

Arhgap22 Cas9-CKO Strategy

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Project Overview

Project Name

Arhgap22

Project type

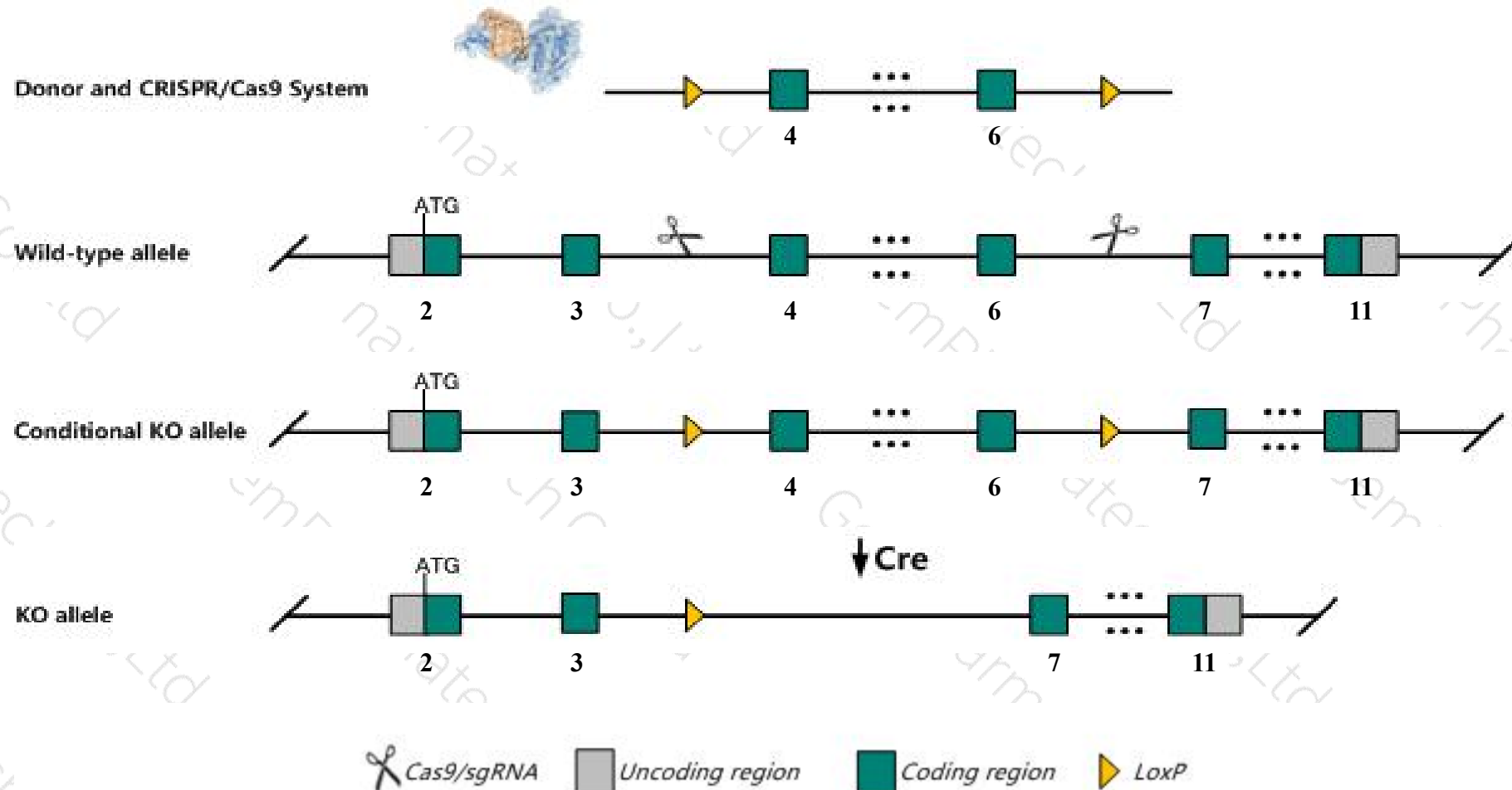
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap22* gene. The schematic diagram is as follows:



Technical routes

- The *Arhgap22* gene has 8 transcripts. According to the structure of *Arhgap22* gene, exon4-exon6 of *Arhgap22*-202(ENSMUST00000111956.8) transcript is recommended as the knockout region. The region contains 425bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arhgap22* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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 *Arhgap22* gene is located on the Chr14. 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.
- Transcript *Arhgap22-204&206* may not be affected.
- 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)

