

Atp6v0a1 Cas9-KO Strategy

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Project Overview

Project Name

Atp6v0a1

Project type

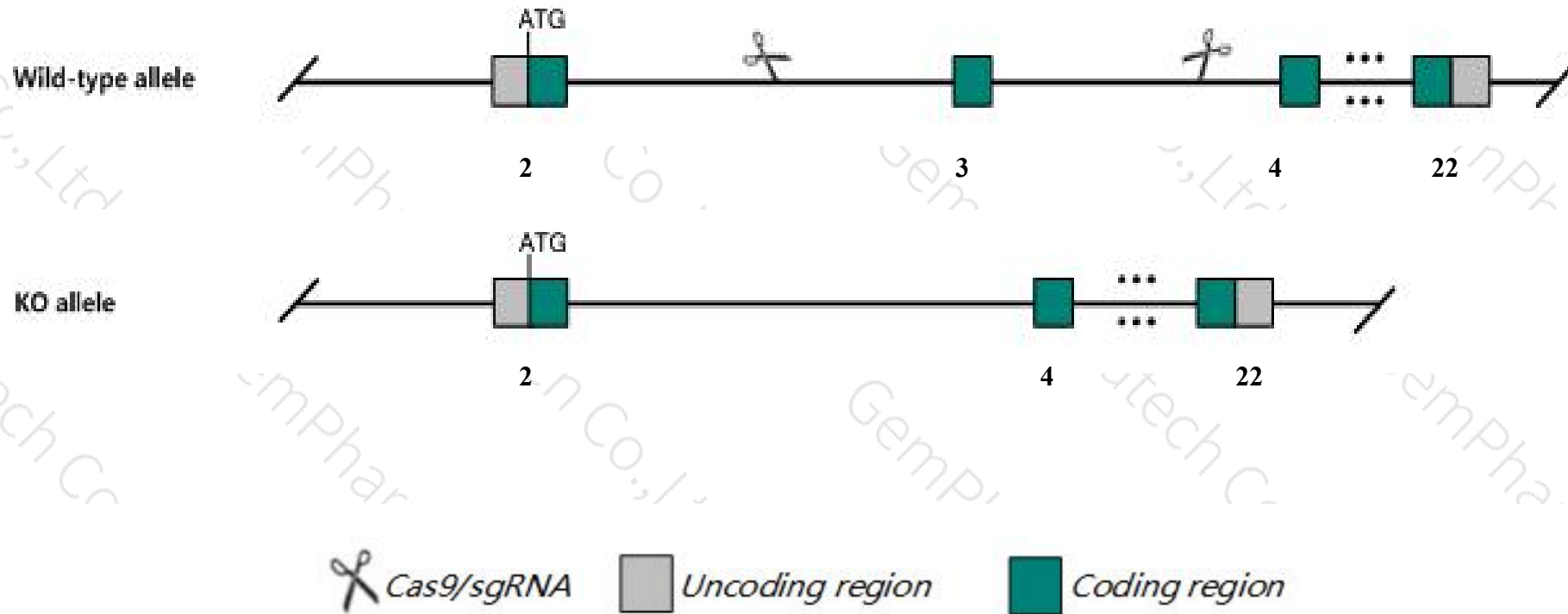
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atp6v0a1* gene. The schematic diagram is as follows:



- The *Atp6v0a1* gene has 10 transcripts. According to the structure of *Atp6v0a1* gene, exon3 of *Atp6v0a1-201* (ENSMUST00000044721.12) transcript is recommended as the knockout region. The region contains 79bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Atp6v0a1* 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.

