

Atg2a Cas9-CKO Strategy

Designer:

Longyun Hu

Reviewer:

Yun Li

Design Date:

2019-12-18

Project Overview

Project Name

Atg2a

Project type

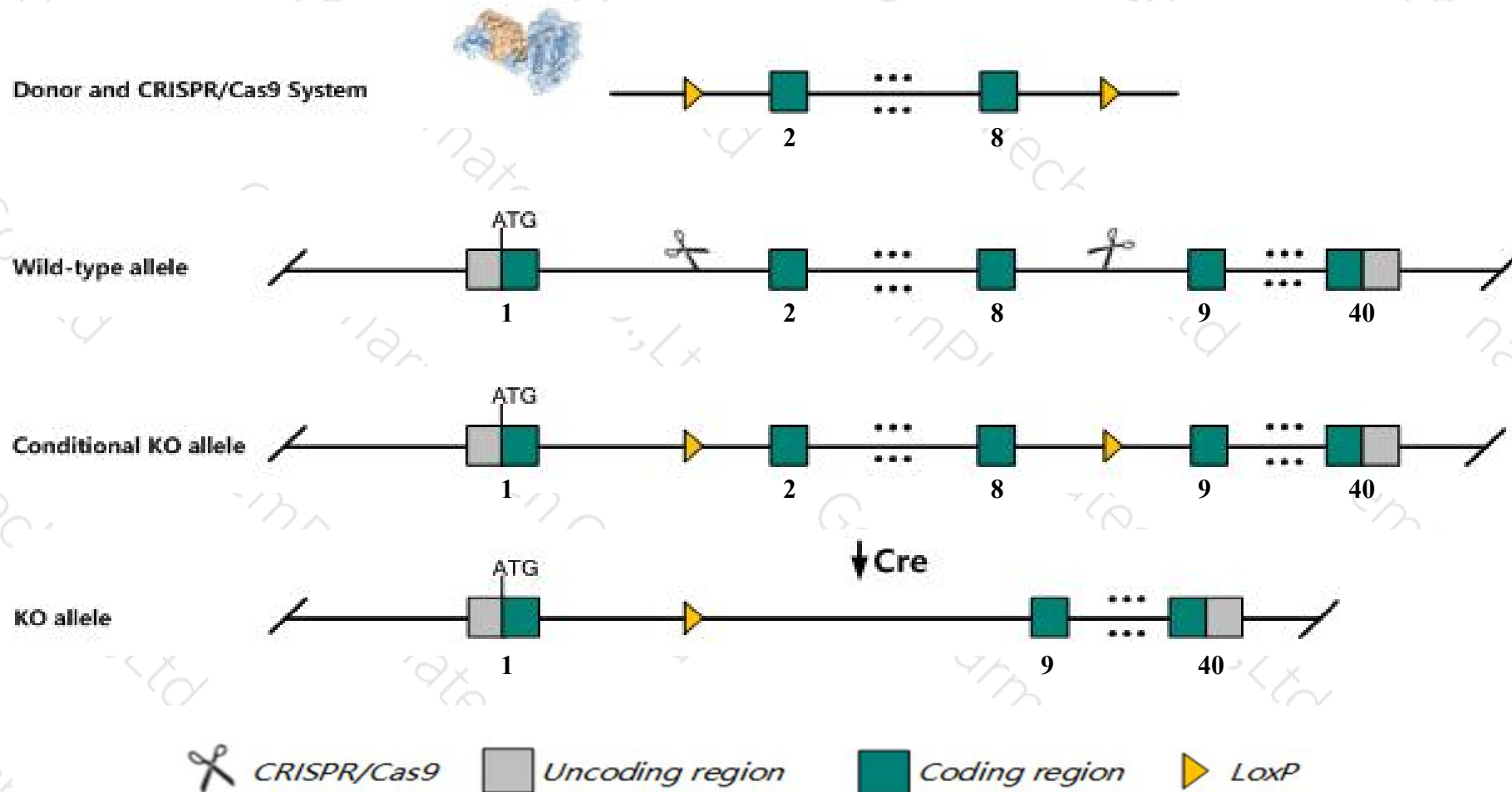
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Atg2a* gene. The schematic diagram is as follows:



Technical routes

- The *Atg2a* gene has 6 transcripts. According to the structure of *Atg2a* gene, exon2-exon8 of *Atg2a-201* (ENSMUST00000045351.12) transcript is recommended as the knockout region. The region contains 1054bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Atg2a* 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 sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- 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.

