

***Capn10* Cas9-CKO Strategy**

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Project Overview

Project Name

Capn10

Project type

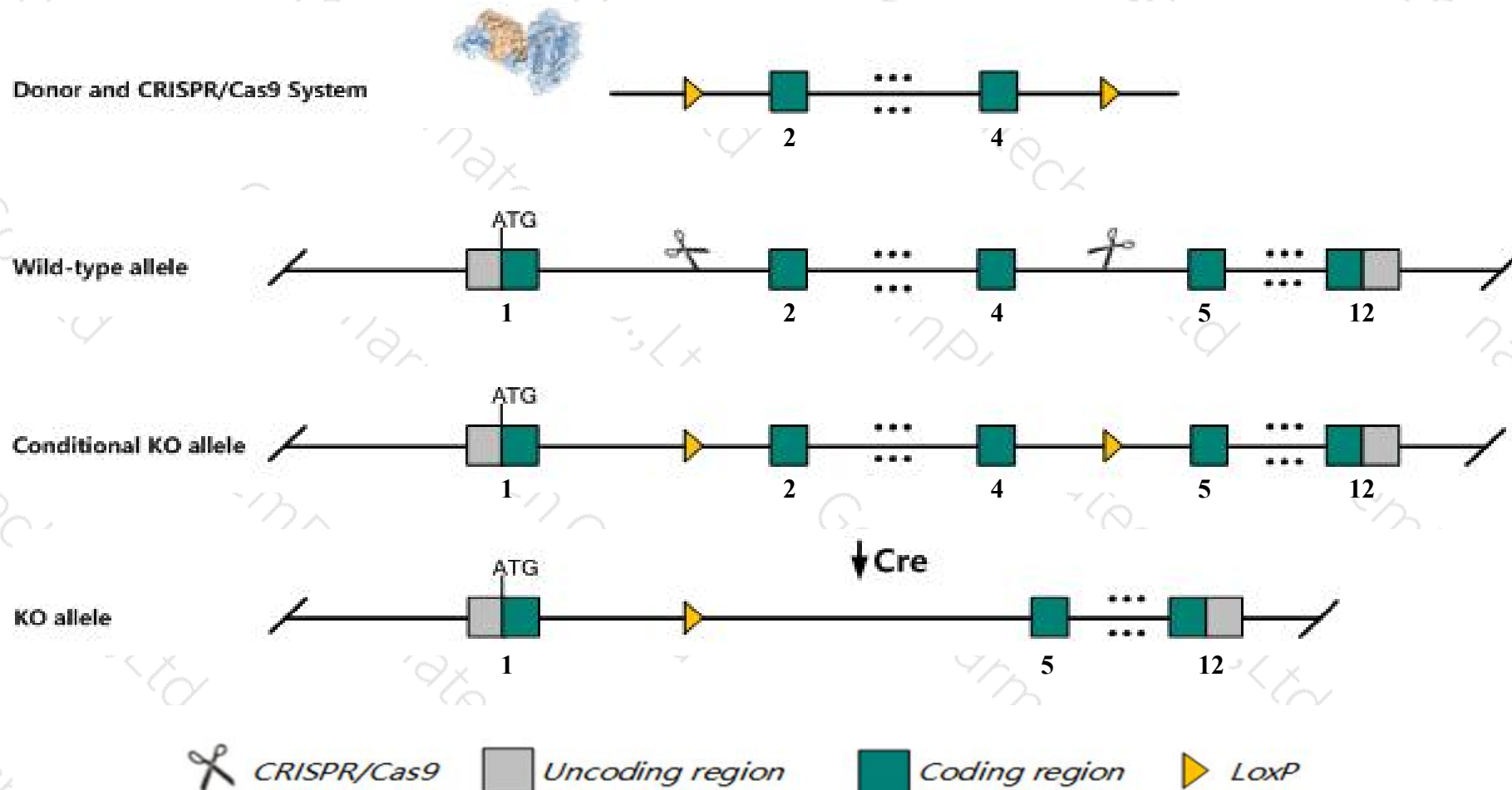
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Capn10* gene. The schematic diagram is as follows:



- The *Capn10* gene has 7 transcripts. According to the structure of *Capn10* gene, exon2-exon4 of *Capn10-201* (ENSMUST00000027488.10) transcript is recommended as the knockout region. The region contains 547bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Capn10* 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 resistance to ryanodine- and palmitate-induced pancreatic apoptosis. Mice homozygous for a different knock-out allele exhibit increased adiposity, body and organ weights, and leptin serum levels on background containing LG/J.
- *9430060I03Rik* gene may be destroyed in this strategy.
- Transcript *Capn10*-203&204&206 may not be affected.
- The *Capn10* gene is located on the Chr1. 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)

Capn10 calpain 10 [*Mus musculus* (house mouse)]

Gene ID: 23830, updated on 5-Nov-2019

Summary

Official Symbol	Capn10 provided by MGI
Official Full Name	calpain 10 provided by MGI
Primary source	MGI:MGI:1344392
See related	Ensembl:ENSMUSG00000026270
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	Capn8; AW049679; mKIAA1845
Expression	Ubiquitous expression in genital fat pad adult (RPKM 19.1), ovary adult (RPKM 16.4) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 1; 1 D

See Capn10 in [Genome Data Viewer](#)

Exon count: 12

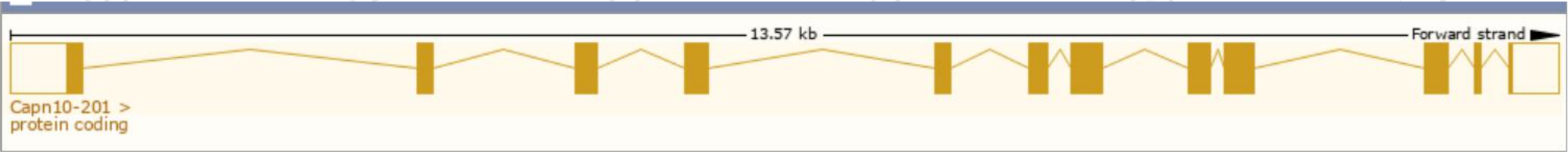
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	1	NC_000067.6 (92934408..92947948)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	1	NC_000067.5 (94830985..94844525)

Transcript information (Ensembl)

