

Ap4s1 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Ap4s1

Project type

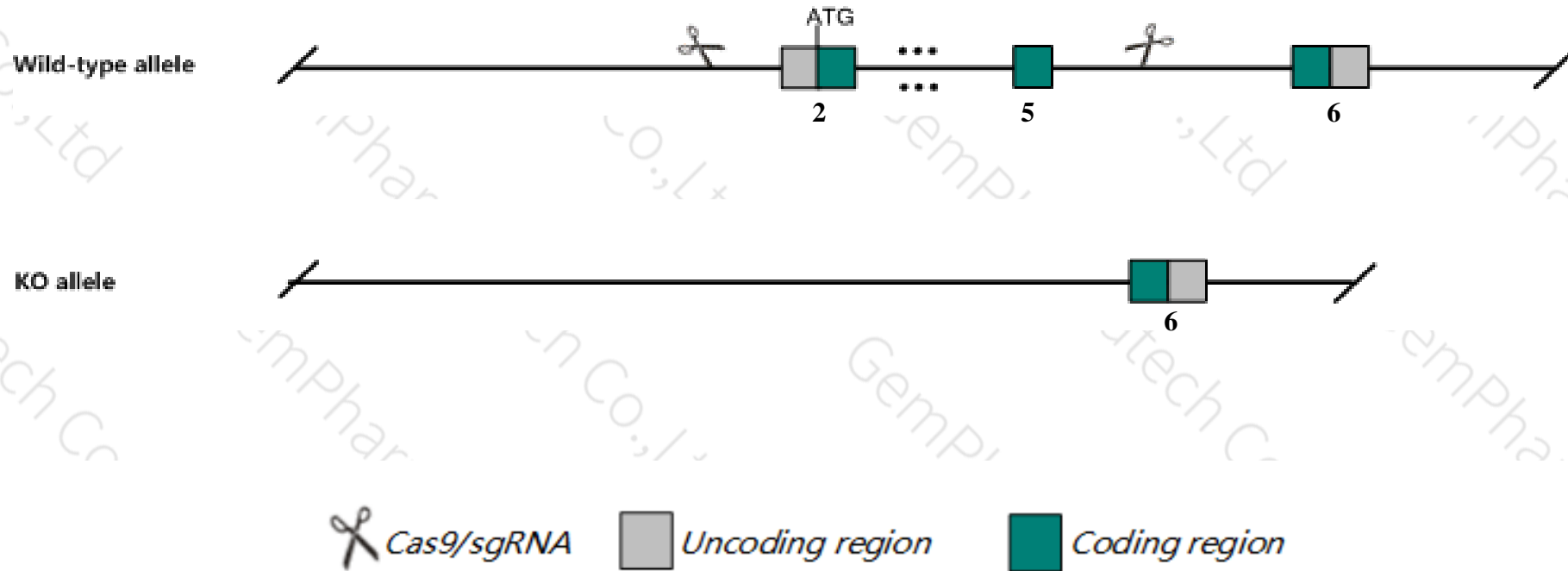
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ap4s1* gene. The schematic diagram is as follows:



- The *Ap4s1* gene has 2 transcripts. According to the structure of *Ap4s1* gene, exon2-exon5 of *Ap4s1-201* (ENSMUST00000021338.9) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ap4s1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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 *Ap4s1* gene is located on the Chr12. 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)

Ap4s1 adaptor-related protein complex AP-4, sigma 1 [Mus musculus (house mouse)]

Gene ID: 11782, updated on 31-Jan-2019

Summary



Official Symbol Ap4s1 provided by [MGI](#)

Official Full Name adaptor-related protein complex AP-4, sigma 1 provided by [MGI](#)

Primary source [MGI:MGI:1337065](#)

See related [Ensembl:ENSMUSG00000020955](#)

