Slc34a1 Cas9-CKO Strategy

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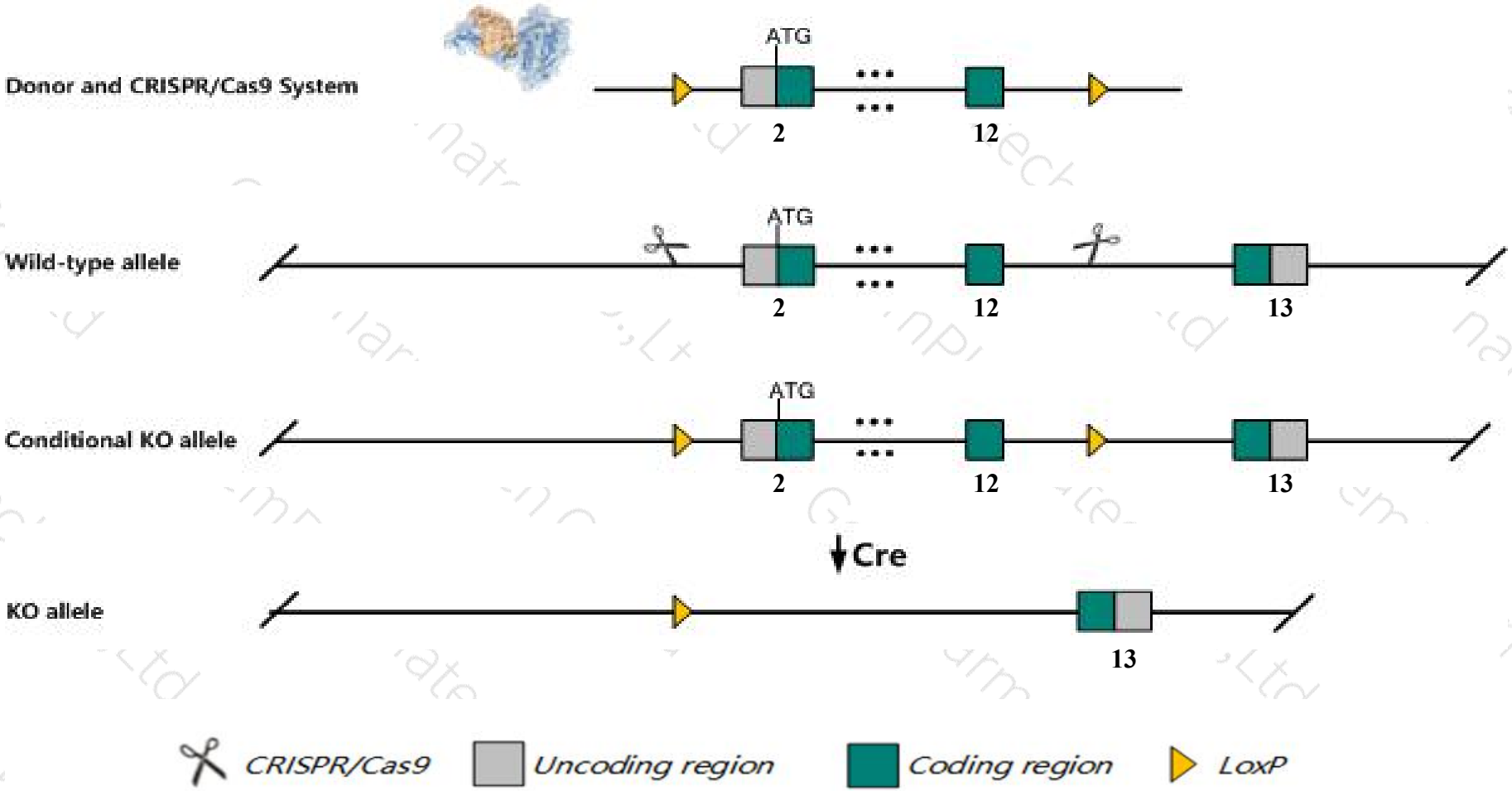
Project Overview

Project Name	***Slc34a1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc34a1* gene. The schematic diagram is as follows:



Technical routes

- The *Slc34a1* gene has 6 transcripts. According to the structure of *Slc34a1* gene, exon2-exon12 of *Slc34a1-205* (ENSMUST00000225259.1) 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 *Slc34a1* 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,Homozygous null mice exhibit renal phosphate wasting, hyerpcalciuria, and skeletal abnormalities. Postnatal viability is reduced, putatively due to poor nutritional status.

