

Slc38a10 Cas9-CKO Strategy

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Project Overview

Project Name

Slc38a10

Project type

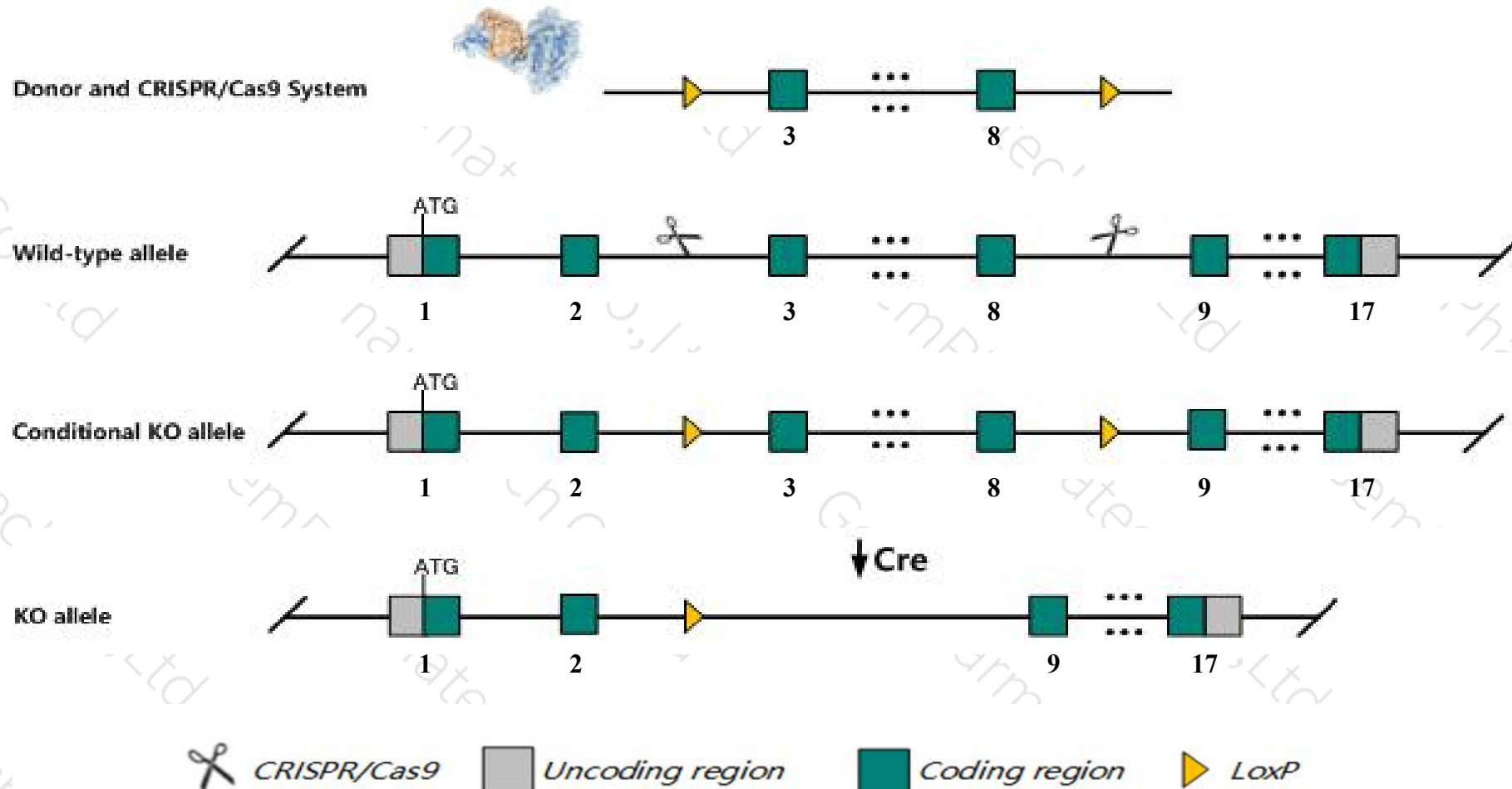
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc38a10* gene. The schematic diagram is as follows:



Technical routes

- The *Slc38a10* gene has 16 transcripts. According to the structure of *Slc38a10* gene, exon3-exon8 of *Slc38a10-204* (ENSMUST00000103018.10) transcript is recommended as the knockout region. The region contains 695bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slc38a10* 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, homozygous null mice exhibit a fragile skeleton, reduced adiposity, lean body mass, body weight/length, long bone length and bone mineral density, increased creatinine levels, reduced amylase and serum albumin levels, increased energy efficiency and oxygen consumption, and altered liver physiology.
- The *Slc38a10* gene is located on the Chr11. 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)

Slc38a10 solute carrier family 38, member 10 [*Mus musculus* (house mouse)]

Gene ID: 72055, updated on 13-Mar-2020

Summary



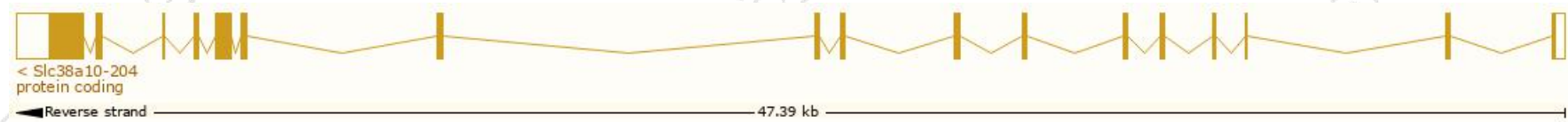
Official Symbol	Slc38a10 provided by MGI
Official Full Name	solute carrier family 38, member 10 provided by MGI
Primary source	MGI:MGI:1919305
See related	Ensembl:ENSMUSG00000061306
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1810073N04Rik
Expression	Ubiquitous expression in mammary gland adult (RPKM 28.3), subcutaneous fat pad adult (RPKM 28.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

