

Foxp4 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2019-12-25

Project Overview

Project Name

Foxp4

Project type

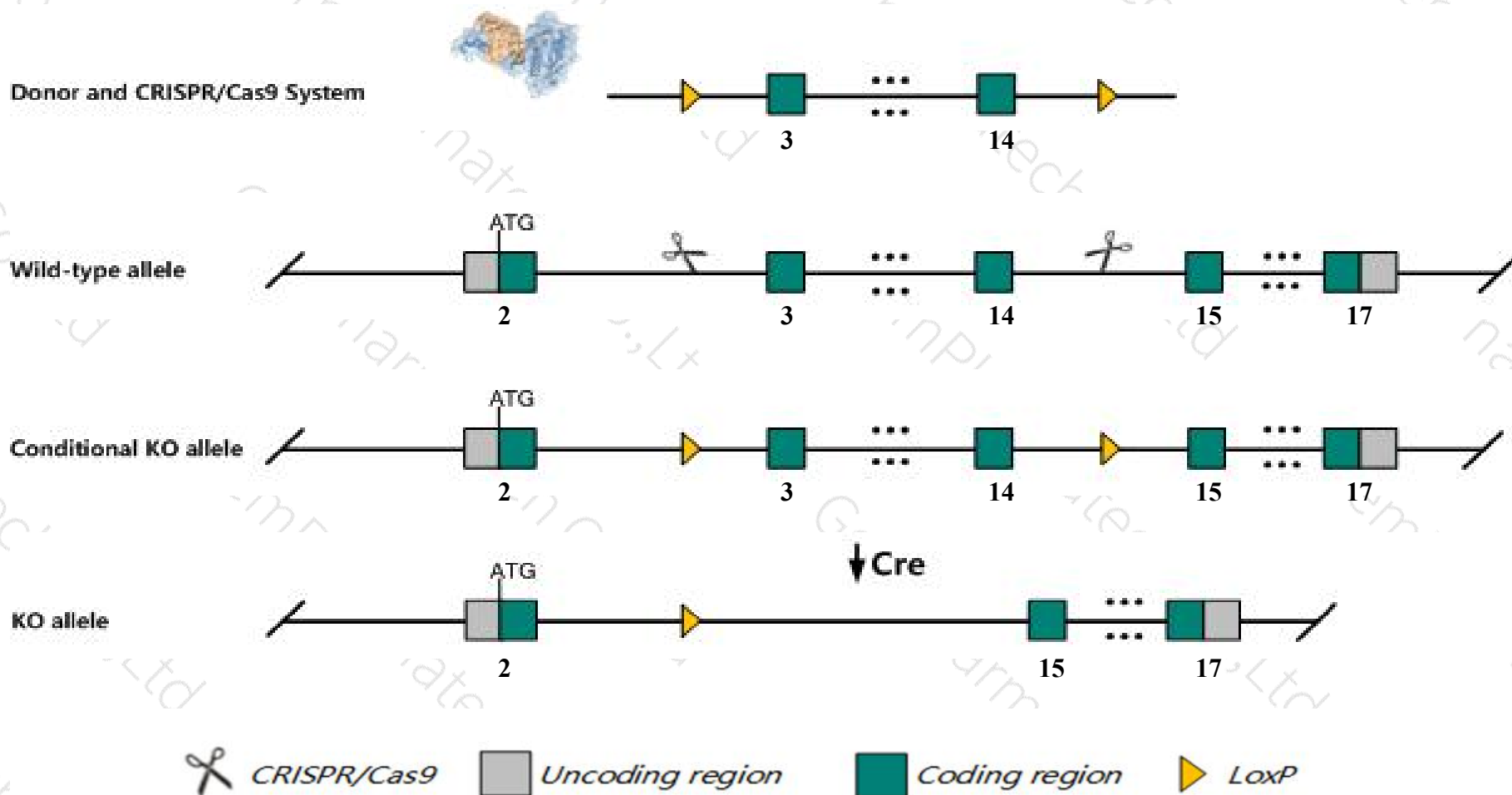
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Foxp4* gene. The schematic diagram is as follows:



- The *Foxp4* gene has 8 transcripts. According to the structure of *Foxp4* gene, exon3-exon14 of *Foxp4*-204 (ENSMUST00000113265.7) transcript is recommended as the knockout region. The region contains 1412bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Foxp4* 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, Mice homozygous for disruptions in this gene usually die before E12.5. Foregut closure is delayed leading to the development of two beating hearts and to the failure of the trachea and esophagus to separate.
- The *Foxp4* gene is located on the Chr17. 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)

Foxp4 forkhead box P4 [*Mus musculus* (house mouse)]

Gene ID: 74123, updated on 12-Aug-2019

Summary

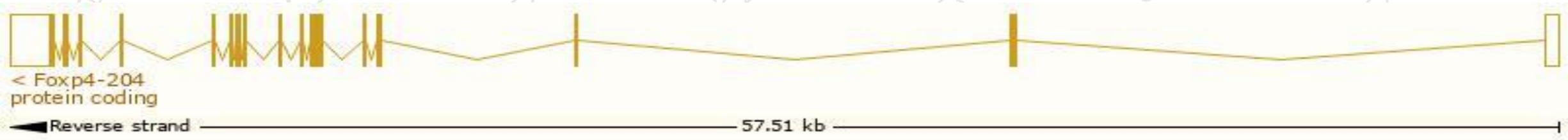
Official Symbol	Foxp4 provided by MGI
Official Full Name	forkhead box P4 provided by MGI
Primary source	MGI:MGI:1921373
See related	Ensembl:ENSMUSG00000023991
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	mFKHLA; 1200010K03Rik; 2310007G05Rik
Expression	Ubiquitous expression in stomach adult (RPKM 50.9), colon adult (RPKM 45.3) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

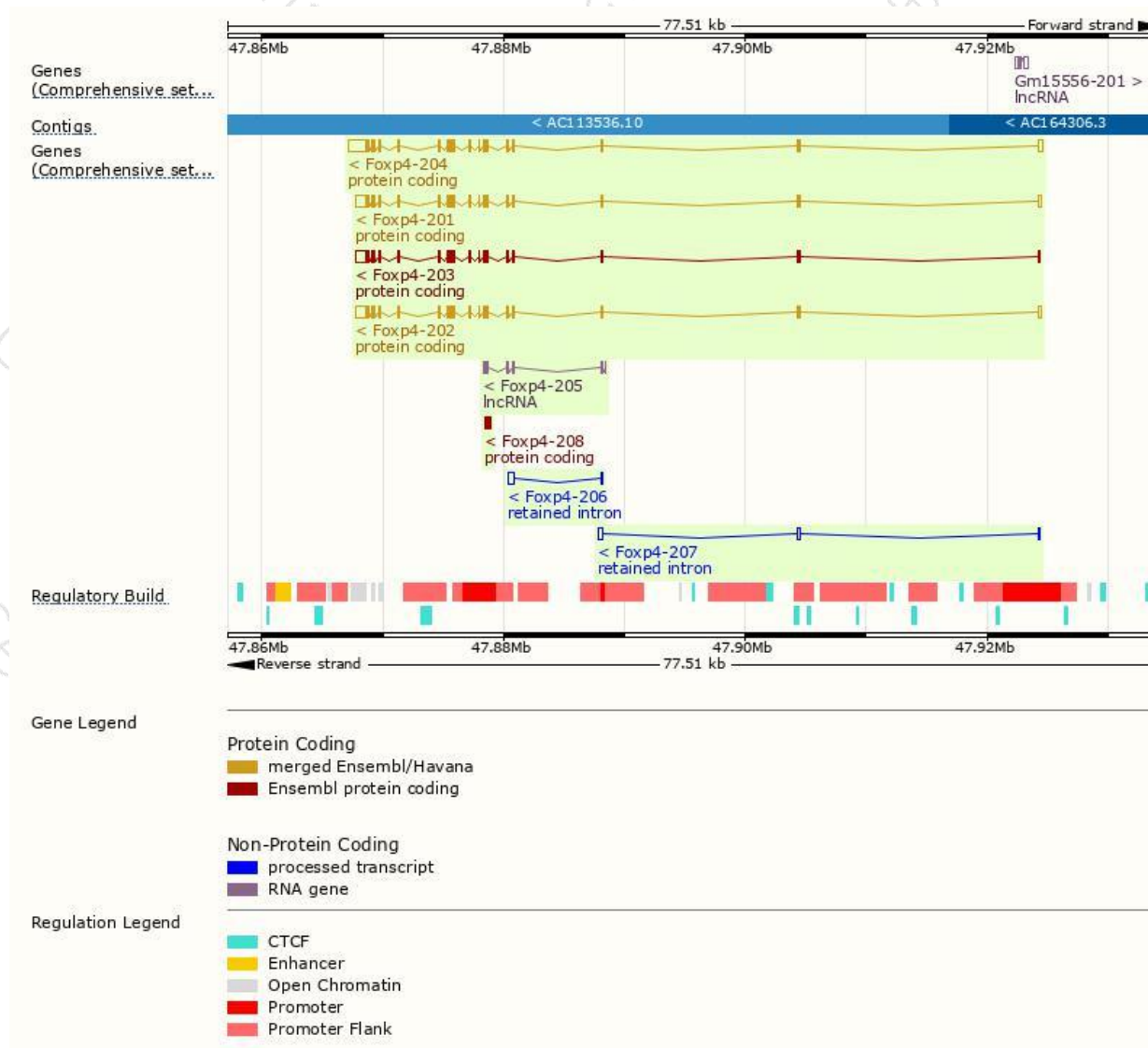
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Foxp4-204	ENSMUST00000113265.7	3999	672aa	Protein coding	CCDS50135	Q9DBY0	TSL:1 GENCODE basic APPRIS ALT2
Foxp4-202	ENSMUST00000113262.1	3198	673aa	Protein coding	CCDS50136	A0A0R4J1I5	TSL:1 GENCODE basic APPRIS ALT2
Foxp4-201	ENSMUST00000097311.8	3197	685aa	Protein coding	CCDS50137	A0A0R4J161	TSL:1 GENCODE basic APPRIS P4
Foxp4-203	ENSMUST00000113263.7	3156	683aa	Protein coding	-	D3Z726	TSL:5 GENCODE basic APPRIS ALT2
Foxp4-208	ENSMUST00000154108.1	365	113aa	Protein coding	-	-	CDS 3' incomplete TSL:5
Foxp4-207	ENSMUST00000153752.1	788	No protein	Retained intron	-	-	TSL:2
Foxp4-206	ENSMUST00000137039.1	579	No protein	Retained intron	-	-	TSL:5
Foxp4-205	ENSMUST00000136314.1	701	No protein	lncRNA	-	-	TSL:3

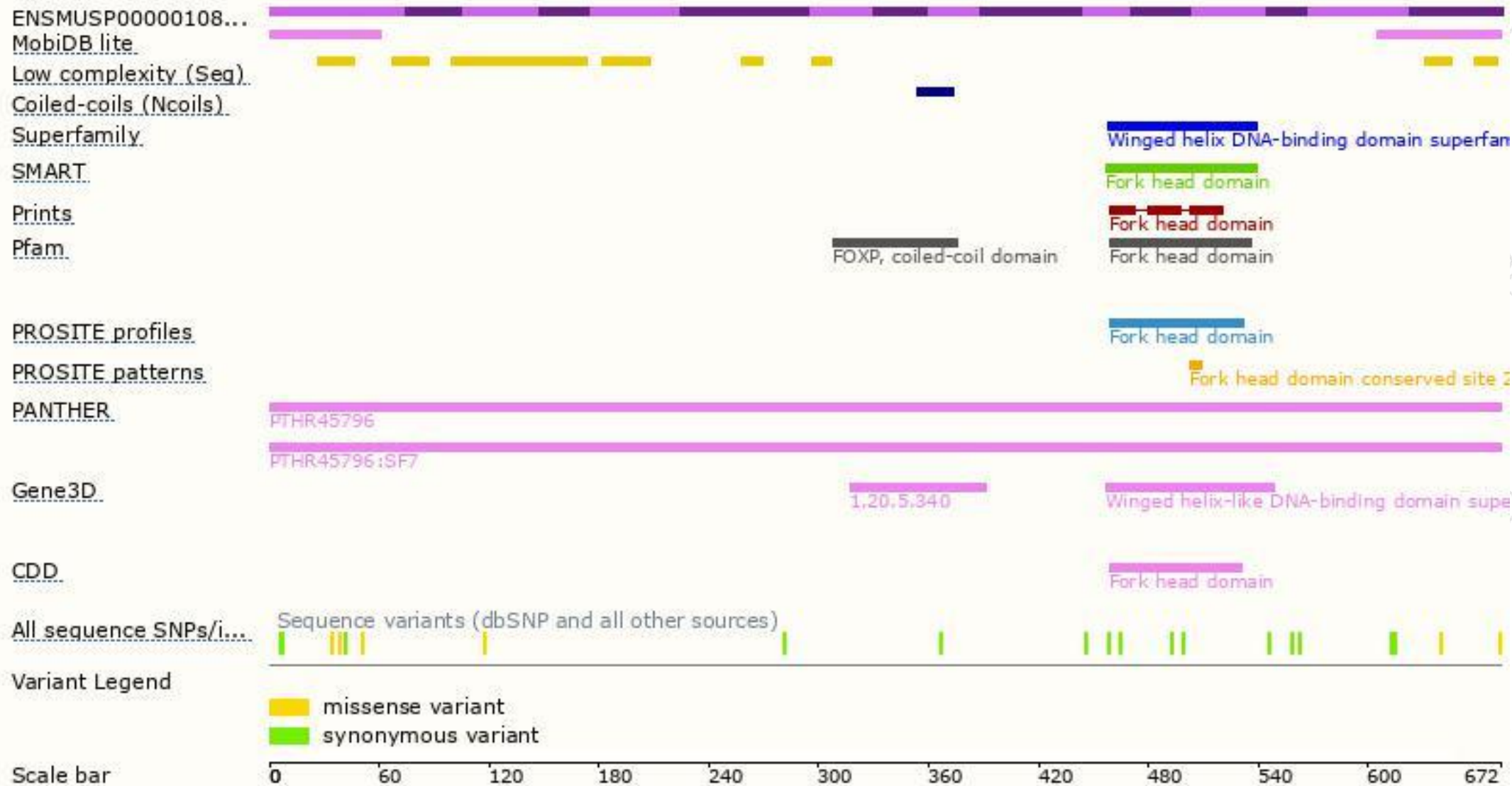
The strategy is based on the design of *Foxp4-204* transcript,The transcription is shown below



