

# Rosa26-CAG-LSL-Slc27a2-flag-polyA Cas9-KI Strategy

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# Overview

## Target Gene Name

- Slc27a2

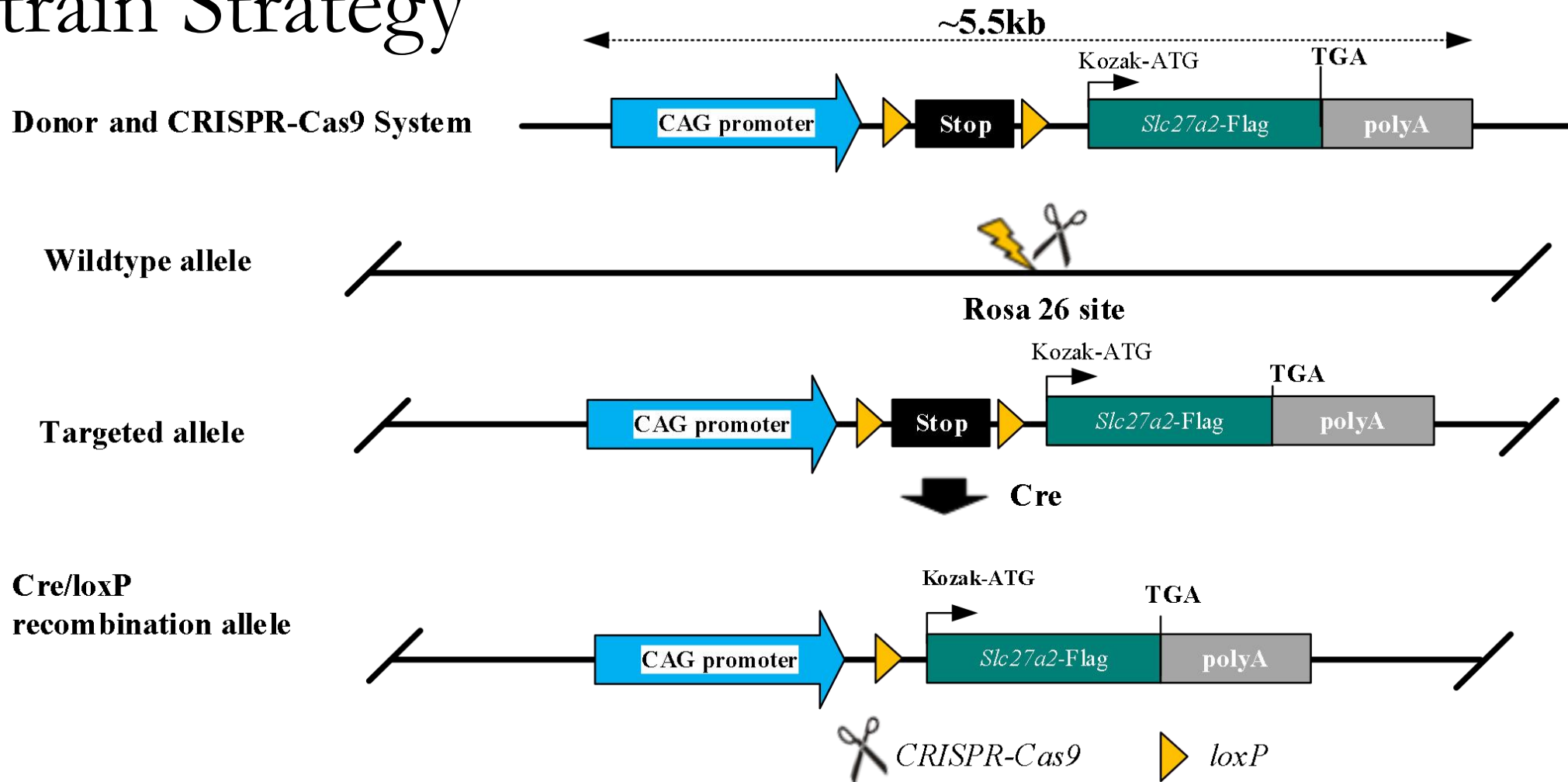
## Project Type

- Cas9-KI (Rosa26)

## Genetic Background

- C57BL/6JGpt

# Strain Strategy



This model will use CRISPR-Cas9 technology to edit the Rosa26 Site. The schematic diagram is as follows:

# Technical Information

- The *Slc27a2* gene has 4 transcripts.
- According to the structure of mouse *Slc27a2* gene, the transcript Slc27a2-201 (ENSMUST00000061491.14) was selected. The transcript Slc27a2-201 (ENSMUST00000061491.14) contains 10 exons, the translation start site ATG is located in exon 1, and the translation end site TGA is located in exon 10, encoding 620 aa.
- Rosa26 is located on the mouse chromosome 6, which is a safe site for the insertion of foreign genes. Foreign genes integrated into this site can be stably and efficiently expressed without damaging the function of endogenous genes. Combined with the use of Cre-loxP system, it can be used to build a multi-purpose conditional gene knock-in mouse model.
- This project uses CRISPR-Cas9 technology to insert CAG-LSL-Slc27a2-flag-polyA gene fragment into Rosa26 site of mice. The brief process is as follows: construct a vector in vitro, inject CRISPR-Cas9 and Donor vectors into the fertilized eggs of C57BL/6JGpt mice, and obtain F0 mice. A stable F1 generation positive mouse model was obtained by mating the correct F0 generation positive mice and C57BL/6JGpt mice verified by PCR and sequencing.

# Gene Information

**Slc27a2** solute carrier family 27 (fatty acid transporter), member 2 [ *Mus musculus* (house mouse) ]

Gene ID: 26458, updated on 5-Jan-2022

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## Summary

Official Symbol	Slc27a2 provided by <a href="#">MGI</a>
Official Full Name	solute carrier family 27 (fatty acid transporter), member 2 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1347099</a>
See related	<a href="#">Ensembl:ENSMUSG00000027359</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	VLCS; Vlac; FATP2; Vlacs; ACSVL1
Summary	Enables fatty acid ligase activity; fatty acid transmembrane transporter activity; and long-chain fatty acid transporter activity. Acts upstream of or within fatty acid transport; long-chain fatty acid metabolic process; and very long-chain fatty acid catabolic process. Located in endoplasmic reticulum; peroxisome; and plasma membrane. Is expressed in several structures, including brain; genitourinary system; liver; lung; and sensory organ. Orthologous to human SLC27A2 (solute carrier family 27 member 2). [provided by Alliance of Genome Resources, Nov 2021]
Expression	Biased expression in kidney adult (RPKM 780.2), liver adult (RPKM 522.9) and 3 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>
<b>NEW</b>	Try the new <a href="#">Gene table</a>
	Try the new <a href="#">Transcript table</a>

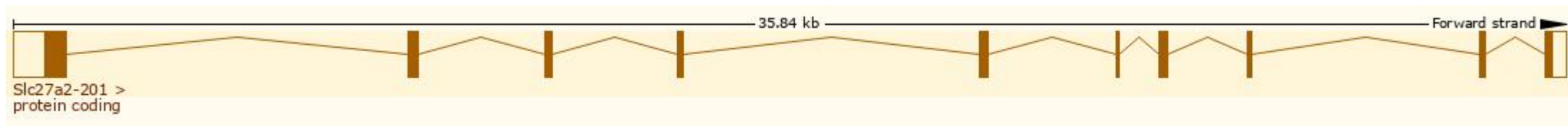
Source: <https://www.ncbi.nlm.nih.gov/>

# Transcript Information

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

Show/hide columns (1 hidden) <span>Filter</span>							
Transcript ID ▲	Name ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt Match ▲	Flags ▲
<a href="#">ENSMUST00000061491.14</a>	Slc27a2-201	2918	<a href="#">620aa</a>	Protein coding	<a href="#">CCDS16683</a>	<a href="#">O35488</a>	GENCODE basic APPRIS P1 TSL:1
<a href="#">ENSMUST00000126249.2</a>	Slc27a2-202	393	No protein	Processed transcript	-	-	TSL:5
<a href="#">ENSMUST00000141482.3</a>	Slc27a2-203	1478	<a href="#">484aa</a>	Protein coding	-	<a href="#">A2ANX6</a>	TSL:5
<a href="#">ENSMUST00000150947.2</a>	Slc27a2-204	1010	No protein	Processed transcript	-	-	TSL:5