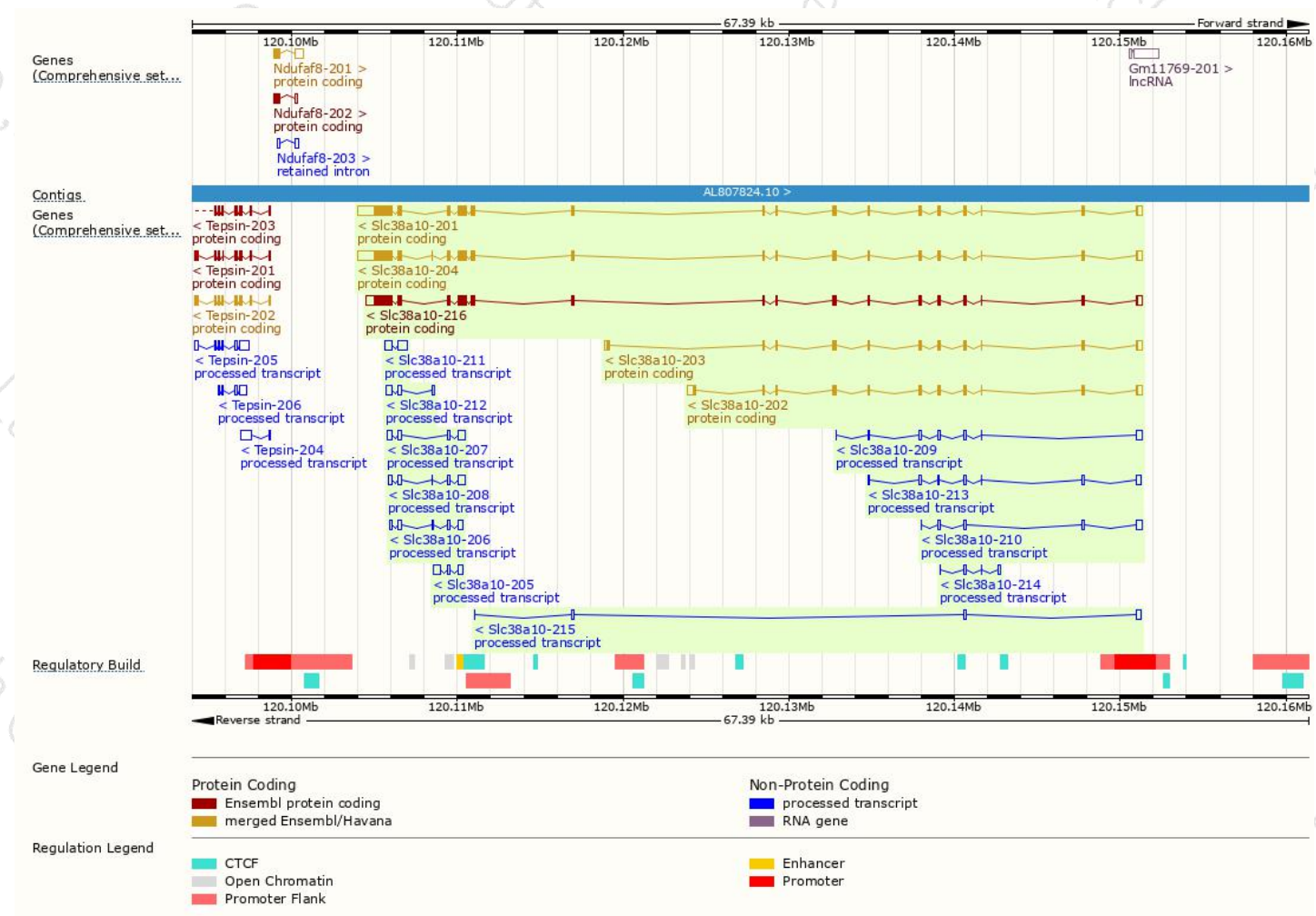
The gene has 16 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc38a10-204	ENSMUST00000103018.10	4578	1090aa	Protein coding	CCDS25728	Q5I012	TSL:1 GENCODE basic APPRIS P3
Slc38a10-201	ENSMUST00000045402.13	4554	1082aa	Protein coding	CCDS49000	Q5I012	TSL:1 APPRIS ALT2
Slc38a10-202	ENSMUST00000053692.8	1947	428aa	Protein coding	CCDS49002	Q5I012	TSL:1 GENCODE basic APPRIS ALT2
Slc38a10-203	ENSMUST00000076697.12	1672	408aa	Protein coding	CCDS49001	Q5I012	TSL:1 GENCODE basic APPRIS ALT2
Slc38a10-216	ENSMUST00000179094.7	4052	1090aa	Protein coding	-	J3QNE8	TSL:5 GENCODE basic APPRIS ALT2
Slc38a10-211	ENSMUST00000146641.1	971	No protein	Processed transcript	-	-	TSL:2
Slc38a10-208	ENSMUST00000129710.7	928	No protein	Processed transcript	-	-	TSL:3
Slc38a10-207	ENSMUST00000129575.7	905	No protein	Processed transcript	-	-	TSL:5
Slc38a10-213	ENSMUST00000150315.7	874	No protein	Processed transcript	-	-	TSL:5
Slc38a10-209	ENSMUST00000132239.7	858	No protein	Processed transcript	-	-	TSL:3
Slc38a10-206	ENSMUST00000129128.7	792	No protein	Processed transcript	-	-	TSL:3
Slc38a10-205	ENSMUST00000124997.1	785	No protein	Processed transcript	-	-	TSL:2
Slc38a10-210	ENSMUST00000135605.7	711	No protein	Processed transcript	-	-	TSL:5
Slc38a10-212	ENSMUST00000148503.7	658	No protein	Processed transcript	-	-	TSL:3
Slc38a10-215	ENSMUST00000154444.8	554	No protein	Processed transcript	-	-	TSL:5
Slc38a10-214	ENSMUST00000152859.1	328	No protein	Processed transcript	-	-	TSL:5

