Gtdc1 Cas9-CKO Strategy

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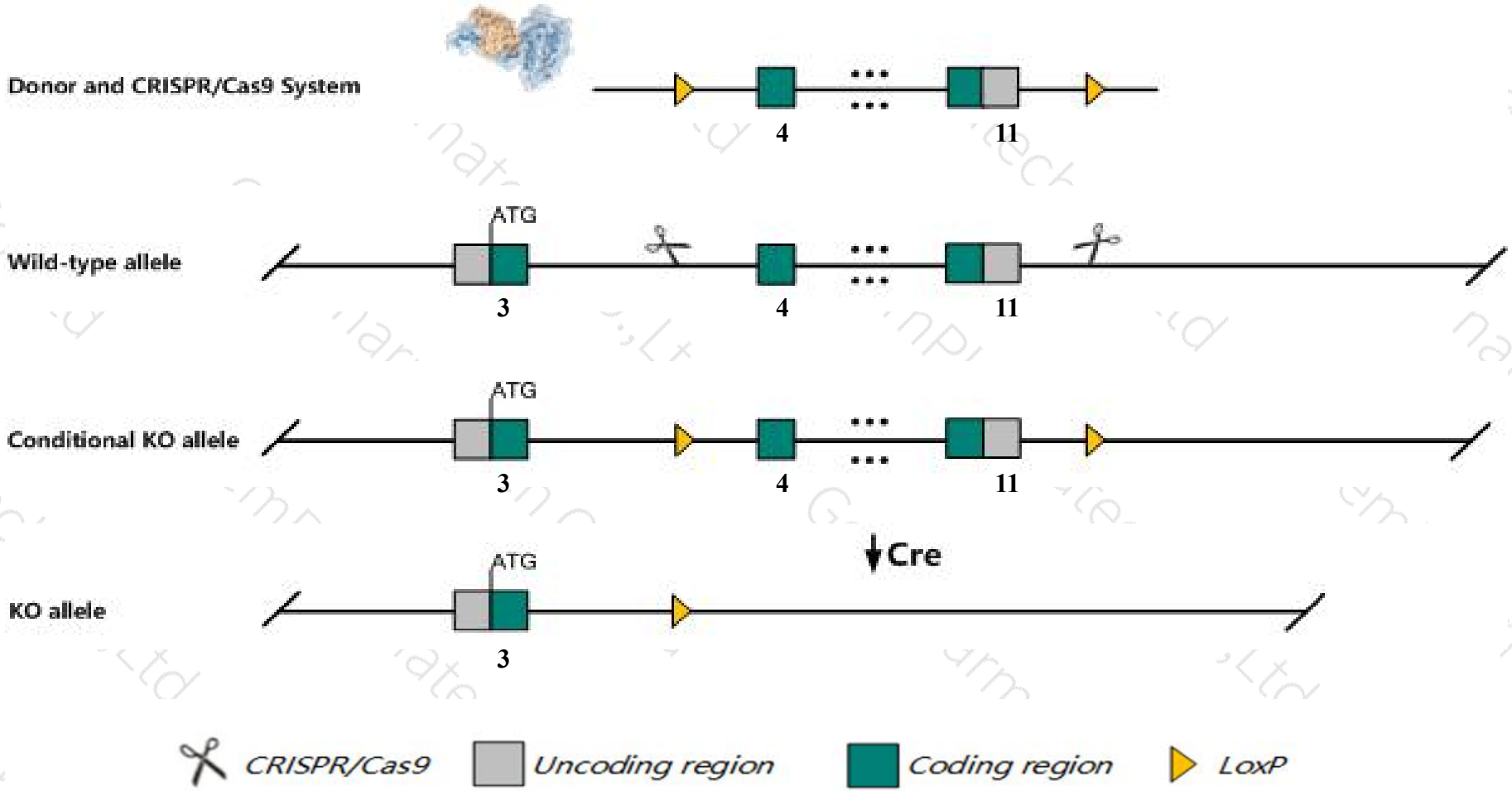
Project Overview

Project Name	***Gtdc1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gtdc1* gene. The schematic diagram is as follows:



Technical routes

- The *Gtdc1* gene has 13 transcripts. According to the structure of *Gtdc1* gene, exon4-exon11 of *Gtdc1-203* (ENSMUST00000112810.7) transcript is recommended as the knockout region.The region contains most of coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gtdc1* 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

➢Transcripts 202,206,209 may not be affected. The effect of transcripts 205,210,211,213 is unknown.

