

***ErbB2* Cas9-KO Strategy**

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Project Overview

Project Name

ErbB2

Project type

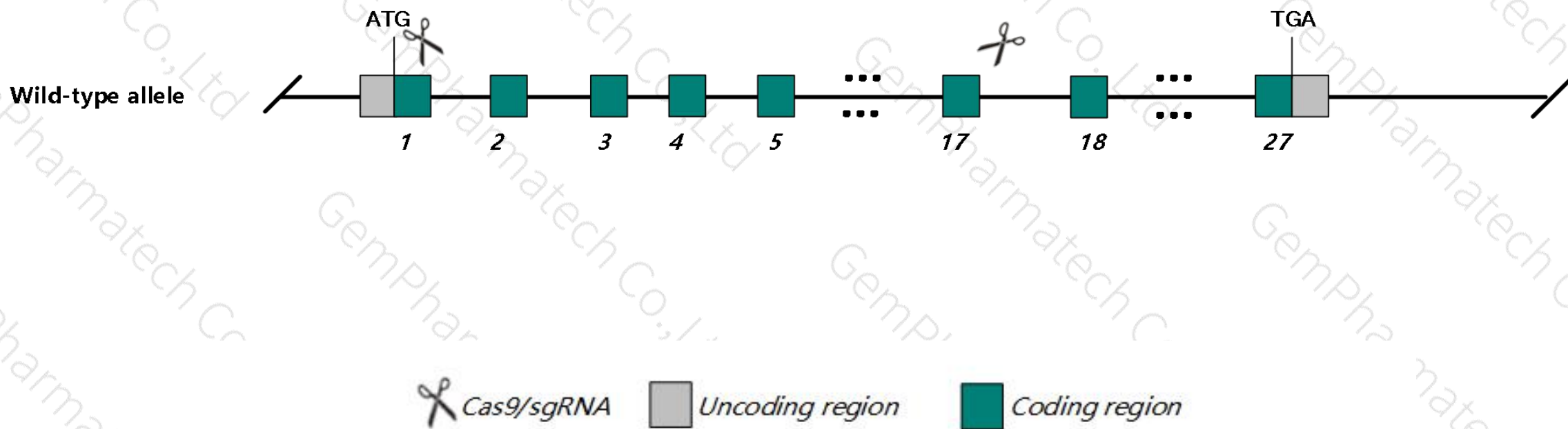
Cas9-KO

Strain background

BALB/c

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *ErbB2* gene. The schematic diagram is as follows:



- The *ErbB2* gene has 3 transcripts. According to the structure of *ErbB2* gene, exon1-exon17 of MGP_BALBcJ_T0032068.1 transcript is recommended as the knockout region.
- In this project we use CRISPR/Cas9 technology to modify *ErbB2* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of BALB/c 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 BALB/c mice.

- 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

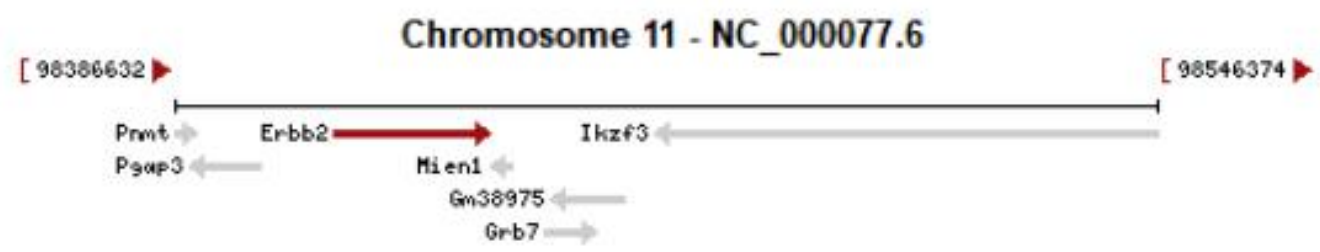
Gene information (NCBI)

ErbB2 erb-b2 receptor tyrosine kinase 2 [*Mus musculus* (house mouse)]

Gene ID: 13866, updated on 9-Sep-2018

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 Vega:OTTMUSG00000002711
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Neu; HER2; HER-2; c-neu; ErbB-2; c-erbB2; I11Jus8; mKIAA3023
Expression	Broad expression in colon adult (RPKM 50.3), duodenum adult (RPKM 35.2) and 17 other tissues See more
Orthologs	human all

