

Adcy10 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Adcy10

Project type

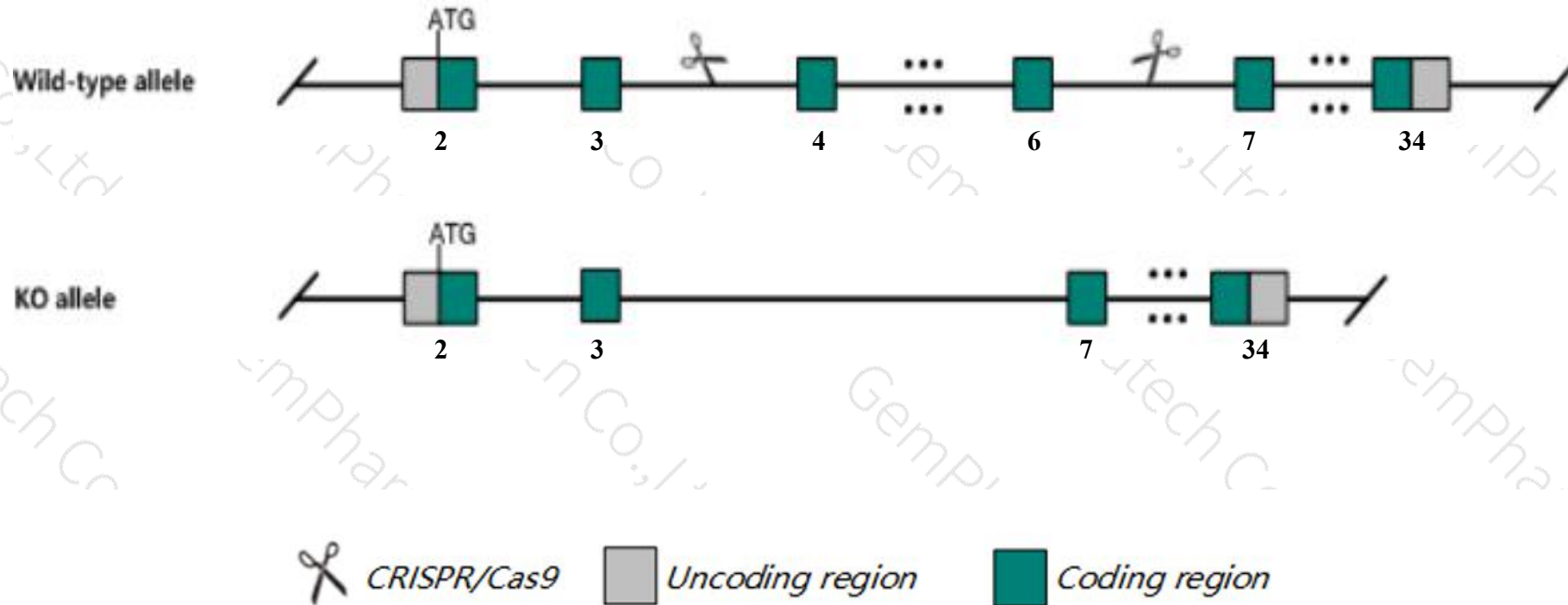
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adcy10* gene. The schematic diagram is as follows:



- The *Adcy10* gene has 10 transcripts. According to the structure of *Adcy10* gene, exon4-exon6 of *Adcy10-201* (ENSMUST00000027852.14) transcript is recommended as the knockout region. The region contains 389bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adcy10* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, homozygous null male mutants are infertile with a severe sperm motility defect, female null mutants are fertile. Females exhibit increased cholesterol and triglyceride levels while both sexes have a slight increase in heart rate.
- The *Adcy10* gene is located on the Chr1. 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)

Adcy10 adenylate cyclase 10 [Mus musculus (house mouse)]

