

Apoa4 Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Apoa4

Project type

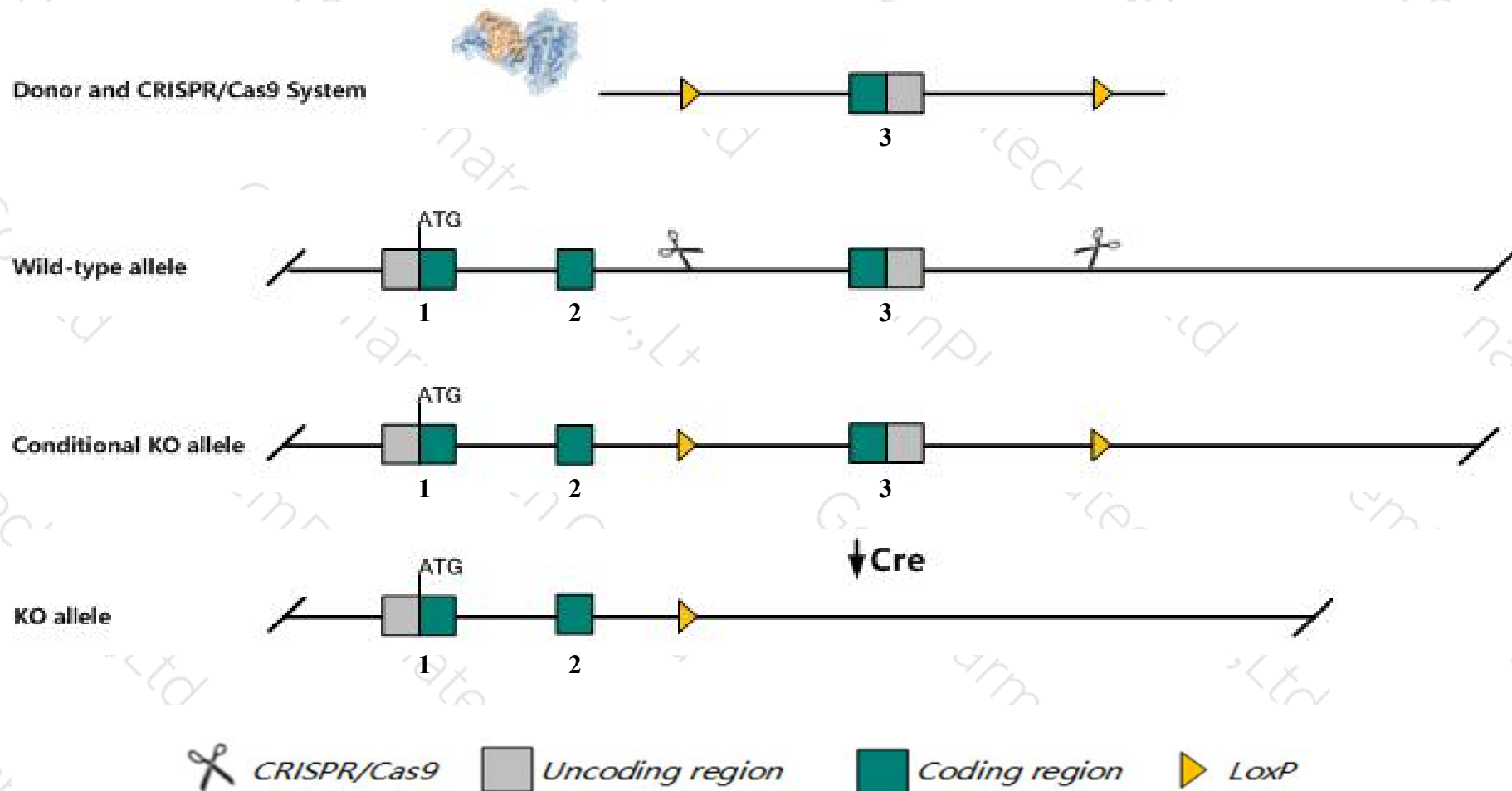
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Apoa4* gene. The schematic diagram is as follows:



