

Adipor1 Cas9-KO Strategy

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Project Overview

Project Name

Adipor1

Project type

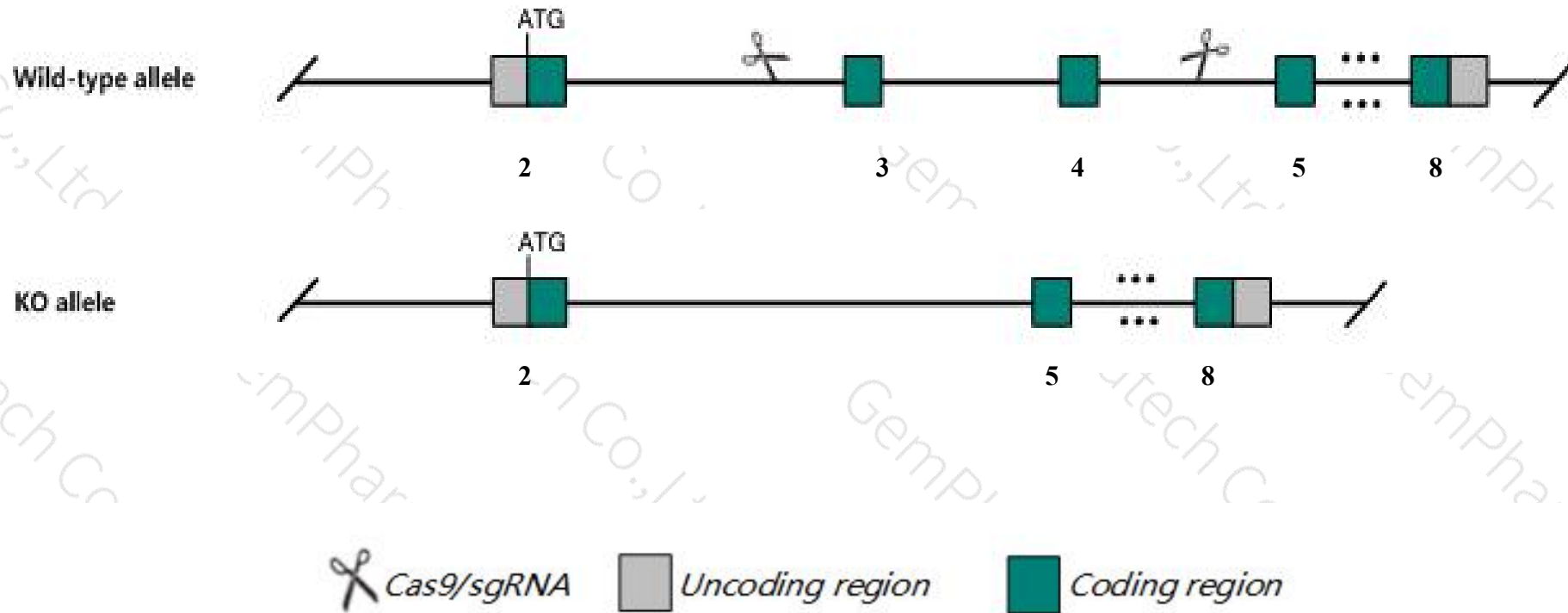
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adipor1* gene. The schematic diagram is as follows:



- The *Adipor1* gene has 4 transcripts. According to the structure of *Adipor1* gene, exon3-exon4 of *Adipor1*-202 (ENSMUST00000112237.1) transcript is recommended as the knockout region. The region contains 289bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adipor1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, Mice homozygous for a targeted allele exhibit abnormal homeostasis, adipose tissue morphology and adaptive thermogenesis.
- The *Adipor1* 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)

Adipor1 adiponectin receptor 1 [Mus musculus (house mouse)]

Gene ID: 72674, updated on 31-Jan-2019

Summary



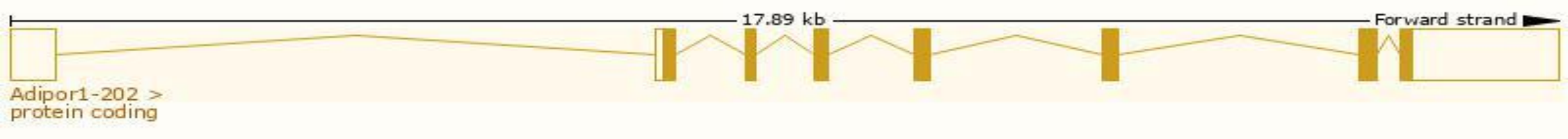
Official Symbol	Adipor1 provided by MGI
Official Full Name	adiponectin receptor 1 provided by MGI
Primary source	MGI:MGI:1919924
See related	Ensembl:ENSMUSG00000026457
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2810031L11Rik, ACDCR1, CGI-45, Paqr1
Summary	This gene encodes a receptor for the fat-derived hormone adiponectin. Binding of adiponectin to the encoded protein results in activation of an AMP-activated kinase signaling pathway which affects levels of fatty acid oxidation and insulin sensitivity. Homozygous knockout mice for this gene exhibit elevated plasma glucose and insulin levels as well as impaired glucose tolerance. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Apr 2015]
Expression	Ubiquitous expression in adrenal adult (RPKM 87.2), colon adult (RPKM 63.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

