Zc3h4 Cas9-CKO *Strategy*

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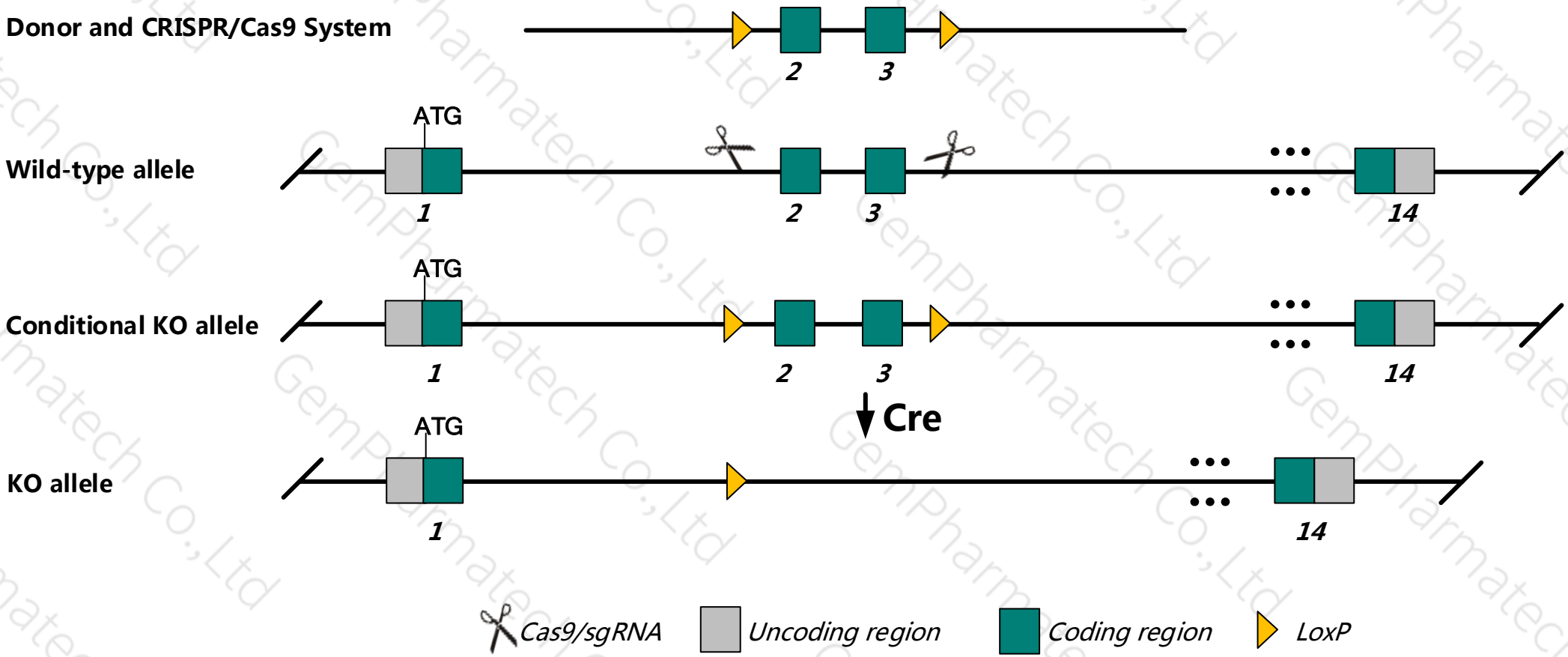
Project Overview

Project Name	***Zc3h4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zc3h4* gene. The schematic diagram is as follows:



Technical routes

- The *Zc3h4* gene has 4 transcripts.According to the structure of *Zc3h4* gene, exon2-exon3 of *Zc3h4*-201 (ENSMUST00000098789.4) transcript is recommended as the knockout region.The region contains 331bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Zc3h4* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues or cell types.

Notice

- The KO region contains functional region of the *Gm45510* gene.Knockout the region may affect the function of *Gm45510* gene.
- The *Zc3h4* 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 the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

Zc3h4 zinc finger CCCH-type containing 4 [*Mus musculus* (house mouse)]

Gene ID: 330474, updated on 8-Dec-2018

Summary

Official Symbol	Zc3h4 provided by MGI
Official Full Name	zinc finger CCCH-type containing 4 provided by MGI
Primary source	MGI:MGI:2682314
See related	Ensembl:ENSMUSG00000059273
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	Bwq1; Gm768; Kiaa1064-hp
Expression	Ubiquitous expression in thymus adult (RPKM 20.9), spleen adult (RPKM 16.4) and 28 other tissues See more
Orthologs	human all