Arhgap22 Rho GTPase activating protein 22 [Mus musculus (house mouse)]

Gene ID: 239027, updated on 20-Mar-2020

Summary



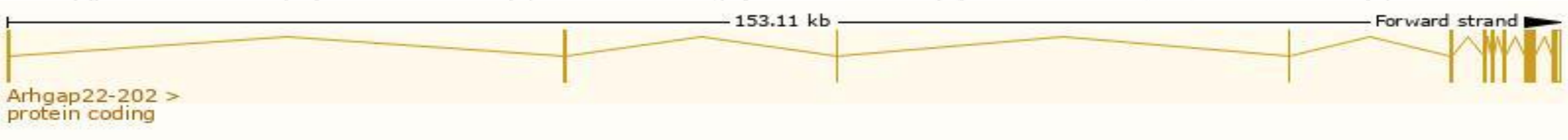
Official Symbol	Arhgap22 provided by MGI
Official Full Name	Rho GTPase activating protein 22 provided by MGI
Primary source	MGI:MGI:2443418
See related	Ensembl:ENSMUSG00000063506
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	B230341L19Rik, RHOGAP2, p68RacGAP
Expression	Broad expression in lung adult (RPKM 3.9), ovary adult (RPKM 3.8) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

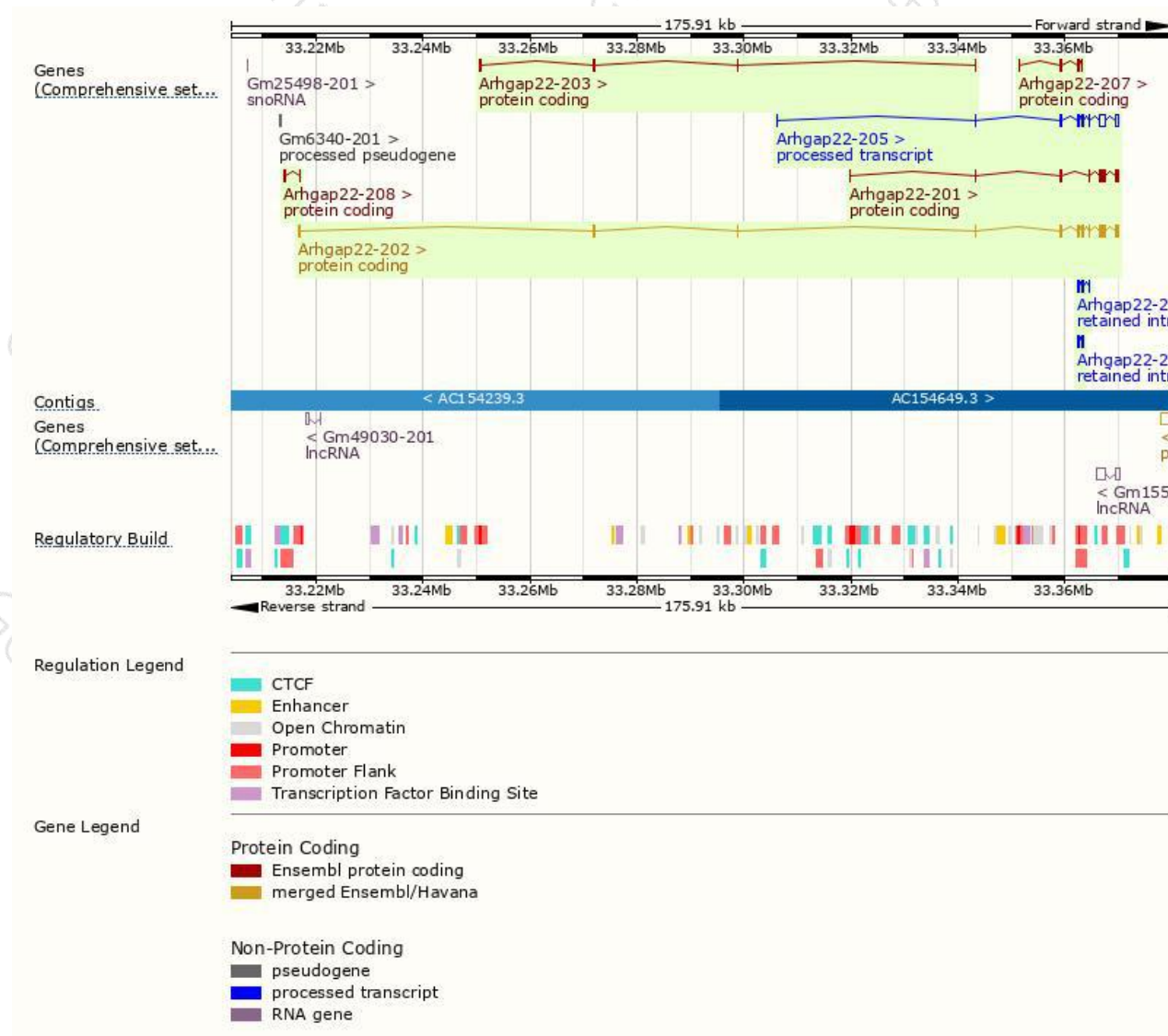
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap22-202	ENSMUST00000111956.8	2596	702aa	Protein coding	CCDS26926	Q8BL80	TSL:1 GENCODE basic APPRIS P1
Arhgap22-201	ENSMUST00000111955.1	2148	537aa	Protein coding	-	D3Z1Y5	TSL:1 GENCODE basic
Arhgap22-203	ENSMUST00000131086.2	711	132aa	Protein coding	-	A0A2I3BQ18	CDS 3' incomplete TSL:2
Arhgap22-207	ENSMUST00000140711.2	467	147aa	Protein coding	-	A0A2I3BRZ0	CDS 3' incomplete TSL:3
Arhgap22-208	ENSMUST00000165792.2	426	16aa	Protein coding	-	A0A2I3BPI8	CDS 3' incomplete TSL:2
Arhgap22-205	ENSMUST00000137590.7	2238	No protein	Processed transcript	-	-	TSL:1
Arhgap22-206	ENSMUST00000140166.1	437	No protein	Retained intron	-	-	TSL:3
Arhgap22-204	ENSMUST00000132659.1	198	No protein	Retained intron	-	-	TSL:3