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 AI314282

Summary This gene encodes the sigma subunit of the adaptor-related protein complex 4 which mediates intracellular membrane trafficking along the endocytic and secretory transport pathways. This complex contains four subunits, beta, epsilon, mu, and sigma, and belongs to a family of five adapter protein complexes, including three clathrin-associated complexes and two non clathrin-associated complexes, that localize to different intracellular compartments and mediate membrane vesicle trafficking using distinct pathways. In humans, loss-of-function mutations in this gene have been linked to specific adapter complex 4 deficiency disorders including hereditary spastic paraplegia. Alternate splicing results in multiple transcript variants. [provided by RefSeq, Jul 2016]

Expression Ubiquitous expression in cerebellum adult (RPKM 9.3), frontal lobe adult (RPKM 8.9) and 28 other tissues [See more](#)

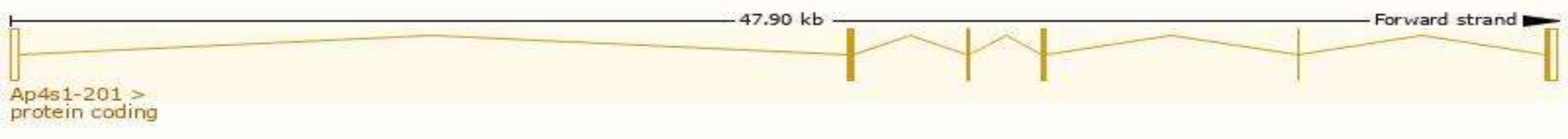
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

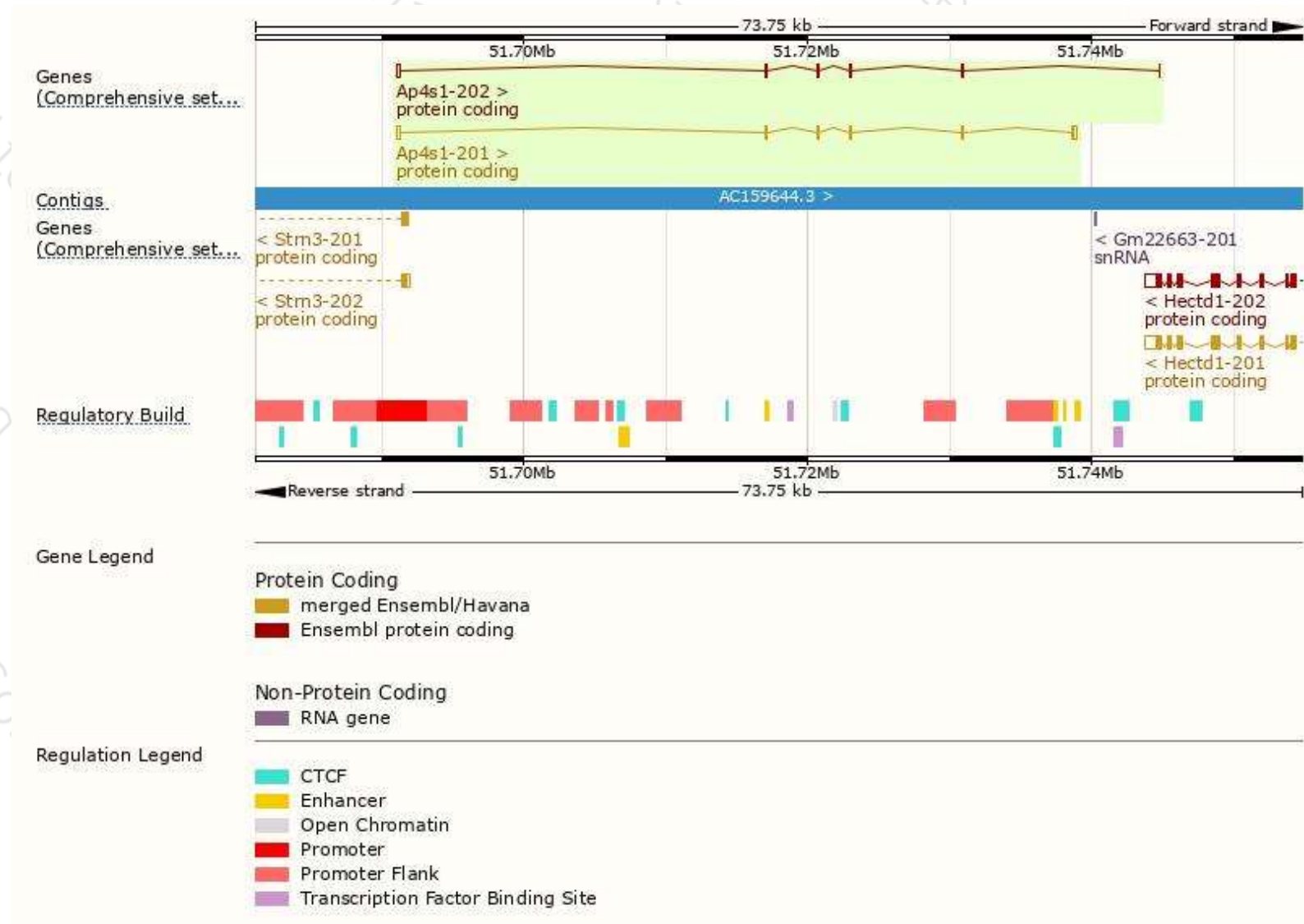
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ap4s1-201	ENSMUST00000021338.9	1035	144aa	Protein coding	CCDS36441	Q9WVL1	TSL:1 GENCODE basic APPRIS P1
Ap4s1-202	ENSMUST00000218820.1	757	134aa	Protein coding	-	A0A1W2P708	CDS 3' incomplete TSL:5

