Glt8d1 Cas9-CKO Strategy

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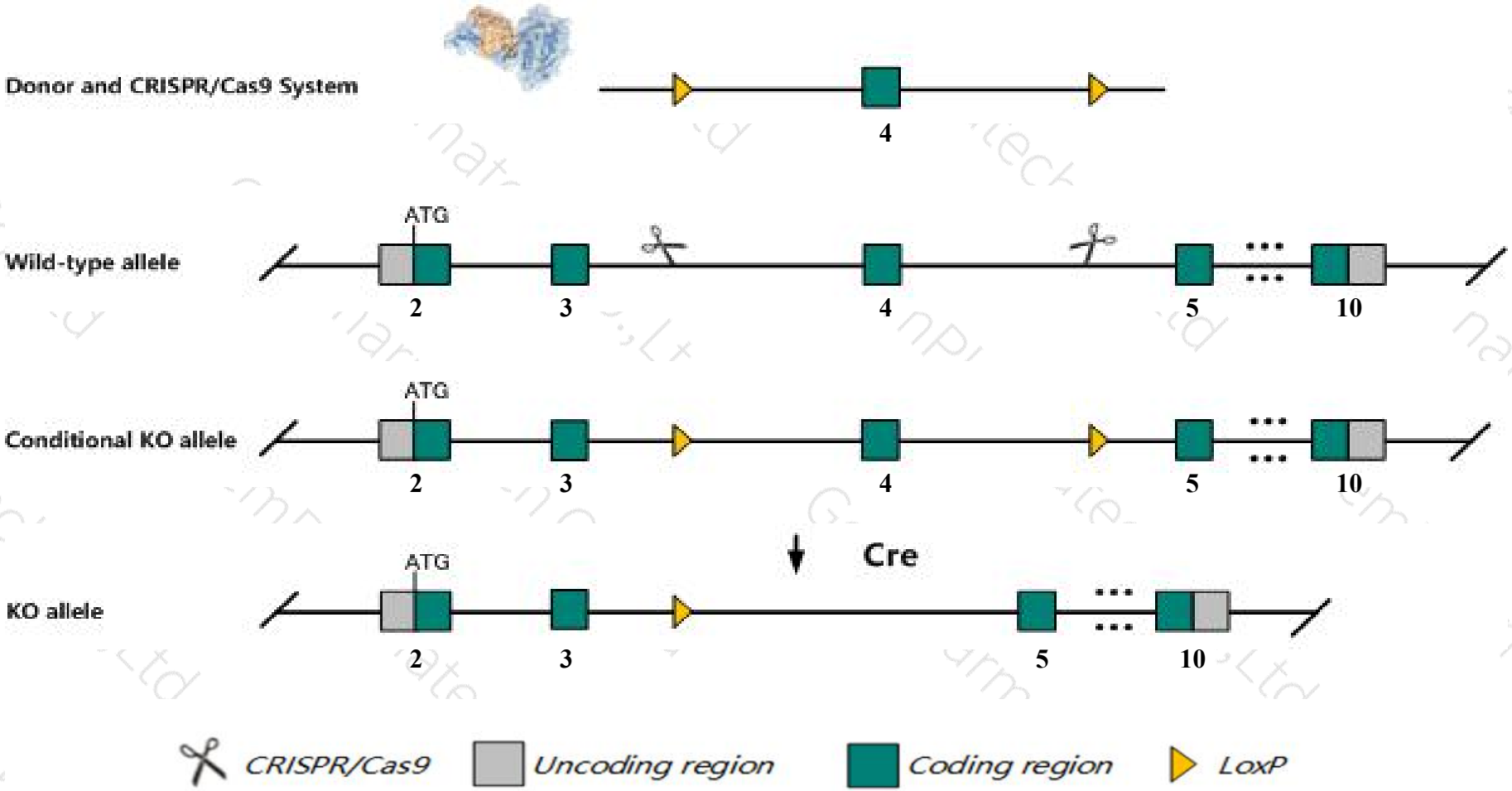
Project Overview

Project Name	***Glt8d1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Glt8d1* gene. The schematic diagram is as follows:



Technical routes

- The *Glt8d1* gene has 10 transcripts. According to the structure of *Glt8d1* gene, exon4 of *Glt8d1-201* (ENSMUST00000022476.8) transcript is recommended as the knockout region.The region contains 214bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Glt8d1* 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 disruption in this gene display exhibited impaired sensorimotor gating/attention during prepulse inhibition testing.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- Transcripts 206,207 may not be affected. The effect of transcript 205 is unknown.
- The *Glt8d1* gene is located on the Chr14. 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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Glt8d1 glycosyltransferase 8 domain containing 1 [*Mus musculus* (house mouse)]

