

Cdk16 Cas9-CKO Strategy

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Project Overview

Project Name

Cdk16

Project type

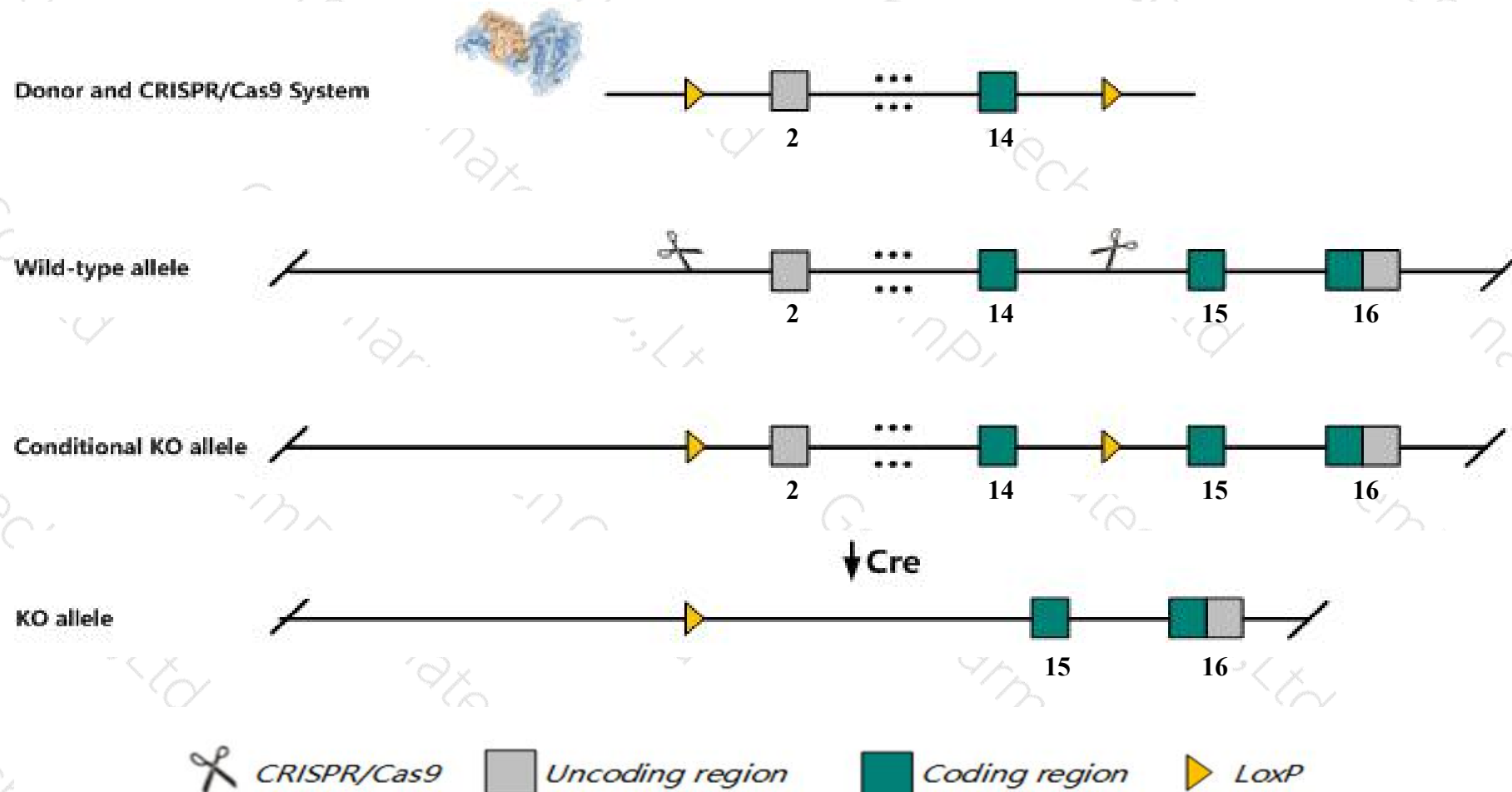
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdk16* gene. The schematic diagram is as follows:



