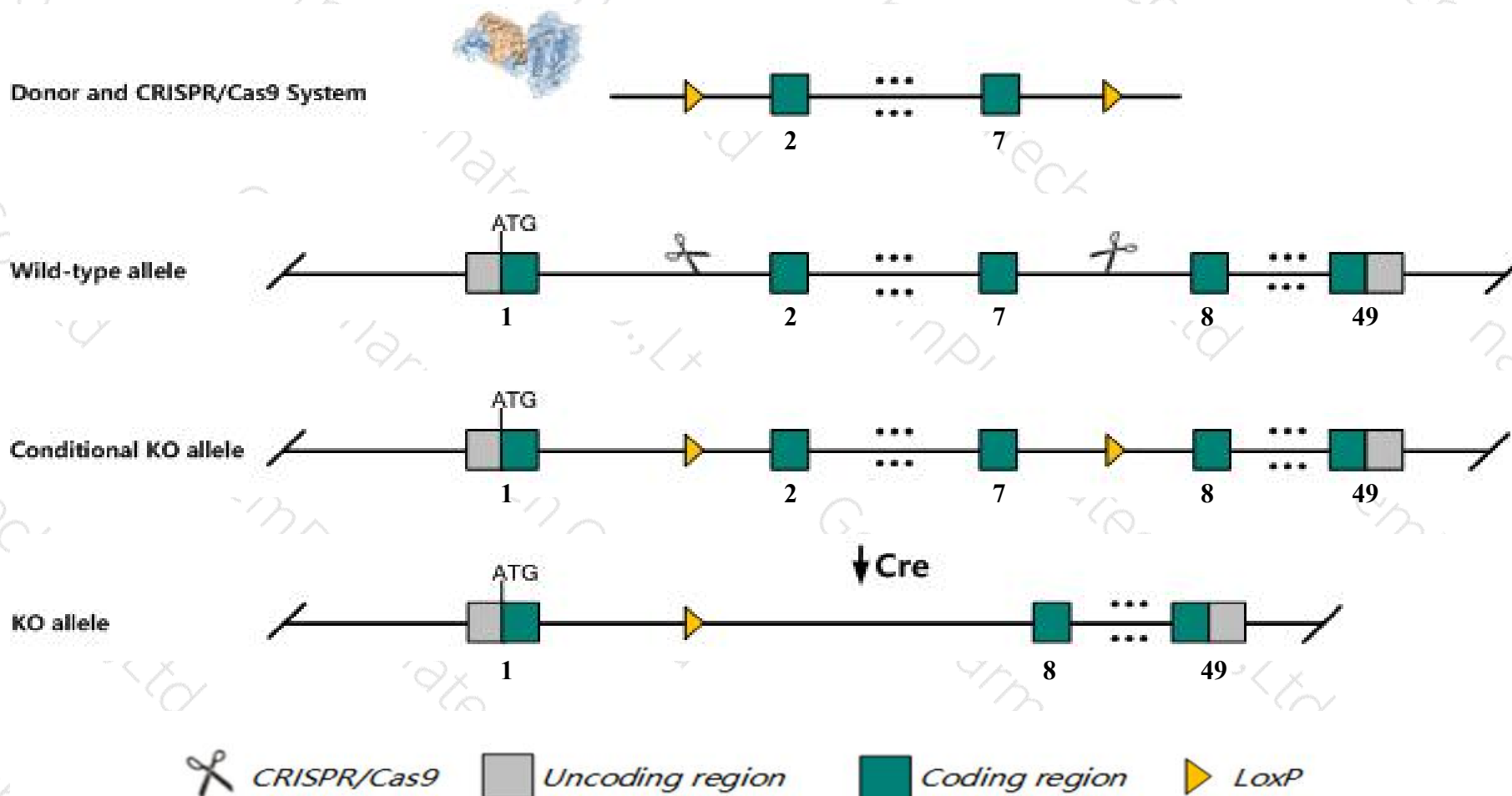
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Muc5b* gene. The schematic diagram is as follows:



Technical routes

- The *Muc5b* gene has 1 transcript. According to the structure of *Muc5b* gene, exon2-exon7 of *Muc5b-201* (ENSMUST00000165147.2) transcript is recommended as the knockout region. The region contains 716bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Muc5b* 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, Mice homozygous for a knock-out allele accumulate materials in the upper and lower airways leading to chronic infection and inflammation that does not resolve and results in premature death. Macrophage function is impaired.
- The *Muc5b* gene is located on the Chr7. 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)

Muc5b mucin 5, subtype B, tracheobronchial [Mus musculus (house mouse)]

Gene ID: 74180, updated on 31-Jan-2019

Summary



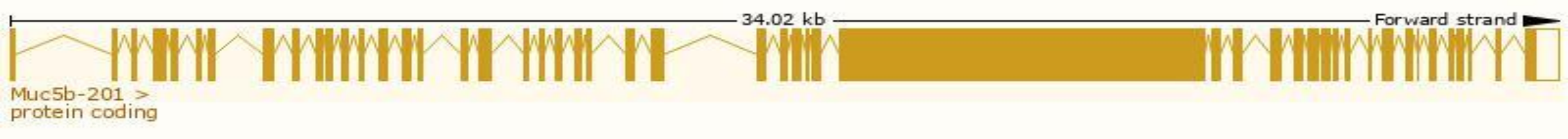
Official Symbol	Muc5b provided by MGI
Official Full Name	mucin 5, subtype B, tracheobronchial provided by MGI
Primary source	MGI:MGI:1921430
See related	Ensembl:ENSMUSG00000066108
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2300002I04Rik, A130042M24, AV085033, MUC5, MUC9, mucin 5b
Expression	Biased expression in genital fat pad adult (RPKM 37.9) and lung adult (RPKM 11.8) See more
Orthologs	human all

Transcript information (Ensembl)

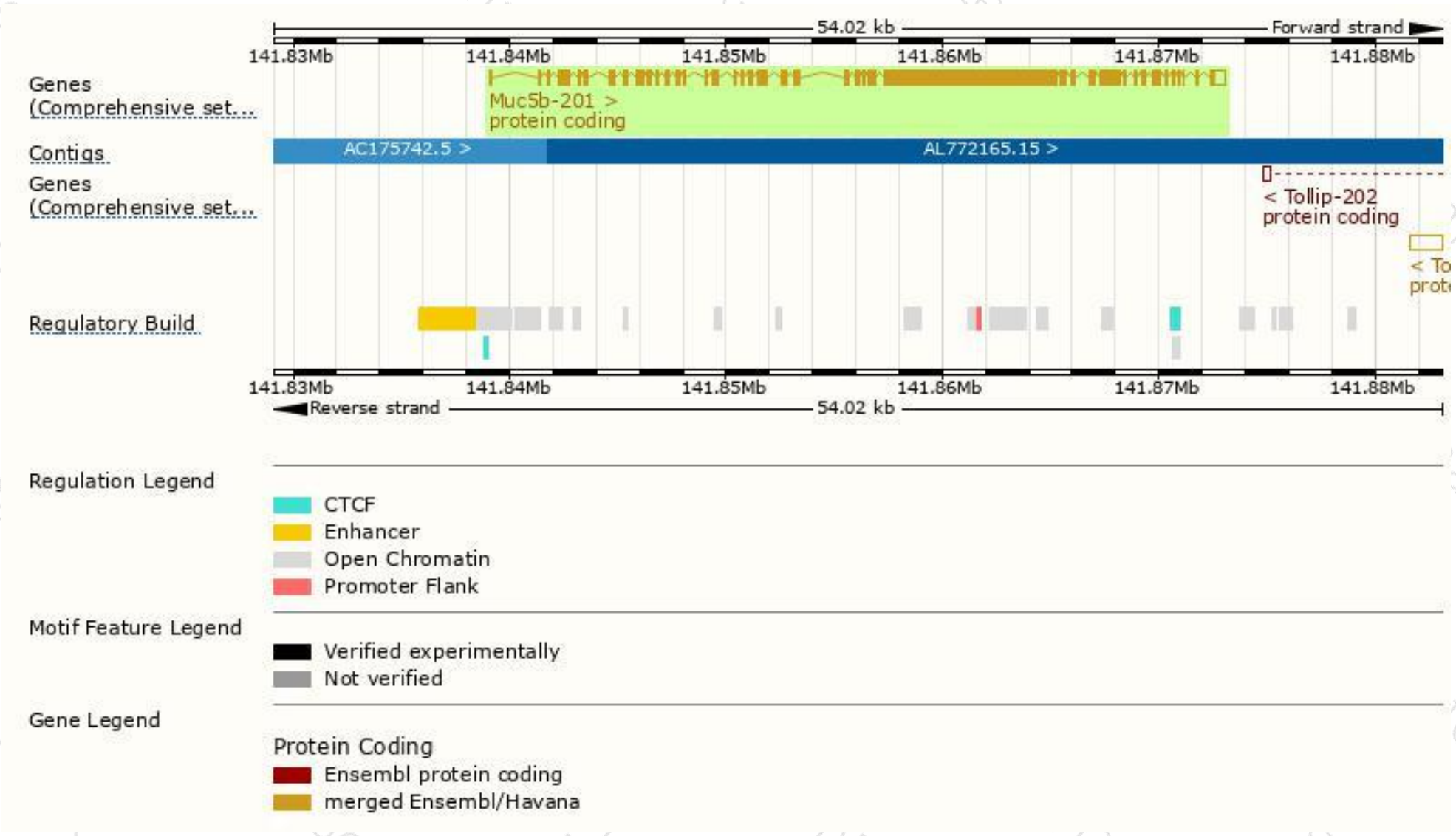
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Muc5b-201	ENSMUST00000165147.2	14964	4800aa	Protein coding	CCDS52448	E9Q5I3	TSL:5 GENCODE basic APPRIS P1

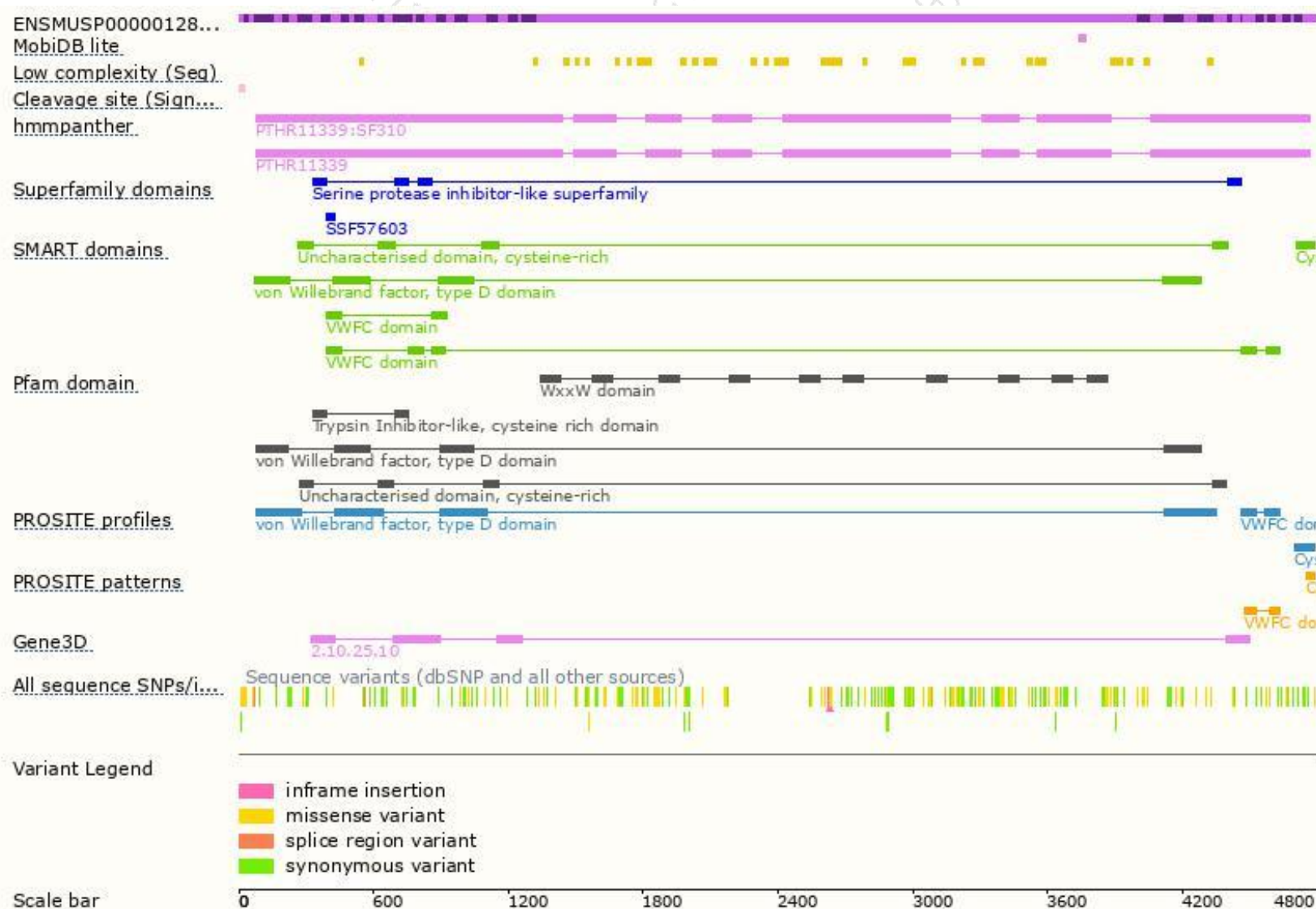
The strategy is based on the design of *Muc5b-201* transcript, The transcription is shown below



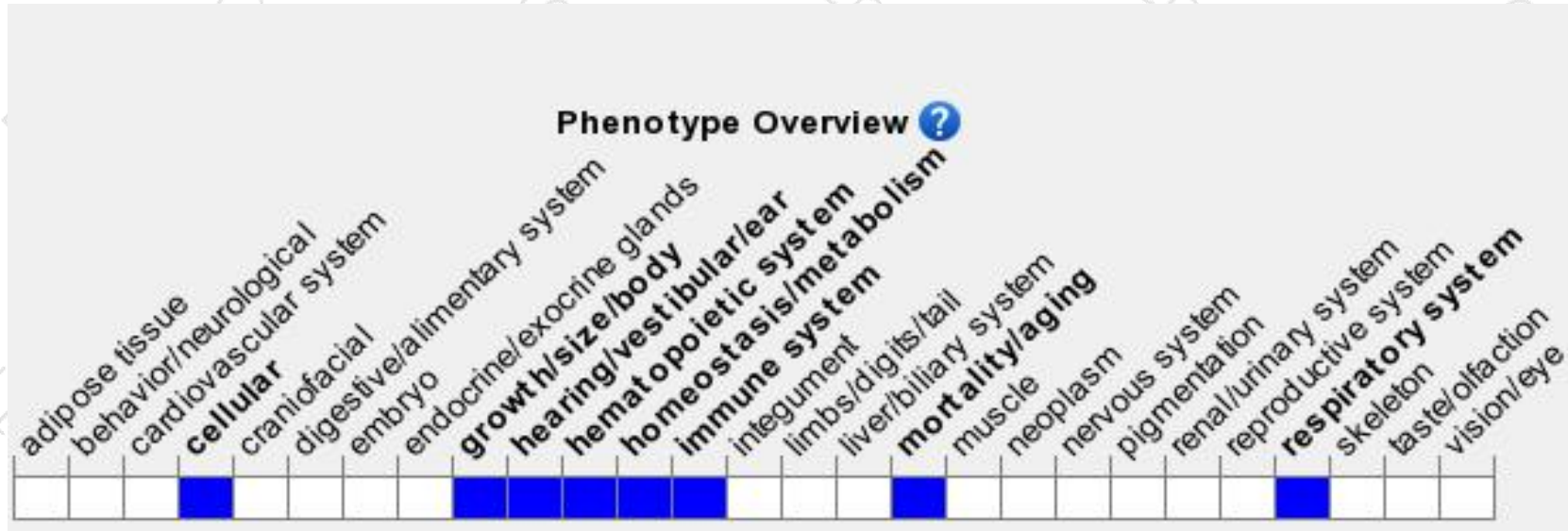
Genomic location distribution



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, Mice homozygous for a knock-out allele accumulate materials in the upper and lower airways leading to chronic infection and inflammation that does not resolve and results in premature death. Macrophage function is impaired.

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

Tel: 400-9660890

