

# ***Gper1 Cas9-CKO Strategy***

**Designer:**

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**Reviewer:**

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**Design Date:**

**2019-12-26**

# Project Overview

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**Project Name**

***Gper1***

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**Project type**

**Cas9-CKO**

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**Strain background**

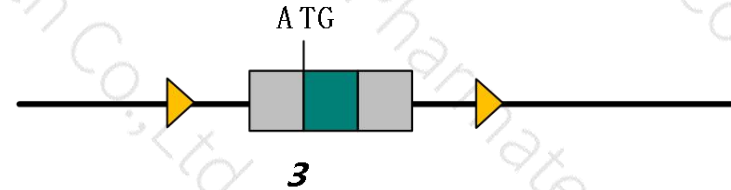
**C57BL/6JGpt**

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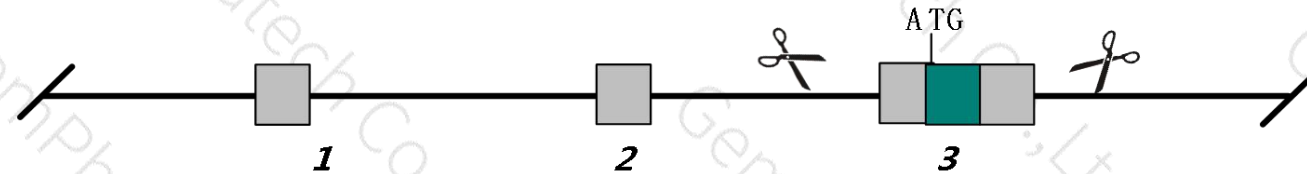
# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gper1* gene. The schematic diagram is as follows:

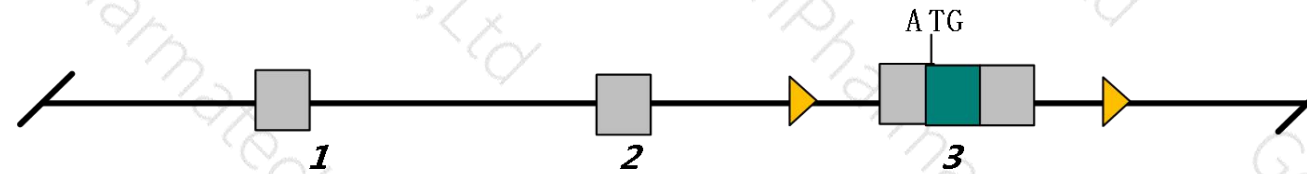
Donor and CRISPR/Cas9 System



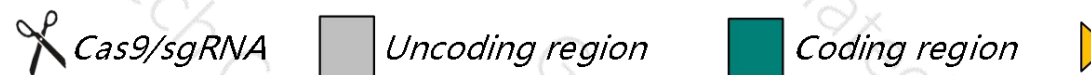
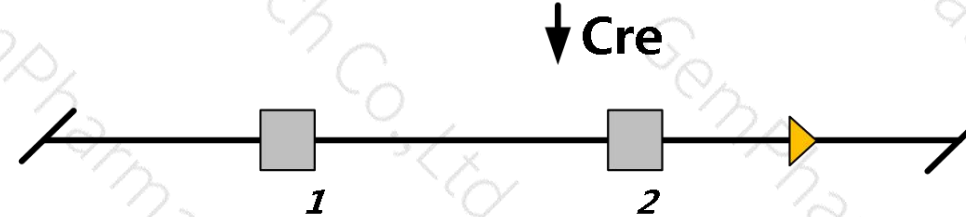
Wild-type allele



Conditional KO allele



KO allele



- The *Gper1* gene has 2 transcript. According to the structure of *Gper1* gene, exon3 of *Gper1*-201 ([ENSMUST00000066211.4](#)) transcript is recommended as the knockout region. The region contains all of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gper1* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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 or cell types.

- According to the existing MGI data , Mice homozygous for a knockout allele exhibit decreased thymic atrophy,
- The CKO region contains the introns of the 3110082I17Rik gene. Knockout of this region may affect splicing of 3110082I17Rik genes.
- The *Gper1* gene is located on the Chr5. 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 the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information ( NCBI )

## Gper1 G protein-coupled estrogen receptor 1 [ *Mus musculus* (house mouse) ]

Gene ID: 76854, updated on 4-Dec-2019

### Summary



**Official Symbol** Gper1 provided by [MGI](#)

**Official Full Name** G protein-coupled estrogen receptor 1 provided by [MGI](#)

**Primary source** [MGI:MGI:1924104](#)

**See related** [Ensembl:ENSMUSG00000053647](#)

**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** Gper; Cep1; FEG-1; Gpr30; CMKRL2; GPCR-Br; 6330420K13Rik

**Expression** Broad expression in stomach adult (RPKM 12.7), genital fat pad adult (RPKM 4.2) and 17 other tissues [See more](#)

