

Dhdds Cas9-CKO Strategy

Designer:

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Design Date:

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Project Overview

Project Name

Dhdds

Project type

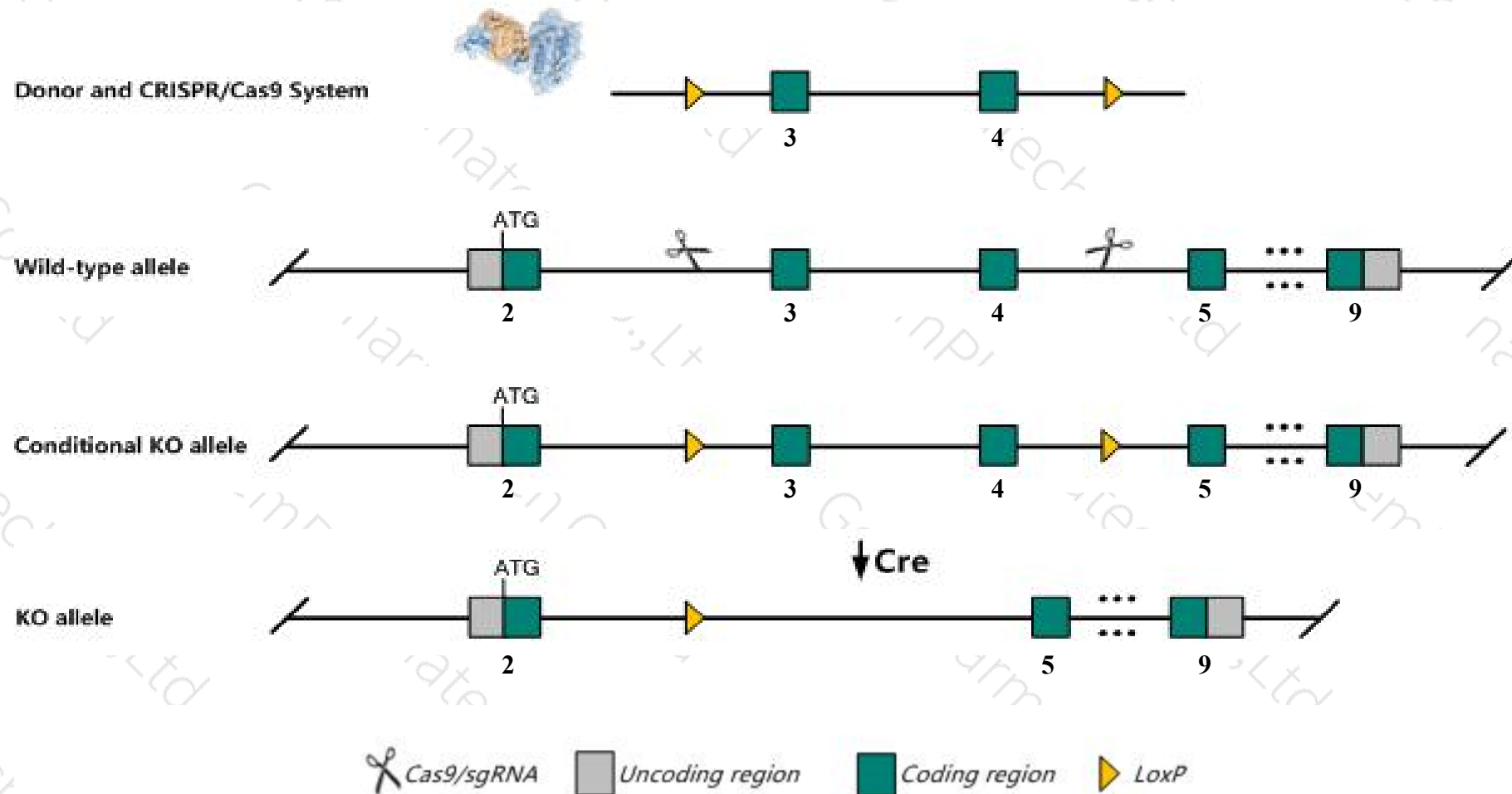
Cas9-CKO

Strain background

C57BL/6J

Conditional Knockout strategy

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



Technical routes

- The *Dhdds* gene has 11 transcripts. According to the structure of *Dhdds* gene, exon3-exon4 of *Dhdds*-209 (ENSMUST00000144668.7) transcript is recommended as the knockout region. The region contains 260bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dhdds* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.
- The flox mice was 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 *Dhdds* gene is located on the Chr4. 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)

