Kl Cas9-KO Strategy

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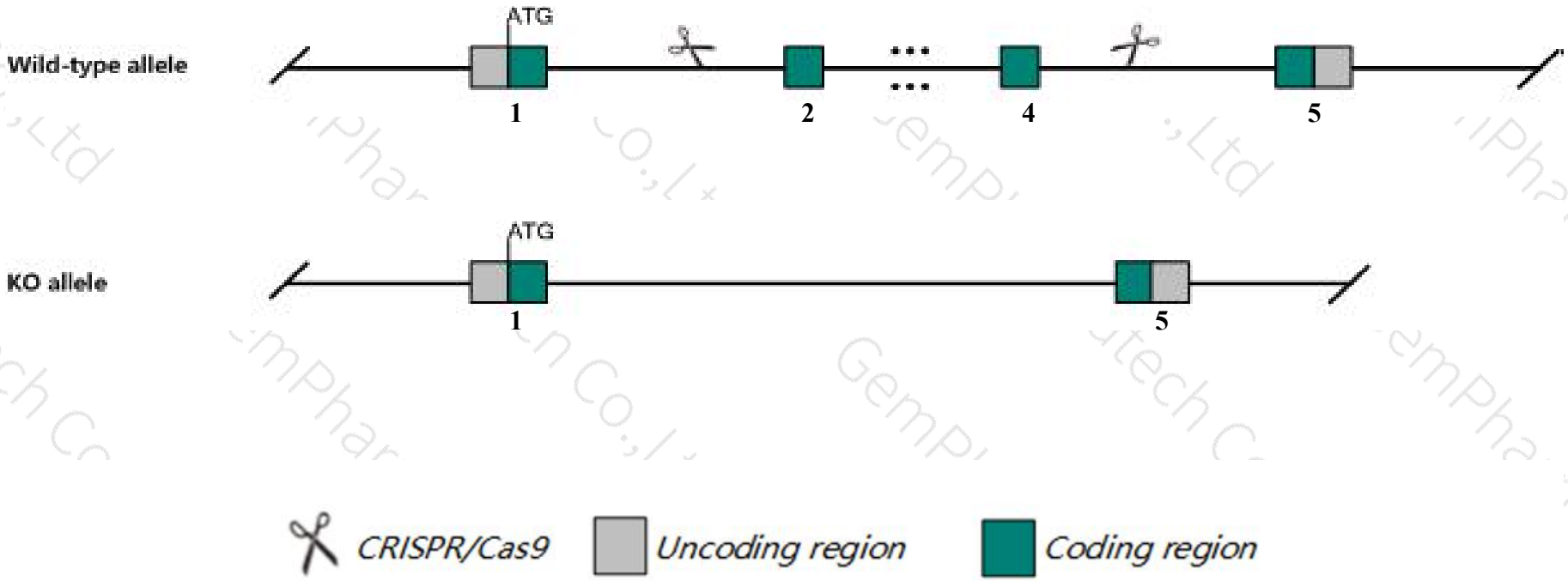
Design Date: 2019-9-11
Reviewer: JiaYu

Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Kl* gene has 2 transcripts. According to the structure of *Kl* gene, exon2-exon4 of *Kl-201* (ENSMUST00000078856.7) transcript is recommended as the knockout region.The region contains 1882bp coding sequence. Knock out the region will result in disruption of protein function.

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

Notice

➢ According to the existing MGI data,Homozygous mutant mice have a short lifespan and growth retardation with one allele homeostatic imbalances and soft tissue calcification are also seen. With a second allele abnormal cancellous bone and femur morphology are seen.

➢ The *Kl* gene is located on the Chr5. 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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Kl klotho [Mus musculus (house mouse)]

Gene ID: 16591, updated on 23-Mar-2019

Summary

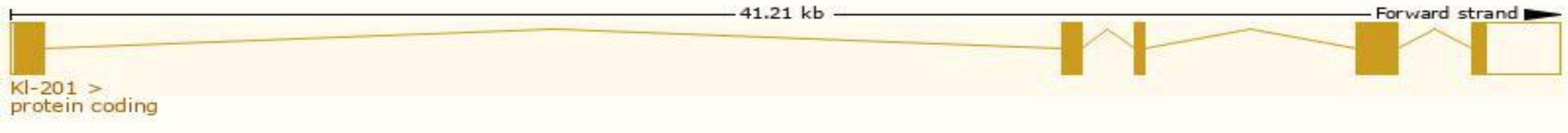
Official Symbol	Kl provided by MGI
Official Full Name	klotho provided by MGI
Primary source	MGI:MGI:1101771
See related	Ensembl:ENSMUSG00000058488
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	alpha-kl
Expression	Restricted expression toward kidney adult (RPKM 58.5)See more
Orthologs	human all

