Rreb1 Cas9-CKO Strategy

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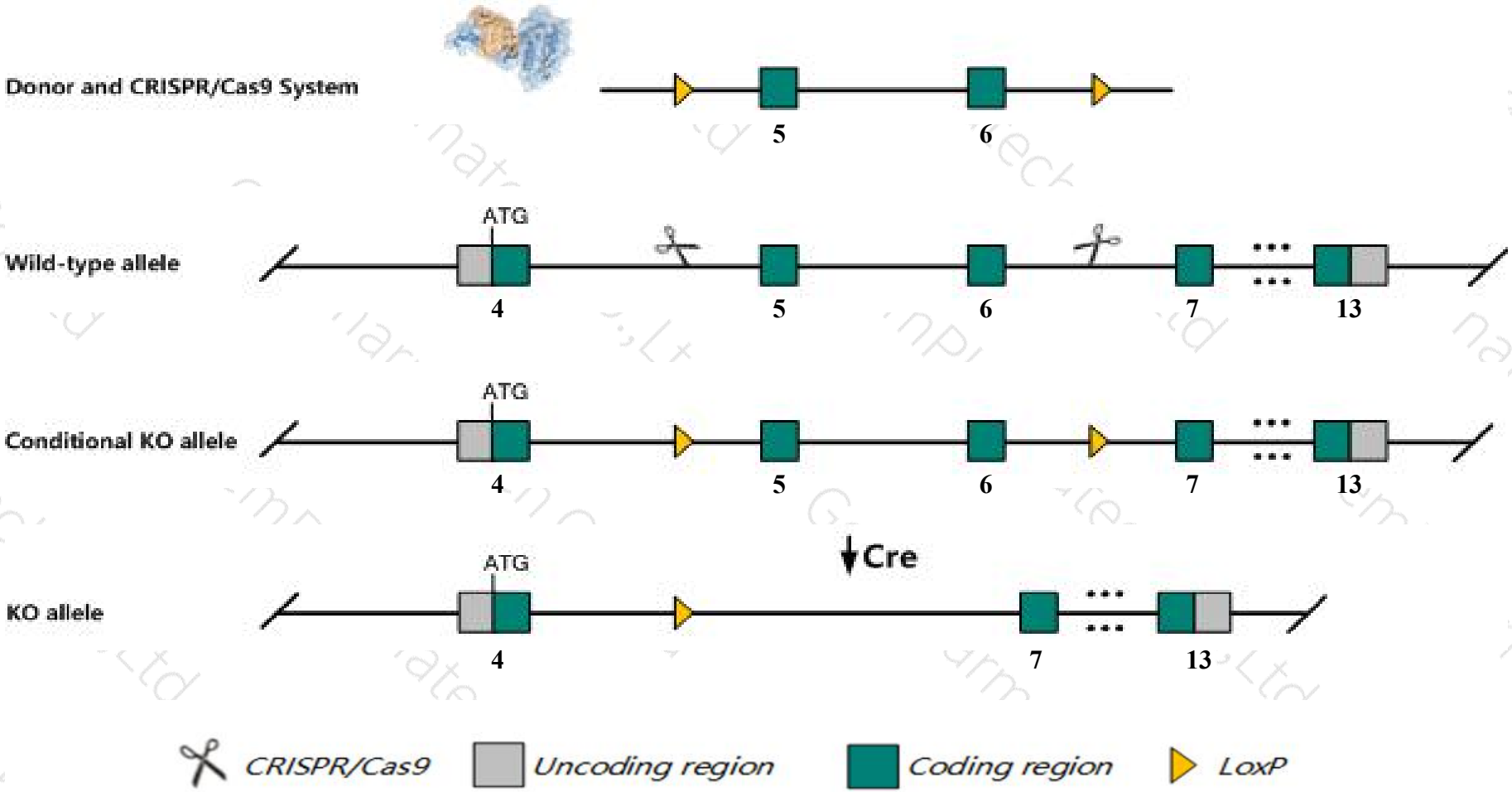
Project Overview

Project Name	***Rreb1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rreb1* gene. The schematic diagram is as follows:



Technical routes

- The *Rreb1* gene has 11 transcripts. According to the structure of *Rreb1* gene, exon5-exon6 of *Rreb1-207* (ENSMUST00000128570.8) transcript is recommended as the knockout region.The region contains 254bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Rreb1* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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.