Dhdds dehydrololichyl diphosphate synthase [*Mus musculus* (house mouse)]

Gene ID: 67422, updated on 24-Oct-2019

Summary

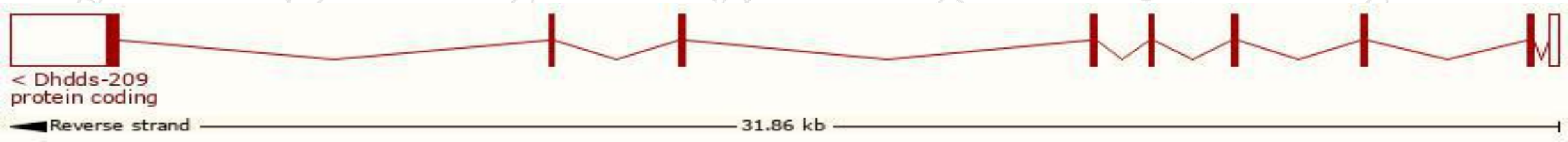
Official Symbol	Dhdds provided by MGI
Official Full Name	dehydrololichyl diphosphate synthase provided by MGI
Primary source	MGI:MGI:1914672
See related	Ensembl:ENSMUSG00000012117
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	DS; CIT; HDS; W91638; cis-IPTase; 3222401G21Rik
Expression	Ubiquitous expression in cerebellum adult (RPKM 17.5), cortex adult (RPKM 14.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

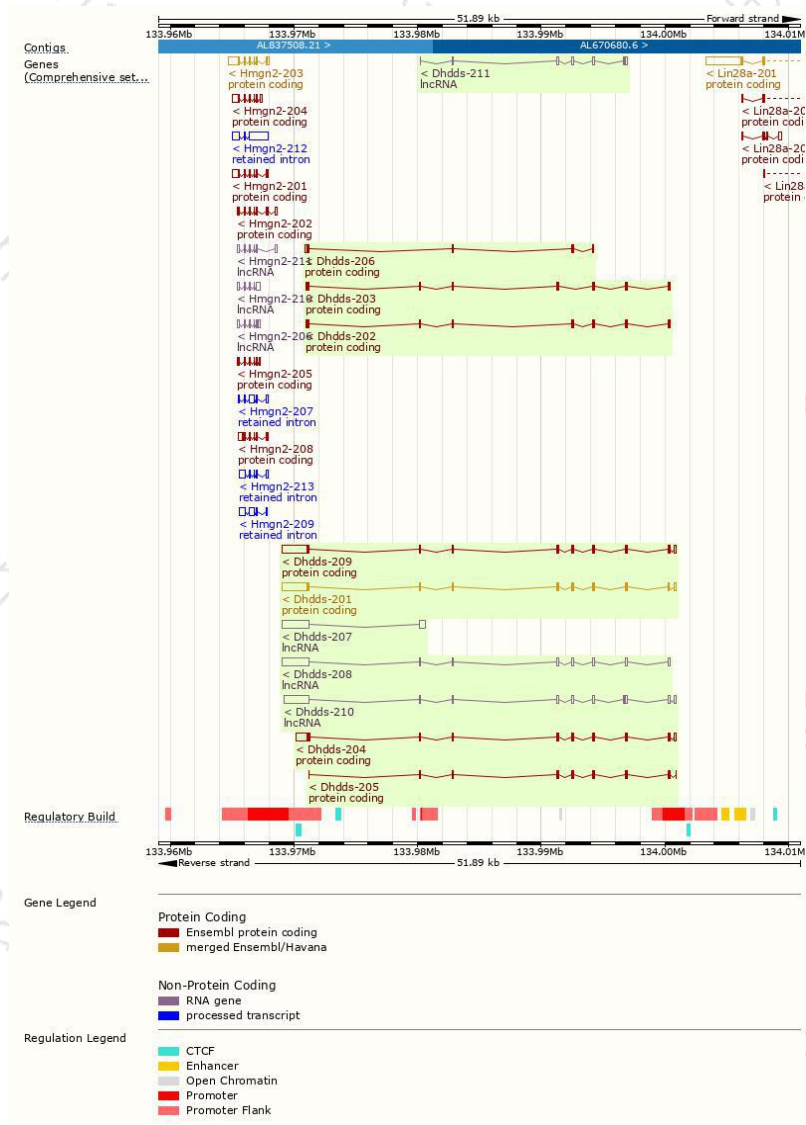
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dhdds-209	ENSMUST00000144668.7	3219	333aa	Protein coding	CCDS18760	Q99KU1	TSL:1 GENCODE basic APPRIS P2
Dhdds-201	ENSMUST00000012262.11	3133	333aa	Protein coding	CCDS18760	Q99KU1	TSL:1 GENCODE basic APPRIS P2
Dhdds-204	ENSMUST00000105887.7	2038	334aa	Protein coding	-	Q99KU1	TSL:1 GENCODE basic APPRIS ALT 1
Dhdds-203	ENSMUST00000105886.7	1015	294aa	Protein coding	-	A3KGL2	TSL:5 GENCODE basic
Dhdds-202	ENSMUST00000105885.7	998	299aa	Protein coding	-	A3KGL0	TSL:5 GENCODE basic
Dhdds-205	ENSMUST00000105889.3	890	258aa	Protein coding	-	A3KGL3	CDS 3' incomplete TSL:5
Dhdds-206	ENSMUST00000130464.7	603	168aa	Protein coding	-	A3KGK9	CDS 5' incomplete TSL:5
Dhdds-210	ENSMUST00000146241.7	3179	No protein	lncRNA	-	-	TSL:1
Dhdds-208	ENSMUST00000142660.7	3043	No protein	lncRNA	-	-	TSL:5
Dhdds-207	ENSMUST00000134096.1	2683	No protein	lncRNA	-	-	TSL:1
Dhdds-211	ENSMUST00000150729.1	748	No protein	lncRNA	-	-	TSL:3

