Arsg Cas9-CKO Strategy

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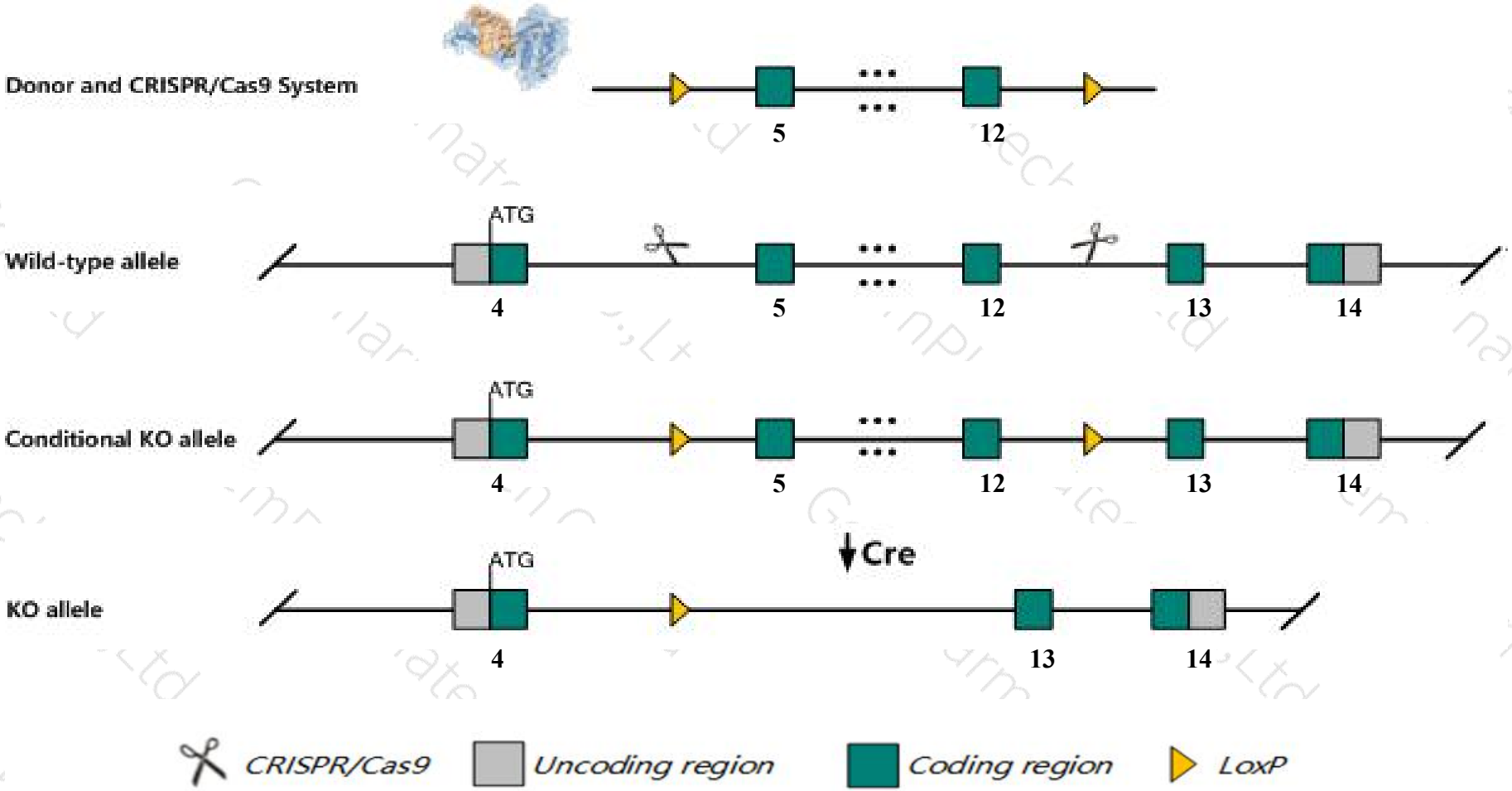
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Arsg* gene has 5 transcripts. According to the structure of *Arsg* gene, exon5-exon12 of *Arsg-201* (ENSMUST00000020928.12) transcript is recommended as the knockout region.The region contains 994bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Arsg* 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 null mutation display lysosomal storage pathology in the nervous system and peripheral tissues, including the liver and kidneys, resulting in Purkinje cell loss and age dependent cognitive impairment.

