

Fbxw7 Cas9-CKO Strategy

Designer

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Reviewer

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Project Overview

Project Name

Fbxw7

Project type

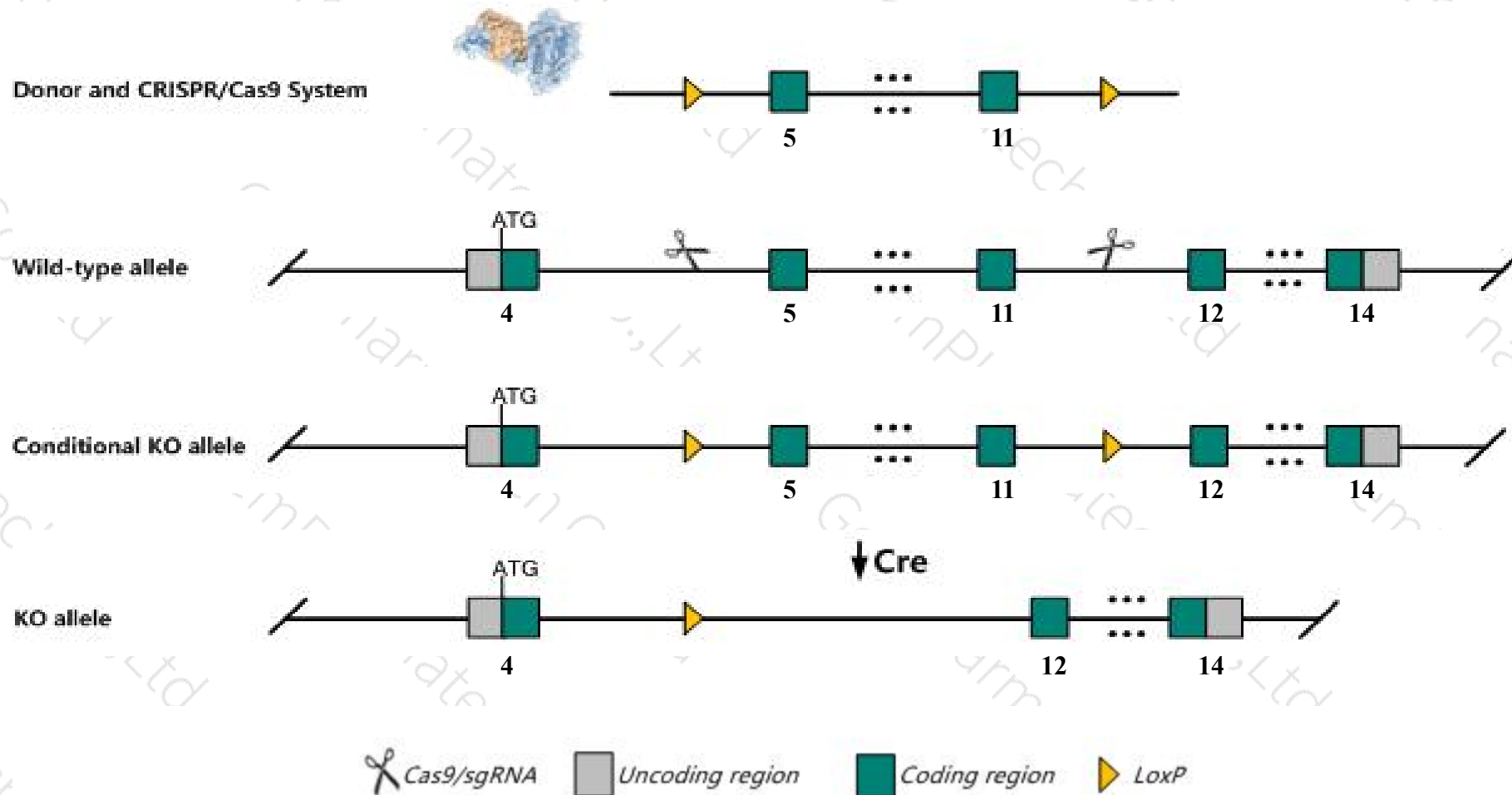
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fbxw7* gene. The schematic diagram is as follows:



Technical routes

- The *Fbxw7* gene has 6 transcripts. According to the structure of *Fbxw7* gene, exon5-exon11 of *Fbxw7*-204 (ENSMUST00000107679.7) transcript is recommended as the knockout region. The region contains 917bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fbxw7* 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/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 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.

- According to the existing MGI data, Homozygous inactivation of this locus disrupts embryonic and extraembryonic vasculature, resulting in death by midgestation.
- Transcript *Fbxw7-206* may not be affected.
- The *Fbxw7* gene is located on the Chr3. 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)

Fbxw7 F-box and WD-40 domain protein 7 [Mus musculus (house mouse)]

Gene ID: 50754, updated on 9-Apr-2019

Summary



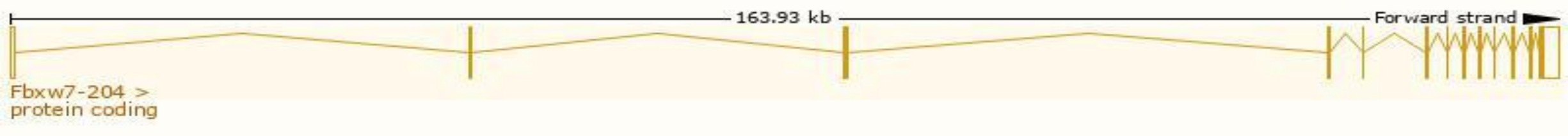
Official Symbol	Fbxw7 provided by MGI
Official Full Name	F-box and WD-40 domain protein 7 provided by MGI
Primary source	MGI:MGI:1354695
See related	Ensembl:ENSMUSG00000028086
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110001A17Rik, AGO, Cdc4, Fbw7, Fbwd6, Fbx30, Fbxo30, Fbxw6, SEL-10
Expression	Broad expression in cortex adult (RPKM 16.6), frontal lobe adult (RPKM 13.5) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

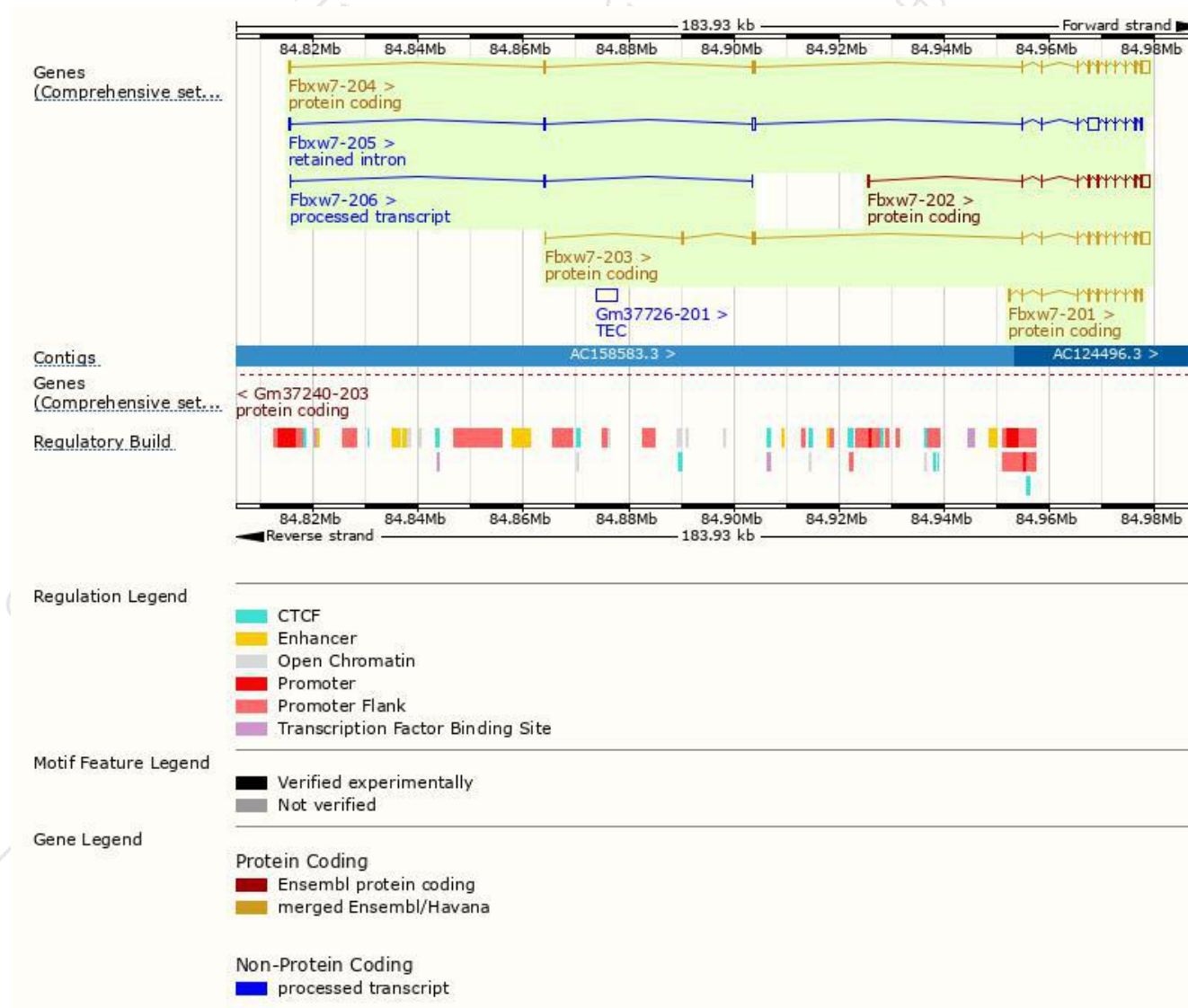
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fbxw7-204	ENSMUST00000107679.7	4473	710aa	Protein coding	CCDS50940	Q8VBV4	TSL:1 GENCODE basic
Fbxw7-203	ENSMUST00000107678.7	4073	710aa	Protein coding	CCDS50940	Q8VBV4	TSL:5 GENCODE basic
Fbxw7-201	ENSMUST00000029727.7	2221	629aa	Protein coding	CCDS17440	Q8VBV4	TSL:1 GENCODE basic APPRIS P2
Fbxw7-202	ENSMUST00000107675.7	3599	589aa	Protein coding	-	D3YUA8	TSL:5 GENCODE basic APPRIS ALT 1
Fbxw7-206	ENSMUST00000212597.1	56	No protein	Processed transcript	-	-	TSL:5
Fbxw7-205	ENSMUST00000151410.1	4348	No protein	Retained intron	-	-	TSL:2

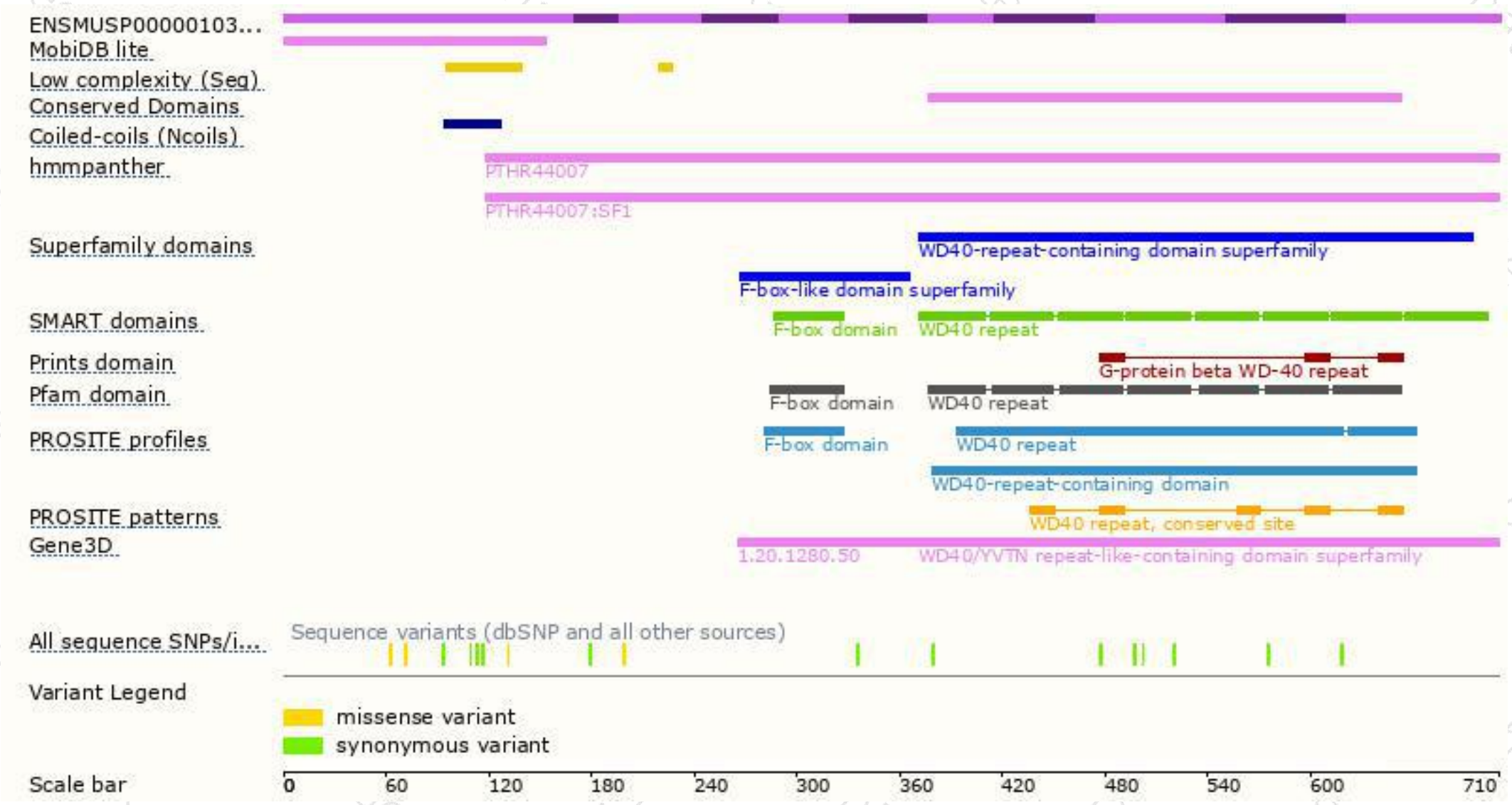
The strategy is based on the design of *Fbxw7-204* transcript,The transcription is shown below