Notice

- The *Rreb1* gene is located on the Chr13. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Rreb1 ras responsive element binding protein 1 [Mus musculus (house mouse)]

Gene ID: 68750, updated on 31-Jan-2019

Summary

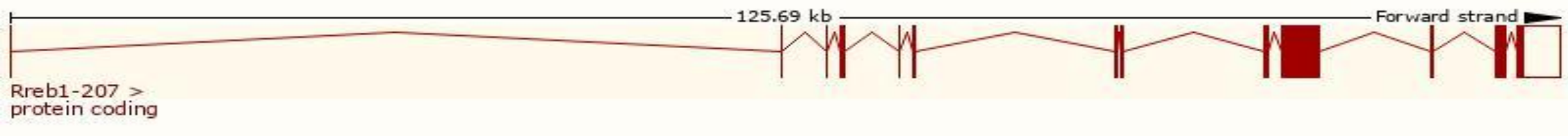
Official Symbol	Rreb1 provided by MGI
Official Full Name	ras responsive element binding protein 1 provided by MGI
Primary source	MGI:MGI:2443664
See related	Ensembl:ENSMUSG00000039087
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110037N09Rik, AA414966, B930013M22Rik
Expression	Ubiquitous expression in adrenal adult (RPKM 5.6), colon adult (RPKM 5.2) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

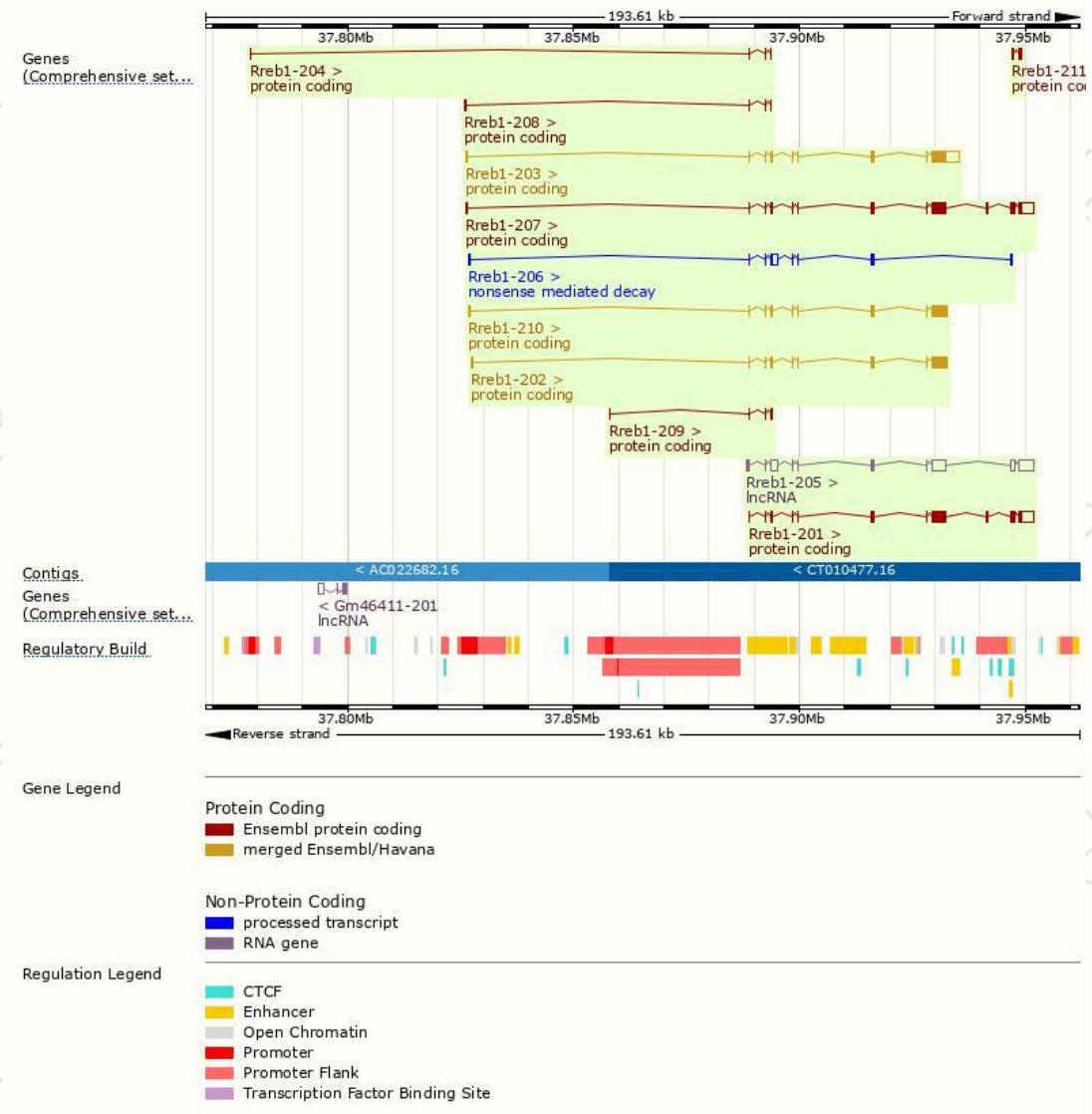
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rreb1-207	ENSMUST00000128570.8	8436	1754aa	Protein coding	CCDS49238	Q3UH06	TSL:5 GENCODE basic APPRIS P1
Rreb1-201	ENSMUST00000037232.7	8395	1754aa	Protein coding	CCDS49238	Q3UH06	TSL:5 GENCODE basic APPRIS P1
Rreb1-203	ENSMUST00000110238.9	7437	1291aa	Protein coding	CCDS36634	Q3UH06	TSL:1 GENCODE basic
Rreb1-202	ENSMUST00000110237.8	4617	1291aa	Protein coding	CCDS36634	Q3UH06	TSL:1 GENCODE basic
Rreb1-210	ENSMUST00000149745.7	4320	1291aa	Protein coding	CCDS36634	Q3UH06	TSL:1 GENCODE basic
Rreb1-211	ENSMUST00000162849.1	1053	320aa	Protein coding	-	F6UB40	CDS 5' incomplete TSL:2
Rreb1-209	ENSMUST00000138110.7	512	33aa	Protein coding	-	B8JJE4	CDS 3' incomplete TSL:3
Rreb1-204	ENSMUST00000122842.7	445	12aa	Protein coding	-	B8JJE5	CDS 3' incomplete TSL:3
Rreb1-208	ENSMUST00000138043.7	342	4aa	Protein coding	-	-	CDS 3' incomplete TSL:2
Rreb1-206	ENSMUST00000124373.7	2376	67aa	Nonsense mediated decay	-	Q3UHQ4	TSL:5
Rreb1-205	ENSMUST00000124268.7	9702	No protein	lncRNA	-	-	TSL:1

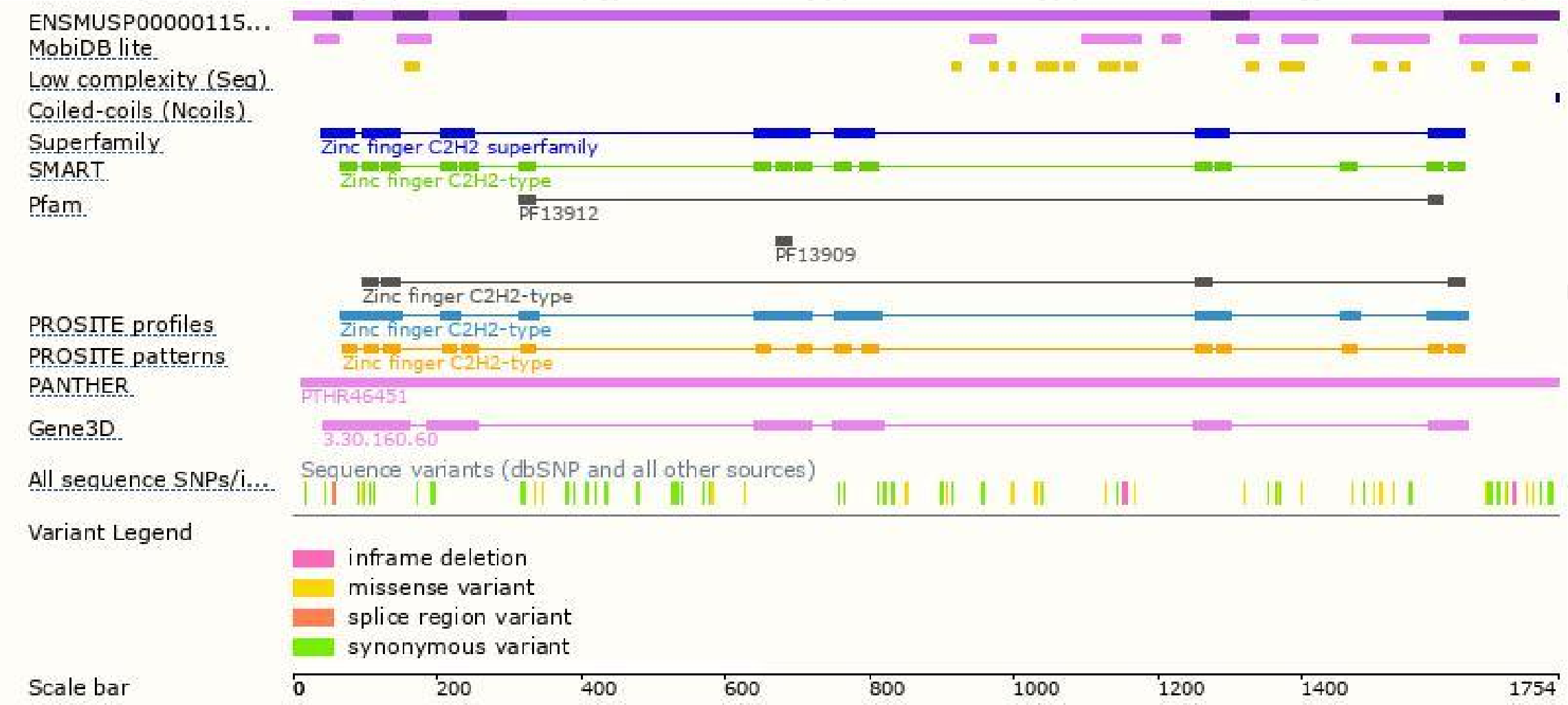
The strategy is based on the design of *Rreb1-207* transcript,The transcription is shown below



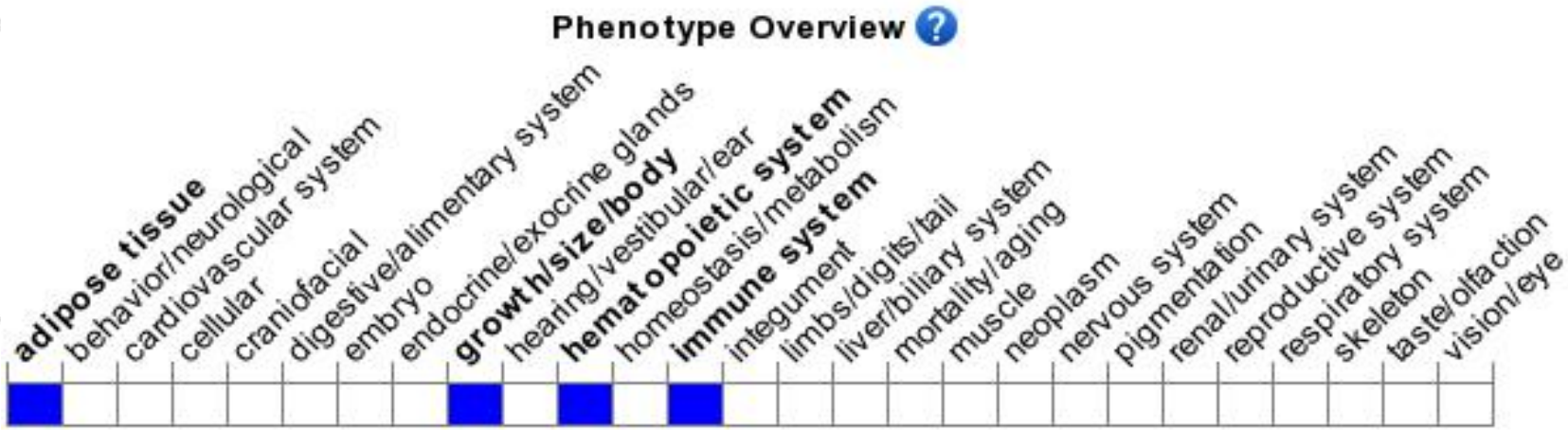
Genomic location distribution



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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