Rnf168 Cas9-CKO Strategy

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Project Overview

Project Name	***Rnf168***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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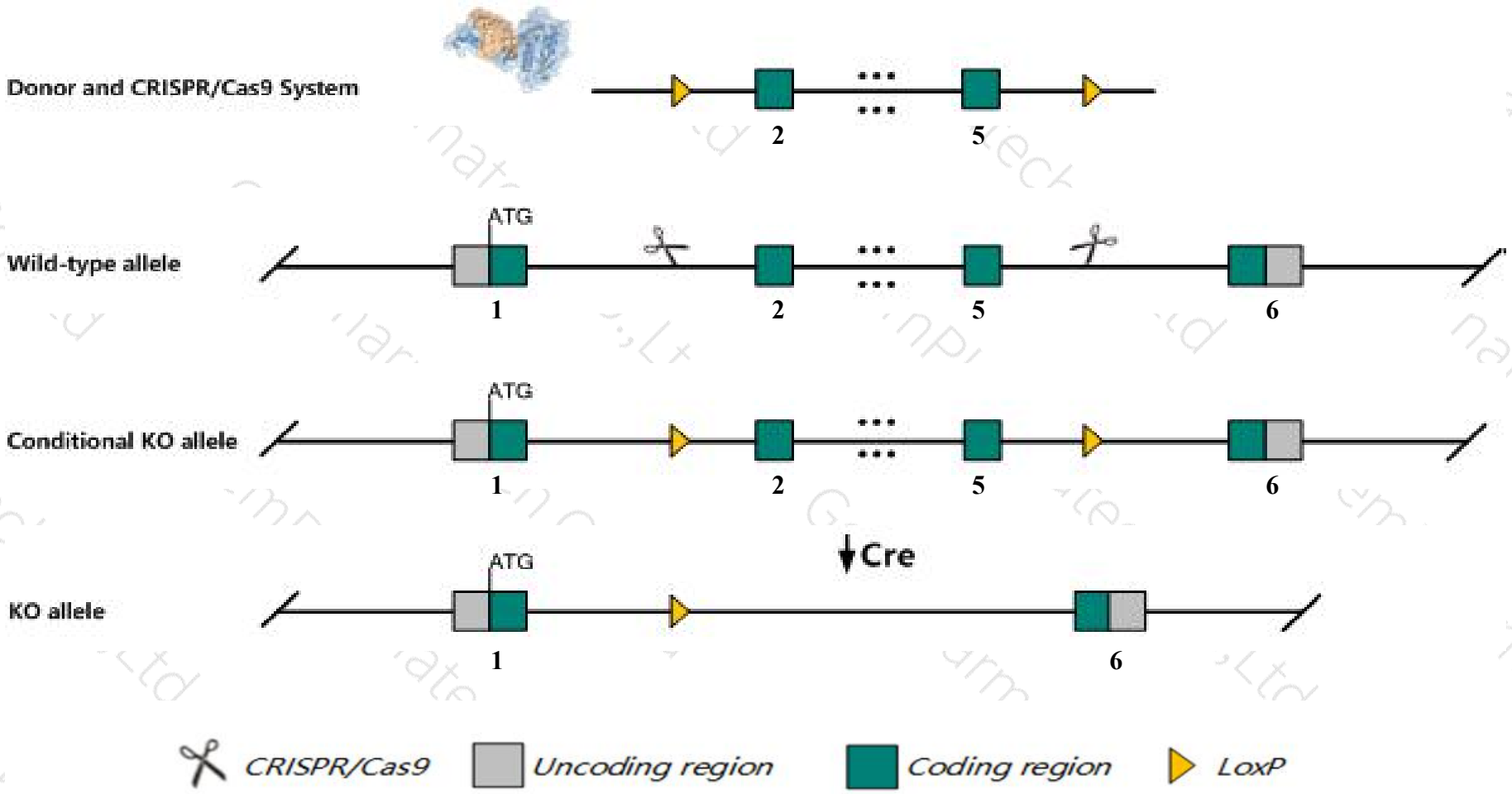
This model will use CRISPR/Cas9 technology to edit the *Rnf168* gene. The schematic diagram is as follows:



Technical routes

- The *Rnf168* gene has 3 transcripts. According to the structure of *Rnf168* gene, exon2-exon5 of *Rnf168-203* (ENSMUST00000171474.1) transcript is recommended as the knockout region.The region contains 458bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Rnf168* 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 knock-out allele exhibit immunodeficient, increased radiosensitivity and age-dependent reduction in male infertility.