Gene ID: 76485, updated on 14-Aug-2019

Summary

Official Symbol	Glt8d1 provided by MGI
Official Full Name	glycosyltransferase 8 domain containing 1 provided by MGI
Primary source	MGI:MGI:1923735
See related	Ensembl:ENSMUSG00000021916
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI450005; 2410004H05Rik; 5430414N14Rik
Summary	This gene encodes a member of the glycosyltransferase family. The encoded protein is a type II transmembrane protein containing a glycosyltransferase 8 domain in the lumenal (C-terminal) portion. The specific function of this protein has not been determined. Two alternatively spliced variants encoding the same isoform have been described. [provided by RefSeq, Sep 2009]
Expression	Broad expression in testis adult (RPKM 75.2), limb E14.5 (RPKM 20.1) and 21 other tissues See more
Orthologs	human all

Genomic context

Location: 14; 14 B

See Glt8d1 in Genome Data Viewer

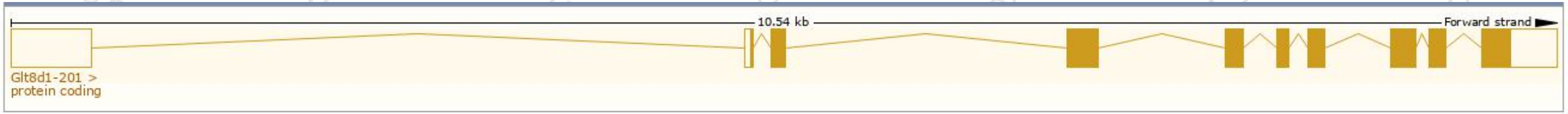
Exon count: 12

Transcript information（Ensembl）

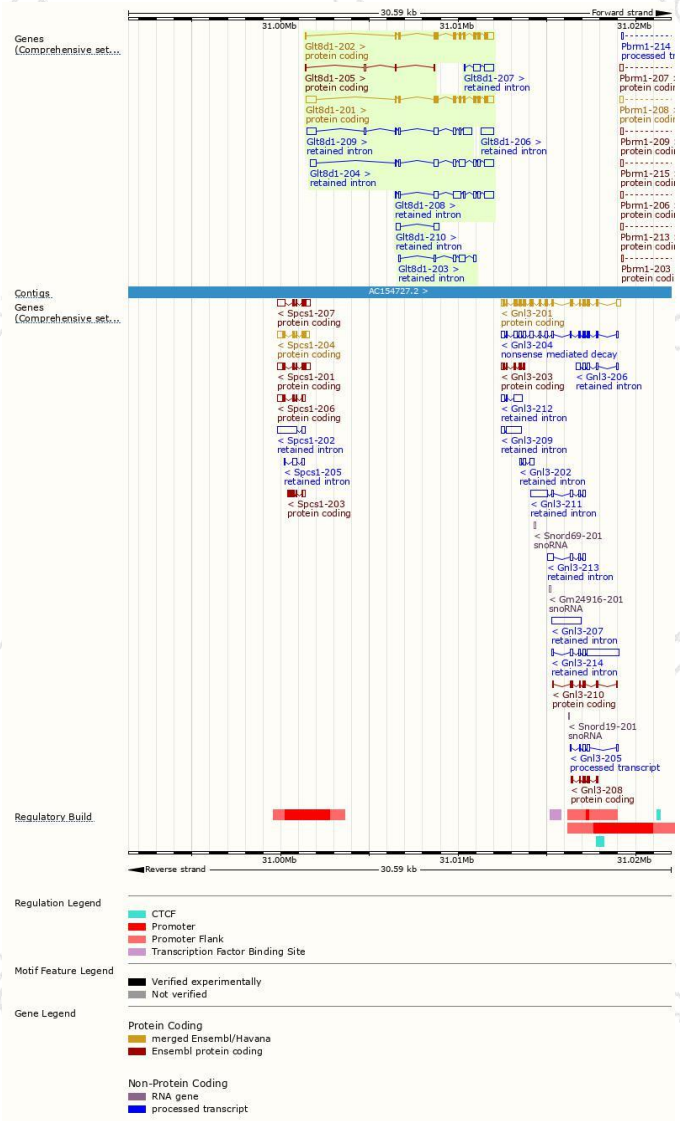
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Glt8d1-201	ENSMUST00000022476.8	2018	371aa	Protein coding	CCDS26904	Q6NSU3	TSL:1 GENCODE basic APPRIS P1
Glt8d1-202	ENSMUST00000168584.8	1498	371aa	Protein coding	CCDS26904	Q6NSU3	TSL:1 GENCODE basic APPRIS P1
Glt8d1-205	ENSMUST00000226378.1	213	18aa	Protein coding	-	A0A2I3BRI4	CDS 3' incomplete
Glt8d1-204	ENSMUST00000226348.1	1923	No protein	Retained intron	-	-	
Glt8d1-208	ENSMUST00000228255.1	1692	No protein	Retained intron	-	-	
Glt8d1-209	ENSMUST00000228718.1	1681	No protein	Retained intron	-	-	
Glt8d1-207	ENSMUST00000227783.1	955	No protein	Retained intron	-	-	
Glt8d1-203	ENSMUST00000226271.1	772	No protein	Retained intron	-	-	
Glt8d1-206	ENSMUST00000226959.1	684	No protein	Retained intron	-	-	
Glt8d1-210	ENSMUST00000228914.1	487	No protein	Retained intron	-	-	

