

# *Slc25a21* Cas9-KO Strategy

Designer: Xingkai Xiao

Reviewer: Xiangli Bian

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# Overview

## Target Gene Name

- *Slc25a21*

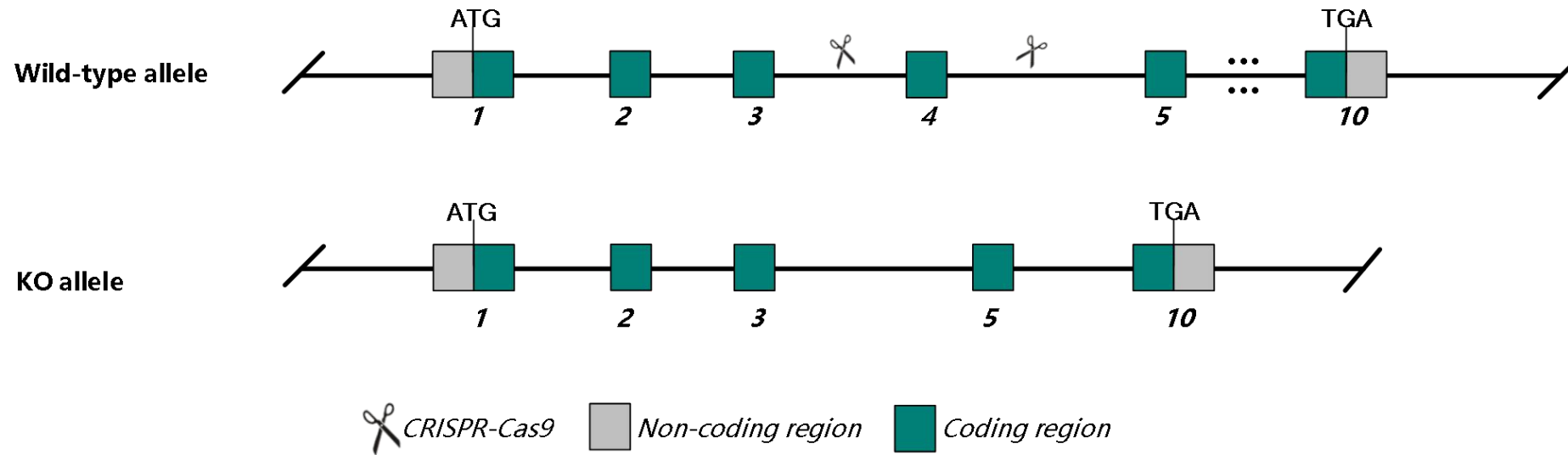
## Project Type

- Cas9-KO

## Genetic Background

- C57BL/6JGpt

# Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Slc25a21* gene.

# Technical Information

- The *Slc25a21* gene has 5 transcripts. According to the structure of *Slc25a21* gene, exon 4 of *Slc25a21*-201 (ENSMUST00000044634.12) is recommended as the knockout region. The region contains 67 bp of coding sequence. Knocking out the region will result in disruption of gene function.
- In this project we use CRISPR-Cas9 technology to modify *Slc25a21* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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.

# Gene Information

**Slc25a21** solute carrier family 25 (mitochondrial oxodicarboxylate carrier), member 21 [ *Mus musculus* (house mouse) ]

Gene ID: 217593, updated on 26-Sep-2023

[Download Datasets](#)

## Summary

<b>Official Symbol</b>	Slc25a21 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	solute carrier family 25 (mitochondrial oxodicarboxylate carrier), member 21 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2445059</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000035472</a> <a href="#">AllianceGenome:MGI:2445059</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	A630030I10; 9930033G19Rik
<b>Summary</b>	Predicted to enable alpha-ketoglutarate transmembrane transporter activity. Predicted to be involved in mitochondrial alpha-ketoglutarate transmembrane transport. Located in mitochondrion. Is expressed in several structures, including integumental system; limb; liver; respiratory system; and skeleton. Human ortholog(s) of this gene implicated in mitochondrial DNA depletion syndrome. Orthologous to human SLC25A21 (solute carrier family 25 member 21). [provided by Alliance of Genome Resources, Apr 2022]
<b>Expression</b>	Biased expression in liver E14 (RPKM 5.7), liver E14.5 (RPKM 5.5) and 11 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

