Fam20c Cas9-CKO Strategy

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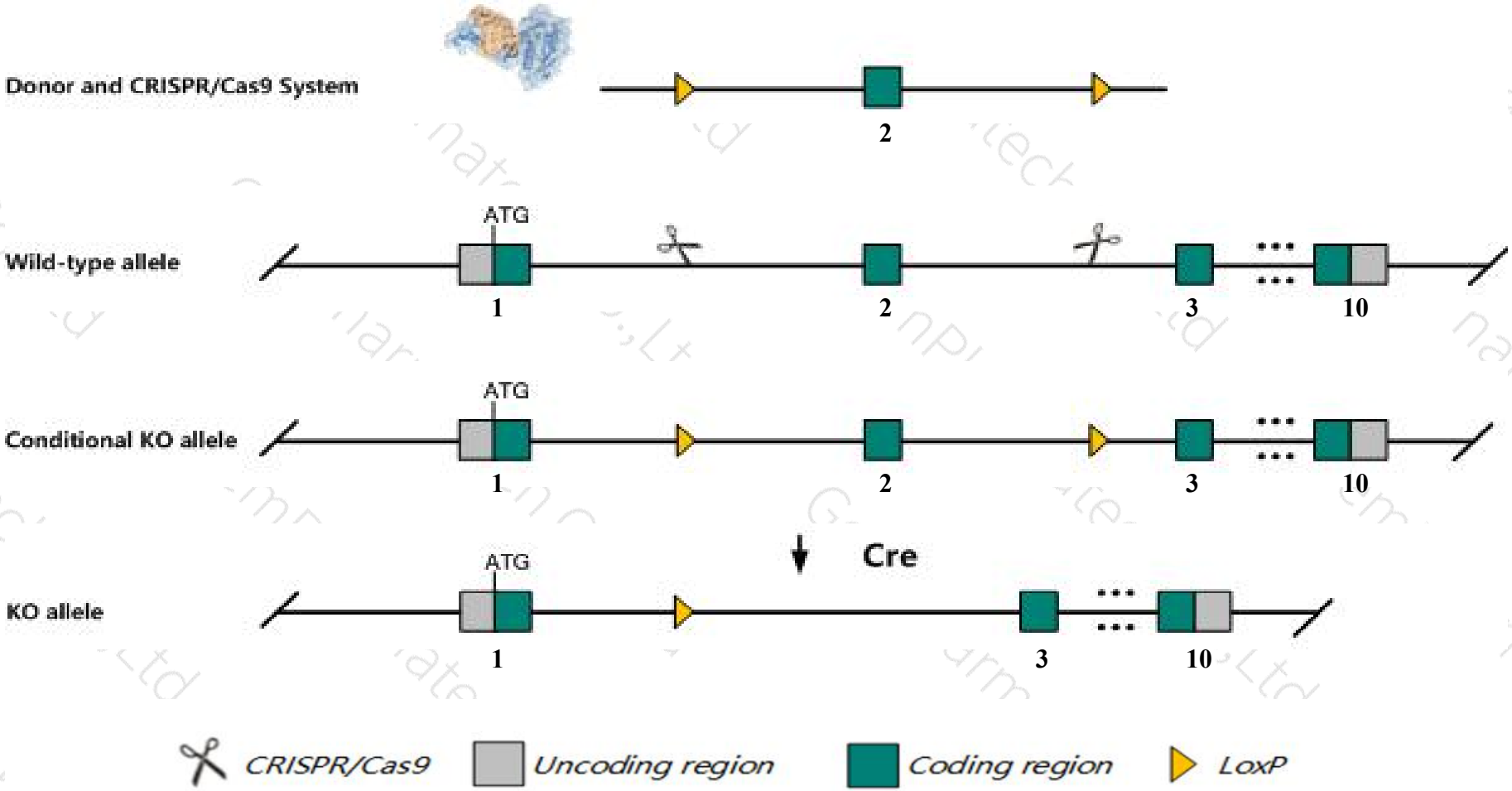
Design Date: 2019-7-18