- The *Slc34a1* gene is located on the Chr13. 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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Slc34a1 solute carrier family 34 (sodium phosphate), member 1 [*Mus musculus* (house mouse)]

Gene ID: 20505, updated on 12-Nov-2019

Summary

Official Symbol	Slc34a1 provided by MGI
Official Full Name	solute carrier family 34 (sodium phosphate), member 1 provided by MGI
Primary source	MGI:MGI:1345284
See related	Ensembl:ENSMUSG00000021490
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	Npt2; Npt2a; Slc17a2; NaPi-IIa
Expression	Restricted expression toward kidney adult (RPKM 2731.8) See more
Orthologs	human all

Genomic context

Location: 13 B1; 13 29.81 cM

See Slc34a1 in Genome Data Viewer

Exon count: 14

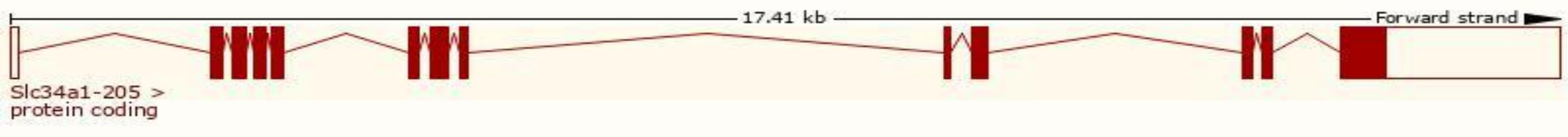
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	13	NC_000079.6 (55399622..55414695)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	13	NC_000079.5 (55501009..55516056)