- The *Arsg* gene is located on the Chr11. 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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Arsg arylsulfatase G [Mus musculus (house mouse)]

Gene ID: 74008, updated on 31-Jan-2019

Summary

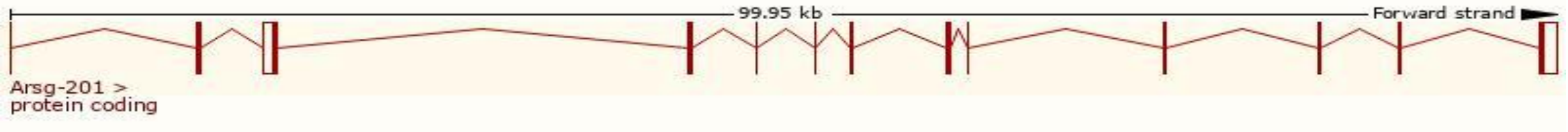
Official Symbol	Arsg provided by MGI
Official Full Name	arylsulfatase G provided byMGI
Primary source	MGI:MGI:1921258
See related	Ensembl:ENSMUSG00000020604
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	6330406P08Rik, AI846872, ASG
Expression	Ubiquitous expression in cerebellum adult (RPKM 4.8), kidney adult (RPKM 3.0) and 27 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

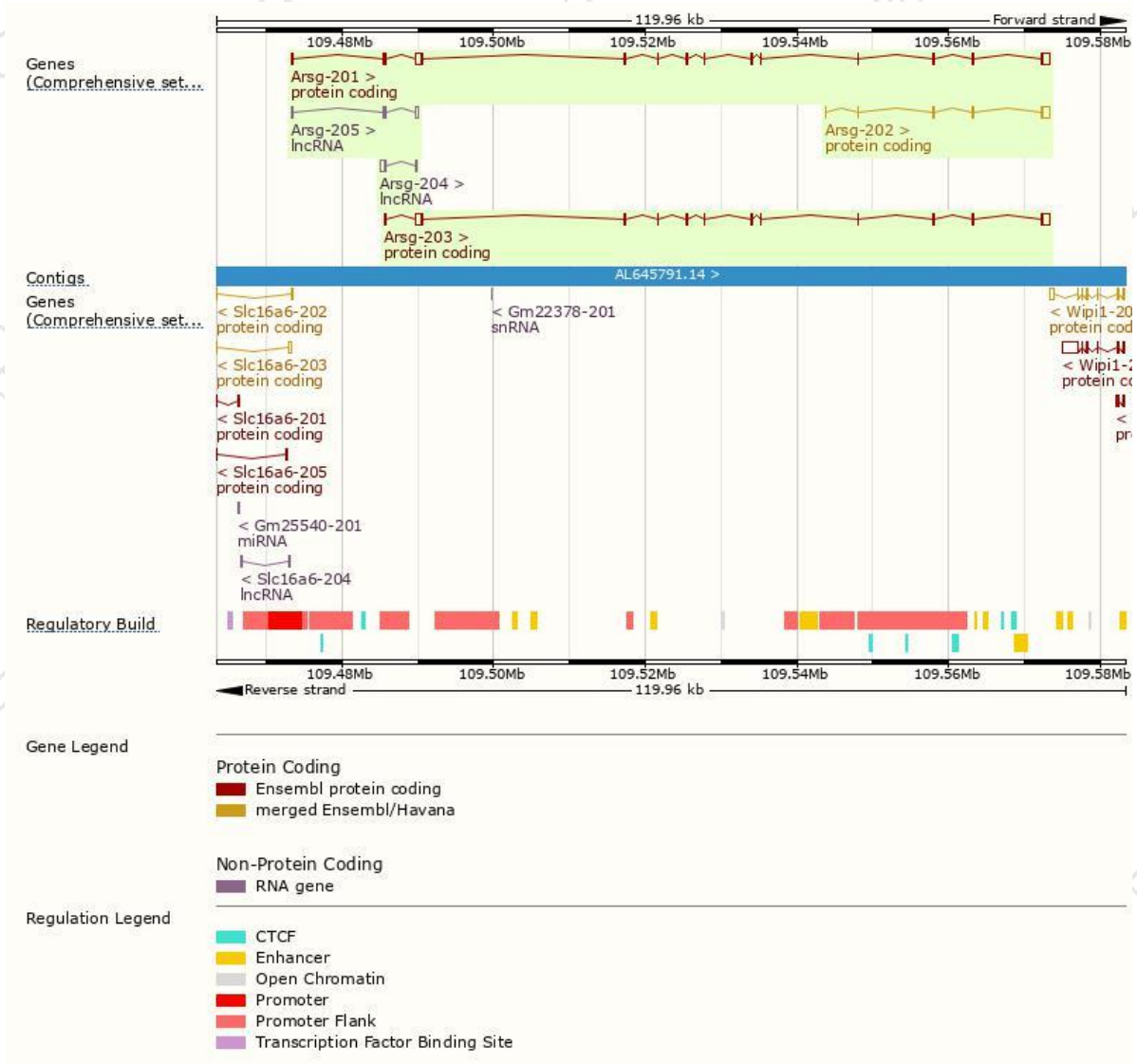
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arsg-201	ENSMUST00000020928.12	3273	525aa	Protein coding	CCDS25581	Q3TYD4	TSL:1 GENCODE basic APPRIS P1
Arsg-203	ENSMUST00000106697.7	3232	525aa	Protein coding	CCDS25581	Q3TYD4	TSL:5 GENCODE basic APPRIS P1
Arsg-202	ENSMUST00000106696.1	1508	202aa	Protein coding	CCDS48971	Q3TYD4	TSL:1 GENCODE basic
Arsg-204	ENSMUST00000136336.1	733	No protein	lncRNA	-	-	TSL:3
Arsg-205	ENSMUST00000152252.7	430	No protein	lncRNA	-	-	TSL:3

