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Slc29a3 Cas9-CKO Strategy

Designer: Rui Xiong

Reviewer: Longyun Hu

Design Date: 2024-03-06

Overview

Target Gene Name

- Slc29a3

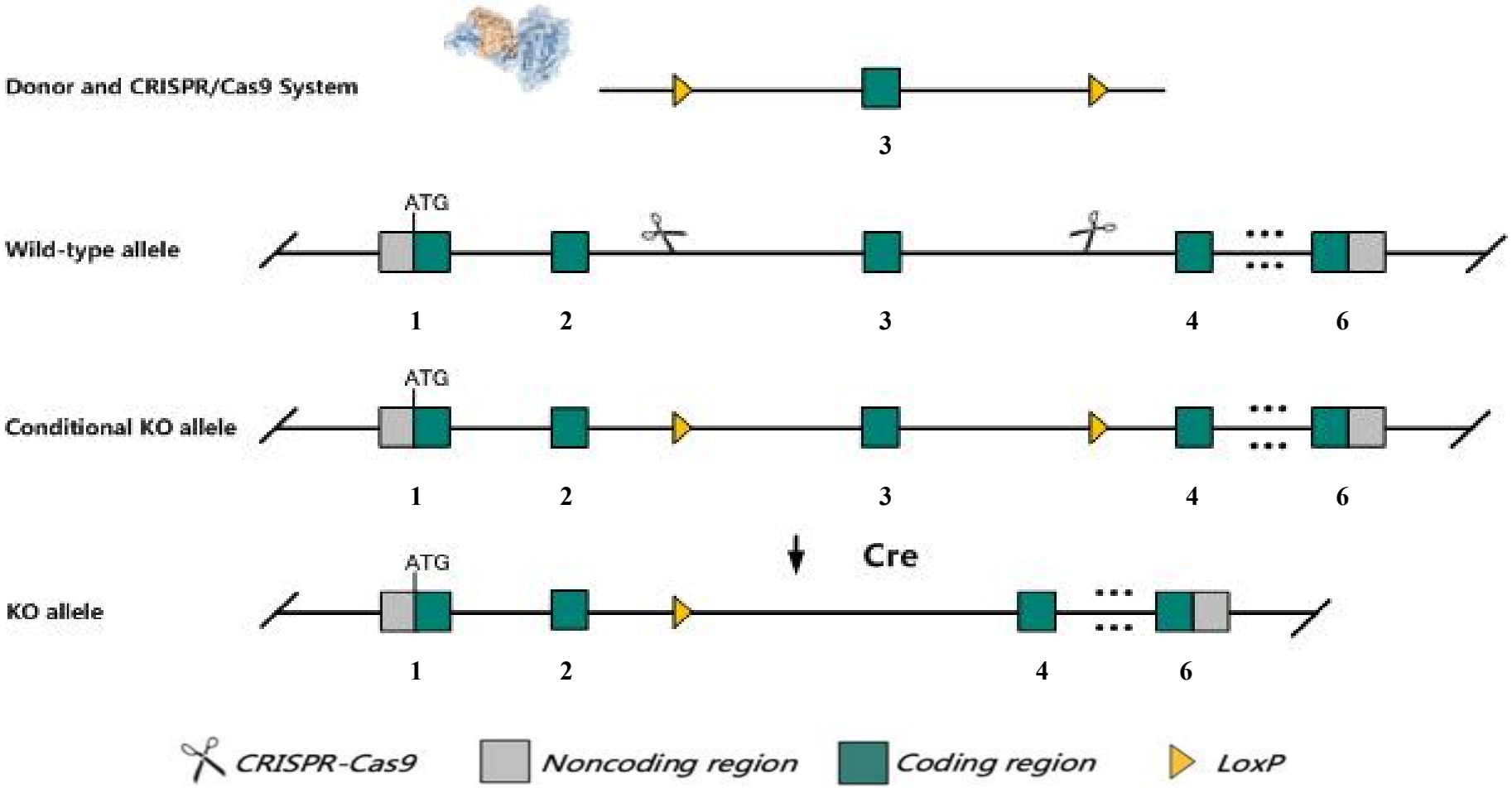
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Slc29a3* gene.

