Slc27a5 Cas9-CKO Strategy

Designer: Huimin Su

Reviewer: Ruirui Zhang

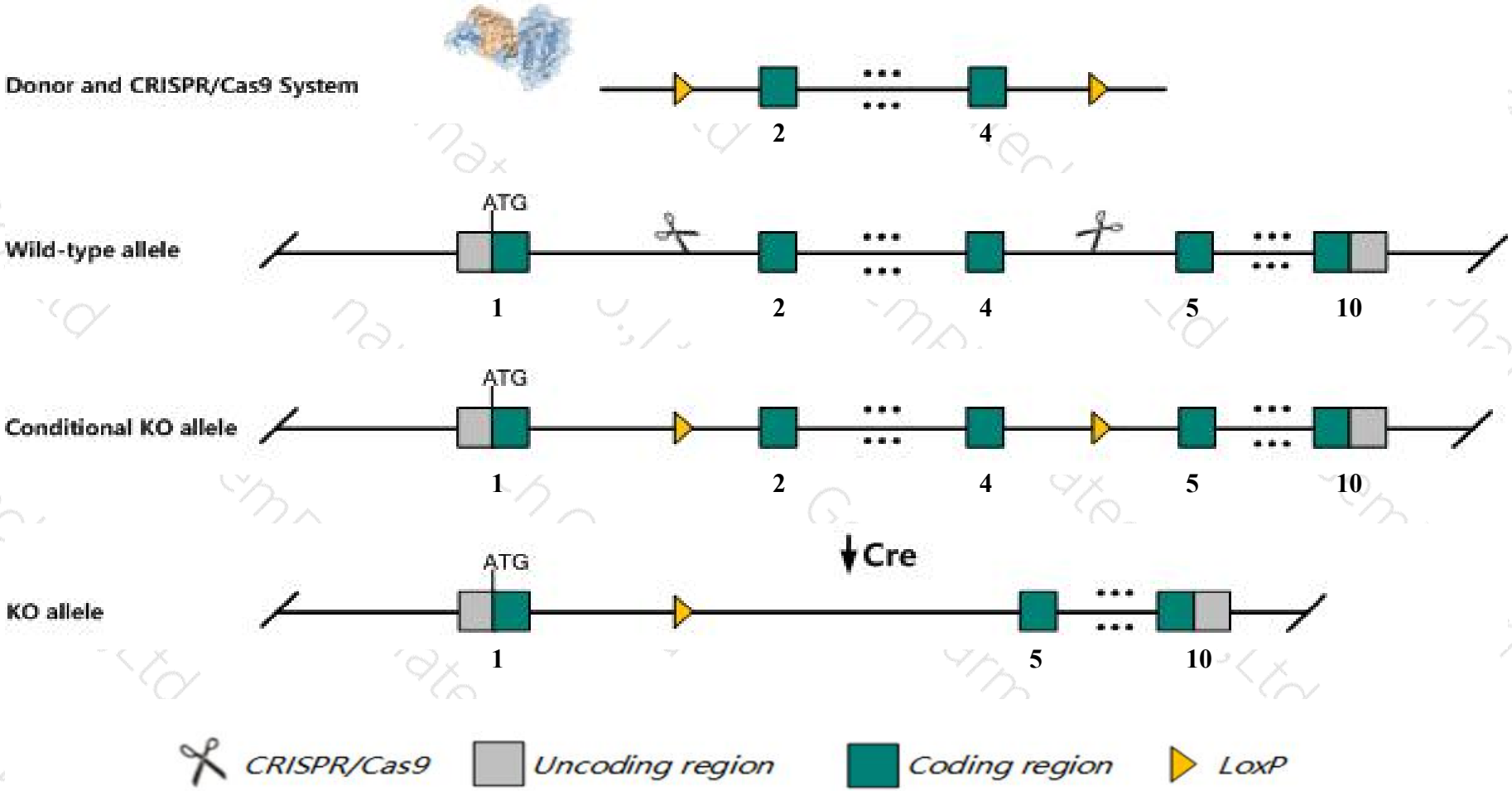
Design Date: 2020-3-12

Project Overview

Project Name	***Slc27a5***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc27a5* gene. The schematic diagram is as follows:



Technical routes

- The *Slc27a5* gene has 4 transcripts. According to the structure of *Slc27a5* gene, exon2-exon4 of *Slc27a5-201* (ENSMUST00000032539.13) transcript is recommended as the knockout region.The region contains 494bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc27a5* 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

➢ According to the existing MGI data, mice homozygous for a null allele exhibit altered lipid homeostasis.

