

Atg9b Cas9-CKO Strategy

Designer:

Longyun Hu

Reviewer:

Yun Li

Design Date:

2019-12-18

Project Overview

Project Name

Atg9b

Project type

Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

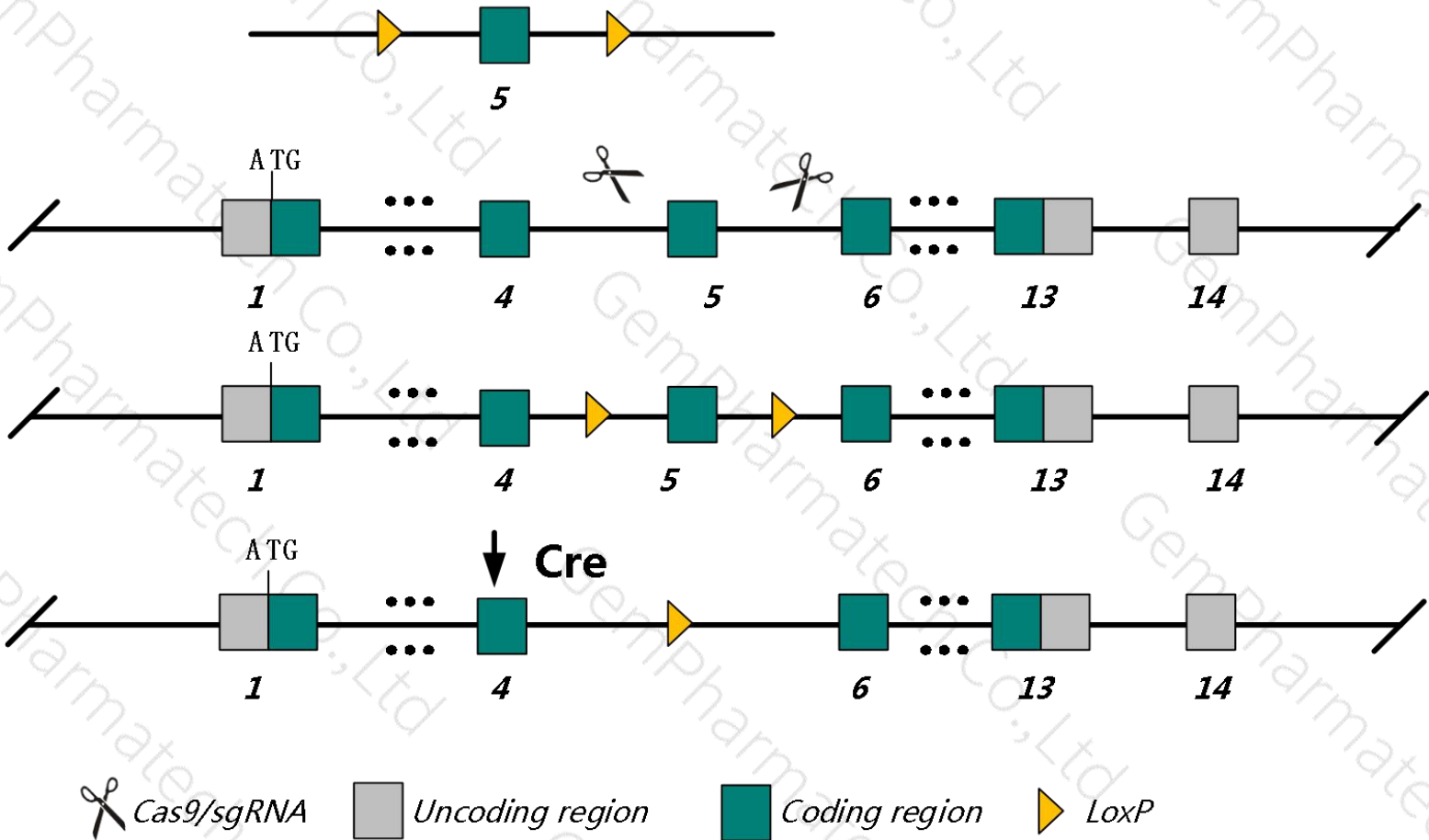
This model will use CRISPR/Cas9 technology to edit the *Atg9b* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System

Wild-type allele

Conditional KO allele

KO allele



- The *Atg9b* gene has 3 transcripts. According to the structure of *Atg9b* gene, exon 5 of *Atg9b*-201(ENSMUST00000059401.6) transcript is recommended as the knockout region. The region contains 142 bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Atg9b* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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 or cell types.