➢The *Gtdc1* 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）

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Gtdc1 glycosyltransferase-like domain containing 1 [*Mus musculus* (house mouse)]

Gene ID: 227835, updated on 24-Oct-2019

Summary

Official Symbol	Gtdc1 provided by MGI
Official Full Name	glycosyltransferase-like domain containing 1 provided by MGI
Primary source	MGI:MGI:2444269
See related	Ensembl:ENSMUSG00000036890
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	E330008O22Rik
Expression	Broad expression in cortex adult (RPKM 8.8), CNS E18 (RPKM 7.0) and 23 other tissues See more
Orthologs	human all

Genomic context

Location: 2; 2 B

See Gtdc1 in Genome Data Viewer

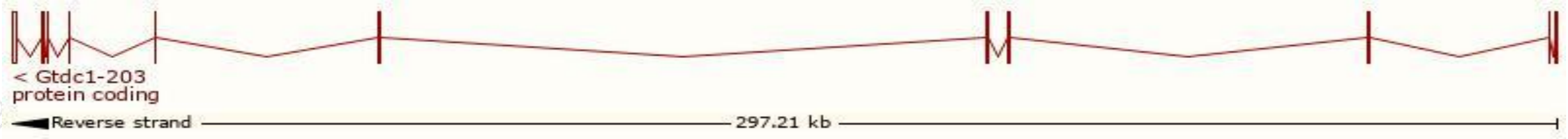
Exon count: 18

Transcript information（Ensembl）

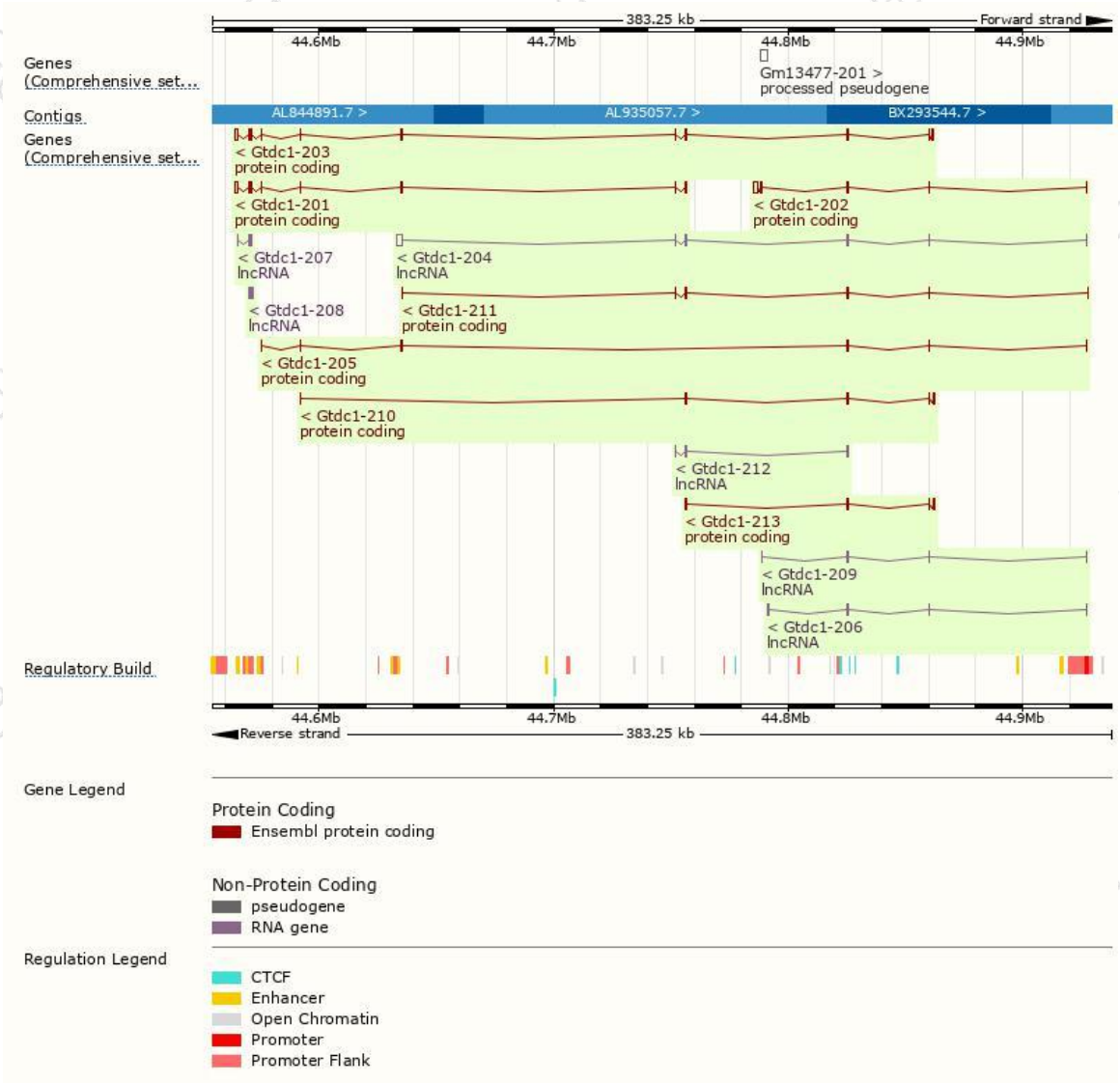
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gtdc1-203	ENSMUST00000112810.7	2564	445aa	Protein coding	CCDS71050	Q8BW56	TSL:1 GENCODE basic APPRIS P1
Gtdc1-202	ENSMUST00000100127.8	2422	106aa	Protein coding	-	Q8BW56	TSL:1 GENCODE basic
Gtdc1-201	ENSMUST00000049051.12	2197	386aa	Protein coding	-	G8JL42	TSL:1 GENCODE basic
Gtdc1-205	ENSMUST00000130991.7	784	238aa	Protein coding	-	B1AY87	CDS 3' incomplete TSL:5
Gtdc1-211	ENSMUST00000148279.7	677	191aa	Protein coding	-	A0A0A0MQK2	CDS 3' incomplete TSL:5
Gtdc1-210	ENSMUST00000146694.7	652	142aa	Protein coding	-	B1AY88	CDS 3' incomplete TSL:3
Gtdc1-213	ENSMUST00000154744.7	571	115aa	Protein coding	-	A0A0A0MQI8	CDS 3' incomplete TSL:2
Gtdc1-204	ENSMUST00000129240.7	2882	No protein	lncRNA	-	-	TSL:1
Gtdc1-206	ENSMUST00000133442.1	646	No protein	lncRNA	-	-	TSL:5
Gtdc1-208	ENSMUST00000143333.1	643	No protein	lncRNA	-	-	TSL:2
Gtdc1-209	ENSMUST00000143766.7	638	No protein	lncRNA	-	-	TSL:3
Gtdc1-207	ENSMUST00000134813.1	629	No protein	lncRNA	-	-	TSL:1
Gtdc1-212	ENSMUST00000148786.1	547	No protein	lncRNA	-	-	TSL:2

