

# *Cadps* Cas9-CKO Strategy

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# Project Overview

**Project Name**

***Cadps***

**Project type**

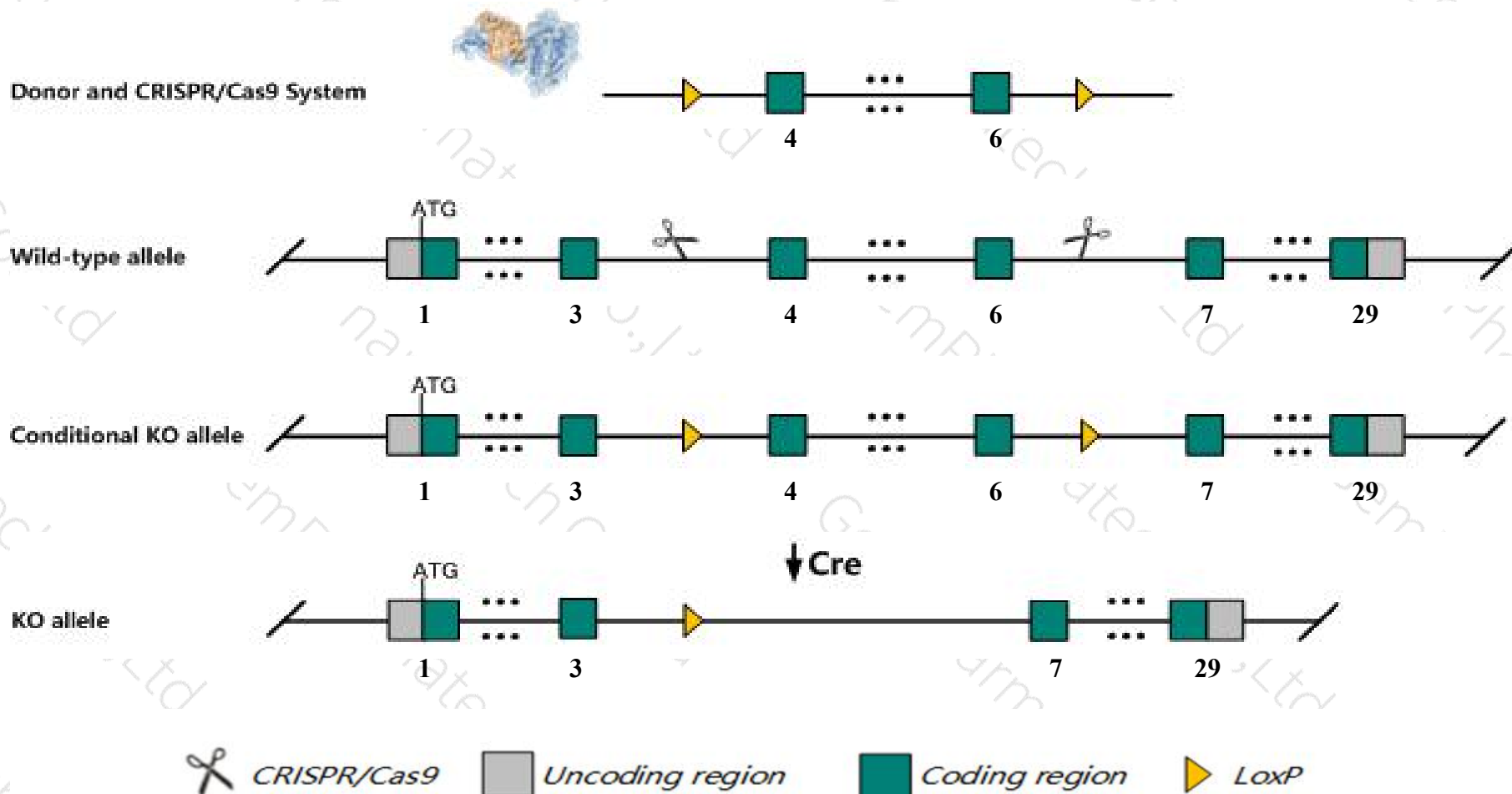
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

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



# Technical routes

- The *Cadps* gene has 12 transcripts. According to the structure of *Cadps* gene, exon4-exon6 of *Cadps*-201(ENSMUST00000067491.13) transcript is recommended as the knockout region. The region contains 437bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cadps* 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, homozygous null mice display neonatal lethality, respiratory failure and abnormal adrenal gland physiology. Adult heterozygous null mice display abnormal adrenal gland physiology that is different from that seen in homozygous neonates.
- The effect on transcript *Cadps*-208 is unknown.
- Transcript *Cadps*-205&206&207&209&211&212 may not be affected.
- The *Cadps* gene is located on the Chr14. 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)

