Erbb2 Cas9-CKO Strategy

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Project Overview

Project Name	***Erbb2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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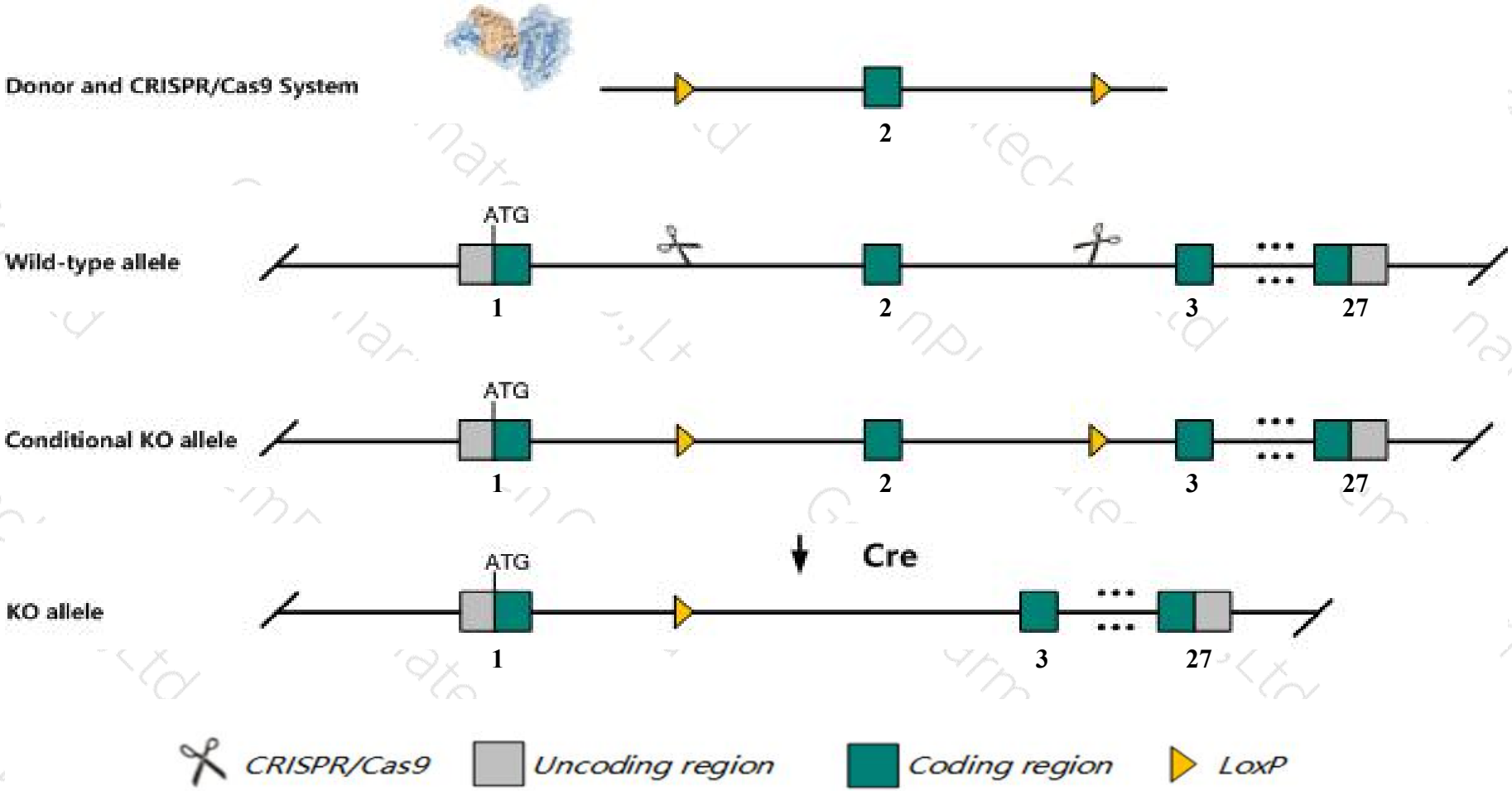
This model will use CRISPR/Cas9 technology to edit the *Erbb2* gene. The schematic diagram is as follows:



Technical routes

- The *Erbb2* gene has 3 transcripts. According to the structure of *Erbb2* gene, exon2 of *Erbb2-201* (ENSMUST00000058295.5) transcript is recommended as the knockout region.The region contains 152bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Erbb2* 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.