Gene ID: 271639, updated on 13-Mar-2020

Summary



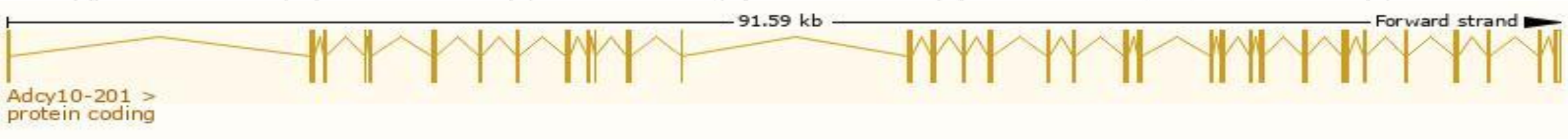
Official Symbol	Adcy10 provided by MGI
Official Full Name	adenylate cyclase 10 provided by MGI
Primary source	MGI:MGI:2660854
See related	Ensembl:ENSMUSG00000026567
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930431D04Rik, 4931412F17, Sacy, sAC
Expression	Restricted expression toward testis adult (RPKM 24.0) See more
Orthologs	human all

Transcript information (Ensembl)

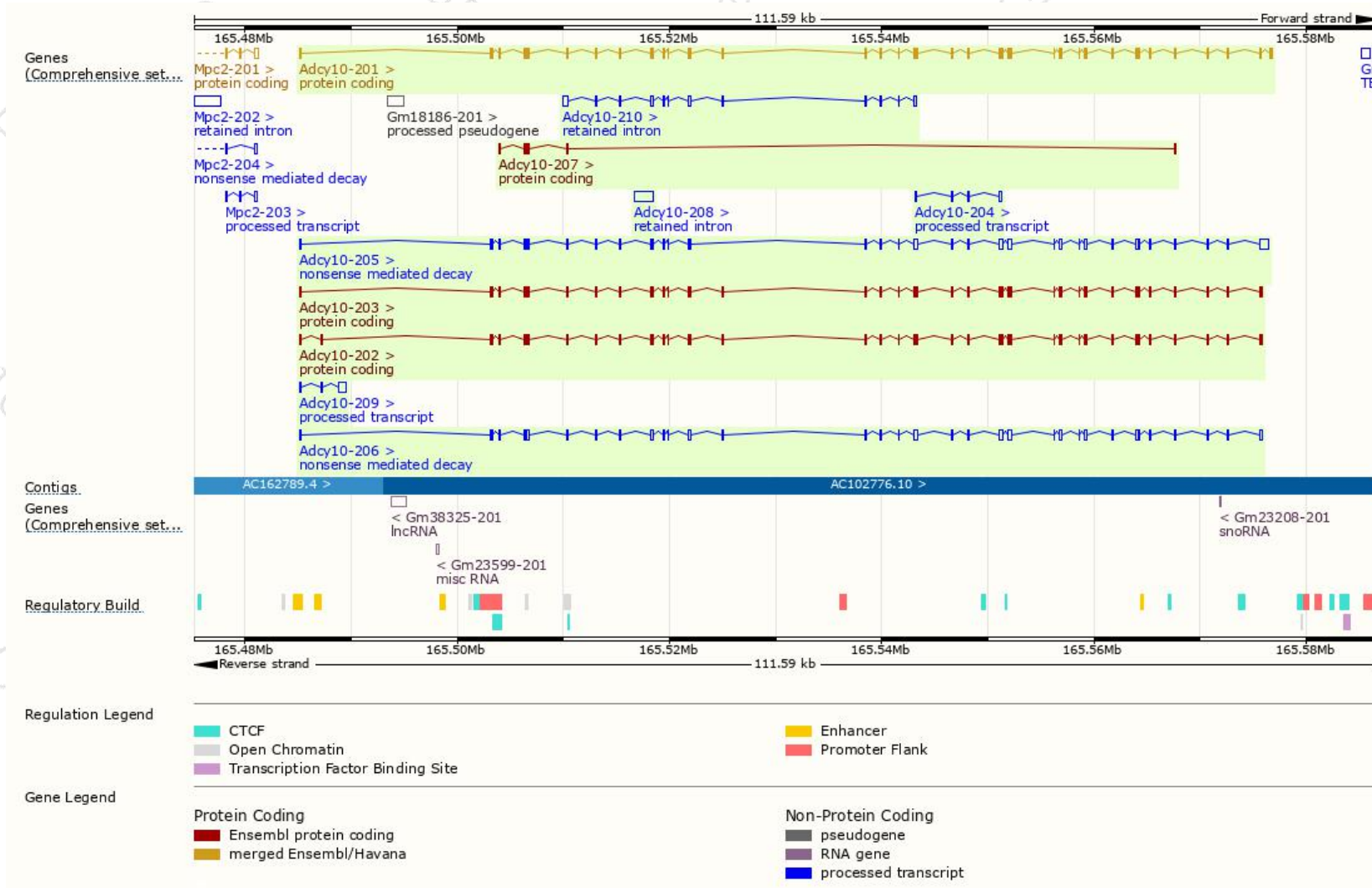
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adcy10-201	ENSMUST00000027852.14	5210	1614aa	Protein coding	CCDS35756	Q8C0T9	TSL:1 GENCODE basic APPRIS P2
Adcy10-202	ENSMUST00000111439.7	5193	1609aa	Protein coding	-	E9Q9T4	TSL:5 GENCODE basic APPRIS ALT2
Adcy10-203	ENSMUST00000111440.7	5078	1609aa	Protein coding	-	E9Q9T4	TSL:5 GENCODE basic APPRIS ALT2
Adcy10-207	ENSMUST00000193149.1	607	169aa	Protein coding	-	A0A0A6YXI1	CDS 5' incomplete TSL:5
Adcy10-205	ENSMUST00000148550.7	5569	471aa	Nonsense mediated decay	-	Q8C0T9	TSL:1
Adcy10-206	ENSMUST00000155216.7	5083	98aa	Nonsense mediated decay	-	M0QWB5	TSL:5
Adcy10-209	ENSMUST00000194745.1	955	No protein	Processed transcript	-	-	TSL:1
Adcy10-204	ENSMUST00000124037.1	684	No protein	Processed transcript	-	-	TSL:3
Adcy10-210	ENSMUST00000195194.1	2035	No protein	Retained intron	-	-	TSL:1
Adcy10-208	ENSMUST00000194554.1	1812	No protein	Retained intron	-	-	TSL:NA