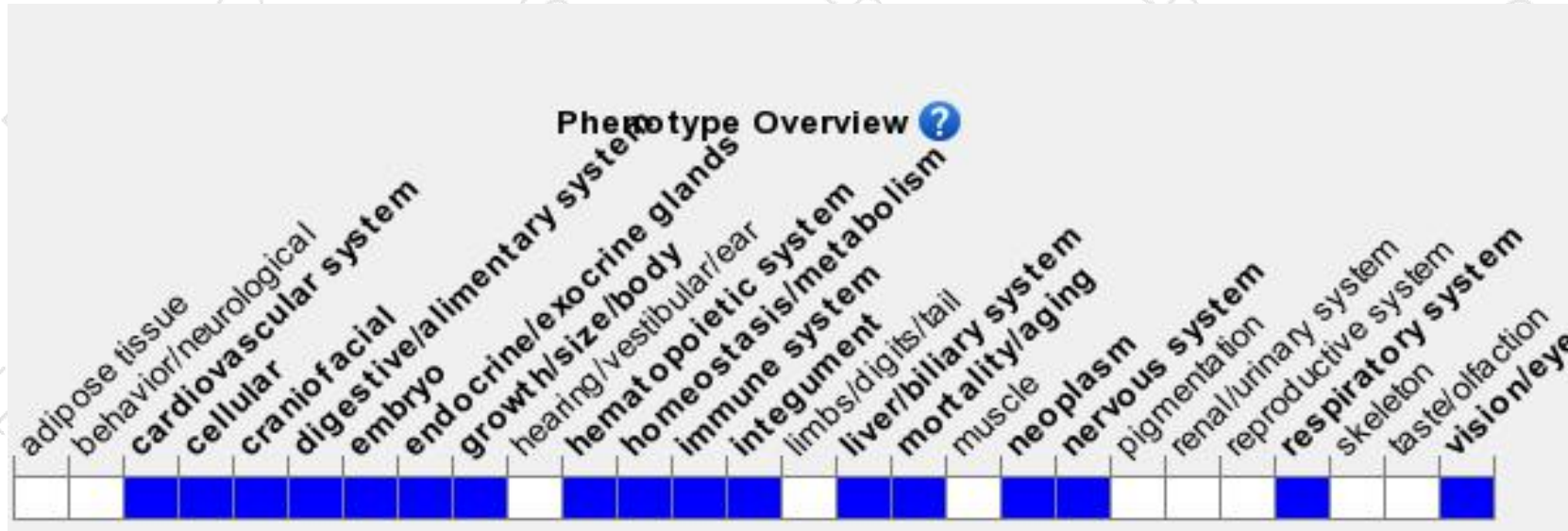
Genomic location distribution



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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