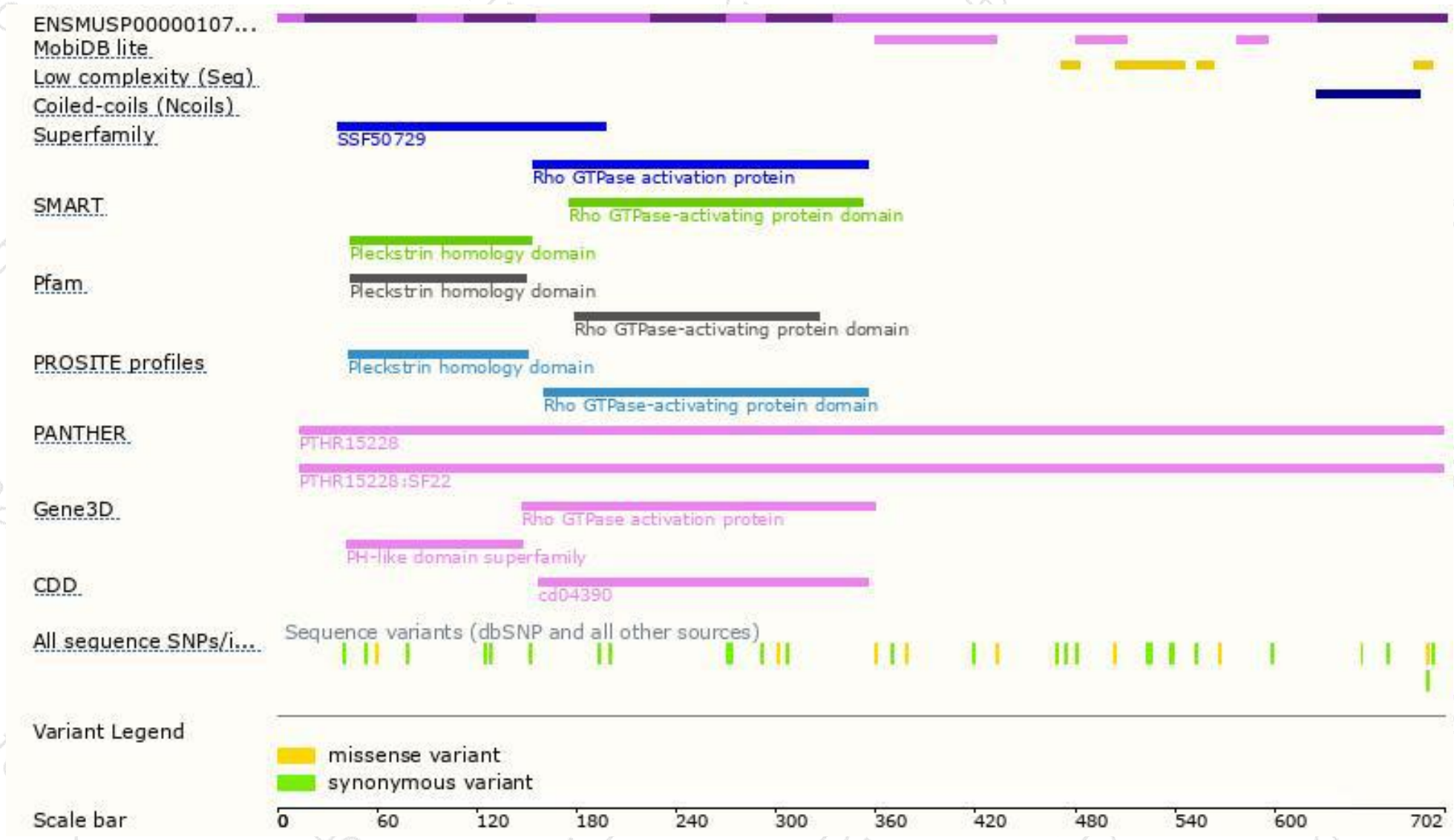
The strategy is based on the design of *Arhgap22-202* transcript,the transcription is shown below:



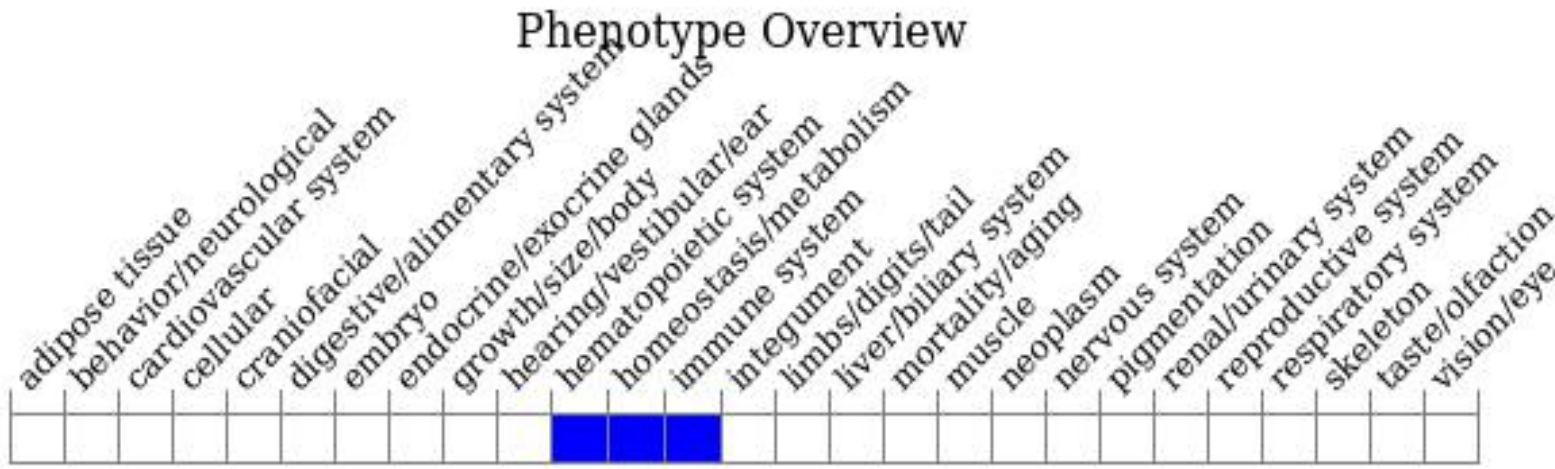
Genomic location distribution



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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