

Ahi1 Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Ahi1

Project type

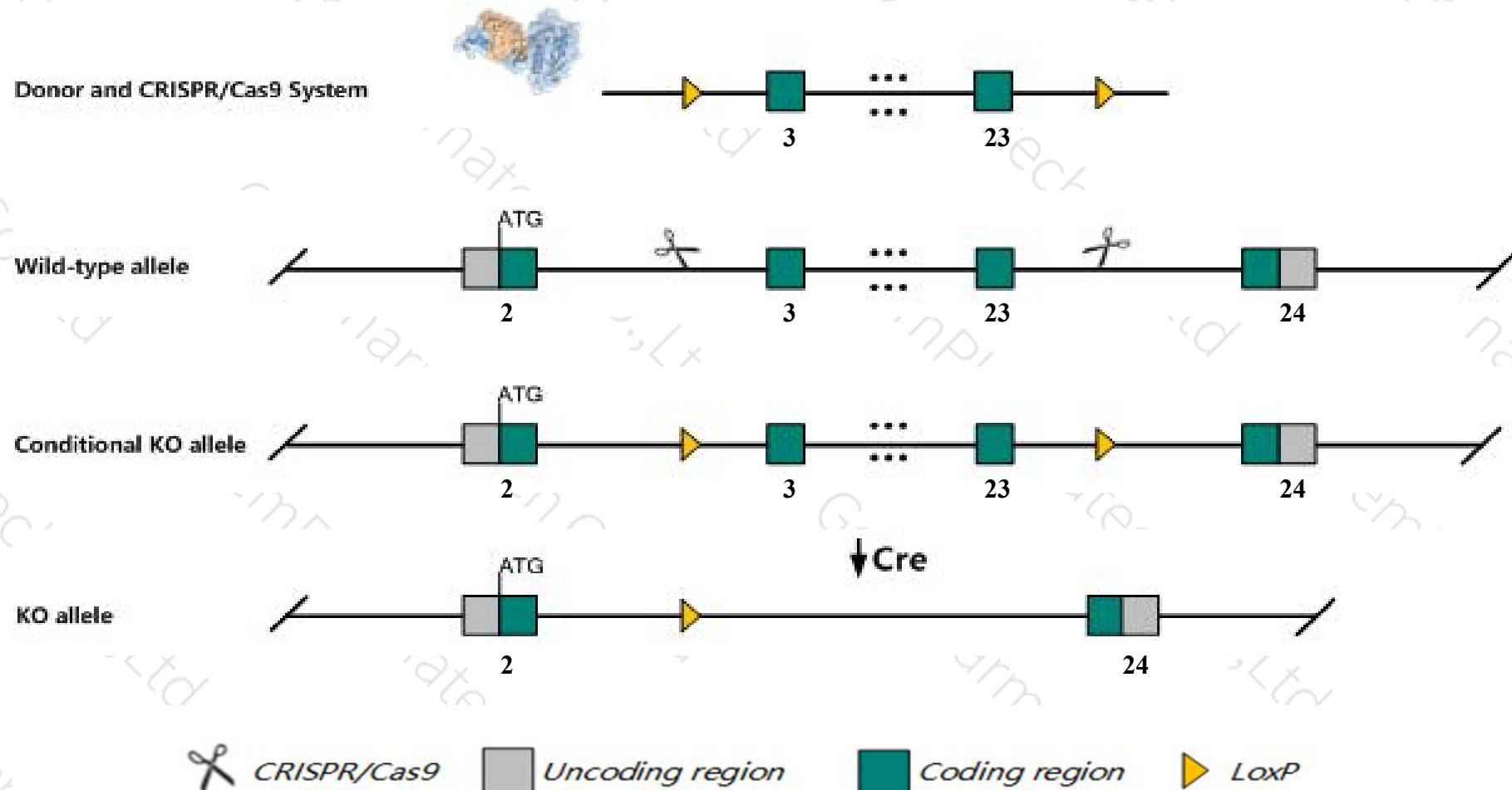
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Ahi1* gene has 7 transcripts. According to the structure of *Ahi1* gene, exon3-exon23 of *Ahi1-201* (ENSMUST00000105525.11) transcript is recommended as the knockout region. The region contains 2830bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ahi1* 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.