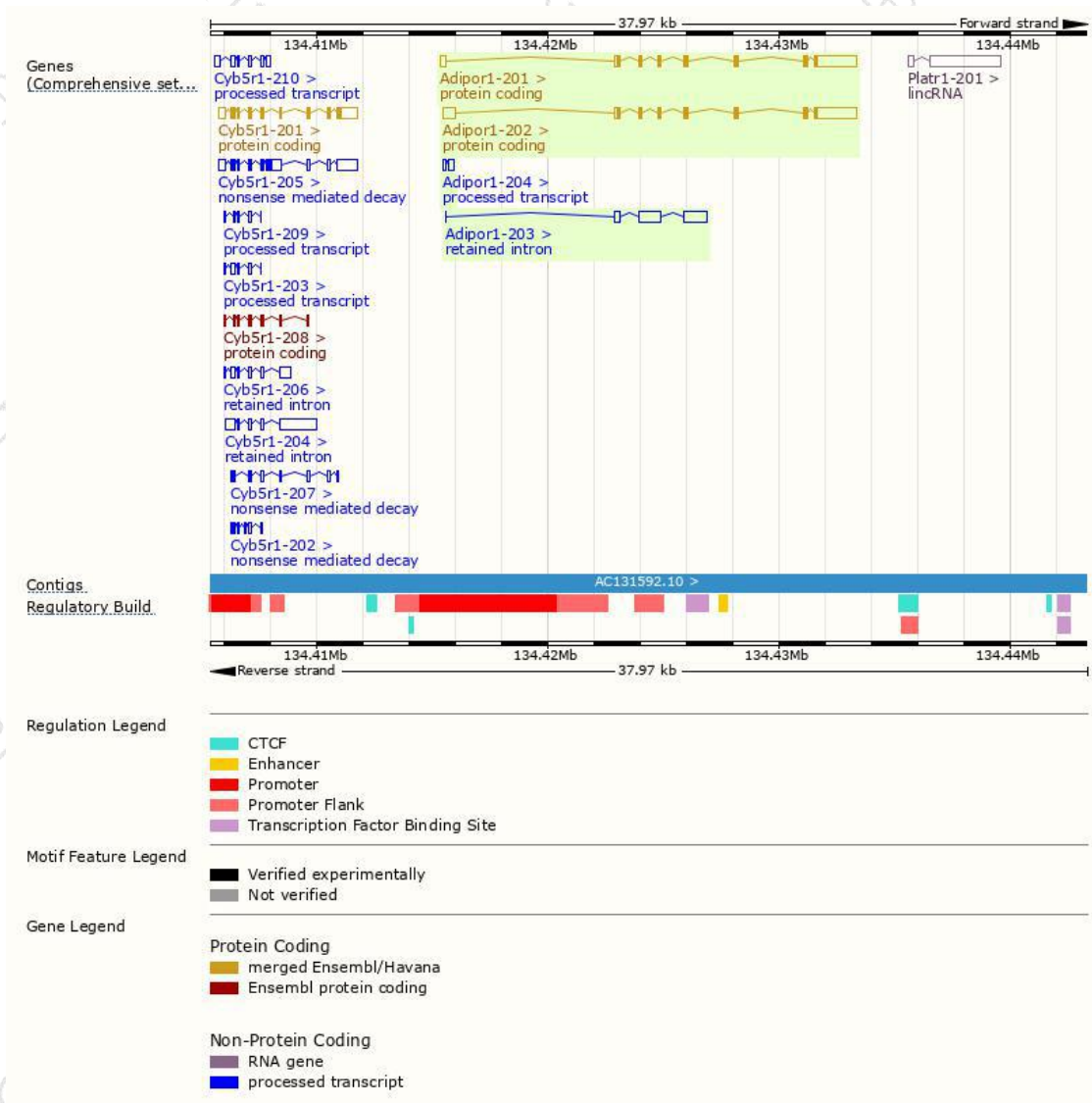
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adipor1-202	ENSMUST00000112237.1	3446	375aa	Protein coding	CCDS15309	Q53YY4 Q91VH1	TSL:1 GENCODE basic APPRIS P1
Adipor1-201	ENSMUST00000027727.14	3123	375aa	Protein coding	CCDS15309	Q53YY4 Q91VH1	TSL:1 GENCODE basic APPRIS P1
Adipor1-204	ENSMUST00000156433.1	363	No protein	Processed transcript	-	-	TSL:3
Adipor1-203	ENSMUST00000148822.1	2231	No protein	Retained intron	-	-	TSL:2

