Ttr Cas9-KO Strategy

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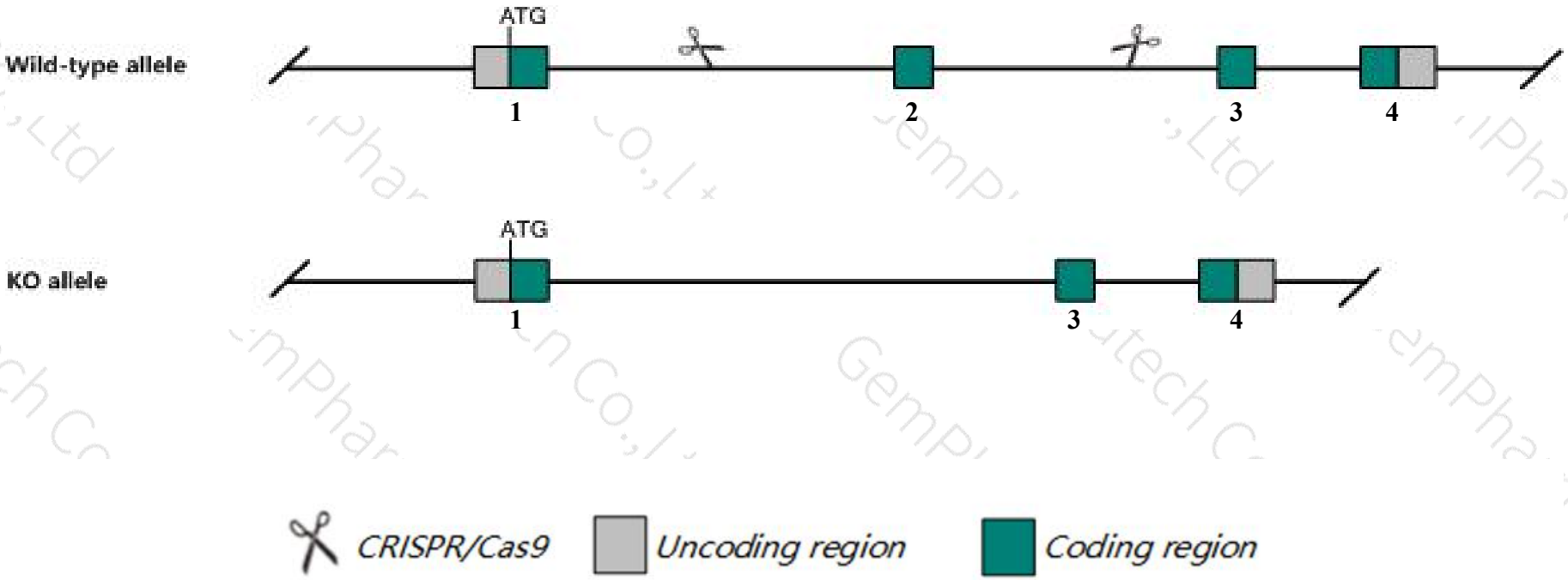
Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Ttr* gene has 1 transcript. According to the structure of *Ttr* gene, exon2 of *Ttr-201* (ENSMUST00000075312.4) transcript is recommended as the knockout region.The region contains 131bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ttr* gene. The brief process is as follows: CRISPR/Cas9 system we

Notice

- According to the existing MGI data,Homozygous mutation of this gene results in decreased circulating thyroxine, triiodothyronine, and retinol levels.

