

Slc34a3 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Slc34a3

Project type

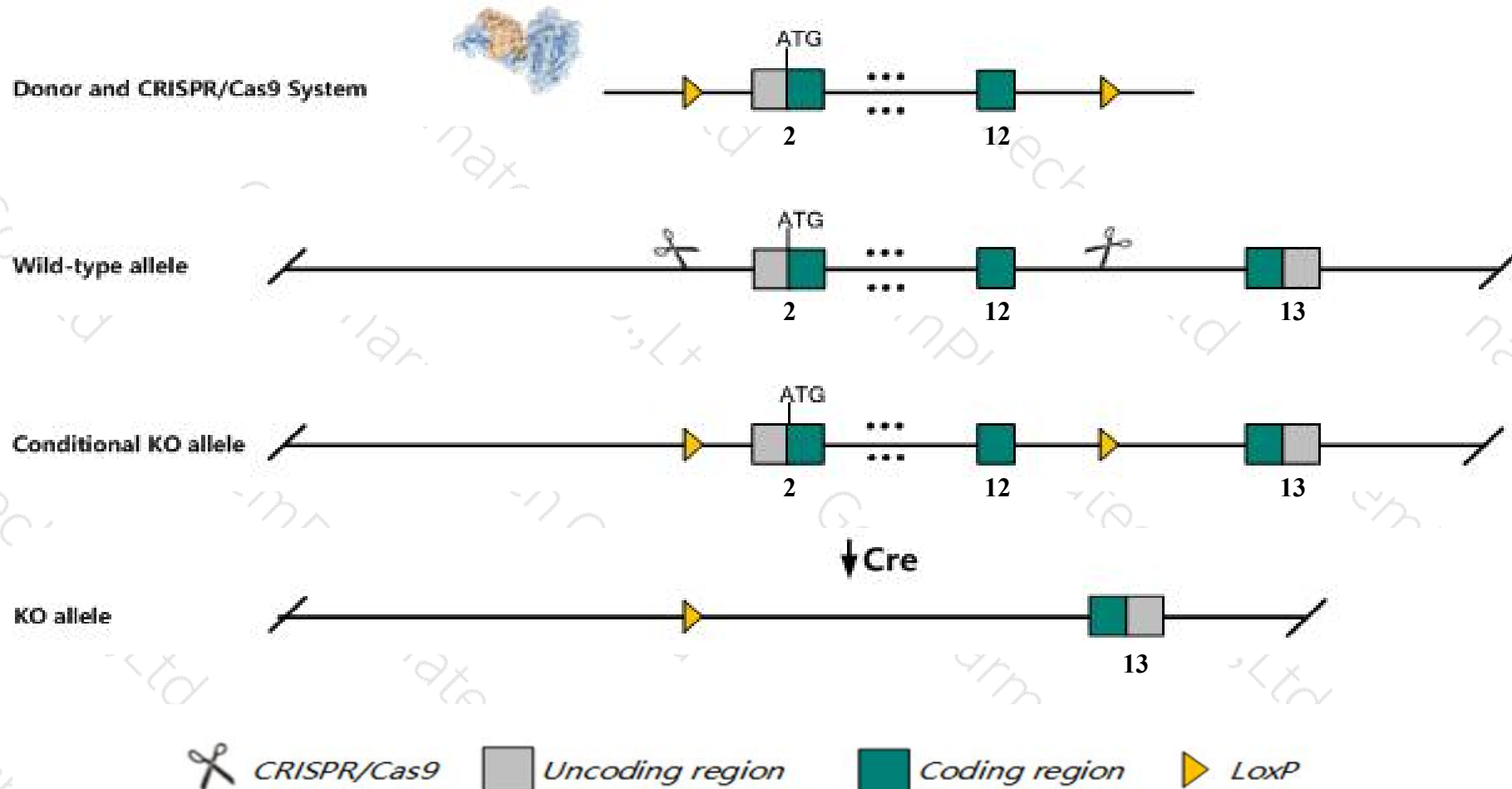
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc34a3* gene. The schematic diagram is as follows:



