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Slc25a11 Cas9-CKO Strategy

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Reviewer: Zihe Cui

Design Date: 2022-08-29

Overview

Target Gene Name

- Slc25a11

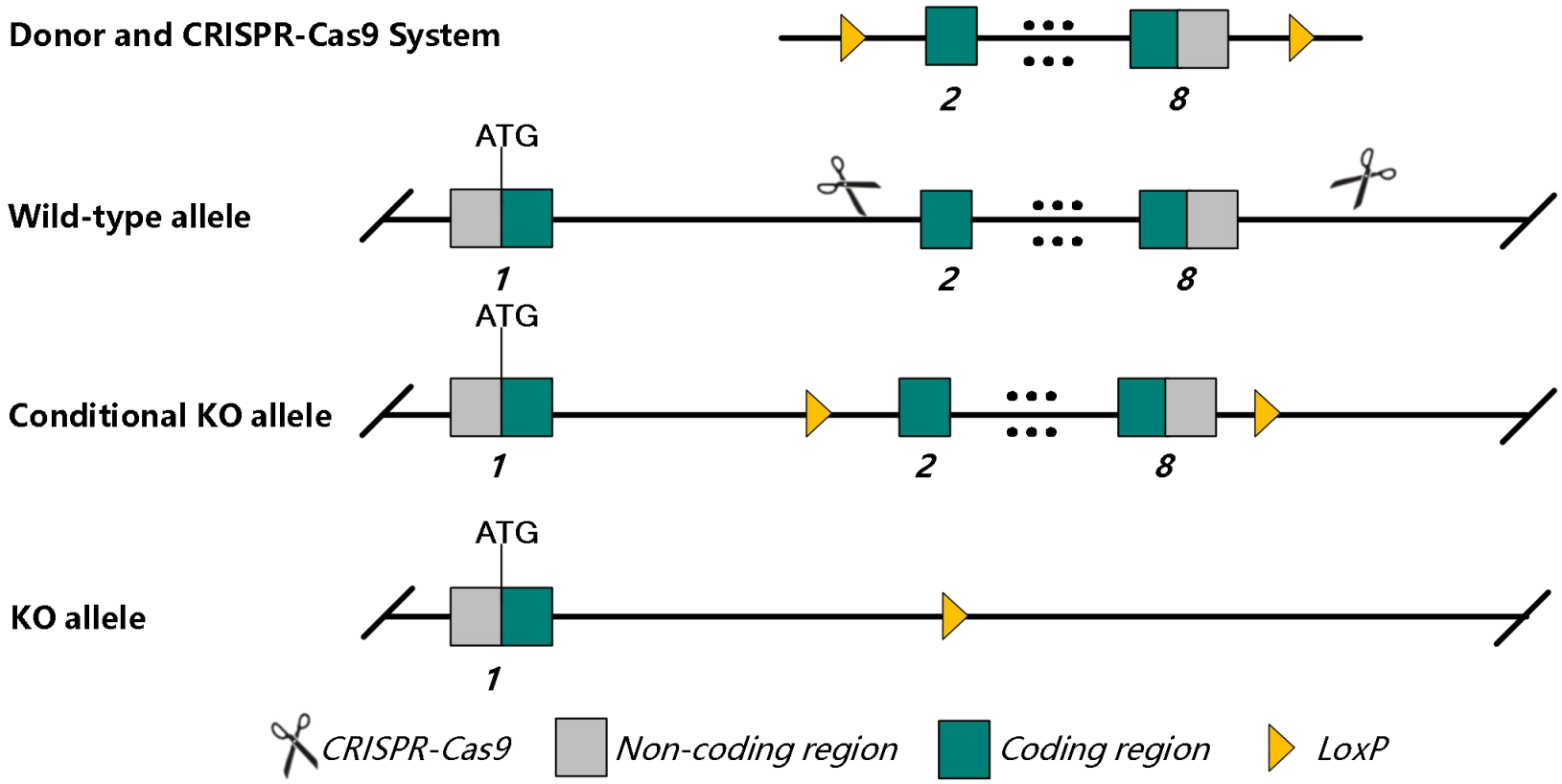
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy

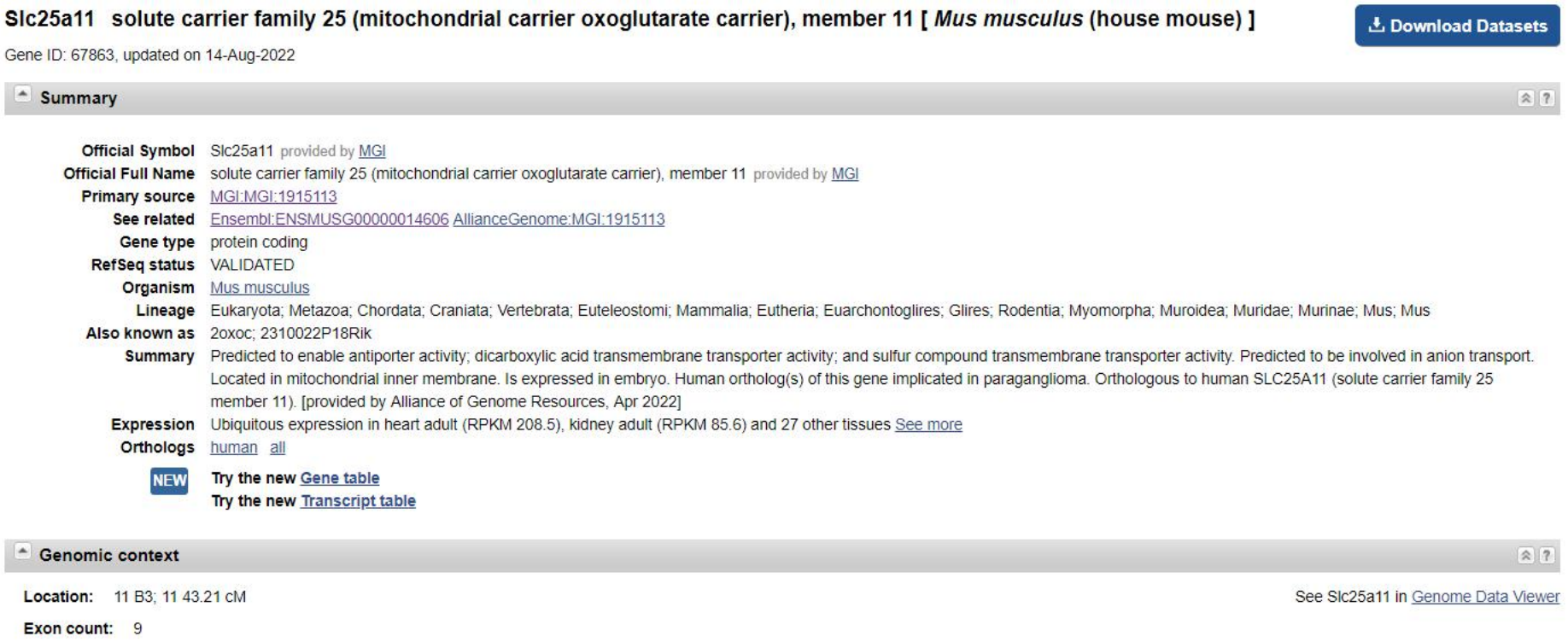


Schematic representation of CRISPR-Cas9 engineering used to edit the *Slc25a11* gene.

Technical Information

- The *Slc25a11* gene has 5 transcripts. According to the structure of *Slc25a11* gene, exon2-8 of *Slc25a11*-201 (ENSMUST00000014750.15) transcript is recommended as the knockout region. The region contains most of coding sequences. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Slc25a11* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information



Slc25a11 solute carrier family 25 (mitochondrial carrier oxoglutarate carrier), member 11 [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 67863, updated on 14-Aug-2022

Summary

Official Symbol	Slc25a11 provided by MGI
Official Full Name	solute carrier family 25 (mitochondrial carrier oxoglutarate carrier), member 11 provided by MGI
Primary source	MGI:MGI:1915113
See related	Ensembl:ENSMUSG00000014606 AllianceGenome:MGI:1915113
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	2oxoc; 2310022P18Rik
Summary	Predicted to enable antiporter activity; dicarboxylic acid transmembrane transporter activity; and sulfur compound transmembrane transporter activity. Predicted to be involved in anion transport. Located in mitochondrial inner membrane. Is expressed in embryo. Human ortholog(s) of this gene implicated in paraganglioma. Orthologous to human SLC25A11 (solute carrier family 25 member 11). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in heart adult (RPKM 208.5), kidney adult (RPKM 85.6) and 27 other tissues See more
Orthologs	human all

NEW Try the new Gene table
Try the new Transcript table

Genomic context

Location: 11 B3; 11 43.21 cM — See Slc25a11 in Genome Data Viewer

Exon count: 9

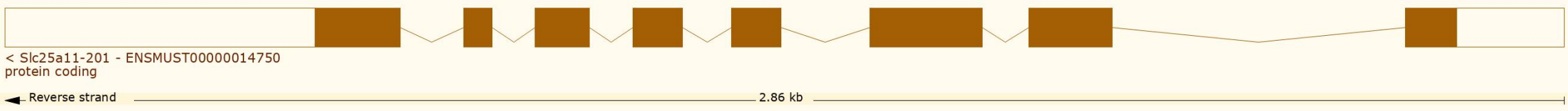
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