Notice

- According to the existing MGI data,Homozygotes for targeted null mutations exhibit degeneration of motor nerves, an absence of Schwann cells, impairment of junctional folds at the neuromuscular synapse, and cardiac defects that results in lethality by embryonic day 10.5.

- The *Erbb2* 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）

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Erbb2 erb-b2 receptor tyrosine kinase 2 [Mus musculus (house mouse)]

Gene ID: 13866, updated on 12-Mar-2019

Summary

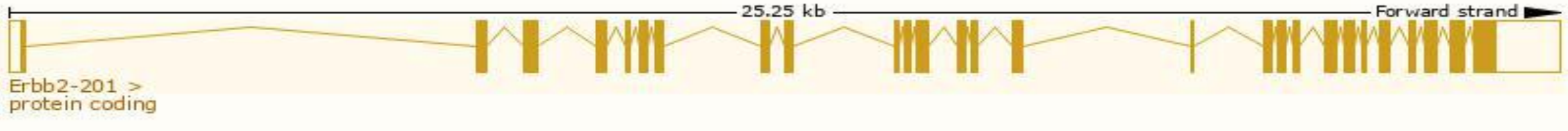
Official Symbol	Erbb2 provided by MGI
Official Full Name	erb-b2 receptor tyrosine kinase 2 provided by MGI
Primary source	MGI:MGI:95410
See related	Ensembl:ENSMUSG00000062312
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Erbb-2, HER-2, HER2, Neu, c-erbB2, c-neu, l11Jus8, mKIAA3023
Expression	Broad expression in colon adult (RPKM 50.3), duodenum adult (RPKM 35.2) and 17 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

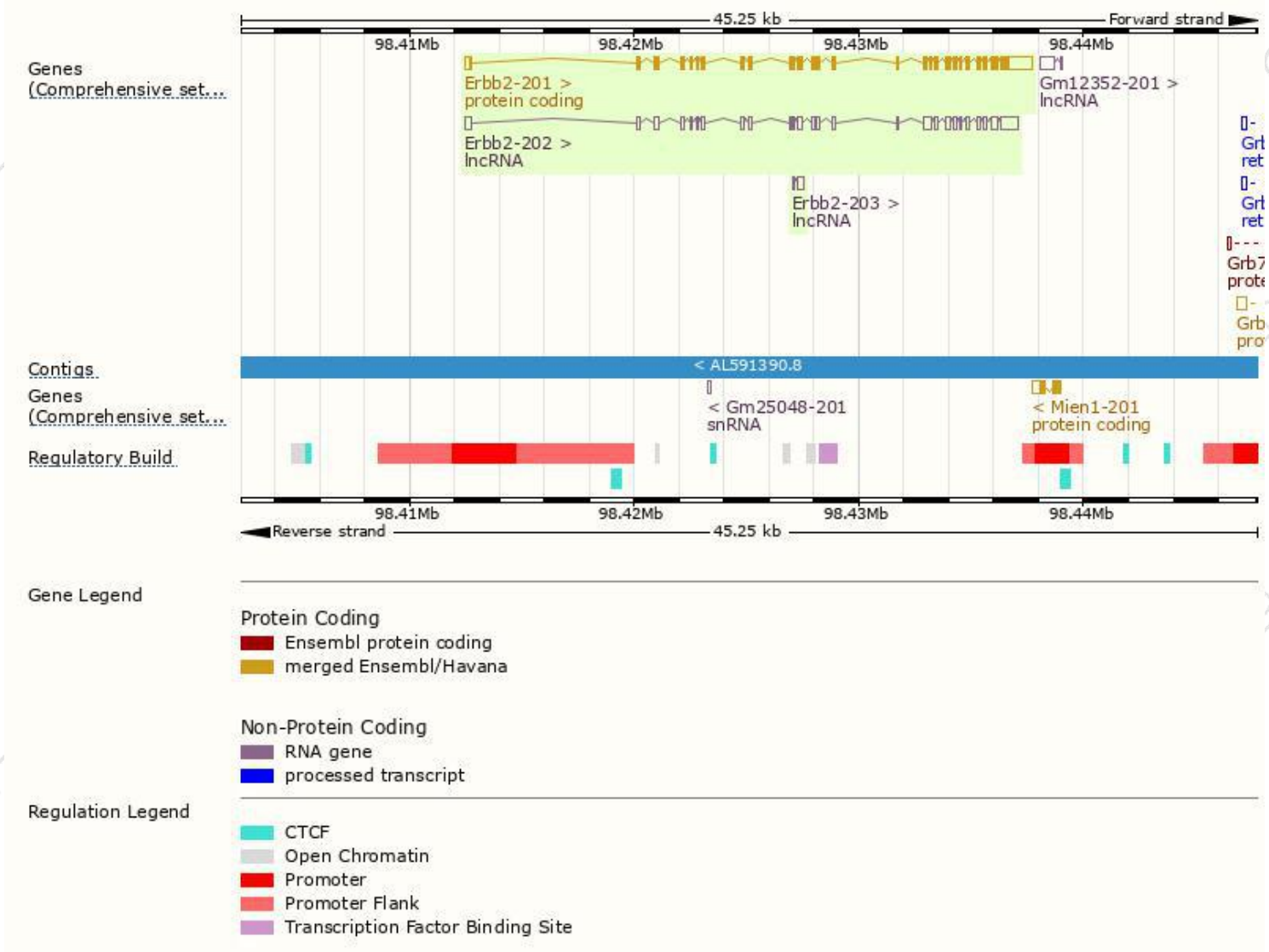
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Erbb2-201	ENSMUST00000058295.5	5012	1256aa	Protein coding	CCDS25349	P70424	TSL:1 GENCODE basic APPRIS P1
Erbb2-202	ENSMUST00000136032.1	4431	No protein	Processed transcript	-	-	TSL:2
Erbb2-203	ENSMUST00000138066.1	388	No protein	Processed transcript	-	-	TSL:3