Technical routes

- The *Slc34a3* gene has 7 transcripts. According to the structure of *Slc34a3* gene, exon2-exon12 of *Slc34a3-201* (ENSMUST00000006638.7) 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 *Slc34a3* 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 knock-out allele exhibit hypercalciuria, hypercalcemia and increased plasma 1,25(OH)2D3 levels but do not develop hypophosphatemia, renal calcification, rickets, or osteomalacia.
- The *Slc34a3* 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)

Slc34a3 solute carrier family 34 (sodium phosphate), member 3 [Mus musculus (house mouse)]

Gene ID: 142681, updated on 31-Jan-2019

Summary



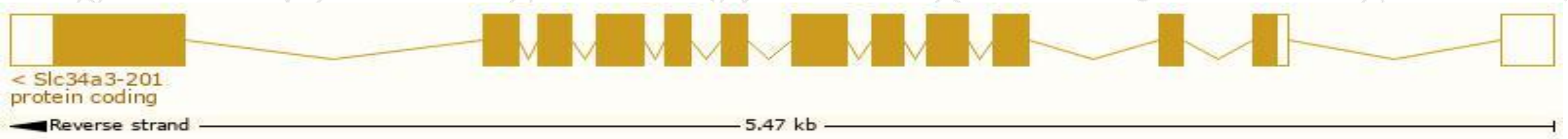
Official Symbol	Slc34a3 provided by MGI
Official Full Name	solute carrier family 34 (sodium phosphate), member 3 provided by MGI
Primary source	MGI:MGI:2159410
See related	Ensembl:ENSMUSG000000006469
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Al649385, Npt2c, Npt2c-v1, Npt1lc, naPi-2c
Expression	Restricted expression toward kidney adult (RPKM 74.2) See more
Orthologs	human all

Transcript information (Ensembl)