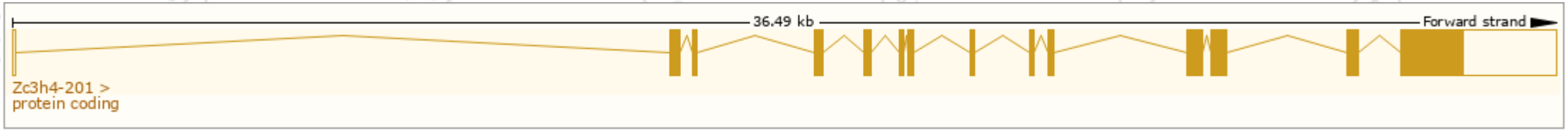
Transcript information（Ensembl）

The gene has 4 transcripts, and all transcripts are shown below:

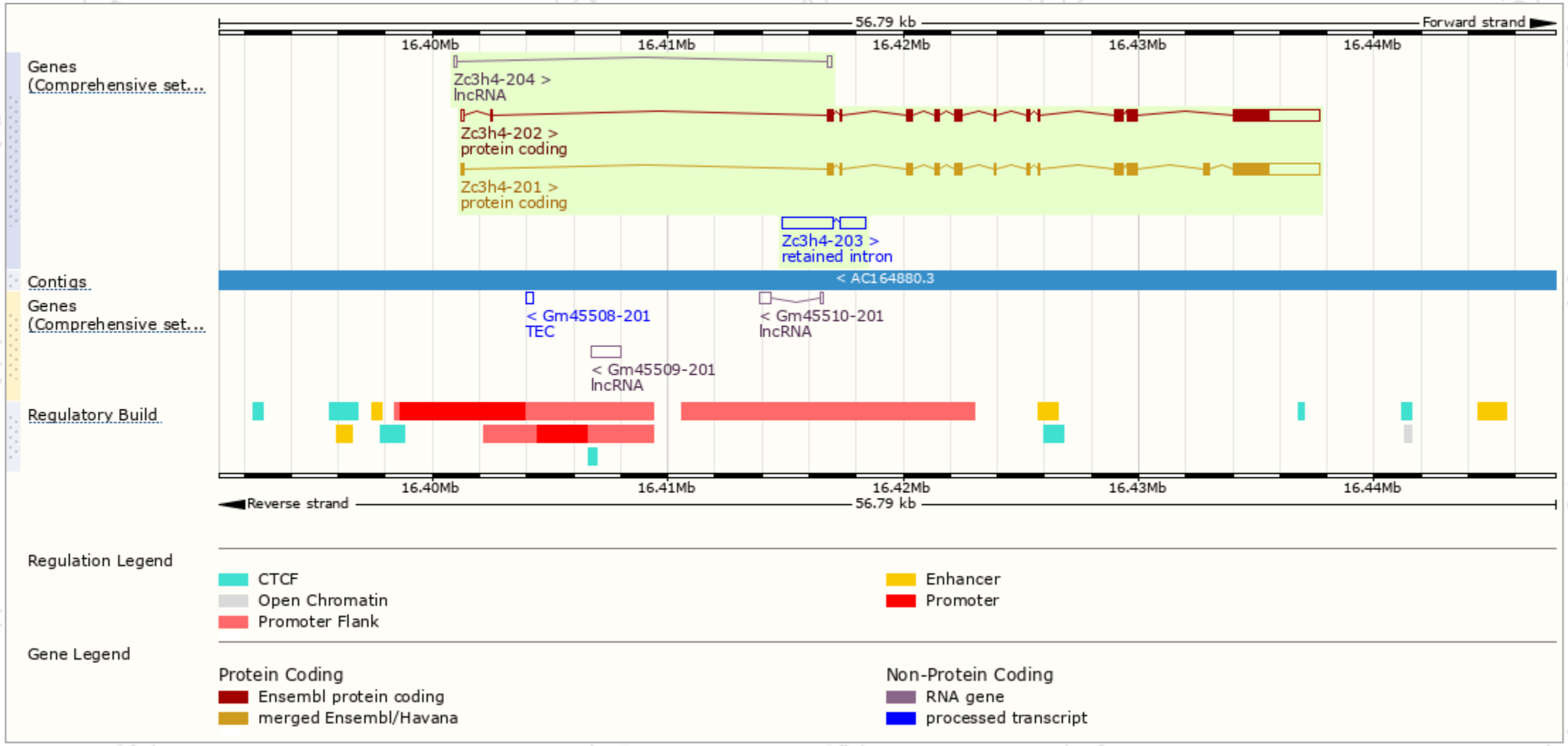
Show/hide columns (1 hidden) Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zc3h4-201	ENSMUST00000098789.4	6039	1255aa	Protein coding	CCDS52040	E9Q8K8	TSL:5 GENCODE basic APPRIS P2
Zc3h4-202	ENSMUST00000209289.1	5853	1180aa	Protein coding	-	A0A1B0GRU3	TSL:5 GENCODE basic APPRIS ALT2
Zc3h4-203	ENSMUST00000209374.1	3244	No protein	Retained intron	-	-	TSL:1
Zc3h4-204	ENSMUST00000214735.1	333	No protein	lncRNA	-	-	TSL:3