Transcript information（Ensembl）

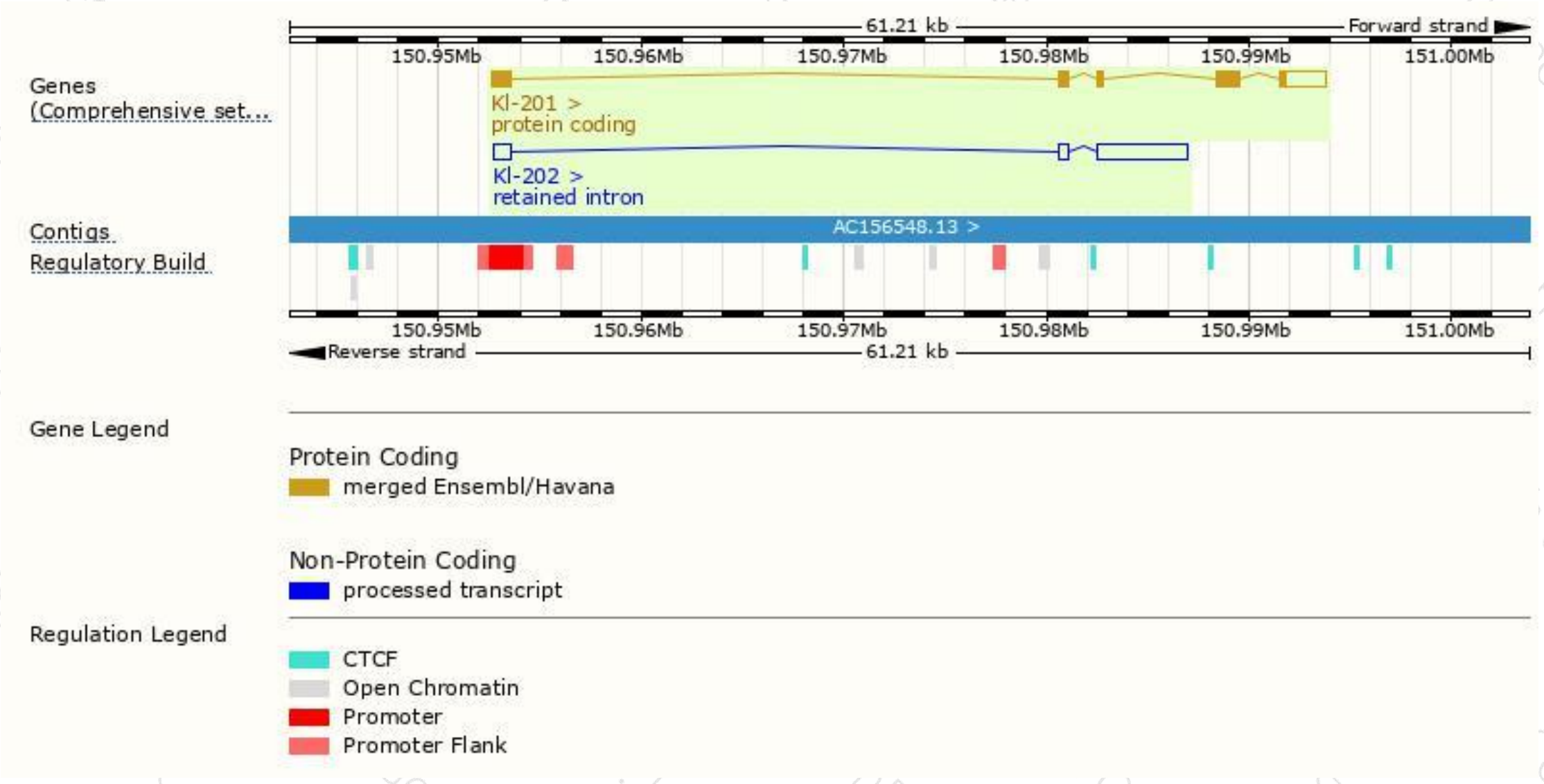
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kl-201	ENSMUST00000078856.7	5118	1014aa	Protein coding	CCDS19889	O35082	TSL:1 GENCODE basic APPRIS P1
Kl-202	ENSMUST00000202096.1	5828	No protein	Retained intron	-	-	TSL:1

