

Nek2 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Nek2

Project type

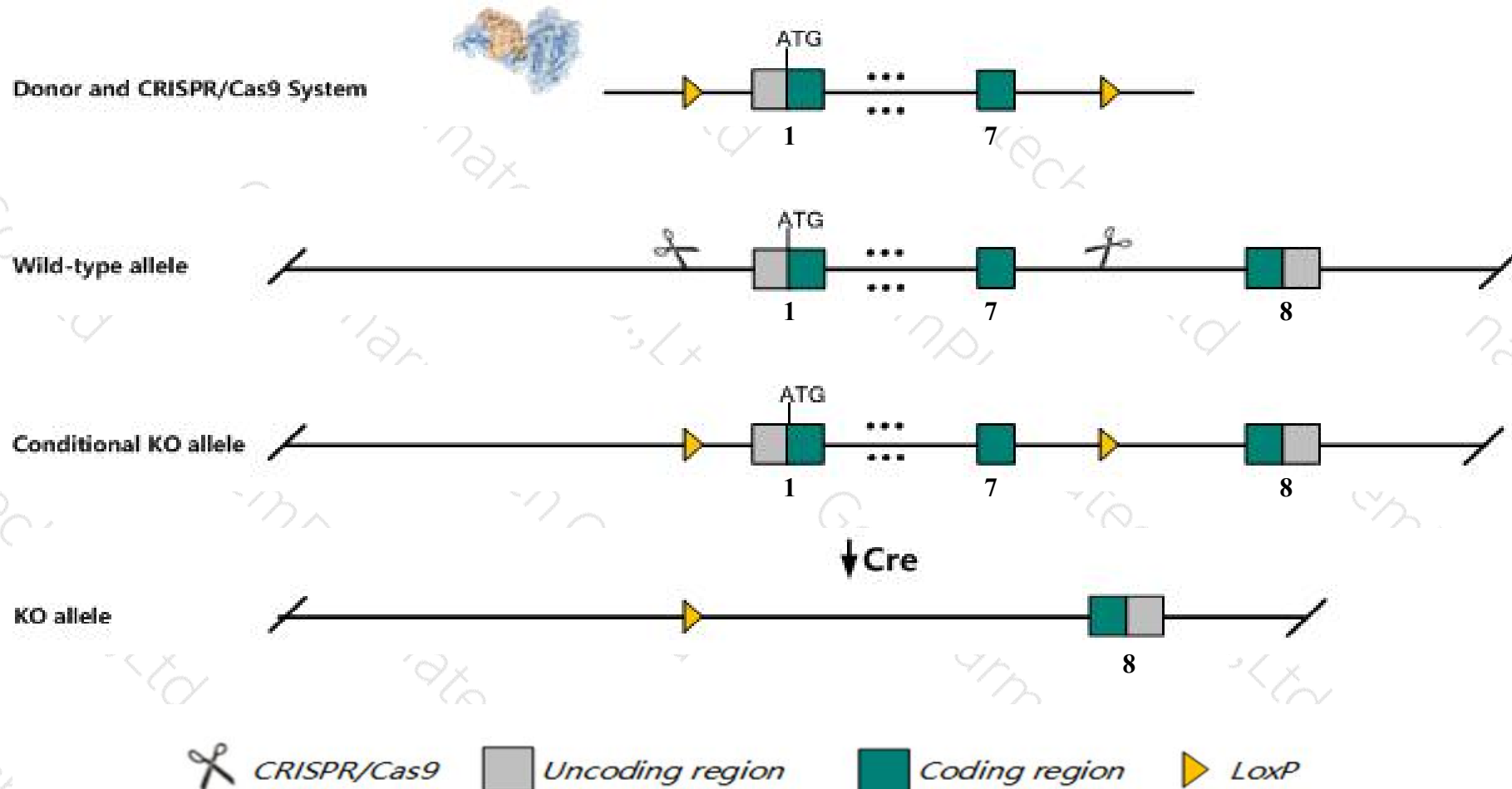
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nek2* gene. The schematic diagram is as follows:



- The *Nek2* gene has 4 transcripts. According to the structure of *Nek2* gene, exon1-exon7 of *Nek2-201* (ENSMUST00000027931.7) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nek2* 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.