Technical Information

- The *Slc29a3* gene has 5 transcripts. According to the structure of *Slc29a3* gene, exon3 of *Slc29a3*-201 (ENSMUST00000117513.8) transcript is recommended as the knockout region. The region contains 83bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Slc29a3* 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

Slc29a3 solute carrier family 29 (nucleoside transporters), member 3 [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 71279, updated on 5-Mar-2024

Summary

Official Symbol	Slc29a3 provided by MGI
Official Full Name	solute carrier family 29 (nucleoside transporters), member 3 provided by MGI
Primary source	MGI:MGI:1918529
See related	Ensembl:ENSMUSG00000020100 AllianceGenome:MGI:1918529
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	Ent3; 4933435C21Rik
Summary	Predicted to enable nucleoside transmembrane transporter activity. Predicted to be involved in nucleoside transport. Predicted to be located in intracellular membrane-bounded organelle. Predicted to be active in Golgi apparatus and plasma membrane. Predicted to be integral component of membrane. Human ortholog(s) of this gene implicated in histiocytosis-lymphadenopathy plus syndrome. Orthologous to human SLC29A3 (solute carrier family 29 member 3). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Broad expression in testis adult (RPKM 22.2), kidney adult (RPKM 16.0) and 27 other tissues See more
Orthologs	human all

NEW Try the new Gene table
Try the new Transcript table

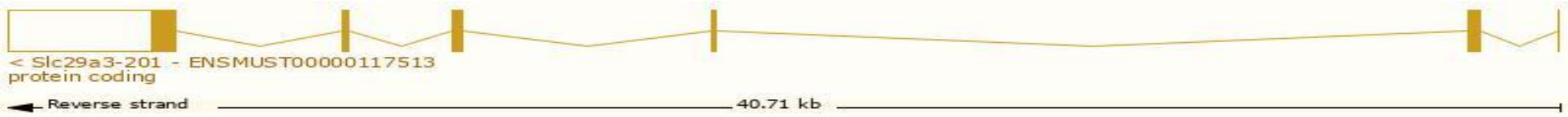
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

