

Adcy5 Cas9-CKO Strategy

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Project Overview

Project Name

Adcy5

Project type

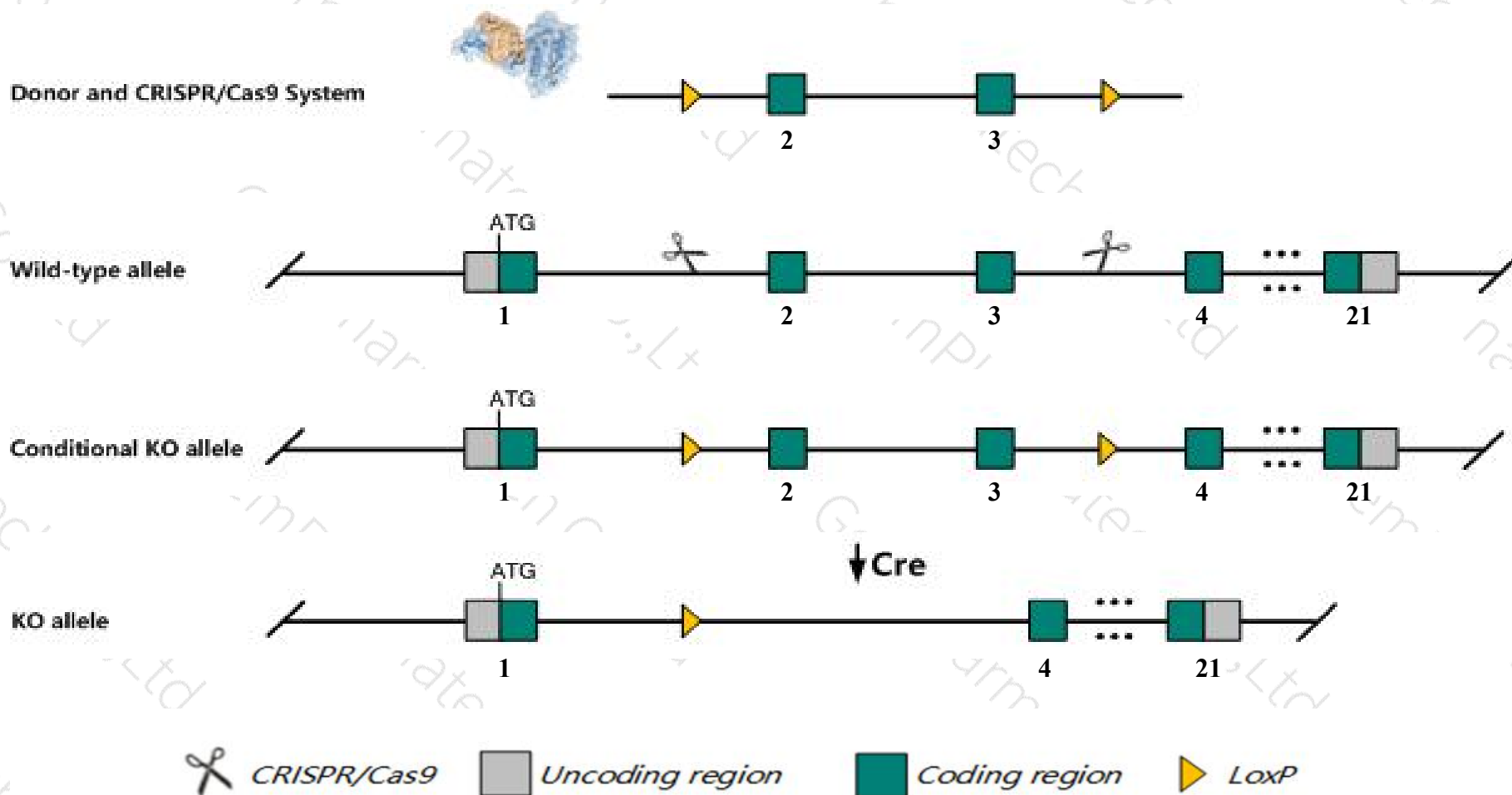
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adcy5* gene. The schematic diagram is as follows:



