

Atp5pb Cas9-CKO Strategy

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Overview

Target Gene Name

- Atp5pb

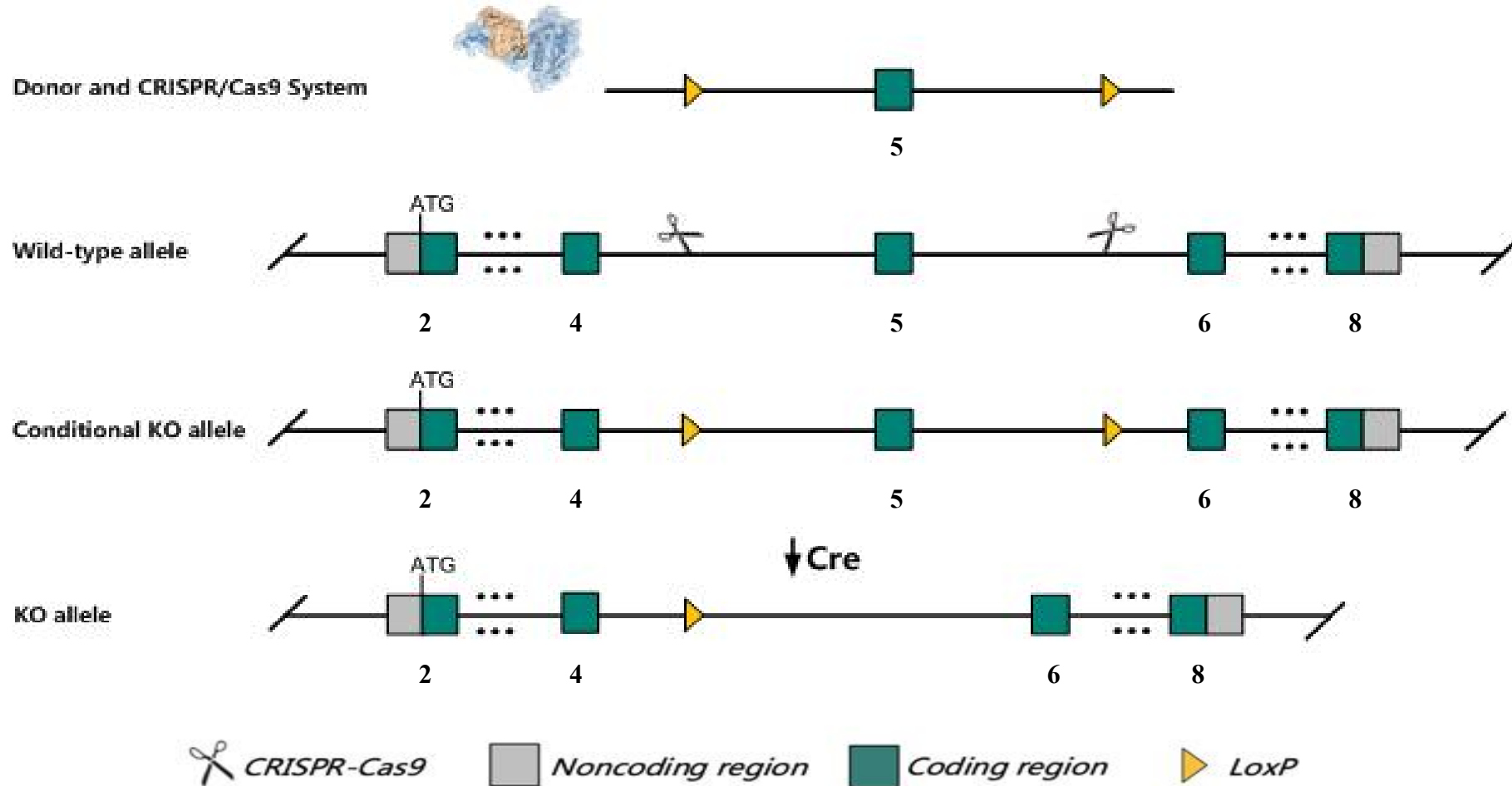
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Atp5pb* gene.

Technical Information

- The *Atp5pb* gene has 6 transcripts. According to the structure of *Atp5pb* gene, exon5 of *Atp5pb*-201 (ENSMUST00000118209.8) transcript is recommended as the knockout region. The region contains 164bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Atp5pb* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information

Atp5pb ATP synthase peripheral stalk-membrane subunit b [*Mus musculus* (house mouse)]

[Download Datasets](#)

Gene ID: 11950, updated on 11-Apr-2024

Summary



Official Symbol Atp5pb provided by [MGI](#)

Official Full Name ATP synthase peripheral stalk-membrane subunit b provided by [MGI](#)

Primary source [MGI:MGI:1100495](#)

See related [Ensembl:ENSMUSG00000000563](#) [AllianceGenome:MGI:1100495](#)

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 Atp5f1

Summary Predicted to enable proton transmembrane transporter activity. Predicted to contribute to proton-transporting ATP synthase activity, rotational mechanism. Predicted to be involved in mitochondrial ATP synthesis coupled proton transport. Predicted to act upstream of or within ion transport. Located in mitochondrial inner membrane and myelin sheath. Is expressed in several structures, including alimentary system; genitourinary system; heart; nervous system; and sensory organ. Orthologous to human ATP5PB (ATP synthase peripheral stalk-membrane subunit b). [provided by Alliance of Genome Resources, Apr 2022]

Expression Ubiquitous expression in duodenum adult (RPKM 196.9), heart adult (RPKM 162.8) and 28 other tissues [See more](#)

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

NEW

Try the new [Gene table](#)

Try the new [Transcript table](#)

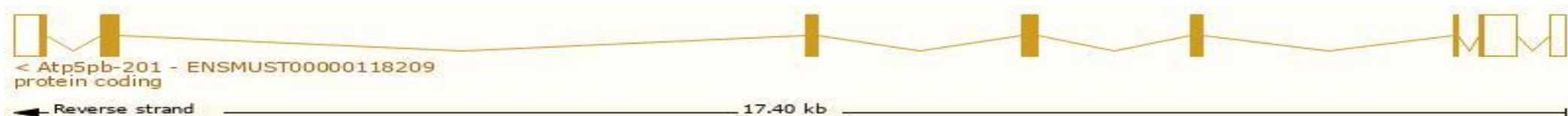
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

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

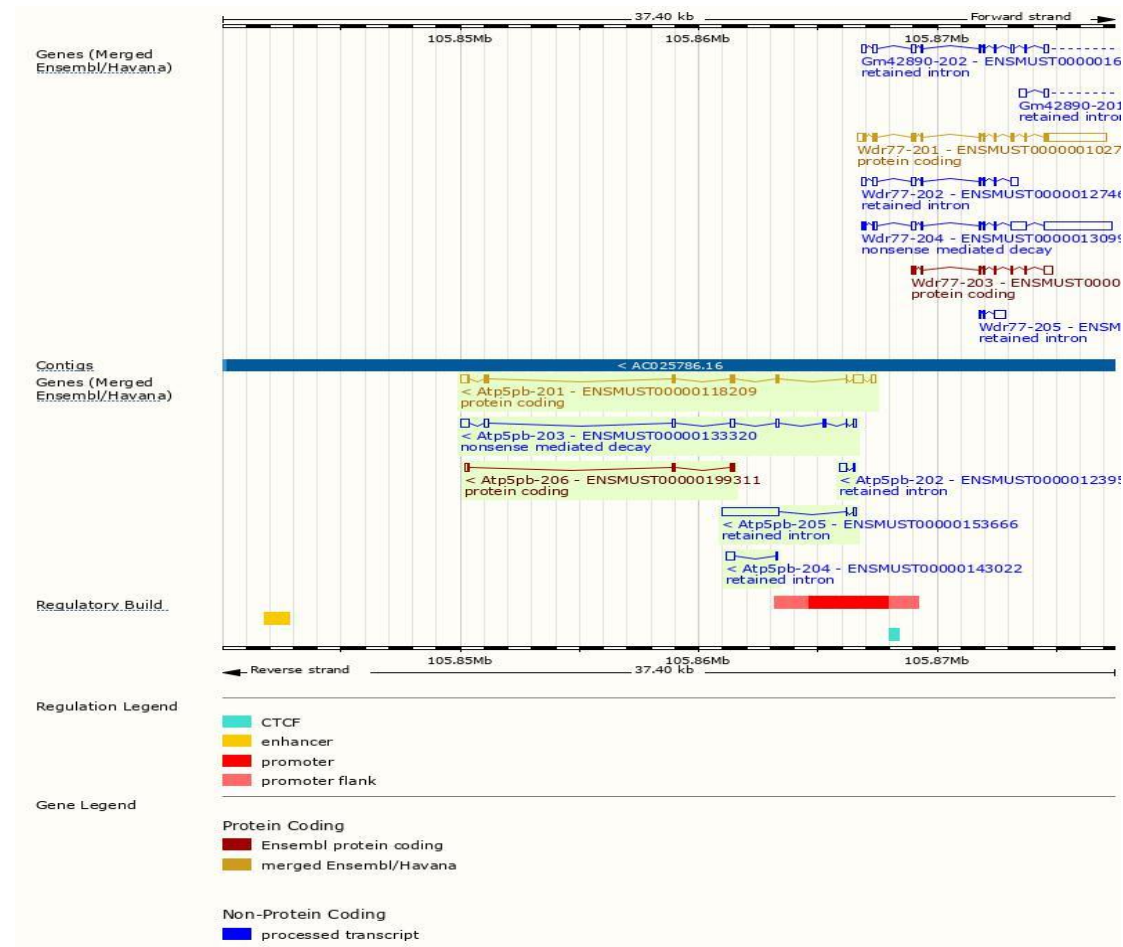
Show/hide columns (1 hidden)							Filter	
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags	
ENSMUST00000153666.2	Atp5pb-205	2527	No protein	Retained intron		-	TSL:2	
ENSMUST00000143022.2	Atp5pb-204	466	No protein	Retained intron		-	TSL:2	
ENSMUST00000123959.2	Atp5pb-202	407	No protein	Retained intron		-	TSL:2	
ENSMUST00000118209.8	Atp5pb-201	1604	256aa	Protein coding	CCDS17714	Q5I0W0 Q9CQQ7	Ensembl Canonical	GENCODE basic APPRIS P1 TSL:5
ENSMUST00000199311.2	Atp5pb-206	456	122aa	Protein coding		A0A0G2JGX3	TSL:5	CDS 5' incomplete
ENSMUST00000133320.2	Atp5pb-203	1311	59aa	Nonsense mediated decay		D6RGL7	TSL:1	