- The *Atp6v0a1* gene is located on the Chr11. 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)

Atp6v0a1 ATPase, H⁺ transporting, lysosomal V0 subunit A1 [Mus musculus (house mouse)]

Gene ID: 11975, updated on 7-Apr-2019

Summary



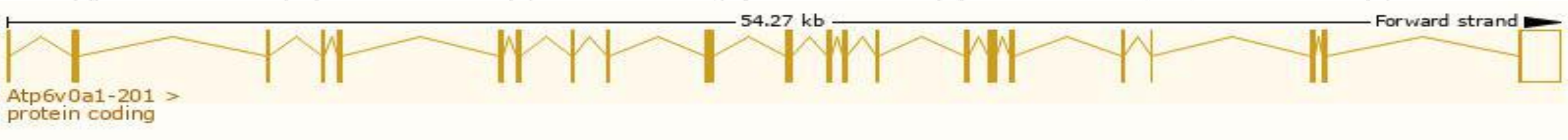
Official Symbol	Atp6v0a1 provided by MGI
Official Full Name	ATPase, H ⁺ transporting, lysosomal V0 subunit A1 provided by MGI
Primary source	MGI:MGI:103286
See related	Ensembl:ENSMUSG00000019302
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA959968, ATP6a1, Atp6n1, Atp6n1a, Atpv0a1, Vpp-1, Vpp1
Expression	Ubiquitous expression in cortex adult (RPKM 75.9), frontal lobe adult (RPKM 74.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

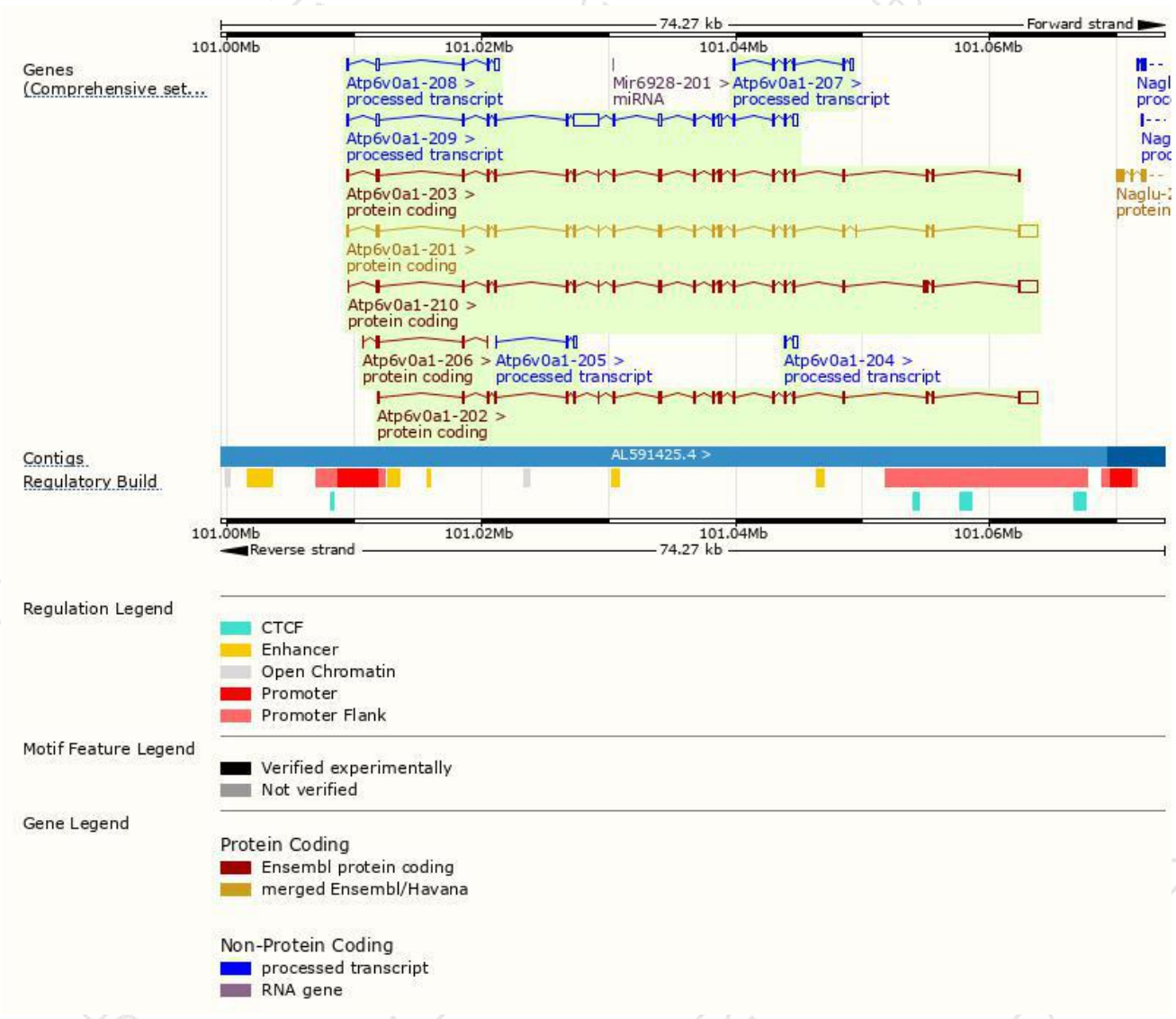
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Atp6v0a1-201	ENSMUST00000044721.12	4008	838aa	Protein coding	CCDS25443	Q9Z1G4	TSL:1 GENCODE basic APPRIS P3
Atp6v0a1-202	ENSMUST00000092663.3	3813	832aa	Protein coding	CCDS56809	Q9Z1G4	TSL:1 GENCODE basic APPRIS ALT 1
Atp6v0a1-203	ENSMUST00000103110.9	2716	839aa	Protein coding	CCDS56808	Q9Z1G4	TSL:5 GENCODE basic APPRIS ALT 1
Atp6v0a1-210	ENSMUST00000168757.8	3967	838aa	Protein coding	-	K3W4T3	TSL:5 GENCODE basic APPRIS ALT 1
Atp6v0a1-206	ENSMUST00000139619.7	373	79aa	Protein coding	-	A2A599	CDS 3' incomplete TSL:3
Atp6v0a1-209	ENSMUST00000154896.7	4162	No protein	Processed transcript	-	-	TSL:1
Atp6v0a1-207	ENSMUST00000139857.1	844	No protein	Processed transcript	-	-	TSL:1
Atp6v0a1-208	ENSMUST00000151554.1	828	No protein	Processed transcript	-	-	TSL:2
Atp6v0a1-204	ENSMUST00000127810.1	504	No protein	Processed transcript	-	-	TSL:2
Atp6v0a1-205	ENSMUST00000134919.1	384	No protein	Processed transcript	-	-	TSL:2