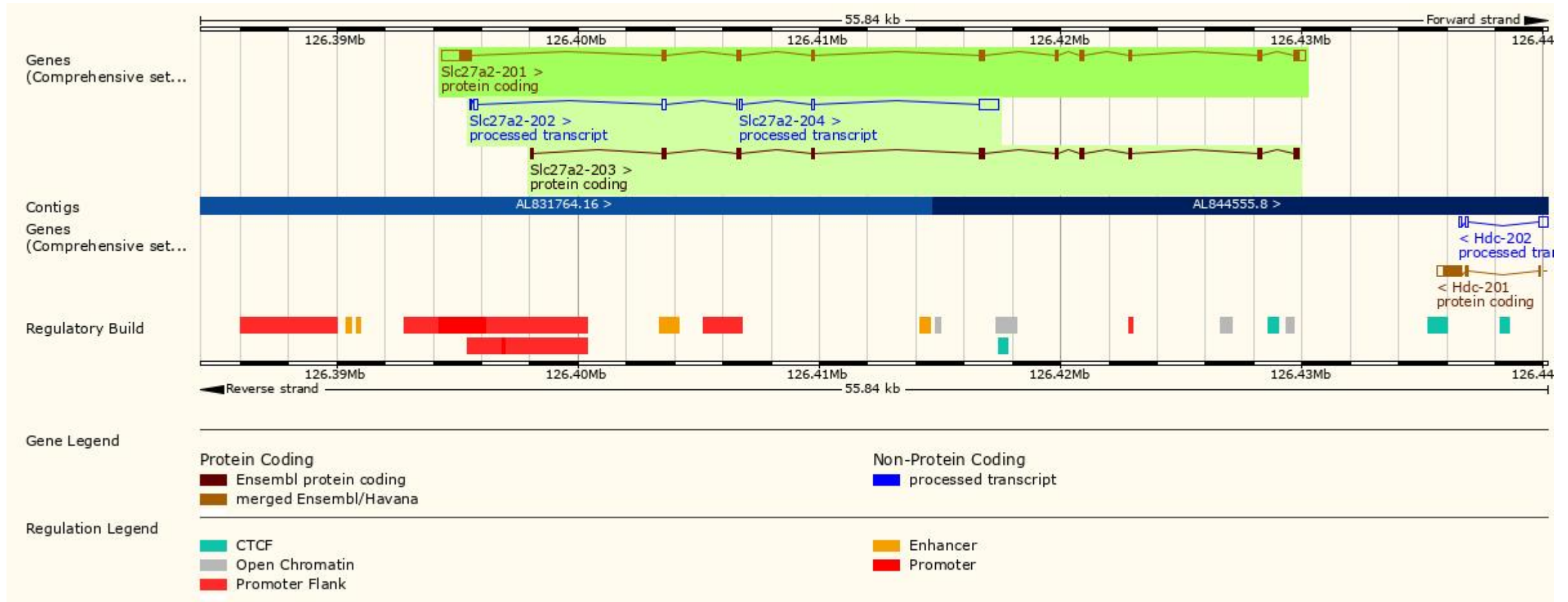
The strategy is based on the design of *Slc27a2*-201 transcript, the transcription is shown below:



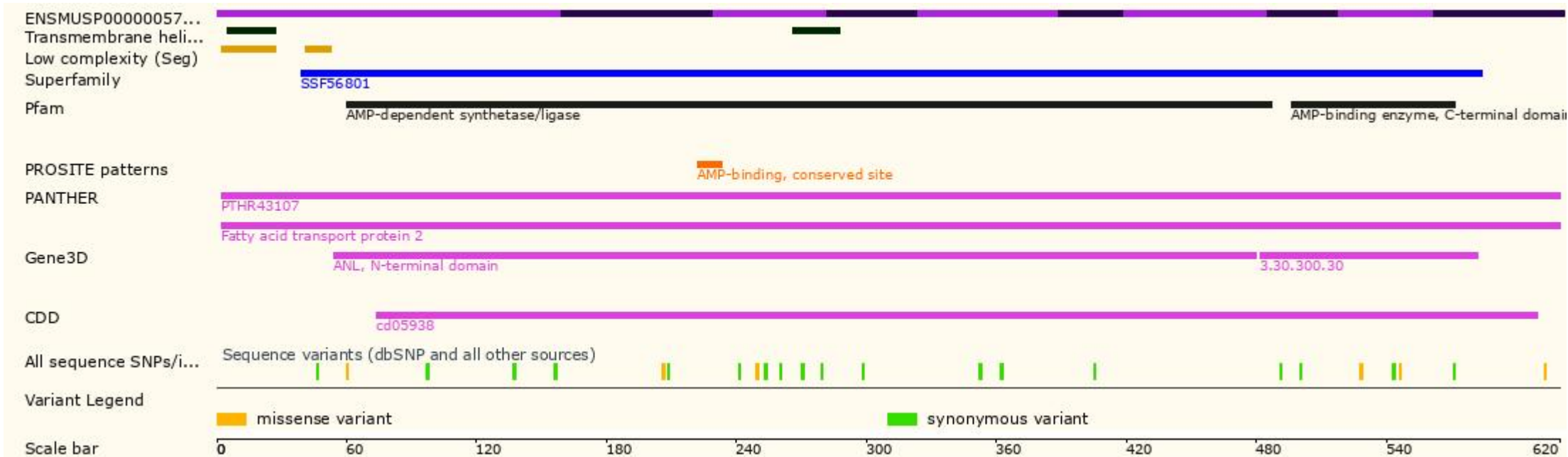
Source: <https://www.ensembl.org>



# Genomic Information

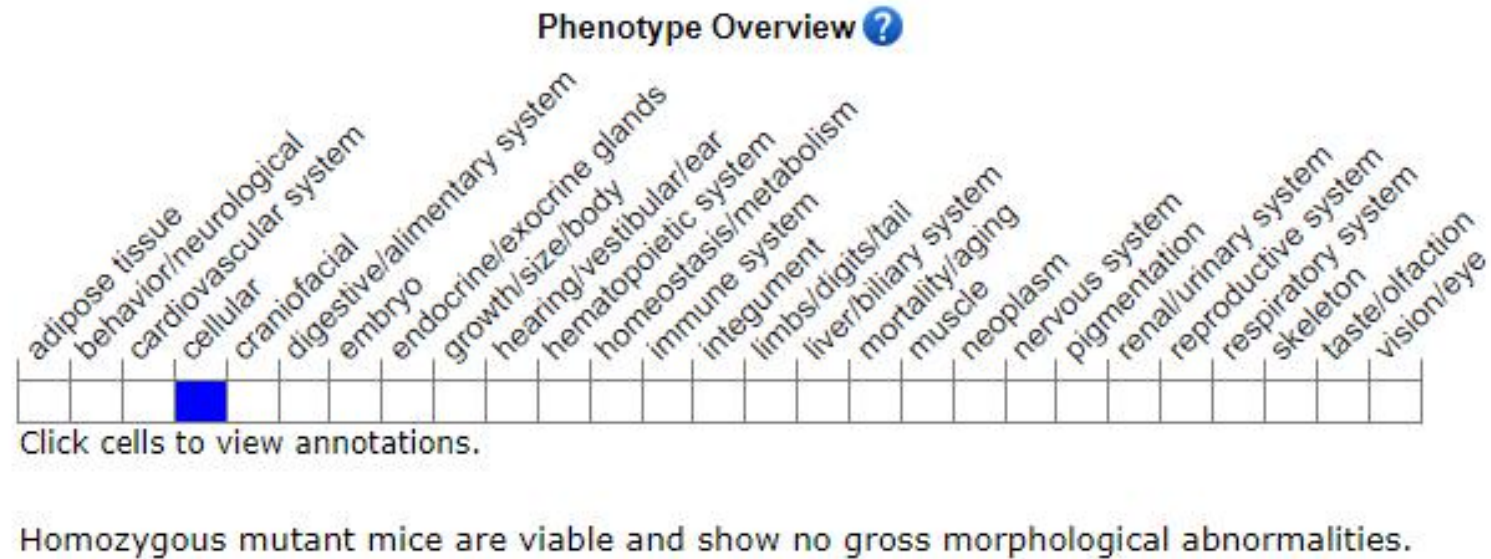


# Protein Information





# Mouse Phenotype Information (MGI)



- Homozygous mutant mice are viable and show no gross morphological abnormalities.

# Important Information

- The expression of *Slc27a2-flag* was closed before the model was mated with Cre tool mice. After mating with Cre tool mice, *Slc27a2-flag* was expressed in specific tissues/cells under the control of CAG promoter and cre tool mice.
- Rosa26 site is located on chromosome 6. If this gene is knocked into the mouse and propagated with other gene-editing mouse strains, please avoid that two genes are located on the same chromosome, or you will not be able to obtain the offspring of mice with homozygous positive double genes.
- This scheme is designed according to the gene information in the existing database. Due to the complexity of gene transcription and translation process, it can not be fully predicted at the current technical level.