

Adcyap1r1 Cas9-CKO Strategy

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Project Overview

Project Name

Adcyap1r1

Project type

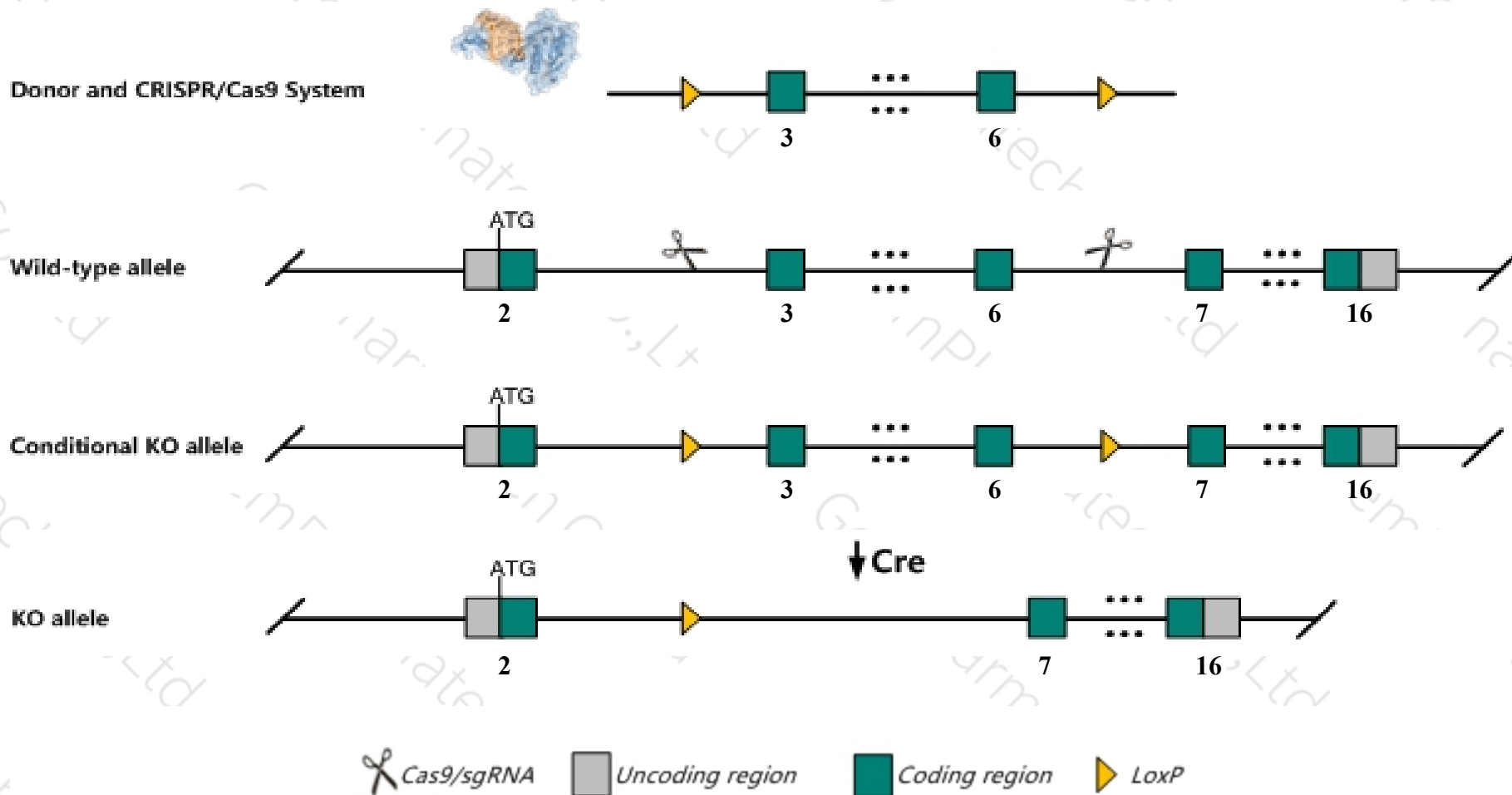
Cas9-CKO

Strain background

C57BL/6J

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adcyap1r1* gene. The schematic diagram is as follows:



- The *Adcyap1r1* gene has 8 transcripts. According to the structure of *Adcyap1r1* gene, exon3-exon6 of *Adcyap1r1*-202 (ENSMUST00000070756.11) transcript is recommended as the knockout region. The region contains 277bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adcyap1r1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.
- The flox mice was 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, Homozygotes for targeted mutations affect contextual fear conditioning, elevated locomotor activity, anxiety-like behavior, susceptibility to endotoxic shock, circadian responses to a photic stimulus, and glucose tolerance. Some alleles affect female fertility.
- The *Adcyap1r1* gene is located on the Chr6. 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)