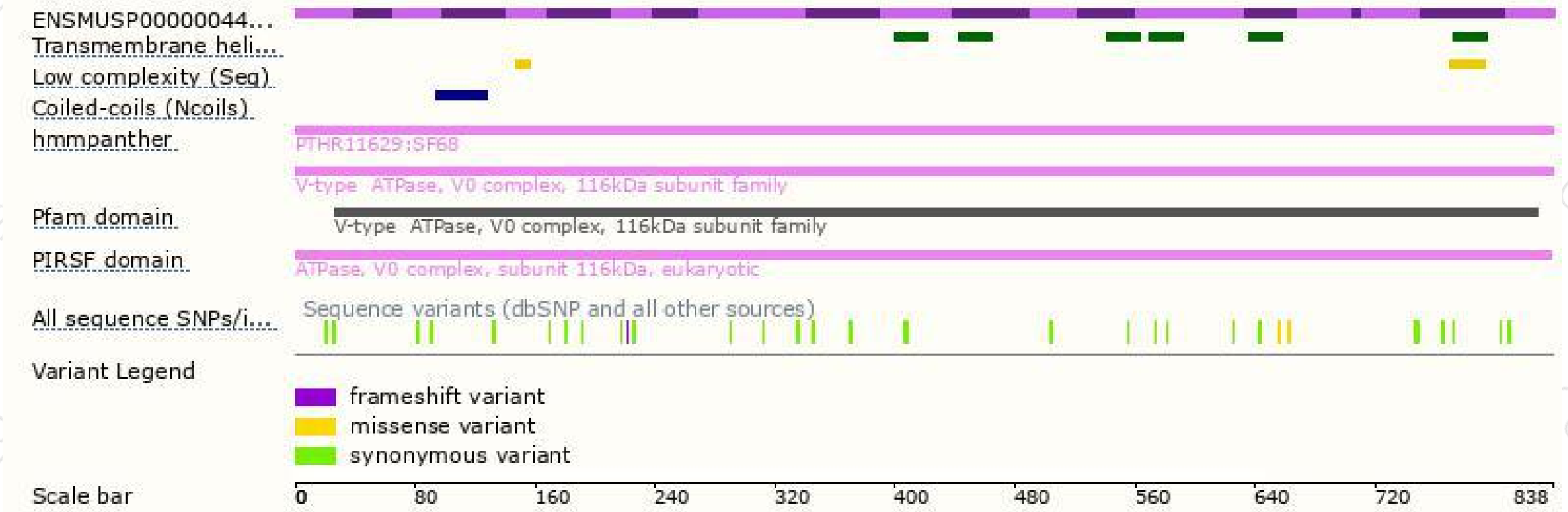
The strategy is based on the design of *Atp6v0a1-201* transcript,The transcription is shown below



