Abcc6 Cas9-CKO Strategy

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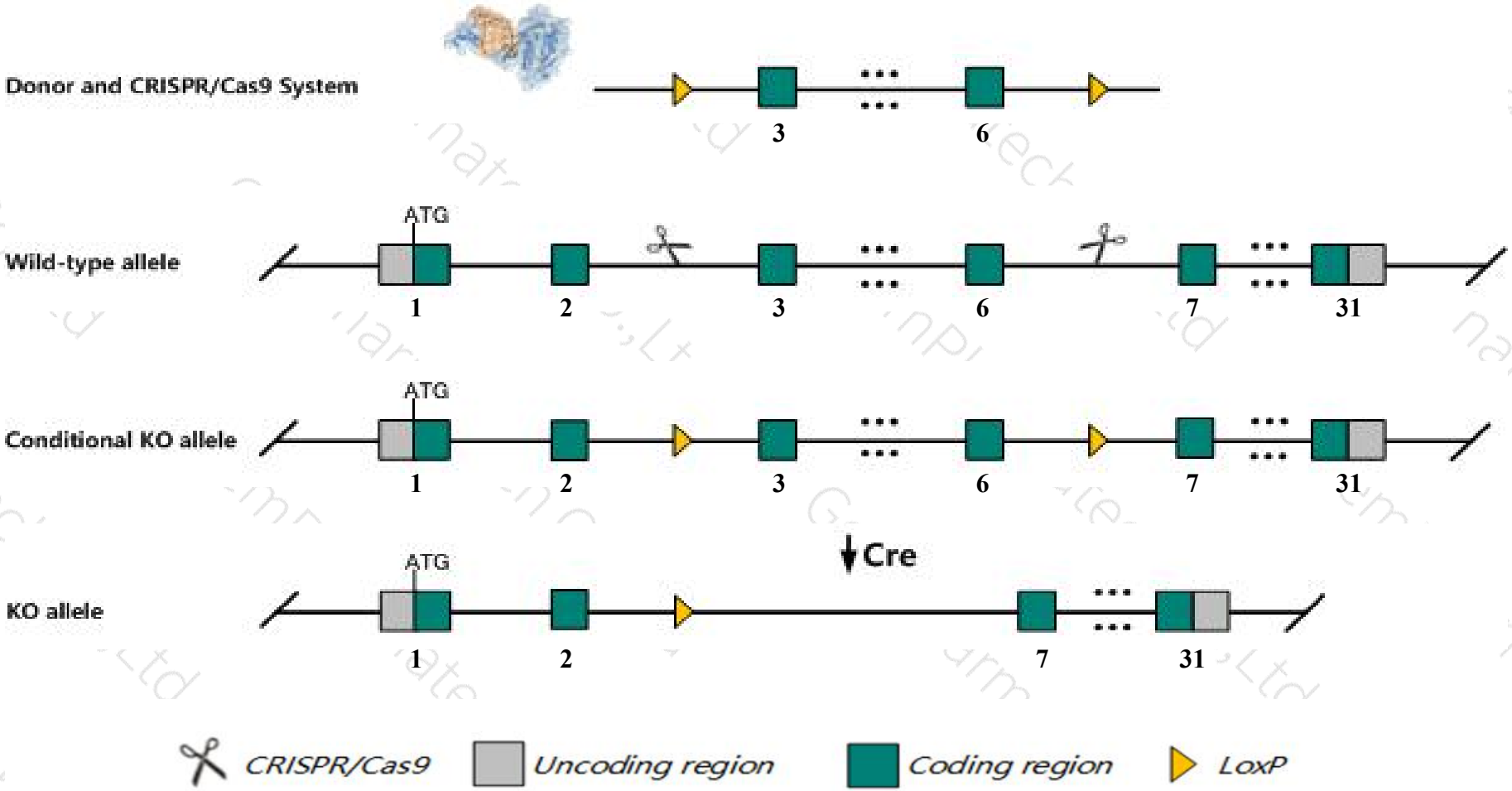
Design Date: 2019-11-14

Project Overview

Project Name	***Abcc6***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Abcc6* gene. The schematic diagram is as follows:



Technical routes

- The *Abcc6* gene has 5 transcripts. According to the structure of *Abcc6* gene, exon3-exon6 of *Abcc6-201* (ENSMUST00000002850.7) transcript is recommended as the knockout region.The region contains 443bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Abcc6* 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,Homozygous null mice display patchy mineralization which may include the capsule surrounding the sinuses of vibrissae, medium sized arteries, skin, retina, kidney, and interscapular brown fat. Strain differences at this locus may lead to altered susceptibility to cardiac calcinosis.