Transcript information（Ensembl）

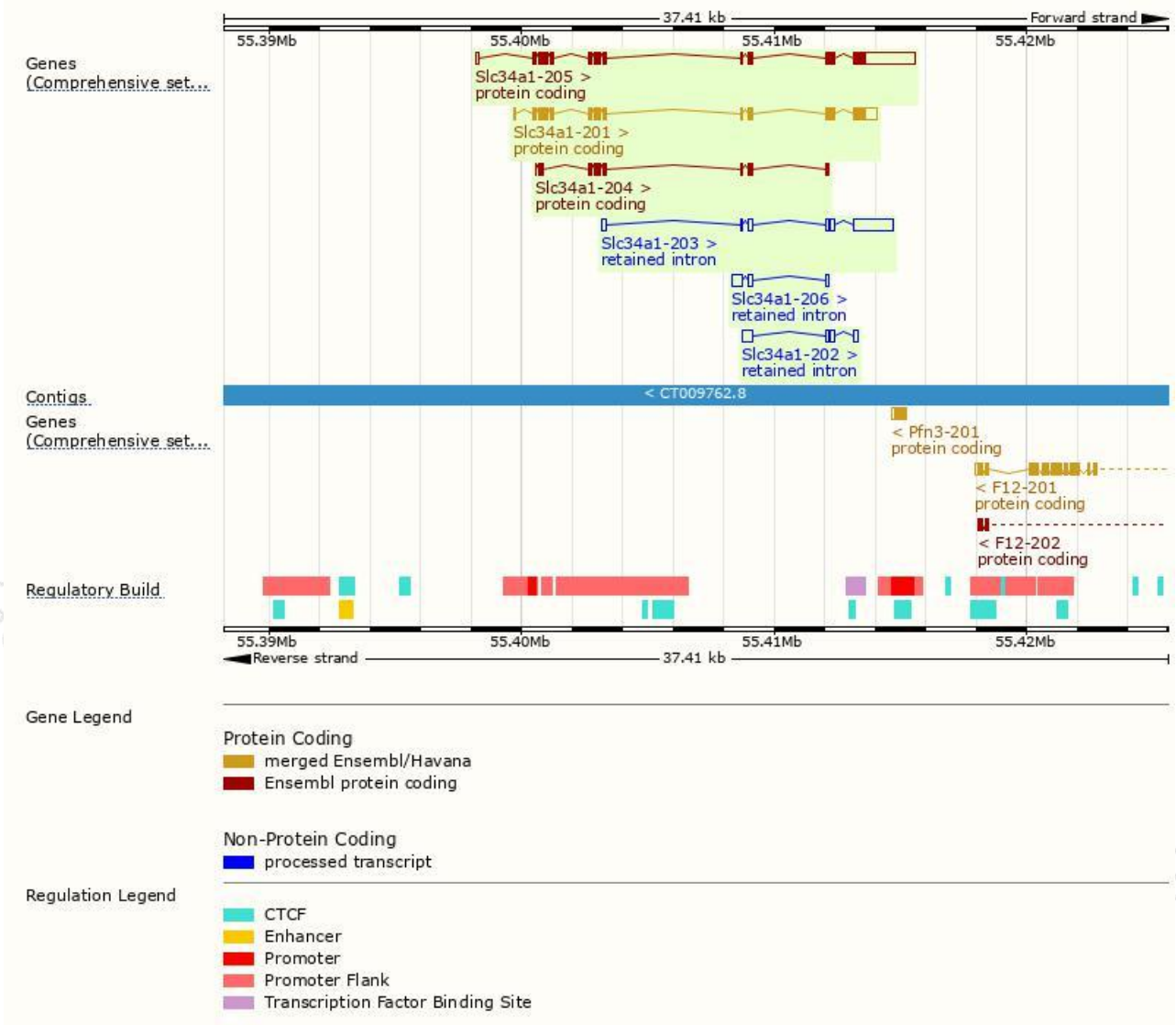
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc34a1-205	ENSMUST00000225259.1	3983	637aa	Protein coding	CCDS49271	Q9D2V6	GENCODE basic APPRIS P1
Slc34a1-201	ENSMUST00000057167.8	2433	637aa	Protein coding	CCDS49271	Q9D2V6	TSL:1 GENCODE basic APPRIS P1
Slc34a1-204	ENSMUST00000224925.1	928	309aa	Protein coding	-	A0A286YCG7	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete
Slc34a1-203	ENSMUST00000224043.1	2168	No protein	Retained intron	-	-	
Slc34a1-202	ENSMUST00000223954.1	860	No protein	Retained intron	-	-	
Slc34a1-206	ENSMUST00000225538.1	722	No protein	Retained intron	-	-	