- The *Adcy5* gene has 2 transcripts. According to the structure of *Adcy5* gene, exon2-exon3 of *Adcy5-201* (ENSMUST00000114913.2) transcript is recommended as the knockout region. The region contains 272bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adcy5* 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, Targeted inactivation of this gene has been shown to result in motor dysfunction.
- Transcript *Adcy5*-202 may not be affected.
- The N-terminal of *Adcy5* gene will remain 379aa, it may remain the partial function of *Adcy5* gene.
- The *Adcy5* gene is located on the Chr16. 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)

Adcy5 adenylate cyclase 5 [*Mus musculus* (house mouse)]

Gene ID: 224129, updated on 16-Sep-2019

Summary

Official Symbol	Adcy5 provided by MGI
Official Full Name	adenylate cyclase 5 provided by MGI
Primary source	MGI:MGI:99673
See related	Ensembl:ENSMUSG00000022840
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	Ac5; AW121902
Expression	Broad expression in subcutaneous fat pad adult (RPKM 31.9), ovary adult (RPKM 30.5) and 23 other tissues See more
Orthologs	human all

Genomic context

Location: 16; 16 B3

See Adcy5 in [Genome Data Viewer](#)

Exon count: 22

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	16	NC_000082.6 (35154494..35305743)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	16	NC_000082.5 (35155722..35304635)

Transcript information (Ensembl)

The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adcy5-201	ENSMUST00000114913.2	7008	1262aa	Protein coding	CCDS37322	P84309	TSL:1 GENCODE basic APPRIS P1
Adcy5-202	ENSMUST00000232470.1	374	No protein	Retained intron	-	-	

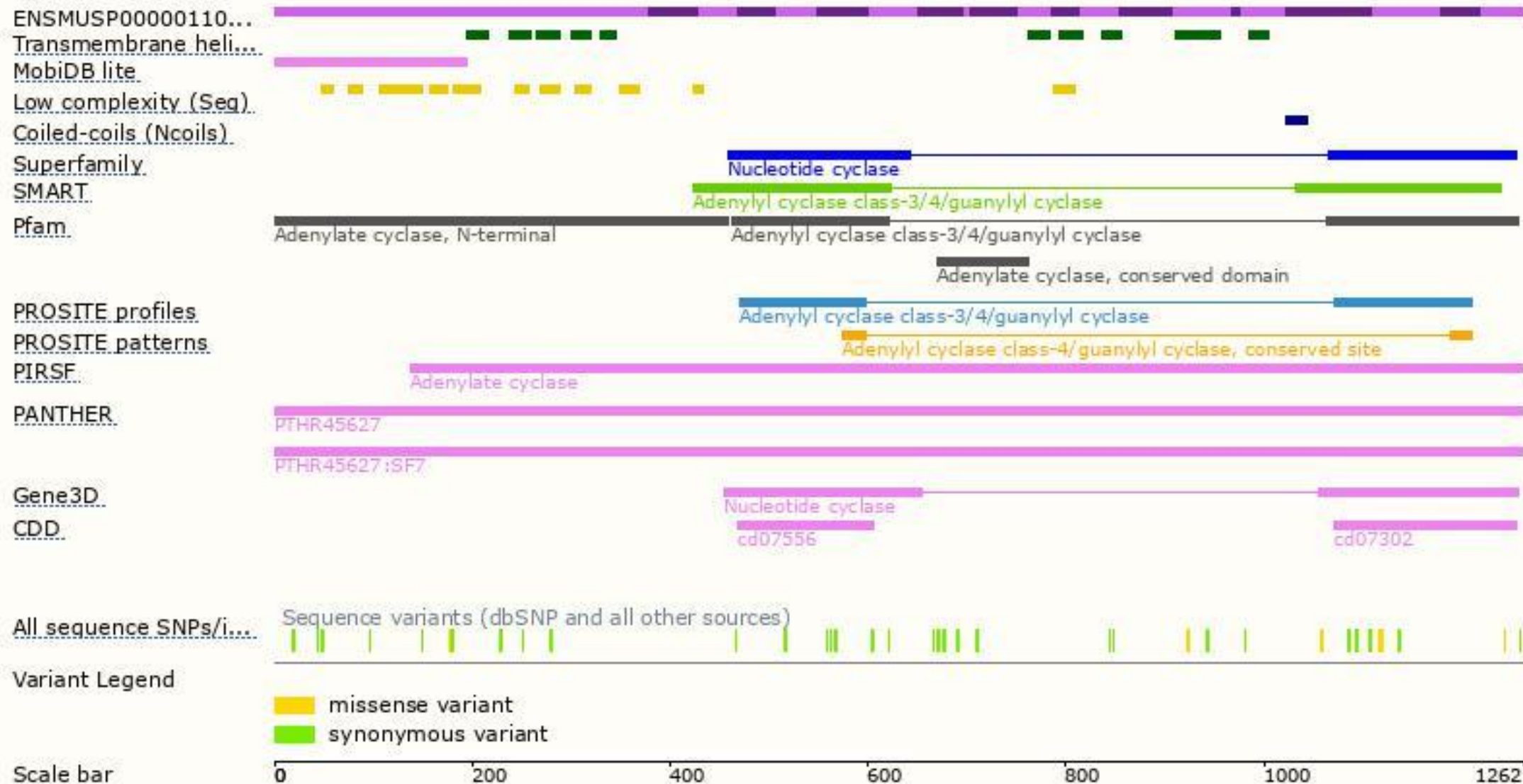
The strategy is based on the design of *Adcy5-201* transcript,The transcription is shown below



