

Cadps Cas9-KO Strategy

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Project Overview

Project Name

Cadps

Project type

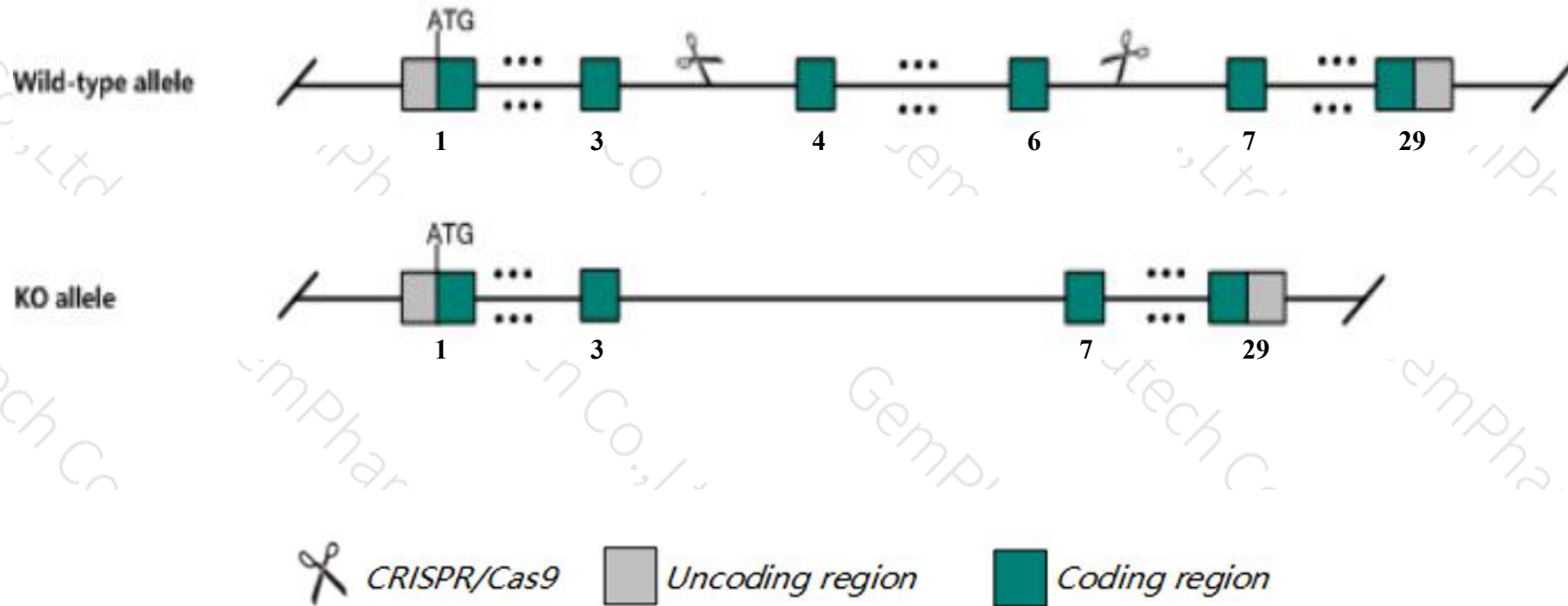
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- 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 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, 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Cadps Ca²⁺-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 Ca²⁺-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](#)

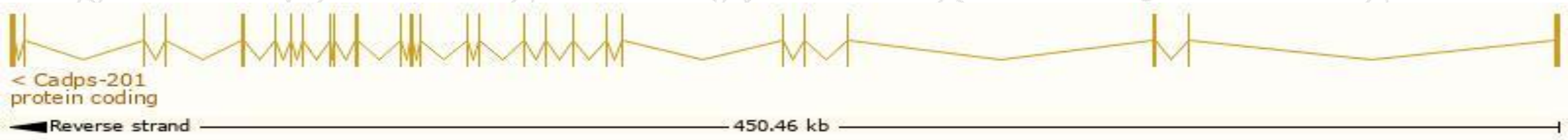
Orthologs [human all](#)

Transcript information (Ensembl)

