Nkx2-3 Cas9-KO Strategy

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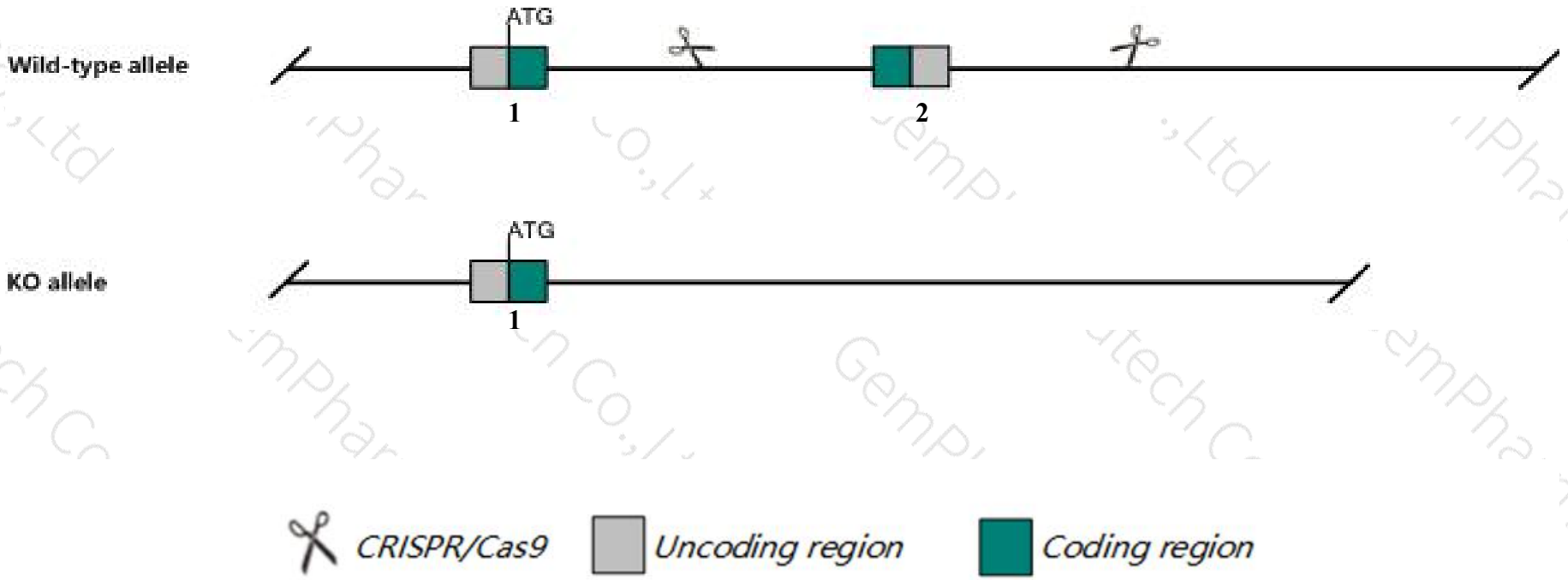
Design Date: 2019-10-18

Project Overview

Project Name	***Nkx2-3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nkx2-3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Nkx2-3* gene has 1 transcript. According to the structure of *Nkx2-3* gene, exon2 of *Nkx2-3-201* (ENSMUST00000057178.10) transcript is recommended as the knockout region.The region contains 740bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Nkx2-3* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,Homozygotes exhibit postnatal lethality due to acute intestinal malabsorption. Survivors recover well but exhibit splenic and Peyers patch hypoplasia, intestinal villus malformation, gut truncation and distension, abnormal molar and sublingual gland development, and deranged lymphocyte homing.

- The *Nkx2-3* gene is located on the Chr19. 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）

集萃药康 GemPharmatech

Nkx2-3 NK2 homeobox 3 [Mus musculus (house mouse)]

Gene ID: 18089, updated on 6-Apr-2019

Summary

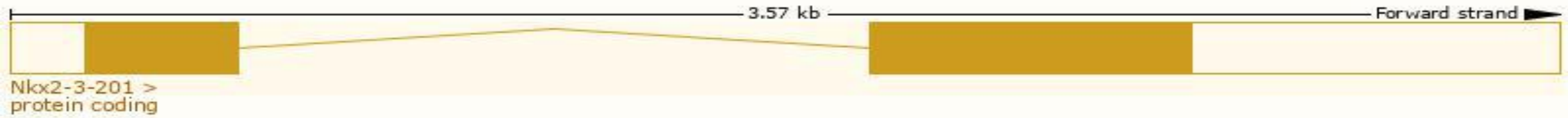
Official Symbol	Nkx2-3 provided by MGI
Official Full Name	NK2 homeobox 3 provided by MGI
Primary source	MGI:MGI:97348
See related	Ensembl:ENSMUSG00000044220
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Nkx-2.3, Nkx2.3, nkx2-C, tinman
Expression	Biased expression in duodenum adult (RPKM 12.0), colon adult (RPKM 9.9) and 6 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