Project Overview

Project Name	***Fam20c***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fam20c* gene. The schematic diagram is as follows:



Technical routes

- The *Fam20c* gene has 6 transcripts. According to the structure of *Fam20c* gene, exon2 of *Fam20c-201* (ENSMUST00000026972.7) transcript is recommended as the knockout region.The region contains 179bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Fam20c* 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 with global conditional deletion of this gene display infertility, dwarfism, delayed bone ossification, reduced bone mineralization, fragile skeletons, hypophosphatemic rickets, and impaired osteoblast differentiation.

- The *Fam20c* gene is located on the Chr5. 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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Fam20c family with sequence similarity 20, member C [Mus musculus (house mouse)]

Gene ID: 80752, updated on 2-Apr-2019

Summary

Official Symbol	Fam20c provided by MGI
Official Full Name	family with sequence similarity 20, member C provided by MGI
Primary source	MGI:MGI:2136853
See related	Ensembl:ENSMUSG00000025854
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	C76981, DMP-4, DMP4, GEF-CK, mKIAA4081
Expression	Broad expression in ovary adult (RPKM 31.6), kidney adult (RPKM 20.3) and 26 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

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

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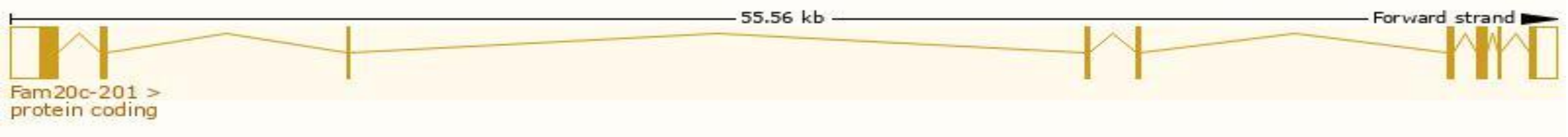
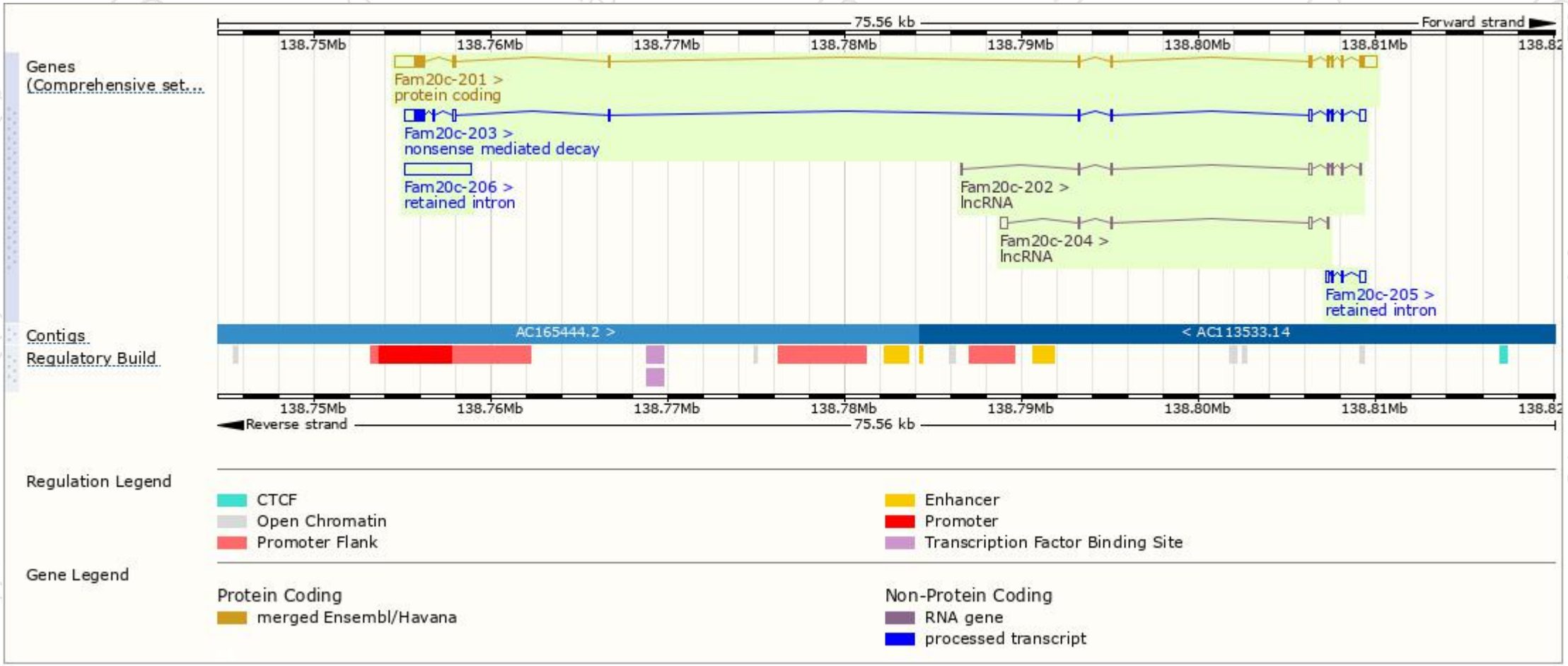
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fam20c-201	ENSMUST00000026972.7	3582	579aa	Protein coding	CCDS51681	Q5MJS3	TSL:1 GENCODE basic APPRIS P1
Fam20c-203	ENSMUST00000160645.7	2395	203aa	Nonsense mediated decay	-	E0CY01	TSL:1
Fam20c-206	ENSMUST00000197027.1	3763	No protein	Retained intron	-	-	TSL:NA
Fam20c-205	ENSMUST00000161641.1	611	No protein	Retained intron	-	-	TSL:2
Fam20c-204	ENSMUST00000160988.1	880	No protein	lncRNA	-	-	TSL:3
Fam20c-202	ENSMUST00000159176.7	795	No protein	lncRNA	-	-	TSL:3

