Slc13a4 Cas9-KO Strategy

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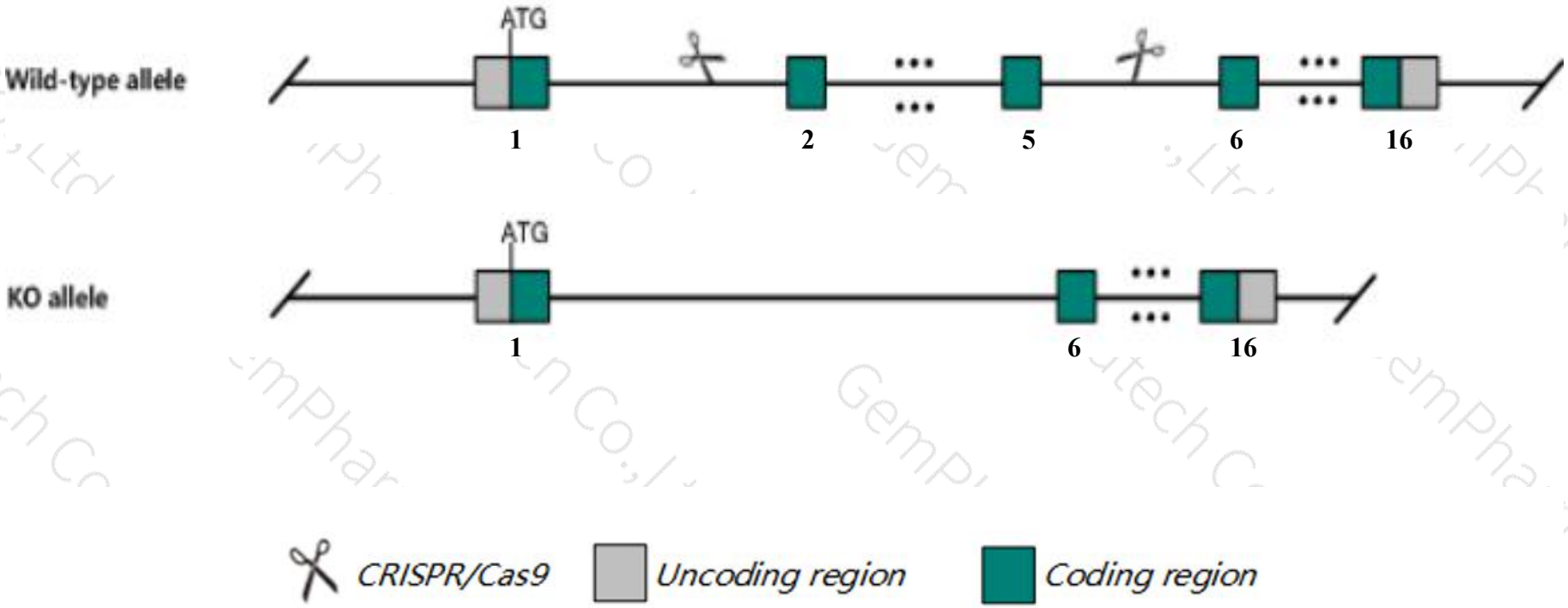
Design Date: 2020-8-6

Project Overview

Project Name	***Slc13a4***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc13a4* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc13a4* gene has 3 transcripts. According to the structure of *Slc13a4* gene, exon2-exon5 of *Slc13a4-201*(ENSMUST00000031868.4) transcript is recommended as the knockout region.The region contains 485bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc13a4* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,mice homozygous for a null allele display lethality before birth, impaired placental sulfate transport, failure of bone ossification, impaired vascular development, hemorrhaging, and cleft palate.

➢ The *Slc13a4* gene is located on the Chr6. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Slc13a4 solute carrier family 13 (sodium/sulfate symporters), member 4 [Mus musculus (house mouse)]

Gene ID: 243755, updated on 13-Mar-2020

Summary

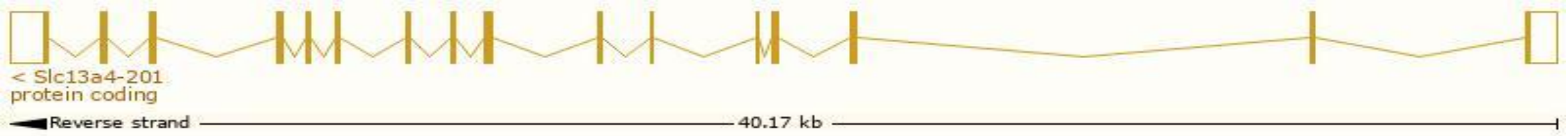
Official Symbol	Slc13a4 provided by MGI
Official Full Name	solute carrier family 13 (sodium/sulfate symporters), member 4 provided by MGI
Primary source	MGI:MGI:2442367
See related	Ensembl:ENSMUSG00000029843
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9630060C05Rik, SUT-1, SUT1
Expression	Biased expression in placenta adult (RPKM 18.6), frontal lobe adult (RPKM 2.9) and 10 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

