Slc52a3 Cas9-CKO Strategy

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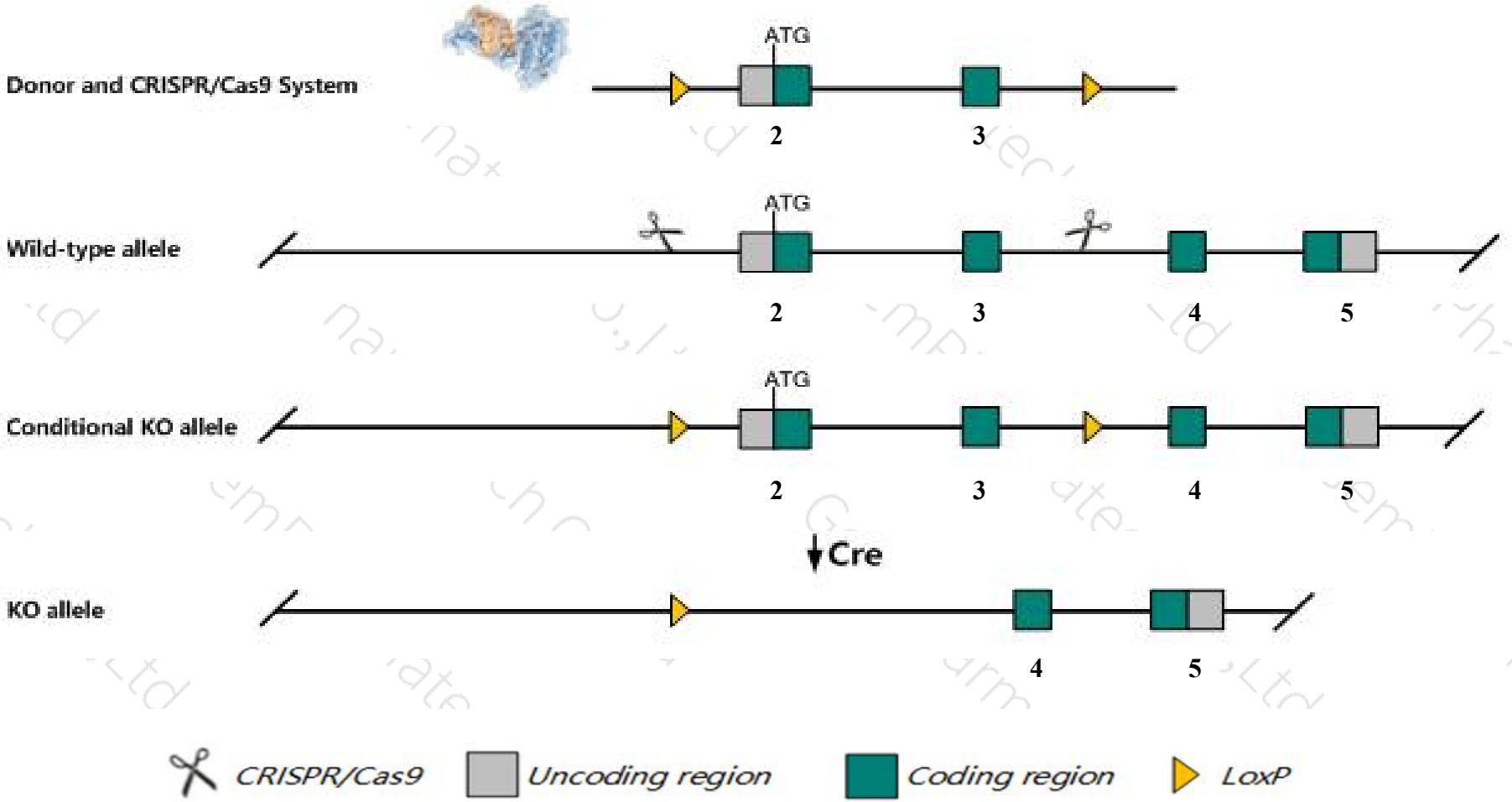
Project Overview

Project Name	***Slc52a3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc52a3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc52a3* gene has 4 transcripts. According to the structure of *Slc52a3* gene, exon2-exon3 of *Slc52a3-201*(ENSMUST00000073228.11) transcript is recommended as the knockout region.The region contains start codon ATG.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc52a3* 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.

