Slc22a4 Cas9-CKO Strategy

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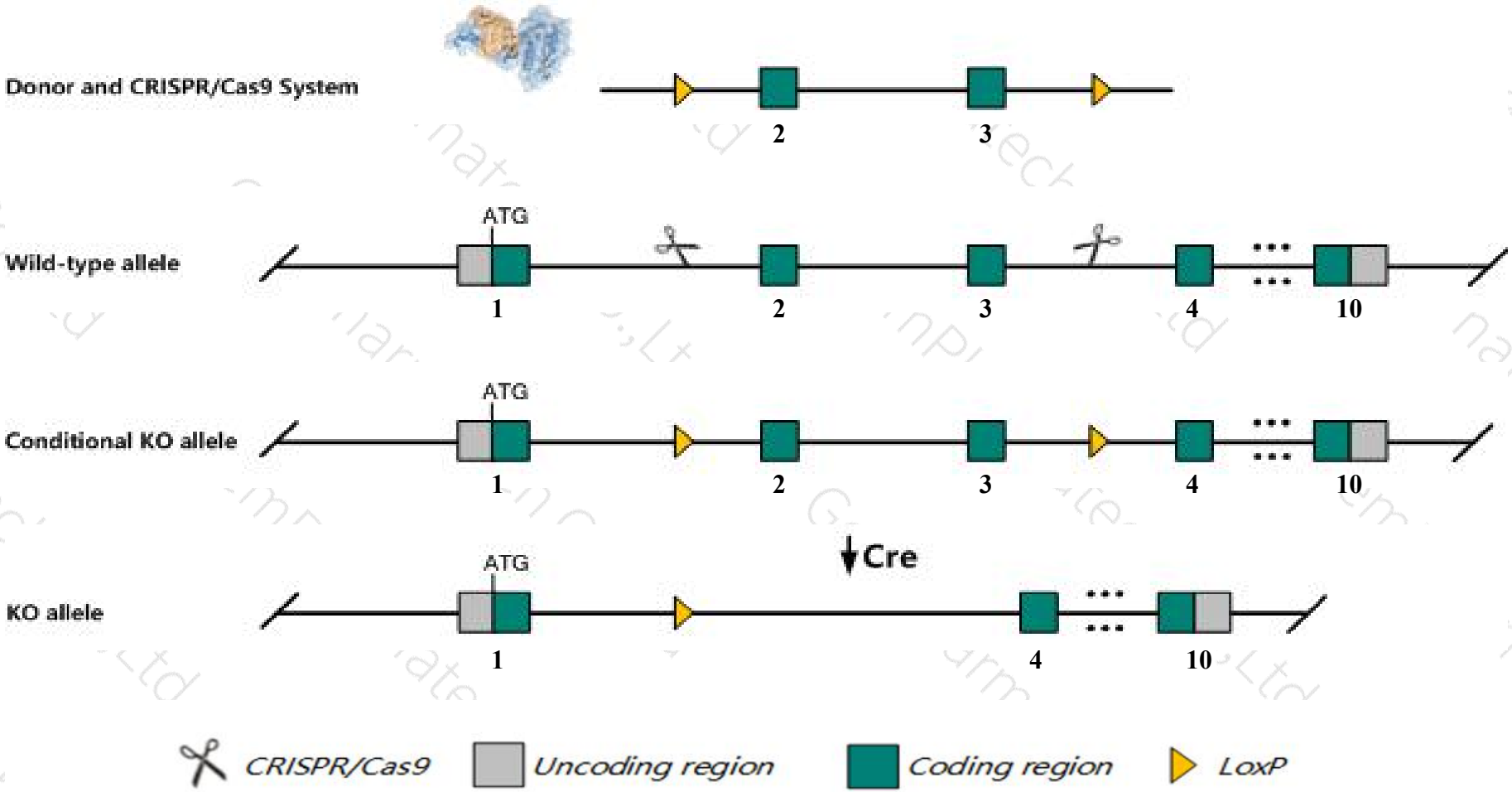
Project Overview

Project Name	***Slc22a4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc22a4* gene. The schematic diagram is as follows:



Technical routes

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- The *Slc22a4* gene has 3 transcripts. According to the structure of *Slc22a4* gene, exon2-exon3 of *Slc22a4-201* (ENSMUST00000020586.6) transcript is recommended as the knockout region.The region contains 259bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Slc22a4* 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 complete loss of ergothioneine with reduced absorption and increased excretion and increased susceptibility of small intestine to inflammation following ischemia and reperfusion.