Notice

- The *Atg2a* gene is located on the Chr19. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Atg2a autophagy related 2A [Mus musculus (house mouse)]

Gene ID: 329015, updated on 31-Jan-2019

Summary



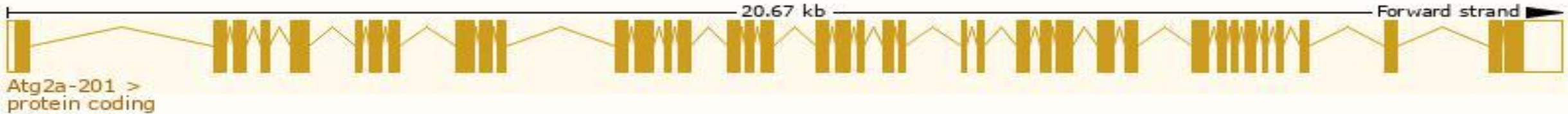
Official Symbol	Atg2a provided by MGI
Official Full Name	autophagy related 2A provided by MGI
Primary source	MGI:MGI:1916291
See related	Ensembl:ENSMUSG00000024773
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1810013C15Rik, A830054M12, BC023754, mKIAA0404
Expression	Ubiquitous expression in adrenal adult (RPKM 34.8), thymus adult (RPKM 26.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

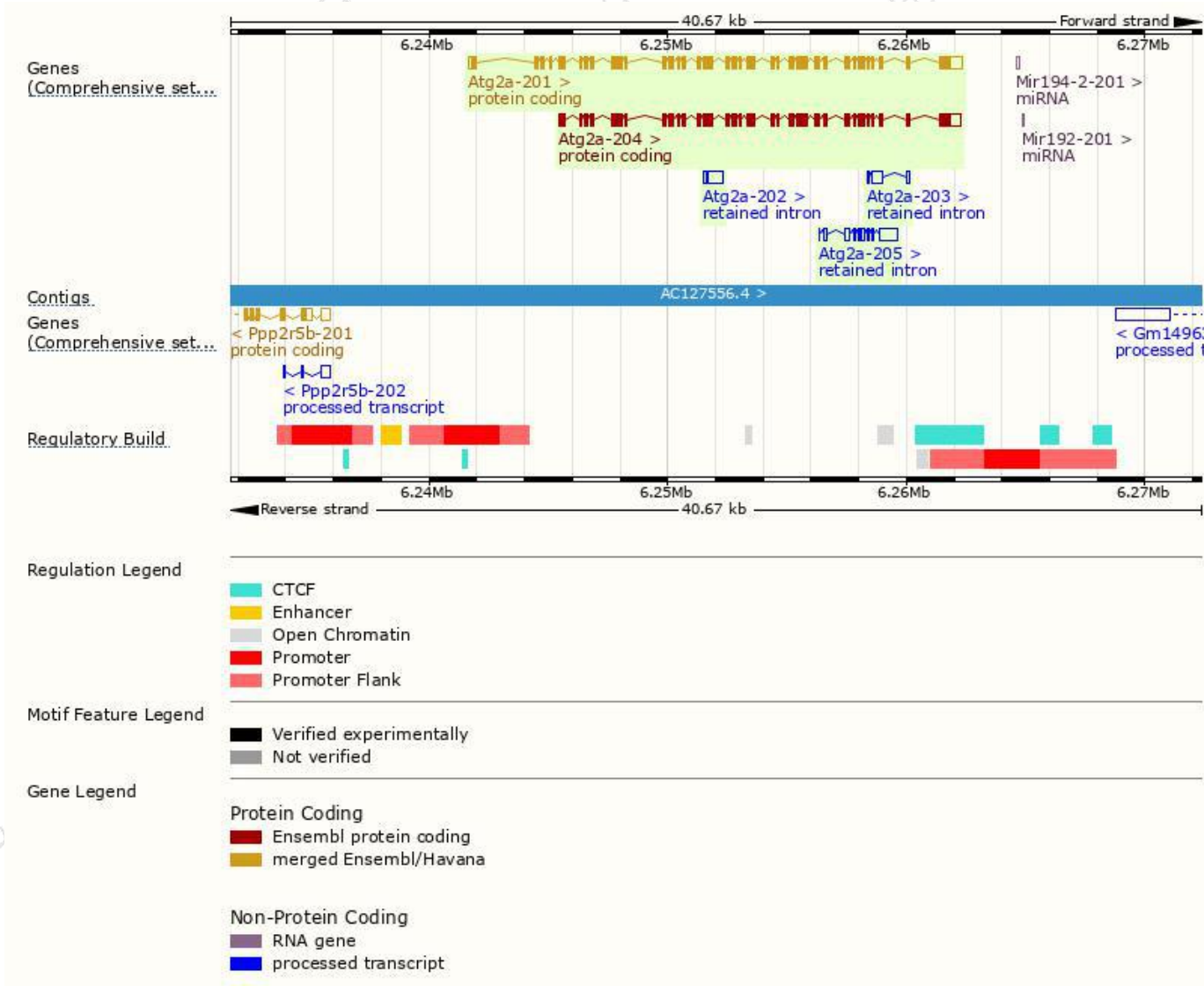
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Atg2a-201	ENSMUST00000045351.12	6371	1914aa	Protein coding	CCDS29500	Q6P4T0	TSL:1 GENCODE basic APPRIS P1
Atg2a-204	ENSMUST00000145600.1	5613	1718aa	Protein coding	-	F6V3Y9	CDS 5' incomplete TSL:1
Atg2a-206	ENSMUST00000237387.1	658	No protein	Processed transcript	-	-	
Atg2a-205	ENSMUST00000151079.1	1575	No protein	Retained intron	-	-	TSL:5
Atg2a-202	ENSMUST00000135018.1	706	No protein	Retained intron	-	-	TSL:3
Atg2a-203	ENSMUST00000143053.1	672	No protein	Retained intron	-	-	TSL:3