➢ The *Abcc6* gene is located on the Chr7. 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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Abcc6 ATP-binding cassette, sub-family C (CFTR/MRP), member 6 [Mus musculus (house mouse)]

Gene ID: 27421, updated on 25-Mar-2019

Summary

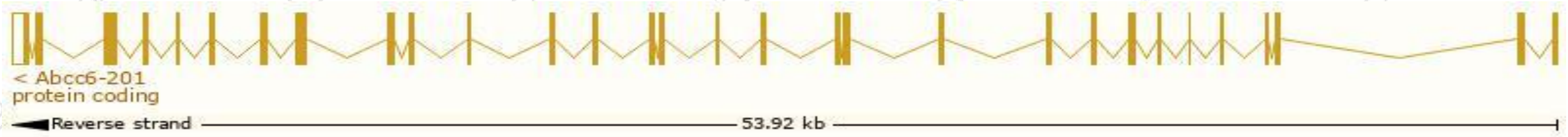
Official Symbol	Abcc6 provided by MGI
Official Full Name	ATP-binding cassette, sub-family C (CFTR/MRP), member 6 provided byMGI
Primary source	MGI:MGI:1351634
See related	Ensembl:ENSMUSG00000030834
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Abcc1b, DCC, Dyscalc1, Mrp6, dyscalc
Summary	The protein encoded by this gene is a member of the superfamily of ATP-binding cassette (ABC) transporters. ABC proteins transport various molecules across extra- and intra-cellular membranes. ABC genes are divided into seven distinct subfamilies (ABC1, MDR/TAP, MRP, ALD, OABP, GCN20, White). This protein is a member of the MRP subfamily which is involved in multi-drug resistance. The specific function of this protein is unknown; however, a similar rat protein has been identified as the major canalicular bile salt export pump of liver. [provided by RefSeq, Jul 2008]
Expression	Biased expression in liver adult (RPKM 33.2), liver E18 (RPKM 7.7) and 6 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

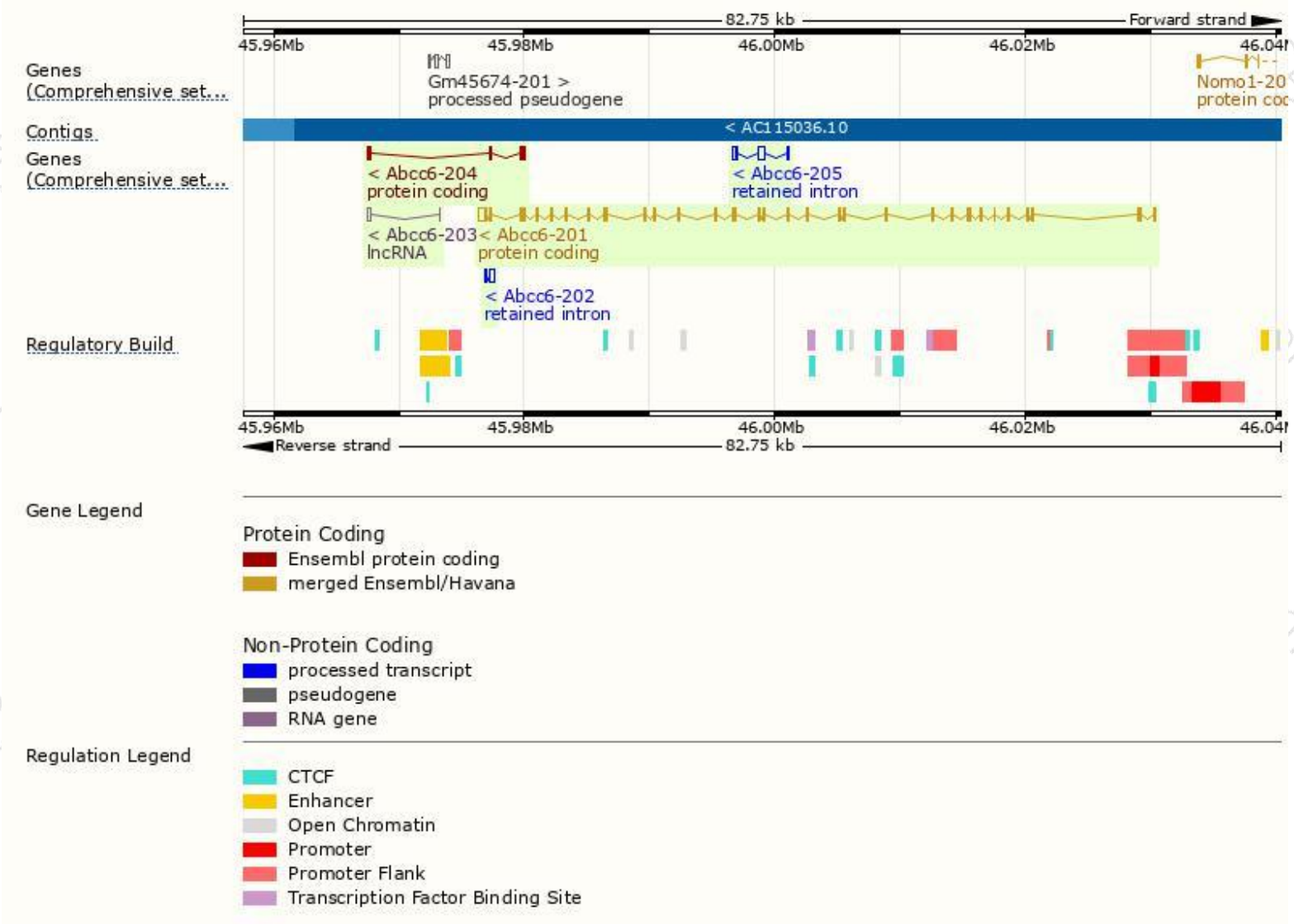
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Abcc6-201	ENSMUST00000002850.7	4974	1498aa	Protein coding	CCDS21272	Q9R1S7	TSL:1 GENCODE basic APPRIS P1
Abcc6-204	ENSMUST00000211220.1	659	182aa	Protein coding	-	A0A1B0GRV2	CDS 5' incomplete TSL:3
Abcc6-205	ENSMUST00000211780.1	760	No protein	Retained intron	-	-	TSL:3
Abcc6-202	ENSMUST00000209985.1	492	No protein	Retained intron	-	-	TSL:2
Abcc6-203	ENSMUST00000210962.1	257	No protein	lncRNA	-	-	TSL:3