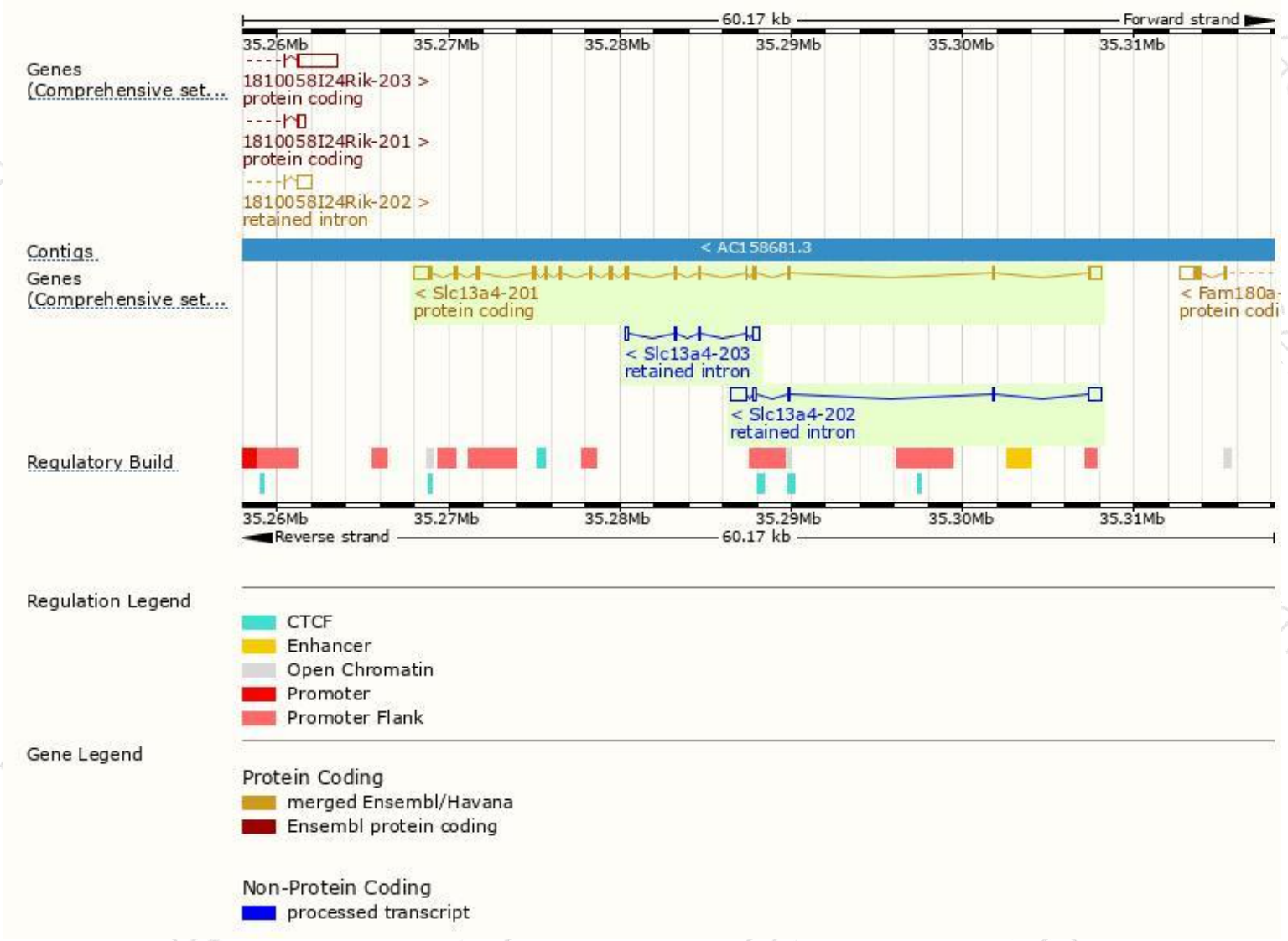
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc13a4-201	ENSMUST00000031868.4	3427	625aa	Protein coding	CCDS20000	Q8BZ82	TSL:1 GENCODE basic APPRIS P1
Slc13a4-202	ENSMUST00000122829.1	2101	No protein	Retained intron	-	-	TSL:1
Slc13a4-203	ENSMUST00000155366.1	774	No protein	Retained intron	-	-	TSL:2

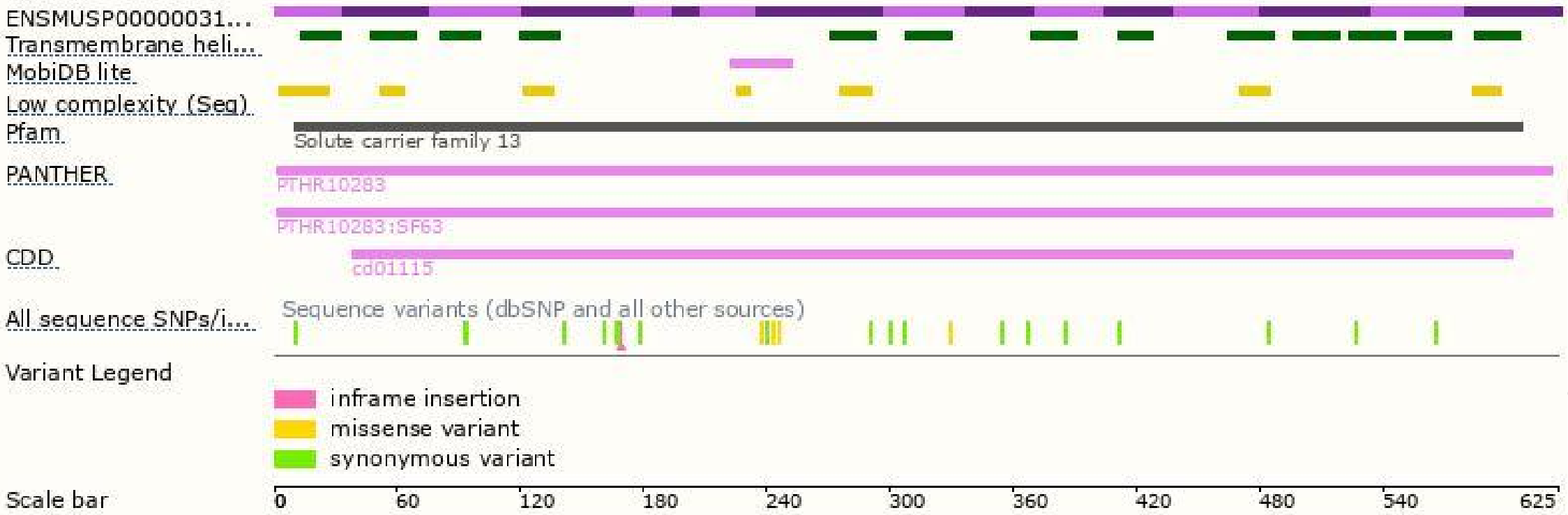
The strategy is based on the design of *Slc13a4-201* transcript,the transcription is shown below:



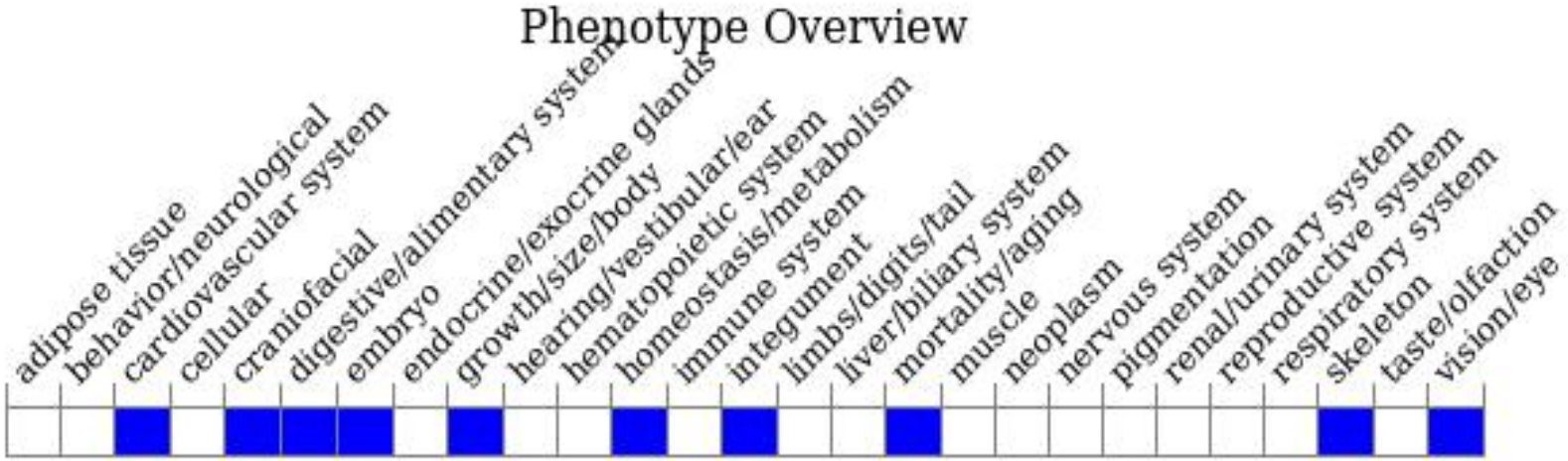
Genomic location distribution



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/).

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

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