- The KO region contains the *Gm38037* gene. Knockout the region will affect the function of *Gm38037* gene.
- The *Nek2* gene is located on the Chr1. 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)

Nek2 NIMA (never in mitosis gene a)-related expressed kinase 2 [Mus musculus (house mouse)]

Gene ID: 18005, updated on 22-Mar-2019

Summary



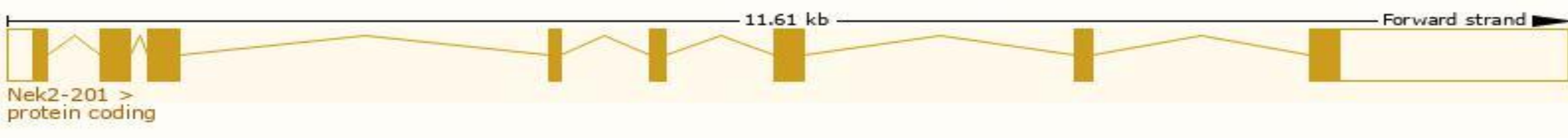
Official Symbol	Nek2 provided by MGI
Official Full Name	NIMA (never in mitosis gene a)-related expressed kinase 2 provided by MGI
Primary source	MGI:MGI:109359
See related	Ensembl:ENSMUSG00000026622
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA617254, C77054
Expression	Broad expression in testis adult (RPKM 25.4), CNS E11.5 (RPKM 10.9) and 15 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

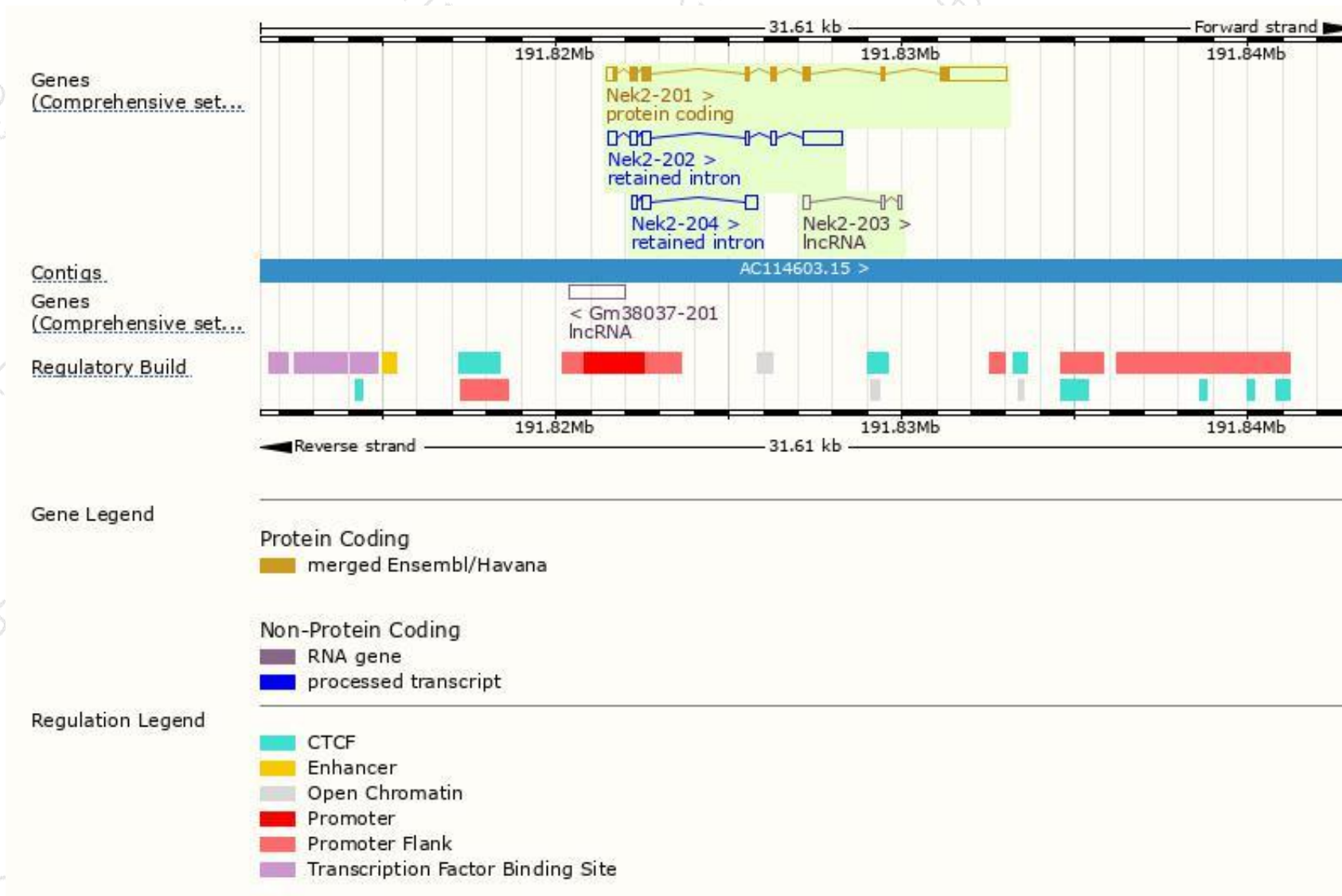
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nek2-201	ENSMUST00000027931.7	3227	443aa	Protein coding	CCDS15623	O35942	TSL:1 GENCODE basic APPRIS P1
Nek2-202	ENSMUST00000126446.7	2044	No protein	Retained intron	-	-	TSL:2
Nek2-204	ENSMUST00000150839.1	767	No protein	Retained intron	-	-	TSL:3
Nek2-203	ENSMUST00000136733.1	452	No protein	lncRNA	-	-	TSL:3