- The *Ttr* gene is located on the Chr18. 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）

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Ttr transthyretin [Mus musculus (house mouse)]

Gene ID: 22139, updated on 2-Apr-2019

Summary

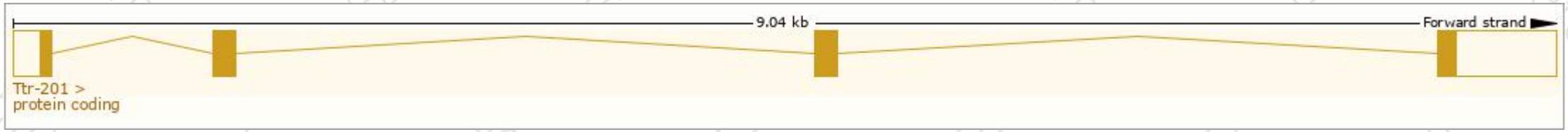
Official Symbol	Ttr provided by MGI
Official Full Name	transthyretin provided by MGI
Primary source	MGI:MGI:98865
See related	Ensembl:ENSMUSG00000061808
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA408768, AI787086, D17860, prealbumin
Summary	This gene encodes a carrier protein responsible for the transport of thyroid hormones and retinol. The protein consists of a tetramer of identical subunits. Due to increased stability of the tetramer form of this encoded protein in mouse, compared to the human protein, this gene product has a reduced tendency to form amyloid fibrils. In humans, this protein binds beta-amyloid preventing its aggregation and providing a neuroprotective role in Alzheimer's disease. [provided by RefSeq, Mar 2010]
Expression	Biased expression in liver adult (RPKM 3655.3), liver E18 (RPKM 2930.2) and 7 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

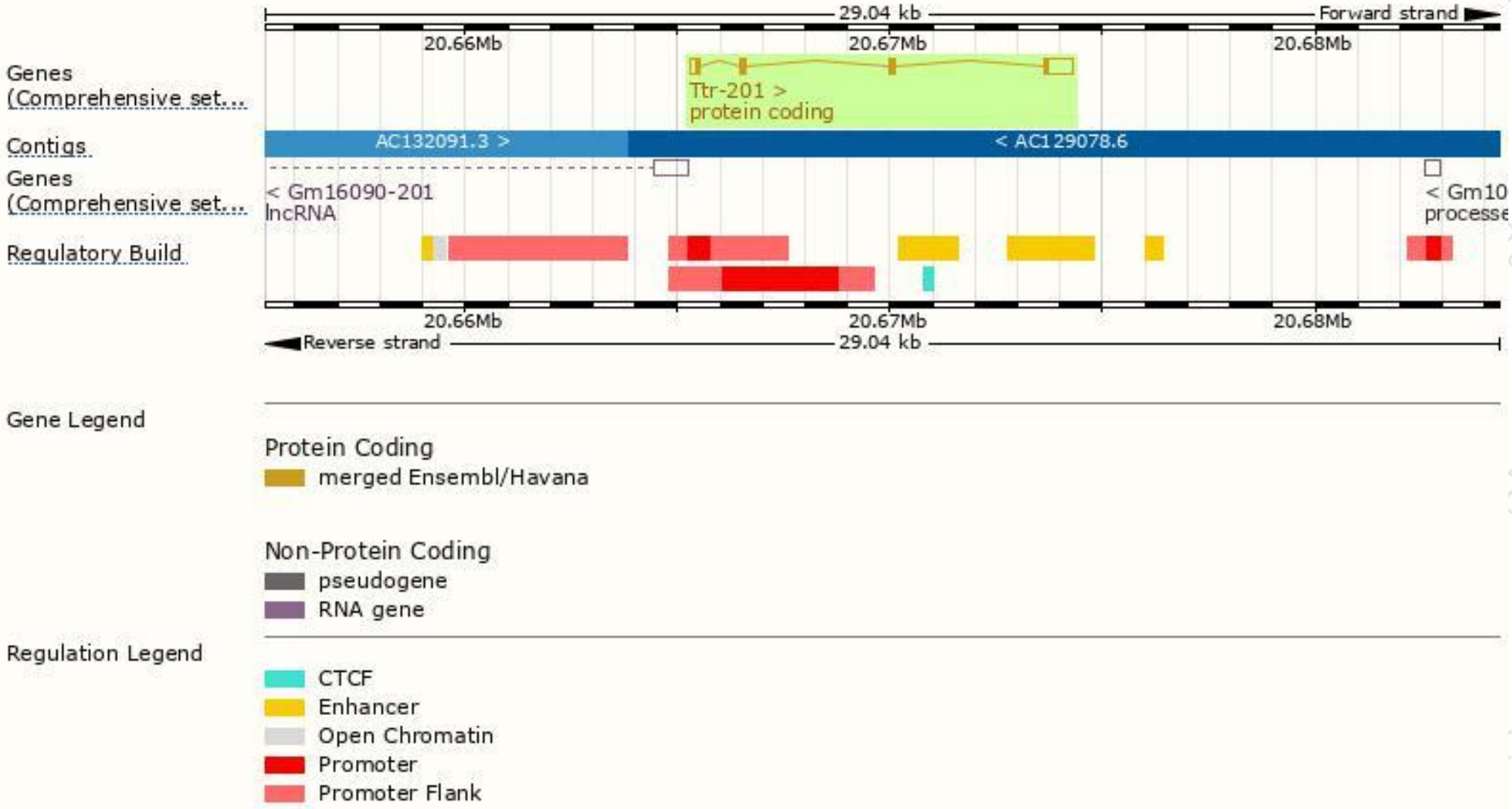
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ttr-201	ENSMUST00000075312.4	1186	147aa	Protein coding	CCDS29085	P07309 Q5M9K1	TSL:1 GENCODE basic APPRIS P1