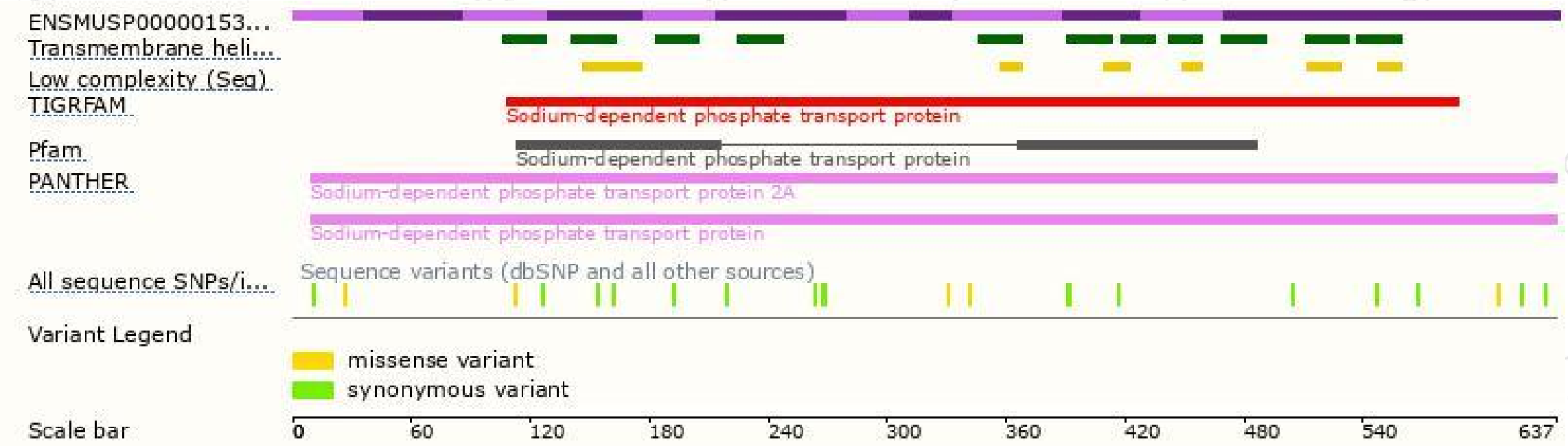
The strategy is based on the design of *Slc34a1-205* transcript,The transcription is shown below



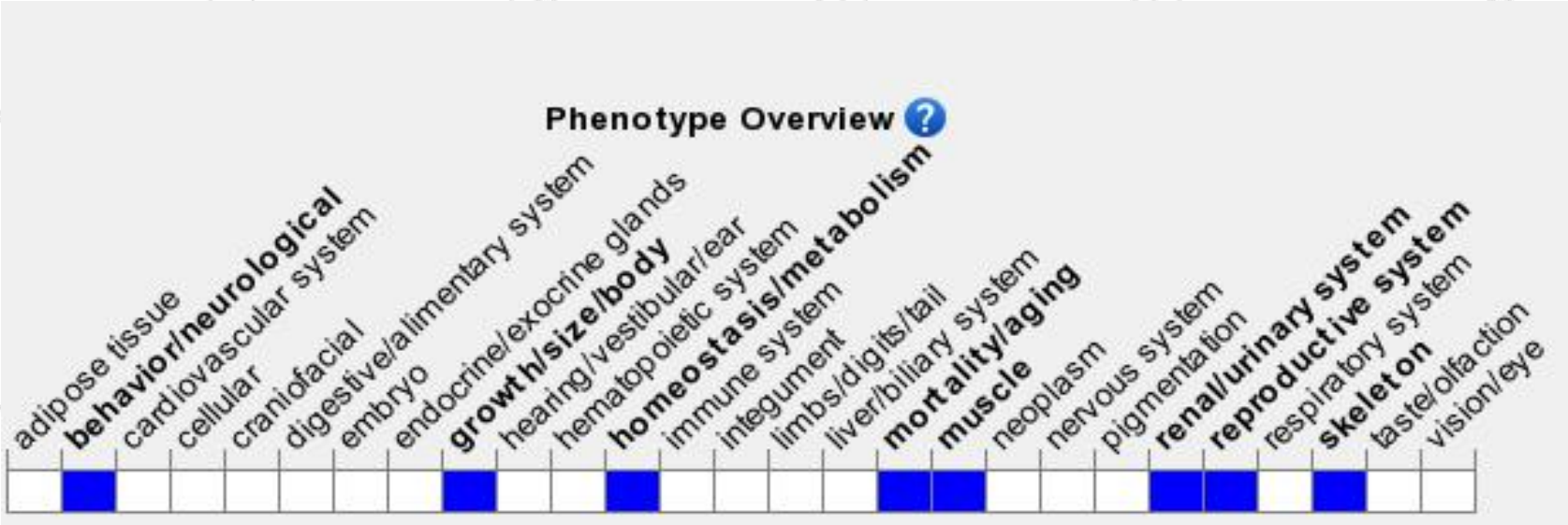
Genomic location distribution



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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