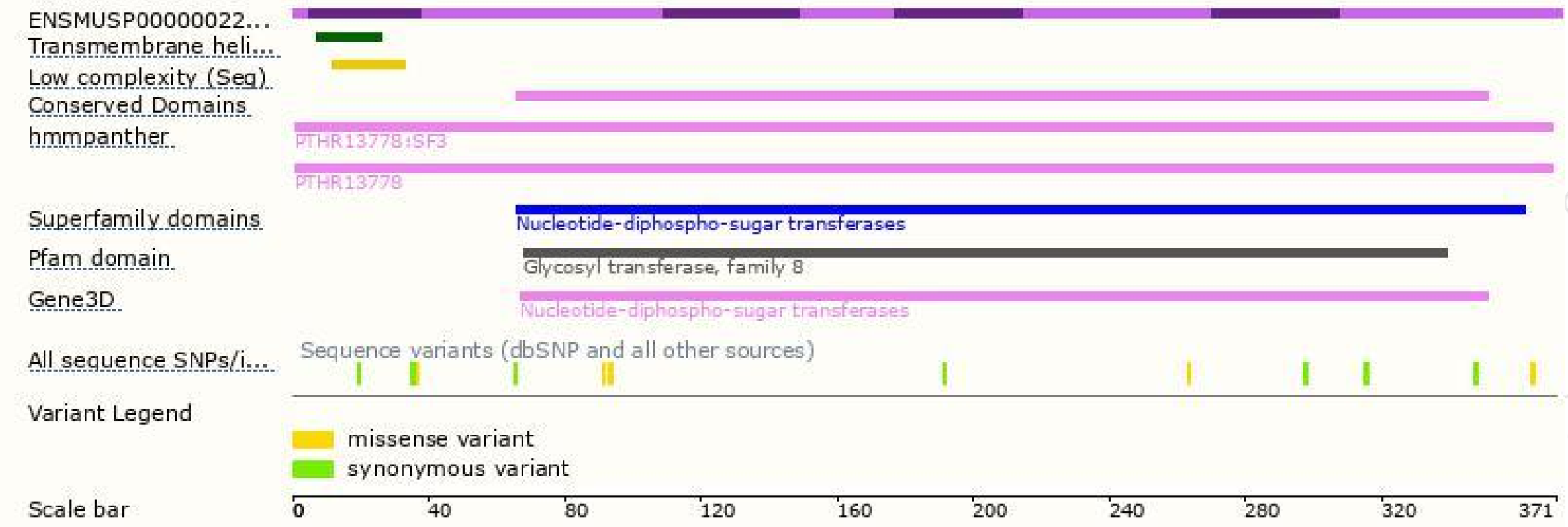
The strategy is based on the design of *Glt8d1-201* transcript,The transcription is shown below



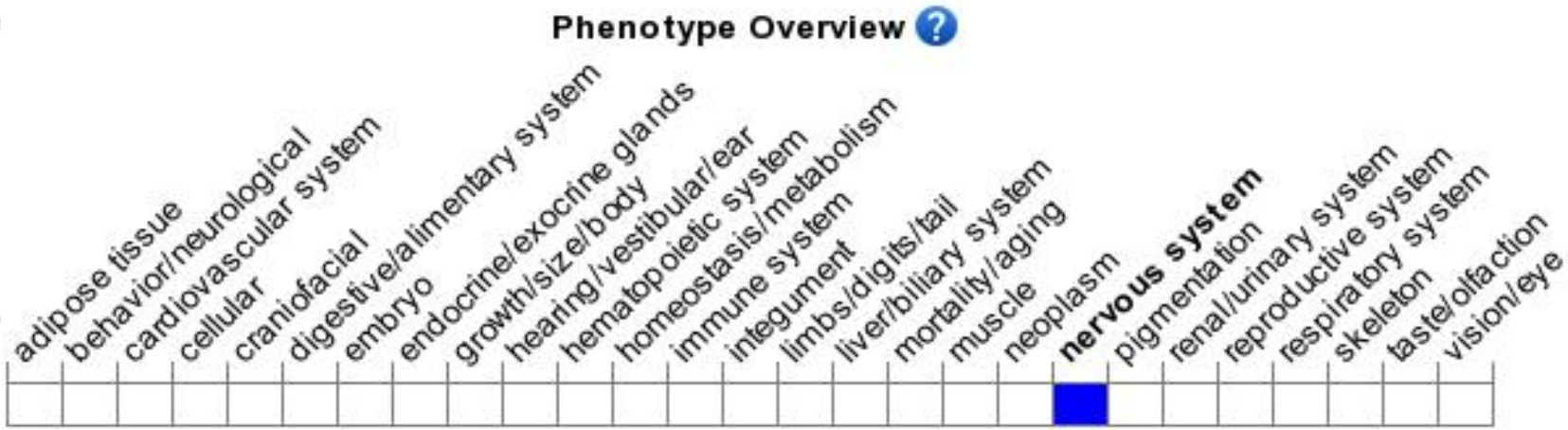
Genomic location distribution



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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