

# ***Hsd11b1 Cas9-KO Strategy***

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# Project Overview

**Project Name**

*Hsd11b1*

**Project type**

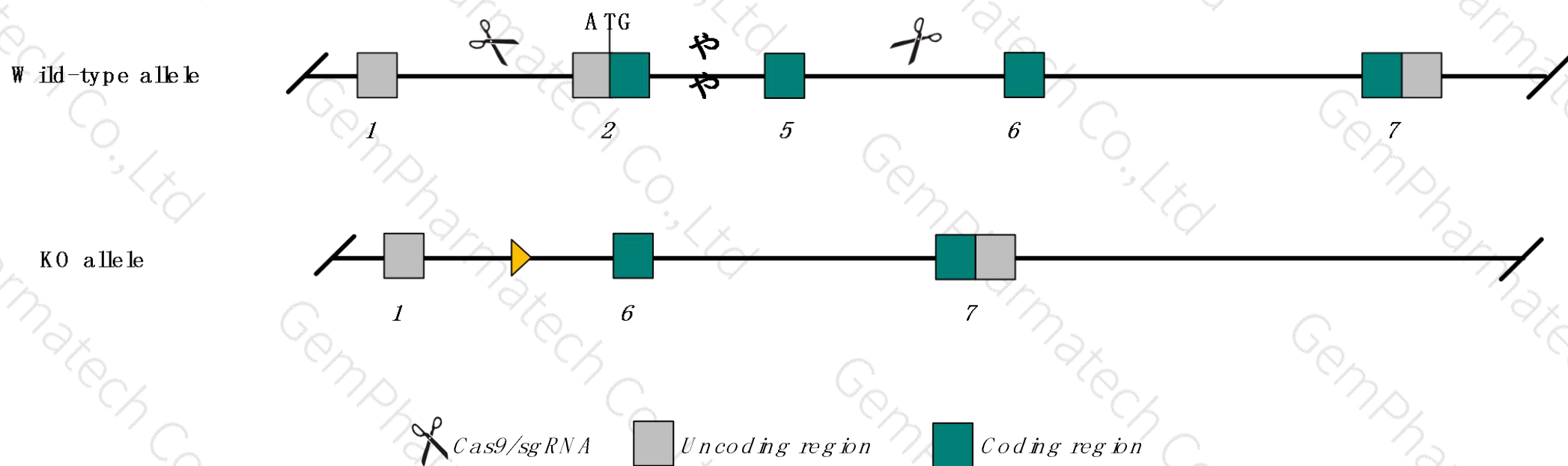
Cas9-KO

**Animal background**

C57BL/6JGpt

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the Hsd11b1 gene. The schematic diagram is as follows:



# Technical routes

- The Hsd11b1 gene has 7 transcripts. According to the structure of Hsd11b1 gene, exon2-5 of Hsd11b1-205 transcript is recommended as the knockout region. The region contains start codon ATG coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hsd11b1* 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.

- According to the existing MGI data , Mice homozygous for disruptions in this gene display improved glucose tolerance and lower circulating lipid levels. Mice homozygous for a different targeted allele exhibit decreased susceptibility to weight gain, adiposis or hyperinsulinemia induced by 11-DHC.
- The *Hsd11b1* 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 gene transcription and translation processes, all risks cannot be predicted under existing information.