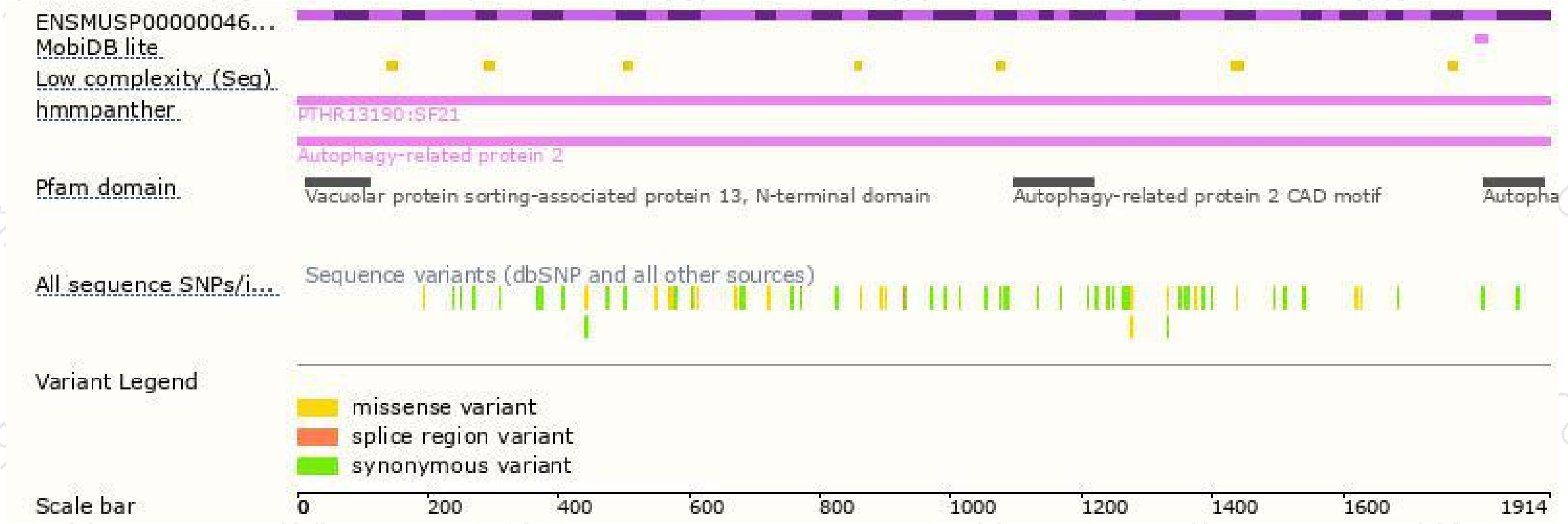
The strategy is based on the design of *Atg2a-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

Tel: 400-9660890