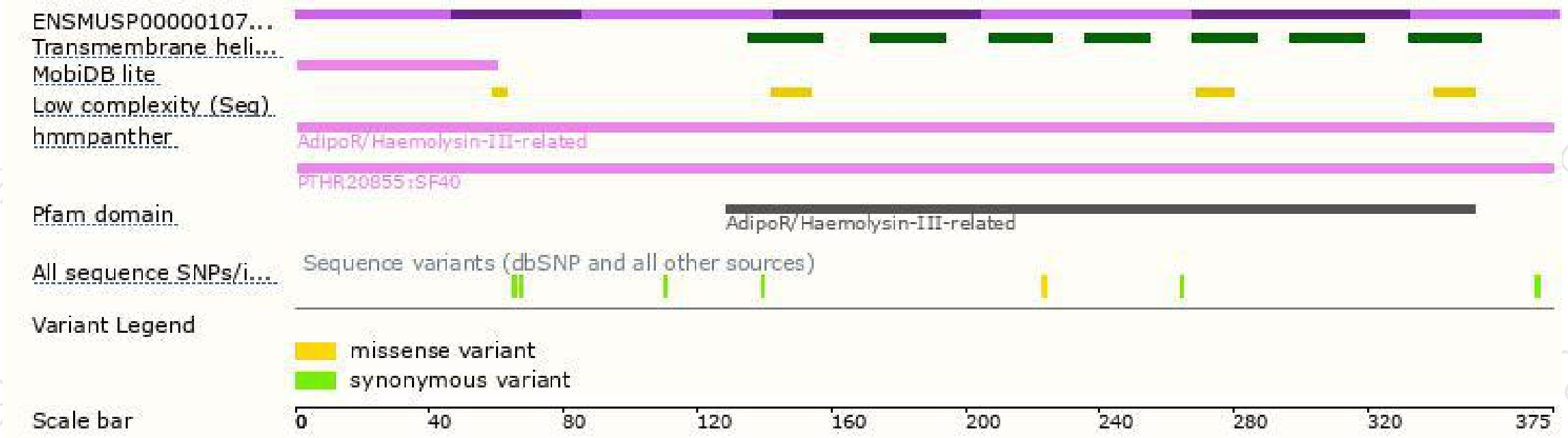
The strategy is based on the design of *Adipor1-202* transcript,The transcription is shown below



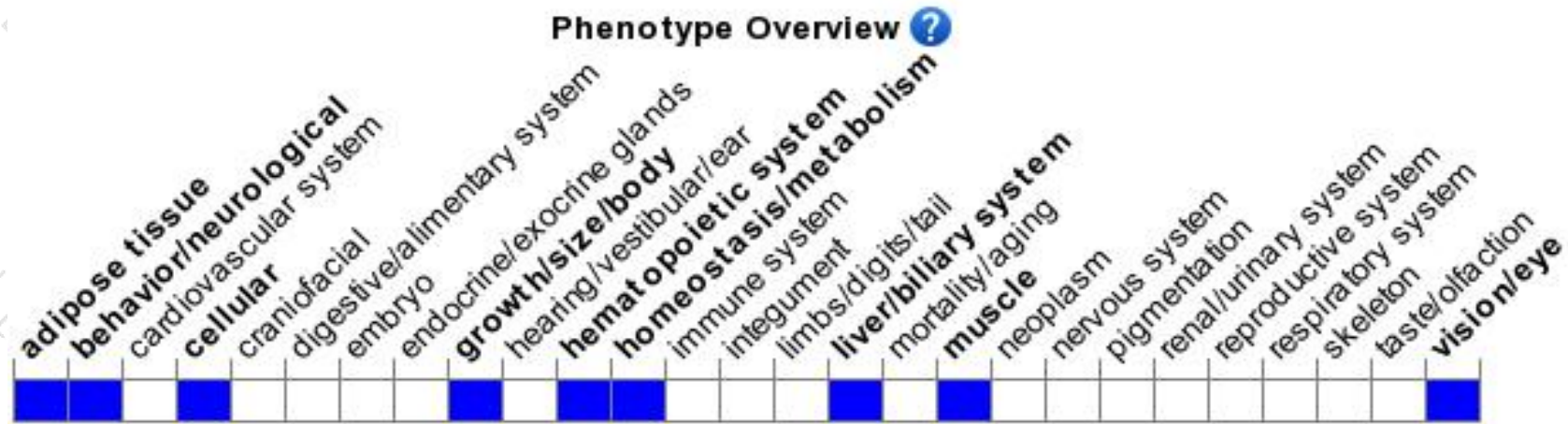
Genomic location distribution



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, Mice homozygous for a targeted allele exhibit abnormal homeostasis, adipose tissue morphology and adaptive thermogenesis.

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

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