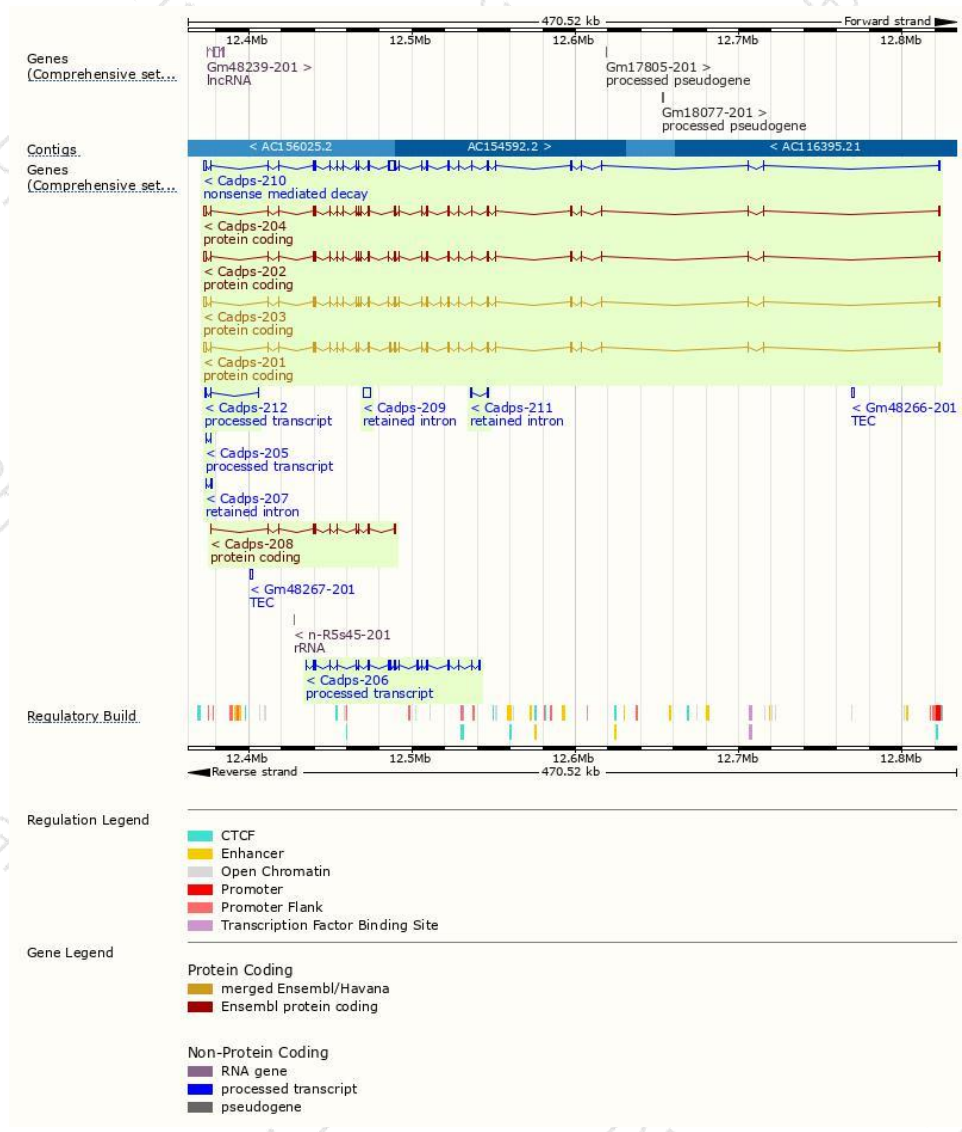
The gene has 12 transcripts,all transcripts are shown below:

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

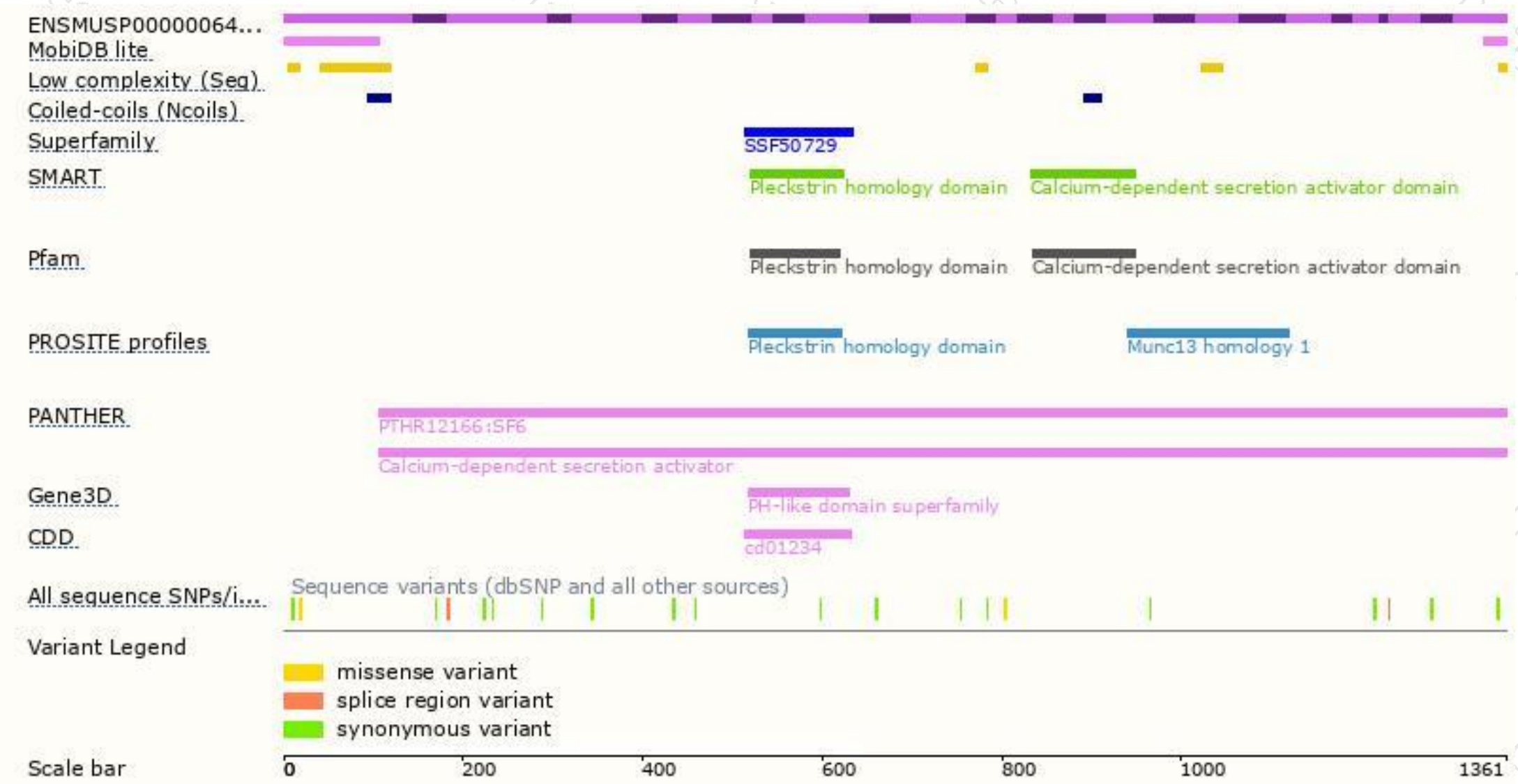
The strategy is based on the design of *Cadps-201* transcript,the transcription is shown below:



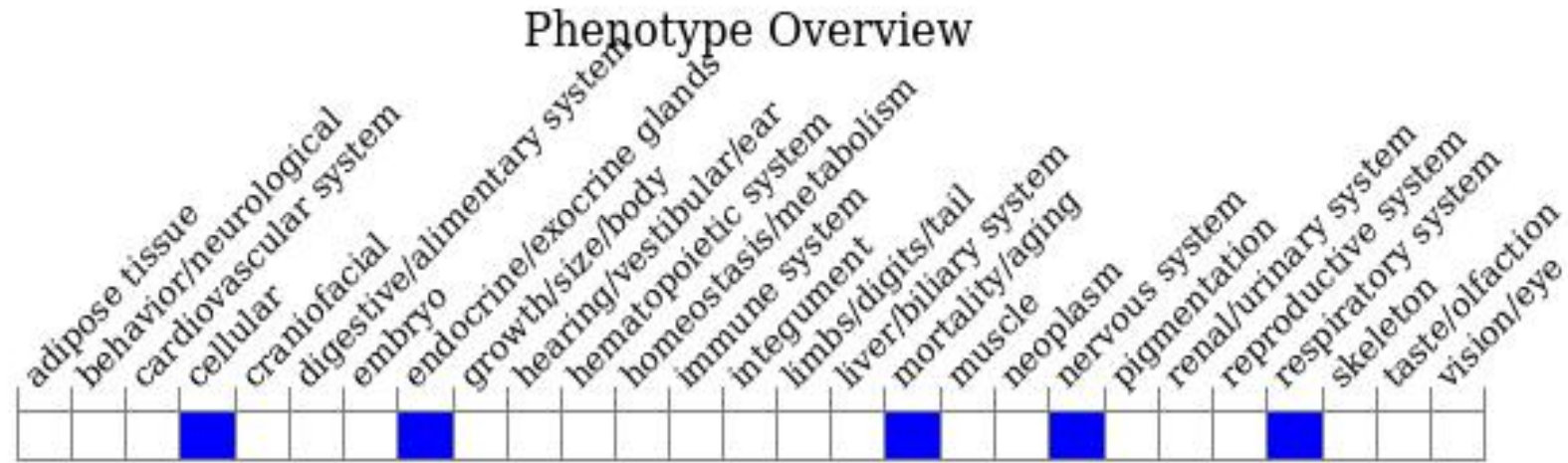
Genomic location distribution



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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