➢ The *Slc27a5* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

集萃药康 GemPharmatech

Slc27a5 solute carrier family 27 (fatty acid transporter), member 5 [*Mus musculus* (house mouse)]

Gene ID: 26459, updated on 27-Feb-2020

Summary

Official Symbol	Slc27a5 provided by MGI
Official Full Name	solute carrier family 27 (fatty acid transporter), member 5 provided by MGI
Primary source	MGI:MGI:1347100
See related	Ensembl:ENSMUSG00000030382
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	FATP5; FACVL3; VLCSH2; Vlacsr; VLCS-H2
Expression	Restricted expression toward liver adult (RPKM 472.5) See more
Orthologs	human all

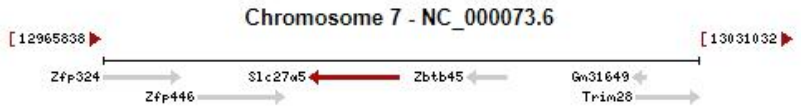
Genomic context

Location: 7; 7 A1

See Slc27a5 in Genome Data Viewer

Exon count: 10

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	7	NC_000073.6 (12988346..12998192, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.6 (13573695..13583541, complement)

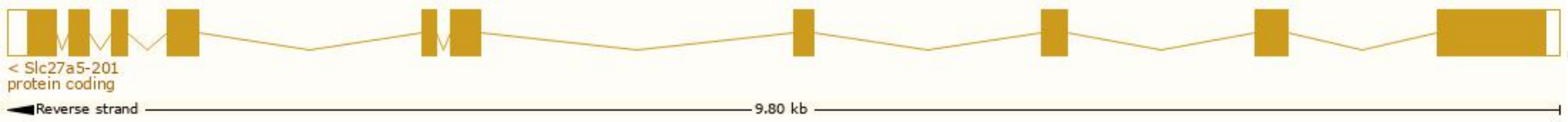


Transcript information（Ensembl）

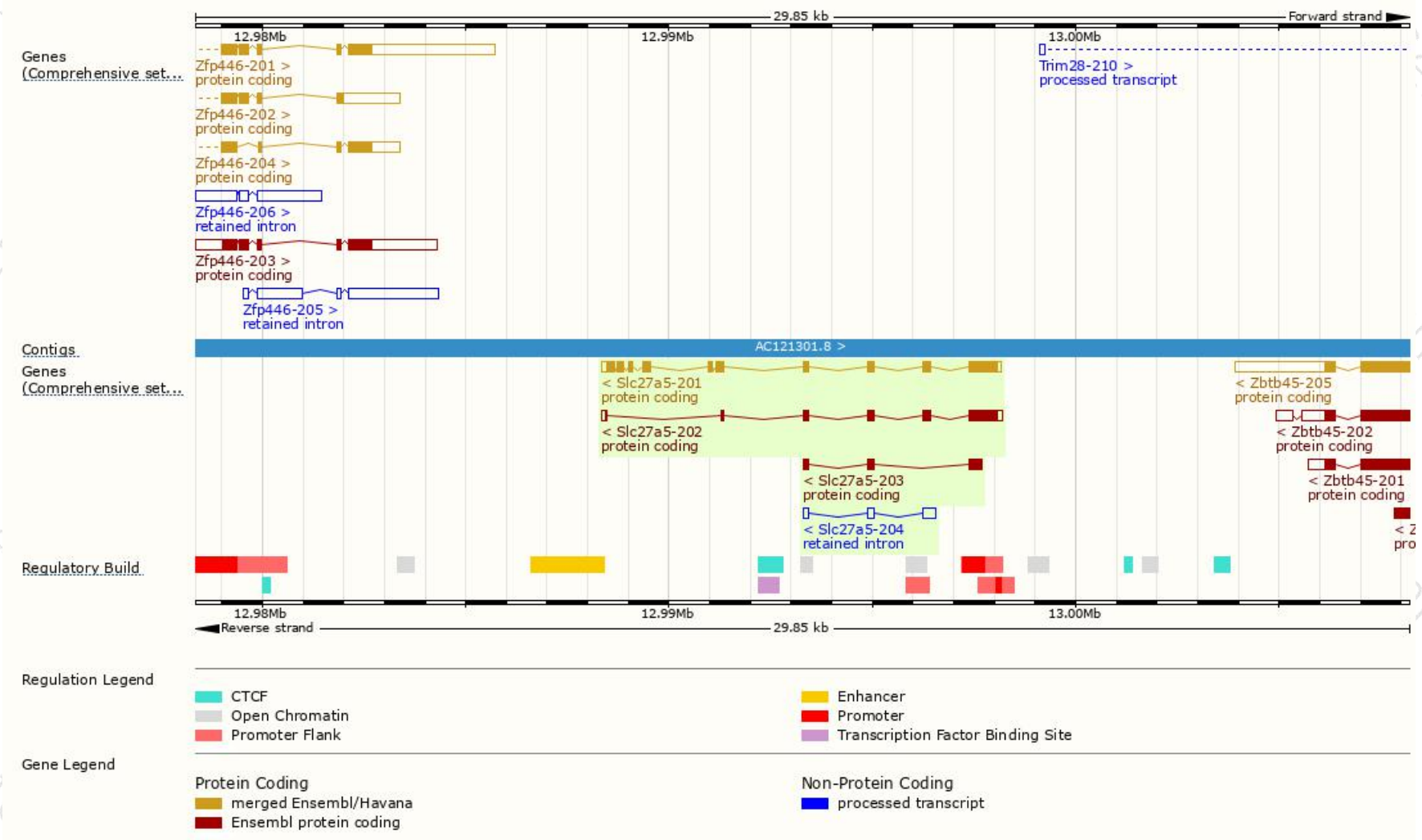
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc27a5-201	ENSMUST00000032539.13	2288	689aa	Protein coding	CCDS20821	Q4LDG0	TSL:1 GENCODE basic APPRIS P1
Slc27a5-202	ENSMUST00000120903.7	1468	418aa	Protein coding	-	E9PXV4	TSL:1 GENCODE basic
Slc27a5-203	ENSMUST00000133977.2	584	195aa	Protein coding	-	F6YDR6	CDS 5' and 3' incomplete TSL:3
Slc27a5-204	ENSMUST00000155192.1	602	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Slc27a5-201* transcript, the transcription is shown below

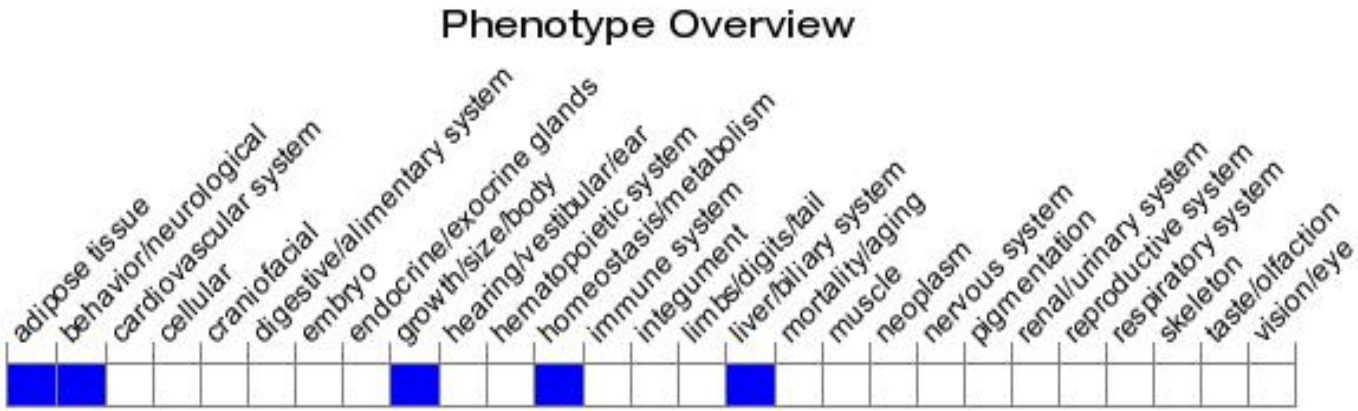


Genomic location distribution



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, mice homozygous for a null allele exhibit altered lipid homeostasis.

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