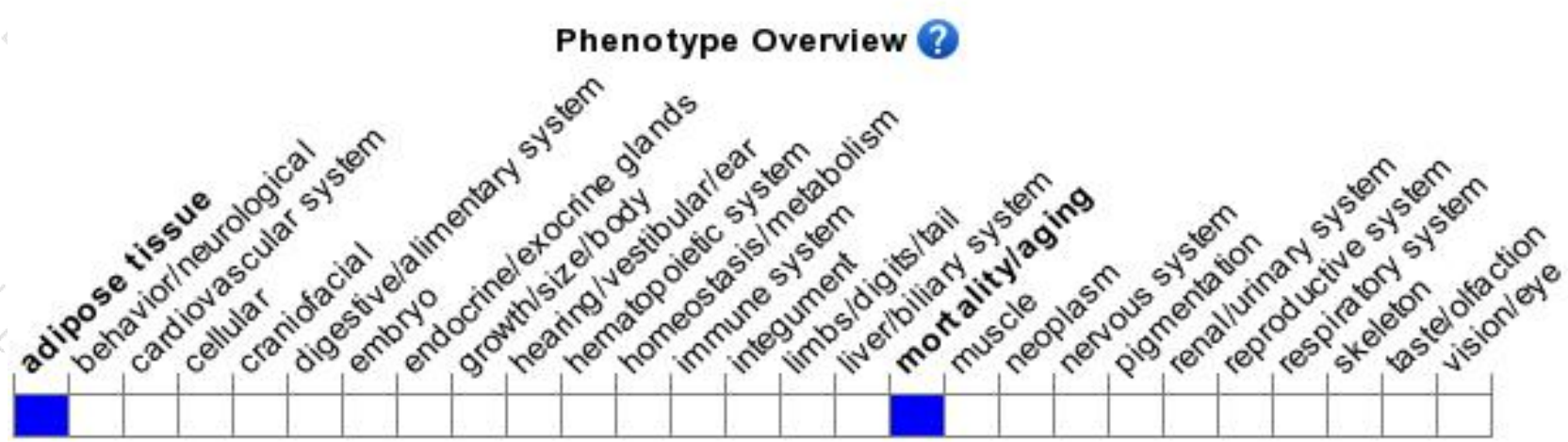
Genomic location distribution



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/>).

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

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