Atp4a Cas9-KO Strategy

Designer: JiaYu

Reviewer: Xiaojing Li

Design Date: 2019-8-27

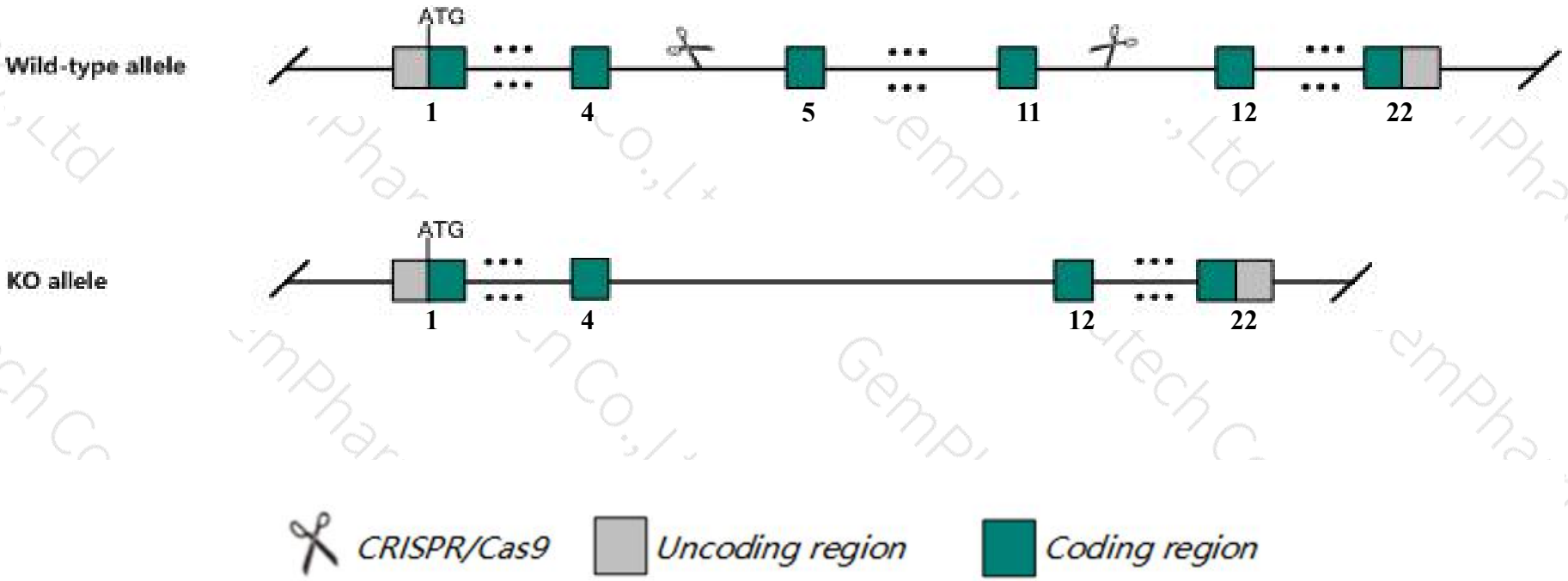
集萃药康 GemPharmatech

Project Overview

Project Name	***Atp4a***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atp4a* gene. The schematic diagram is as follows:



Technical routes

➢ The *Atp4a* gene has 5 transcripts. According to the structure of *Atp4a* gene, exon5-exon11 of *Atp4a-201* (ENSMUST00000005692.13) transcript is recommended as the knockout region.The region contains 1273bp coding sequenc Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Atp4a* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous mutation of this gene results in achlorhydria, hypergastrinemia, and abnormalities of the parietal cells. Mice homozygous for an ENU-induced allele exhibit iron-deficiency anemia.