Notice

➢ According to the existing MGI data,mice homozygous for a knock-out allele exhibit abnormal placental riboflavin transport and sudden neonatal death associated with hyperlipidemia and hypoglycemia due to riboflavin deficiency.

➢ The *Slc52a3* gene is located on the Chr2. 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）

集萃药康 GemPharmatech

Slc52a3 solute carrier protein family 52, member 3 [Mus musculus (house mouse)]

Gene ID: 69698, updated on 13-Mar-2020

Summary

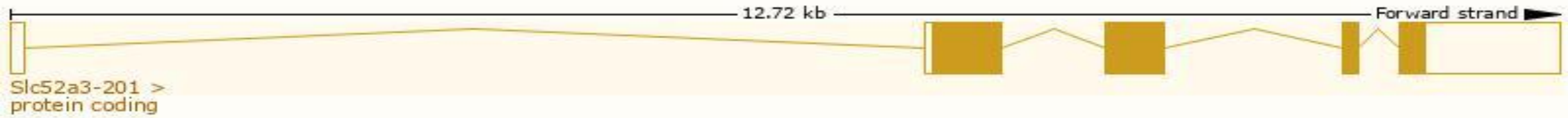
Official Symbol	Slc52a3 provided by MGI
Official Full Name	solute carrier protein family 52, member 3 provided byMGI
Primary source	MGI:MGI:1916948
See related	Ensembl:ENSMUSG00000027463
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2310046K01Rik, RFT2
Expression	Biased expression in small intestine adult (RPKM 57.0), large intestine adult (RPKM 55.9) and 12 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

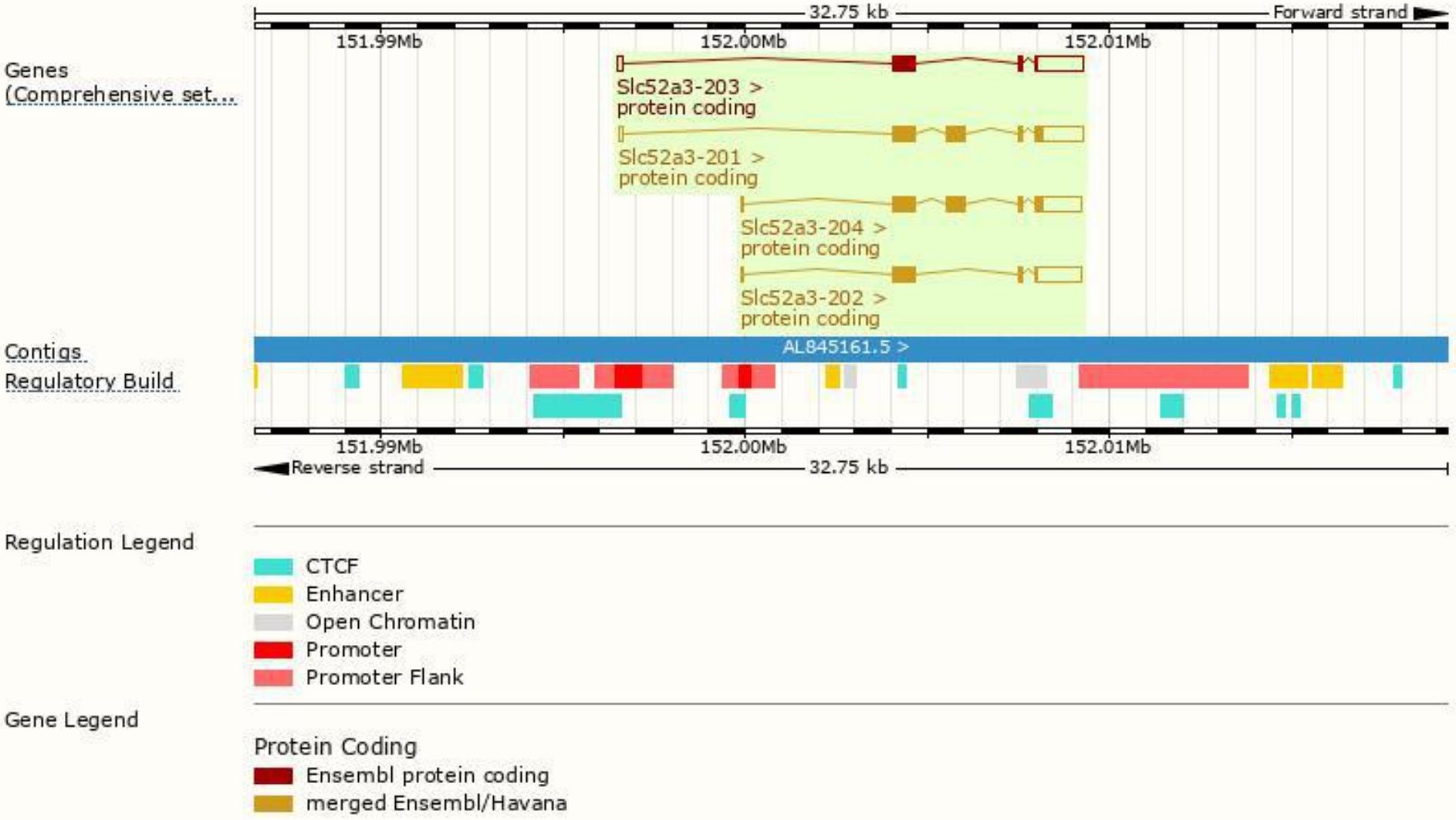
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc52a3-201	ENSMUST00000073228.11	2669	460aa	Protein coding	CCDS16876	Q9D6X5	TSL:1 GENCODE basic APPRIS P1
Slc52a3-204	ENSMUST00000109861.7	2590	460aa	Protein coding	CCDS16876	Q9D6X5	TSL:1 GENCODE basic APPRIS P1
Slc52a3-203	ENSMUST00000109859.8	2204	250aa	Protein coding	CCDS50749	Q9D6X5	TSL:5 GENCODE basic
Slc52a3-202	ENSMUST00000109858.1	2094	250aa	Protein coding	CCDS50749	Q9D6X5	TSL:1 GENCODE basic