- The N-terminal of *Rnf168* gene will remain 102aa,it may remain the partial function of *Rnf168* gene.

- The *Rnf168* 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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Rnf168 ring finger protein 168 [Mus musculus (house mouse)]

Gene ID: 70238, updated on 31-Jan-2019

Summary

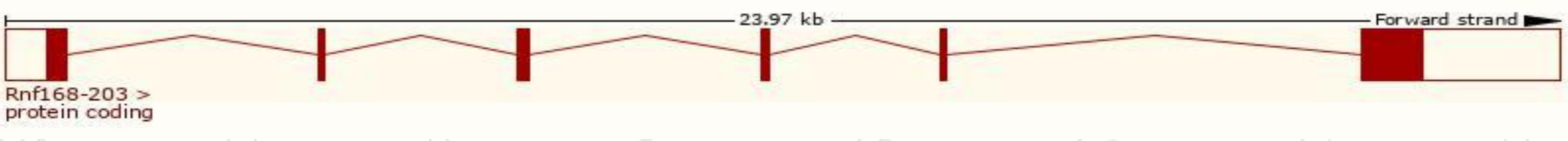
Official Symbol	Rnf168 provided by MGI
Official Full Name	ring finger protein 168 provided by MGI
Primary source	MGI:MGI:1917488
See related	Ensembl:ENSMUSG00000014074
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	3110001H15Rik
Expression	Ubiquitous expression in CNS E11.5 (RPKM 5.3), CNS E18 (RPKM 2.8) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

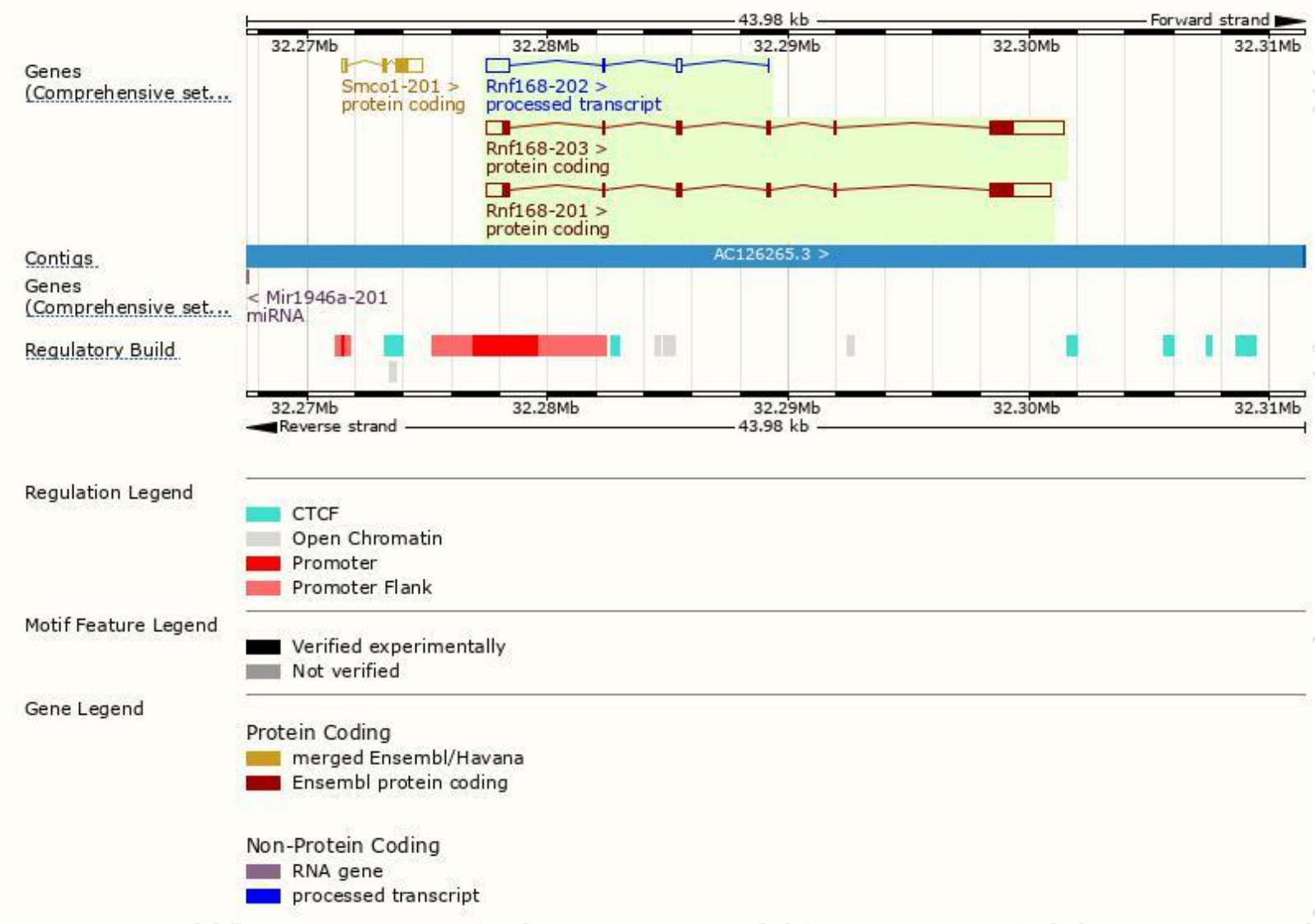
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf168-203	ENSMUST00000171474.1	4460	567aa	Protein coding	CCDS49825	E9PYW4	TSL:1 GENCODE basic APPRIS P2
Rnf168-201	ENSMUST00000014218.14	3932	565aa	Protein coding	-	Q80XJ2	TSL:1 GENCODE basic APPRIS ALT2
Rnf168-202	ENSMUST00000155649.7	1249	No protein	Processed transcript	-	-	TSL:1

