Atp11b Cas9-KO Strategy

Designer: Xiaojing Li

Reviewer: JiaYu

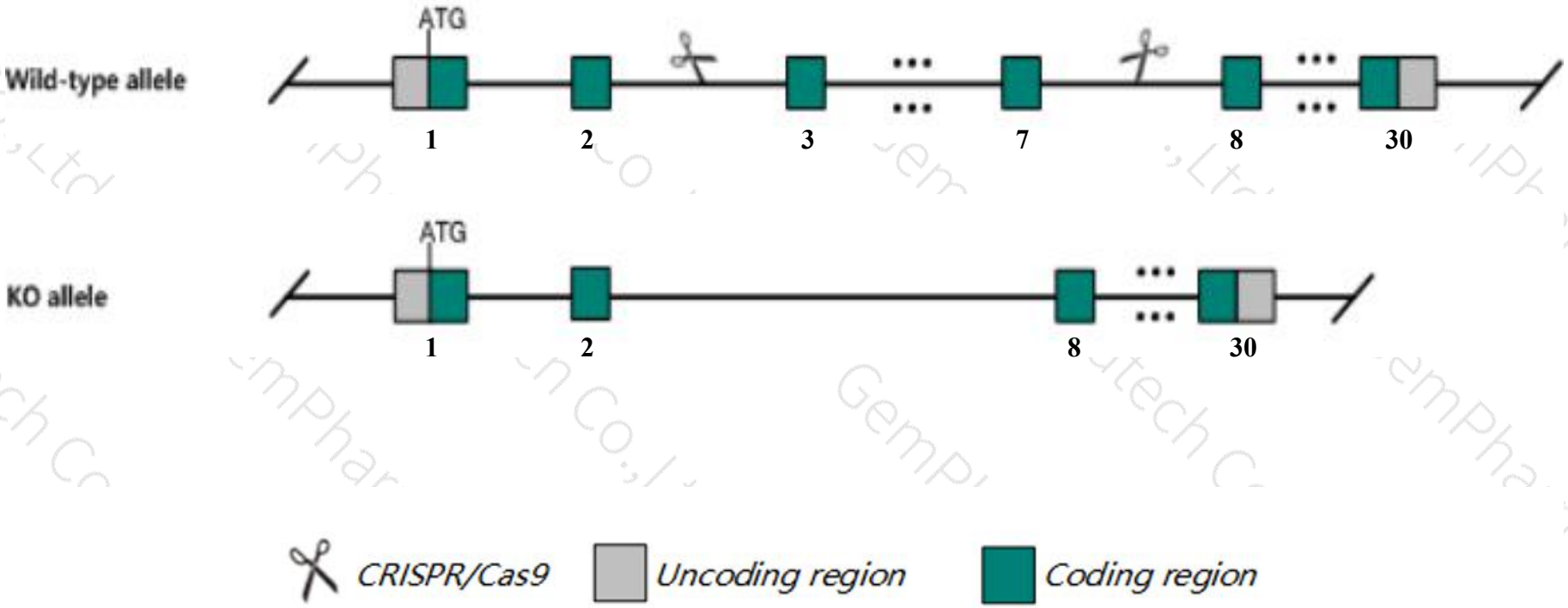
Design Date: 2020-11-10

Project Overview

Project Name	***Atp11b***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atp11b* gene. The schematic diagram is as follows:



Technical routes

➢ The *Atp11b* gene has 11 transcripts. According to the structure of *Atp11b* gene, exon3-exon7 of *Atp11b-201*(ENSMUST00000029257.14) transcript is recommended as the knockout region.The region contains 512bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Atp11b* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ The *Atp11b* gene is located on the Chr3. 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 may not affect the *Atp11b*-206 transcript.

➢ 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）

集萃药康 GemPharmatech

Atp11b ATPase, class VI, type 11B [Mus musculus (house mouse)]

Gene ID: 76295, updated on 20-Mar-2020

Summary

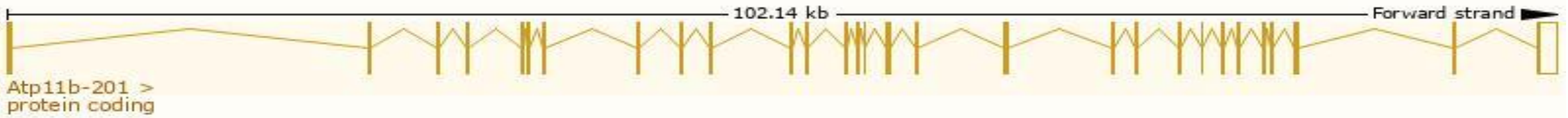
Official Symbol	Atp11b provided by MGI
Official Full Name	ATPase, class VI, type 11B provided byMGI
Primary source	MGI:MGI:1923545
See related	Ensembl:ENSMUSG00000037400
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110019I14Rik, ATPIF, ATPIR, mKIAA0956
Expression	Ubiquitous expression in frontal lobe adult (RPKM 18.5), CNS E18 (RPKM 15.8) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