- The *Atp4a* gene is located on the Chr7. 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）

集萃药康 GemPharmatech

Atp4a ATPase, H+/K+ exchanging, gastric, alpha polypeptide [Mus musculus (house mouse)]

Gene ID: 11944, updated on 5-Mar-2019

Summary

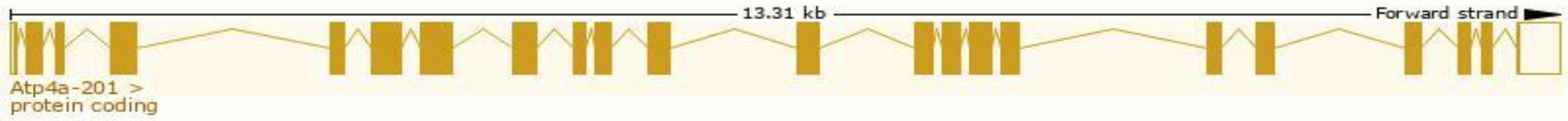
Official Symbol	Atp4a provided by MGI
Official Full Name	ATPase, H+/K+ exchanging, gastric, alpha polypeptide provided byMGI
Primary source	MGI:MGI:88113
See related	Ensembl:ENSMUSG00000005553
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Restricted expression toward stomach adult (RPKM 485.0)See more
Orthologs	human all

Transcript information（Ensembl）

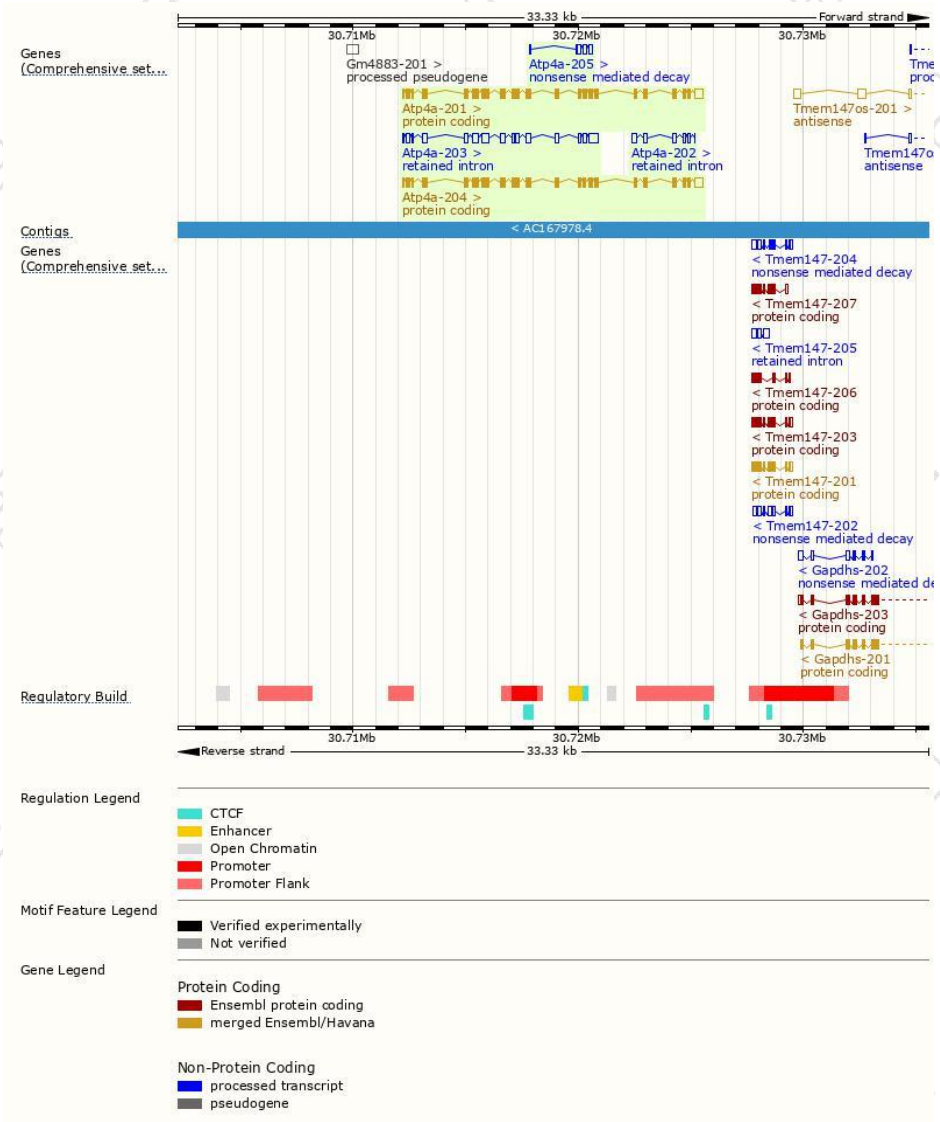
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Atp4a-201	ENSMUST00000005692.13	3485	1034aa	Protein coding	CCDS71932	E9QNX7	TSL:5 GENCODE basic APPRIS P1
Atp4a-204	ENSMUST00000170371.1	3447	1025aa	Protein coding	CCDS52182	Q91WH7	TSL:1 GENCODE basic
Atp4a-205	ENSMUST00000171014.1	564	32aa	Nonsense mediated decay	-	F6S7B0	CDS 5' incomplete TSL:3
Atp4a-203	ENSMUST00000167761.7	2601	No protein	Retained intron	-	-	TSL:1
Atp4a-202	ENSMUST00000165410.1	738	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Atp4a-201* transcript,The transcription is shown below