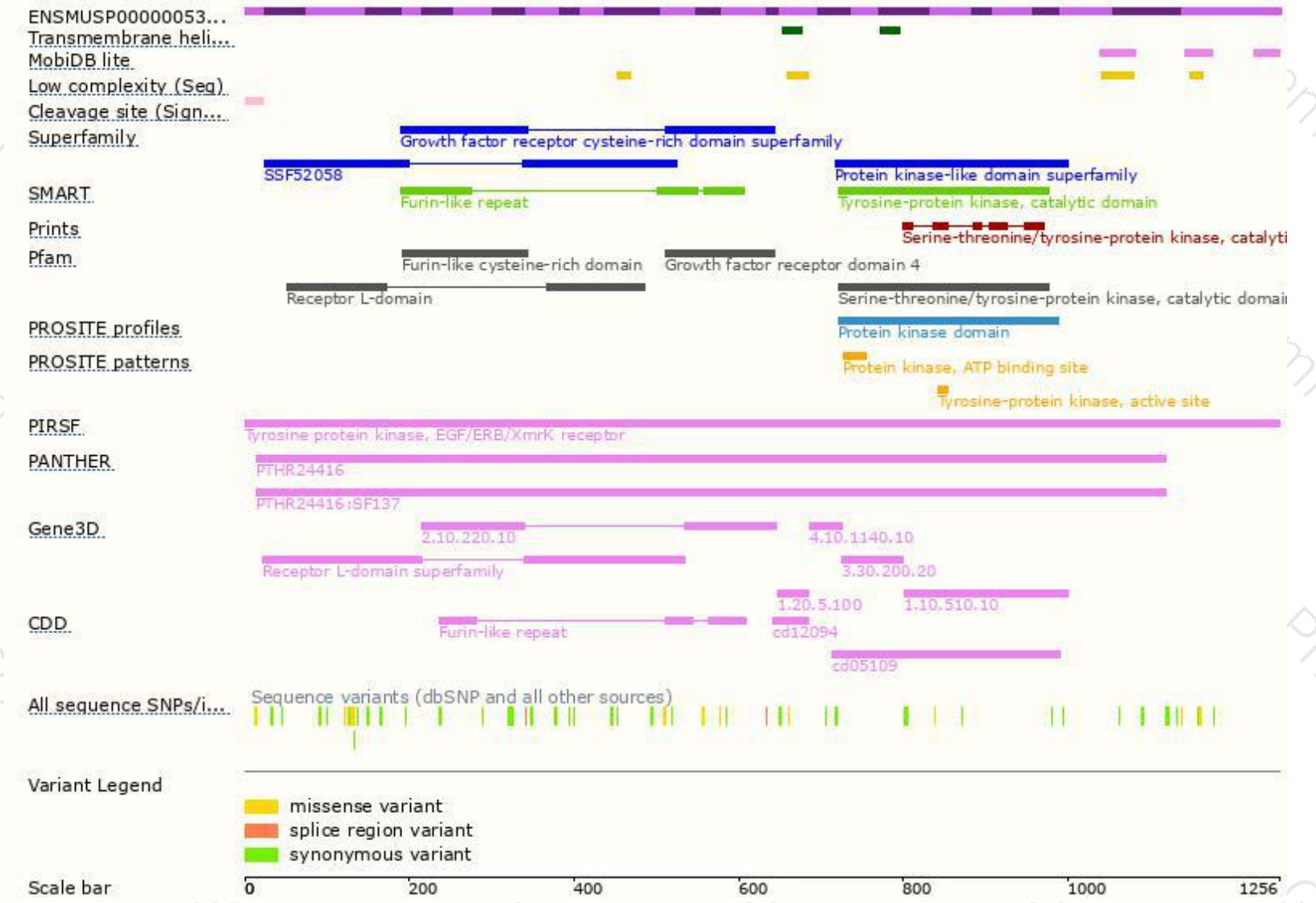
The strategy is based on the design of *Erbb2-201* transcript,The transcription is shown below



