Slc5a11 Cas9-CKO Strategy

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Project Overview

Project Name	***Slc5a11***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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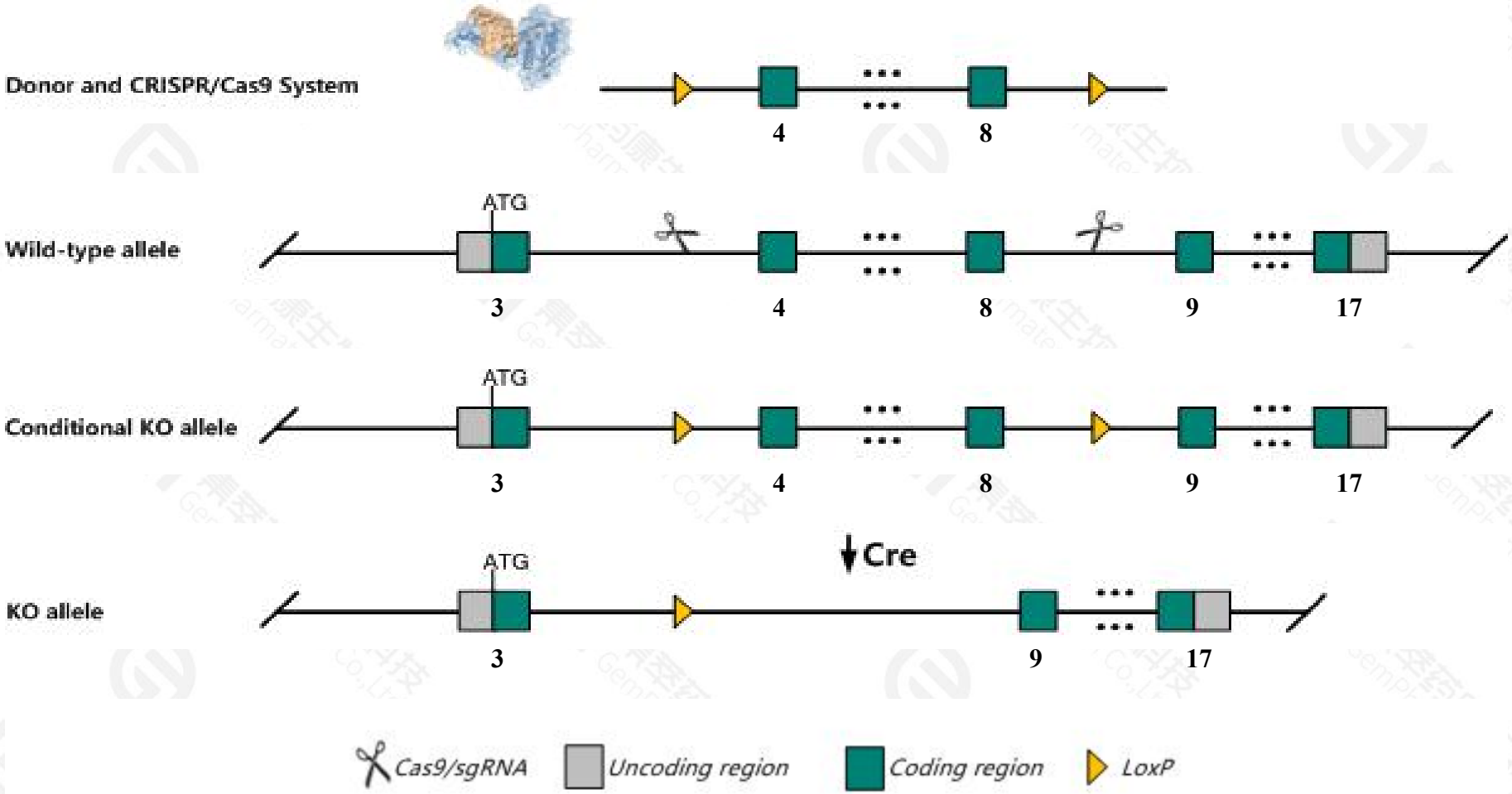
This model will use CRISPR/Cas9 technology to edit the *Slc5a11* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc5a11* gene has 8 transcripts. According to the structure of *Slc5a11* gene, exon4-exon8 of *Slc5a11-201*(ENSMUST00000033035.13) transcript is recommended as the knockout region.The region contains 448bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc5a11* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor was constructed.Cas9, sgRNA 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 was 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

➢ The *Slc5a11* gene is located on the Chr7. 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）

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Slc5a11 solute carrier family 5 (sodium/glucose cotransporter), member 11 [Mus musculus (house mouse)]