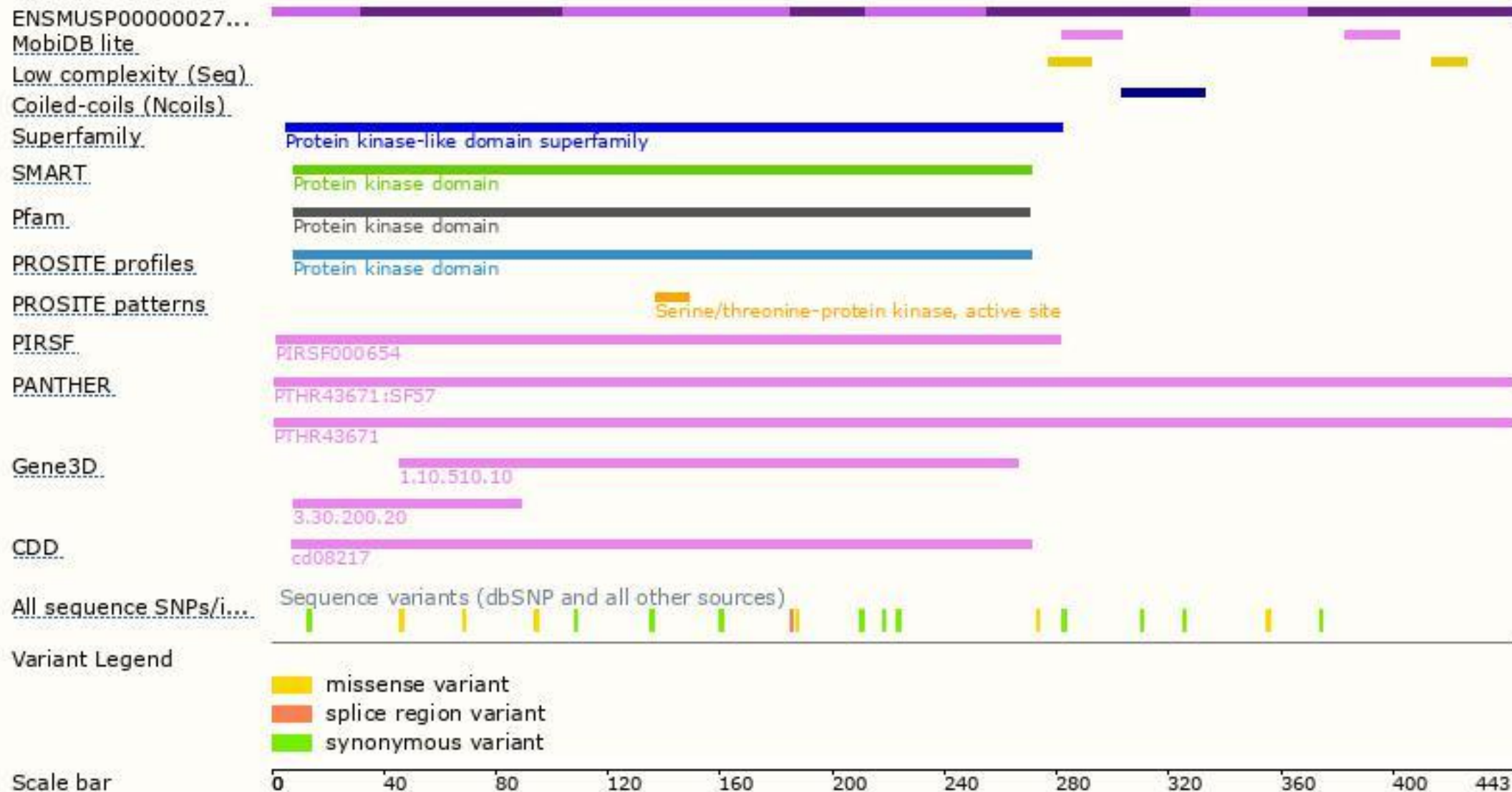
The strategy is based on the design of *Nek2-201* transcript,The transcription is shown below