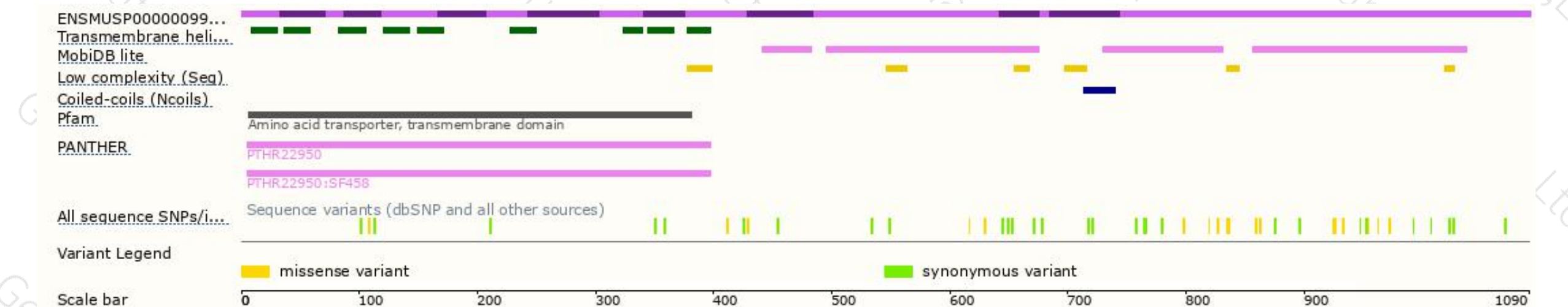
The strategy is based on the design of *Slc38a10-204* transcript, the transcription is shown below



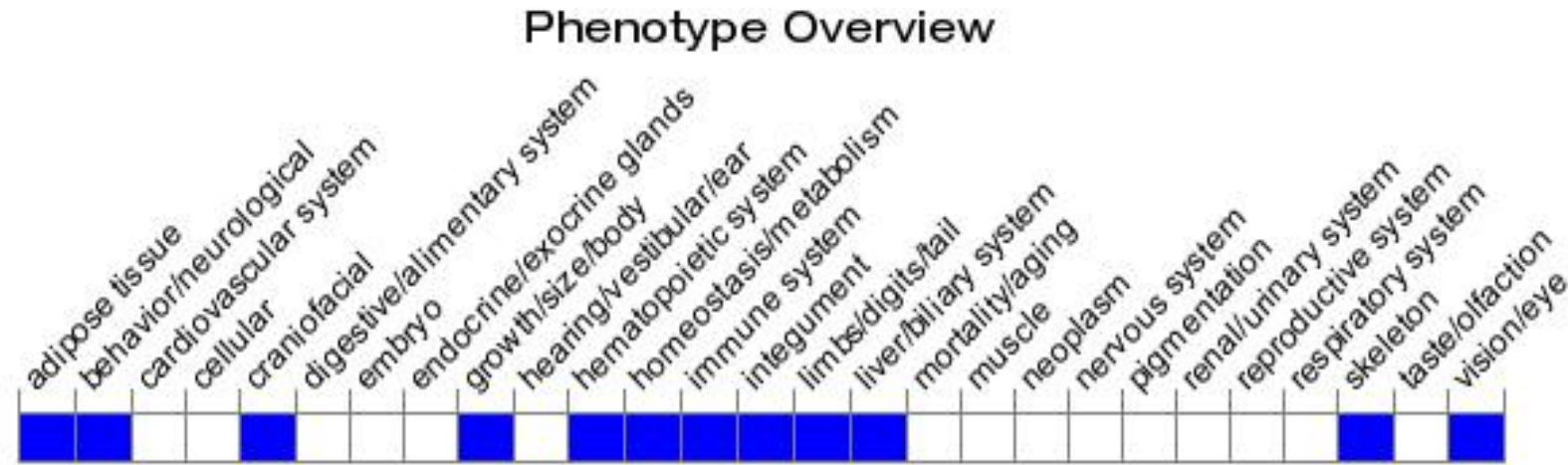
Genomic location distribution



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, homozygous null mice exhibit a fragile skeleton, reduced adiposity, lean body mass, body weight/length, long bone length and bone mineral density, increased creatinine levels, reduced amylase and serum albumin levels, increased energy efficiency and oxygen consumption, and altered liver physiology.

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

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