Morc3 Cas9-CKO Strategy

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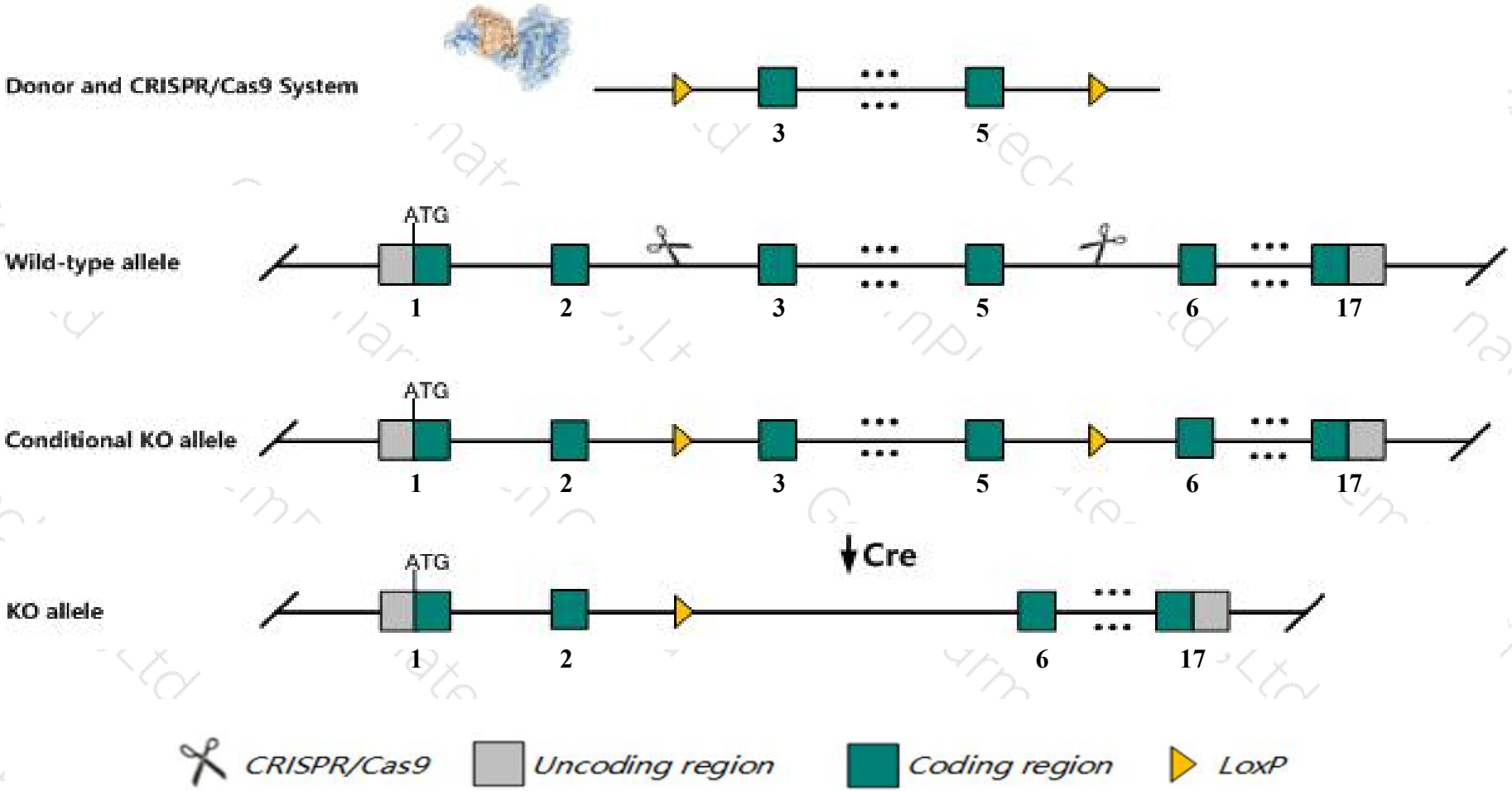
Project Overview

Project Name	***Morc3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Morc3* gene. The schematic diagram is as follows:



Technical routes

- The *Morc3* gene has 10 transcripts. According to the structure of *Morc3* gene, exon3-exon5 of *Morc3-206* (ENSMUST00000202261.4) transcript is recommended as the knockout region.The region contains 496bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Morc3* 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 allele die at or within a day of birth.