- The *Atg9b* gene is located on the Chr 5 . 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.
- The CKO region contains functional region of the *Abcb8* gene. Knockout the region may affect the function of *Abcb8* gene.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Atg9b autophagy related 9B [*Mus musculus* (house mouse)]

Gene ID: 213948, updated on 31-Jan-2019

Summary



Official Symbol Atg9b provided by [MGI](#)

Official Full Name autophagy related 9B provided by [MGI](#)

Primary source [MGI:MGI:2685420](#)

See related [Ensembl:ENSMUSG00000038295](#)

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 eONE; sONE; Gm574; Apg912; Apg9l2; Apgdc2; Nos3as

Expression Broad expression in stomach adult (RPKM 10.7), lung adult (RPKM 3.8) and 19 other tissues [See more](#)

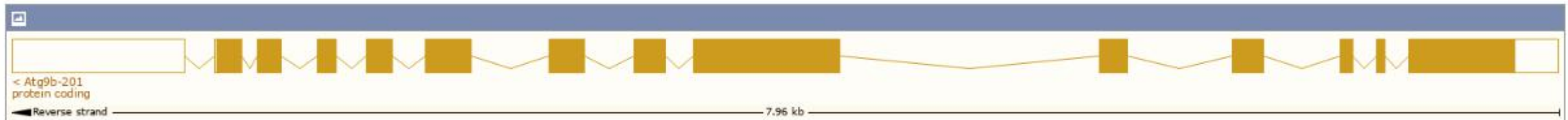
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

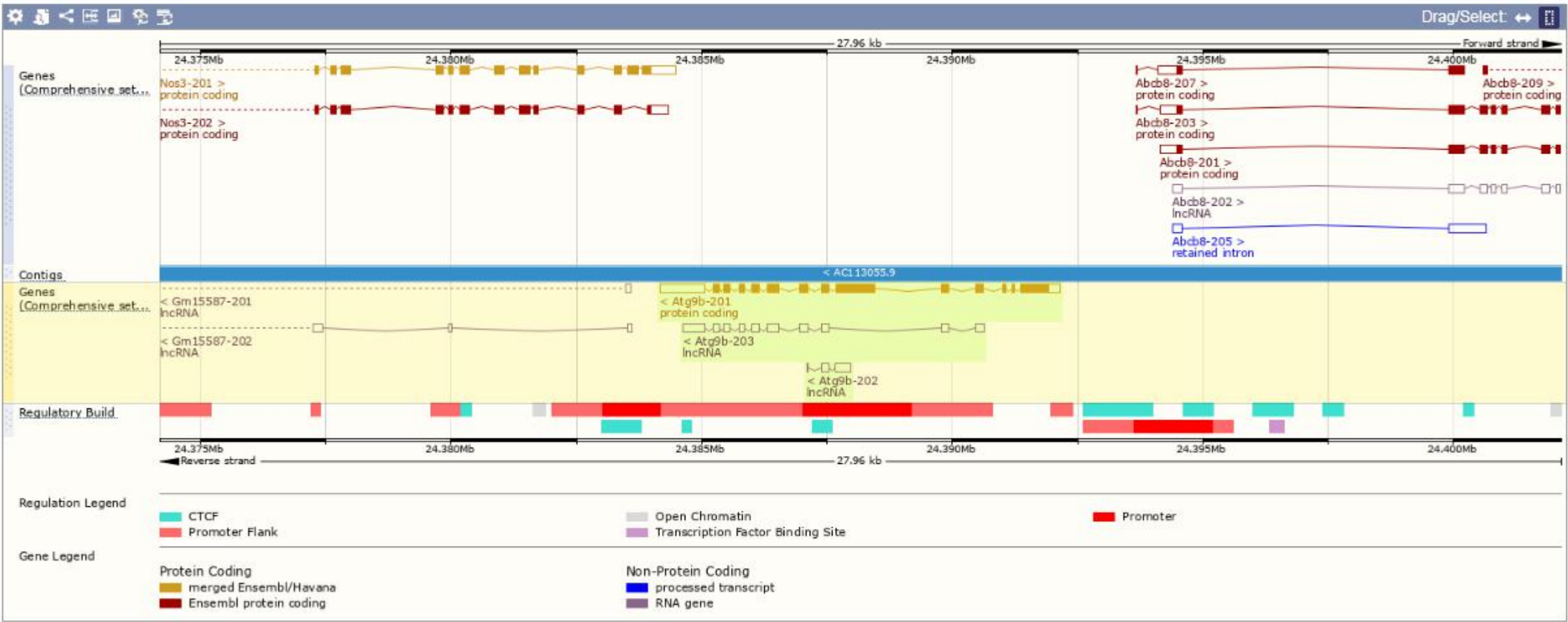
The gene has 3 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Atg9b-203	ENSMUST00000138716.7	1837	No protein	lncRNA	-	-	TSL:5	
Atg9b-202	ENSMUST00000128831.1	490	No protein	lncRNA	-	-	TSL:3	
Atg9b-201	ENSMUST00000059401.6	3902	922aa	Protein coding	CCDS39027	Q6EBV9	TSL:1	GENCODE basic APPRIS P1