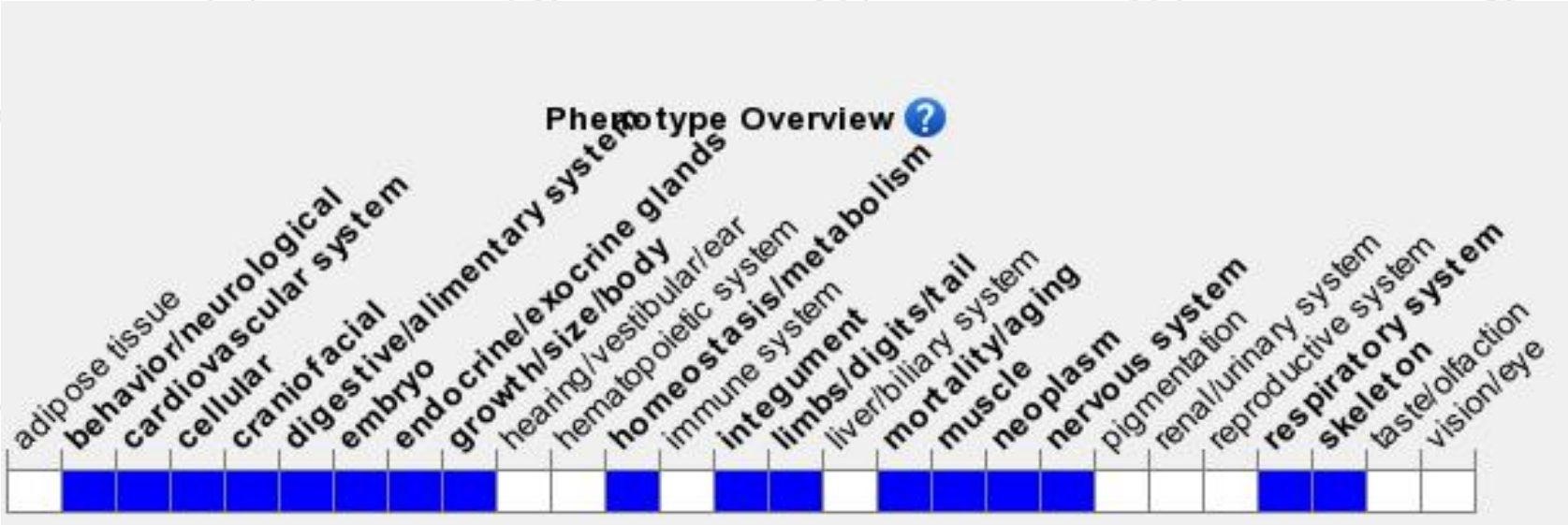
Genomic location distribution



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/).

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

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