

Atp6v1b1 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Atp6v1b1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atp6v1b1* gene. The schematic diagram is as follows:



- The *Atp6v1b1* gene has 6 transcripts. According to the structure of *Atp6v1b1* gene, exon2-exon6 of *Atp6v1b1-201* (ENSMUST00000006431.7) transcript is recommended as the knockout region. The region contains 467bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Atp6v1b1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a targeted mutation show impaired urinary acidification with a more severe metabolic acidosis and inappropriately alkaline urine after oral acid challenge. However, contrary to expectation, neither hearing nor inner ear morphology are impaired.
- The *Atp6v1b1* gene is located on the Chr6. 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)

Atp6v1b1 ATPase, H⁺ transporting, lysosomal V1 subunit B1 [*Mus musculus* (house mouse)]

Gene ID: 110935, updated on 19-Nov-2019

Summary

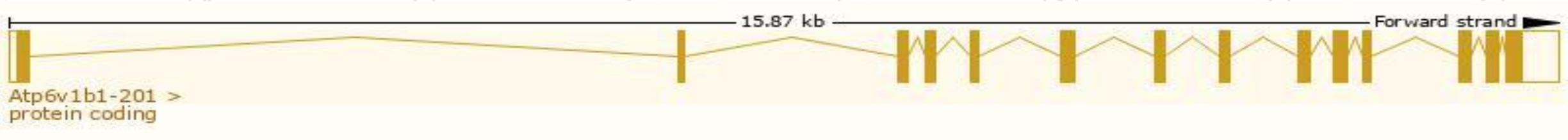
Official Symbol	Atp6v1b1 provided by MGI
Official Full Name	ATPase, H ⁺ transporting, lysosomal V1 subunit B1 provided by MGI
Primary source	MGI:MGI:103285
See related	Ensembl:ENSMUSG000000006269
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Vpp3; Vpp-3; Atp6b1; AW208839; D630003L15; D630030L16Rik; D630039P21Rik
Expression	Biased expression in kidney adult (RPKM 52.9), mammary gland adult (RPKM 17.0) and 3 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