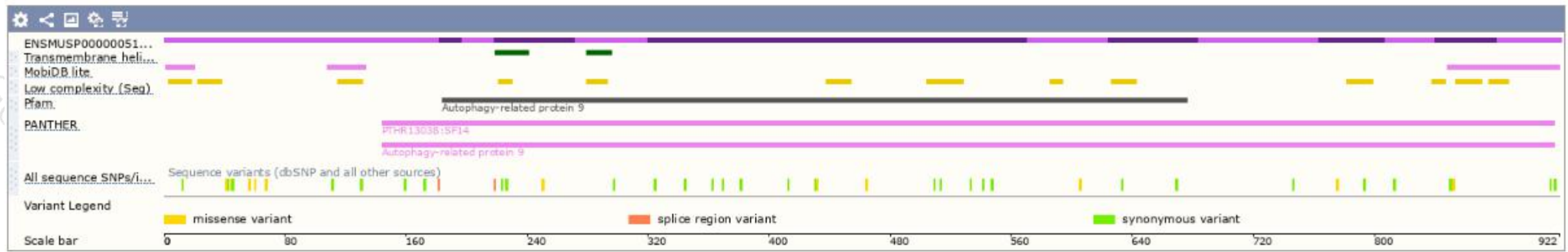
The strategy is based on the design of *Atg9b-201* transcript, The transcription is shown below



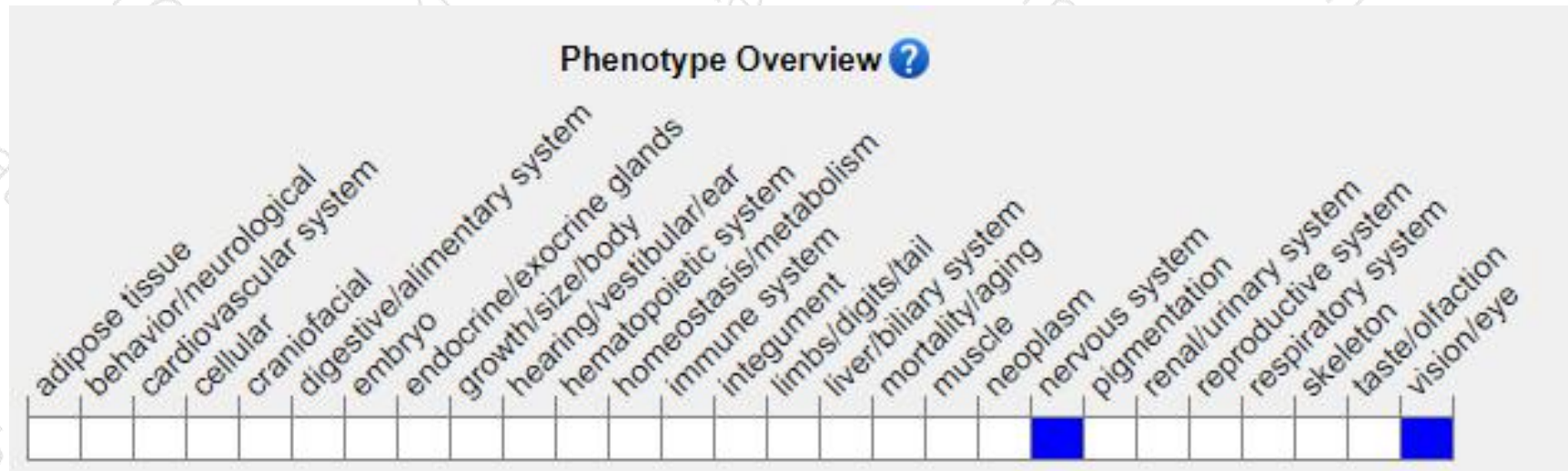
Genomic location distribution



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, Mutations in this locus affect cell-cycle regulation and apoptosis. Null homozygotes show high, early-onset tumor incidence; some have persistent hyaloid vasculature and cataracts. Truncated or temperature-sensitive alleles cause early aging phenotypes.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