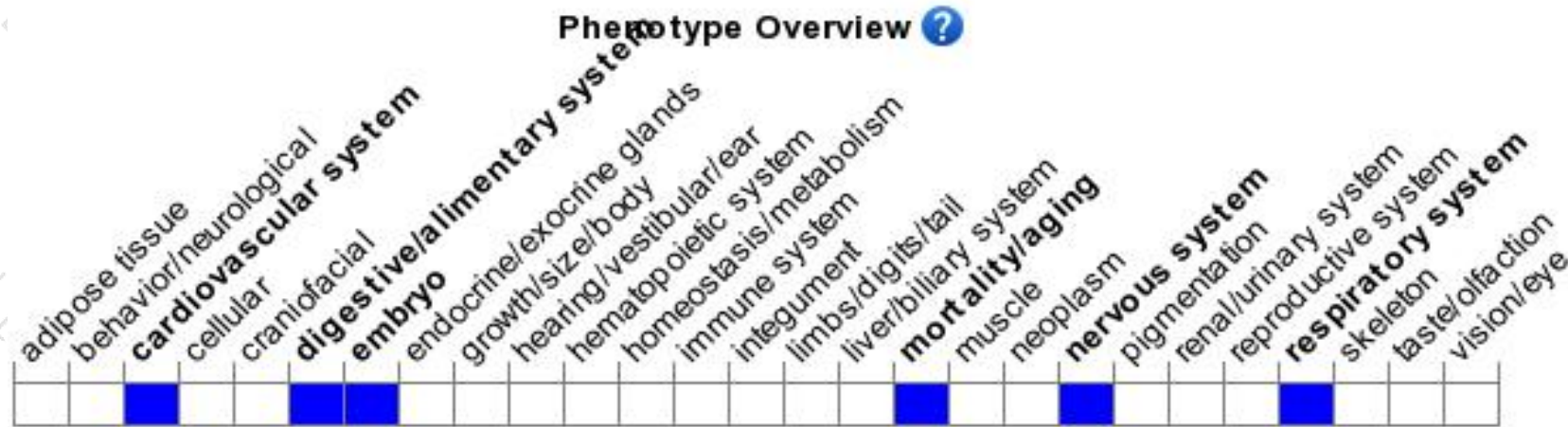
Genomic location distribution



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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