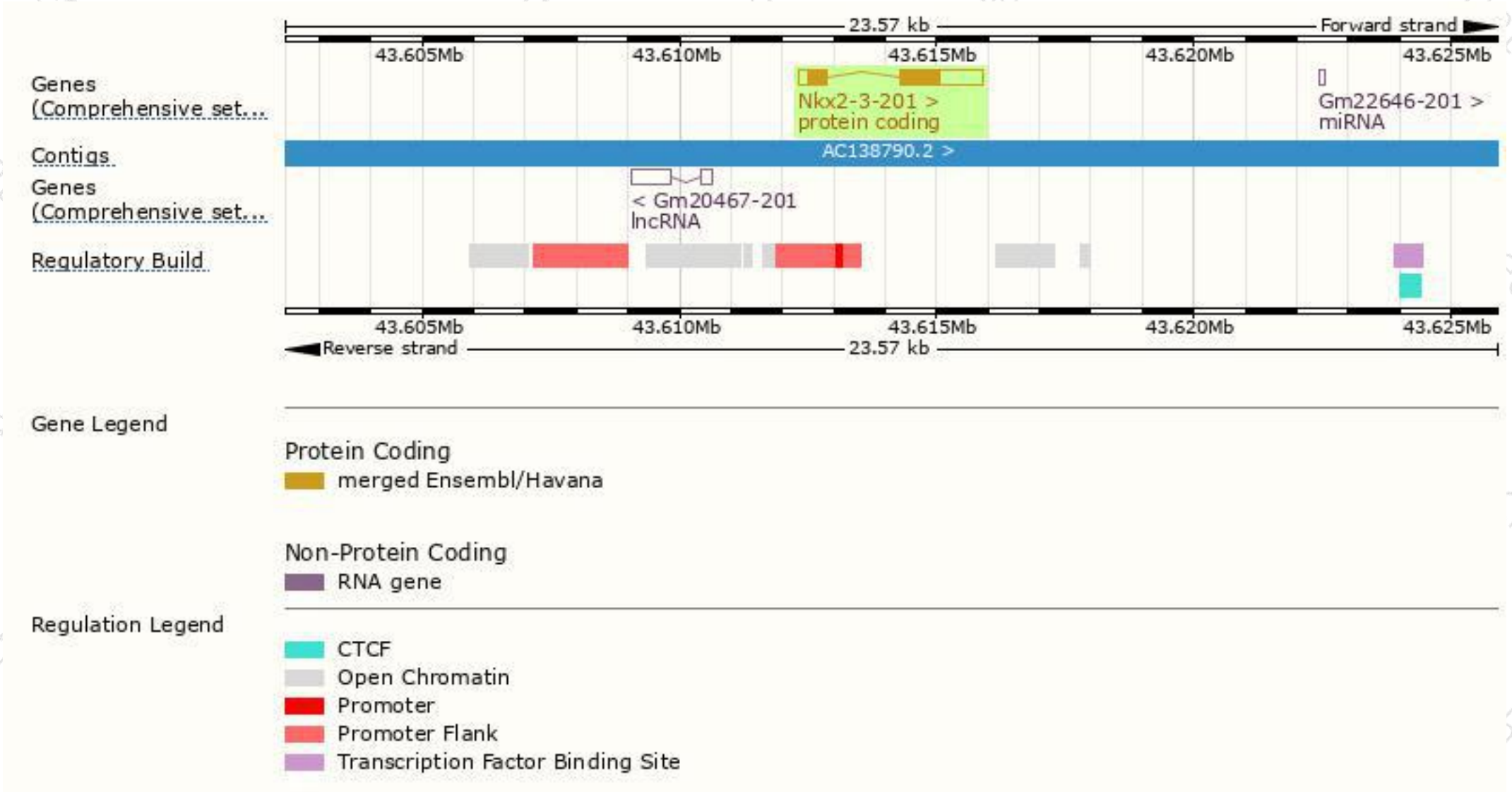
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nkx2-3-201	ENSMUST00000057178.10	2112	362aa	Protein coding	CCDS29833	P97334	TSL:1 GENCODE basic APPRIS P1

