

# *Prmt3 Cas9-KO Strategy*

**Designer:**

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# Project Overview

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**Project Name**

*Prmt3*

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**Project type**

Cas9-KO

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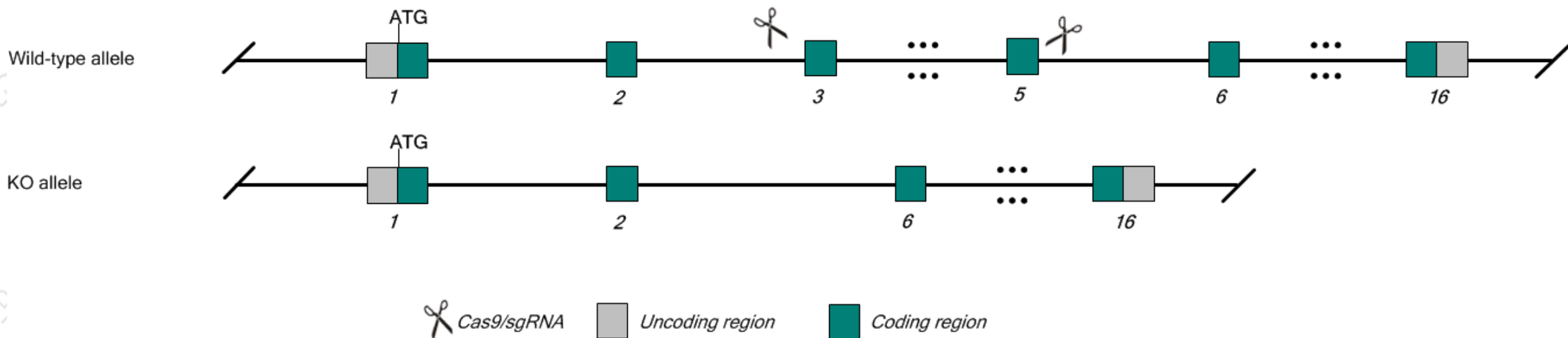
**Animal background**

C57BL/6JGpt

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# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the Prmt3 gene. The schematic diagram is as follows:



# Technical routes

- The *Prmt3* gene has 9 transcripts. According to the structure of *Prmt3* gene, exon3-5 of *Prmt3*-201 (ENSMUST00000032715.12) transcript is recommended as the knockout region. The region contains 236bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prmt3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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 a hypomorphic gene trap allele exhibit a reduced embryonic size but survive birth and attain a normal size in adulthood..
- The *Prmt3* gene is located on the Chr7. 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.

# Notice

- According to the existing MGI data , Mice homozygous for a hypomorphic gene trap allele exhibit a reduced embryonic size but survive birth and attain a normal size in adulthood..
- The *Prmt3* gene is located on the Chr7. 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.
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# Gene information ( NCBI )

## Prmt3 protein arginine N-methyltransferase 3 [ *Mus musculus* (house mouse) ]

Gene ID: 71974, updated on 9-Feb-2019

### Summary

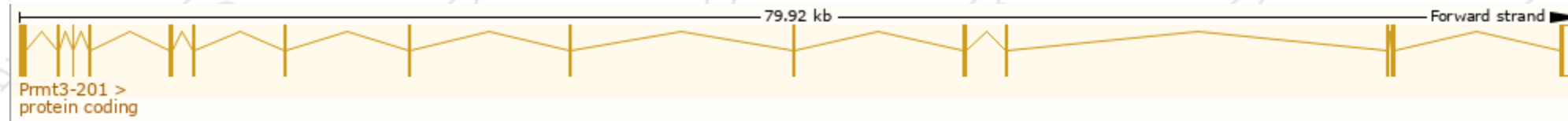
<b>Official Symbol</b>	Prmt3 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	protein arginine N-methyltransferase 3 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1919224</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000030505</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Hrmt113; AL033309; 2010005E20Rik; 2410018A17Rik
<b>Expression</b>	Ubiquitous expression in ovary adult (RPKM 18.2), CNS E11.5 (RPKM 14.1) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information ( Ensembl )

The gene has 9 transcripts, and all transcripts are shown below :