- The *Cdk16* gene has 8 transcripts. According to the structure of *Cdk16* gene, exon2-exon14 of *Cdk16-202* (ENSMUST00000115364.7) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cdk16* 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 a knock-out allele exhibit male infertility associated with asthenozoospermia and abnormal sperm morphology.
- The *Cdk16* gene is located on the ChrX. 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)

Cdk16 cyclin-dependent kinase 16 [Mus musculus (house mouse)]

Gene ID: 18555, updated on 31-Jan-2019

Summary



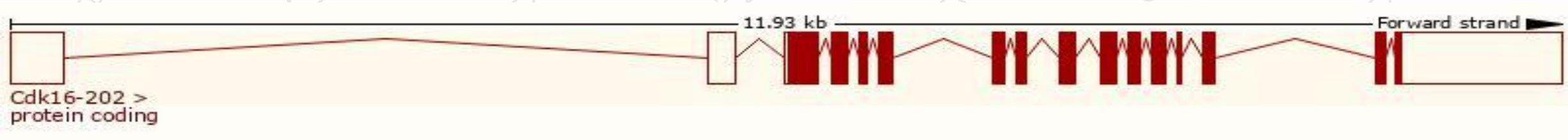
Official Symbol	Cdk16 provided by MGI
Official Full Name	cyclin-dependent kinase 16 provided by MGI
Primary source	MGI:MGI:97516
See related	Ensembl:ENSMUSG00000031065
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Crk5, Pctaire1, Pctk1
Expression	Ubiquitous expression in cerebellum adult (RPKM 104.3), adrenal adult (RPKM 90.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

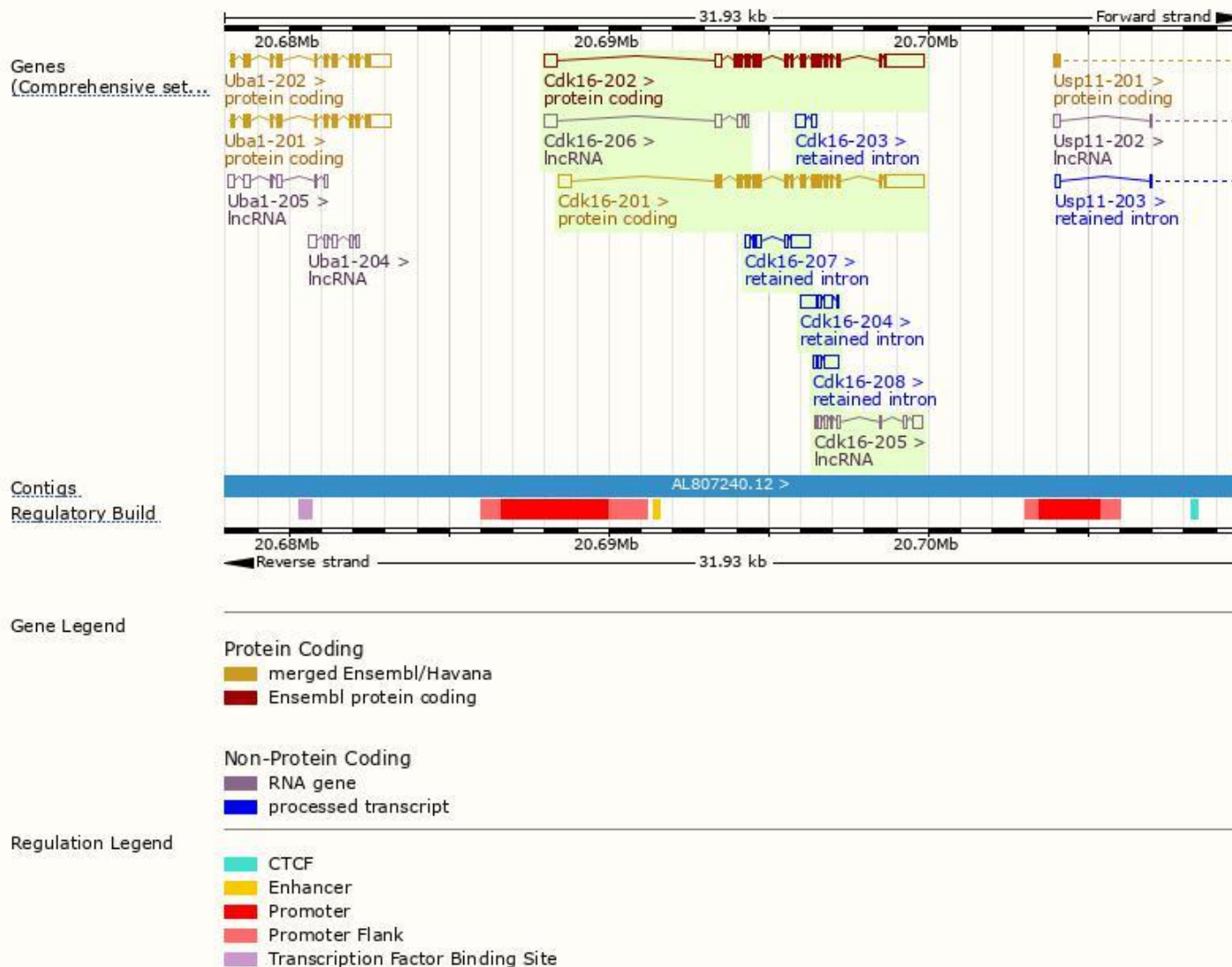
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdk16-202	ENSMUST00000115364.7	3270	461aa	Protein coding	CCDS81103	Q04735 Q3TM24	TSL:1 GENCODE basic
Cdk16-201	ENSMUST00000033380.6	3120	496aa	Protein coding	CCDS30045	Q04735 Q543G3	TSL:1 GENCODE basic APPRIS P1
Cdk16-207	ENSMUST00000146259.1	968	No protein	Retained intron	-	-	TSL:3
Cdk16-204	ENSMUST00000125035.7	871	No protein	Retained intron	-	-	TSL:3
Cdk16-208	ENSMUST00000148757.7	598	No protein	Retained intron	-	-	TSL:3
Cdk16-203	ENSMUST00000122944.1	420	No protein	Retained intron	-	-	TSL:1
Cdk16-205	ENSMUST00000129914.1	799	No protein	lncRNA	-	-	TSL:3
Cdk16-206	ENSMUST00000132365.1	797	No protein	lncRNA	-	-	TSL:3