➢The non-coding transcripts 204, 210 are unaffected.

➢ The *Morc3* gene is located on the Chr16. 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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Morc3 microrchidia 3 [Mus musculus (house mouse)]

Gene ID: 338467, updated on 31-Jan-2019

Summary

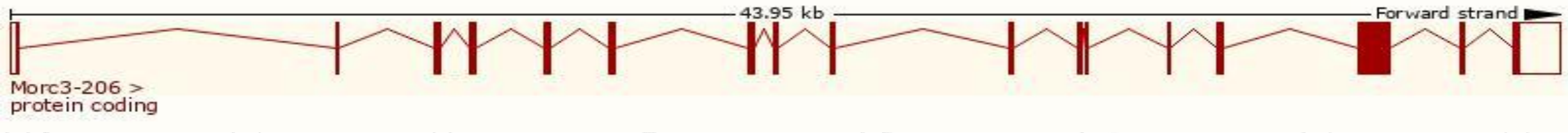
Official Symbol	Morc3 provided by MGI
Official Full Name	microrchidia 3 provided by MGI
Primary source	MGI:MGI:2136841
See related	Ensembl:ENSMUSG00000039456
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110051N18Rik, AI452146, BF318192, D16Jhu32e, NXP2, Zcwcc3
Expression	Ubiquitous expression in CNS E18 (RPKM 8.1), CNS E11.5 (RPKM 7.9) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

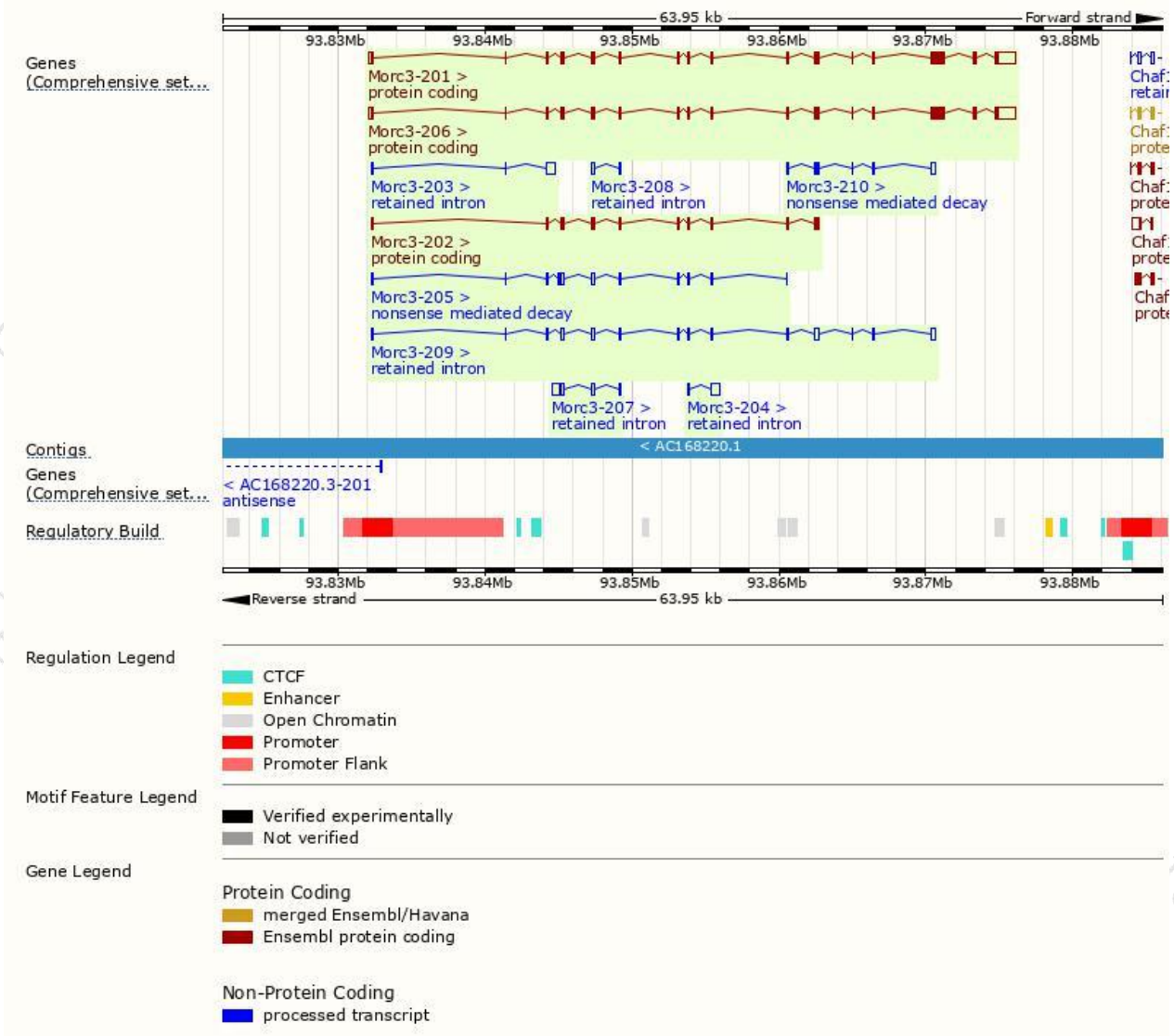
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Morc3-206	ENSMUST00000202261.4	4179	942aa	Protein coding	CCDS79490	F7BJB9	TSL:1 GENCODE basic APPRIS P1
Morc3-201	ENSMUST00000044068.9	4178	942aa	Protein coding	-	F7BJB9	TSL:5 GENCODE basic APPRIS P1
Morc3-202	ENSMUST00000201097.2	1386	397aa	Protein coding	-	A0A0J9YU83	CDS 3' incomplete TSL:5
Morc3-205	ENSMUST00000201754.3	1298	92aa	Nonsense mediated decay	-	A0A0J9YUV3	TSL:1
Morc3-210	ENSMUST00000232639.1	726	58aa	Nonsense mediated decay	-	A0A338P7B1	CDS 5' incomplete
Morc3-209	ENSMUST00000232425.1	2114	No protein	Retained intron	-	-	
Morc3-207	ENSMUST00000202663.1	882	No protein	Retained intron	-	-	TSL:3
Morc3-203	ENSMUST00000201497.1	735	No protein	Retained intron	-	-	TSL:2
Morc3-204	ENSMUST00000201706.1	634	No protein	Retained intron	-	-	TSL:3
Morc3-208	ENSMUST00000231891.1	246	No protein	Retained intron	-	-	