- According to the existing MGI data, Mouse embryonic fibroblasts homozygous for one knock-out allele exhibit reduced and abnormal cilia. Mice homozygous for another knock-out allele exhibit premature death and abnormal kidney morphology and physiology.
- The *Ahi1* gene is located on the Chr10. 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)

Ahi1 Abelson helper integration site 1 [Mus musculus (house mouse)]

Gene ID: 52906, updated on 10-Feb-2019

Summary



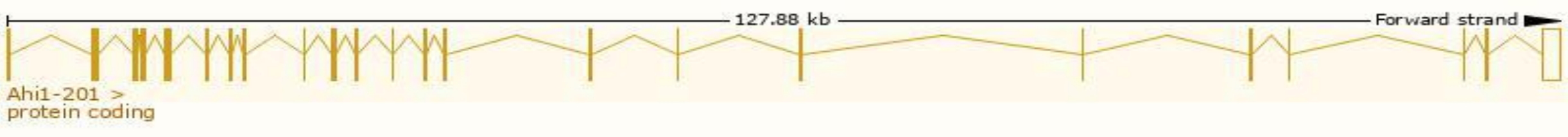
Official Symbol	Ahi1 provided by MGI
Official Full Name	Abelson helper integration site 1 provided by MGI
Primary source	MGI:MGI:87971
See related	Ensembl:ENSMUSG00000019986
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700015F03Rik, Ahi-1, D10Bwg0629e
Expression	Biased expression in CNS E18 (RPKM 44.9), frontal lobe adult (RPKM 34.7) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

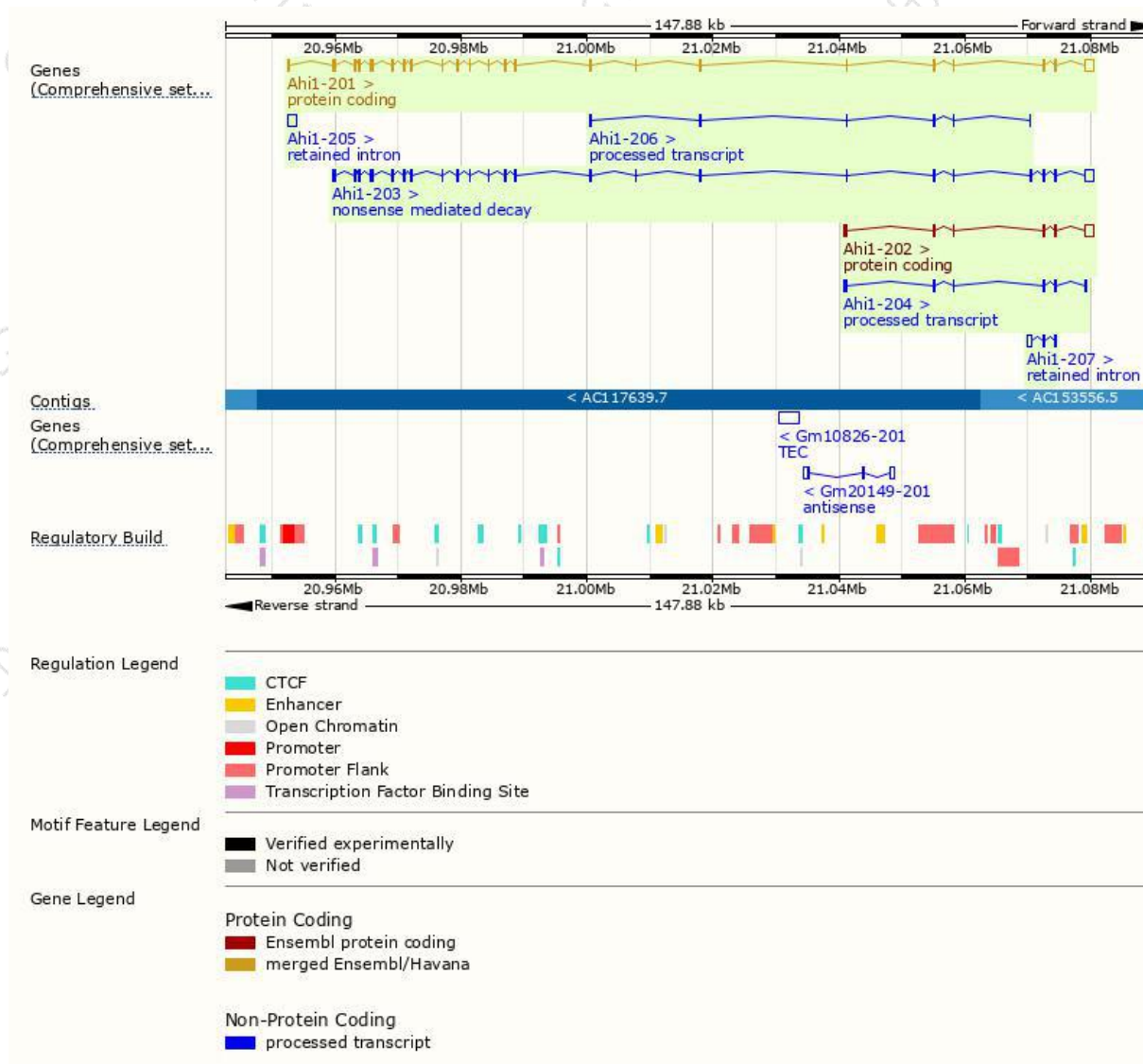
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ahi1-201	ENSMUST00000105525.11	4851	1047aa	Protein coding	CCDS35860	E9QP54	TSL:1 GENCODE basic APPRIS P1
Ahi1-202	ENSMUST00000163505.2	2067	142aa	Protein coding	CCDS48512	E9Q552	TSL:1 GENCODE basic
Ahi1-203	ENSMUST00000213104.1	4829	1005aa	Nonsense mediated decay	-	A0A1L1SQE2	TSL:2
Ahi1-204	ENSMUST00000213852.1	1038	No protein	Processed transcript	-	-	TSL:1
Ahi1-206	ENSMUST00000214893.1	788	No protein	Processed transcript	-	-	TSL:5
Ahi1-205	ENSMUST00000214745.1	1375	No protein	Retained intron	-	-	TSL:NA
Ahi1-207	ENSMUST00000215543.1	790	No protein	Retained intron	-	-	TSL:5