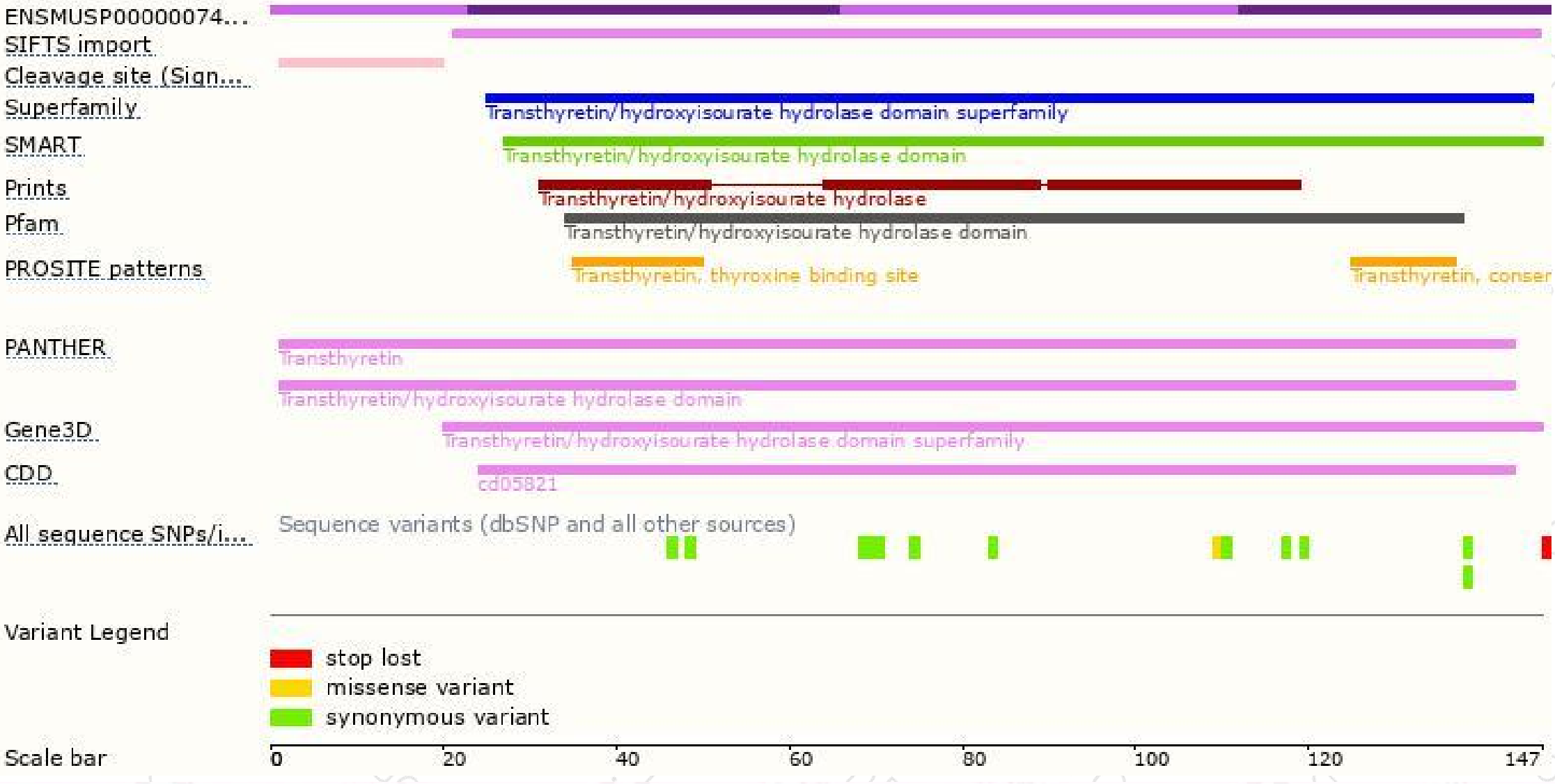
The strategy is based on the design of *Ttr-201* transcript,The transcription is shown below