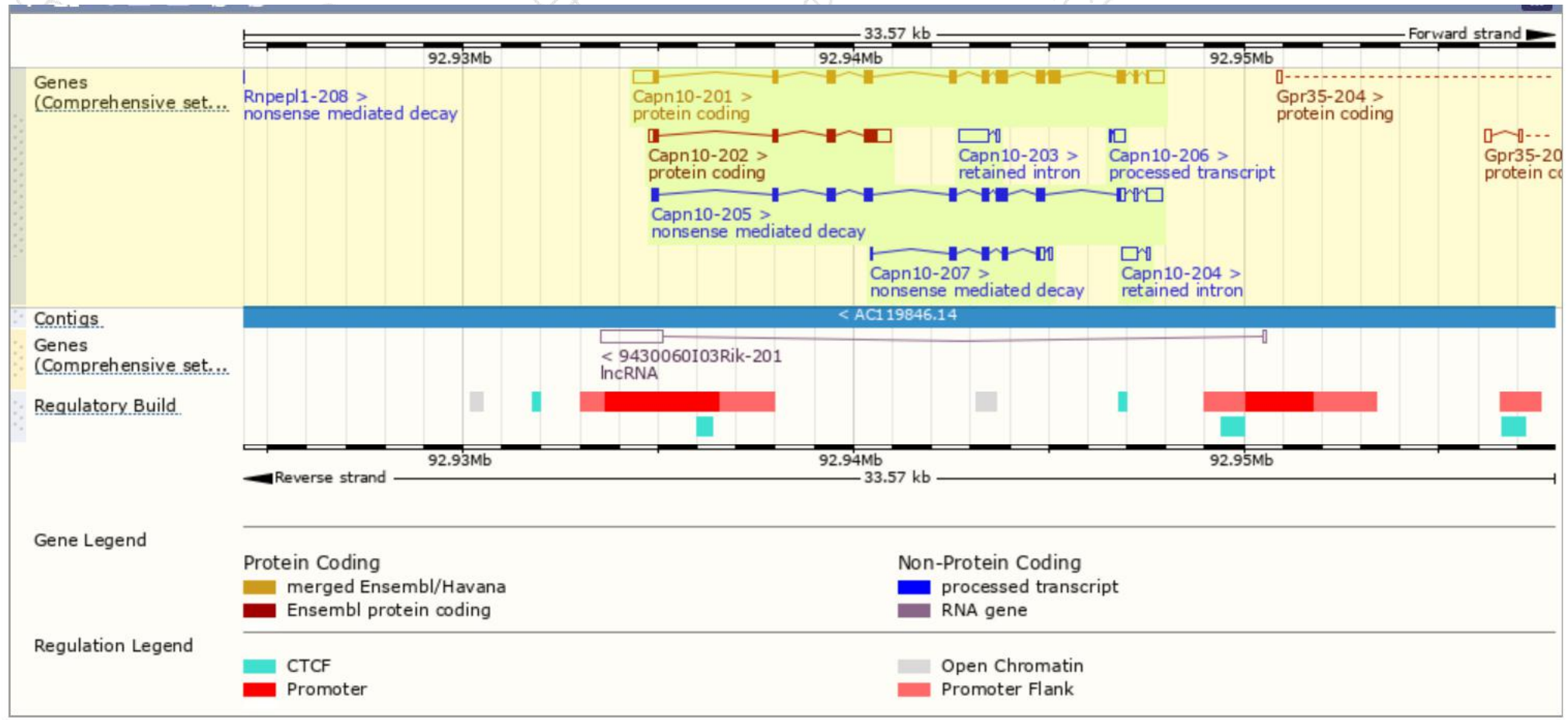
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Capn10-201	ENSMUST00000027488.10	2902	666aa	Protein coding	CCDS15181	Q9ESK3	TSL:1 GENCODE basic APPRIS P1
Capn10-202	ENSMUST000000117814.7	1268	264aa	Protein coding	-	Q9CPY2	TSL:1 GENCODE basic
Capn10-205	ENSMUST000000152983.7	2171	507aa	Nonsense mediated decay	-	D6RGR0	TSL:5
Capn10-207	ENSMUST000000187342.1	752	179aa	Nonsense mediated decay	-	A0A087WSM6	CDS 5' incomplete TSL:5
Capn10-206	ENSMUST000000153828.1	317	No protein	Processed transcript	-	-	TSL:2
Capn10-203	ENSMUST000000128429.1	829	No protein	Retained intron	-	-	TSL:3
Capn10-204	ENSMUST000000136598.1	458	No protein	Retained intron	-	-	TSL:2

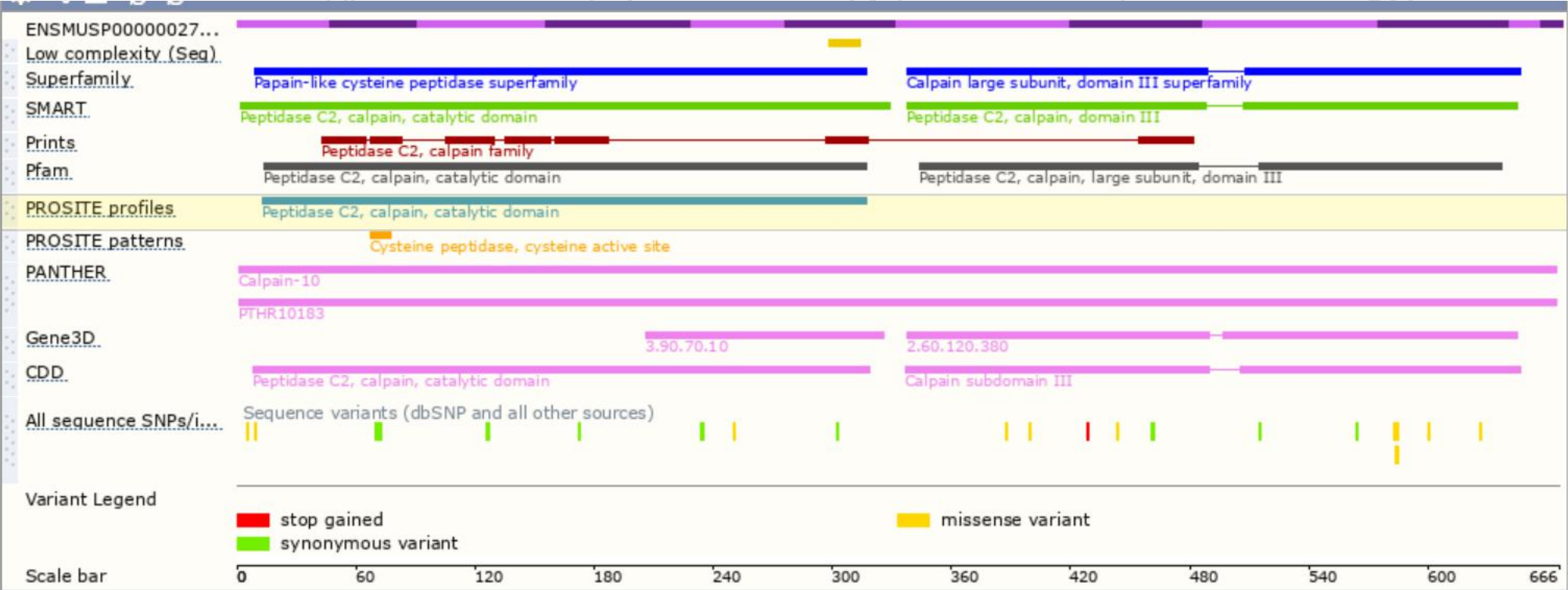
The strategy is based on the design of *Capn10-201* transcript,The transcription is shown below



