

Gata3 Cas9-CKO Strategy

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Project Overview

Project Name

Gata3

Project type

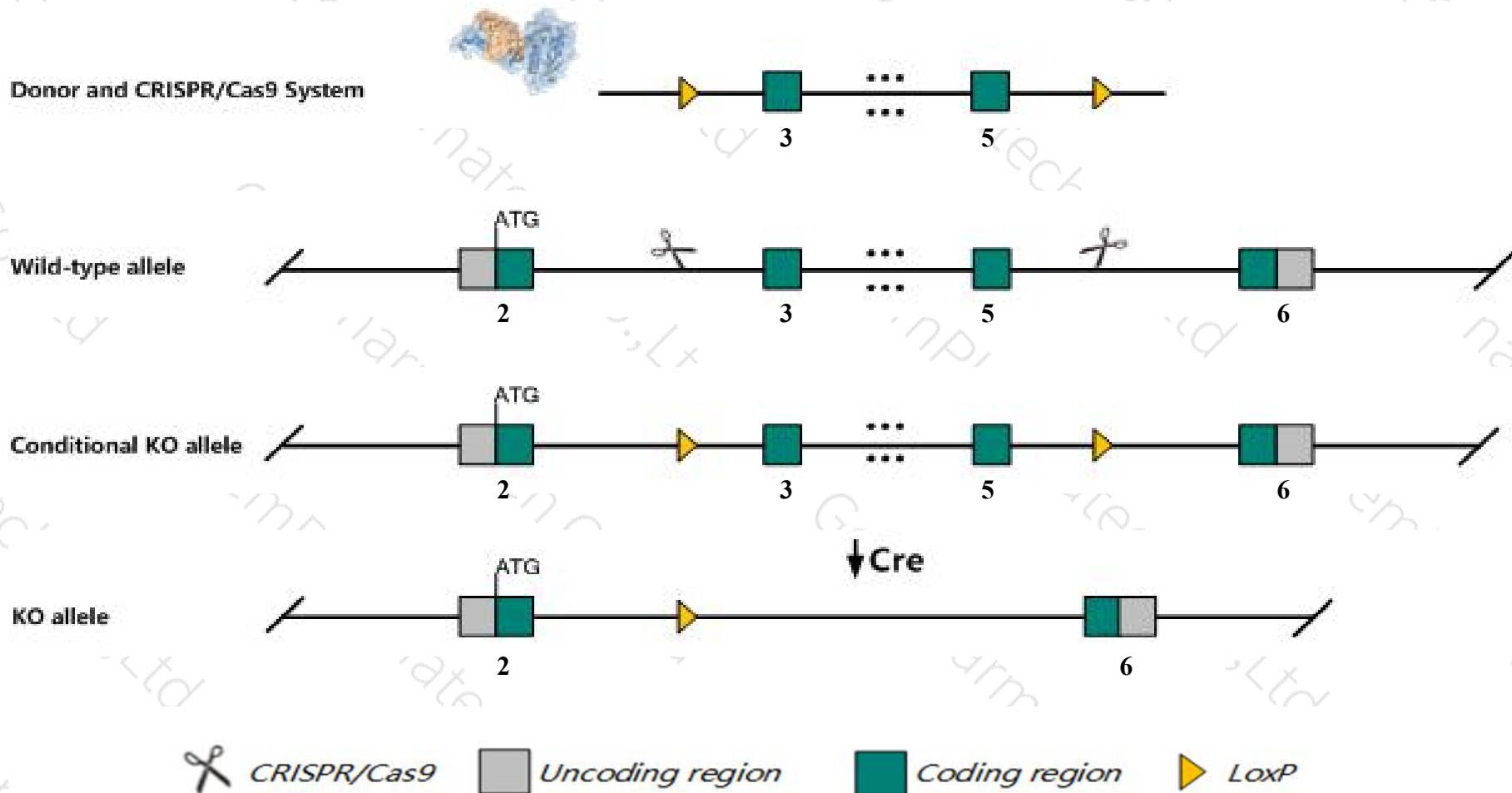
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gata3* gene. The schematic diagram is as follows:



Technical routes

- The *Gata3* gene has 6 transcripts. According to the structure of *Gata3* gene, exon3-exon5 of *Gata3*-201 (ENSMUST00000102976.3) transcript is recommended as the knockout region. The region contains 809bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gata3* 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, Homozygous inactivation is embryonic lethal and show a variety of embryonic defects. T cell development is impaired when the locus is conditionally. Mice with a spontaneous mutation exhibit partial hair loss and various defects in hair structure and in hair growth cycle regulation.
- Transcript 203,204 are unaffected.
- The flox region is about 1.6 kb away from the 5th end of *Gm13256-201*, which may affect the regulation of the 5th end of the gene.
- The *Gata3* gene is located on the Chr2. 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)

Gata3 GATA binding protein 3 [*Mus musculus* (house mouse)]

Gene ID: 14462, updated on 12-Aug-2019

Summary

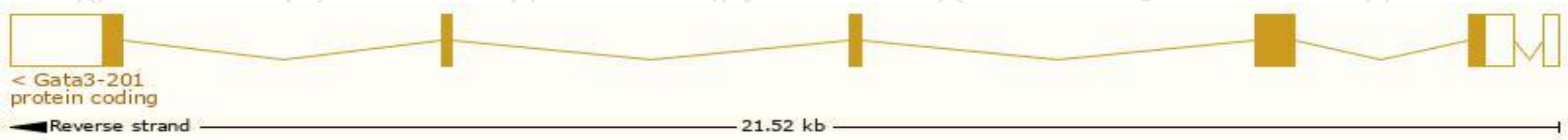
Official Symbol	Gata3 provided by MGI
Official Full Name	GATA binding protein 3 provided by MGI
Primary source	MGI:MGI:95663
See related	Ensembl:ENSMUSG00000015619
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	jal; Gata-3
Expression	Biased expression in bladder adult (RPKM 23.1), mammary gland adult (RPKM 22.0) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

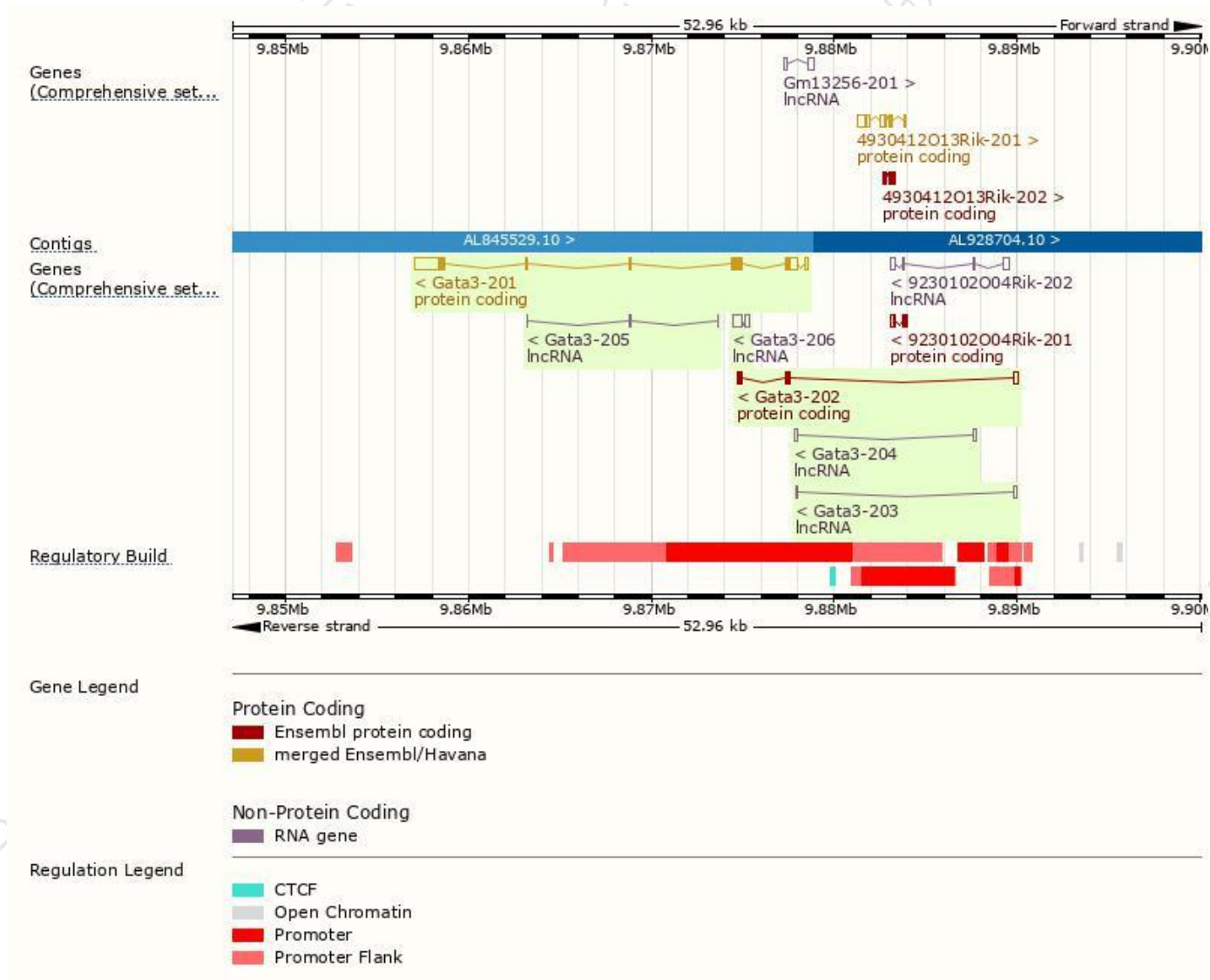
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gata3-201	ENSMUST00000102976.3	3215	443aa	Protein coding	CCDS15674	P23772 Q3U0R5	TSL:1 GENCODE basic APPRIS P1
Gata3-202	ENSMUST00000130615.1	674	119aa	Protein coding	-	F6QTY0	CDS 3' incomplete TSL:5
Gata3-206	ENSMUST00000153509.1	731	No protein	lncRNA	-	-	TSL:2
Gata3-204	ENSMUST00000147533.1	344	No protein	lncRNA	-	-	TSL:3
Gata3-203	ENSMUST00000142305.1	281	No protein	lncRNA	-	-	TSL:3
Gata3-205	ENSMUST00000151456.1	243	No protein	lncRNA	-	-	TSL:3