The strategy is based on the design of *Slc52a3-201* transcript,the transcription is shown below:

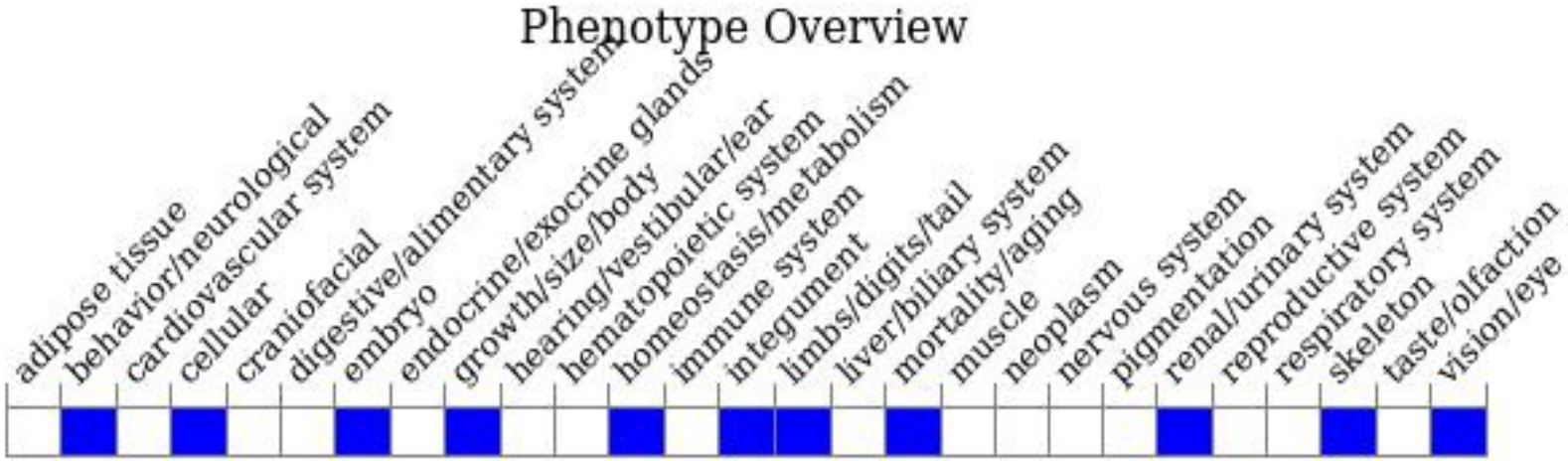


Genomic location distribution



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 a knock-out allele exhibit abnormal placental riboflavin transport and sudden neonatal death associated with hyperlipidemia and hypoglycemia due to riboflavin deficiency.

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

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