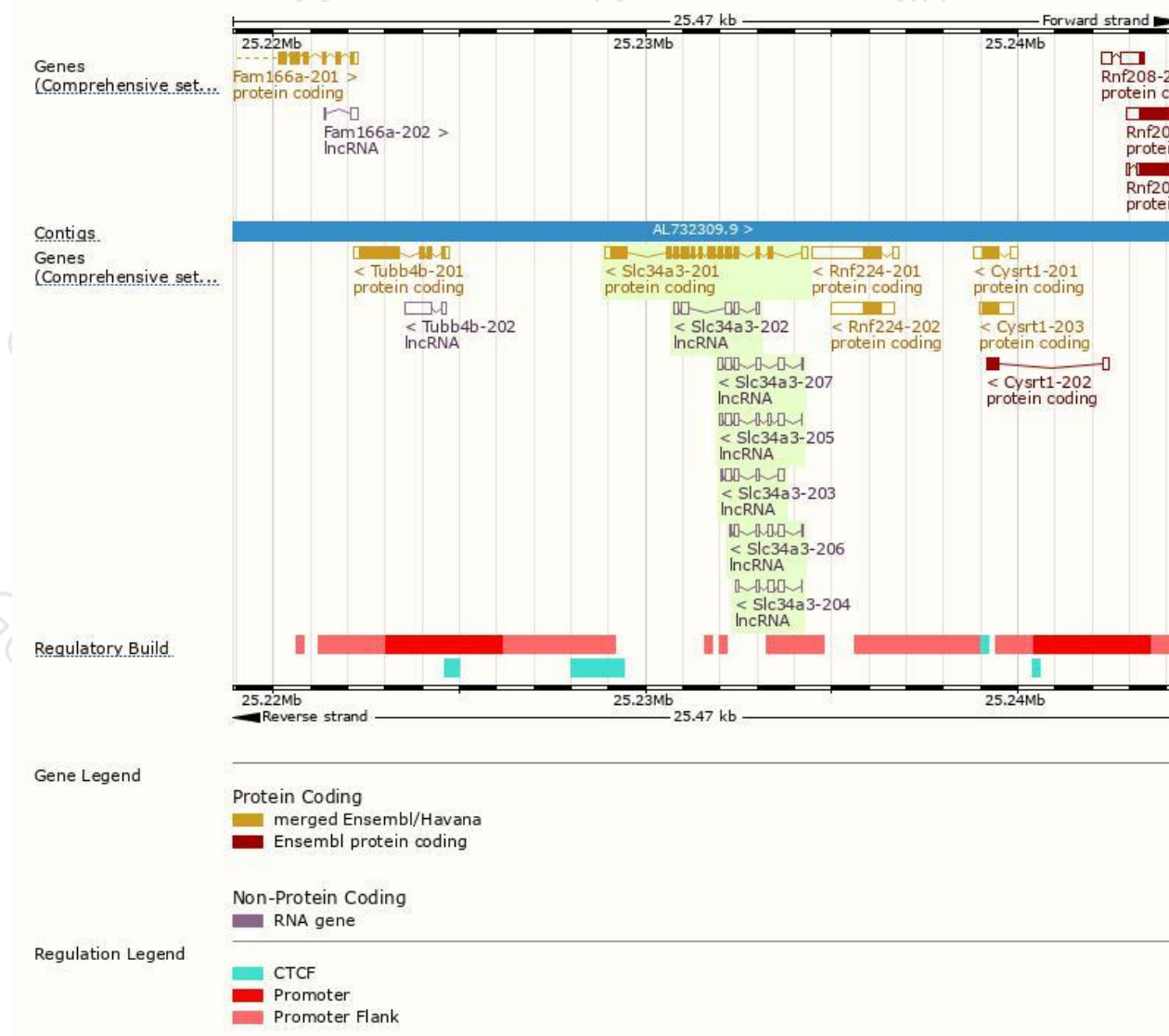
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc34a3-201	ENSMUST00000006638.7	2183	601aa	Protein coding	CCDS15754	Q80SU6	TSL:1 GENCODE basic APPRIS P1
Slc34a3-207	ENSMUST00000155420.7	667	No protein	lncRNA	-	-	TSL:3
Slc34a3-205	ENSMUST00000144884.7	653	No protein	lncRNA	-	-	TSL:3
Slc34a3-202	ENSMUST00000124146.7	628	No protein	lncRNA	-	-	TSL:3
Slc34a3-203	ENSMUST00000137482.7	561	No protein	lncRNA	-	-	TSL:5
Slc34a3-206	ENSMUST00000152997.7	550	No protein	lncRNA	-	-	TSL:5
Slc34a3-204	ENSMUST00000142095.1	451	No protein	lncRNA	-	-	TSL:3

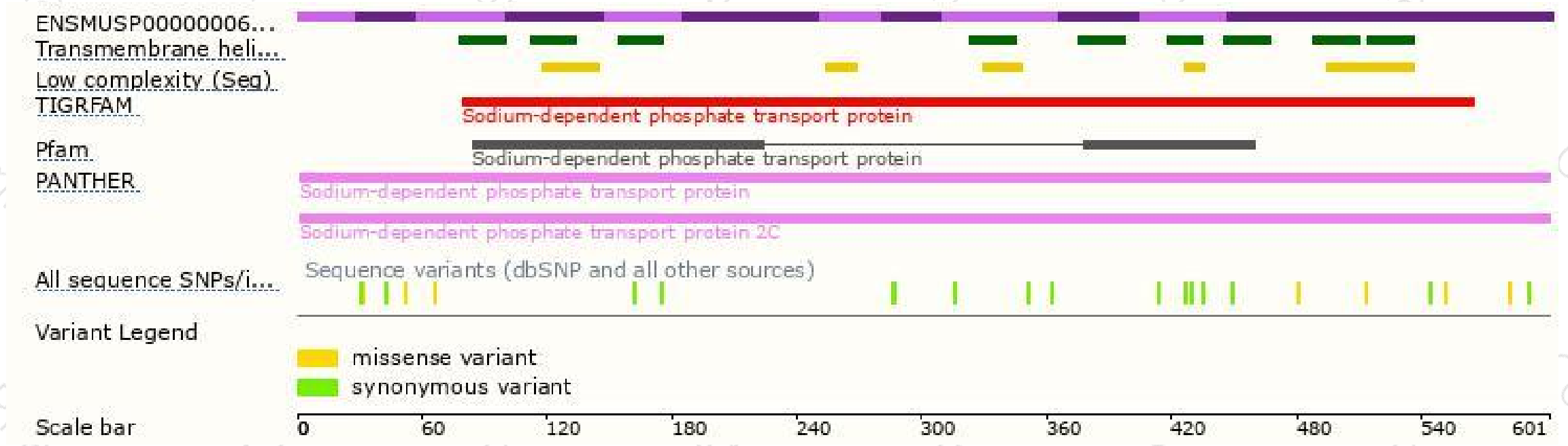
The strategy is based on the design of *Slc34a3-201* transcript,The transcription is shown below



