Mogat2 Cas9-KO Strategy

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Design Date: 2020-1-23
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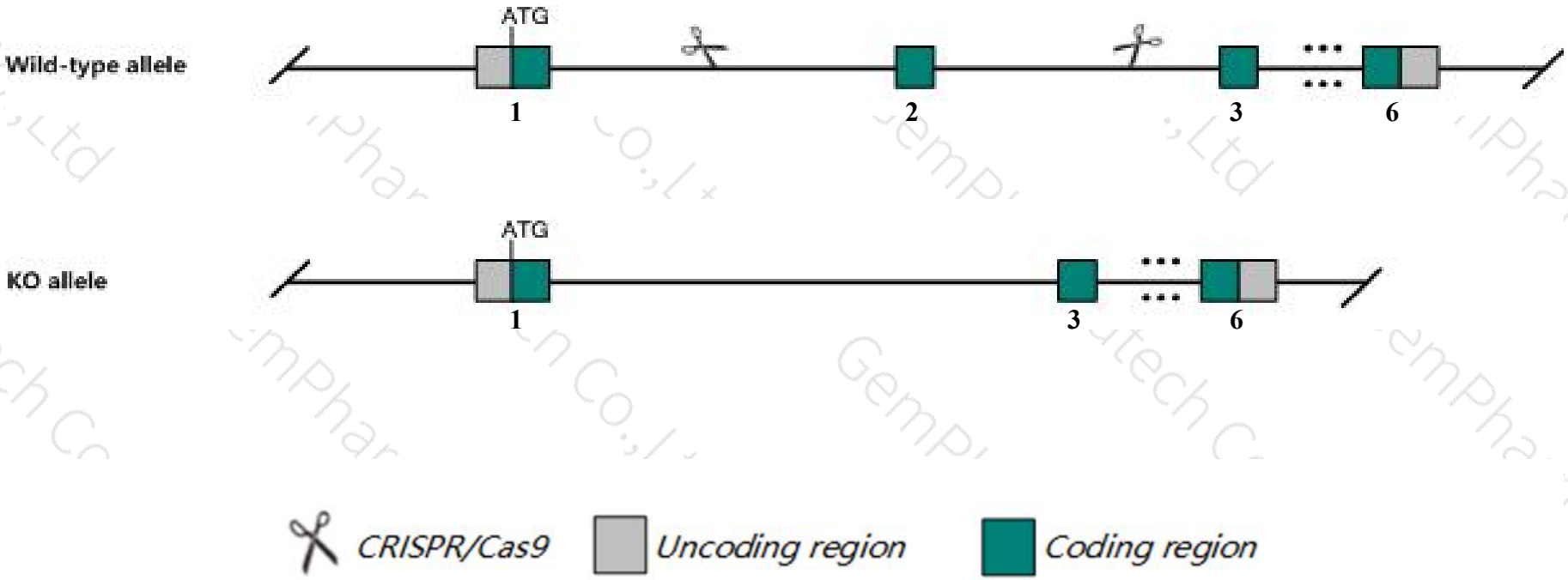
Project Overview

Project Name	***Mogat2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mogat2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Mogat2* gene has 2 transcripts. According to the structure of *Mogat2* gene, exon2 of *Mogat2-201* (ENSMUST00000064231.7) transcript is recommended as the knockout region.The region contains 179bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Mogat2* gene. The brief process is as follows: CRISPR/Cas9 syste

Notice

➢ According to the existing MGI data,Mice homozygous for a null allele exhibit resistance to diet induced obesity, hyperinsulinemia, hyperlipidemia, and steatosis with decreased lipid absorption and increased oxygen consumption when fed a high fat diet.

➢ The *Mogat2* 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）

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Mogat2 monoacylglycerol O-acyltransferase 2 [*Mus musculus* (house mouse)]

Gene ID: 233549, updated on 12-Aug-2019

Summary

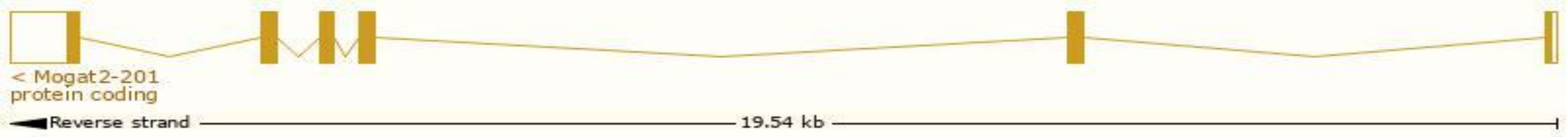
Official Symbol	Mogat2 provided by MGI
Official Full Name	monoacylglycerol O-acyltransferase 2 provided by MGI
Primary source	MGI:MGI:2663253
See related	Ensembl:ENSMUSG00000052396
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	MGAT2; Mgat1l; DGAT2L5
Expression	Biased expression in duodenum adult (RPKM 179.6), large intestine adult (RPKM 123.9) and 5 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

