B4galt2 Cas9-CKO Strategy

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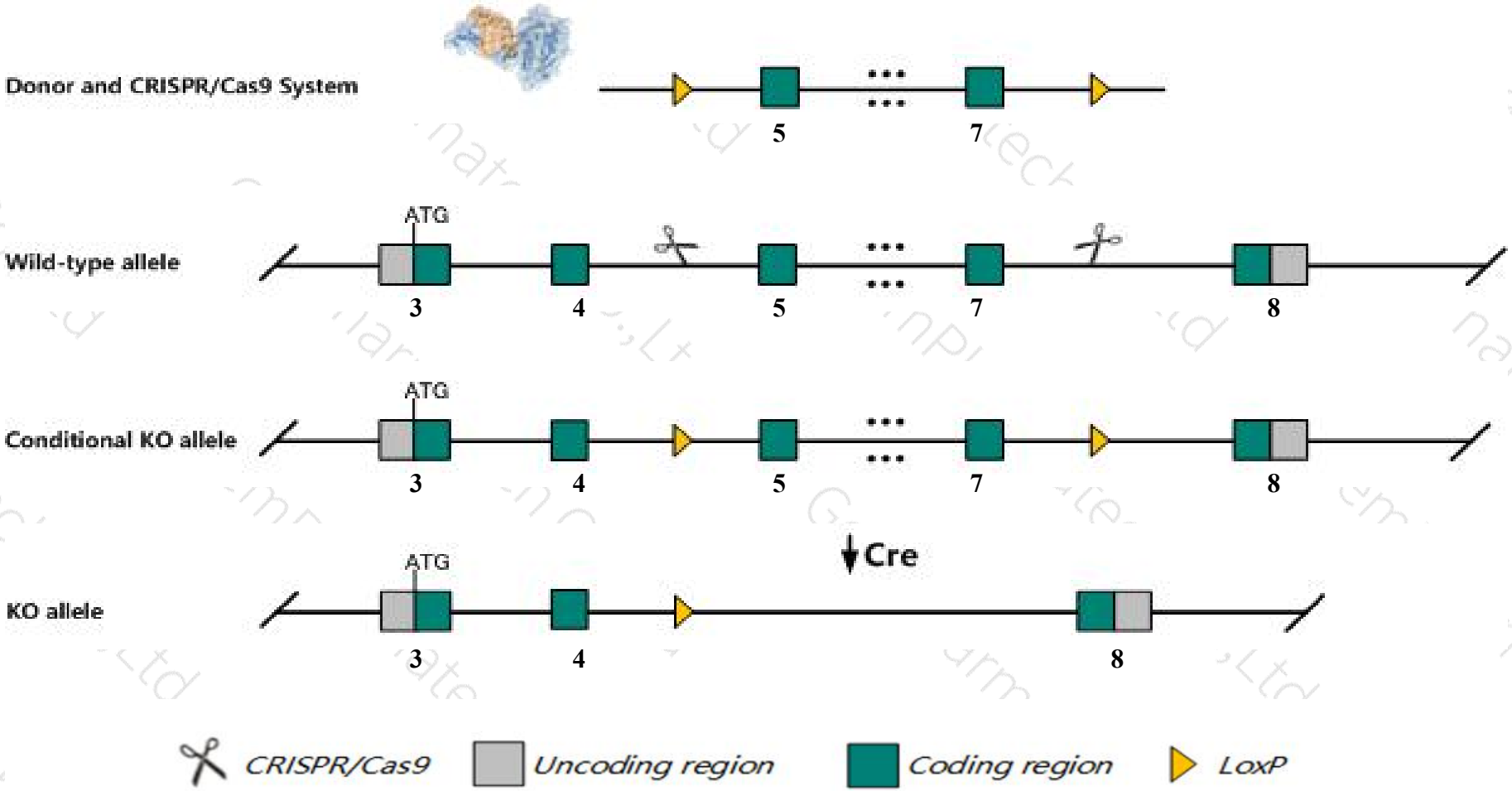
Design Date: 2020-2-15

Project Overview

Project Name	***B4galt2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *B4galt2* gene. The schematic diagram is as follows:



Technical routes

- The *B4galt2* gene has 7 transcripts. According to the structure of *B4galt2* gene, exon5-exon7 of *B4galt2-201* (ENSMUST00000030266.11) transcript is recommended as the knockout region.The region contains 419bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *B4galt2* 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 null allele exhibit decreased brain weight, ectopic Purkinje cells in the cerebellum, and impaired spatial learning and coordination.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- The effect of transcripts 205,207 is unknown.
- The *B4galt2* gene is located on the Chr4. 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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B4galt2 UDP-Gal:betaGlcNAc beta 1,4- galactosyltransferase, polypeptide 2 [*Mus musculus* (house mouse)]

Gene ID: 53418, updated on 12-Aug-2019

Summary

Official Symbol	B4galt2 provided by MGI
Official Full Name	UDP-Gal:betaGlcNAc beta 1,4- galactosyltransferase, polypeptide 2 provided by MGI
Primary source	MGI:MGI:1858493
See related	Ensembl:ENSMUSG00000028541
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	Ggtb2
Expression	Broad expression in CNS E18 (RPKM 21.0), ovary adult (RPKM 20.1) and 23 other tissues See more
Orthologs	human all

