B4galt4 Cas9-CKO Strategy

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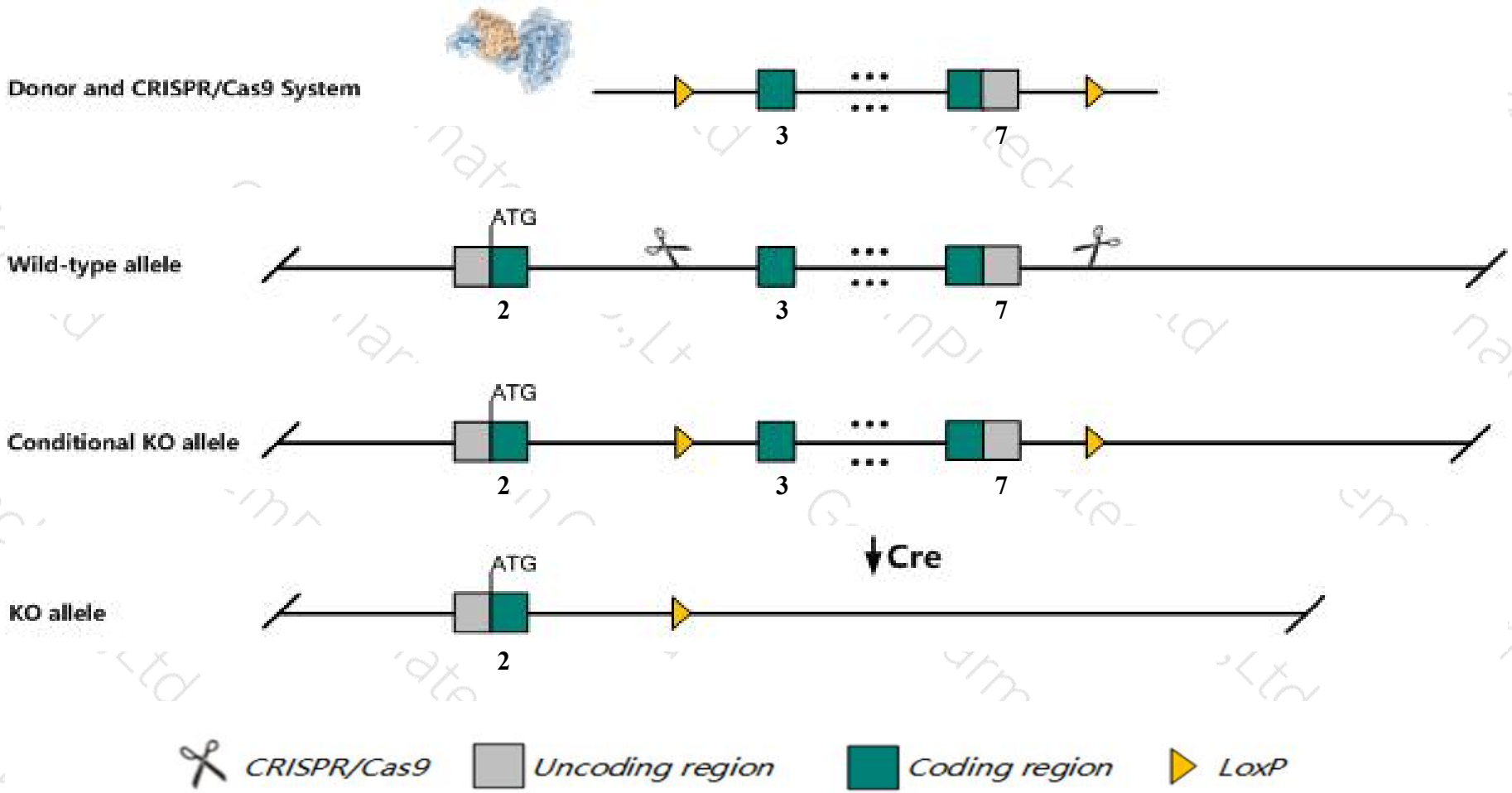
Project Overview

Project Name	***B4galt4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *B4galt4* gene. The schematic diagram is as follows:



Technical routes

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➢ The *B4galt4* gene has 9 transcripts. According to the structure of *B4galt4* gene, exon3-exon7 of *B4galt4-201* (ENSMUST00000023482.12) 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 *B4galt4* 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

➢The effect of transcript 208 is unknown.

➢Some amino acids will remain at the N-terminus and some functions may be retained.