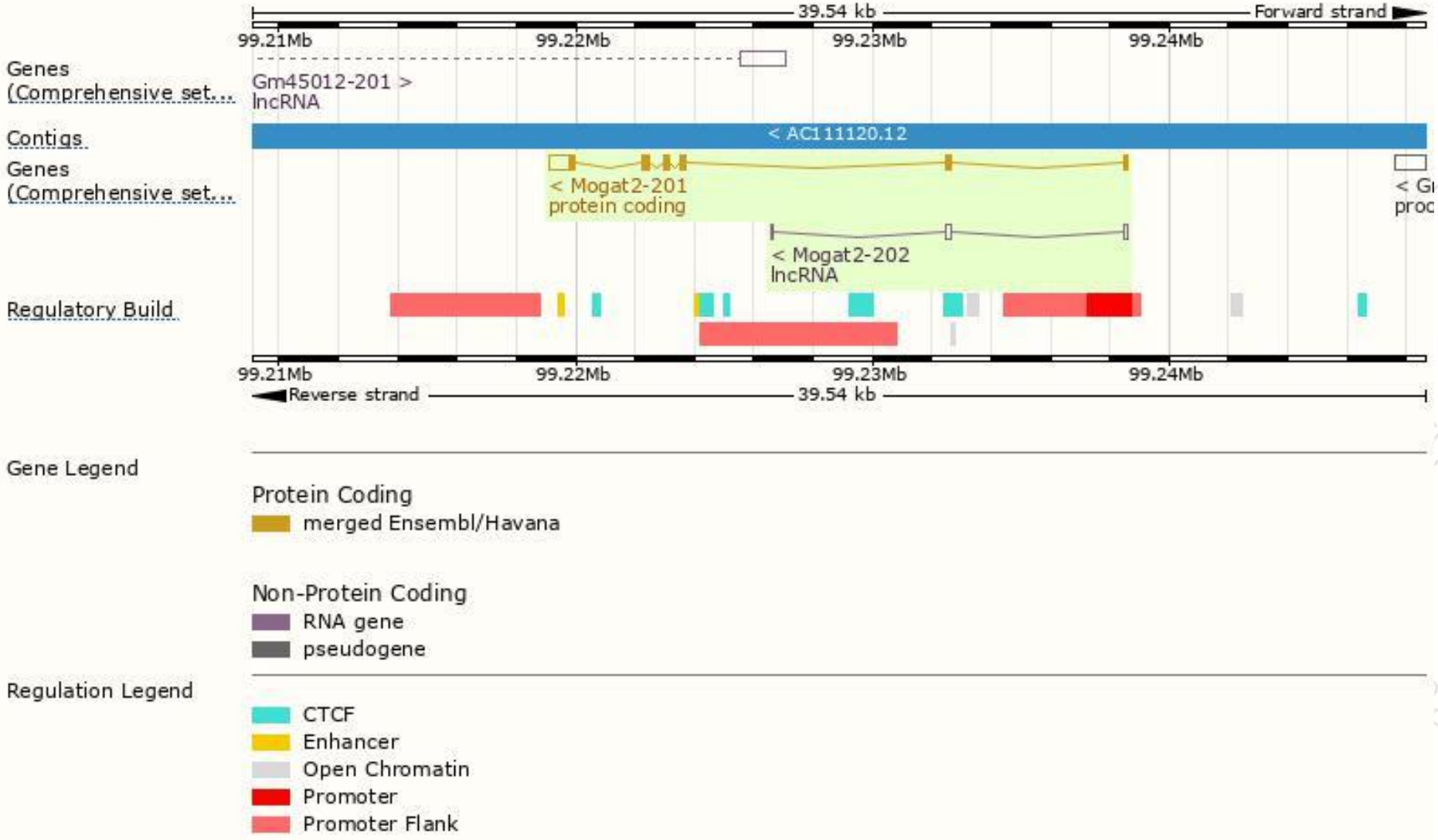
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mogat2-201	ENSMUST00000064231.7	1780	334aa	Protein coding	CCDS21478	Q80W94	TSL:1 GENCODE basic APPRIS P1
Mogat2-202	ENSMUST00000132343.1	354	No protein	lncRNA	-	-	TSL:3

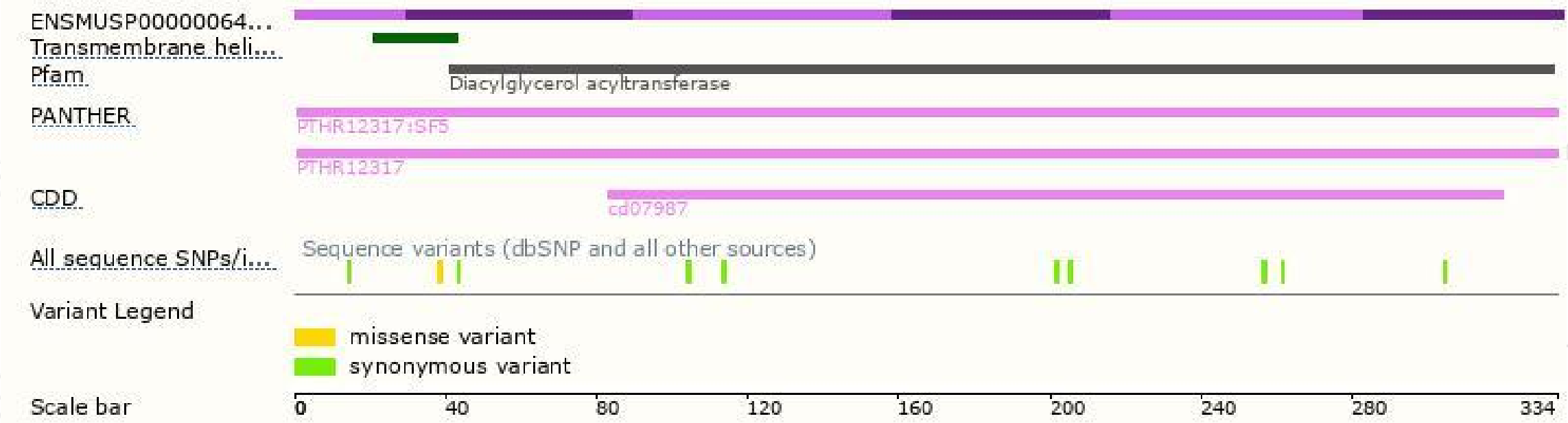
The strategy is based on the design of *Mogat2-201* transcript,The transcription is shown below



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/).

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

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