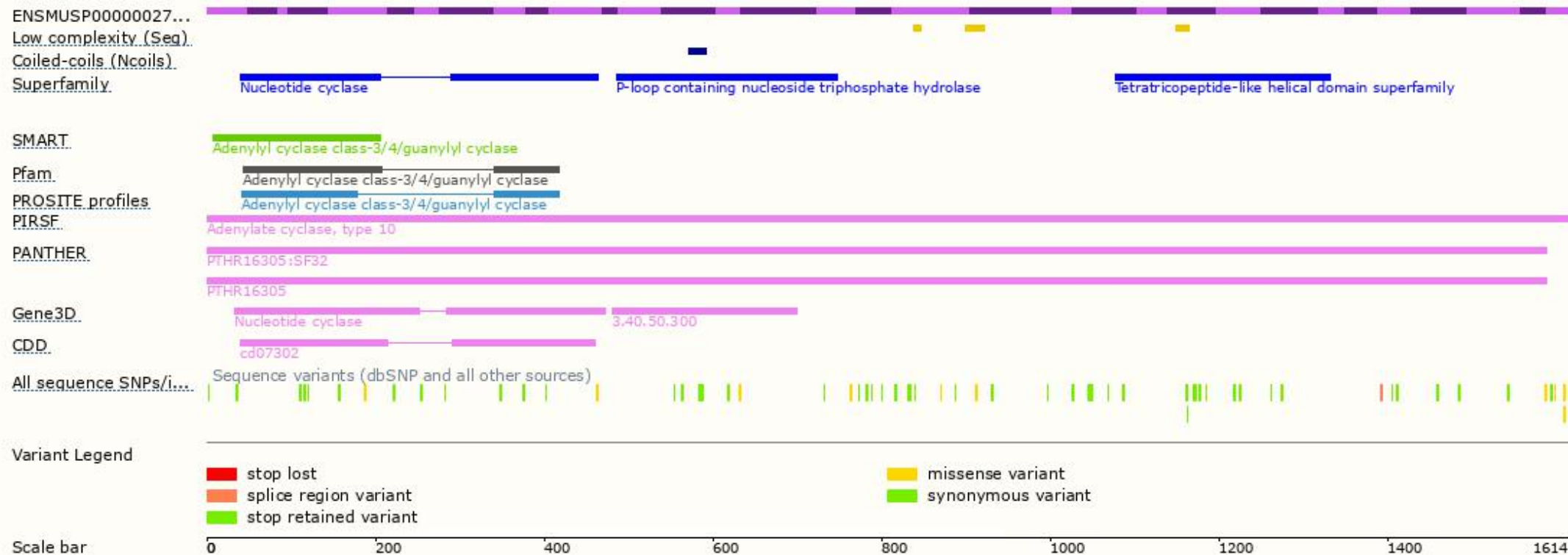
The strategy is based on the design of *Adcy10-201* transcript,the transcription is shown below



