Mboat1 Cas9-KO Strategy

Designer: Lingyan Wu

Reviewer: Miaomiao Cui

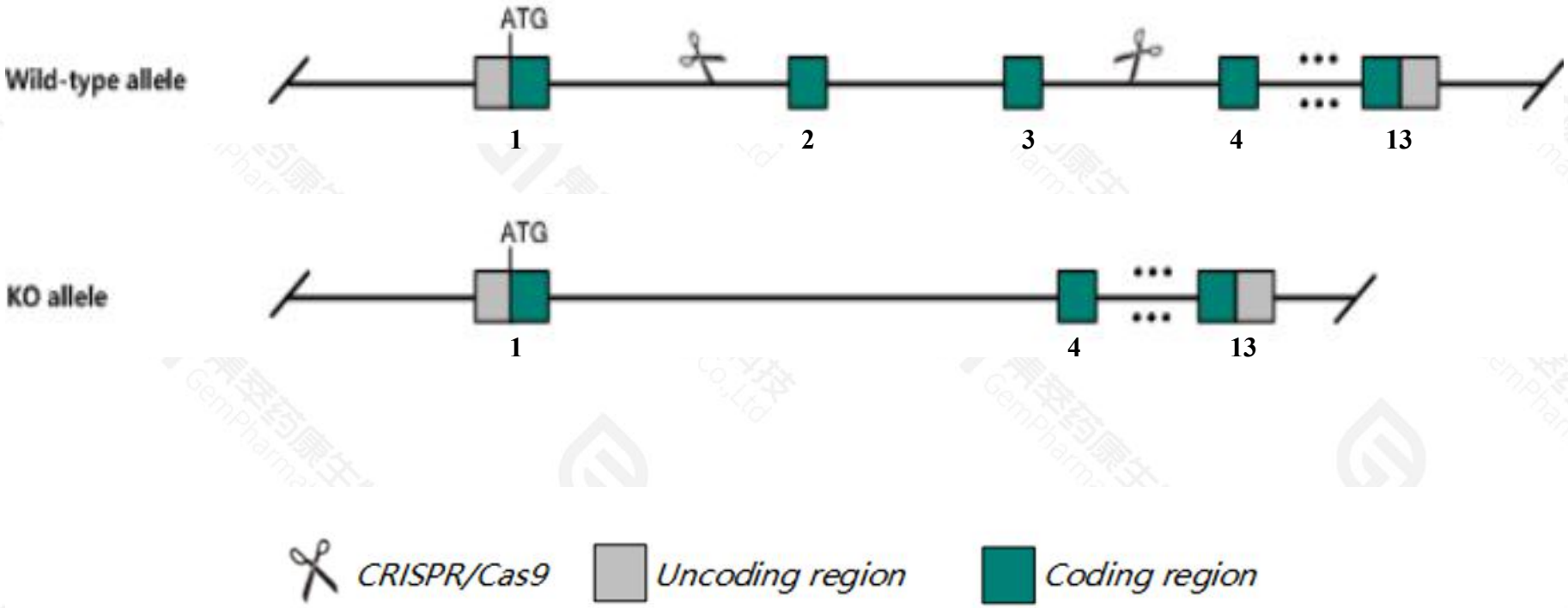
Design Date: 2021-5-31

Project Overview

Project Name	***Mboat1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mboat1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Mboat1* gene has 5 transcripts. According to the structure of *Mboat1* gene, exon2-exon3 of *Mboat1-201*(ENSMUST00000047311.16) transcript is recommended as the knockout region.The region contains 224bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Mboat1* 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 *Mboat1* gene is located on the Chr13. 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）

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Mboat1 membrane bound O-acyltransferase domain containing 1 [Mus musculus (house mouse)]

Gene ID: 218121, updated on 14-Jan-2021

Summary

Official Symbol	Mboat1 provided by MGI
Official Full Name	membrane bound O-acyltransferase domain containing 1 provided by MGI
Primary source	MGI:MGI:2387184
See related	Ensembl:ENSMUSG00000038732
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9130215M02Rik, BC023845, LPEAT1, Moact1, Oac, Oact1
Expression	Biased expression in colon adult (RPKM 26.9), stomach adult (RPKM 19.8) and 11 other tissues See more
Orthologs	human all

