Brd7 Cas9-CKO Strategy

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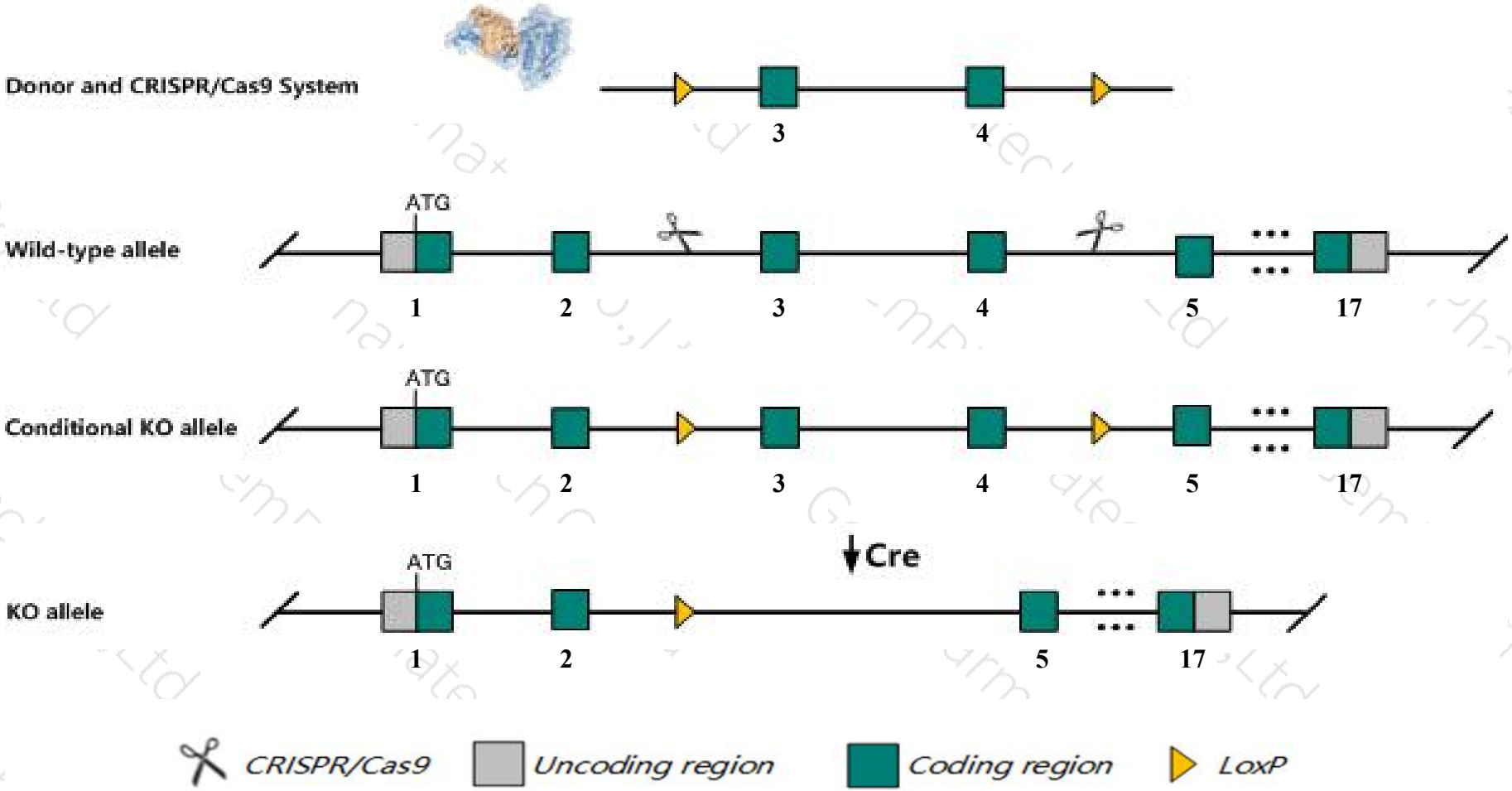
Project Overview

Project Name	***Brd7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

集萃药康 GemPharmatech

This model will use CRISPR/Cas9 technology to edit the *Brd7* gene. The schematic diagram is as follows:



Technical routes

➢ The *Brd7* gene has 7 transcripts. According to the structure of *Brd7* gene, exon3-exon4 of *Brd7-201*(ENSMUST00000034085.7) transcript is recommended as the knockout region.The region contains 188bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Brd7* 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

➢ According to the existing MGI data,mice homozygous for a knock-out allele exhibit impaired cognitive behavior and dendrite morphology in the medial prefrontal cortex. Mice homozygous for a different knock-out allele die in utero prior to E16.5, showing fetal growth retardation and altered limb, blood vessel and organ development.

➢ The *Brd7* gene is located on the Chr8. 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）

Brd7 bromodomain containing 7 [Mus musculus (house mouse)]

Gene ID: 26992, updated on 13-Mar-2020

Summary

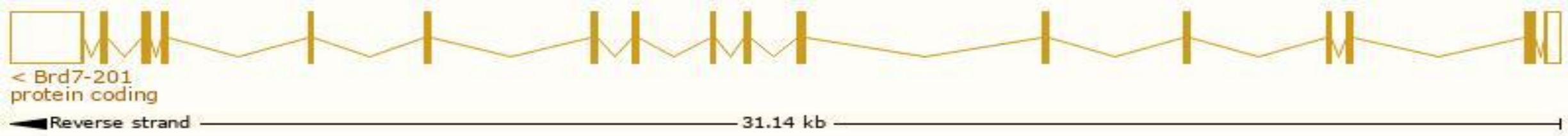
Official Symbol	Brd7 provided by MGI
Official Full Name	bromodomain containing 7 provided byMGI
Primary source	MGI:MGI:1349766
See related	Ensembl:ENSMUSG00000031660
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	BP75, CELTIX1, Ptpn13ip
Expression	Ubiquitous expression in CNS E11.5 (RPKM 13.7), CNS E14 (RPKM 11.2) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

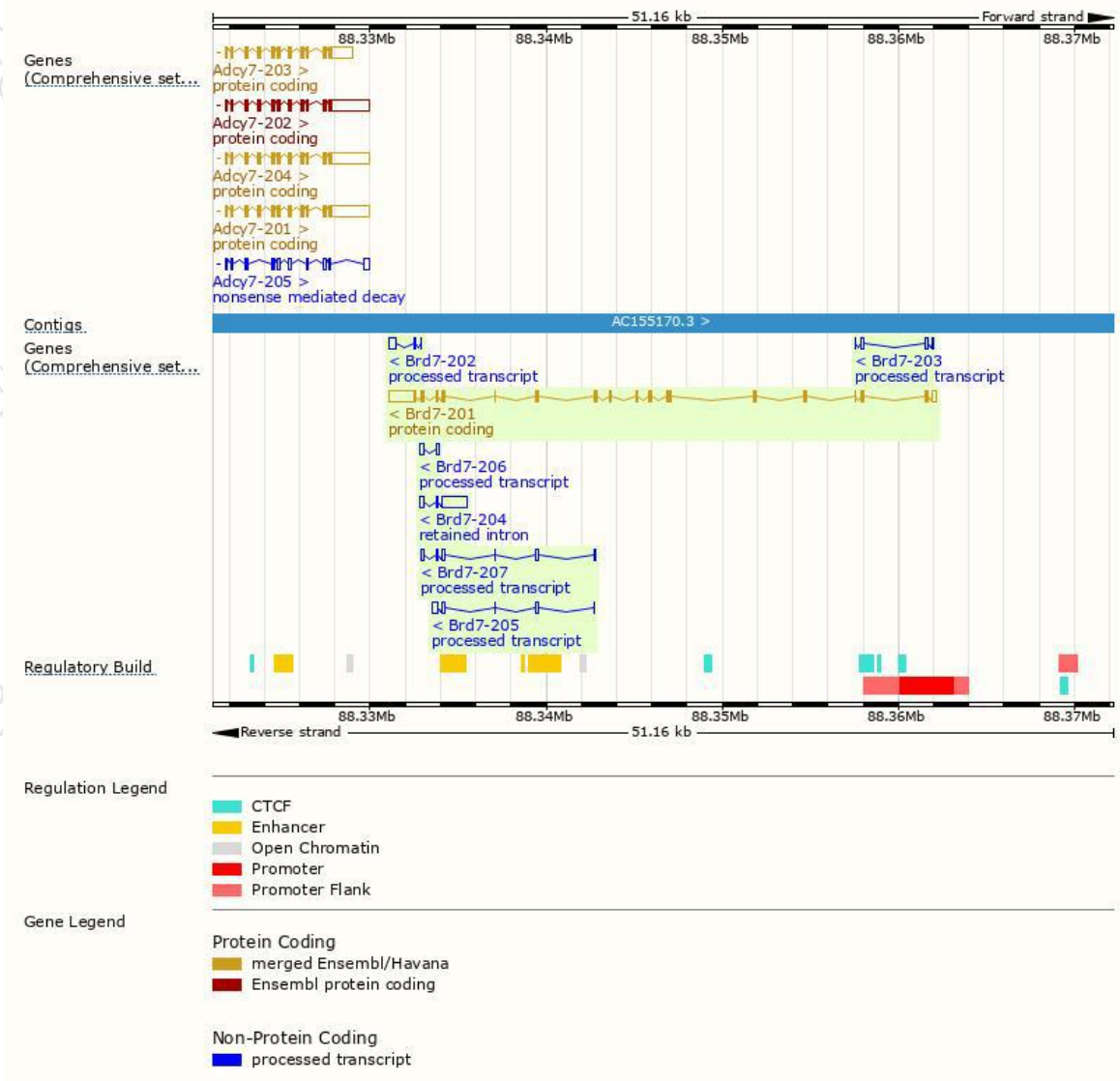
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Brd7-201	ENSMUST00000034085.7	3625	651aa	Protein coding	CCDS22510	O88665	TSL:1 GENCODE basic APPRIS P1
Brd7-207	ENSMUST00000149841.7	667	No protein	Processed transcript	-	-	TSL:3
Brd7-205	ENSMUST00000145609.1	636	No protein	Processed transcript	-	-	TSL:2
Brd7-203	ENSMUST00000135471.1	511	No protein	Processed transcript	-	-	TSL:2
Brd7-202	ENSMUST00000131748.1	508	No protein	Processed transcript	-	-	TSL:2
Brd7-206	ENSMUST00000146370.1	422	No protein	Processed transcript	-	-	TSL:1
Brd7-204	ENSMUST00000139675.7	1746	No protein	Retained intron	-	-	TSL:1

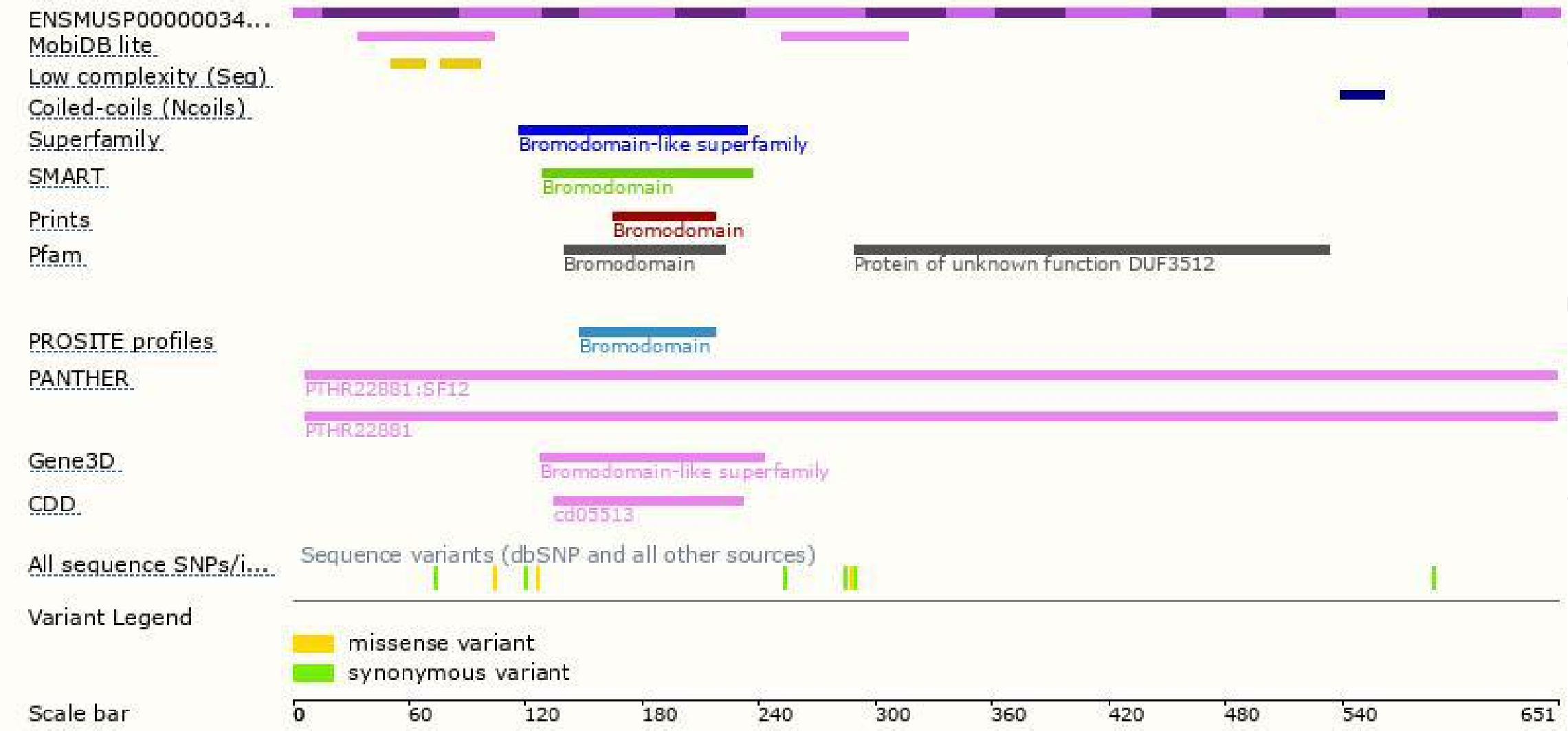
The strategy is based on the design of *Brd7-201* transcript,the transcription is shown below:



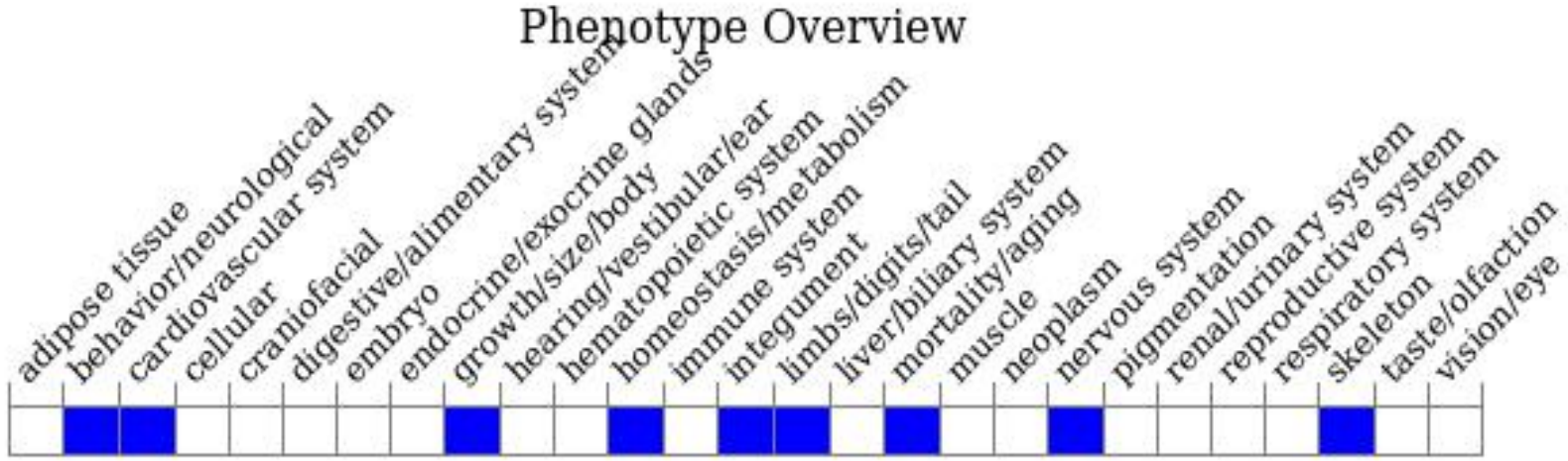
Genomic location distribution



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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