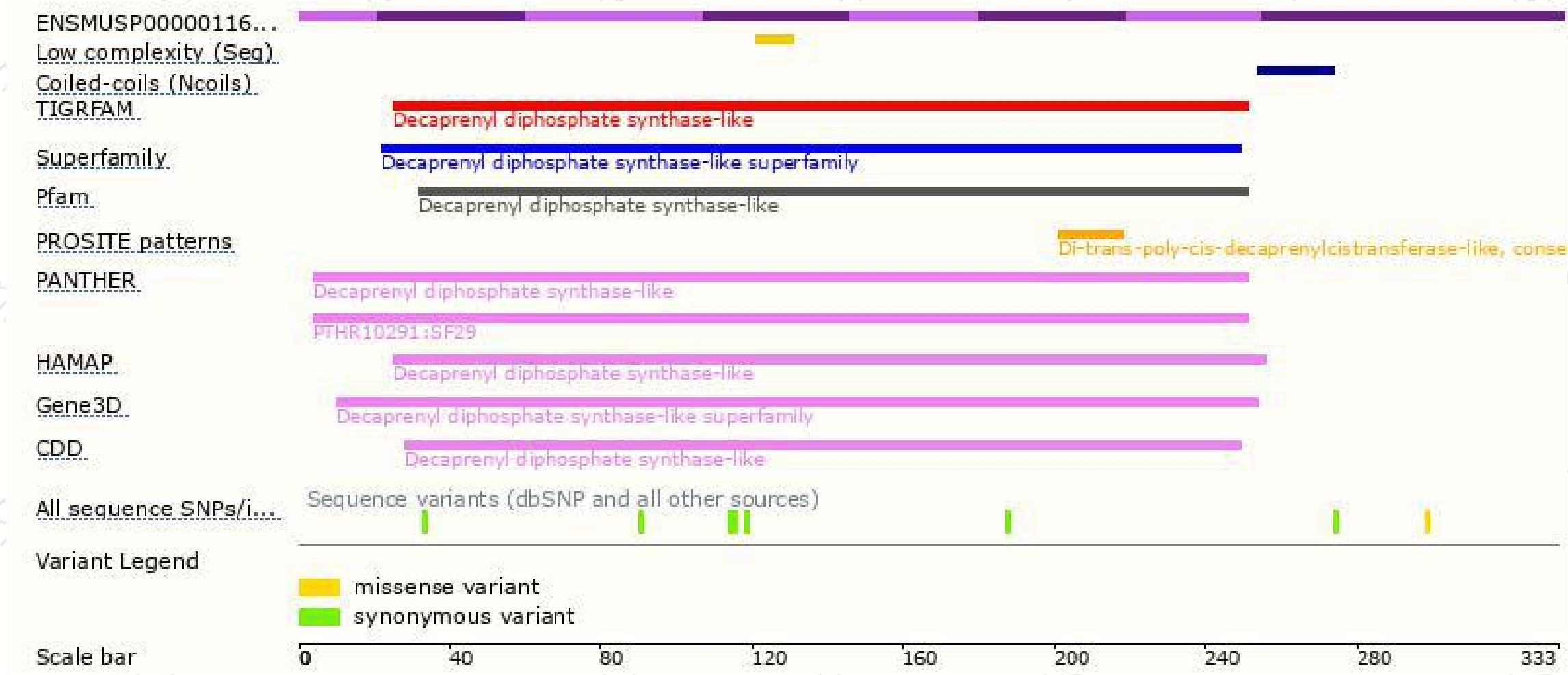
The strategy is based on the design of *Dhdds-209* transcript,The transcription is shown below



