

Slc15a4 Cas9-CKO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

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Project Overview

Project Name

Slc15a4

Project type

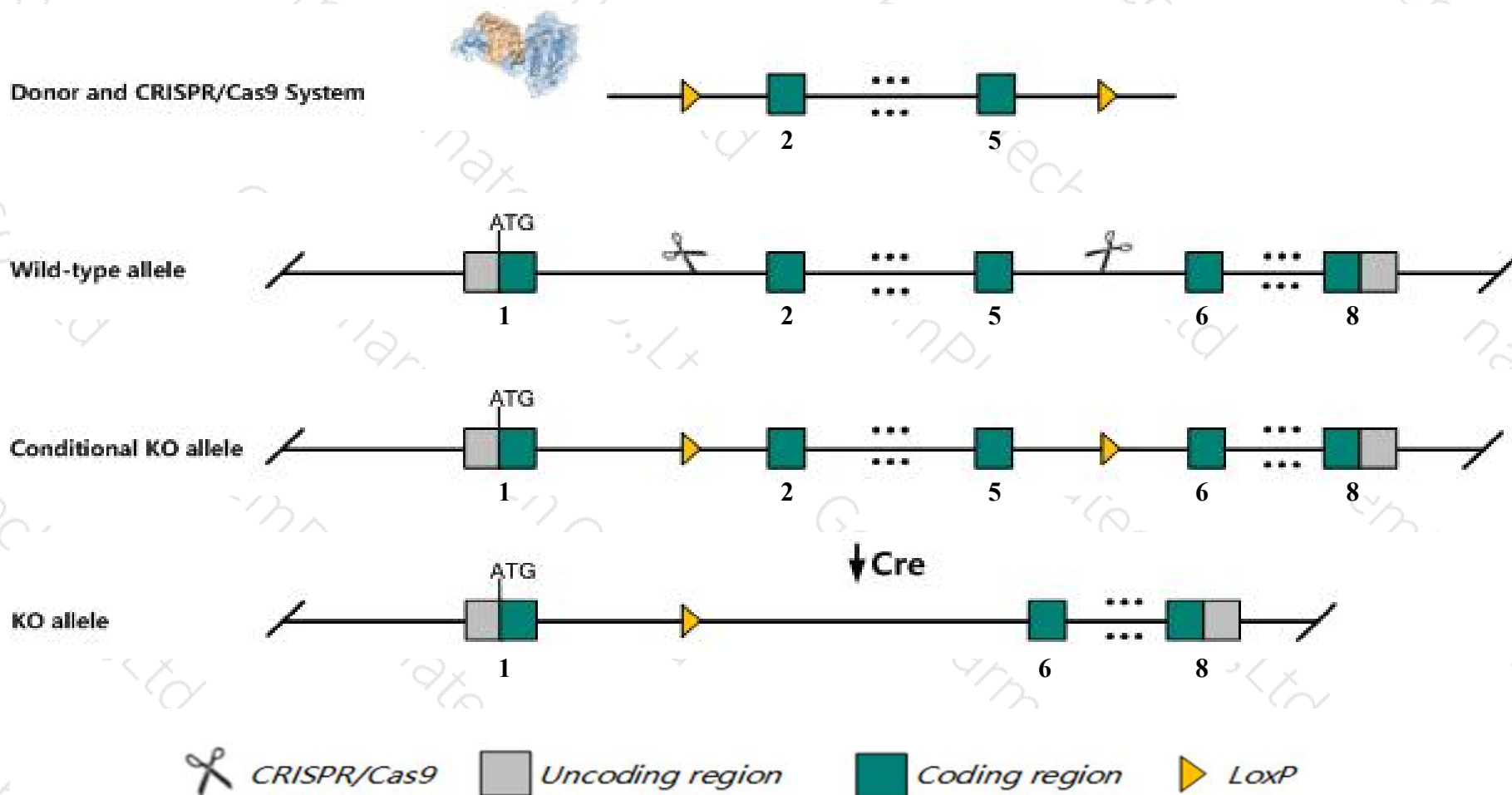
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc15a4* gene. The schematic diagram is as follows:



Technical routes

- The *Slc15a4* gene has 11 transcripts. According to the structure of *Slc15a4* gene, exon2-exon5 of *Slc15a4-201* (ENSMUST00000031367.14) transcript is recommended as the knockout region. The region contains 706bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slc15a4* 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.