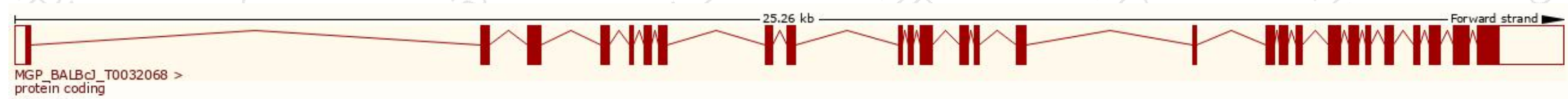


Transcript information (Ensembl)

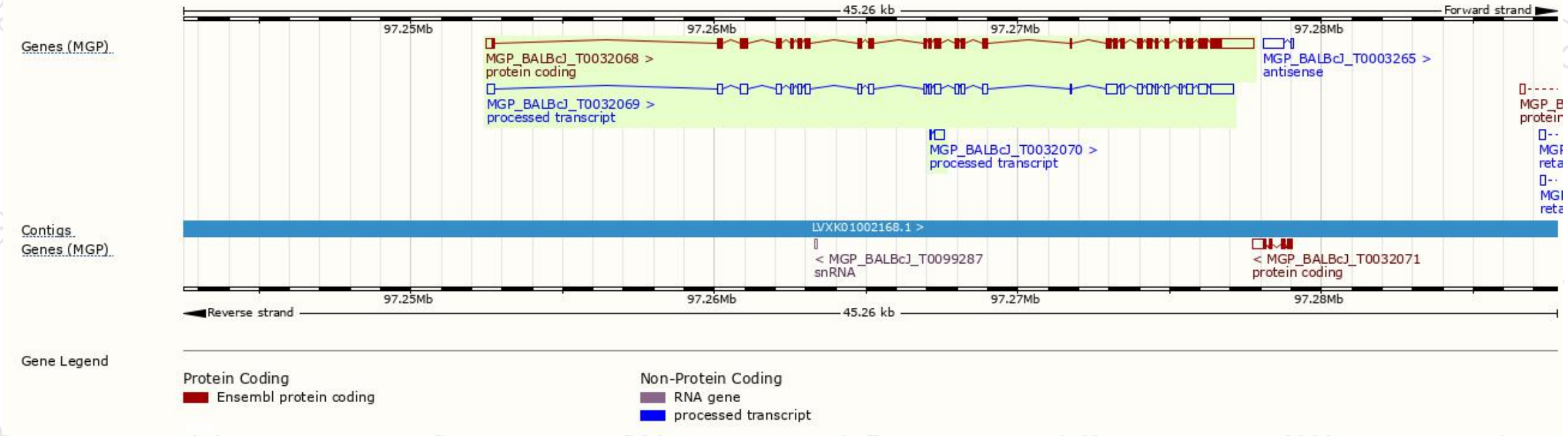
The gene has 3 transcripts,all transcripts are shown below:

Show/hide columns (1 hidden)					Filter		
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
-	MGP_BALBcJ_T0032068.1	5012	1256aa	<div><div></div>Protein coding</div>	CCDS25349	P70424	-
-	MGP_BALBcJ_T0032069.1	4431	No protein	<div><div></div>Processed transcript</div>	-	-	-
-	MGP_BALBcJ_T0032070.1	388	No protein	<div><div></div>Processed transcript</div>	-	-	-