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

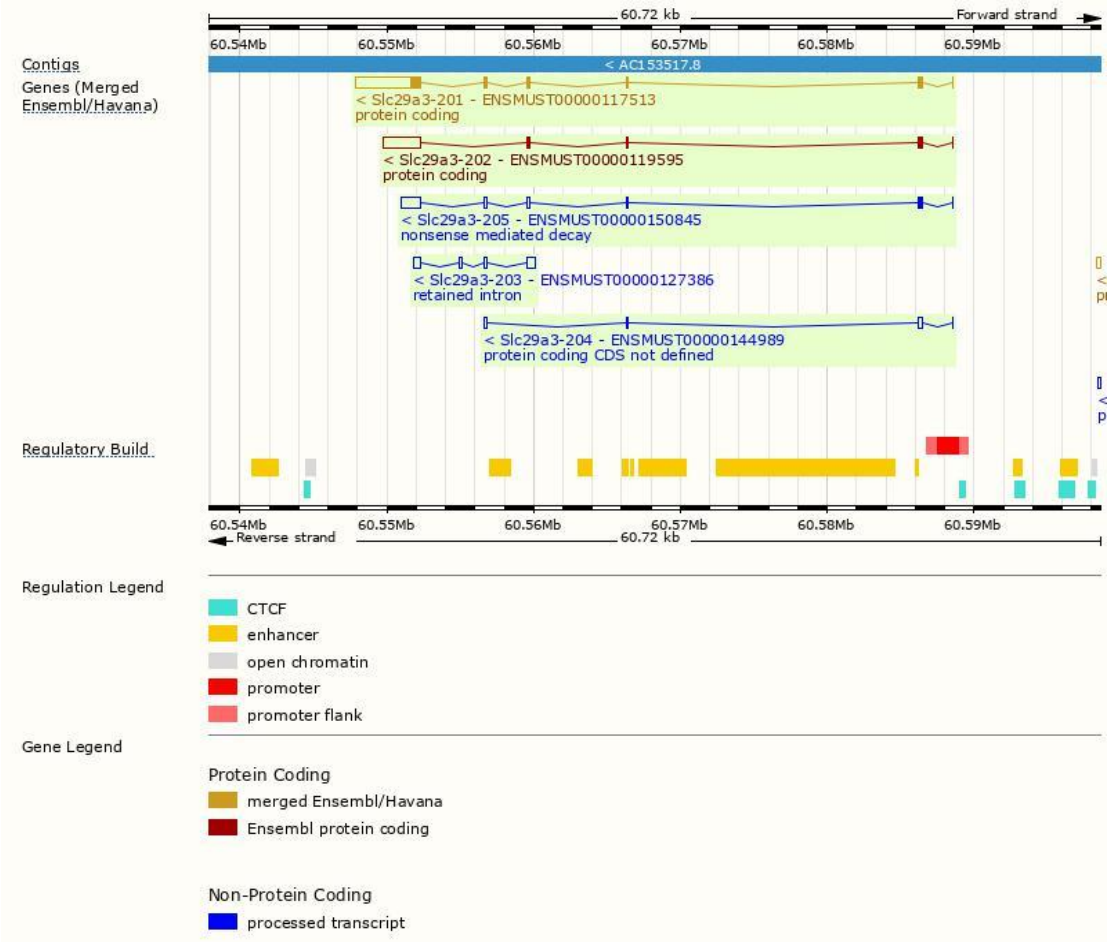
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc29a3-201	ENSMUST00000117513.8	5240	475aa	Protein coding	CCDS48571		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc29a3-202	ENSMUST00000119595.8	3123	206aa	Protein coding	-		TSL:1 , GENCODE basic ,
Slc29a3-205	ENSMUST00000150845.8	2107	156aa	Nonsense mediated decay	-		TSL:1 ,
Slc29a3-204	ENSMUST00000144989.2	606	No protein	Processed transcript	-		TSL:3 ,
Slc29a3-203	ENSMUST00000127386.8	1410	No protein	Retained intron	-		TSL:1 ,

The strategy is based on the design of *Slc29a3*-201 transcript, the transcription is shown below:



Source: https://www.ensembl.org

Genomic Information



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

Protein Information

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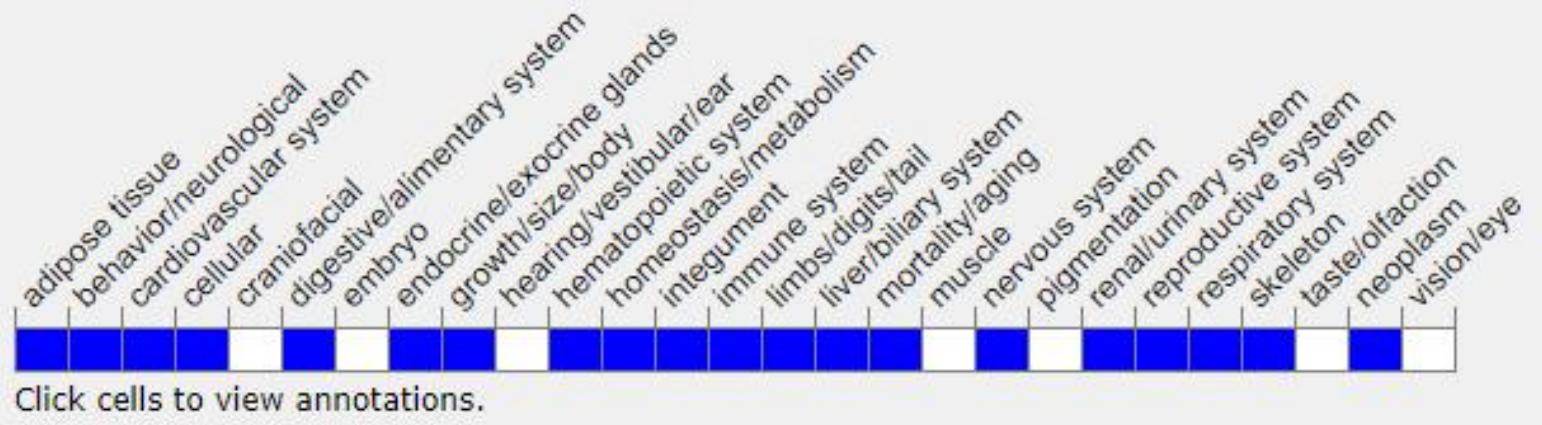
Source: : https://www.ensembl.org