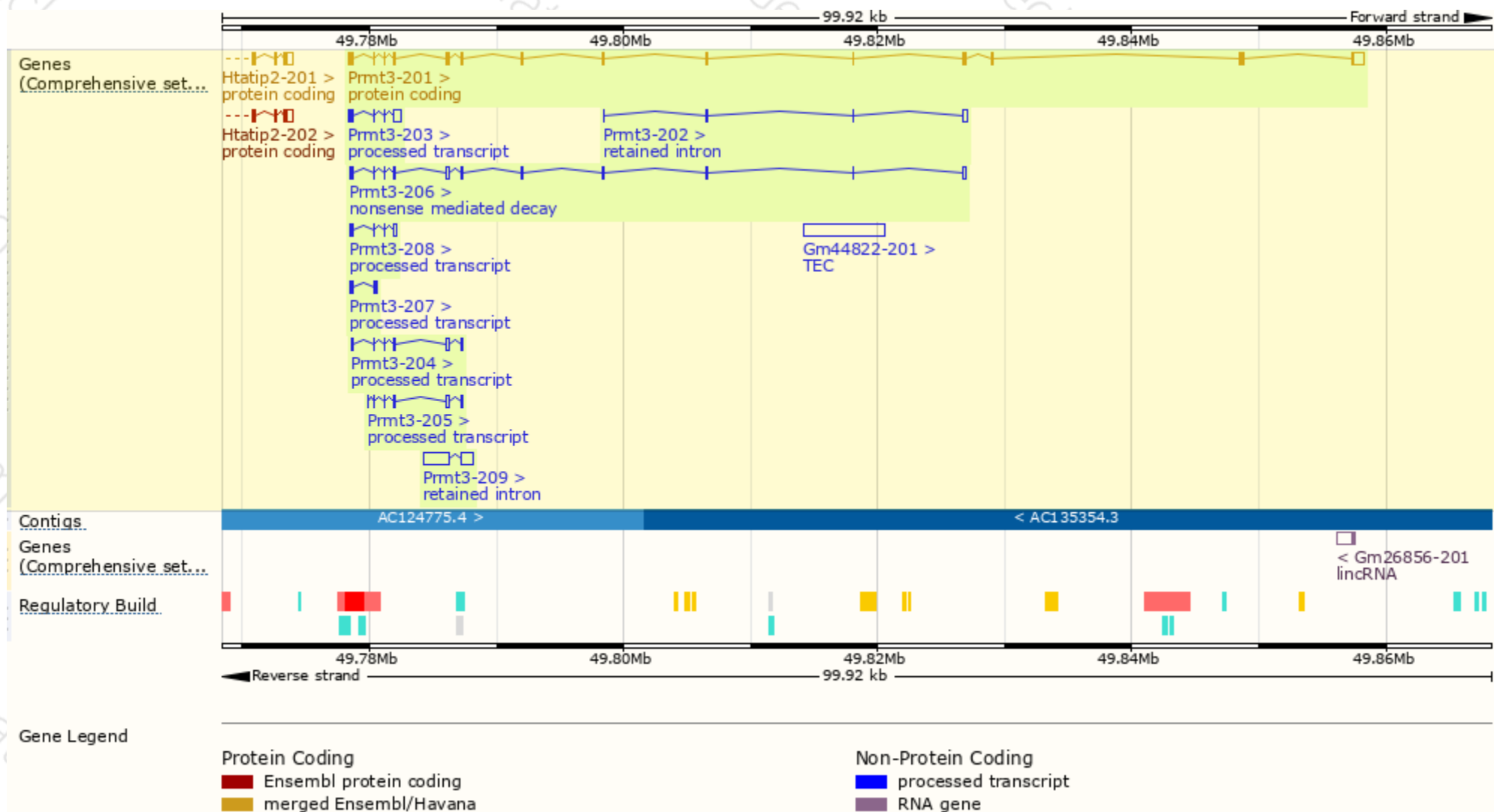
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prmt3-201	<a href="#">ENSMUST00000032715.12</a>	2507	<a href="#">528aa</a>	Protein coding	<a href="#">CCDS21307</a>	<a href="#">Q922H1</a>	TSL:1 GENCODE basic APPRIS P1
Prmt3-206	<a href="#">ENSMUST00000147401.7</a>	1242	<a href="#">64aa</a>	Nonsense mediated decay	-	<a href="#">D6RGQ1</a>	TSL:5
Prmt3-203	<a href="#">ENSMUST00000140656.7</a>	986	No protein	Processed transcript	-	-	TSL:1
Prmt3-204	<a href="#">ENSMUST00000145666.1</a>	600	No protein	Processed transcript	-	-	TSL:3
Prmt3-205	<a href="#">ENSMUST00000146052.1</a>	544	No protein	Processed transcript	-	-	TSL:5
Prmt3-208	<a href="#">ENSMUST00000152127.7</a>	504	No protein	Processed transcript	-	-	TSL:3
Prmt3-207	<a href="#">ENSMUST00000148996.1</a>	404	No protein	Processed transcript	-	-	TSL:3
Prmt3-209	<a href="#">ENSMUST00000207216.1</a>	2937	No protein	Retained intron	-	-	TSL:1
Prmt3-202	<a href="#">ENSMUST00000130907.1</a>	600	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of Prmt3-201 transcript, The transcription is shown below

