Rnd3 Cas9-KO Strategy

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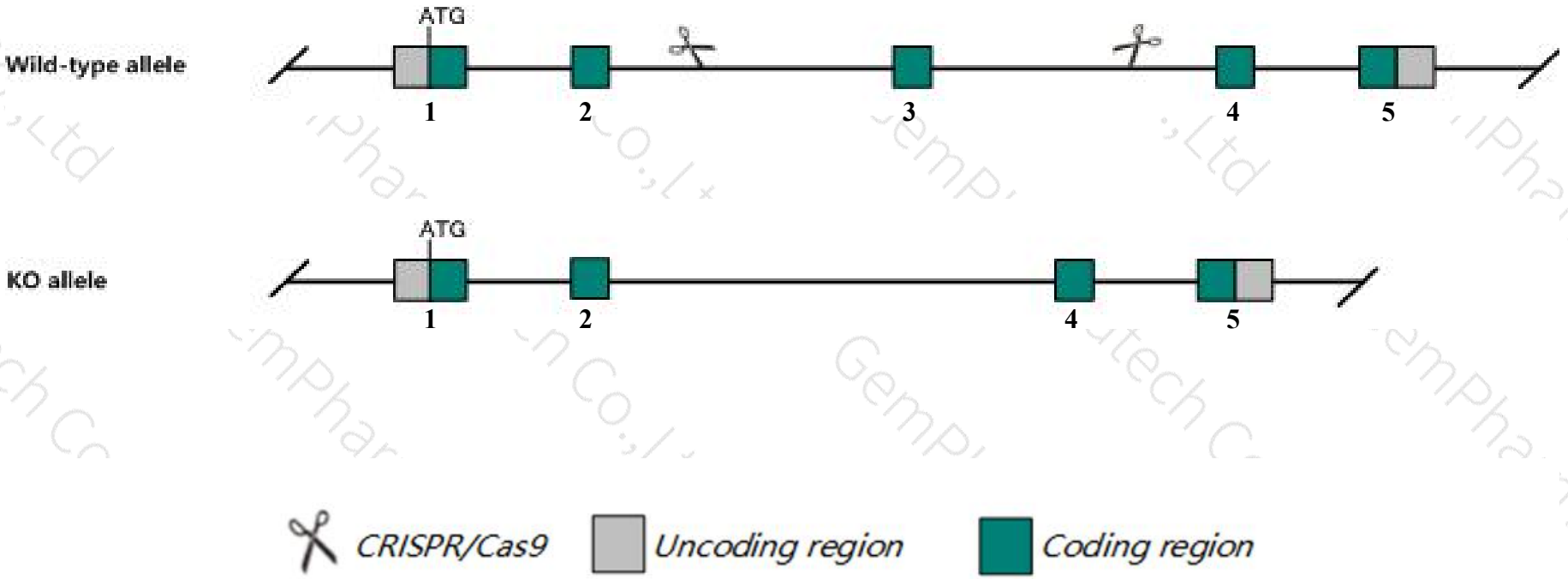
Project Overview

Project Name	***Rnd3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnd3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Rnd3* gene has 3 transcripts. According to the structure of *Rnd3* gene, exon3 of *Rnd3-201* (ENSMUST00000017288.8) transcript is recommended as the knockout region.The region contains 110bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Rnd3* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Mice homozygous for a mutation in this gene display premature death with postnatal growth retardation and wasting, delayed development, absence of the common peroneal nerve and impaired motor capabilities.

➢ The *Rnd3* gene is located on the Chr2. 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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Rnd3 Rho family GTPase 3 [Mus musculus (house mouse)]

Gene ID: 74194, updated on 31-Jan-2019

Summary

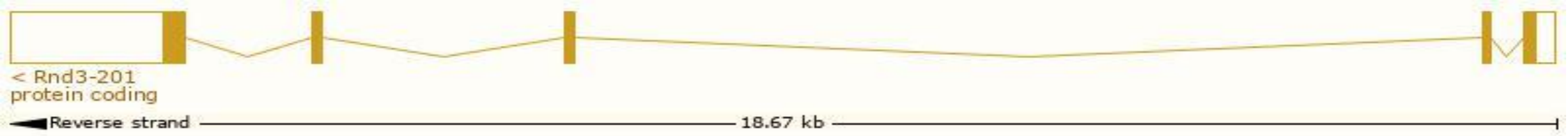
Official Symbol	Rnd3 provided by MGI
Official Full Name	Rho family GTPase 3 provided by MGI
Primary source	MGI:MGI:1921444
See related	Ensembl:ENSMUSG00000017144
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610017M01Rik, AI661404, Arhe, Rhoe
Expression	Biased expression in CNS E11.5 (RPKM 46.9), whole brain E14.5 (RPKM 28.6) and 11 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