Gene ID: 233836, updated on 10-Oct-2020

Summary

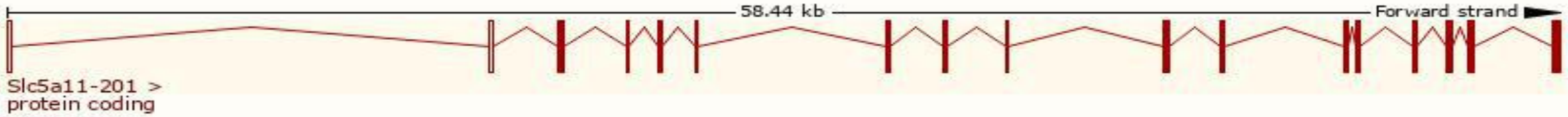
Official Symbol	Slc5a11 provided by MGI
Official Full Name	solute carrier family 5 (sodium/glucose cotransporter), member 11 provided by MGI
Primary source	MGI:MGI:1919316
See related	Ensembl:ENSMUSG00000030769
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2010013B02Rik, Kst, Kst1, RKST2, SMIT2, Slc5a10
Expression	Biased expression in duodenum adult (RPKM 46.1), small intestine adult (RPKM 29.5) and 2 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

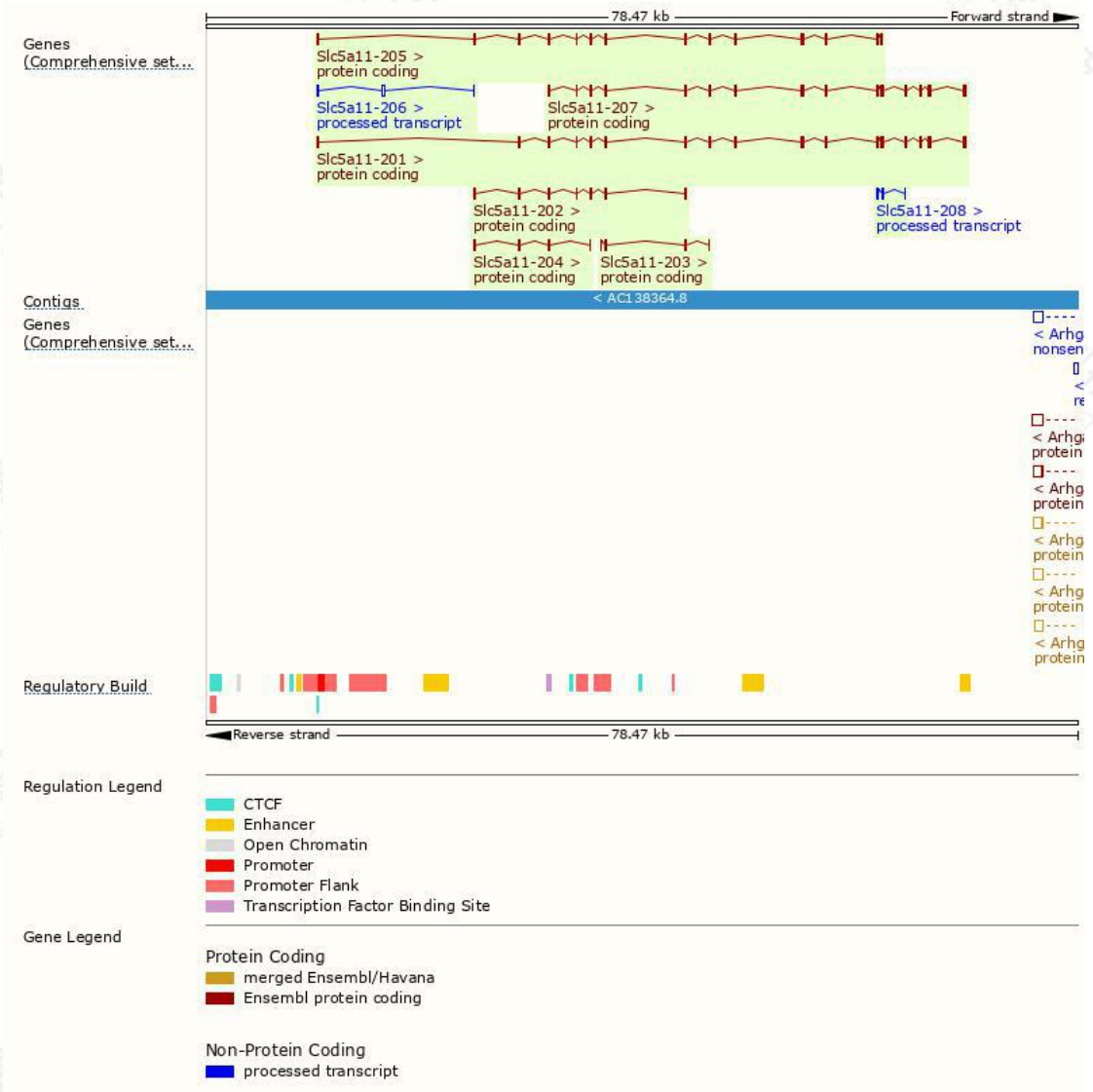
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc5a11-201	ENSMUST00000033035.13	2396	673aa	Protein coding	CCDS21819		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc5a11-207	ENSMUST00000167299.9	2022	673aa	Protein coding	CCDS21819		TSL:5 , GENCODE basic , APPRIS P1 ,
Slc5a11-205	ENSMUST00000131933.8	1648	402aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Slc5a11-202	ENSMUST00000127655.8	704	152aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Slc5a11-204	ENSMUST00000131461.3	440	64aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Slc5a11-203	ENSMUST00000131209.2	215	72aa	Protein coding	-		CDS 5' and 3' incomplete , TSL:5 ,
Slc5a11-206	ENSMUST00000140721.2	459	No protein	Processed transcript	-		TSL:5 ,
Slc5a11-208	ENSMUST00000206180.2	242	No protein	Processed transcript	-		TSL:5 ,