Cadps Ca<sup>2+</sup>-dependent secretion activator [Mus musculus (house mouse)]

Gene ID: 27062, updated on 13-Mar-2020

## Summary



Official Symbol Cadps provided by [MGI](#)

Official Full Name Ca<sup>2+</sup>-dependent secretion activator provided by [MGI](#)

Primary source [MGI:MGI:1350922](#)

See related [Ensembl:ENSMUSG00000054423](#)

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 AU067781, CAPS, CAPS1, mKIAA1121

Expression Biased expression in CNS E18 (RPKM 23.4), cerebellum adult (RPKM 20.6) and 5 other tissues [See more](#)

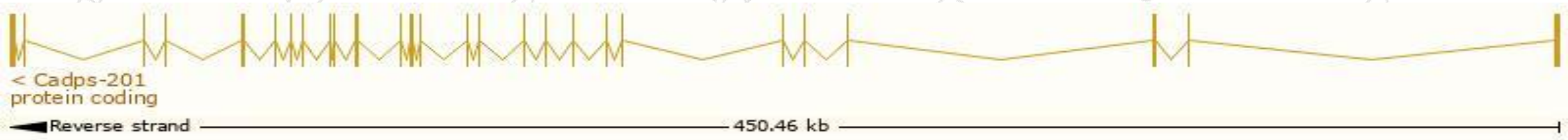
Orthologs [human all](#)

# Transcript information (Ensembl)

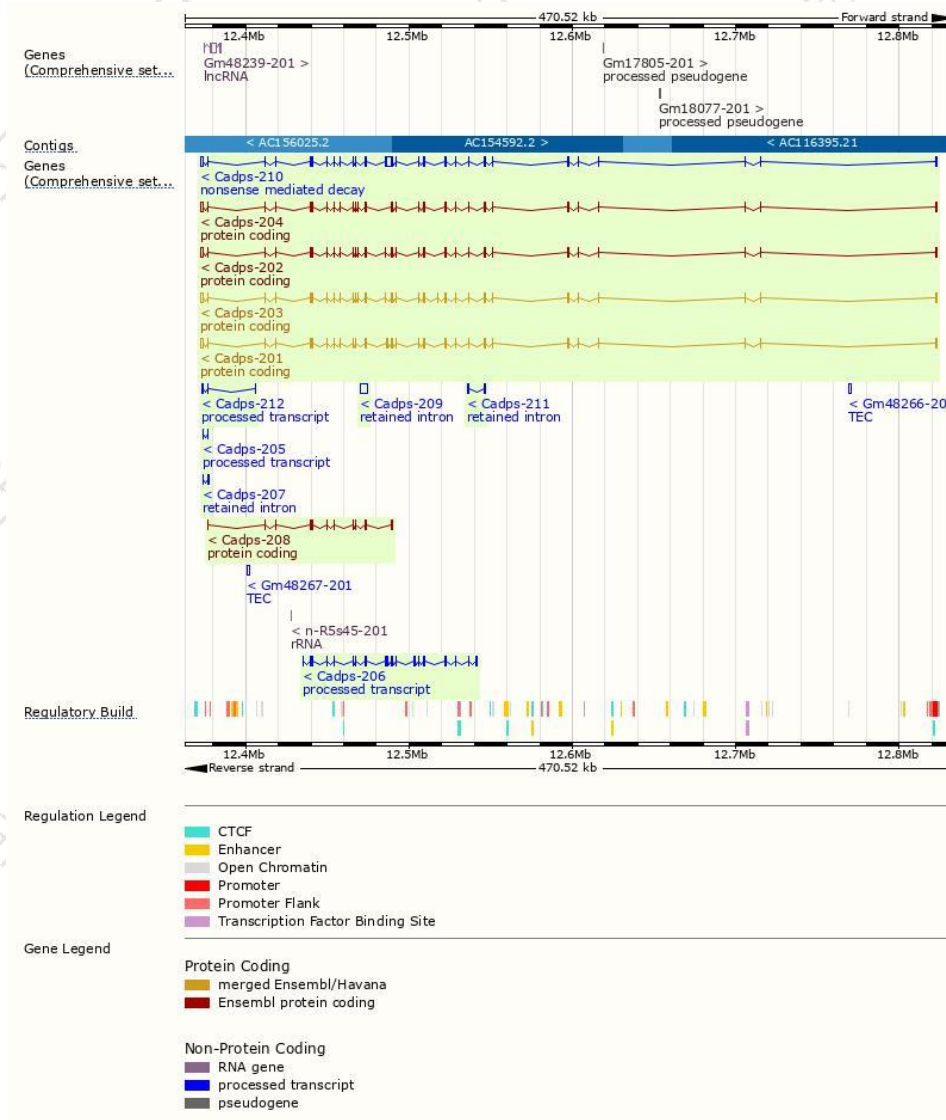
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cadps-203	<a href="#">ENSMUST00000112658.7</a>	5458	<a href="#">1355aa</a>	Protein coding	<a href="#">CCDS36807</a>	<a href="#">Q80TJ1</a>	TSL:1 GENCODE basic APPRIS ALT2
Cadps-201	<a href="#">ENSMUST00000067491.13</a>	5421	<a href="#">1361aa</a>	Protein coding	<a href="#">CCDS36806</a>	<a href="#">Q80TJ1</a>	TSL:1 GENCODE basic APPRIS P4