➢The *B4galt4* gene is located on the Chr16. 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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B4galt4 UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 4 [*Mus musculus* (house mouse)]

Gene ID: 56375, updated on 12-Aug-2019

Summary

Official Symbol	B4galt4 provided by MGI
Official Full Name	UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 4 provided by MGI
Primary source	MGI:MGI:1928387
See related	Ensembl:ENSMUSG00000022793
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	b4Gal-T4; B4galt-IV; beta4Gal-T4; beta4GalT-IV; 9130402O08Rik
Expression	Ubiquitous expression in genital fat pad adult (RPKM 9.5), colon adult (RPKM 7.0) and 26 other tissues See more
Orthologs	human all

Genomic context

Location: 16; 16 B4

See B4galt4 in Genome Data Viewer

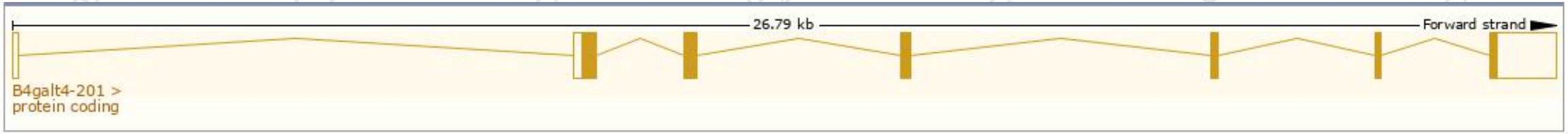
Exon count: 10

Transcript information（Ensembl）

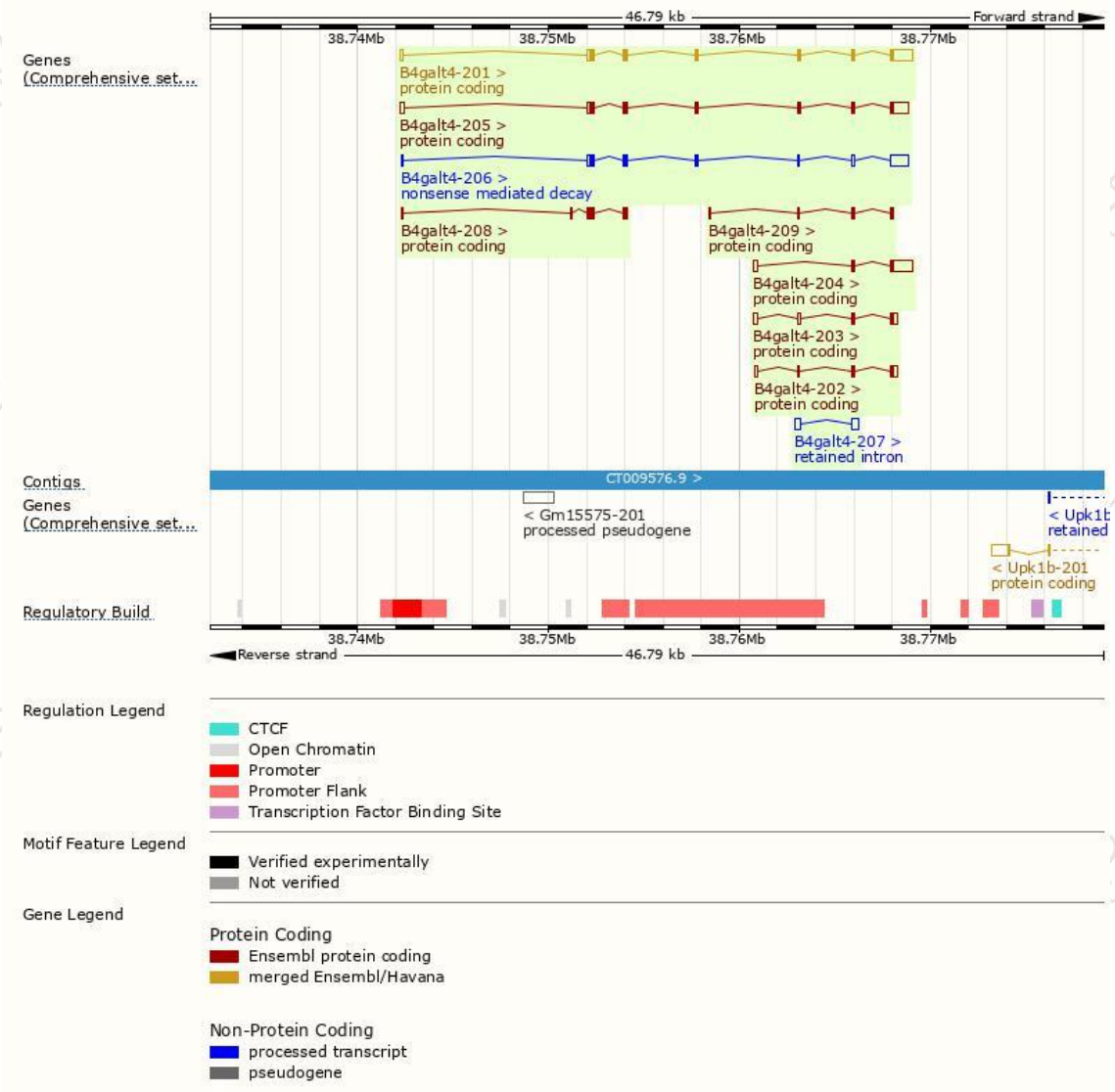
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
B4galt4-201	ENSMUST00000023482.12	2304	344aa	Protein coding	CCDS28173	Q9JJ04	TSL:1 GENCODE basic APPRIS P1
B4galt4-205	ENSMUST00000114712.7	2168	344aa	Protein coding	CCDS28173	Q9JJ04	TSL:1 GENCODE basic APPRIS P1
B4galt4-204	ENSMUST00000114711.7	1481	73aa	Protein coding	-	A6X8Z8	TSL:1 GENCODE basic
B4galt4-203	ENSMUST00000114710.7	837	73aa	Protein coding	-	A6X8Z8	TSL:3 GENCODE basic
B4galt4-208	ENSMUST00000231655.1	746	226aa	Protein coding	-	A0A338P7H8	CDS 3' incomplete
B4galt4-202	ENSMUST00000114708.1	734	73aa	Protein coding	-	A6X8Z8	TSL:2 GENCODE basic
B4galt4-209	ENSMUST00000232454.1	467	73aa	Protein coding	-	A6X8Z8	GENCODE basic
B4galt4-206	ENSMUST00000154902.1	2009	246aa	Nonsense mediated decay	-	F2Z3X1	TSL:1
B4galt4-207	ENSMUST00000161010.1	665	No protein	Retained intron	-	-	TSL:3