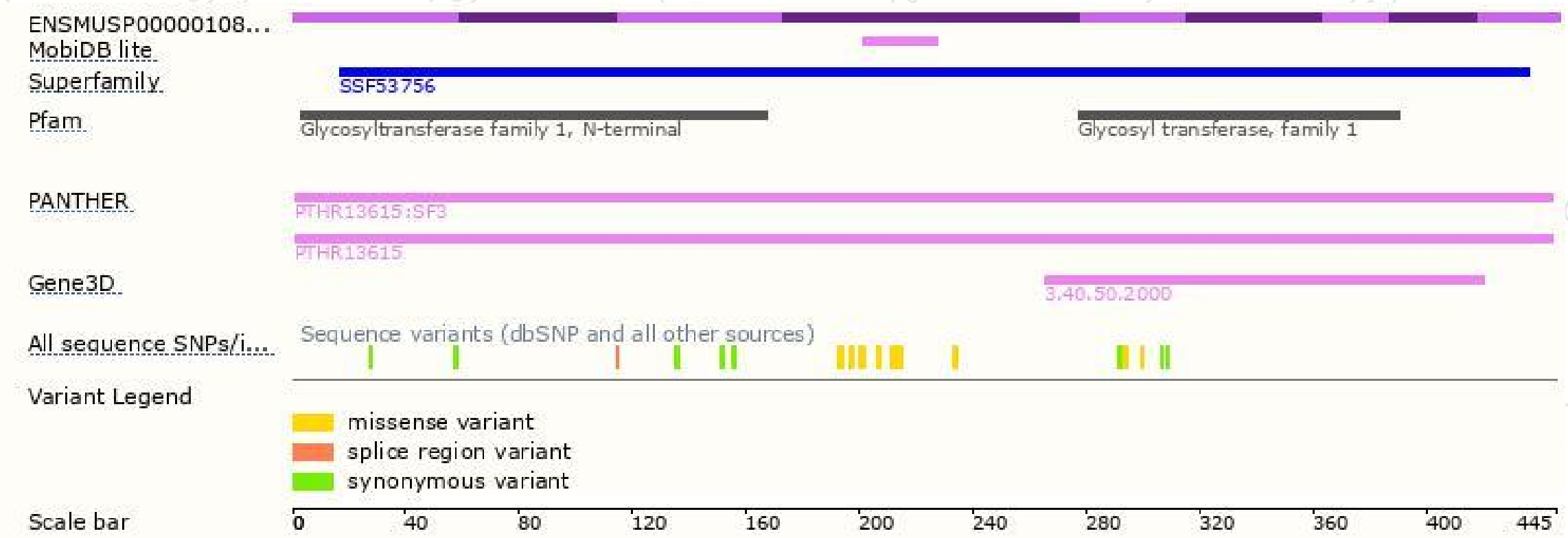
The strategy is based on the design of *Gtdc1-203* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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