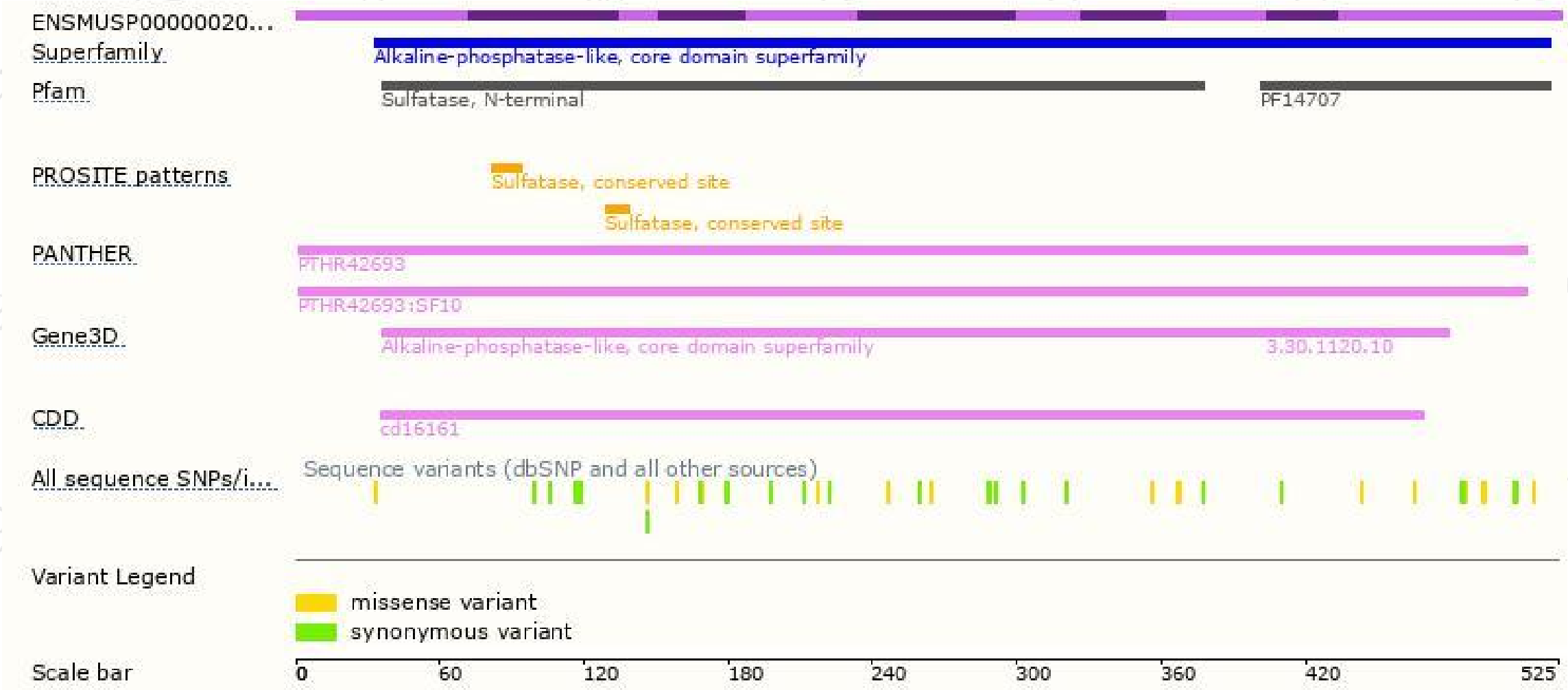
The strategy is based on the design of *Arsg-201* transcript,The transcription is shown below