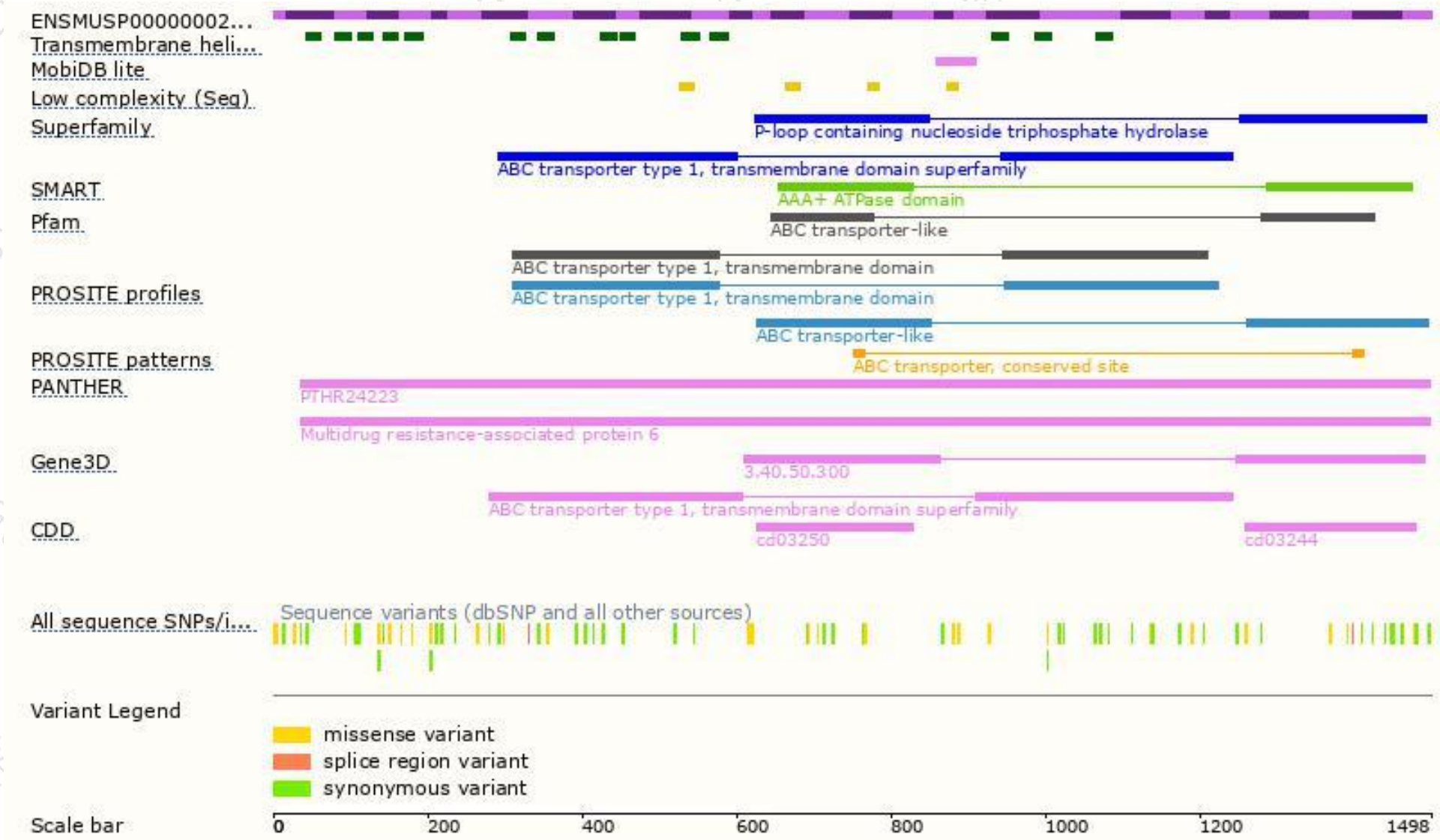
The strategy is based on the design of *Abcc6-201* transcript,The transcription is shown below