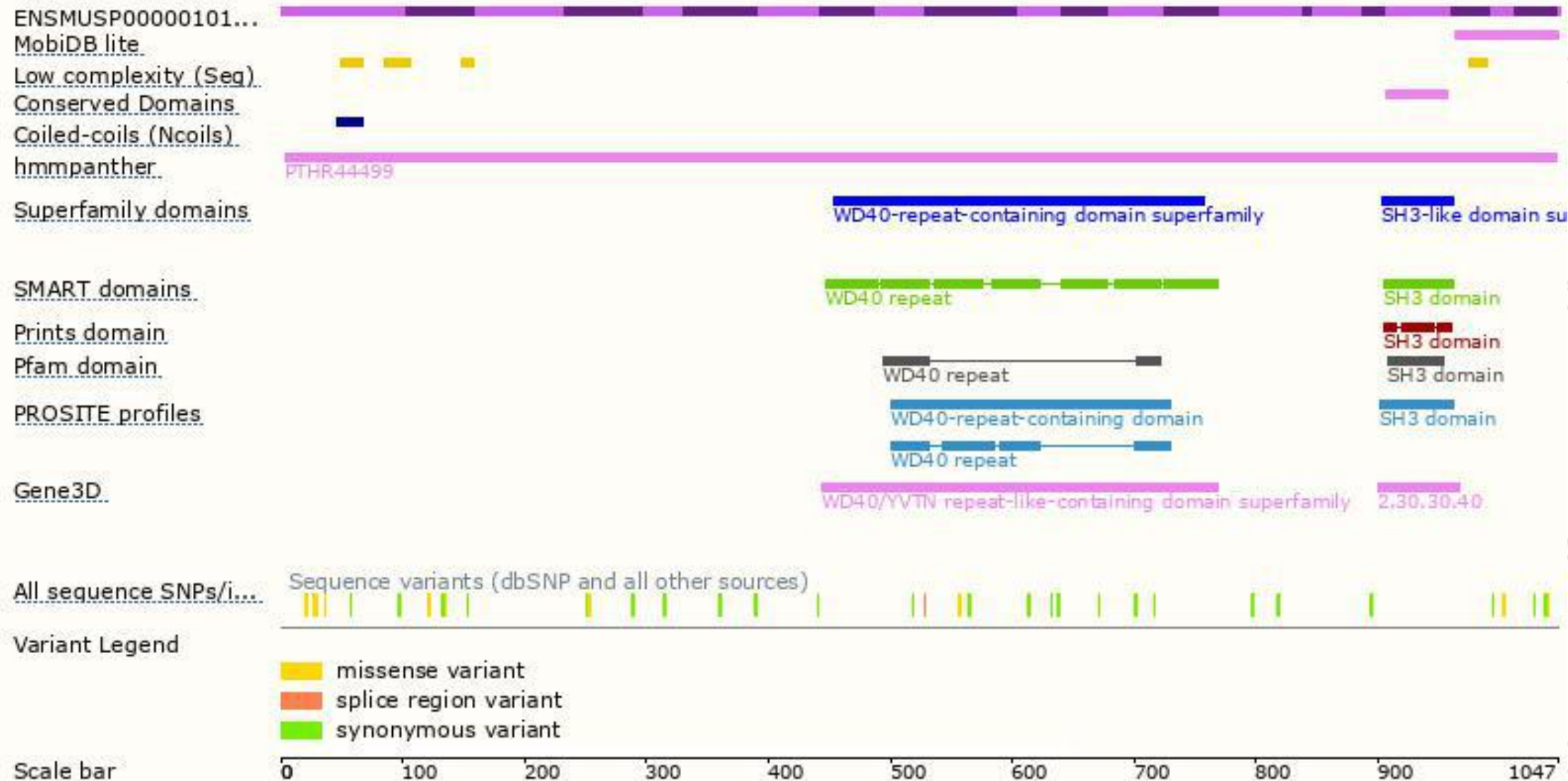
The strategy is based on the design of *Ahi1-201* transcript,The transcription is shown below



