

Slc40a1 Cas9-CKO Strategy

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Project Overview

Project Name

Slc40a1

Project type

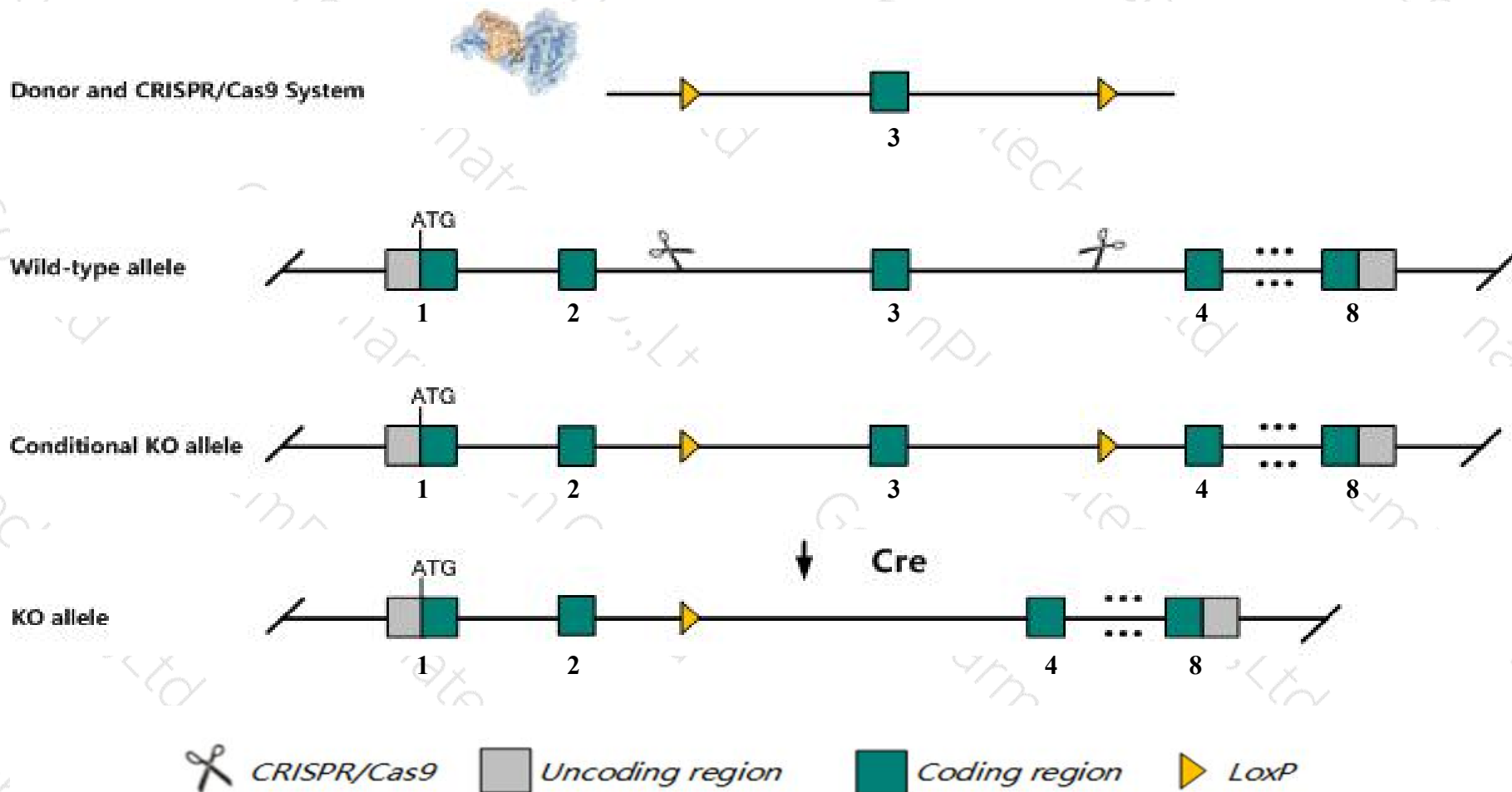
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc40a1* gene. The schematic diagram is as follows:



- The *Slc40a1* gene has 8 transcripts. According to the structure of *Slc40a1* gene, exon3 of *Slc40a1-201* (ENSMUST00000027137.10) transcript is recommended as the knockout region. The region contains 160bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slc40a1* 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 a targeted mutation exhibit embryonic lethality before embryo turning. Mice heterozygous for a targeted mutation display decreased thermal response latency. Mice heterozygous for an ENU induced mutation display abnormal iron homeostasis.
- Transcript *Slc40a1*-202 may not be affected.
- The effect of loxp insertion on transcript *Slc40a1*-203,205,206 are unknown.
- The *Slc40a1* gene is located on the Chr1. 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)

Slc40a1 solute carrier family 40 (iron-regulated transporter), member 1 [Mus musculus (house mouse)]

Gene ID: 53945, updated on 5-Feb-2019

Summary



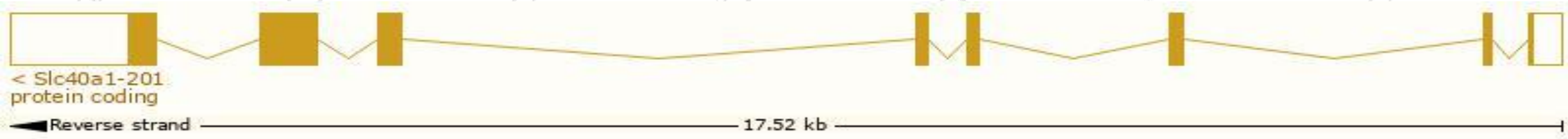
Official Symbol	Slc40a1 provided by MGI
Official Full Name	solute carrier family 40 (iron-regulated transporter), member 1 provided by MGI
Primary source	MGI:MGI:1315204
See related	Ensembl:ENSMUSG000000025993
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Dusg, Fpn1, IREG1, MTP, MTP1, Oi5, Pcm, Slc11a3, Slc39a1
Expression	Broad expression in liver E18 (RPKM 41.3), placenta adult (RPKM 28.4) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