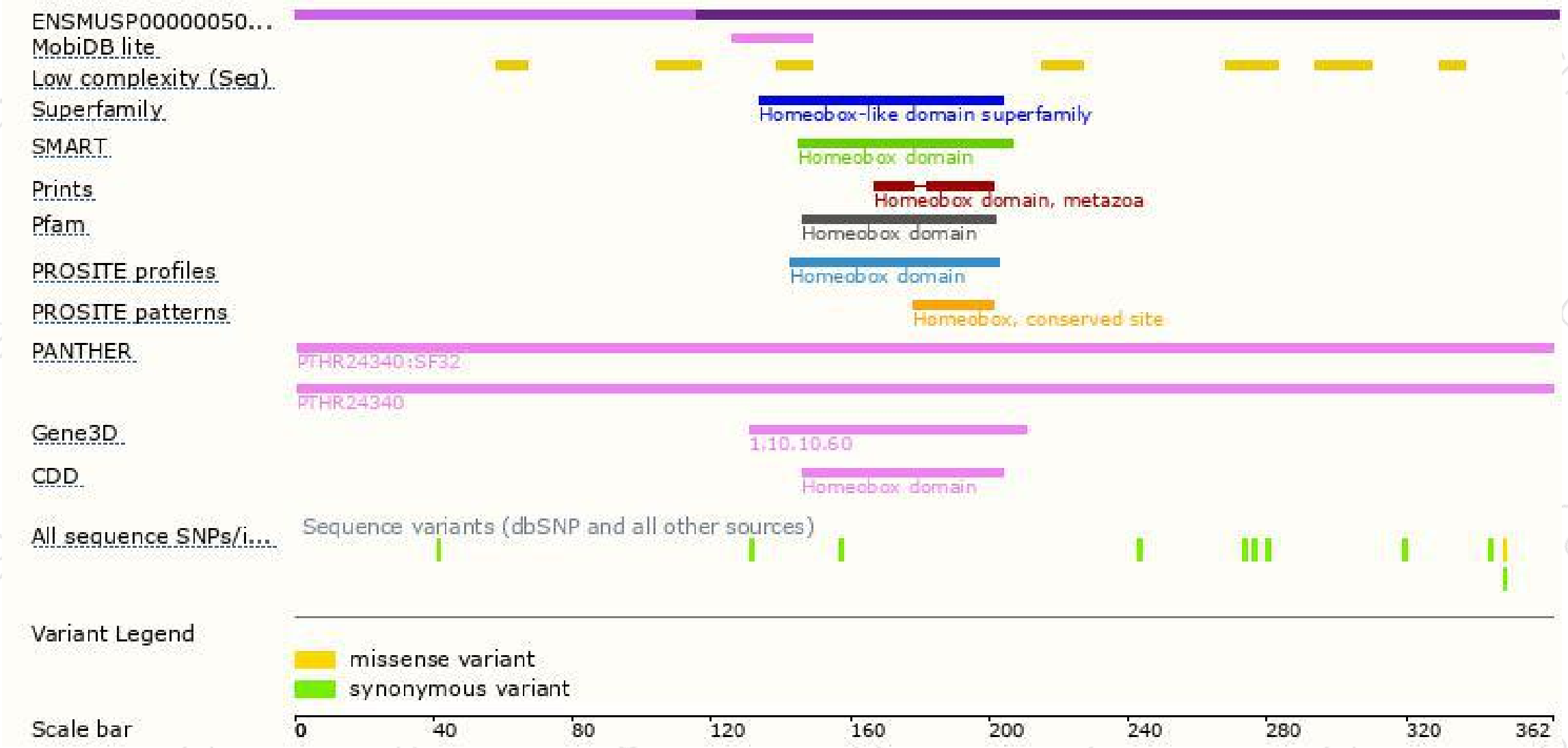
The strategy is based on the design of *Nkx2-3-201* transcript,The transcription is shown below



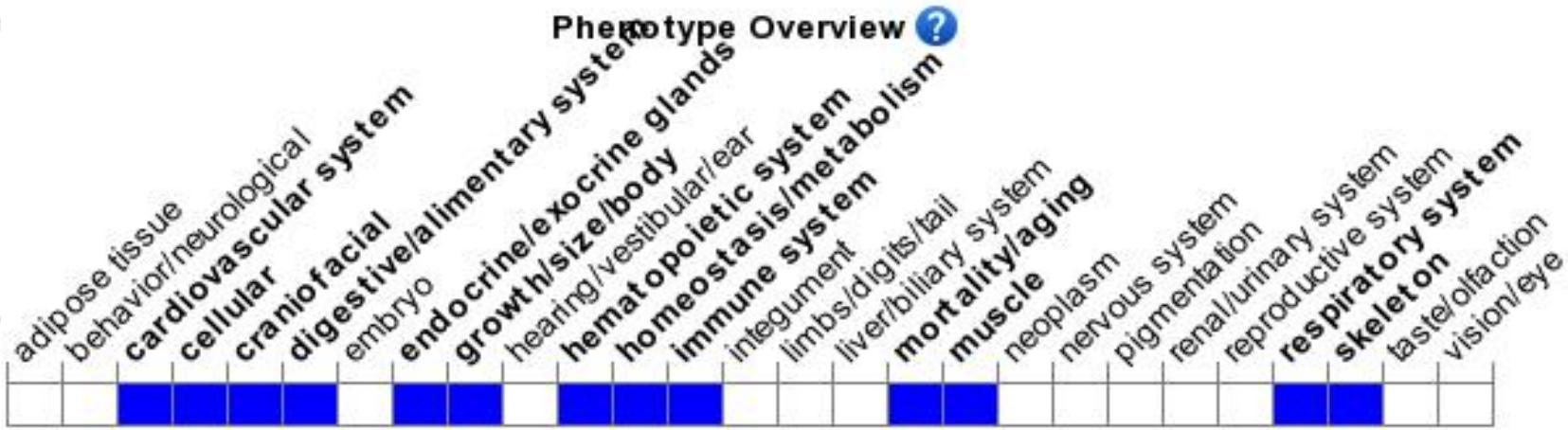
Genomic location distribution



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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