- The *Apoa4* gene has 1 transcript. According to the structure of *Apoa4* gene, exon3 of *Apoa4-201* (ENSMUST00000034585.6) transcript is recommended as the knockout region. The region contains 1012bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Apoa4* 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, Mice homozygous for disruption of this gene have lower HDL cholesterol levels but normal lipid absorption, growth, and feeding behavior.
- The *Apoa4* gene is located on the Chr9. 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)

Apoa4 apolipoprotein A-IV [Mus musculus (house mouse)]

Gene ID: 11808, updated on 17-Feb-2019

Summary



Official Symbol	Apoa4 provided by MGI
Official Full Name	apolipoprotein A-IV provided by MGI
Primary source	MGI:MGI:88051
See related	Ensembl:ENSMUSG00000032080
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	Apoa-4
Expression	Biased expression in duodenum adult (RPKM 2830.4), small intestine adult (RPKM 1726.5) and 2 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

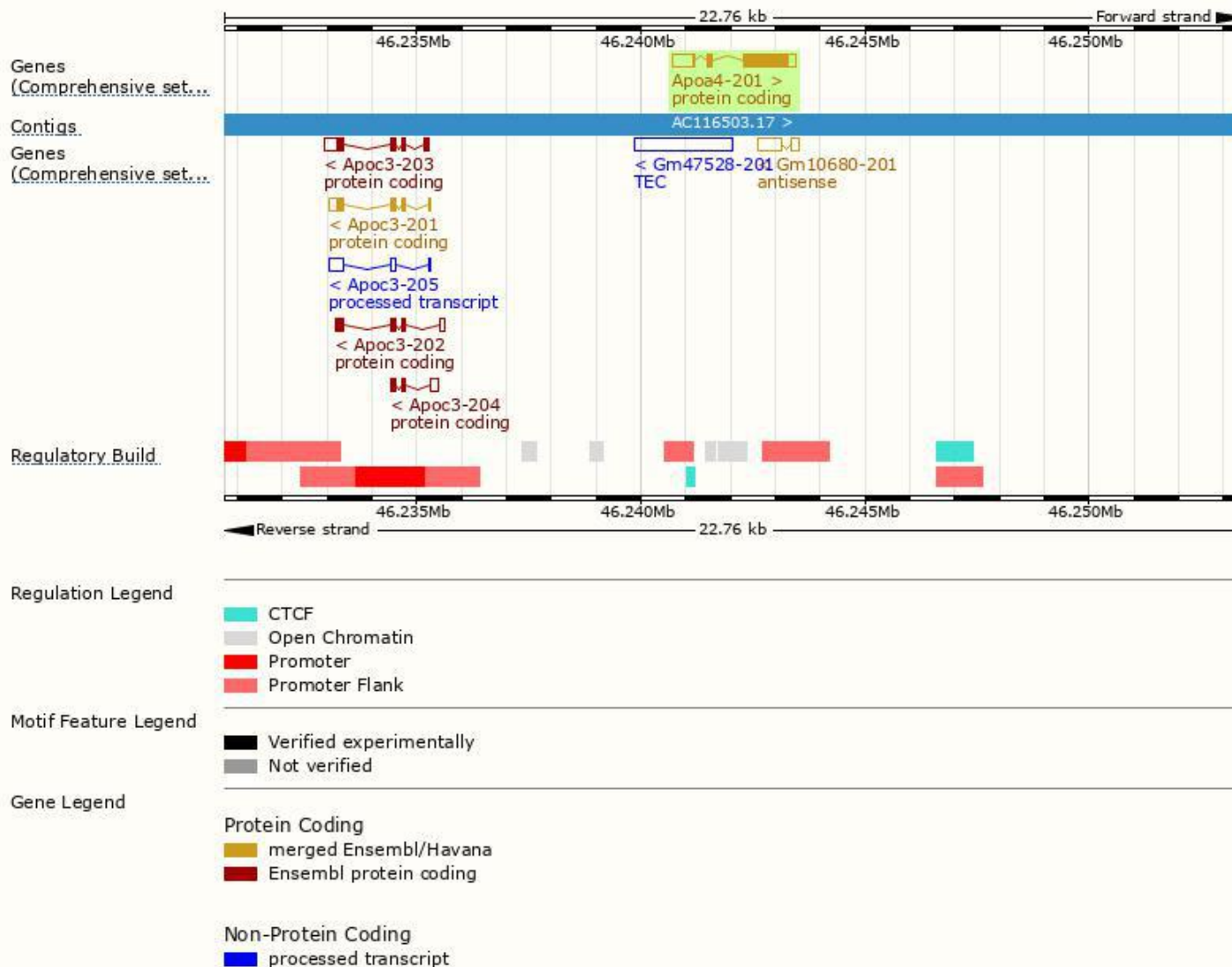
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Apoa4-201	ENSMUST00000034585.6	1815	395aa	Protein coding	CCDS23142	P06728	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Apoa4-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain

ENSMUSP00000034...

MobiDB lite

Low complexity (Seg)

Coiled-coils (Ncoils)

Cleavage site (Sign...

hmmpanther

PTHR18976

PTHR18976:SF1

Superfamily domains

SSF58113

SSF47162

Pfam domain

Apolipoprotein A/E

Gene3D

1.20.120.20

1.20.5.20

All sequence SNPs/i...

Sequence variants (dbSNP and all other sources)

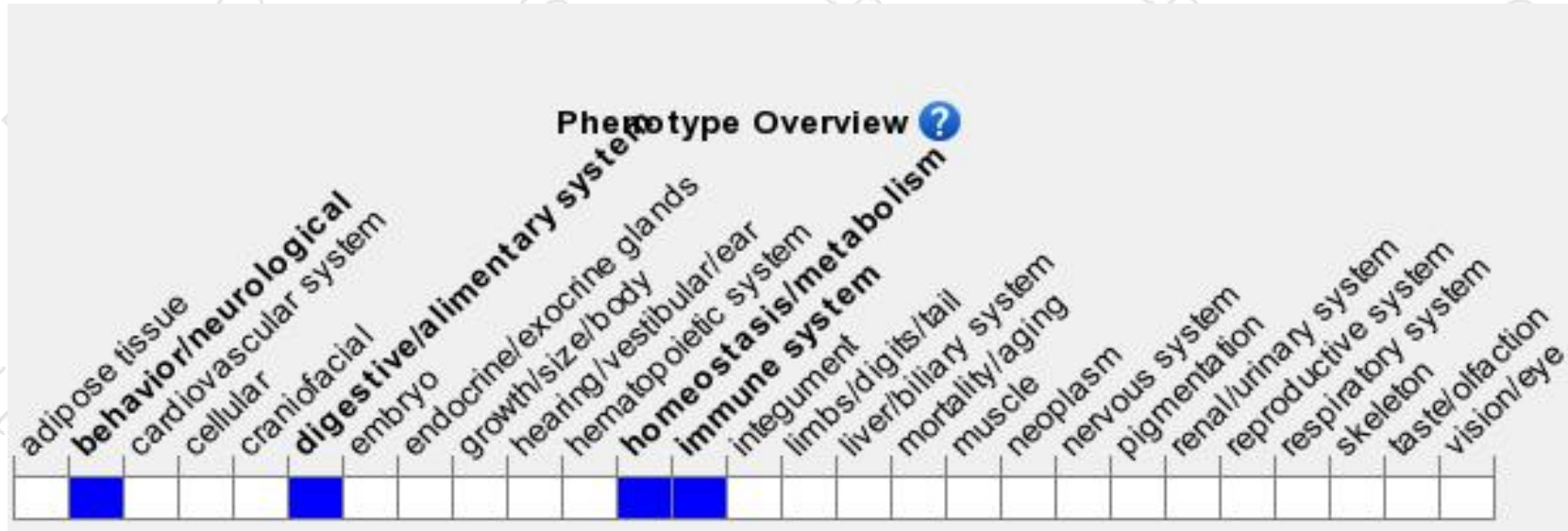
Variant Legend

- inframe insertion
- inframe deletion
- missense variant
- synonymous variant

Scale bar

0 40 80 120 160 200 240 280 320 395

Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

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

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