# Gene information ( NCBI )

## Hsd11b1 hydroxysteroid 11-beta dehydrogenase 1 [ *Mus musculus* (house mouse) ]

Gene ID: 15483, updated on 2-Jul-2019

### Summary

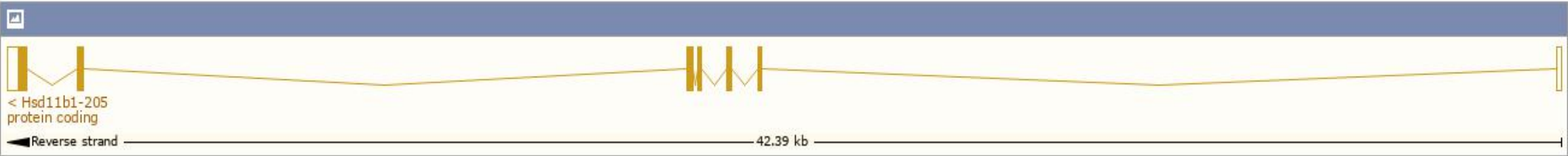
Official Symbol	Hsd11b1 provided by <a href="#">MGI</a>
Official Full Name	hydroxysteroid 11-beta dehydrogenase 1 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:103562</a>
See related	<a href="#">Ensembl:ENSMUSG00000016194</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in liver adult (RPKM 236.8), lung adult (RPKM 66.7) and 8 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information ( Ensembl )

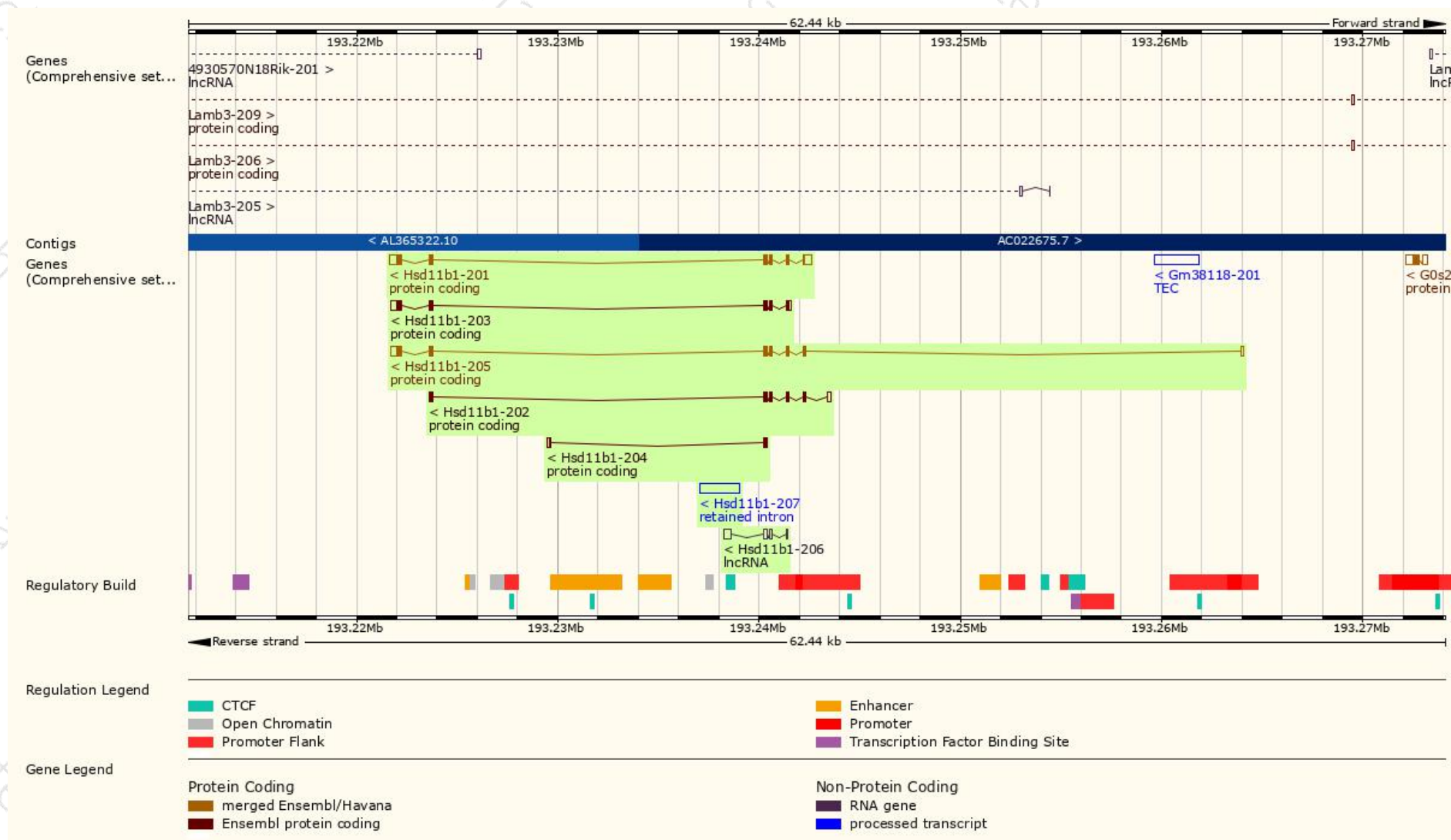
The gene has 7 transcripts, and all transcripts are shown below :

Show/hide columns (1 hidden)					Filter		
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hsd11b1-201	<a href="#">ENSMUST00000016338.14</a>	1623	<a href="#">292aa</a>	Protein coding	<a href="#">CCDS15635</a>	<a href="#">P50172</a> <a href="#">Q4JHD9</a>	TSL:1 GENCODE basic APPRIS P1
Hsd11b1-205	<a href="#">ENSMUST000000161737.7</a>	1355	<a href="#">292aa</a>	Protein coding	<a href="#">CCDS15635</a>	<a href="#">P50172</a> <a href="#">Q4JHD9</a>	TSL:1 GENCODE basic APPRIS P1
Hsd11b1-203	<a href="#">ENSMUST000000160929.7</a>	1256	<a href="#">262aa</a>	Protein coding	-	<a href="#">Q3TJI8</a>	TSL:1 GENCODE basic
Hsd11b1-202	<a href="#">ENSMUST000000159644.3</a>	836	<a href="#">214aa</a>	Protein coding	-	<a href="#">F2Z3U6</a>	CDS 3' incomplete TSL:5
Hsd11b1-204	<a href="#">ENSMUST000000161406.1</a>	398	<a href="#">80aa</a>	Protein coding	-	<a href="#">F6TSI8</a>	CDS 5' incomplete TSL:3
Hsd11b1-207	<a href="#">ENSMUST000000191977.1</a>	1978	No protein	Retained intron	-	-	TSL:NA
Hsd11b1-206	<a href="#">ENSMUST000000162842.2</a>	715	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Hsd11b1-205* transcript,The transcription is shown below

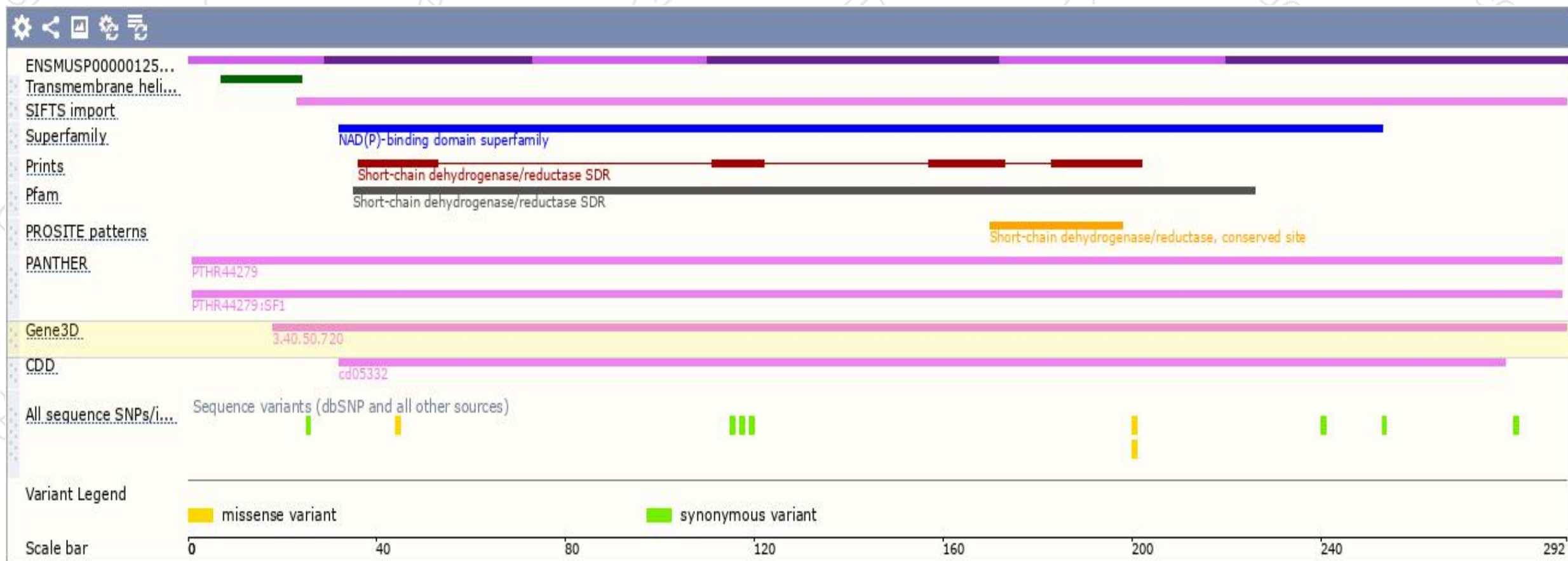


# Genomic location distribution

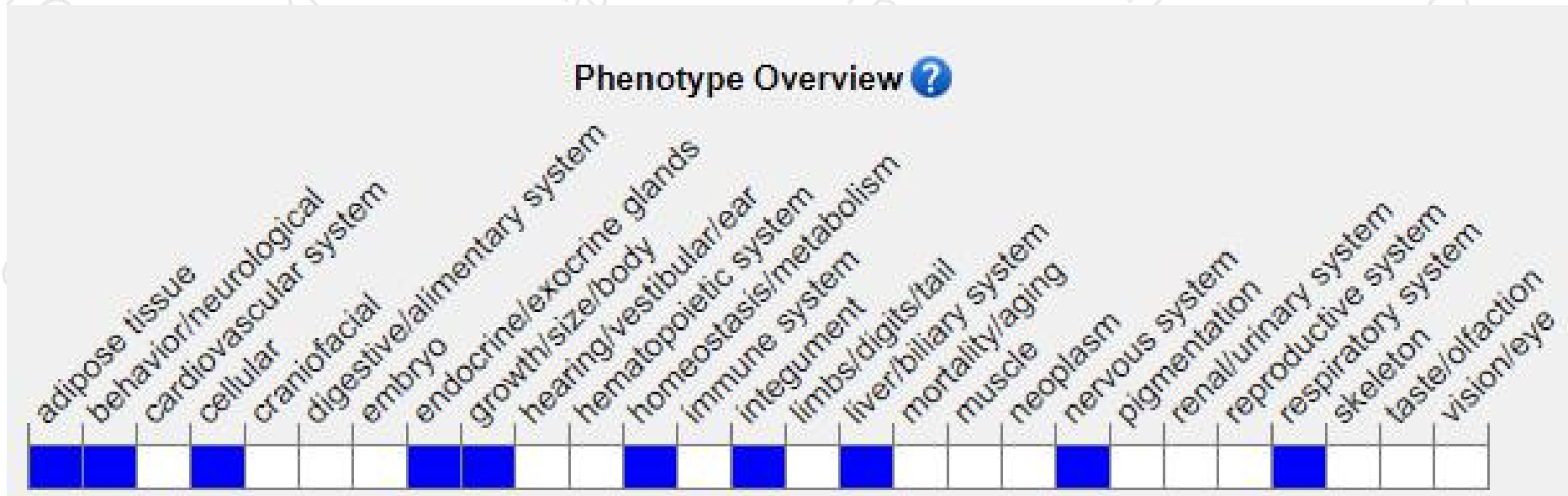




# Protein domain



# Mouse phenotype description(MGI)



According to the existing MGI data, Mice homozygous for disruptions in this gene display improved glucose tolerance and lower circulating lipid levels. Mice homozygous for a different targeted allele exhibit decreased susceptibility to weight gain, adiposis or hyperinsulinemia induced by 11-DHC.

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

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