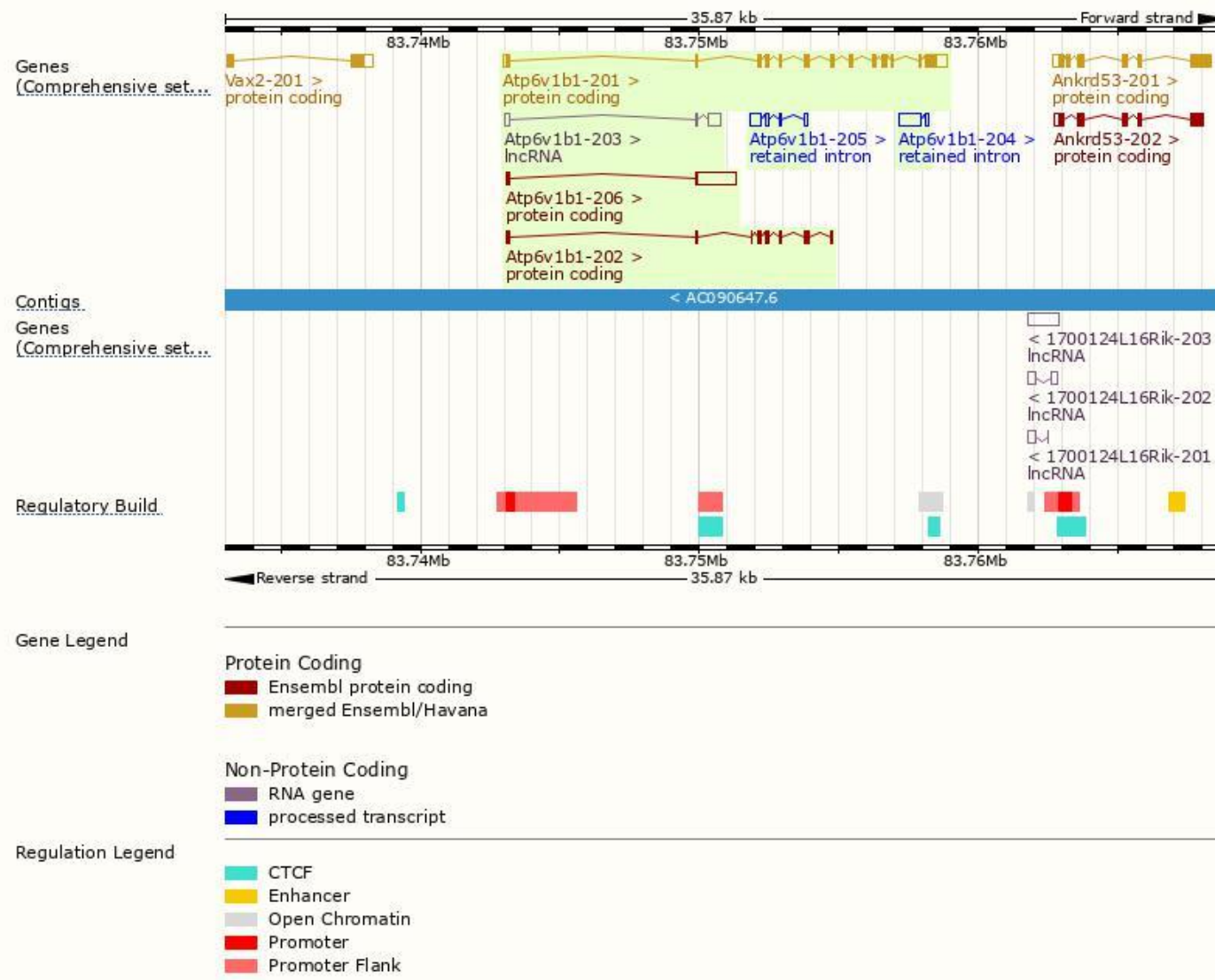
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Atp6v1b1-201	ENSMUST00000006431.7	1999	513aa	ENSMUSP00000006431.6	Protein coding	CCDS20283	Q91YH6	TSL:1 GENCODE basic APPRIS P1
Atp6v1b1-206	ENSMUST00000206911.1	1591	68aa	ENSMUSP00000146154.1	Protein coding	-	A0A0U1RPW7	TSL:1 GENCODE basic
Atp6v1b1-202	ENSMUST00000205763.1	647	215aa	ENSMUSP00000145710.1	Protein coding	-	A0A0U1RNU9	CDS 5' and 3' incomplete TSL:5
Atp6v1b1-204	ENSMUST00000206052.1	935	No protein	-	Retained intron	-	-	TSL:5
Atp6v1b1-205	ENSMUST00000206652.1	645	No protein	-	Retained intron	-	-	TSL:5
Atp6v1b1-203	ENSMUST00000205867.1	653	No protein	-	lncRNA	-	-	TSL:3

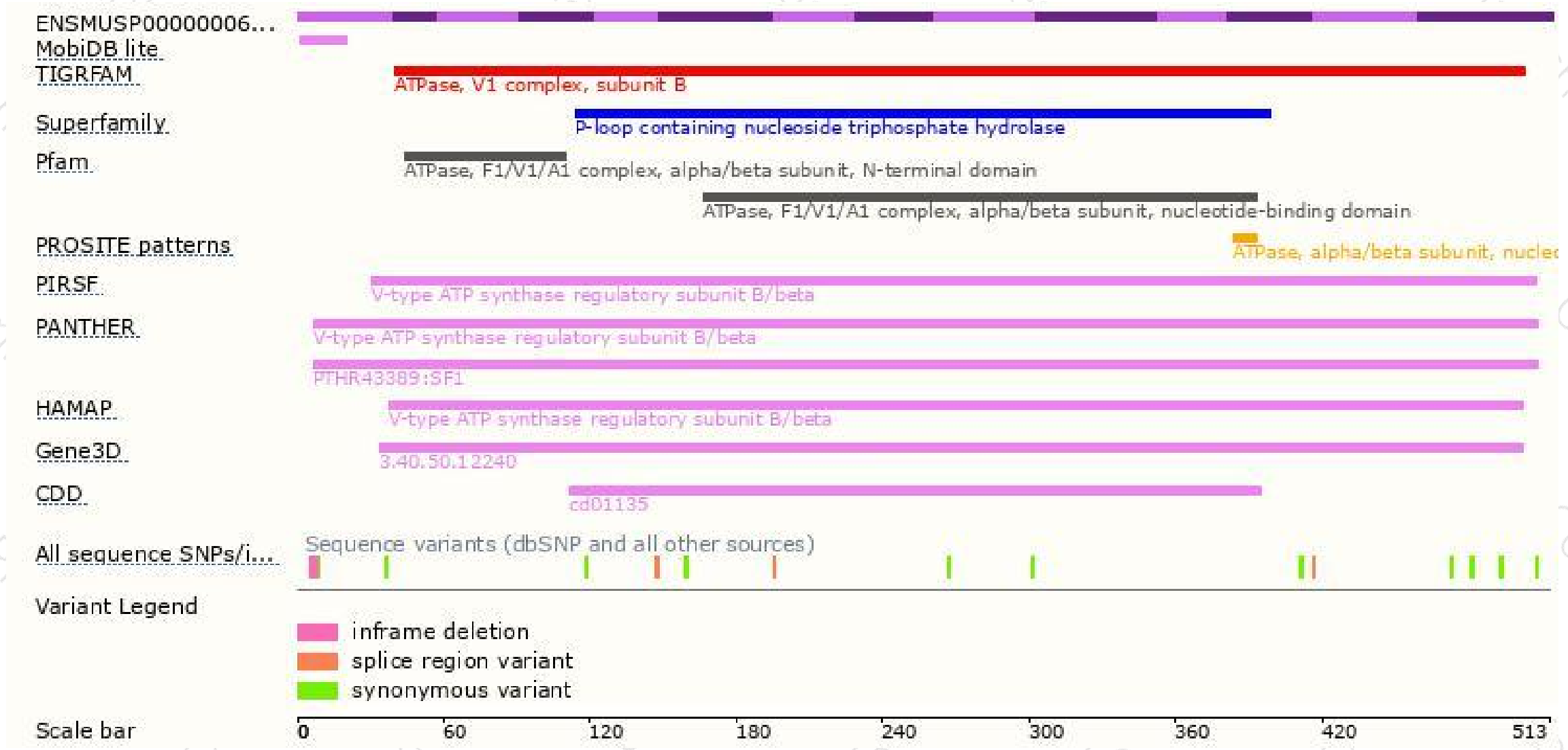
The strategy is based on the design of *Atp6v1b1-201* transcript,The transcription is shown below



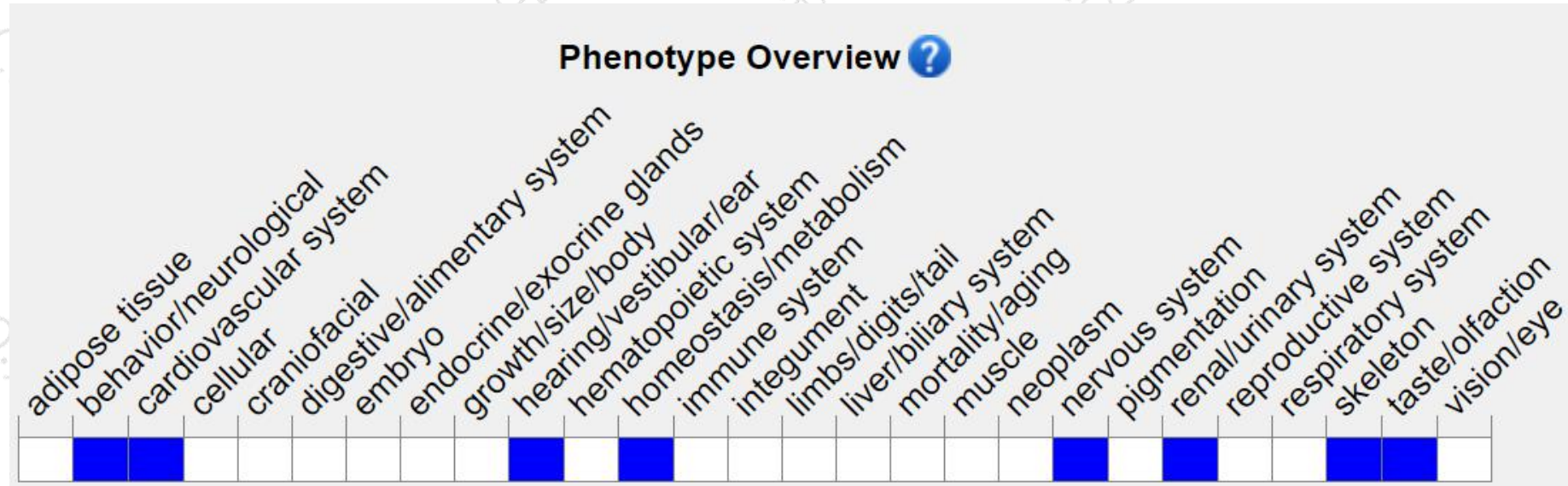
Genomic location distribution



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/>).

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

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