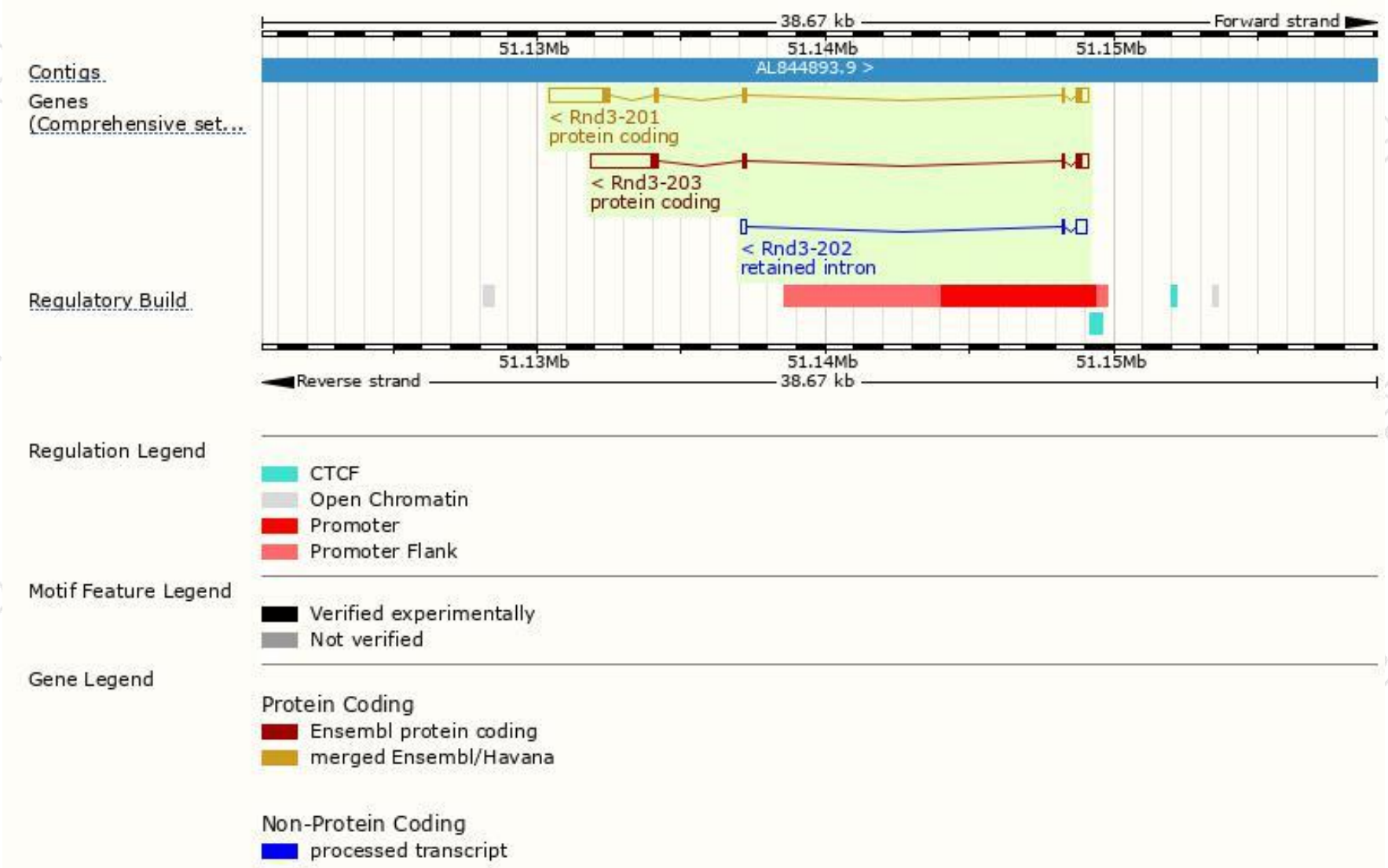
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnd3-201	ENSMUST00000017288.8	2828	244aa	Protein coding	CCDS16028	P61588	TSL:1 GENCODE basic APPRIS P1
Rnd3-203	ENSMUST00000154545.1	2967	202aa	Protein coding	-	E9Q8D7	TSL:1 GENCODE basic
Rnd3-202	ENSMUST00000140864.1	635	No protein	Retained intron	-	-	TSL:2