Mouse Phenotype Information (MGI)



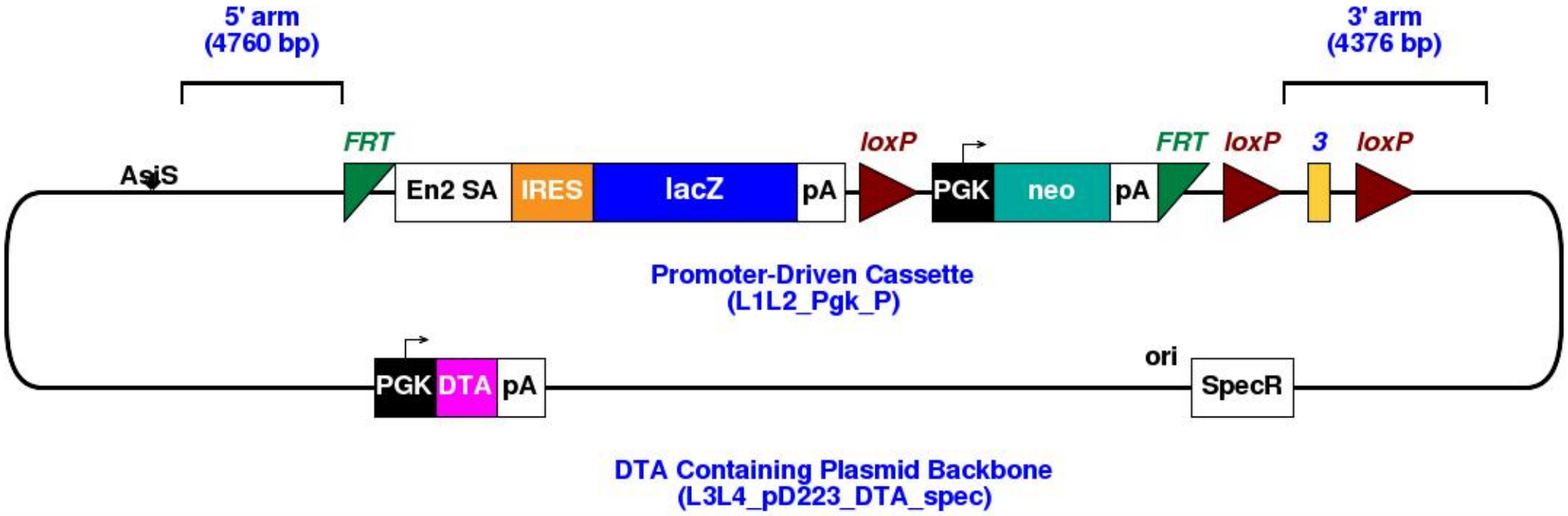
- Mice homozygous for a knock-out allele exhibit lymphadenopathy, splenomegaly, histiocytic sarcoma, and premature death associated with extramedullary hematopoiesis, increased macrophage proliferation and apoptosis and abnormal lysosome function.

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

Important Information

- According to MGI information,Mice homozygous for a knock-out allele exhibit lymphadenopathy, splenomegaly, histiocytic sarcoma, and premature death associated with extramedullary hematopoiesis, increased macrophage proliferation and apoptosis and abnormal lysosome function.
- *Slc29a3* is located on Chr10. 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.

Reference


5' arm
(4760 bp)
3' arm
(4376 bp)
AsiS
FRT
En2 SA
IRES
lacZ
pA
loxP
PGK
neo
pA
FRT
loxP
3
loxP
Promoter-Driven Cassette
(L1L2_Pgk_P)
PGK
DTA
pA
ori
SpecR
DTA Containing Plasmid Backbone
(L3L4_pD223_DTA_spec)