- Transcript *Slc22a4*-203 may not be affected.

- The *Slc22a4* gene is located on the Chr11. 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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Slc22a4 solute carrier family 22 (organic cation transporter), member 4 [*Mus musculus* (house mouse)]

Gene ID: 30805, updated on 12-Aug-2019

Summary

Official Symbol	Slc22a4 provided by MGI
Official Full Name	solute carrier family 22 (organic cation transporter), member 4 provided by MGI
Primary source	MGI:MGI:1353479
See related	Ensembl:ENSMUSG00000020334
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	Octn1
Expression	Broad expression in kidney adult (RPKM 12.0), liver E14.5 (RPKM 10.1) and 17 other tissues See more
Orthologs	human all

Genomic context

Location: 11 B1.3; 11 32.07 cM

See Slc22a4 in Genome Data Viewer

Exon count: 11

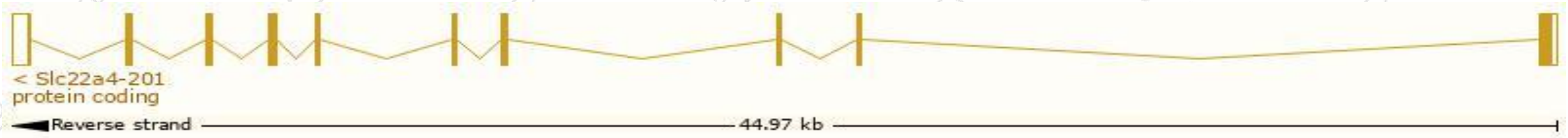
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	11	NC_000077.6 (53983115..54030040, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	11	NC_000077.5 (53796628..53841592, complement)

Transcript information（Ensembl）

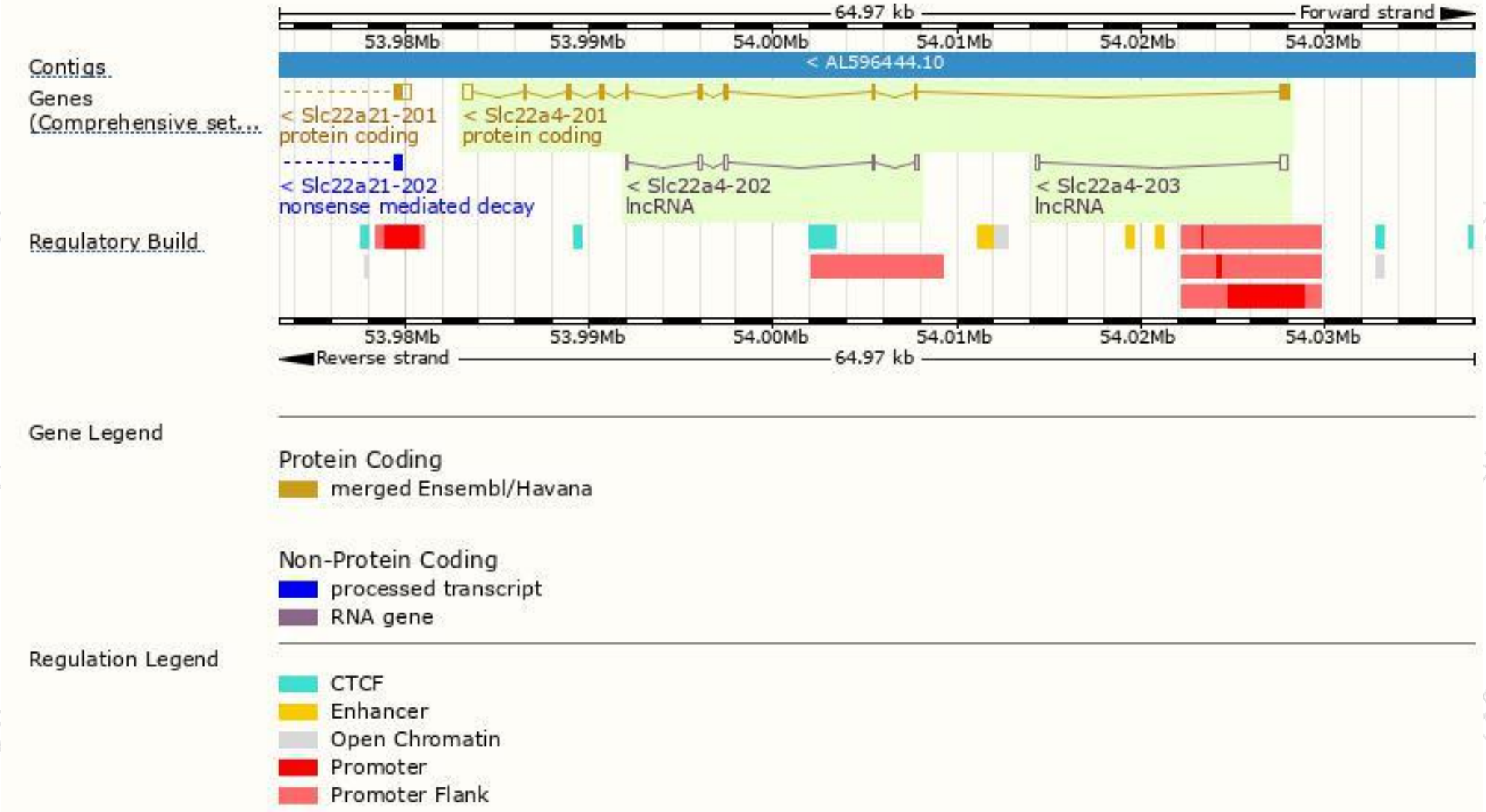
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc22a4-201	ENSMUST00000020586.6	2263	553aa	Protein coding	CCDS24689	Q9Z306	TSL:1 GENCODE basic APPRIS P1
Slc22a4-202	ENSMUST00000146351.1	678	No protein	lncRNA	-	-	TSL:5
Slc22a4-203	ENSMUST00000154369.1	566	No protein	lncRNA	-	-	TSL:2

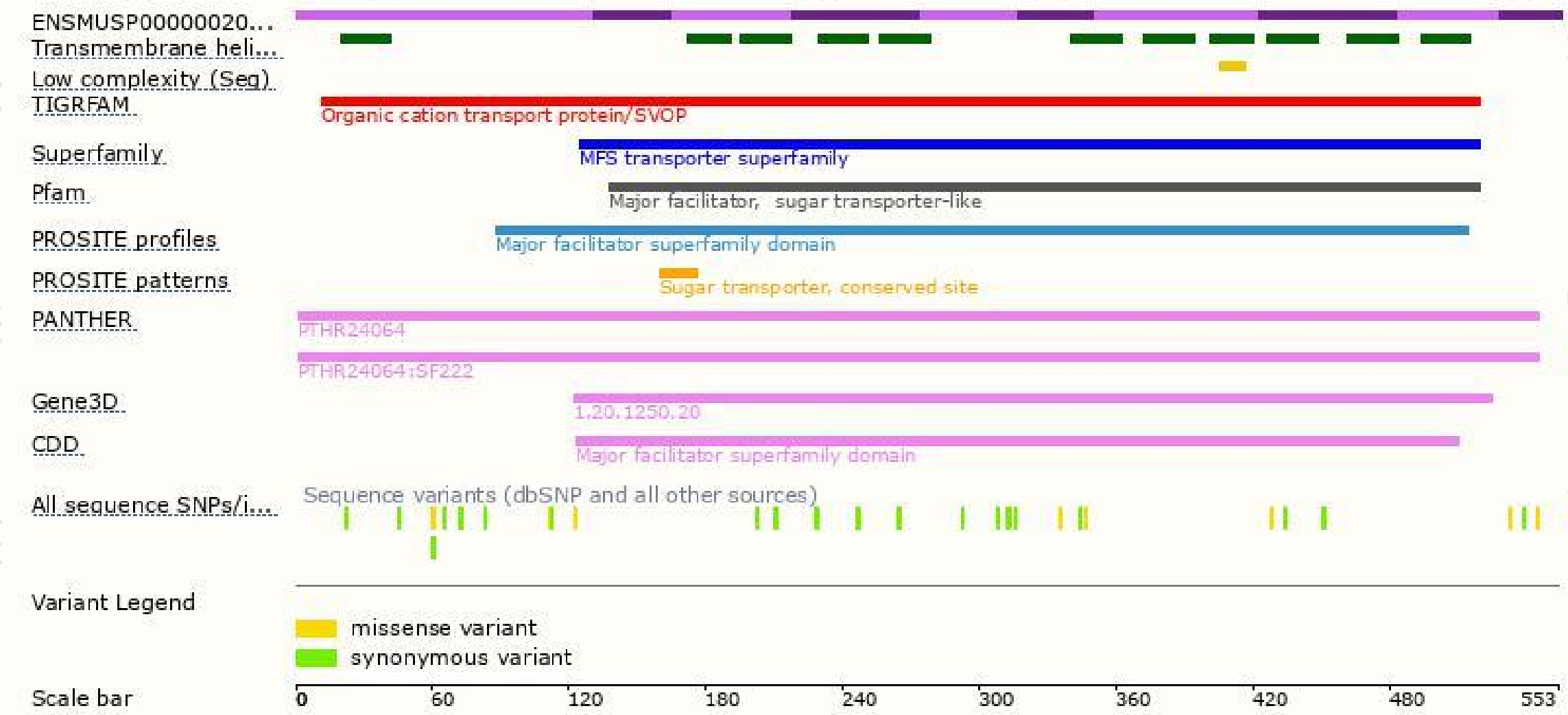
The strategy is based on the design of *Slc22a4-201* transcript,The transcription is shown below



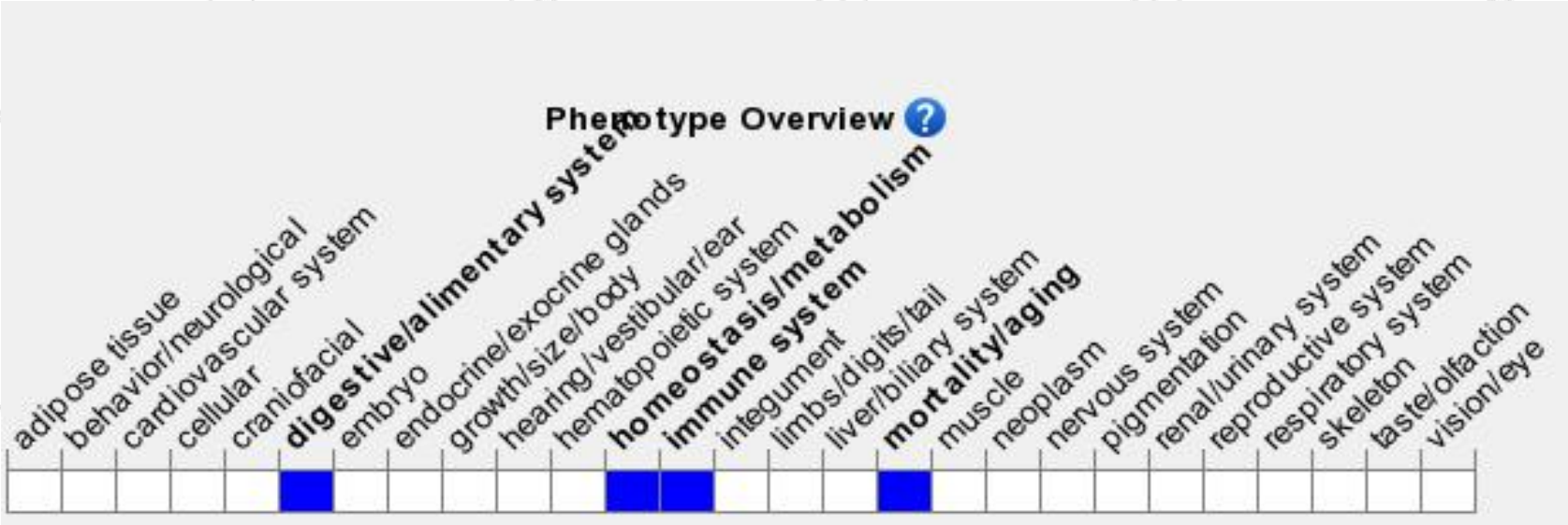
Genomic location distribution



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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