- According to the existing MGI data, Mice homozygous for an ENU-induced mutation display abrogation of both Toll-like receptor (TLR)-induced type I IFN and proinflammatory cytokine production by plasmacytoid dendritic cells. Conventional dendritic cells respond normally to TLR ligands.
- The *Slc15a4* gene is located on the Chr5. 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)

Slc15a4 solute carrier family 15, member 4 [Mus musculus (house mouse)]

Gene ID: 100561, updated on 3-Feb-2019

Summary



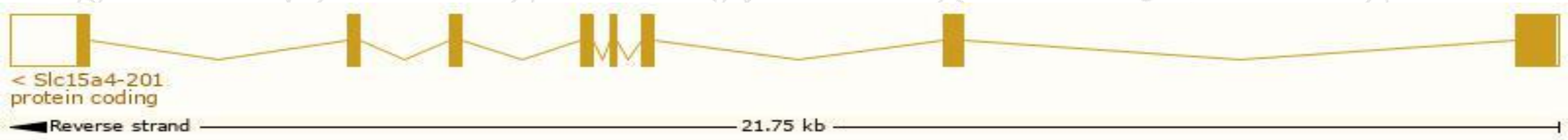
Official Symbol	Slc15a4 provided by MGI
Official Full Name	solute carrier family 15, member 4 provided by MGI
Primary source	MGI:MGI:2140796
See related	Ensembl:ENSMUSG00000029416
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA987064, AW742963, C130069N12Rik, PHT1, PTR4
Expression	Ubiquitous expression in spleen adult (RPKM 27.6), mammary gland adult (RPKM 16.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