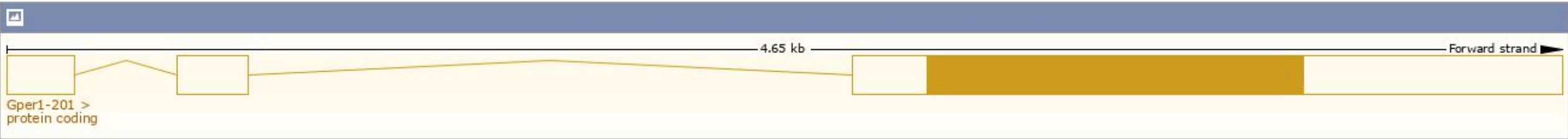
**Orthologs** [human](#) [all](#)

# Transcript information ( Ensembl )

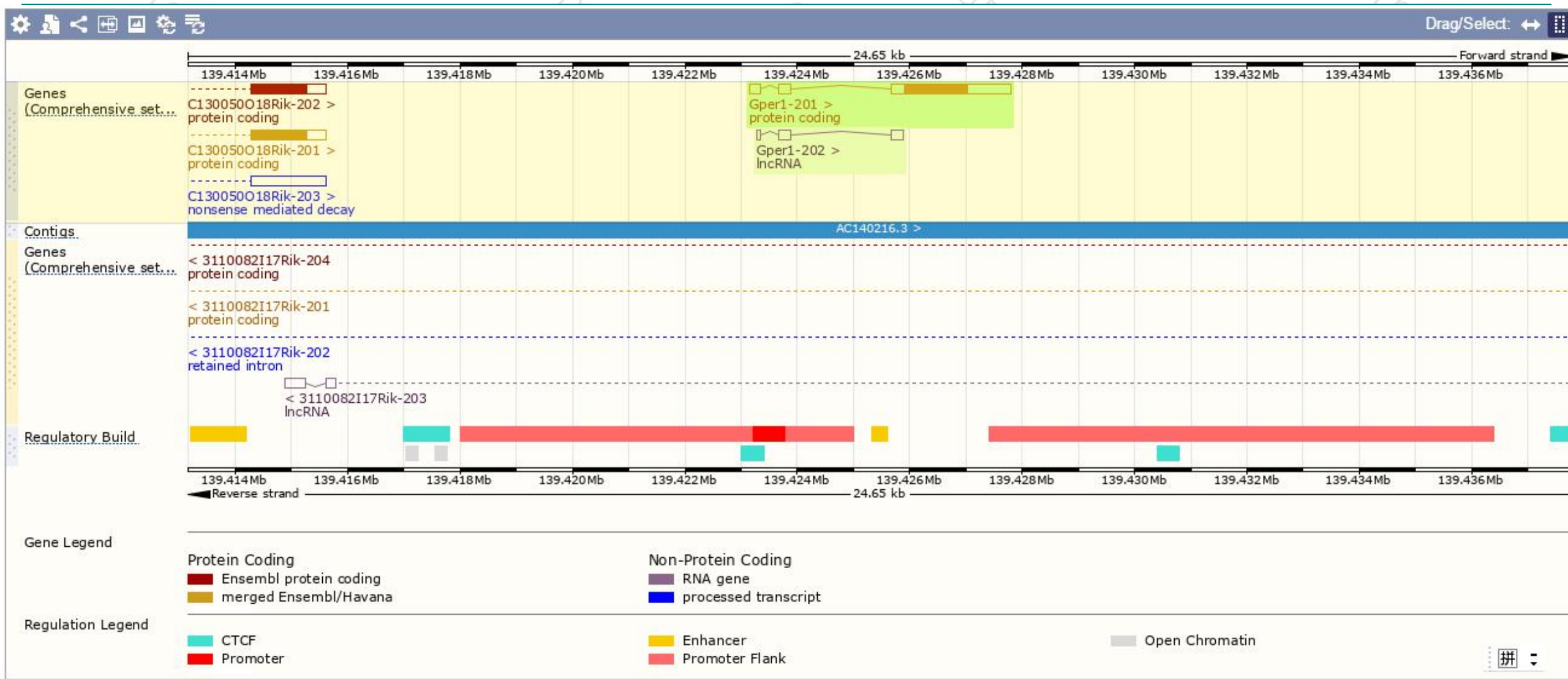
The gene has 2 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Gper1-202	<a href="#">ENSMUST00000173364.1</a>	492	No protein	lncRNA	-	-	TSL:3	
Gper1-201	<a href="#">ENSMUST00000066211.4</a>	2537	<a href="#">375aa</a>	Protein coding	<a href="#">CCDS19811</a>	<a href="#">Q8BMP4</a>	TSL:1	GENCODE basic APPRIS P1

The strategy is based on the design of *Gper1* -201 transcript, The transcription is shown below

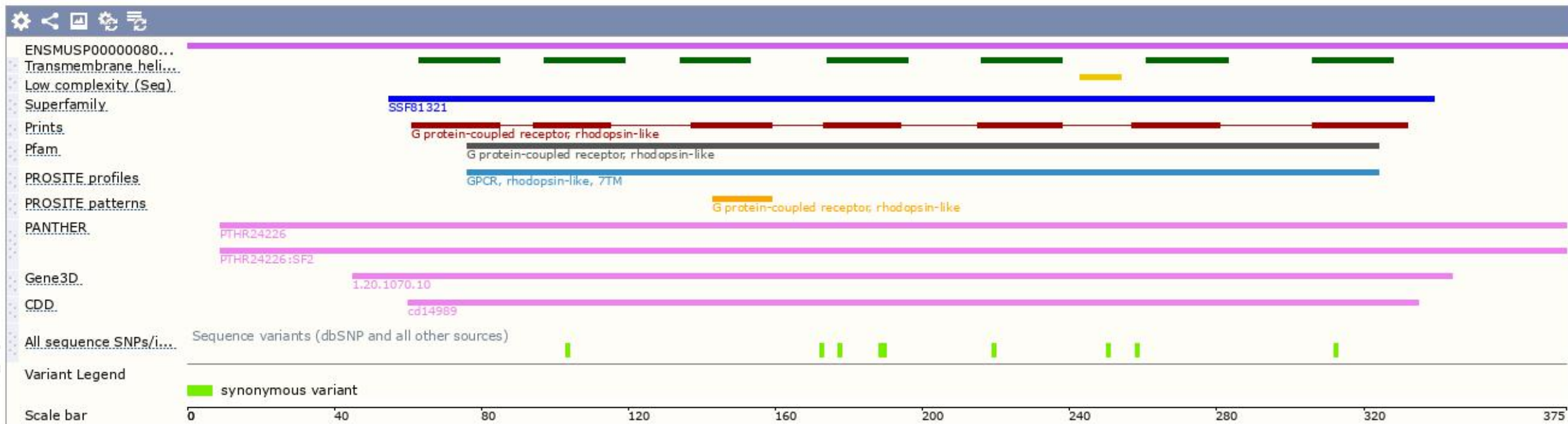


# Genomic location distribution

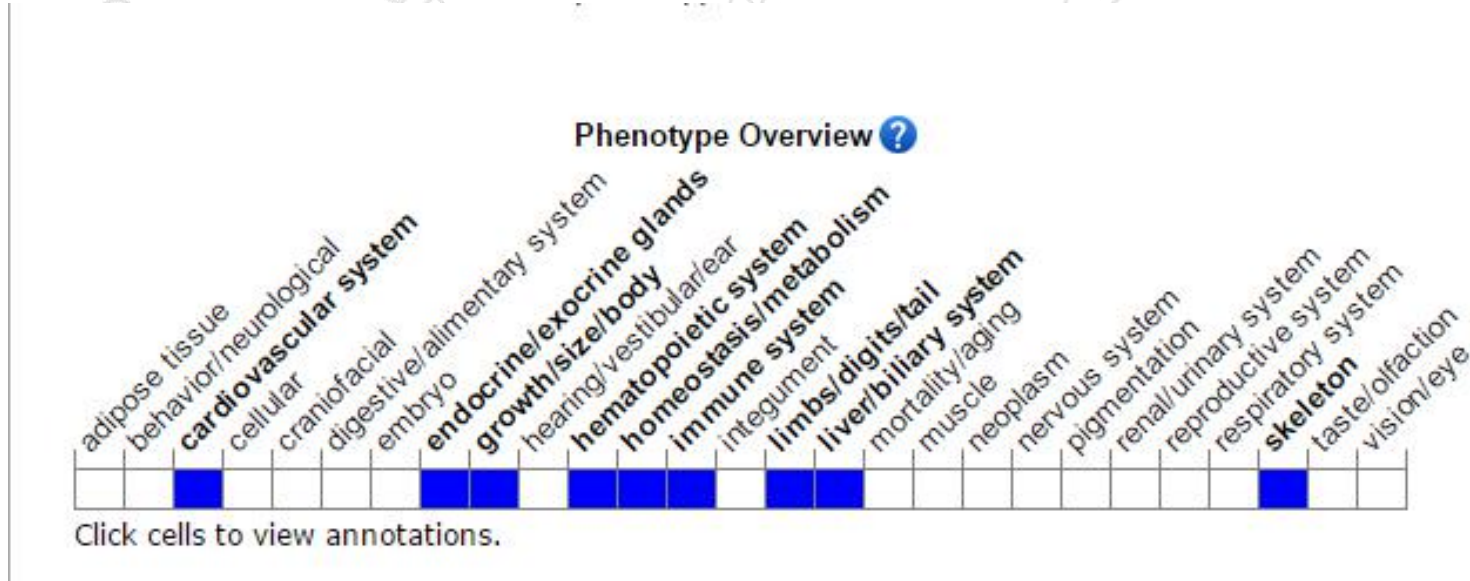




# Protein domain



# 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 knockout allele exhibit decreased thymic atrophy, insulin, and glucagon responses following treatment with PGE2.

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