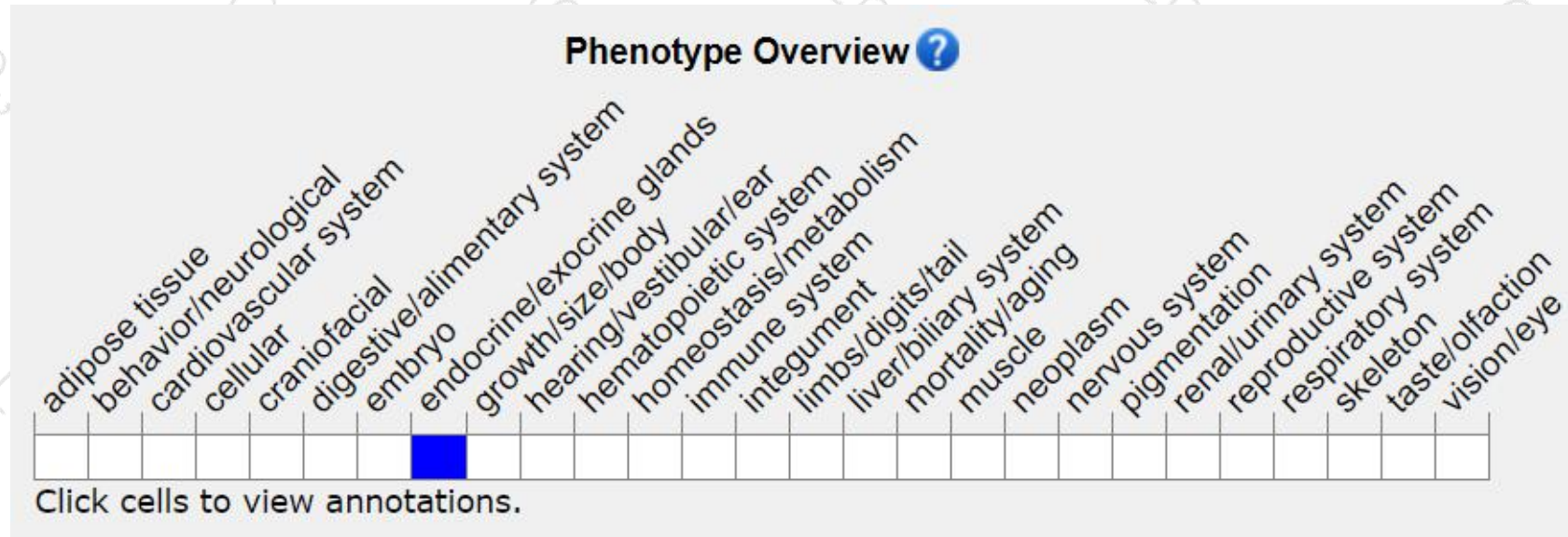
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit resistance to ryanodine- and palmitate-induced pancreatic apoptosis. Mice homozygous for a different knock-out allele exhibit increased adiposity, body and organ weights, and leptin serum levels on background containing LG/J.

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

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