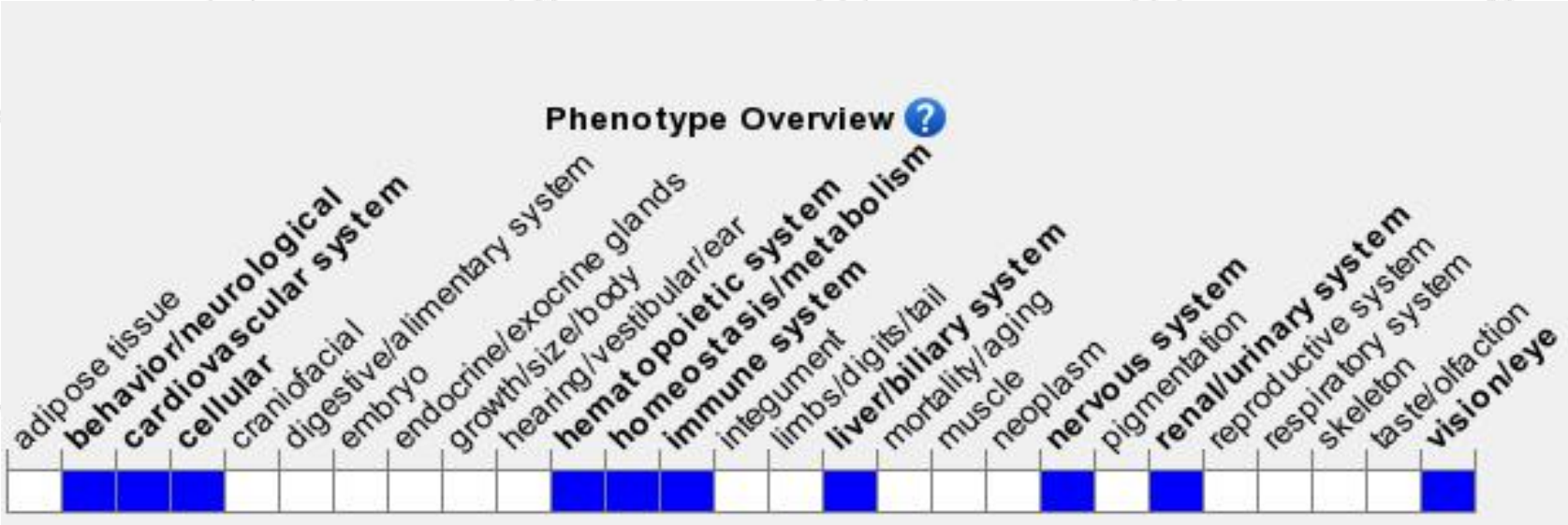
Genomic location distribution



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 null mutation display lysosomal storage pathology in the nervous system and peripheral tissues, including the liver and kidneys, resulting in Purkinje cell loss and age dependent cognitive impairment.

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

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