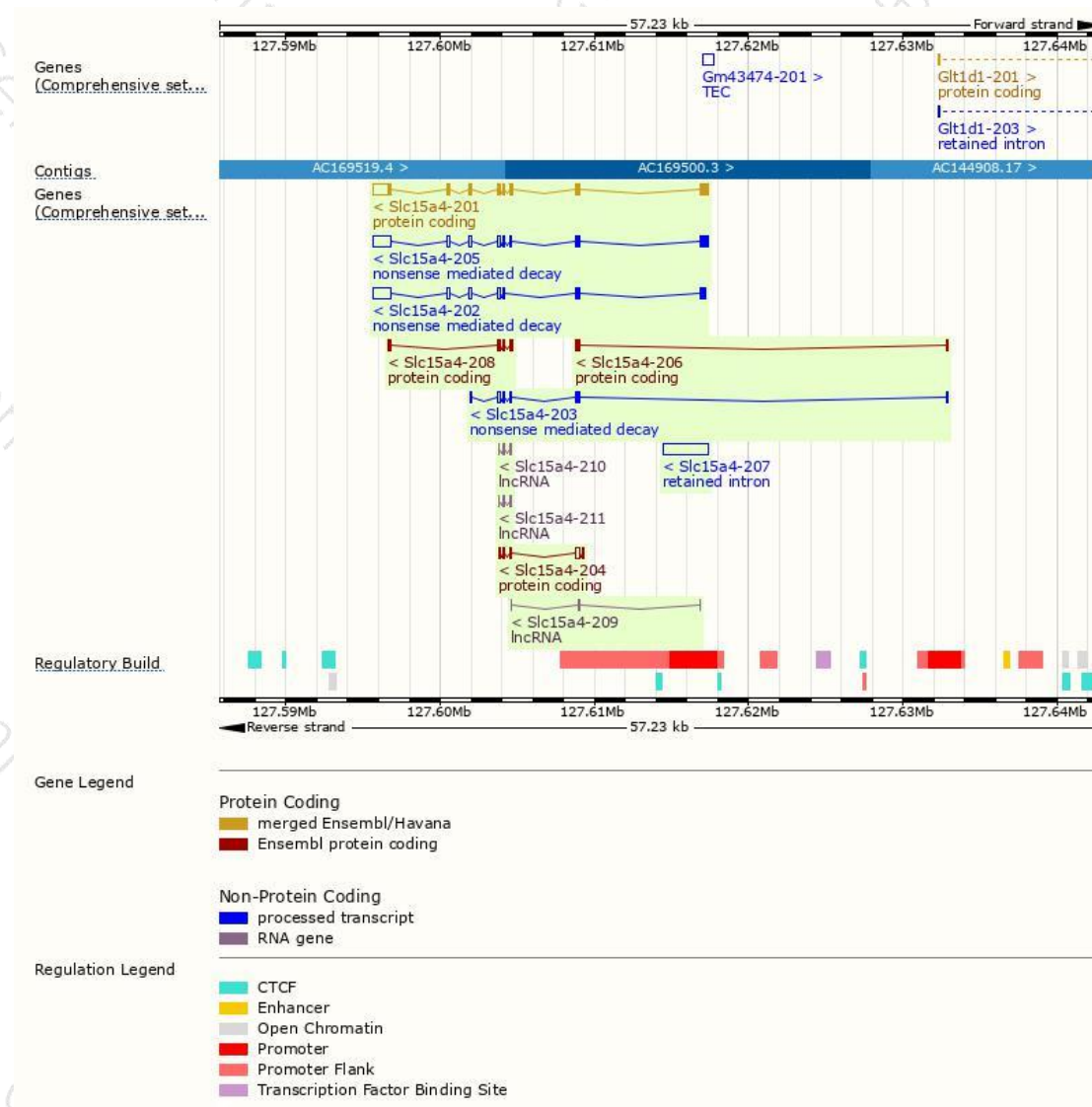
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc15a4-201	ENSMUST00000031367.14	2732	574aa	Protein coding	CCDS19688	Q91W98	TSL:1 GENCODE basic APPRIS P1
Slc15a4-204	ENSMUST00000152727.1	679	81aa	Protein coding	-	D3Z4X0	CDS 3' incomplete TSL:3
Slc15a4-208	ENSMUST00000198486.4	507	169aa	Protein coding	-	A0A0G2JDS1	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Slc15a4-206	ENSMUST00000155321.1	333	105aa	Protein coding	-	D3Z5E9	CDS 3' incomplete TSL:3
Slc15a4-205	ENSMUST00000153832.7	2673	296aa	Nonsense mediated decay	-	D6RDC2	TSL:1
Slc15a4-202	ENSMUST00000124569.7	2370	246aa	Nonsense mediated decay	-	F6QFB4	CDS 5' incomplete TSL:5
Slc15a4-203	ENSMUST00000144603.5	779	127aa	Nonsense mediated decay	-	F7AZ26	CDS 5' incomplete TSL:3
Slc15a4-210	ENSMUST00000199810.1	219	No protein	Processed transcript	-	-	TSL:1
Slc15a4-209	ENSMUST00000198727.1	200	No protein	Processed transcript	-	-	TSL:1
Slc15a4-211	ENSMUST00000200212.4	166	No protein	Processed transcript	-	-	TSL:1
Slc15a4-207	ENSMUST00000182841.1	2936	No protein	Retained intron	-	-	TSL:NA