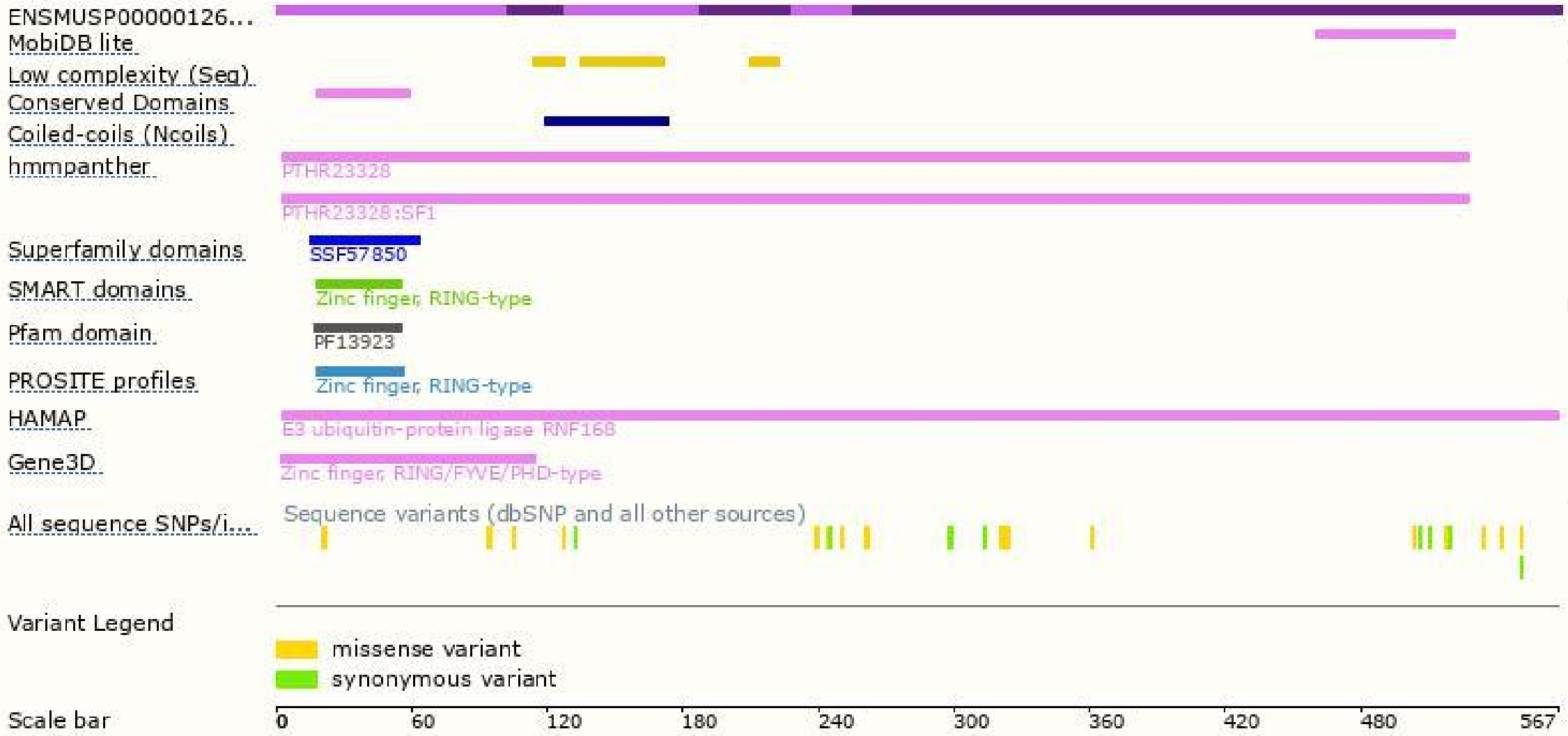
The strategy is based on the design of *Rnf168-203* transcript,The transcription is shown below