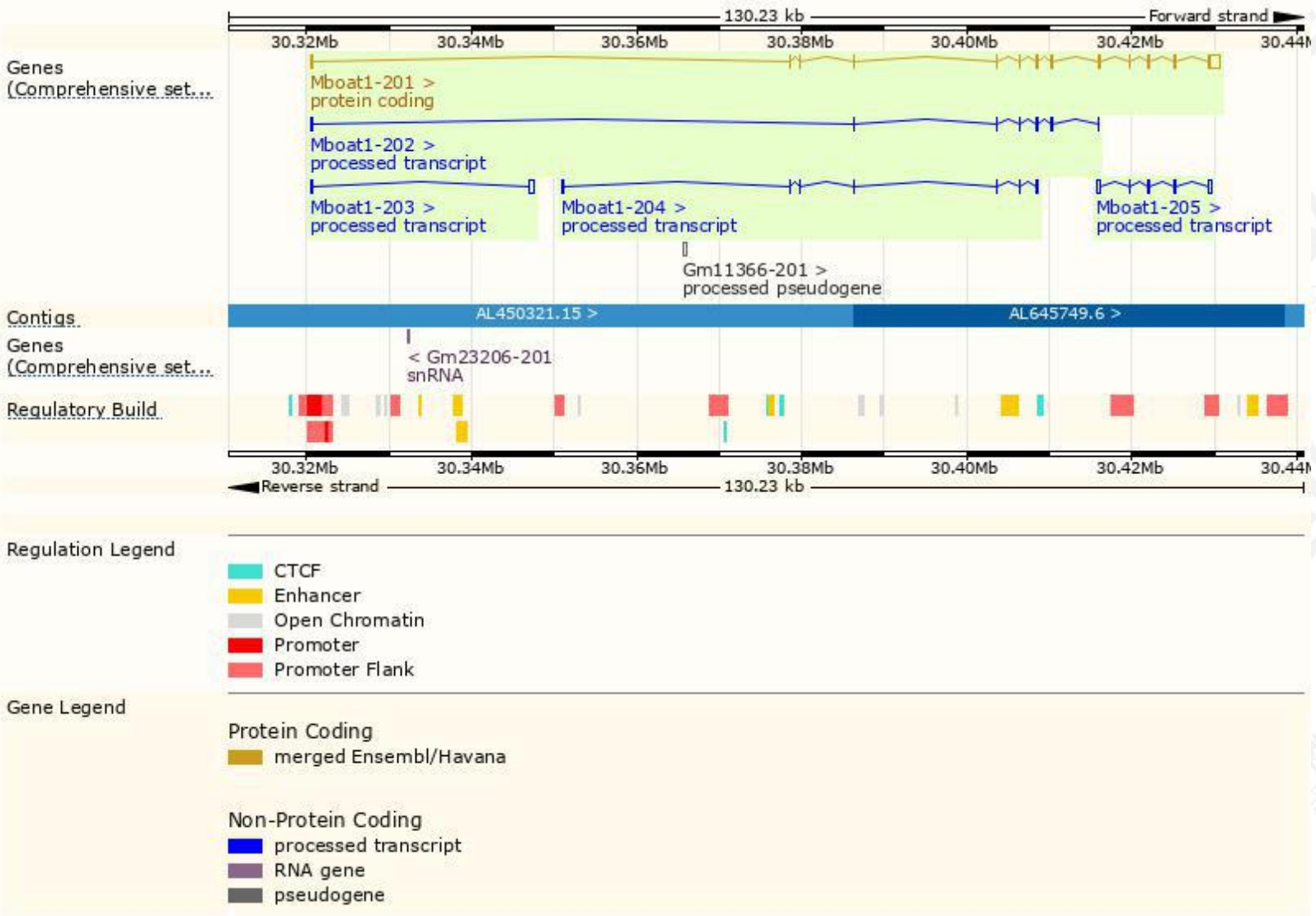
Transcript information（Ensembl）

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

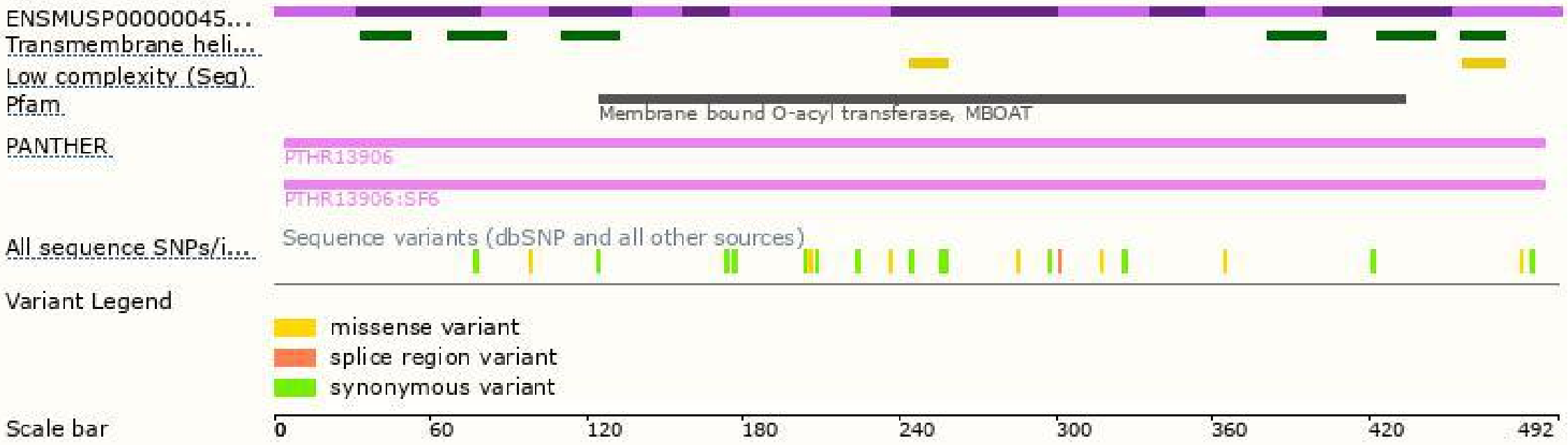
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mboat1-201	ENSMUST00000047311.16	2905	492aa	Protein coding	CCDS26414		TSL:1 , GENCODE basic , APPRIS P1 ,
Mboat1-205	ENSMUST00000222095.2	932	No protein	Processed transcript	-		TSL:3 ,
Mboat1-202	ENSMUST00000152798.3	928	No protein	Processed transcript	-		TSL:5 ,
Mboat1-203	ENSMUST00000153269.3	854	No protein	Processed transcript	-		TSL:1 ,
Mboat1-204	ENSMUST00000220870.2	652	No protein	Processed transcript	-		TSL:3 ,

The strategy is based on the design of *Mboat1-201* transcript,the transcription is shown below:

Genomic location distribution



Protein domain



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Tel: 400-9660890

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