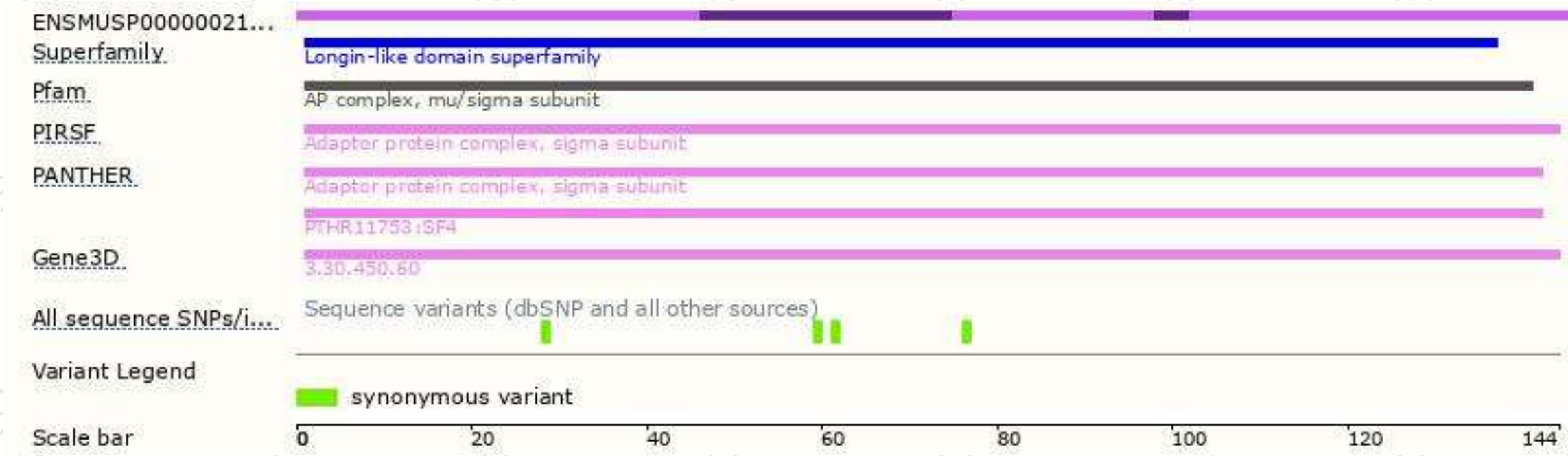
The strategy is based on the design of *Ap4s1-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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