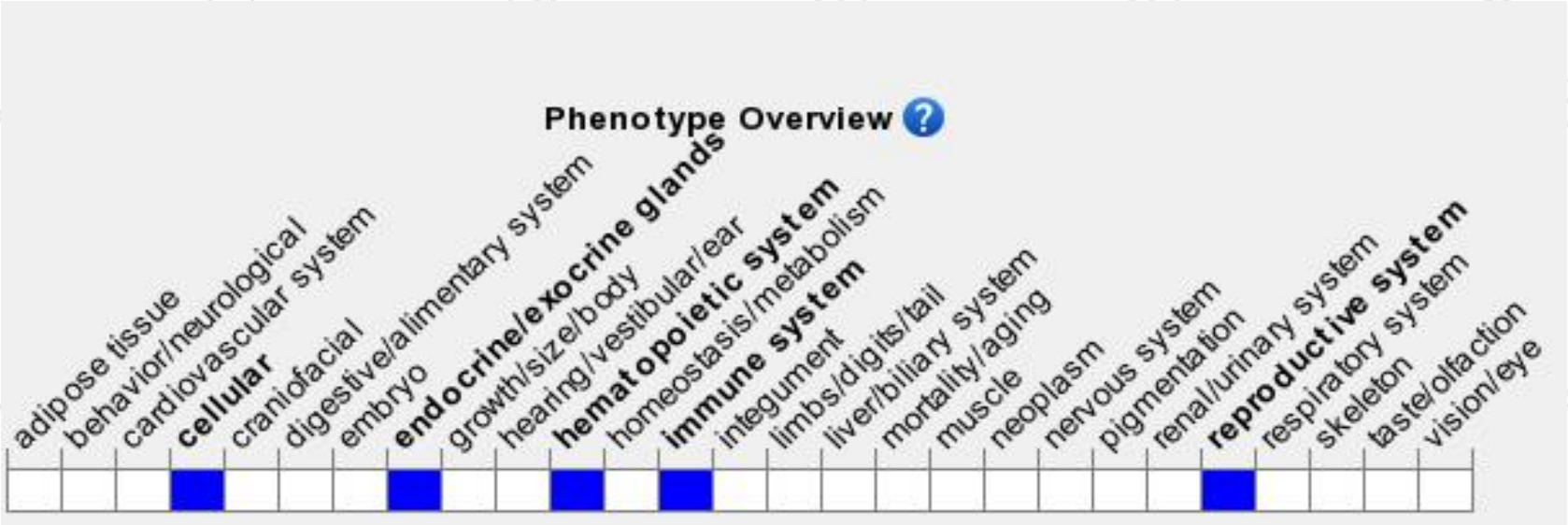
Genomic location distribution



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 knock-out allele exhibit immunodeficient, increased radiosensitivity and age-dependent reduction in male infertility.

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