The strategy is based on the design of *Atp5pb-201* transcript, the transcription is shown below:

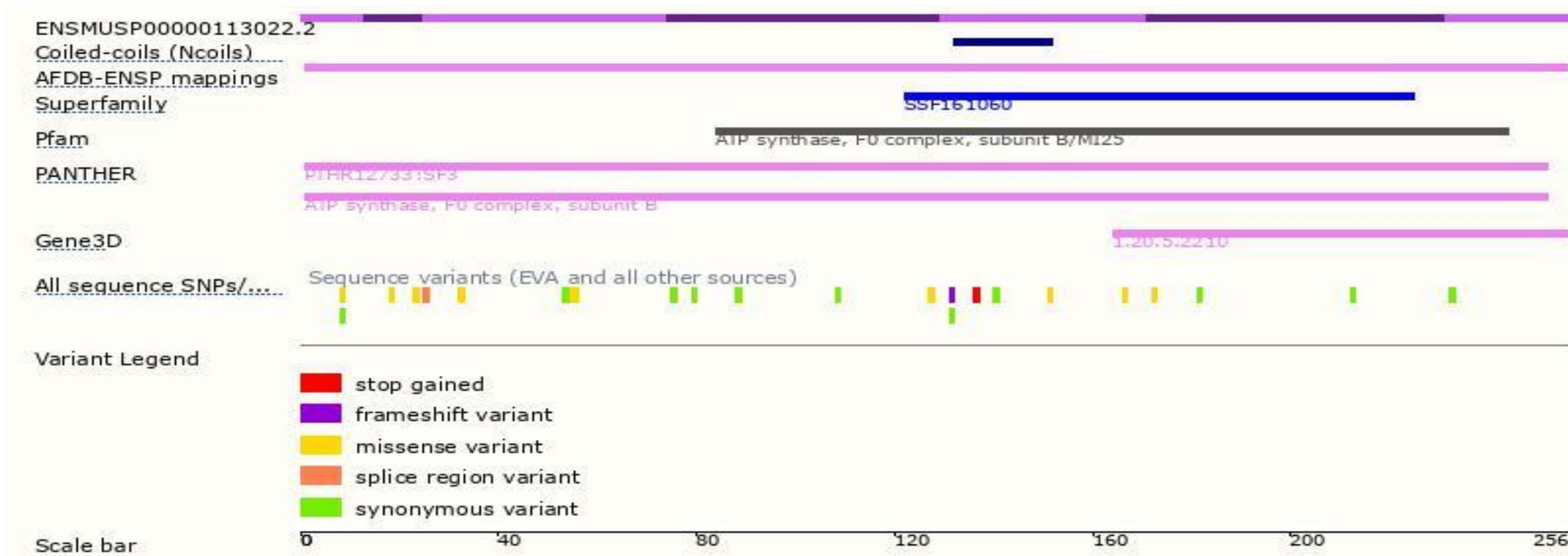


Source: <https://www.ensembl.org>

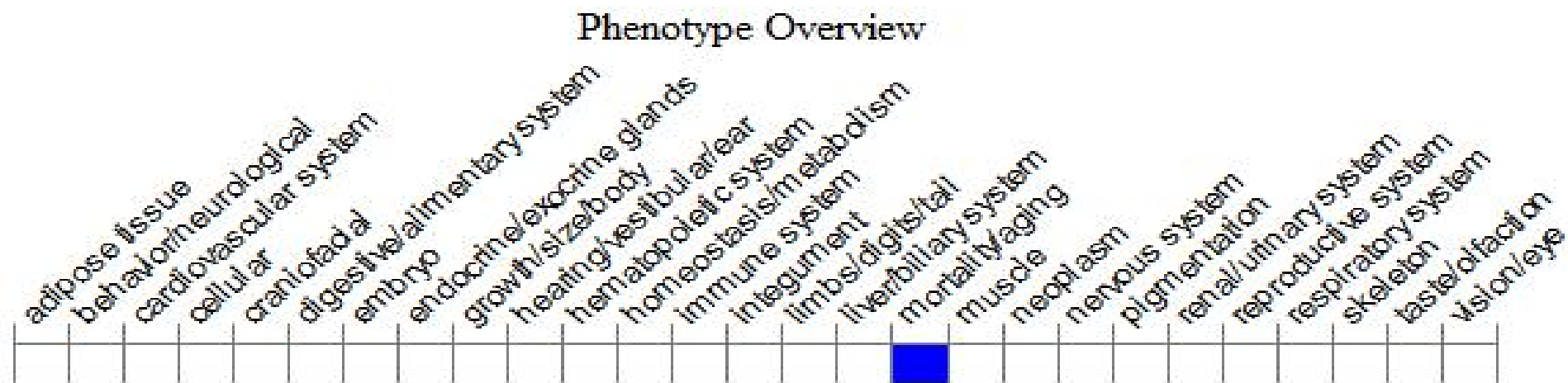
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



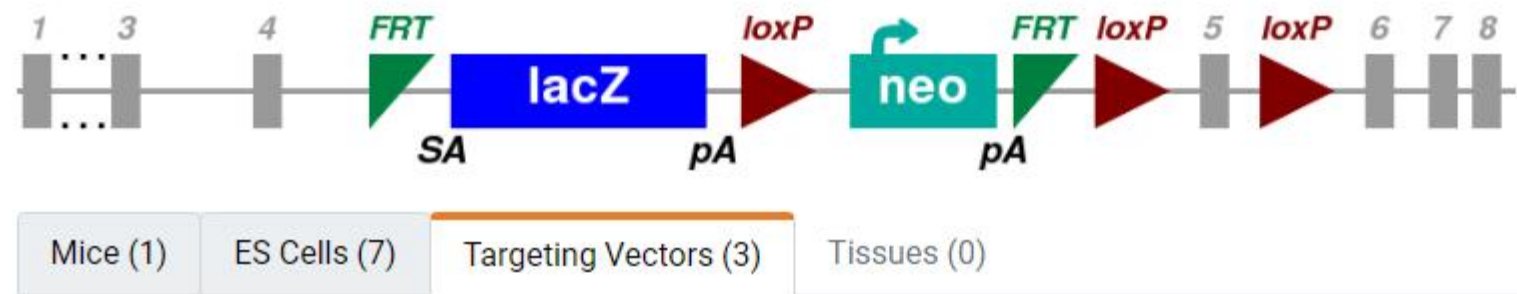
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Important Information

- According to the existing MGI data: homozygous mice die during preweaning stage.
- The transcript-205 is directly destroyed.
- The transcript-202 is not affected.
- *Atp5pb* is located on Chr3. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.

Reference

	MGI Allele	Allele Type	Produced
—	Atp5pb ^{tm1a(EUCOMM)Wtsi}	KO first allele (reporter-tagged insertion with conditional potential)	Mice, Targeting vectors, ES Ce



<https://www.mousephenotype.org/data/genes/MGI:1100495>