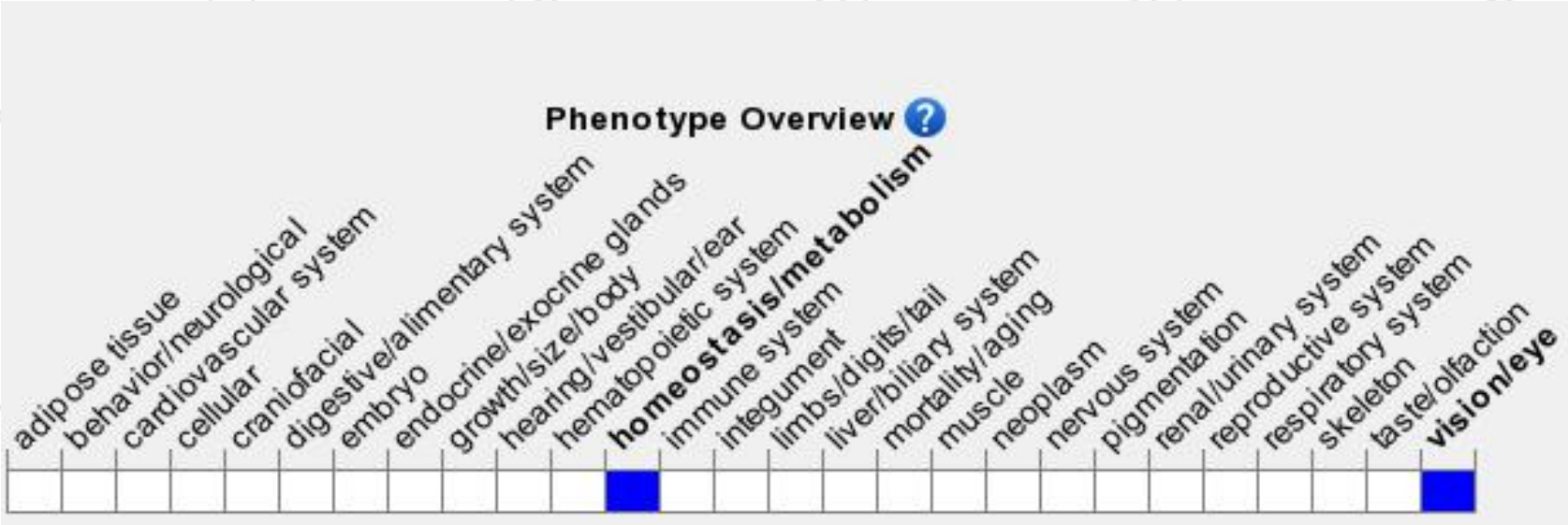
Genomic location distribution



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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