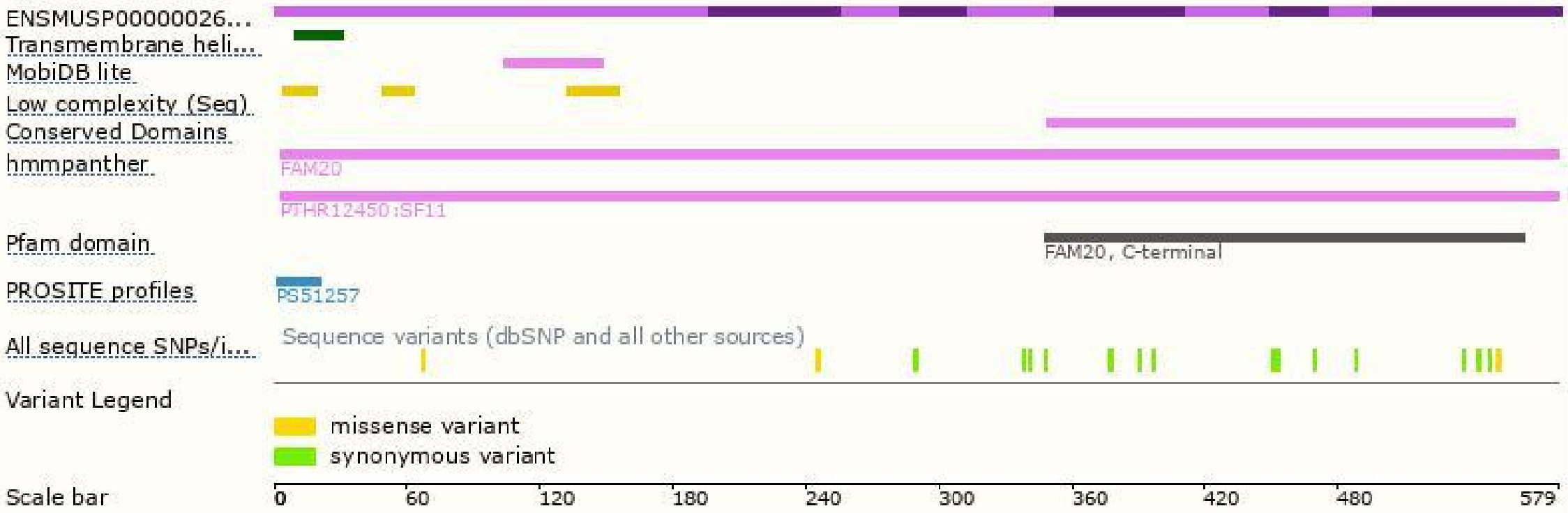
The strategy is based on the design of *Fam20c-201* transcript,The transcription is shown below