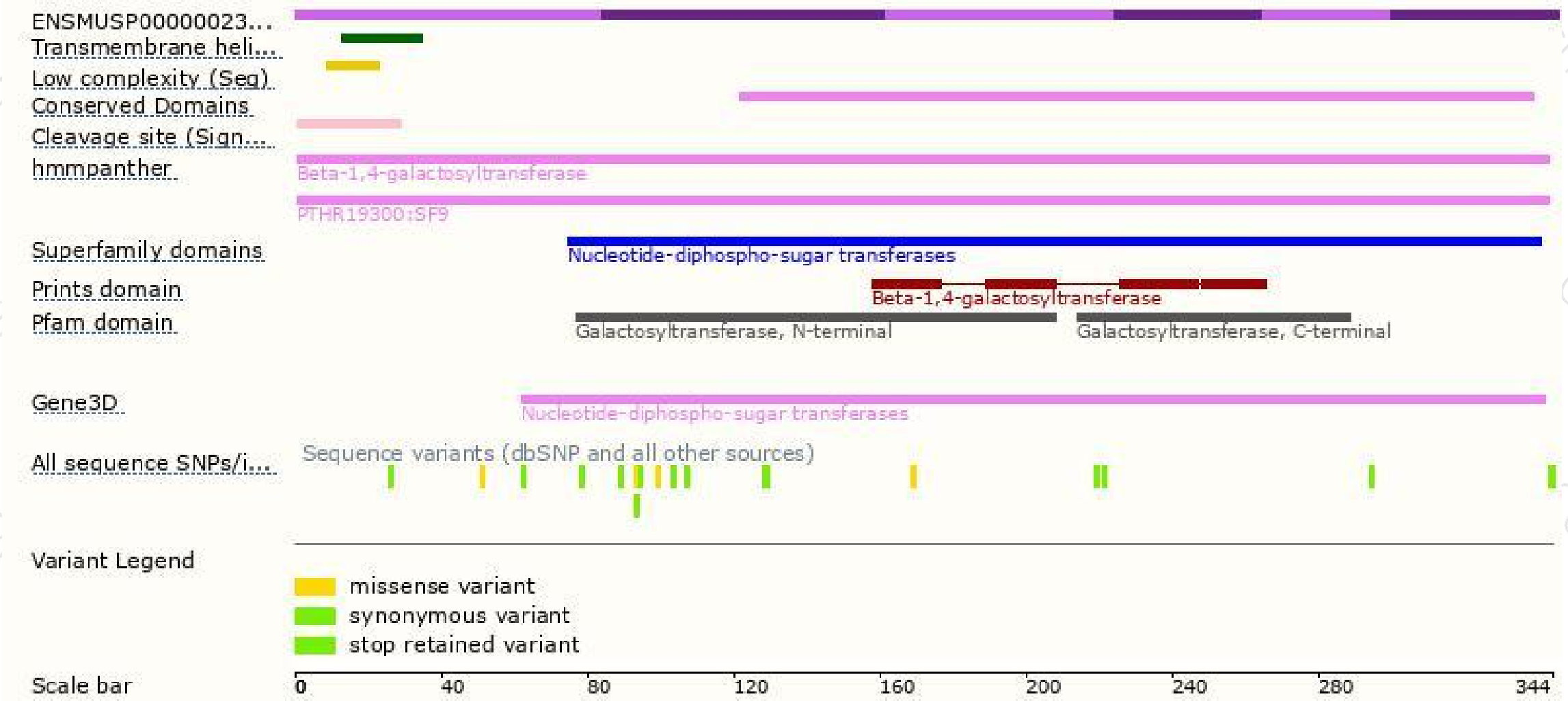
The strategy is based on the design of *B4galt4-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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