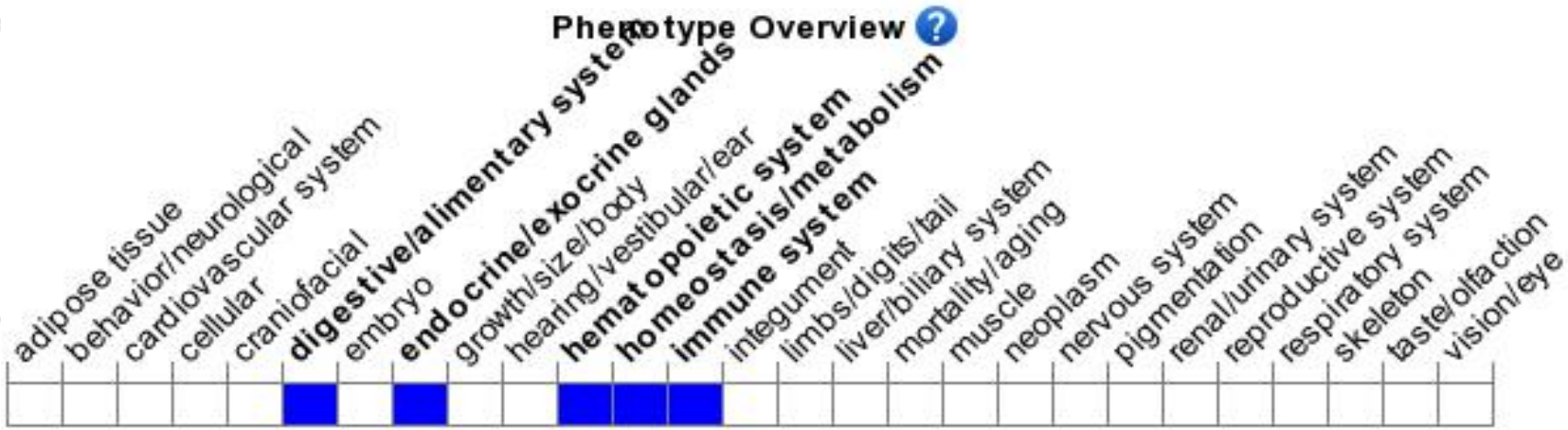


Genomic location distribution



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/).

According to the existing MGI data,Homozygous mutation of this gene results in achlorhydria, hypergastrinemia, and abnormalities of the parietal cells. Mice homozygous for an ENU-induced allele exhibit iron-deficiency anemia.

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

GemPharmatech Co.,Ltd