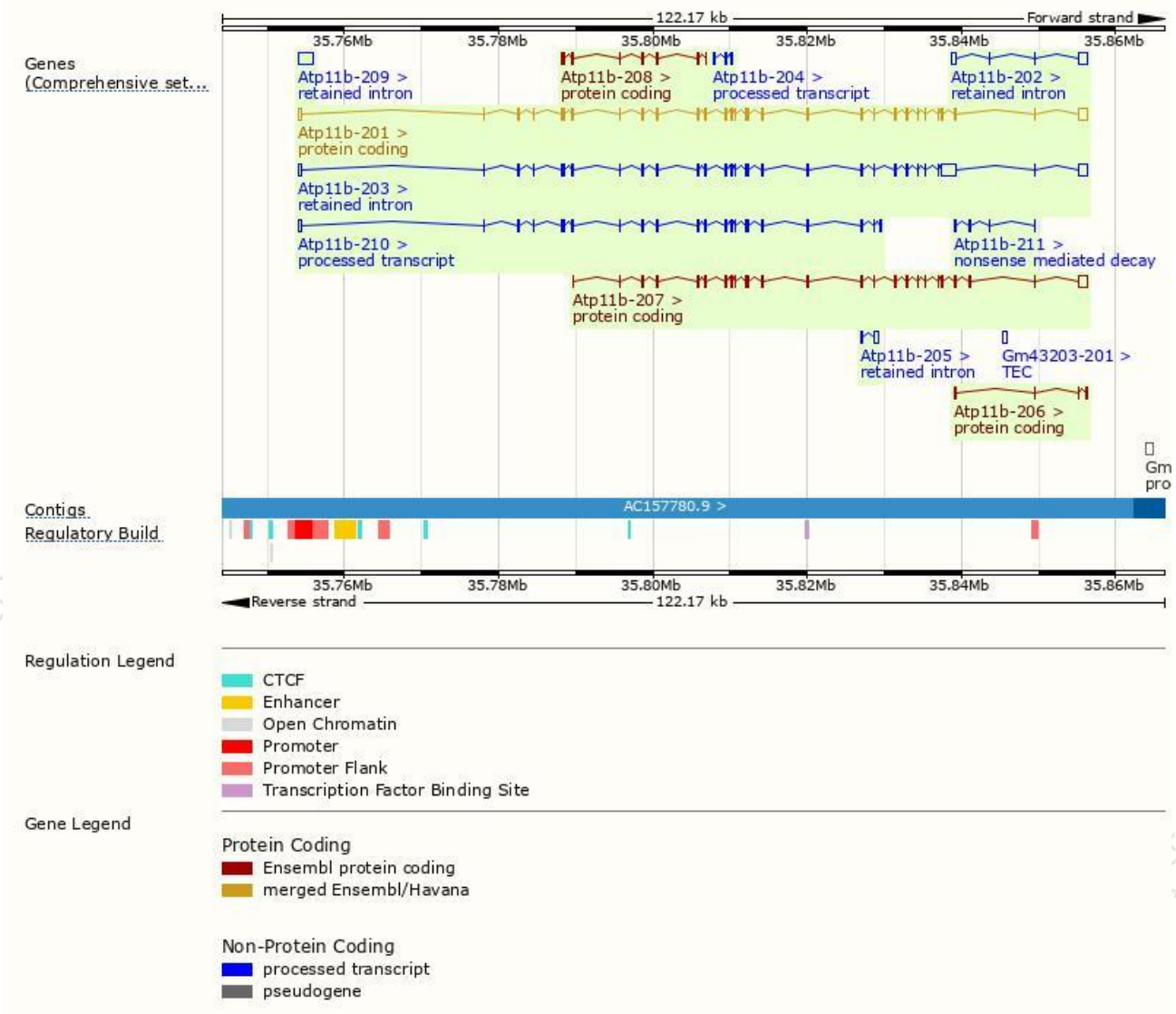
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Atp11b-201	ENSMUST00000029257.14	4868	1175aa	Protein coding	CCDS38414	Q6DFW5	TSL:1 GENCODE basic APPRIS P1
Atp11b-207	ENSMUST00000198599.1	4102	967aa	Protein coding	-	A0A0G2JE89	CDS 5' incomplete TSL:5
Atp11b-208	ENSMUST00000199892.4	776	259aa	Protein coding	-	A0A0G2JED0	CDS 5' and 3' incomplete TSL:3
Atp11b-206	ENSMUST00000197764.1	621	124aa	Protein coding	-	A0A0G2JF19	CDS 5' incomplete TSL:3
Atp11b-211	ENSMUST00000211902.1	509	112aa	Nonsense mediated decay	-	A0A1D5RLK3	CDS 5' incomplete TSL:5
Atp11b-210	ENSMUST00000200445.4	3028	No protein	Processed transcript	-	-	TSL:1
Atp11b-204	ENSMUST00000196965.1	648	No protein	Processed transcript	-	-	TSL:5
Atp11b-203	ENSMUST00000196700.4	6322	No protein	Retained intron	-	-	TSL:5
Atp11b-202	ENSMUST00000196409.1	1918	No protein	Retained intron	-	-	TSL:5
Atp11b-209	ENSMUST00000200351.1	1906	No protein	Retained intron	-	-	TSL:NA
Atp11b-205	ENSMUST00000197003.1	638	No protein	Retained intron	-	-	TSL:3