Cadps-204	<a href="#">ENSMUST00000177814.1</a>	5461	<a href="#">1356aa</a>	Protein coding	-	<a href="#">J3QJW3</a>	TSL:5 GENCODE basic APPRIS ALT2
Cadps-202	<a href="#">ENSMUST00000112657.8</a>	5455	<a href="#">1354aa</a>	Protein coding	-	<a href="#">K4DI76</a>	TSL:5 GENCODE basic APPRIS ALT2
Cadps-208	<a href="#">ENSMUST00000224581.1</a>	1207	<a href="#">402aa</a>	Protein coding	-	<a href="#">A0A286YE00</a>	CDS 5' and 3' incomplete
Cadps-210	<a href="#">ENSMUST00000224882.1</a>	7857	<a href="#">867aa</a>	Nonsense mediated decay	-	<a href="#">A0A286YDH6</a>	
Cadps-206	<a href="#">ENSMUST00000224106.1</a>	3660	No protein	Processed transcript	-	-	
Cadps-212	<a href="#">ENSMUST00000225807.1</a>	1091	No protein	Processed transcript	-	-	
Cadps-205	<a href="#">ENSMUST00000223637.1</a>	332	No protein	Processed transcript	-	-	
Cadps-209	<a href="#">ENSMUST00000224704.1</a>	4361	No protein	Retained intron	-	-	
Cadps-207	<a href="#">ENSMUST00000224140.1</a>	790	No protein	Retained intron	-	-	
Cadps-211	<a href="#">ENSMUST00000225606.1</a>	433	No protein	Retained intron	-	-	