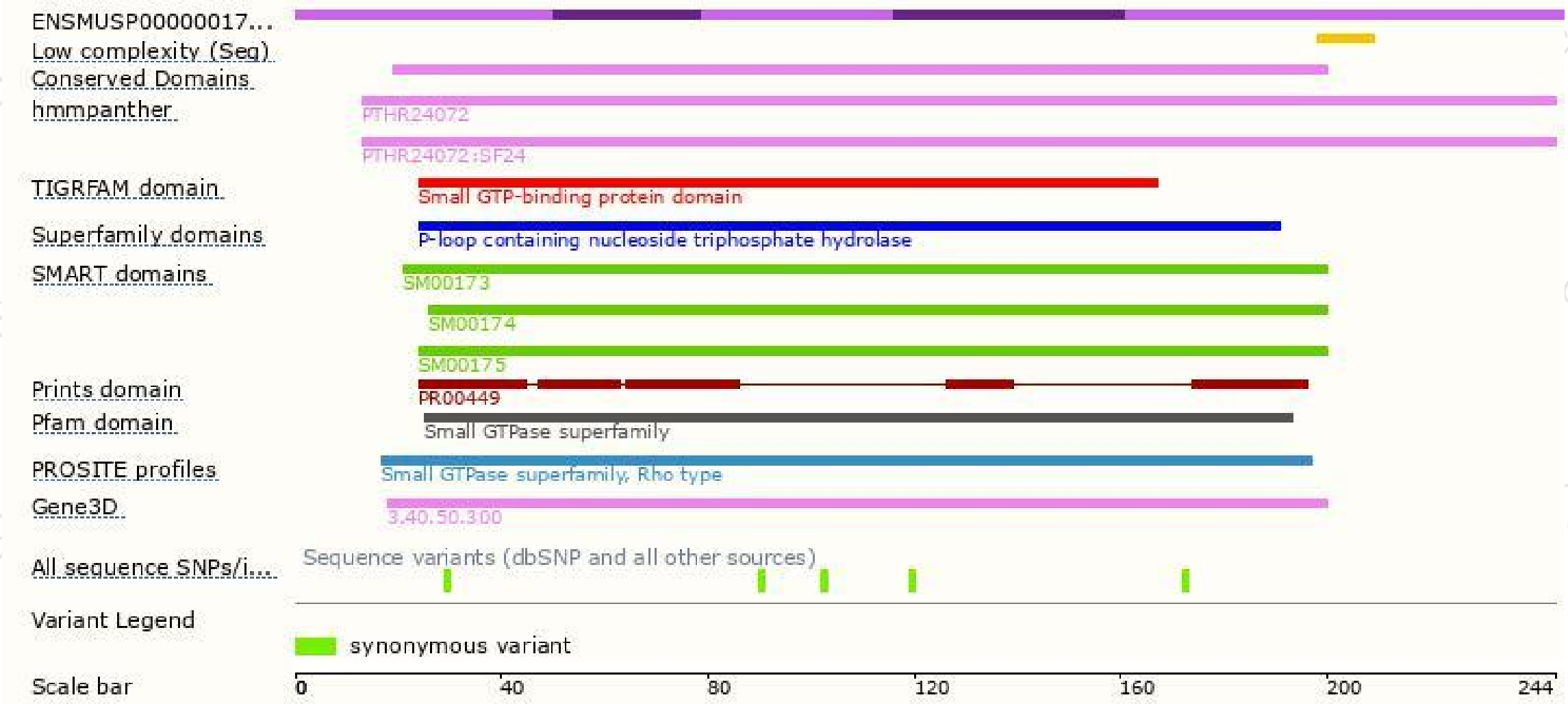
The strategy is based on the design of *Rnd3-201* transcript,The transcription is shown below



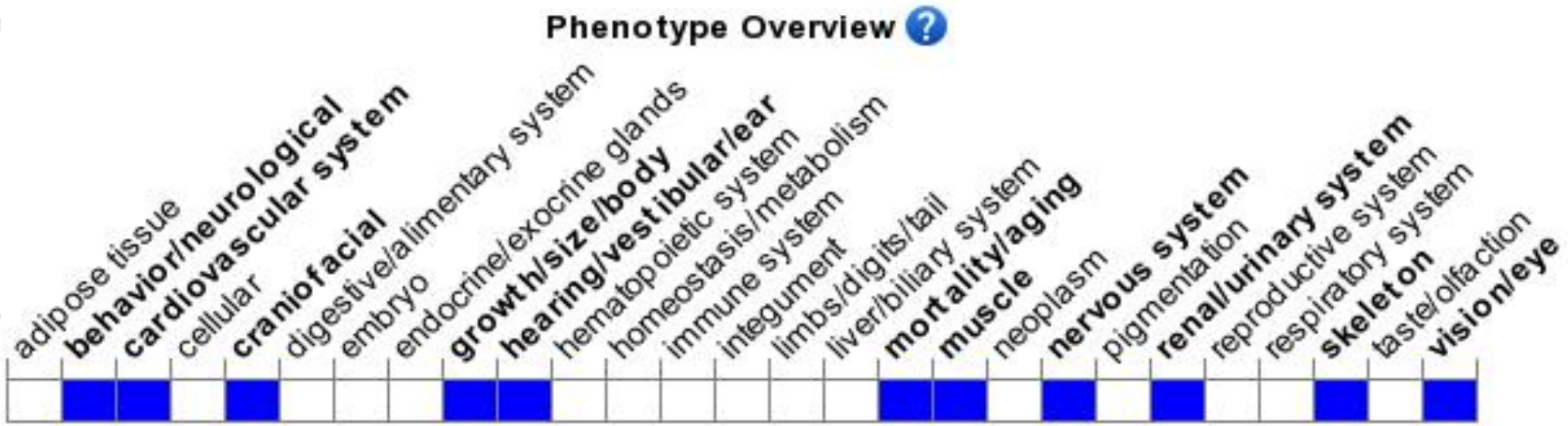
Genomic location distribution



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/).

According to the existing MGI data,Mice homozygous for a mutation in this gene display premature death with postnatal growth retardation and wasting, delayed development, absence of the common peroneal nerve and impaired motor capabilities.

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

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