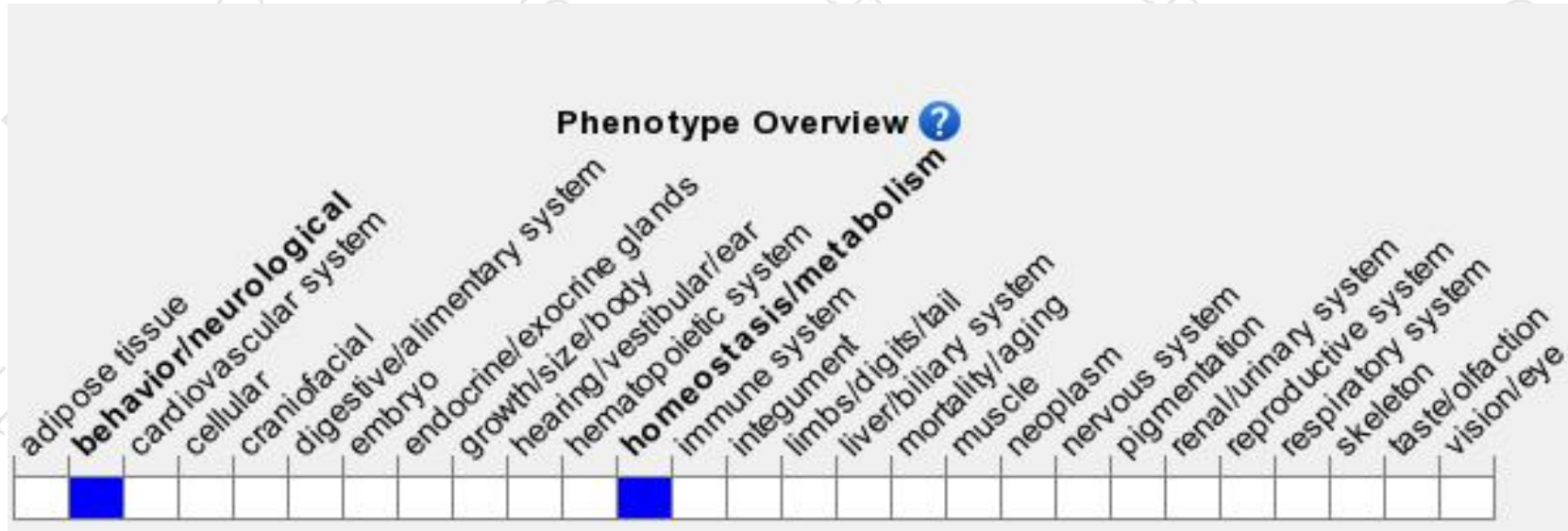
Genomic location distribution



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, Targeted inactivation of this gene has been shown to result in motor dysfunction.

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

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