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

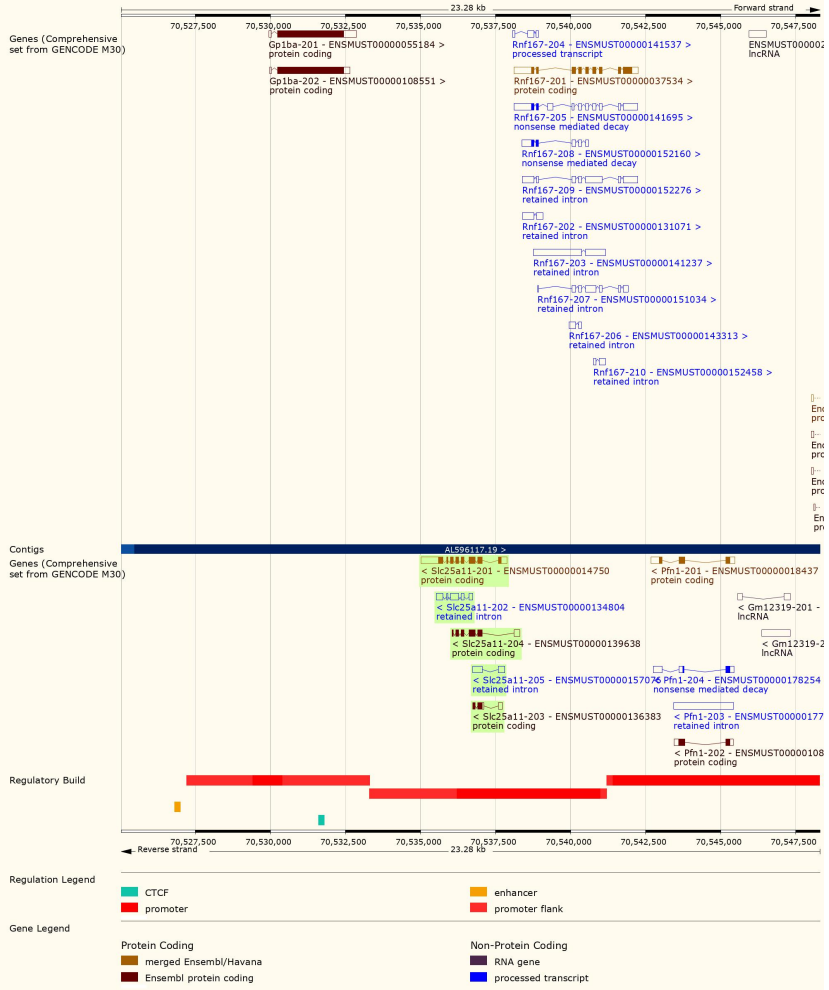
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000014750.15	Slc25a11-201	1711	314aa	Protein coding	CCDS24958	Q5SX53 Q9CR62	Ensembl Canonical GENCODE basic APPRIS P1 TSL:1
ENSMUST00000139638.2	Slc25a11-204	770	193aa	Protein coding		Q5SX46	TSL:3 CDS 3' incomplete
ENSMUST00000136383.2	Slc25a11-203	416	76aa	Protein coding		Q5SX48	TSL:3 CDS 3' incomplete
ENSMUST00000134804.2	Slc25a11-202	768	No protein	Retained intron		-	TSL:2
ENSMUST00000157076.2	Slc25a11-205	531	No protein	Retained intron		-	TSL:1

The strategy is based on the design of *Slc25a11*-201 transcript, the transcription is shown below:



Source: https://www.ensembl.org

Genomic Information



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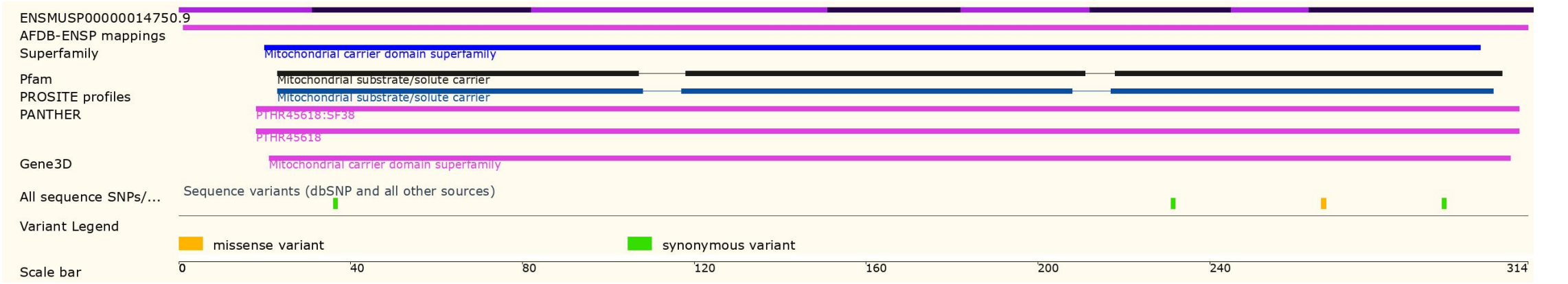
Source: : https://www.ensembl.org

Protein Information



Source: : https://www.ensembl.org

Mouse Phenotype Information (MGI)

- Homozygous knockout is embryonic lethal. Heterozygous KO reduces the tumor incidence of Kras activation mutation-induced lung tumors.

Source: https://www.informatics.jax.org

Important Information

- Accoding of MGI, homozygous knockout is embryonic lethal. Heterozygous KO reduces the tumor incidence of Kras activation mutation-induced lung tumors.
- The effect of *Rnf167*, *Gp1ba* and *Slc25a11*-203, *Slc25a11*-204 gene is unknown.
- Intron 1-2 (539bp) is small, and the insertion effect of loxP is unknown.
- *Slc25a11* is located on Chr11. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.