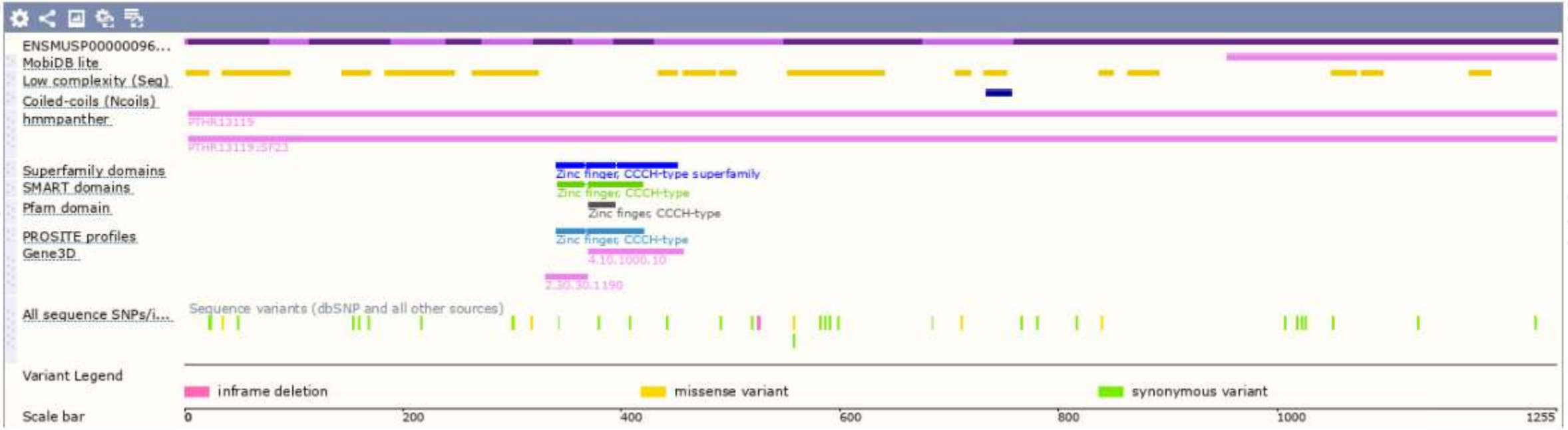
The strategy is based on the design of *Zc3h4*-201 transcript,The transcription is shown below



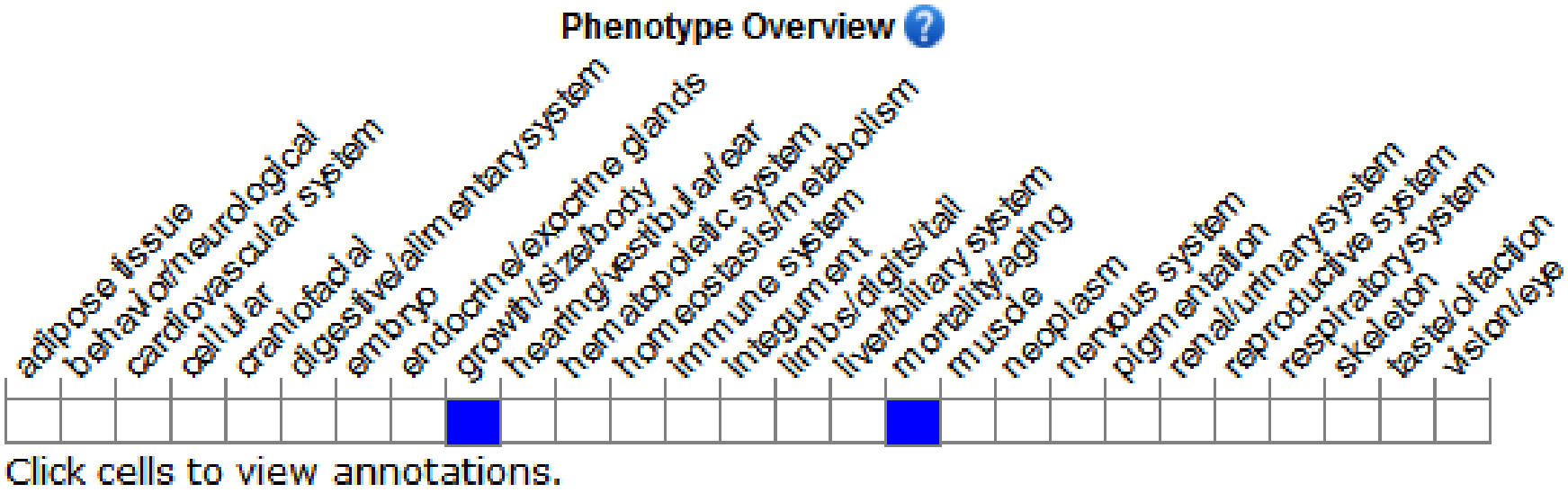
Genomic location distribution



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/) .

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

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