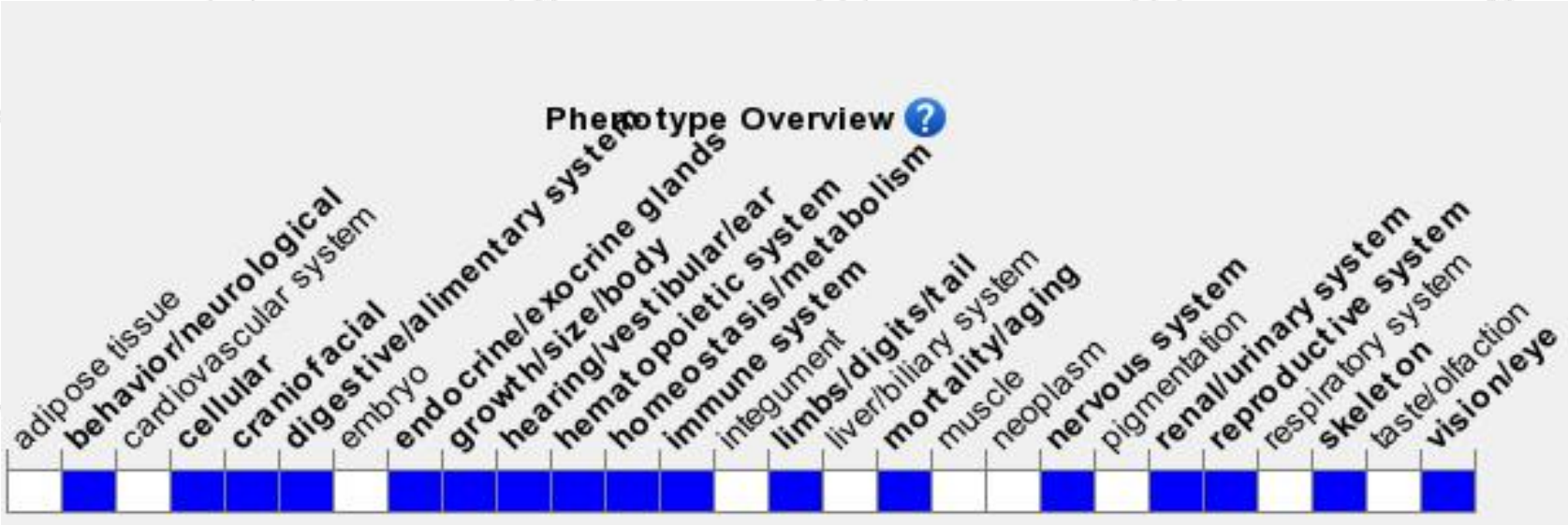
Genomic location distribution



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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