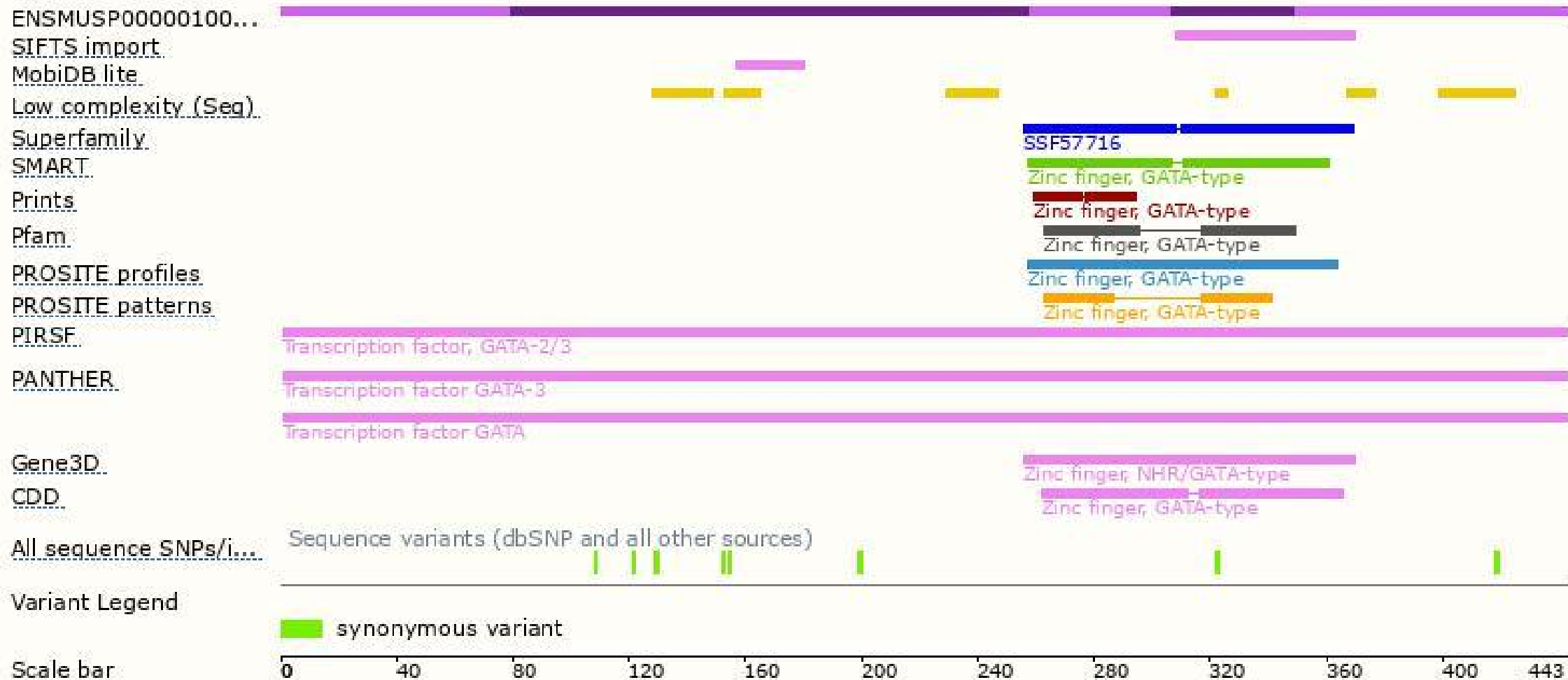
The strategy is based on the design of *Gata3-201* transcript,The transcription is shown below