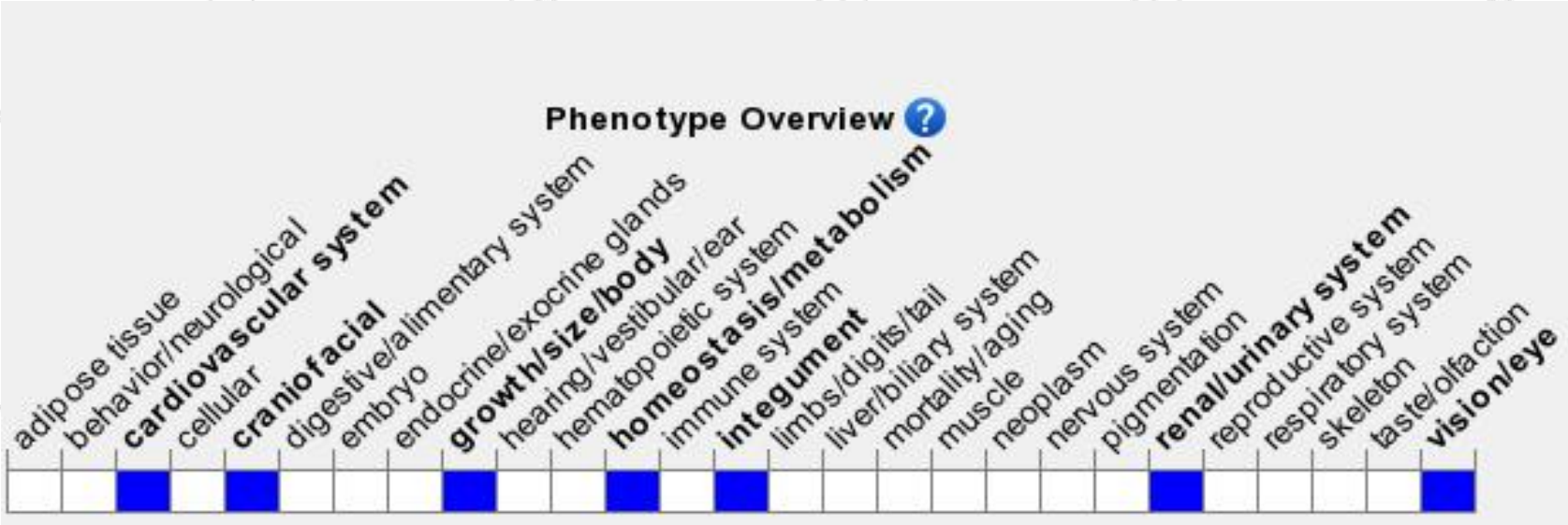
Genomic location distribution



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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