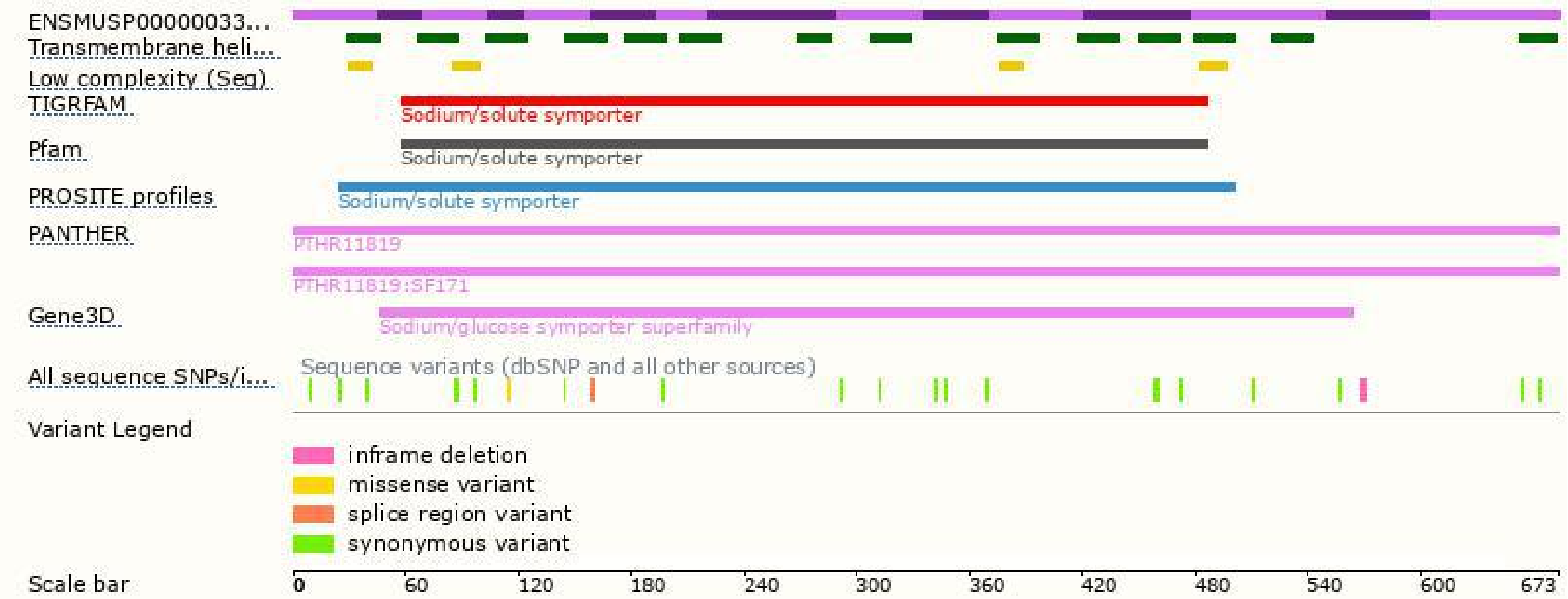
The strategy is based on the design of *Slc5a11-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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