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

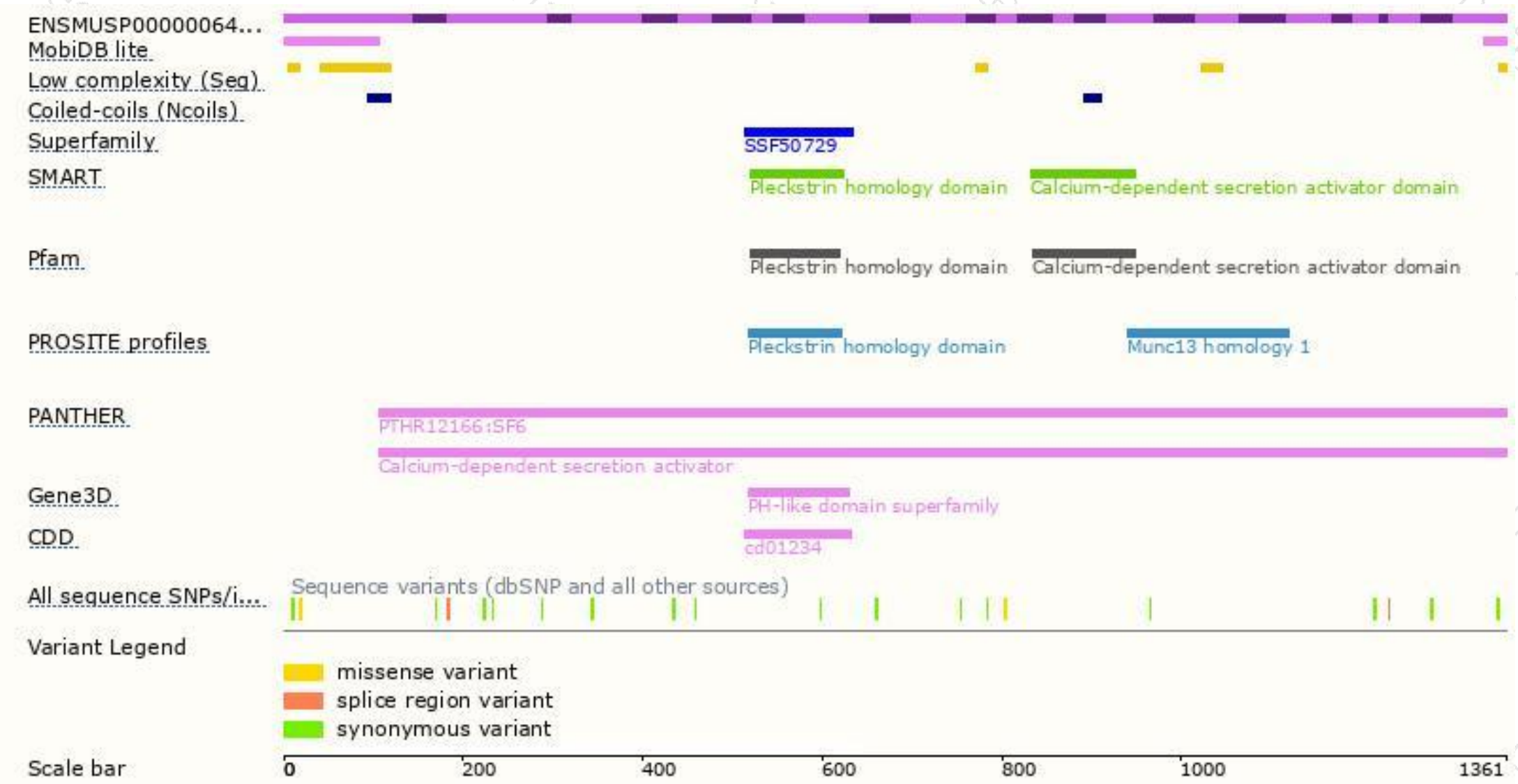


# Genomic location distribution

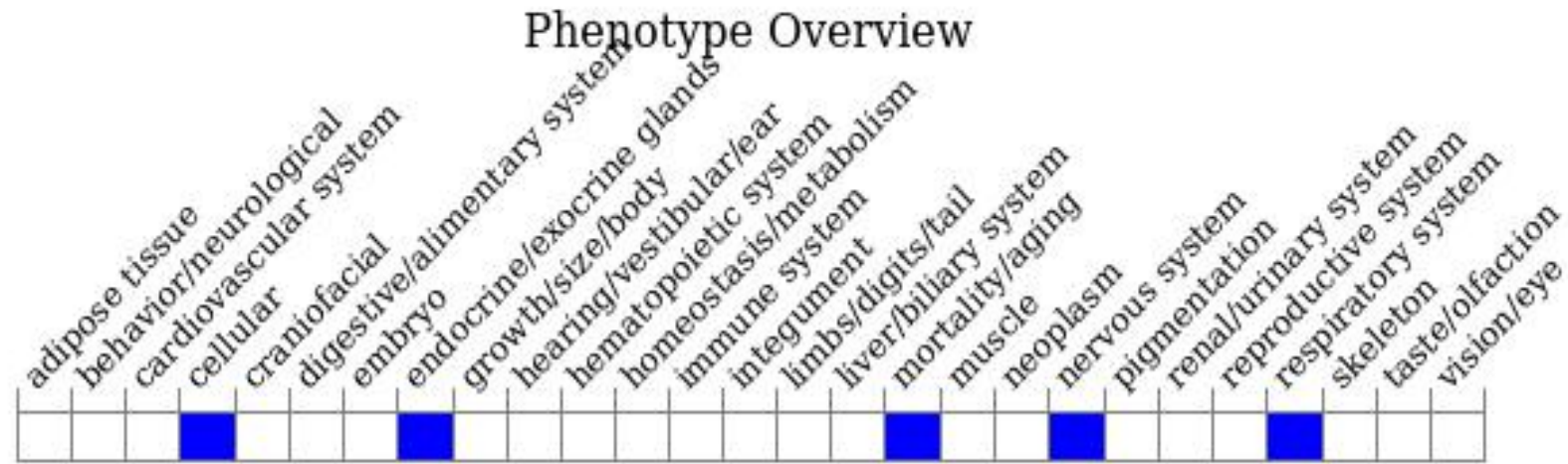




# Protein domain



# 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, homozygous null mice display neonatal lethality, respiratory failure and abnormal adrenal gland physiology. Adult heterozygous null mice display abnormal adrenal gland physiology that is different from that seen in homozygous neonates.

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

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