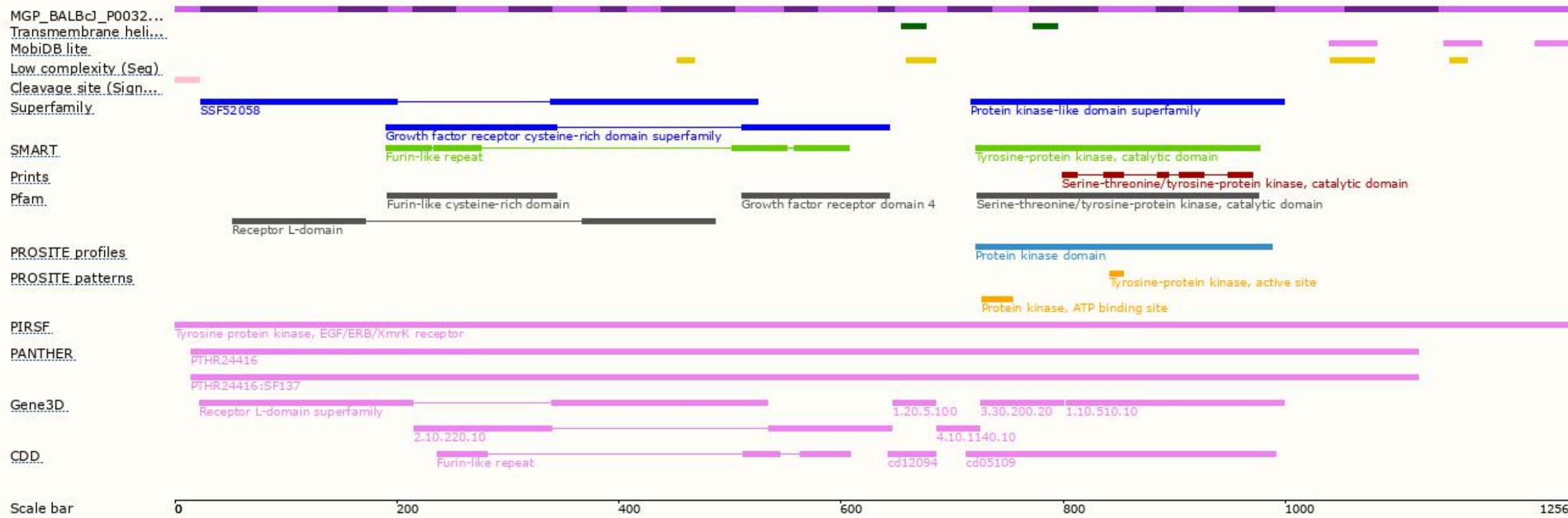
The strategy is based on the design of MGP_BALBcJ_T0032068.1 transcript,The transcription is shown below:



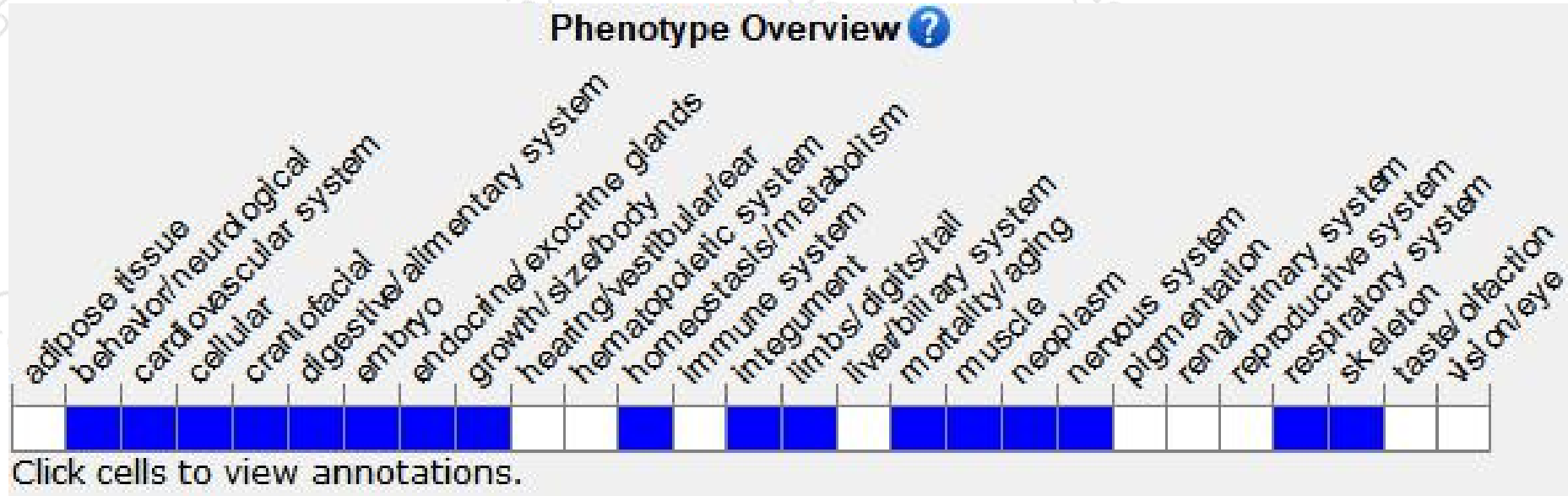
Genomic location distribution



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 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.

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

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