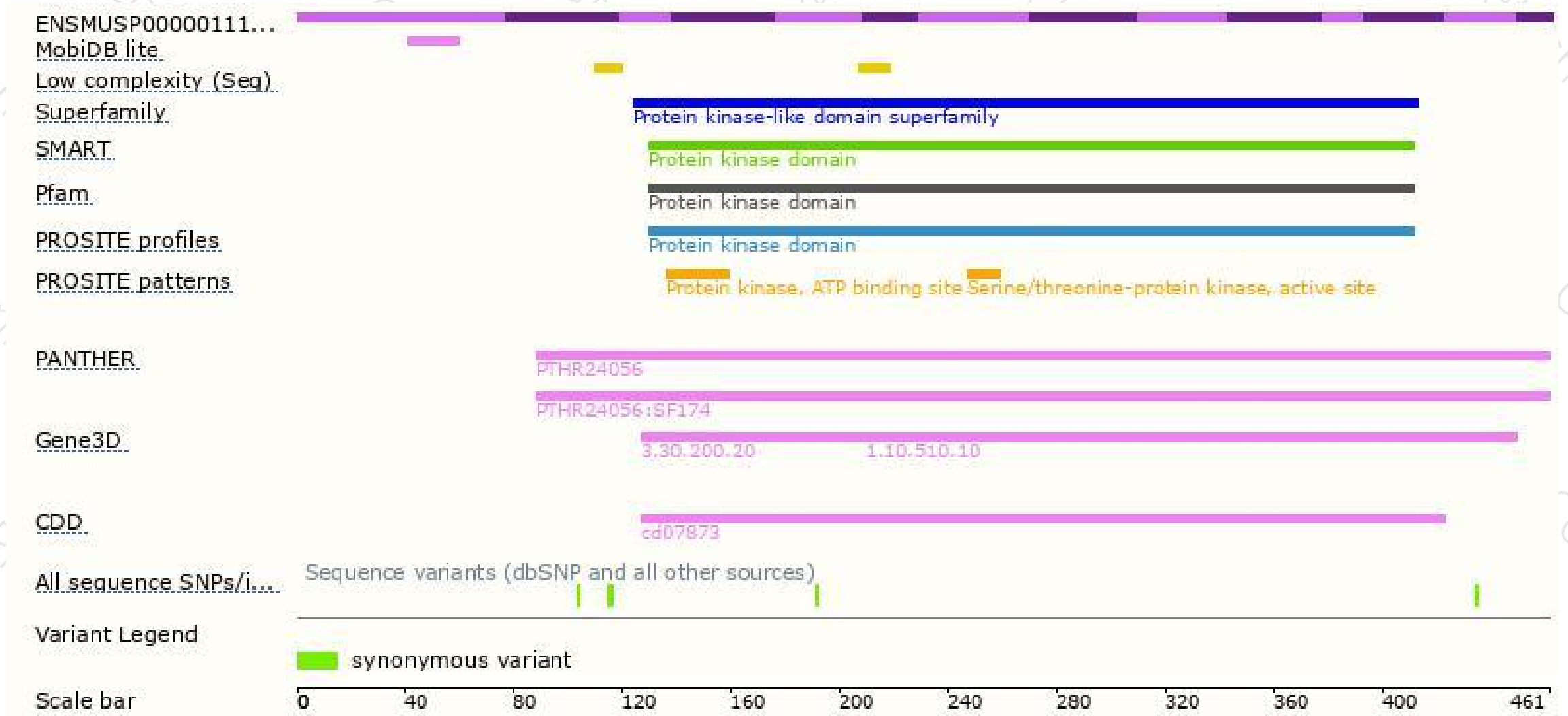
The strategy is based on the design of *Cdk16-202* transcript,The transcription is shown below