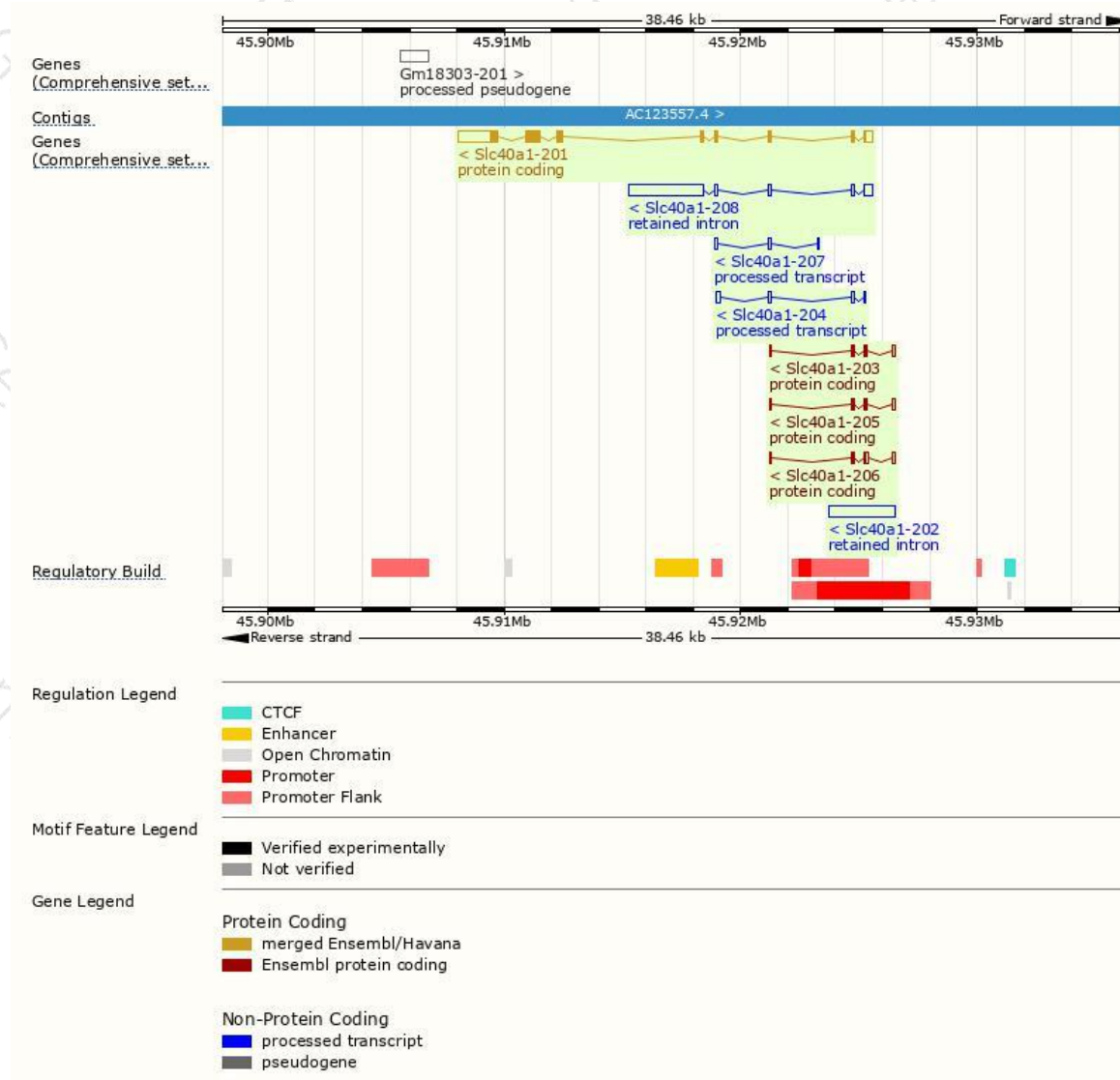
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc40a1-201	ENSMUST00000027137.10	3370	570aa	Protein coding	CCDS14933	Q9JHI9	TSL:1 GENCODE basic APPRIS P1
Slc40a1-206	ENSMUST00000187420.6	451	70aa	Protein coding	-	C5H8V4	CDS 3' incomplete TSL:1
Slc40a1-203	ENSMUST00000186804.1	408	70aa	Protein coding	-	C5H8V4	CDS 3' incomplete TSL:1
Slc40a1-205	ENSMUST00000187406.6	370	70aa	Protein coding	-	C5H8V4	CDS 3' incomplete TSL:1
Slc40a1-204	ENSMUST00000186822.1	505	No protein	Processed transcript	-	-	TSL:3
Slc40a1-207	ENSMUST00000188252.6	263	No protein	Processed transcript	-	-	TSL:3
Slc40a1-208	ENSMUST00000191247.6	3928	No protein	Retained intron	-	-	TSL:1
Slc40a1-202	ENSMUST00000186755.1	2792	No protein	Retained intron	-	-	TSL:NA