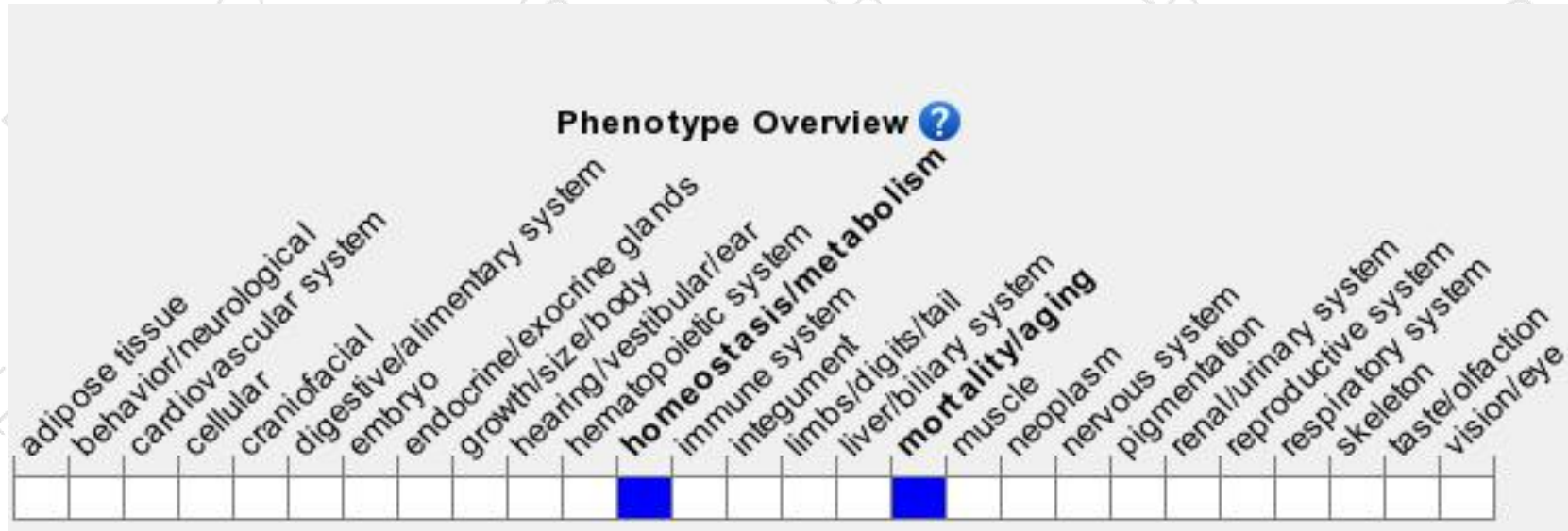
Genomic location distribution



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/>).

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

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