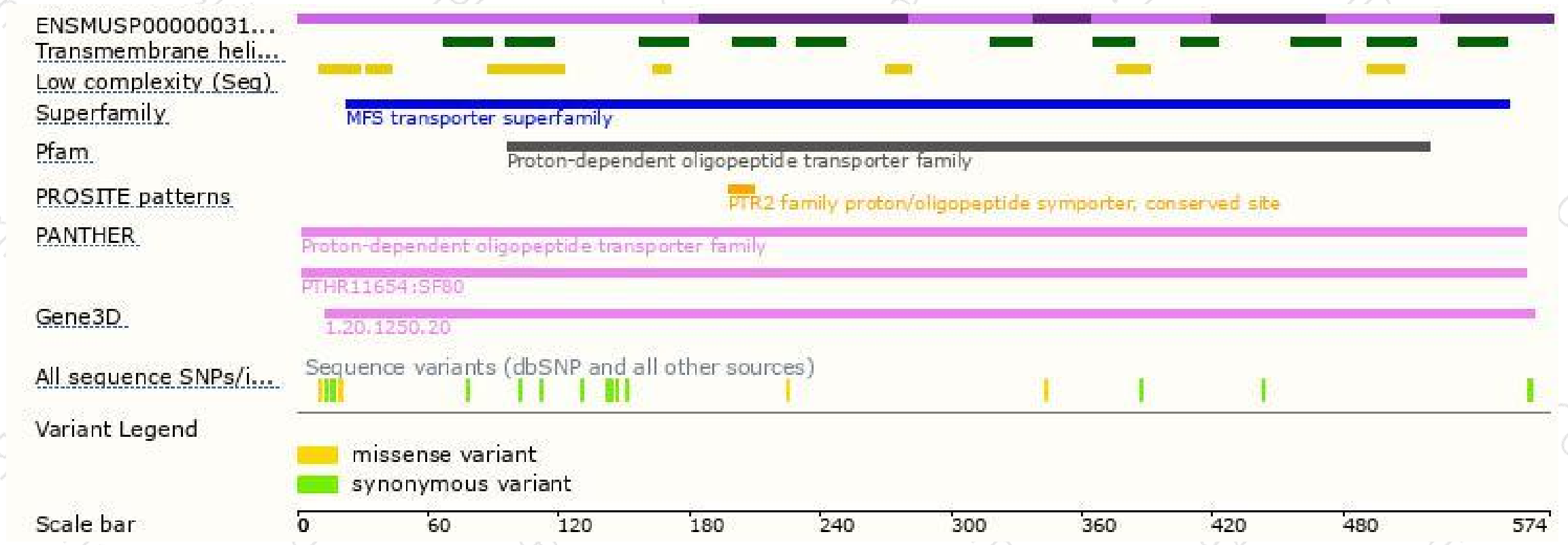
The strategy is based on the design of *Slc15a4-201* transcript,The transcription is shown below



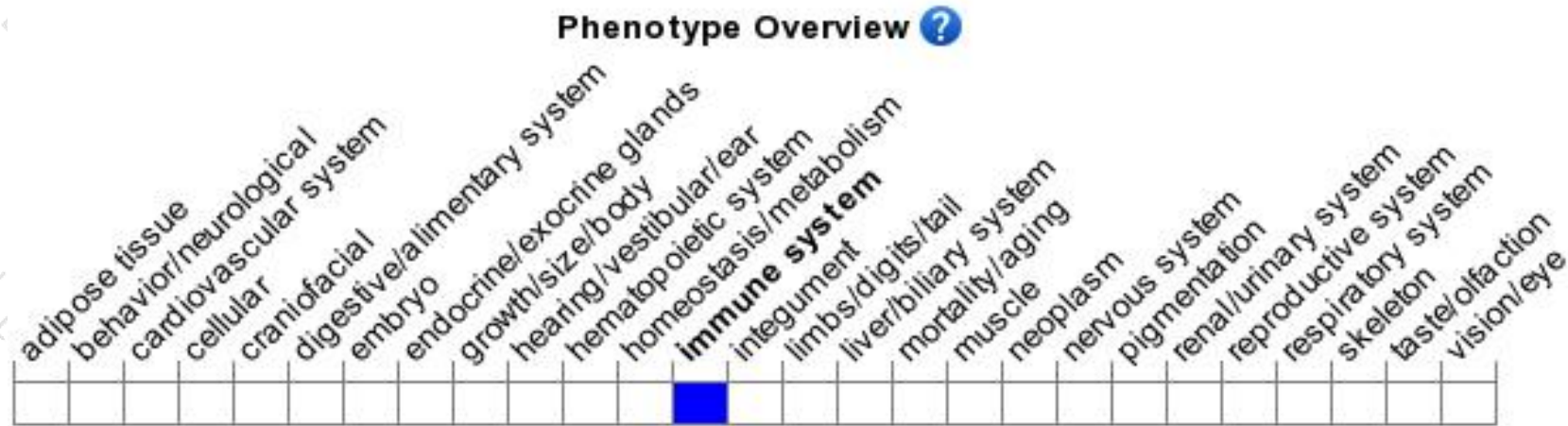
Genomic location distribution



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 an ENU-induced mutation display abrogation of both Toll-like receptor (TLR)-induced type I IFN and proinflammatory cytokine production by plasmacytoid dendritic cells. Conventional dendritic cells respond normally to TLR ligands.

If you have any questions, you are welcome to inquire.

Tel: 400-9660890