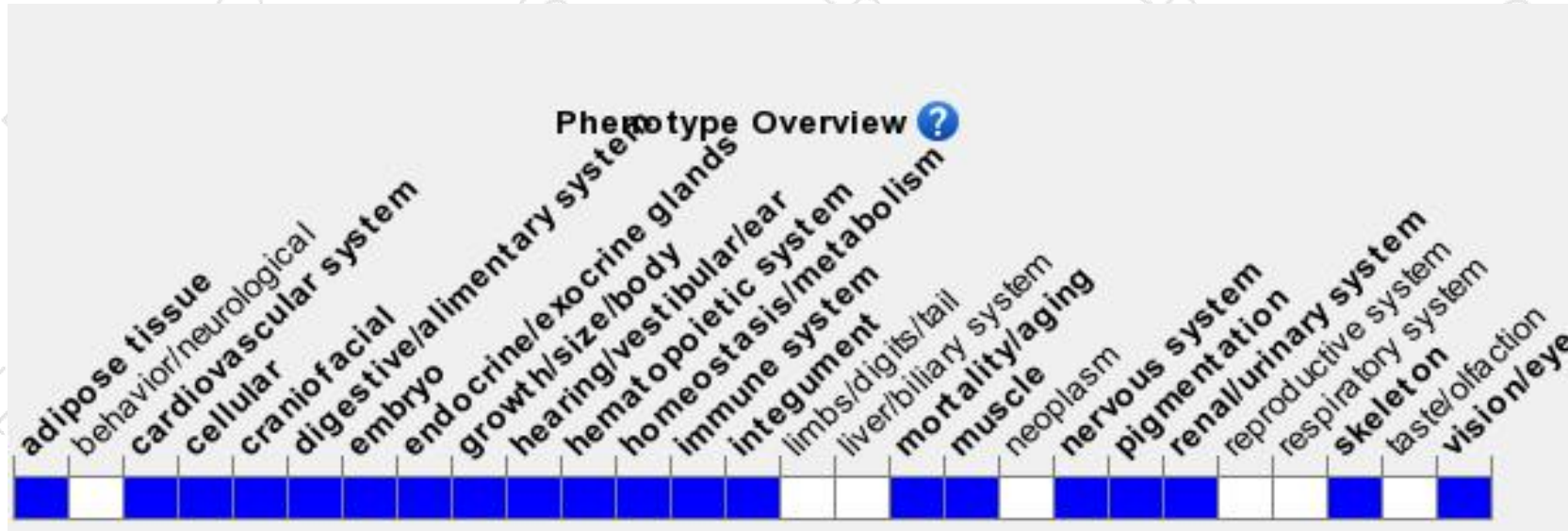
Genomic location distribution



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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T cell development is impaired when the locus is conditionally. Mice with a spontaneous mutation exhibit partial hair loss and various defects in hair structure and in hair growth cycle regulation.

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

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