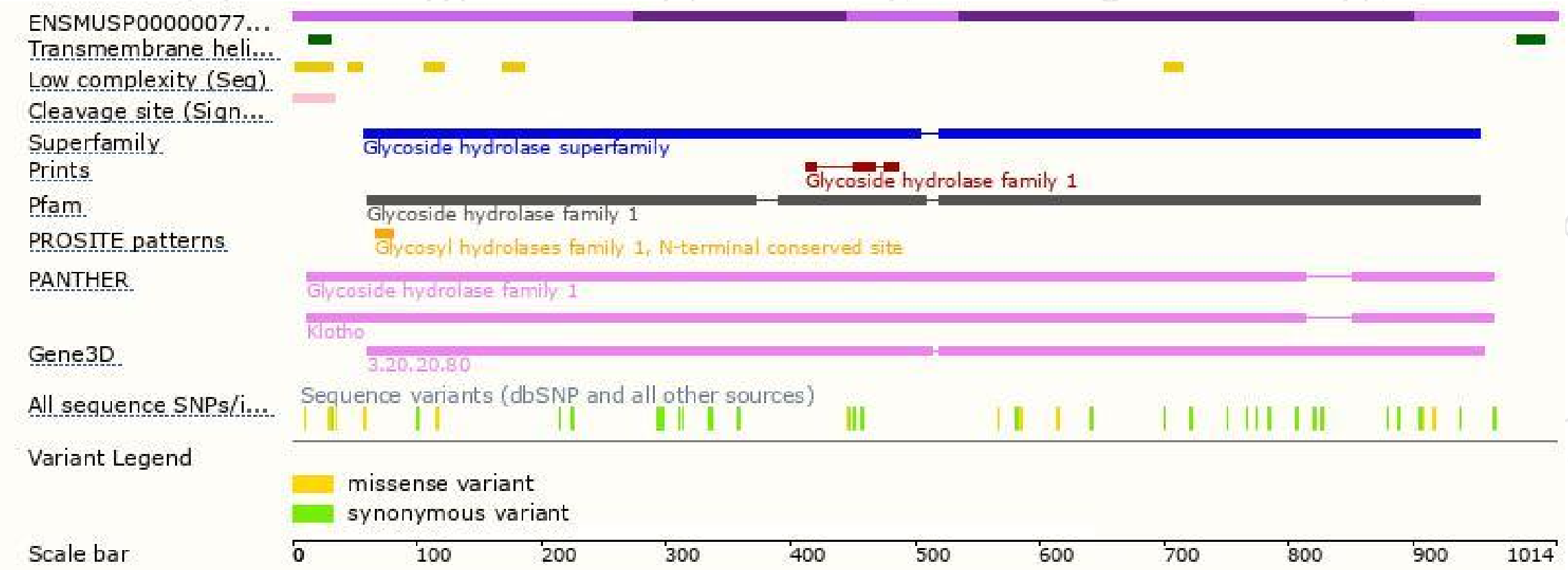
The strategy is based on the design of *Kl-201* transcript,The transcription is shown below



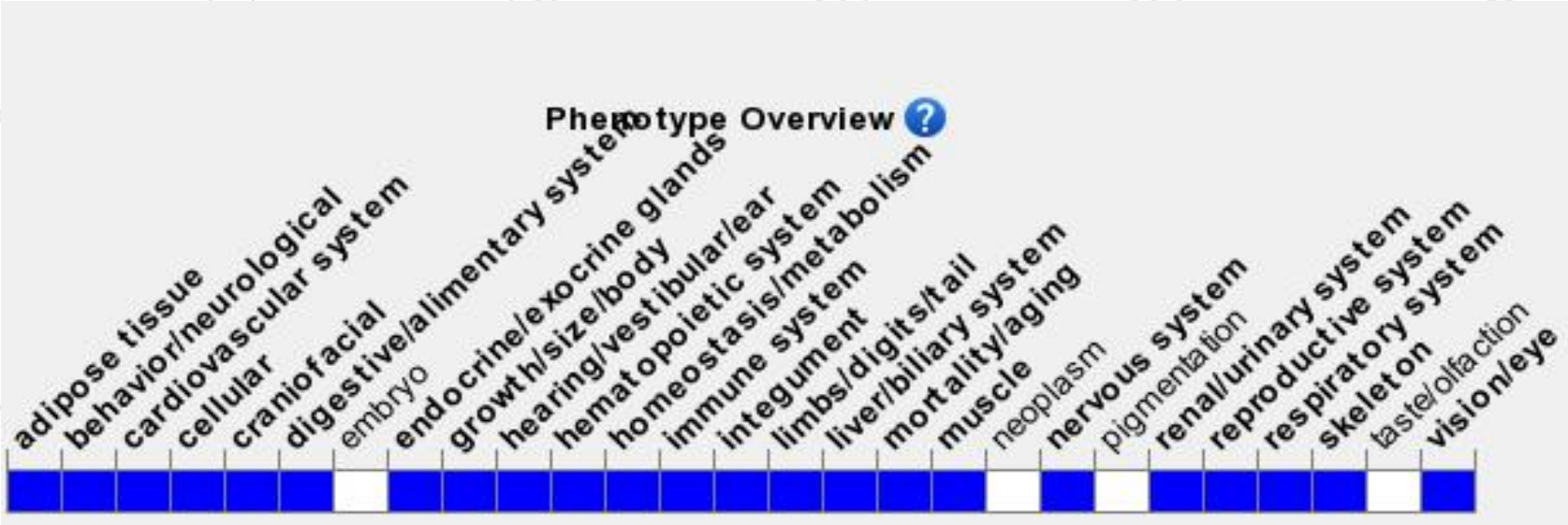
Genomic location distribution



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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