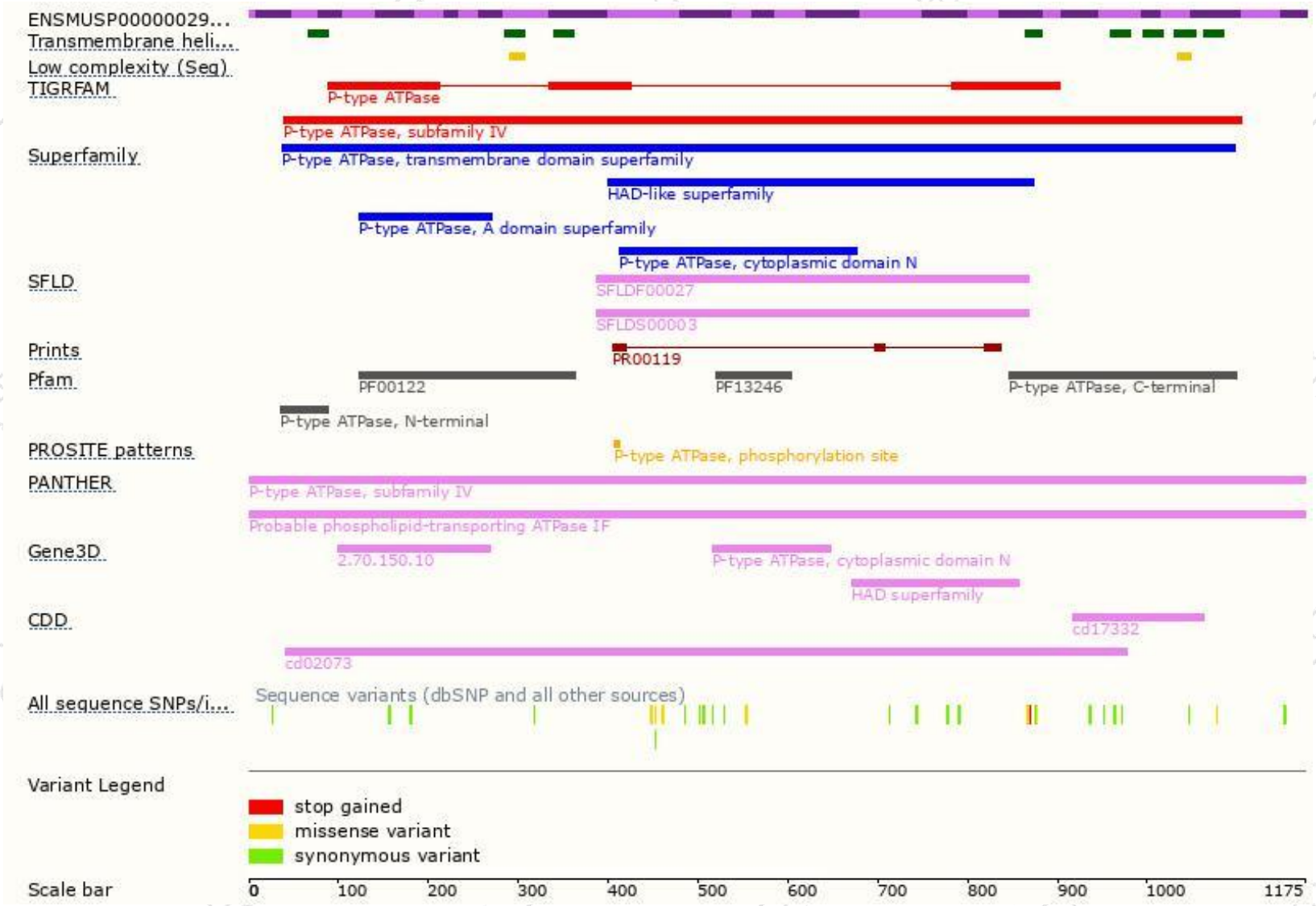
The strategy is based on the design of *Atp11b-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd