

# *Ccna1* Cas9-KO Strategy

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# Project Overview

**Project Name**

***Ccna1***

**Project type**

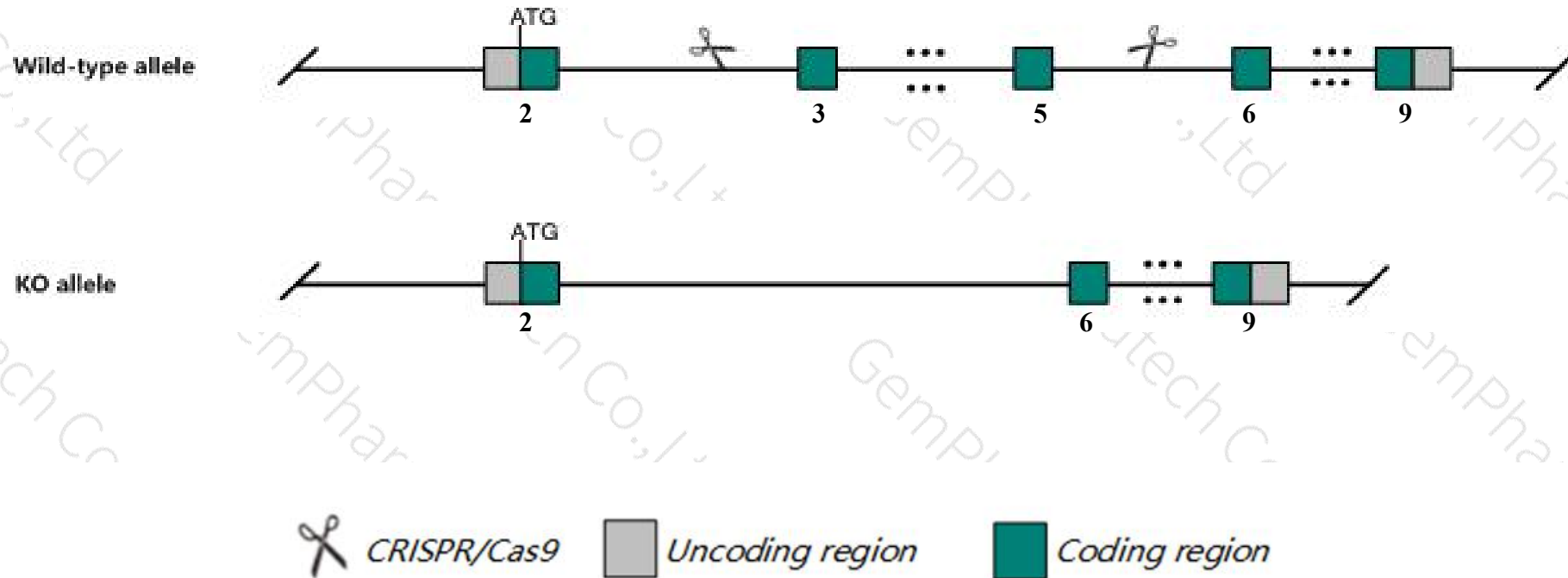
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ccna1* gene. The schematic diagram is as follows:



- The *Ccna1* gene has 6 transcripts. According to the structure of *Ccna1* gene, exon3-exon5 of *Ccna1*-202 (ENSMUST00000197238.4) transcript is recommended as the knockout region. The region contains 596bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ccna1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, homozygous null males are infertile due to the arrest of spermatogenesis prior to the first meiotic division. Female mutant mice are fertile.
- This strategy may affect the 5 terminal regulatory function of *4931419H13Rik* gene.
- The *Ccnal* gene is located on the Chr3. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## Ccna1 cyclin A1 [ *Mus musculus* (house mouse) ]

Gene ID: 12427, updated on 14-Aug-2019

### Summary

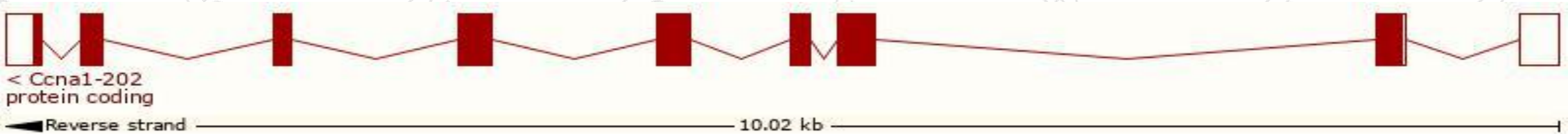
Official Symbol	Ccna1 provided by <a href="#">MGI</a>
Official Full Name	cyclin A1 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:108042</a>
See related	<a href="#">Ensembl:ENSMUSG000000027793</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in testis adult (RPKM 38.8) and limb E14.5 (RPKM 0.7) <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

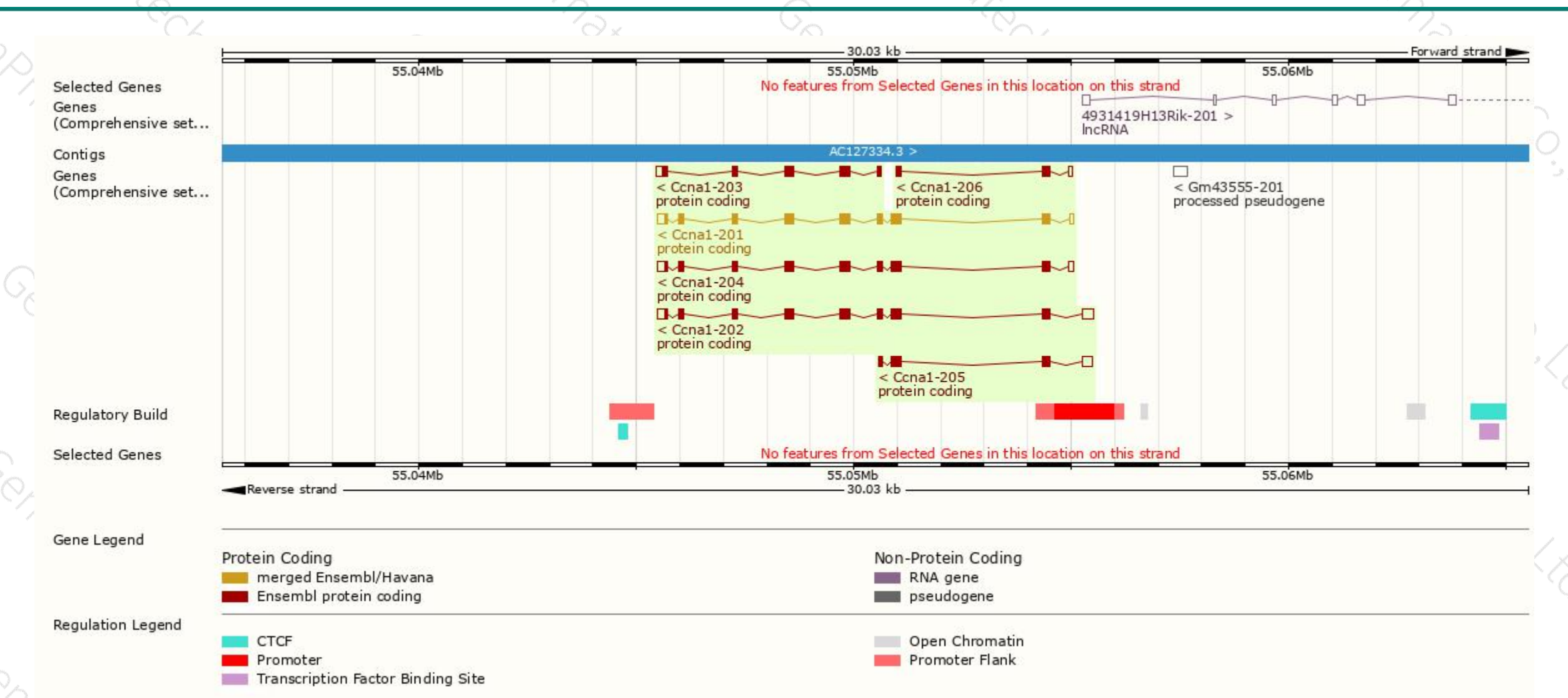
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccna1-202	<a href="#">ENSMUST00000197238.4</a>	1719	<a href="#">421aa</a>	Protein coding	<a href="#">CCDS17356</a>	<a href="#">Q61456</a>	TSL:5 GENCODE basic APPRIS P1
Ccna1-204	<a href="#">ENSMUST00000198320.4</a>	1564	<a href="#">421aa</a>	Protein coding	<a href="#">CCDS17356</a>	<a href="#">Q61456</a>	TSL:1 GENCODE basic APPRIS P1
Ccna1-201	<a href="#">ENSMUST00000029368.6</a>	1560	<a href="#">421aa</a>	Protein coding	<a href="#">CCDS17356</a>	<a href="#">Q61456</a>	TSL:1 GENCODE basic APPRIS P1
Ccna1-206	<a href="#">ENSMUST00000199352.1</a>	391	<a href="#">93aa</a>	Protein coding	-	<a href="#">A0A0G2JGG4</a>	CDS 3' incomplete TSL:5
Ccna1-205	<a href="#">ENSMUST00000199144.4</a>	749	<a href="#">165aa</a>	Protein coding	-	<a href="#">A0A0G2JFR4</a>	CDS 3' incomplete TSL:5
Ccna1-203	<a href="#">ENSMUST00000198102.4</a>	876	<a href="#">250aa</a>	Protein coding	-	<a href="#">A0A0G2JEB5</a>	CDS 5' incomplete TSL:3

The strategy is based on the design of *Ccna1*-202 transcript,The transcription is shown below

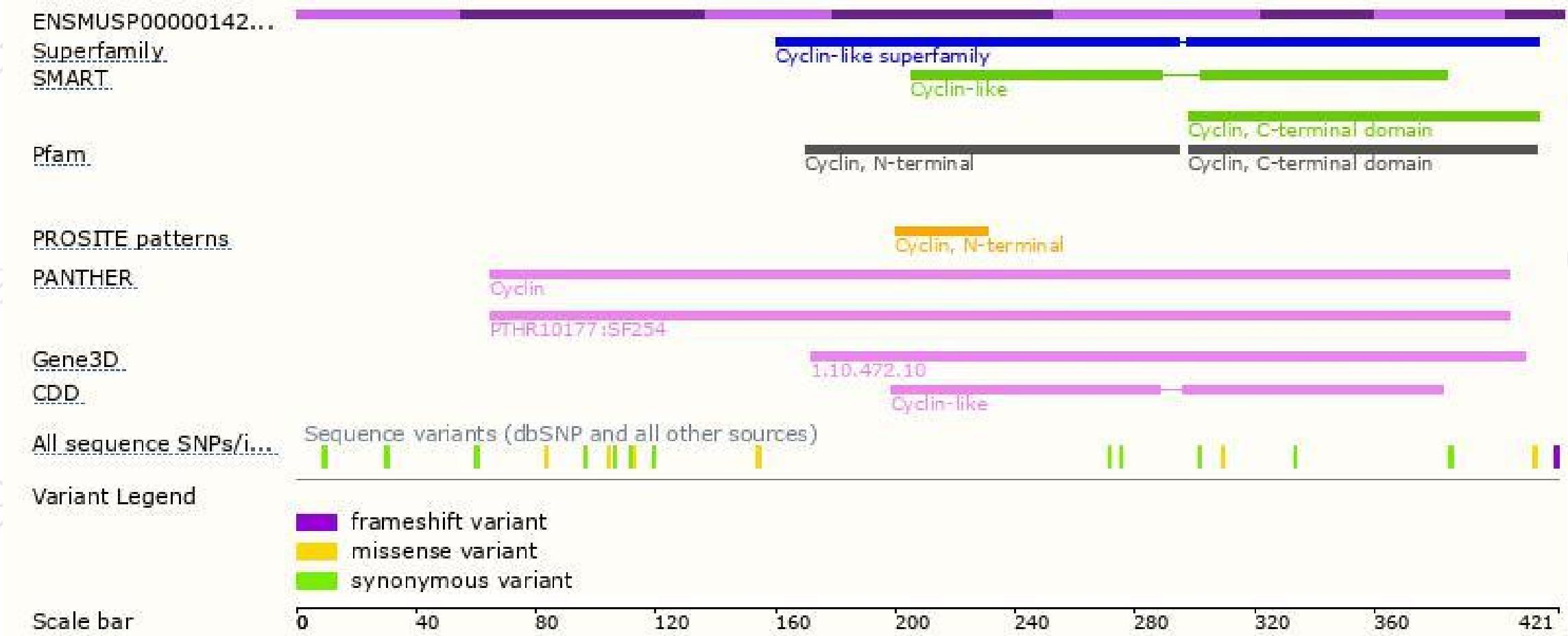


# Genomic location distribution

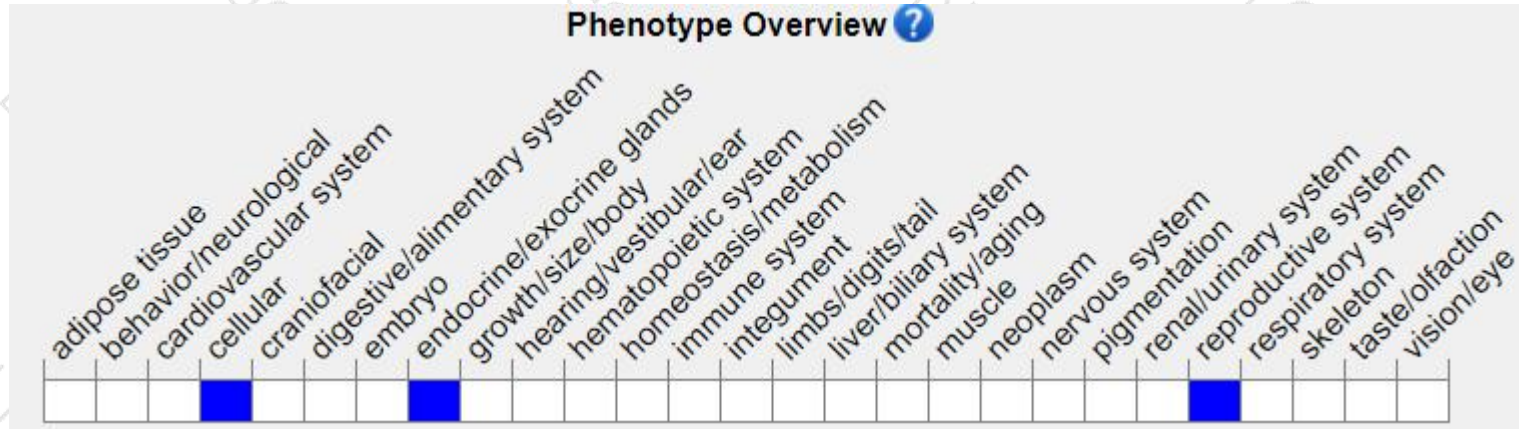




# Protein domain



# 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 males are infertile due to the arrest of spermatogenesis prior to the first meiotic division. Female mutant mice are fertile.

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

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