Adcyap1r1 adenylate cyclase activating polypeptide 1 receptor 1 [Mus musculus (house mouse)]

Gene ID: 11517, updated on 31-Jan-2019

Summary



Official Symbol Adcyap1r1 provided by [MGI](#)

Official Full Name adenylate cyclase activating polypeptide 1 receptor 1 provided by [MGI](#)

Primary source [MGI:MGI:108449](#)

See related [Ensembl:ENSMUSG00000029778](#)

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 2900024I10Rik, AI846590, PAC1, PAC1R, PACAP1-R

Expression Biased expression in frontal lobe adult (RPKM 14.0), CNS E18 (RPKM 9.5) and 14 other tissues [See more](#)

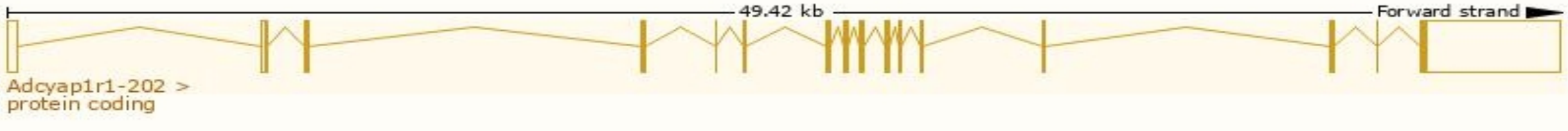
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

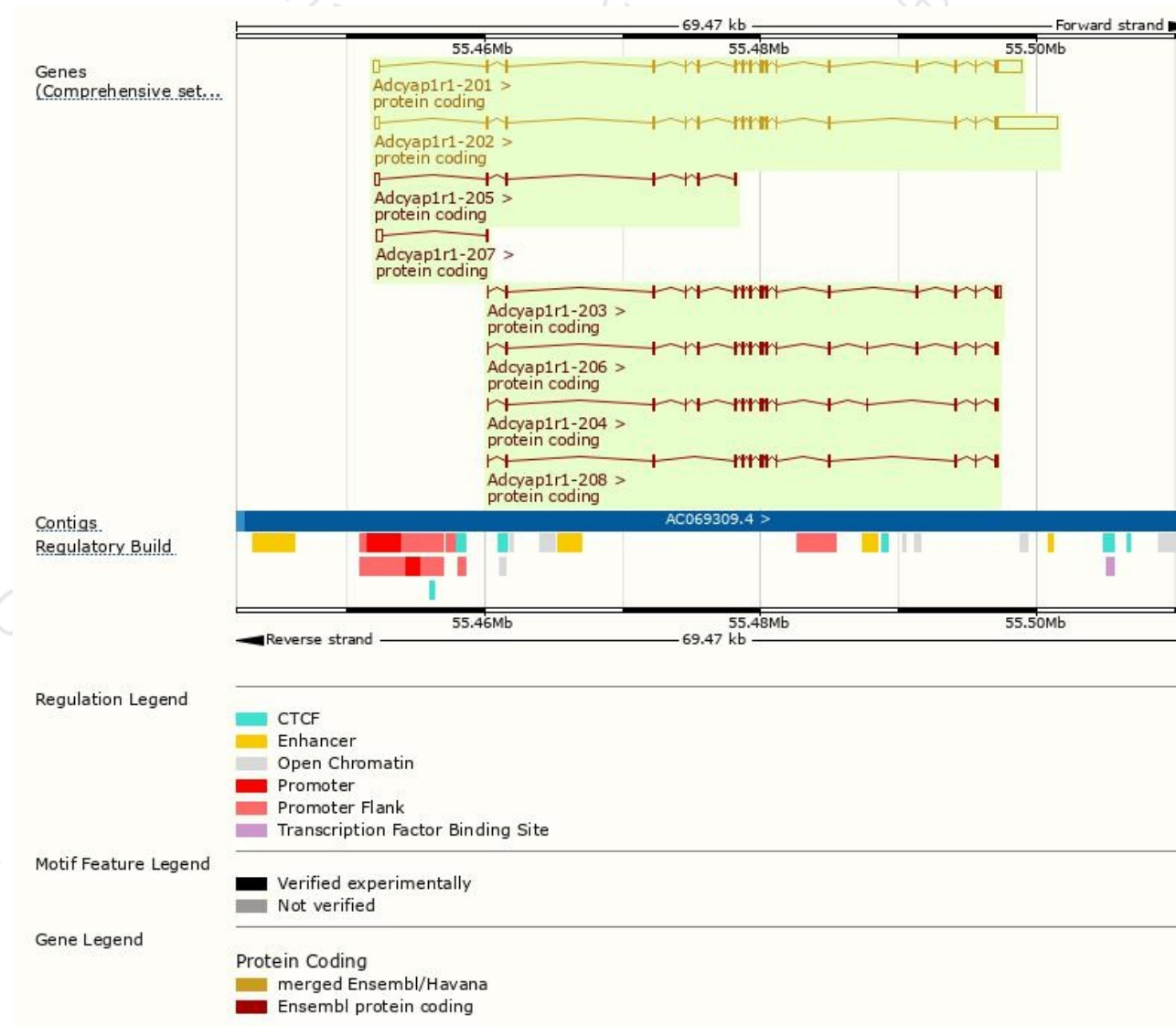
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adcyap1r1-202	ENSMUST00000070756.11	6107	468aa	Protein coding	CCDS20166	Q6NXJ9	TSL:1 GENCODE basic APPRIS ALT2
Adcyap1r1-201	ENSMUST00000070736.11	3695	496aa	Protein coding	CCDS20167	P70205	TSL:1 GENCODE basic APPRIS P4
Adcyap1r1-203	ENSMUST00000165786.1	1745	495aa	Protein coding	-	E9Q968	TSL:5 GENCODE basic APPRIS ALT2
Adcyap1r1-206	ENSMUST00000167234.7	1575	524aa	Protein coding	-	E9PVE8	TSL:5 GENCODE basic APPRIS ALT2
Adcyap1r1-204	ENSMUST00000165857.7	1491	496aa	Protein coding	-	E9Q4B3	TSL:5 GENCODE basic APPRIS ALT2
Adcyap1r1-208	ENSMUST00000172084.7	1344	447aa	Protein coding	-	E9Q3E8	TSL:5 GENCODE basic APPRIS ALT2
Adcyap1r1-205	ENSMUST00000166962.7	830	146aa	Protein coding	-	E9QAL0	CDS 3' incomplete TSL:5
Adcyap1r1-207	ENSMUST00000167484.1	540	3aa	Protein coding	-	-	CDS 3' incomplete TSL:2