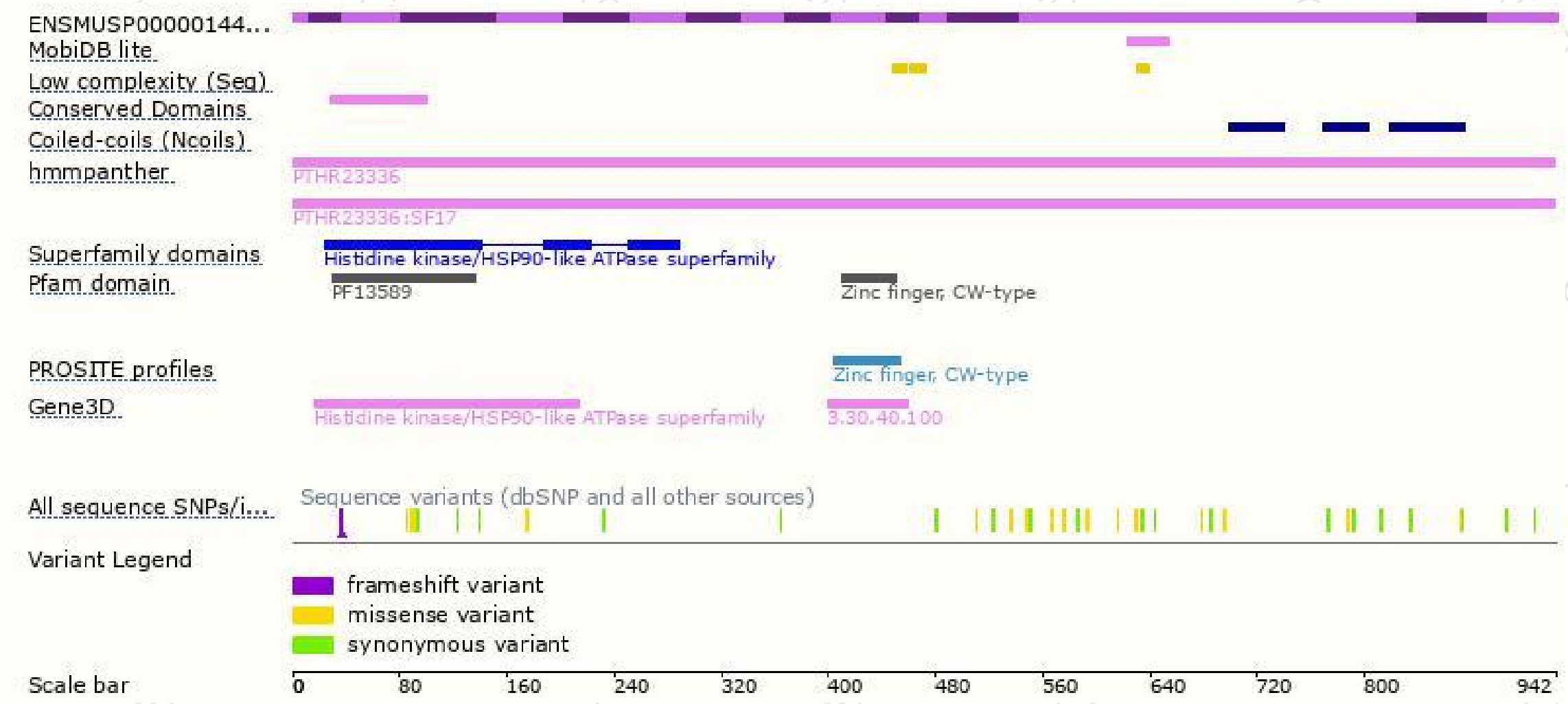
The strategy is based on the design of *Morc3-206* transcript,The transcription is shown below