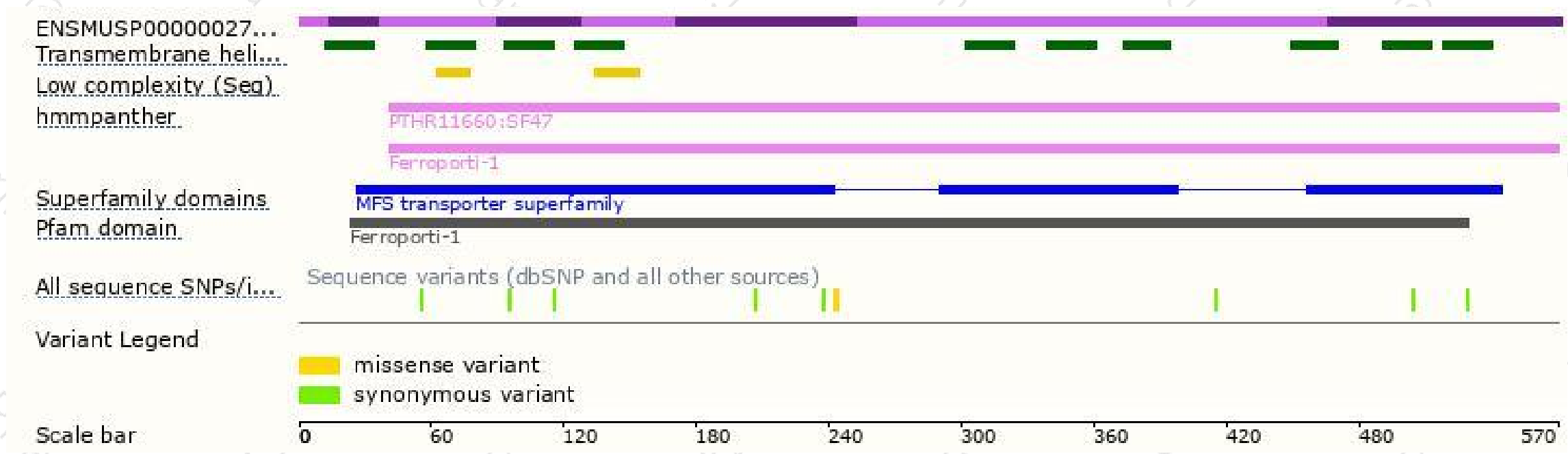
The strategy is based on the design of *Slc40a1-201* transcript,The transcription is shown below



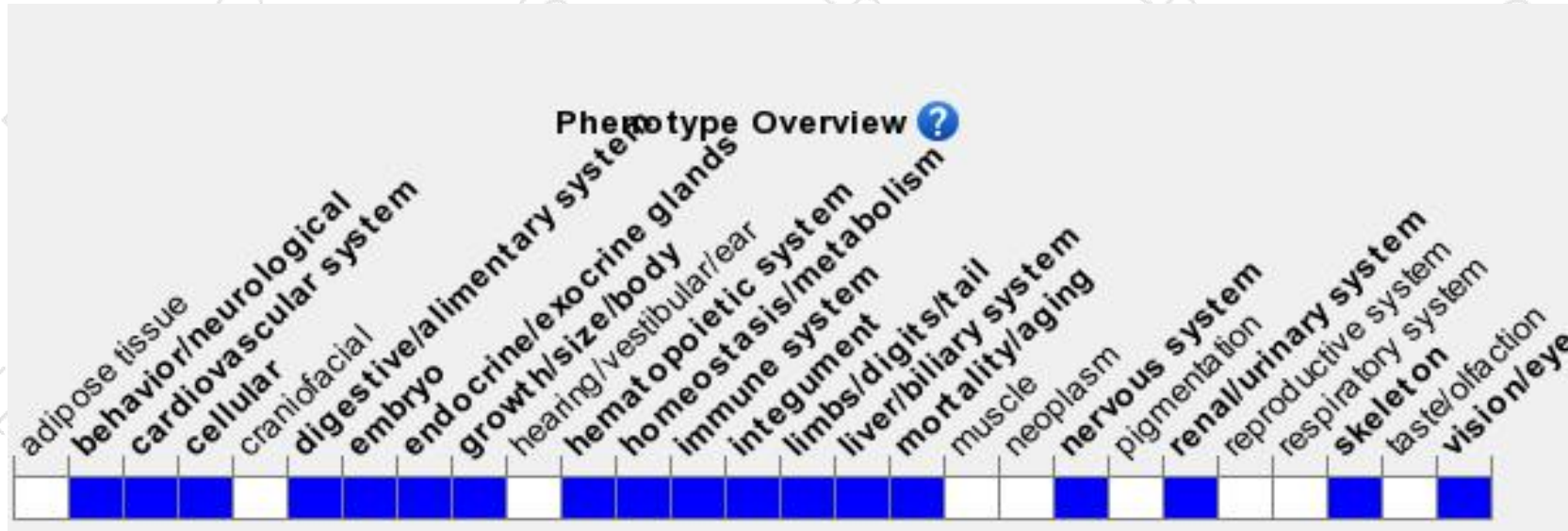
Genomic location distribution



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/>).

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

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