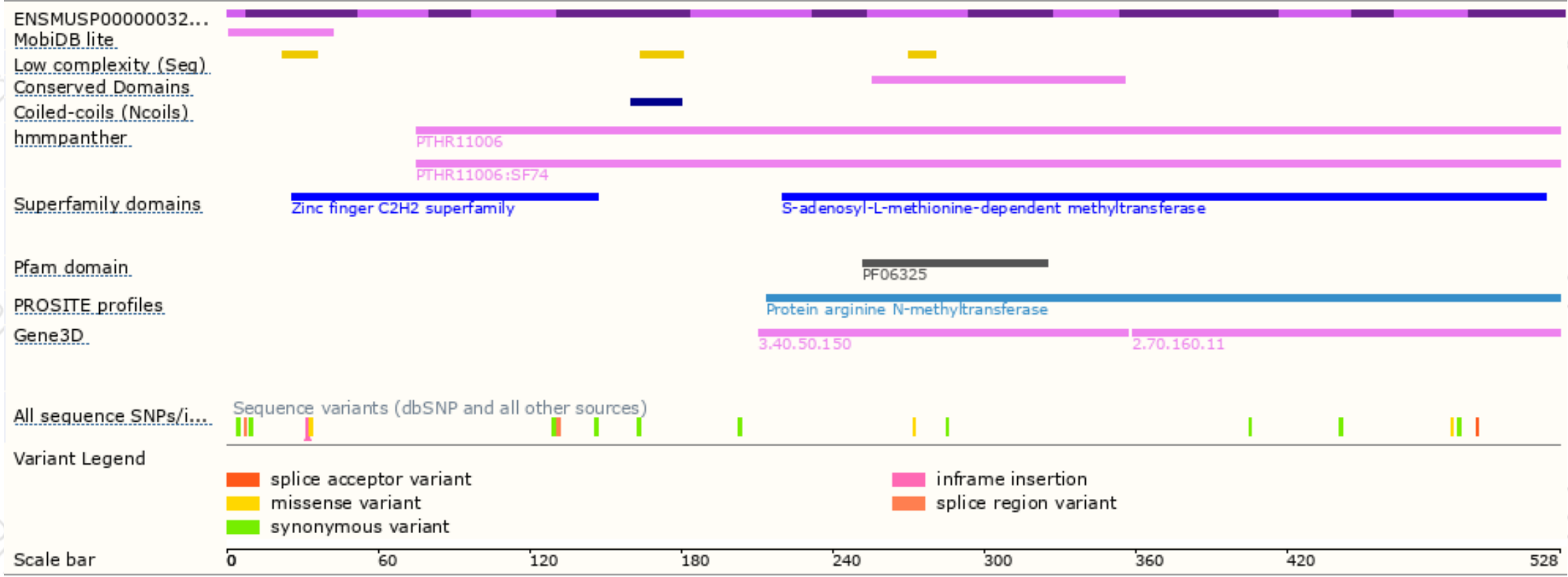




# Genomic location distribution

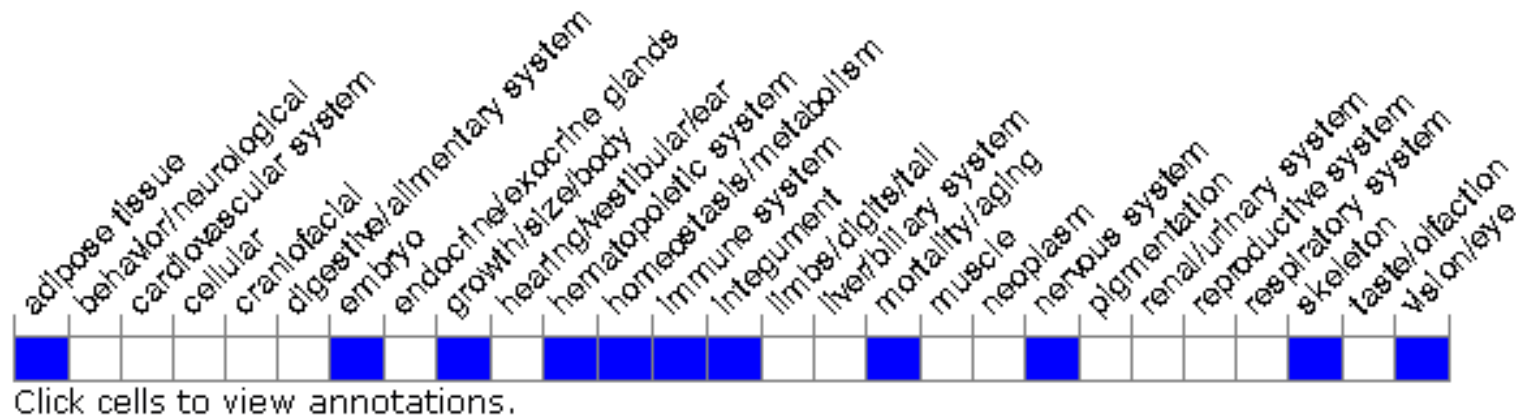


# Protein domain



# Mouse phenotype description(MGI)

## Phenotype Overview ?



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

Mice homozygous for a hypomorphic gene trap allele exhibit a reduced embryonic size but survive birth and attain a normal size in adulthood.

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

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