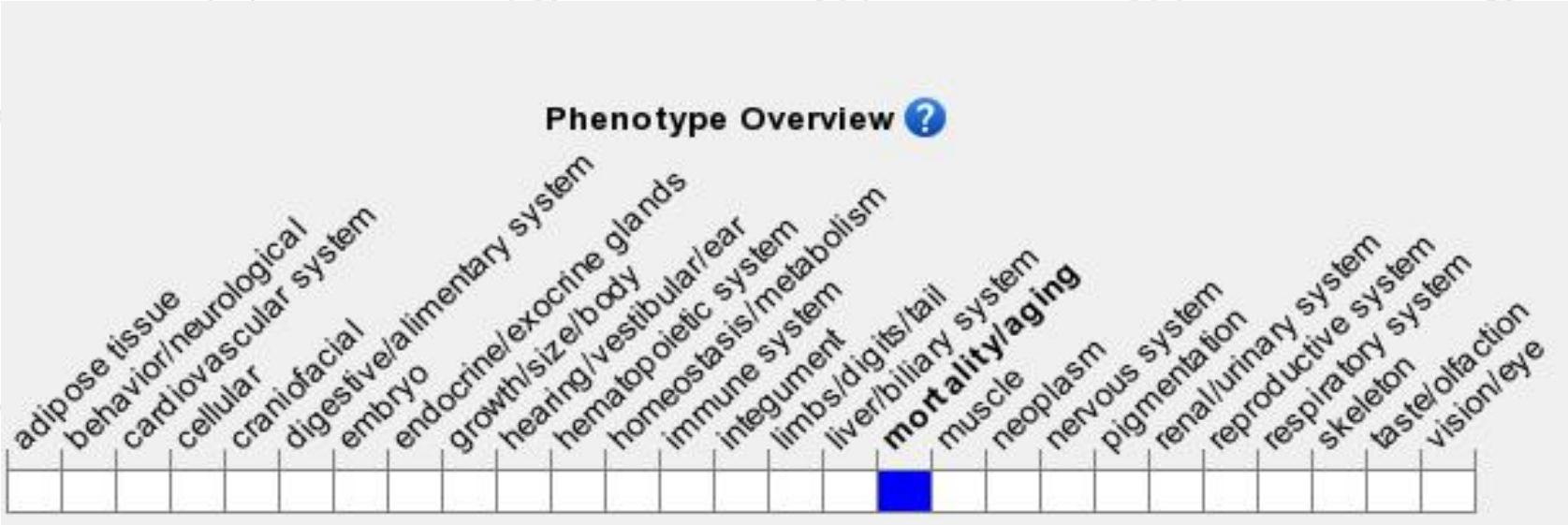
Genomic location distribution



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 allele die at or within a day of birth.

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

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