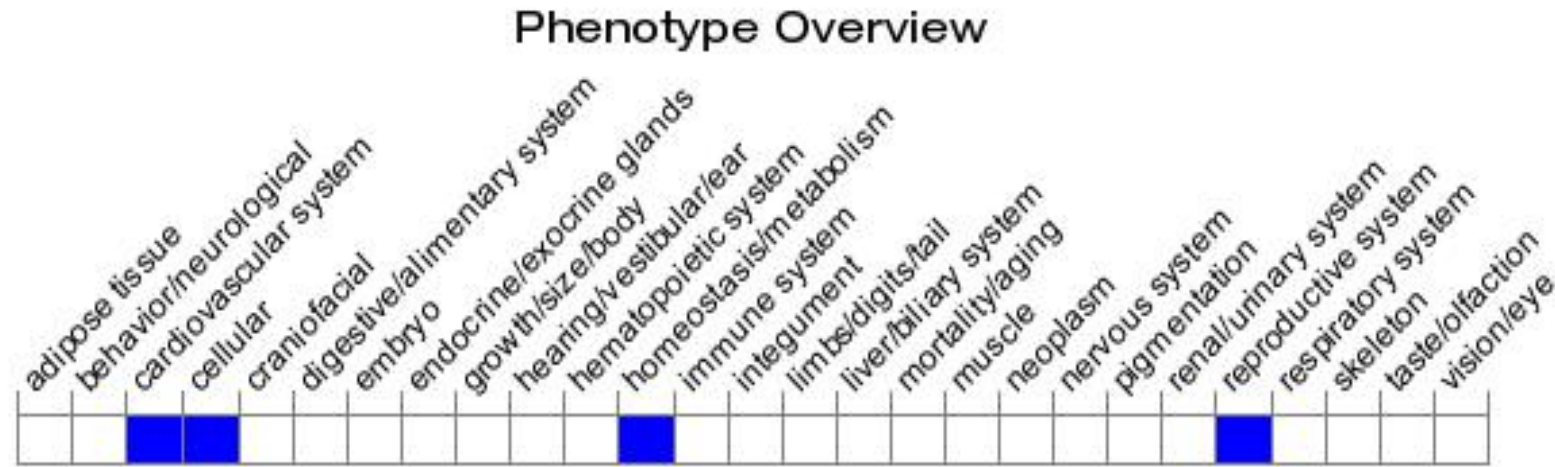
Genomic location distribution



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 male mutants are infertile with a severe sperm motility defect, female null mutants are fertile. Females exhibit increased cholesterol and triglyceride levels while both sexes have a slight increase in heart rate.

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

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