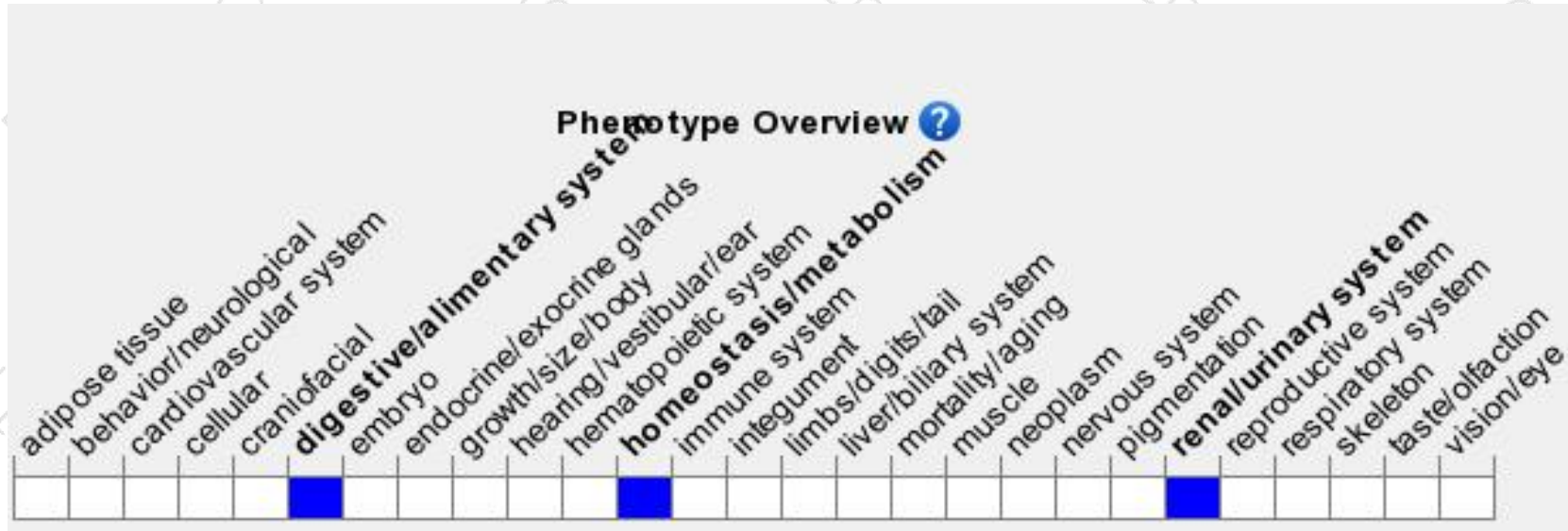
Genomic location distribution



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 hypercalciuria, hypercalcemia and increased plasma 1,25(OH)₂D₃ levels but do not develop hypophosphatemia, renal calcification, rickets, or osteomalacia.

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

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