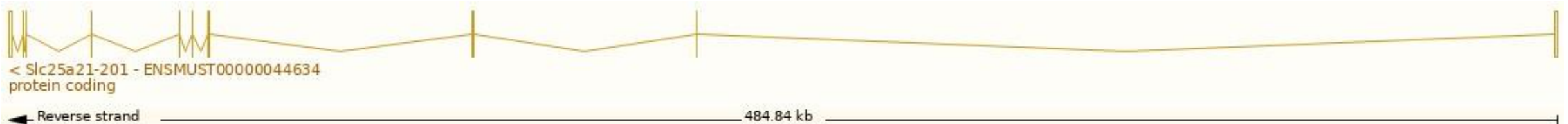
<https://www.ncbi.nlm.nih.gov/gene/217593>

# Transcript Information

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

Show/hide columns (1 hidden)							Filter	
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags	
<a href="#">ENSMUST00000217690.2</a>	Slc25a21-205	1388	<a href="#">305aa</a>	Protein coding	<a href="#">CCDS49069</a>	<a href="#">B6CI26</a>	Ensembl Canonical	GENCODE basic TSL:1
<a href="#">ENSMUST00000044634.12</a>	Slc25a21-201	2609	<a href="#">298aa</a>	Protein coding	<a href="#">CCDS25925</a>	<a href="#">Q8BZ09</a>	GENCODE basic	APPRIS P1 TSL:1
<a href="#">ENSMUST00000110680.3</a>	Slc25a21-202	918	<a href="#">305aa</a>	Protein coding	<a href="#">CCDS49069</a>	<a href="#">B6CI26</a>	GENCODE basic	TSL:5
<a href="#">ENSMUST00000160709.2</a>	Slc25a21-203	558	No protein	Protein coding CDS not defined		-	TSL:2	
<a href="#">ENSMUST00000160892.2</a>	Slc25a21-204	2116	No protein	Retained intron		-	TSL:1	

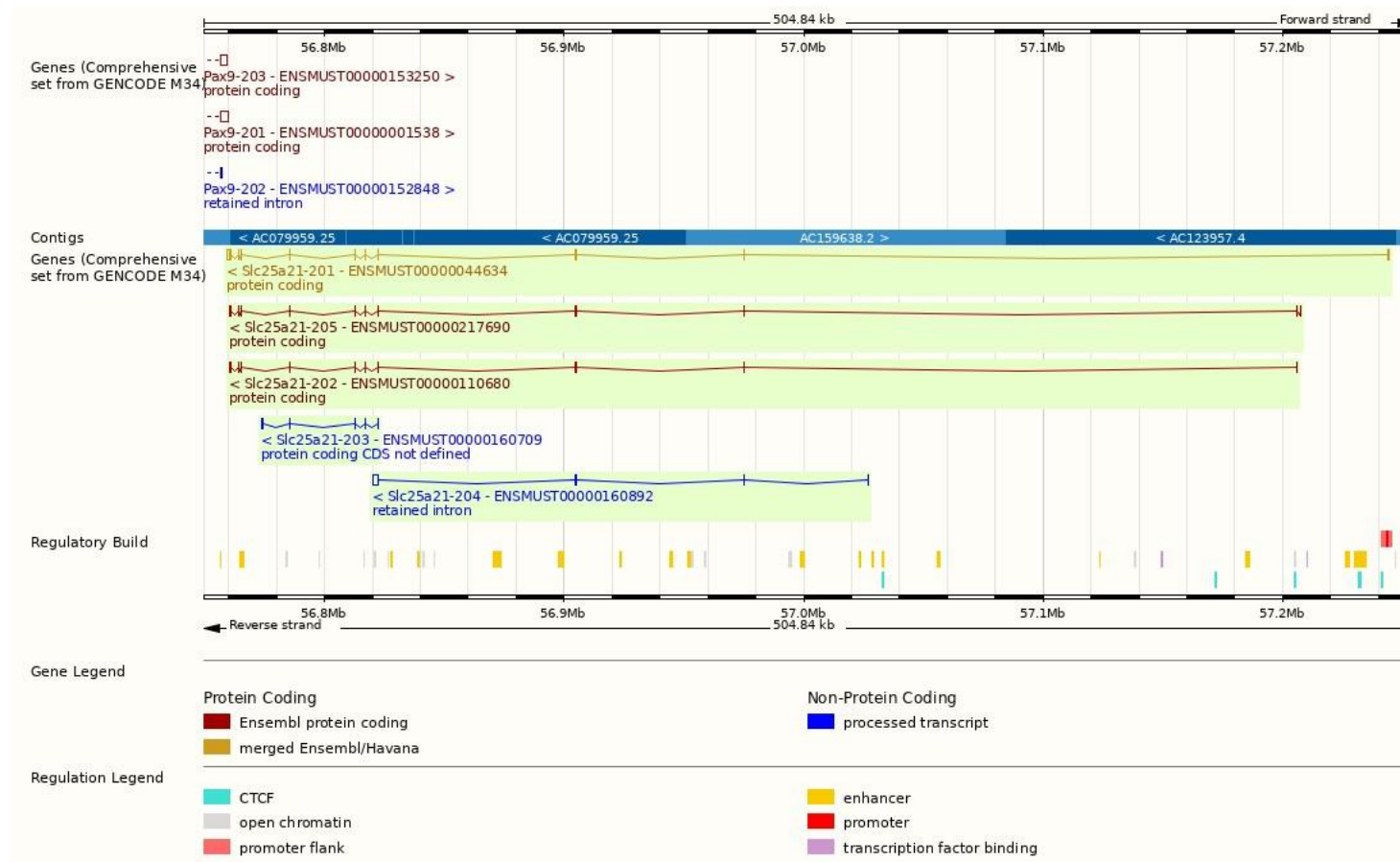
The strategy is based on the design of *Slc25a21-201* transcript, the transcription is shown below:



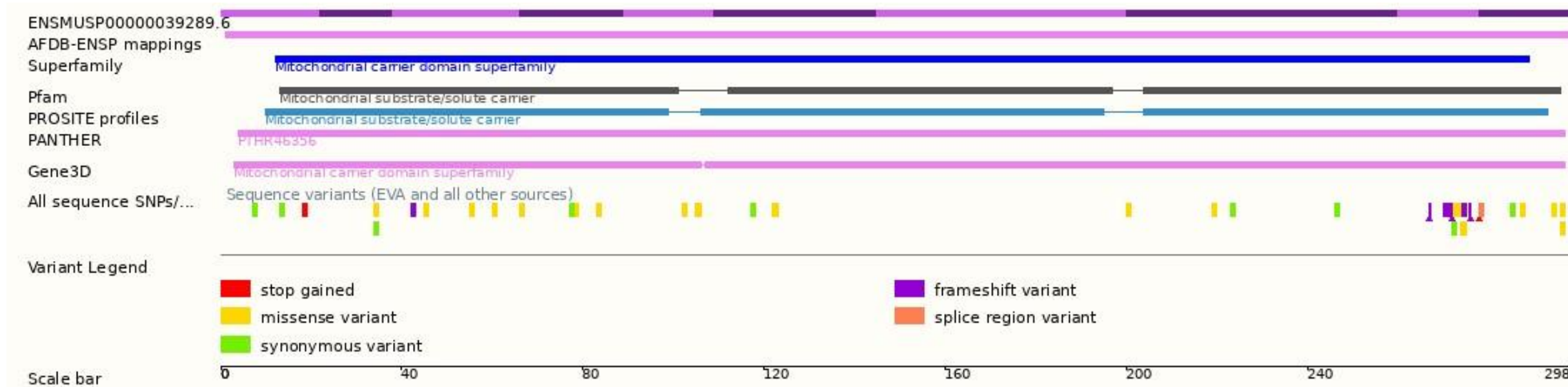
Source: <http://asia.ensembl.org/>



# Genomic Information

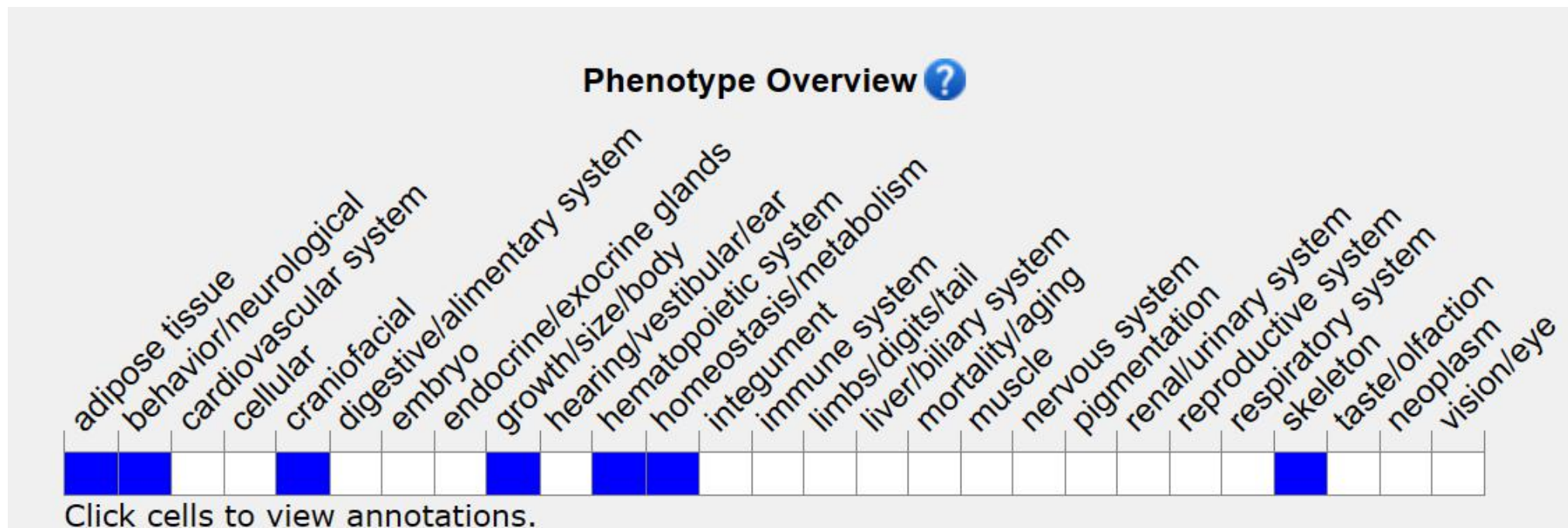


# Protein Information





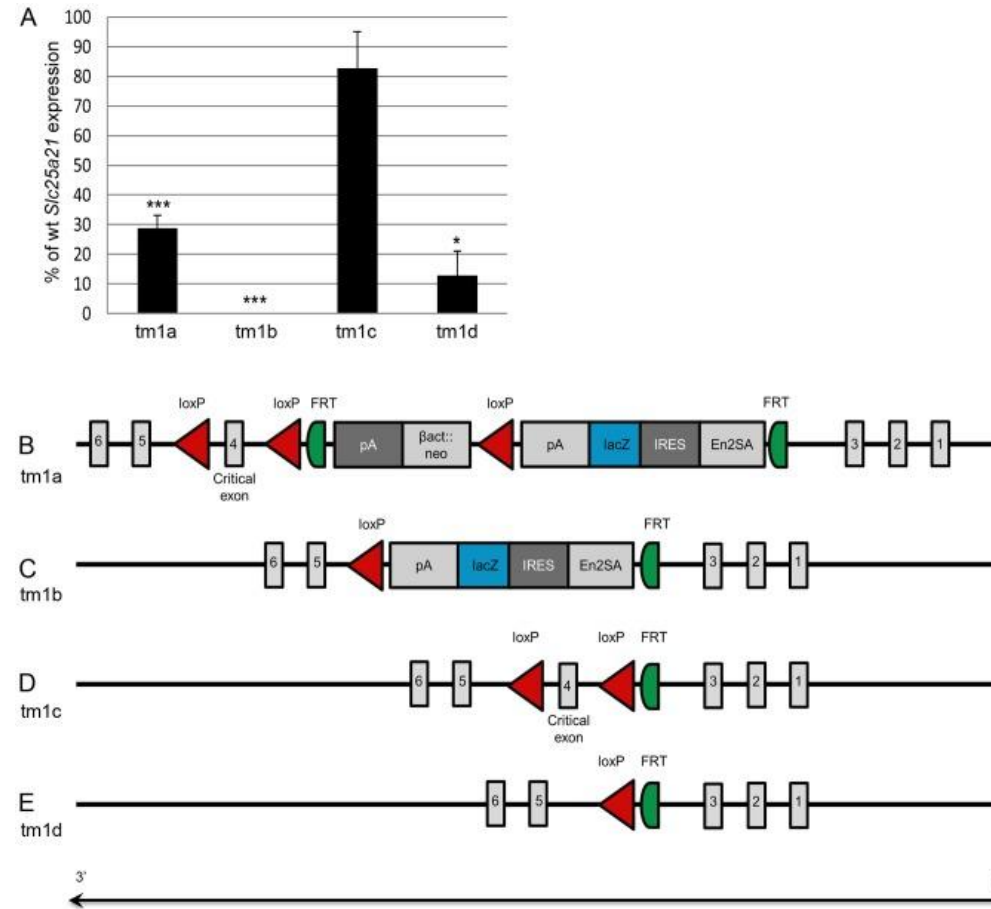
# Mouse Phenotype Information (MGI)



# Important Information

- *Slc25a21* is located on Chr 12. 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 risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Reference



[1] Targeting of *Slc25a21* is associated with orofacial defects and otitis media due to disrupted expression of a neighbouring gene.