The strategy is based on the design of *Adcyap1r1-202* transcript,The transcription is shown below



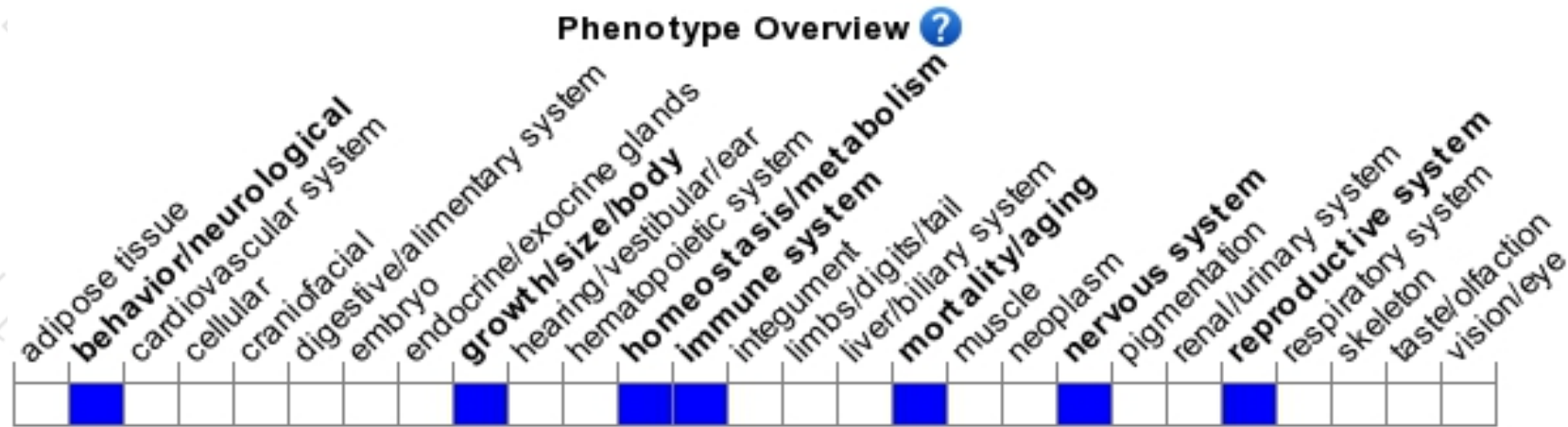
Genomic location distribution



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, Homozygotes for targeted mutations affect contextual fear conditioning, elevated locomotor activity, anxiety-like behavior, susceptibility to endotoxic shock, circadian responses to a photic stimulus, and glucose tolerance. Some alleles affect female fertility.

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

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