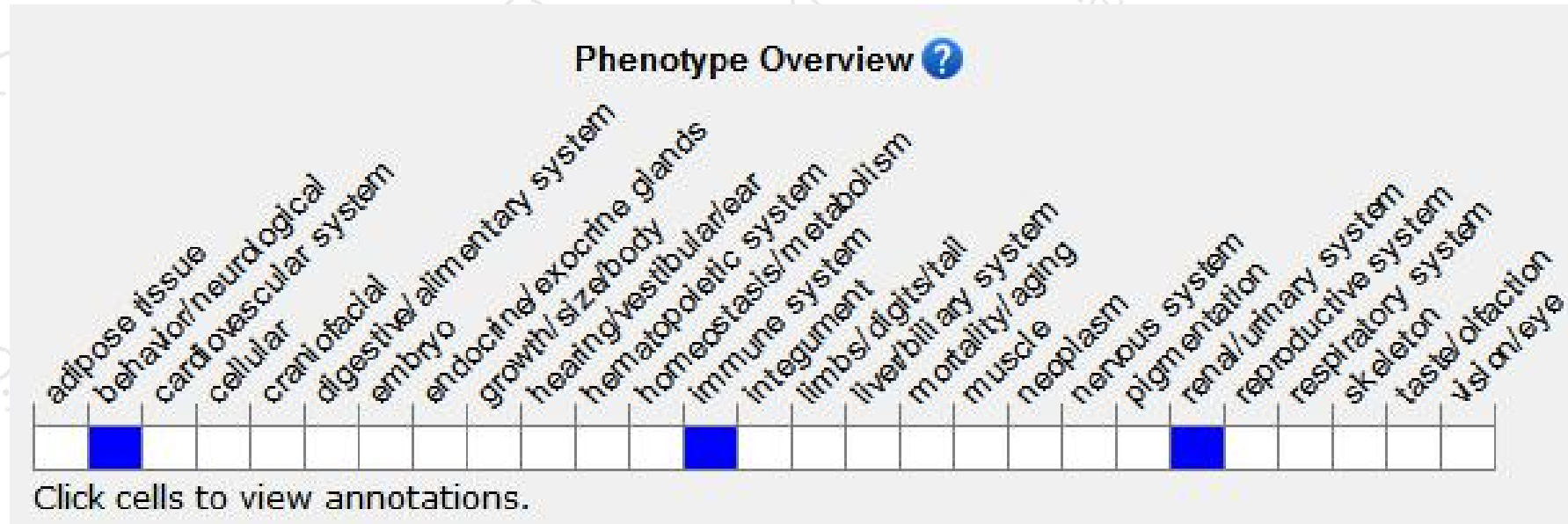
Genomic location distribution



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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