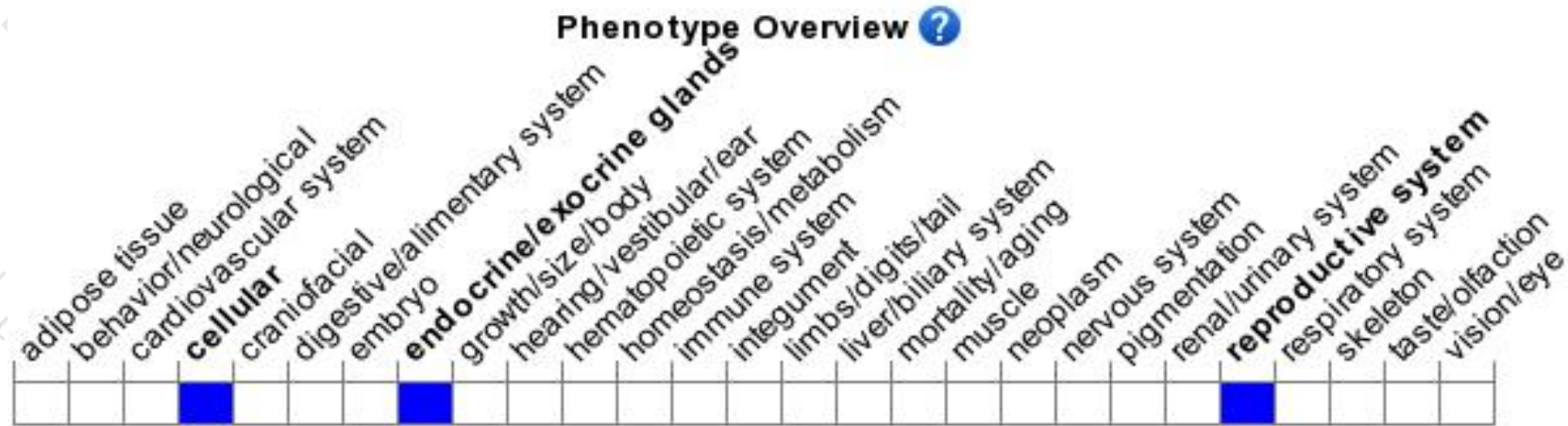
Genomic location distribution



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 male infertility associated with asthenozoospermia and abnormal sperm morphology.

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

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