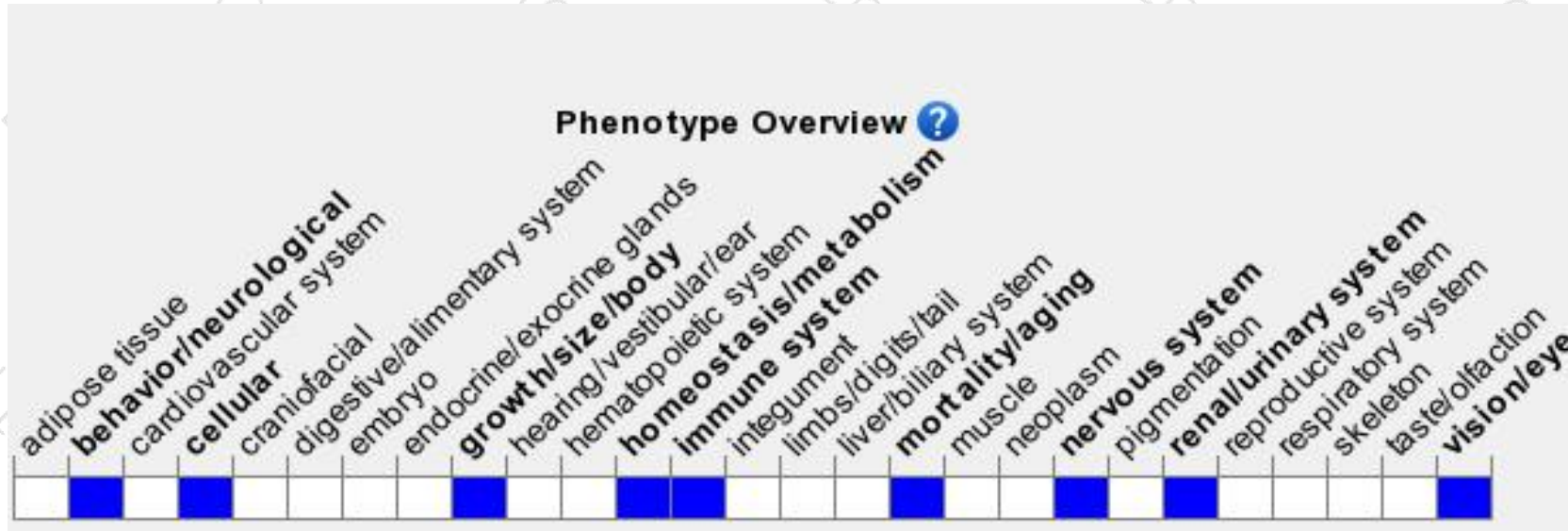
Genomic location distribution



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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