Genomic context

Location: 4; 4 D2.1

See B4galt2 in Genome Data Viewer

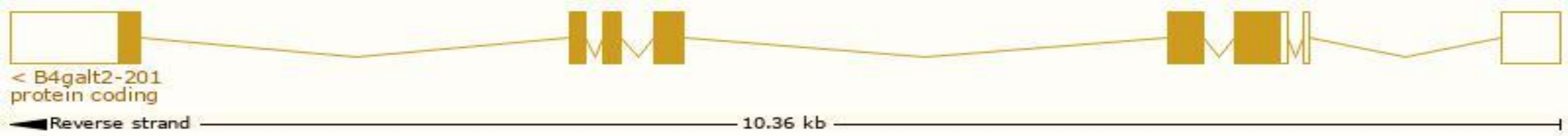
Exon count: 10

Transcript information（Ensembl）

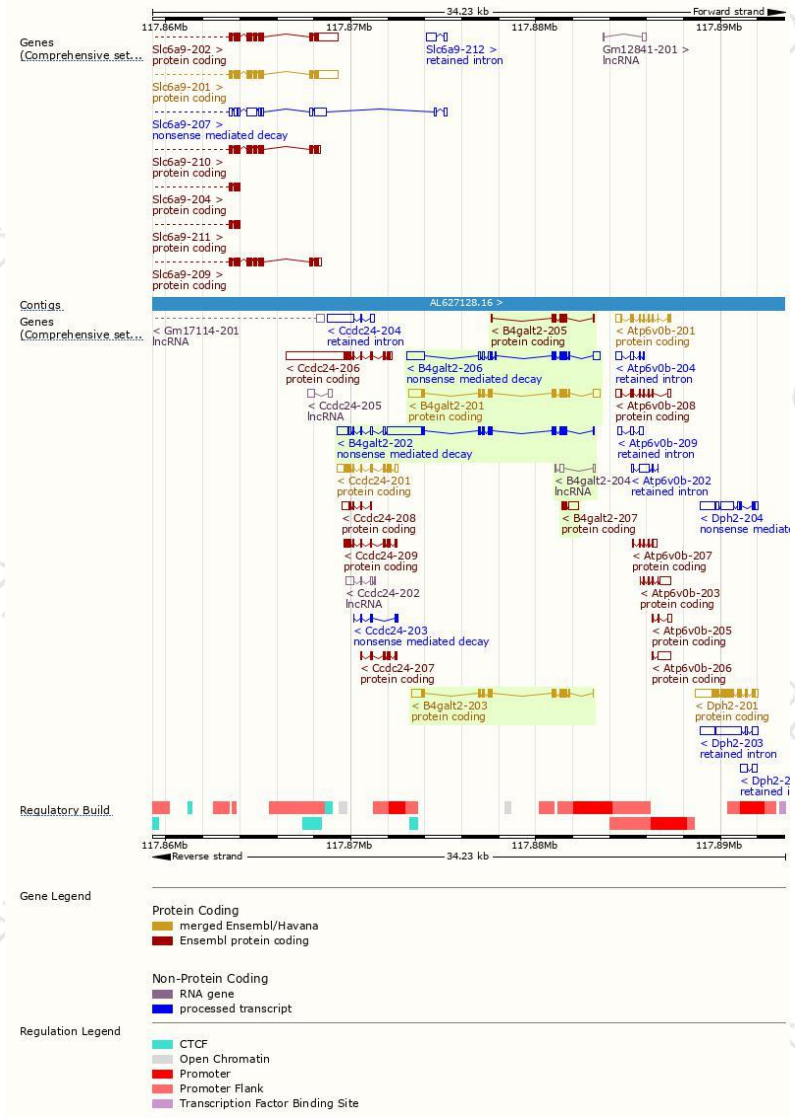
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
B4galt2-201	ENSMUST00000030266.11	2312	369aa	Protein coding	CCDS18539	B1ASJ2 Q9Z2Y2	TSL:1 GENCODE basic APPRIS P1
B4galt2-203	ENSMUST00000106421.8	1801	369aa	Protein coding	CCDS18539	B1ASJ2 Q9Z2Y2	TSL:1 GENCODE basic APPRIS P1
B4galt2-207	ENSMUST00000171548.1	794	75aa	Protein coding	-	E9PY89	CDS 3' incomplete TSL:3
B4galt2-205	ENSMUST00000153358.2	696	196aa	Protein coding	-	A0A0A0MQK1	CDS 3' incomplete TSL:3
B4galt2-202	ENSMUST00000084325.9	4093	369aa	Nonsense mediated decay	CCDS18539	B1ASJ2 Q9Z2Y2	TSL:2
B4galt2-206	ENSMUST00000167443.7	2466	224aa	Nonsense mediated decay	-	E9Q8H8	TSL:1
B4galt2-204	ENSMUST00000137016.1	396	No protein	lncRNA	-	-	TSL:3

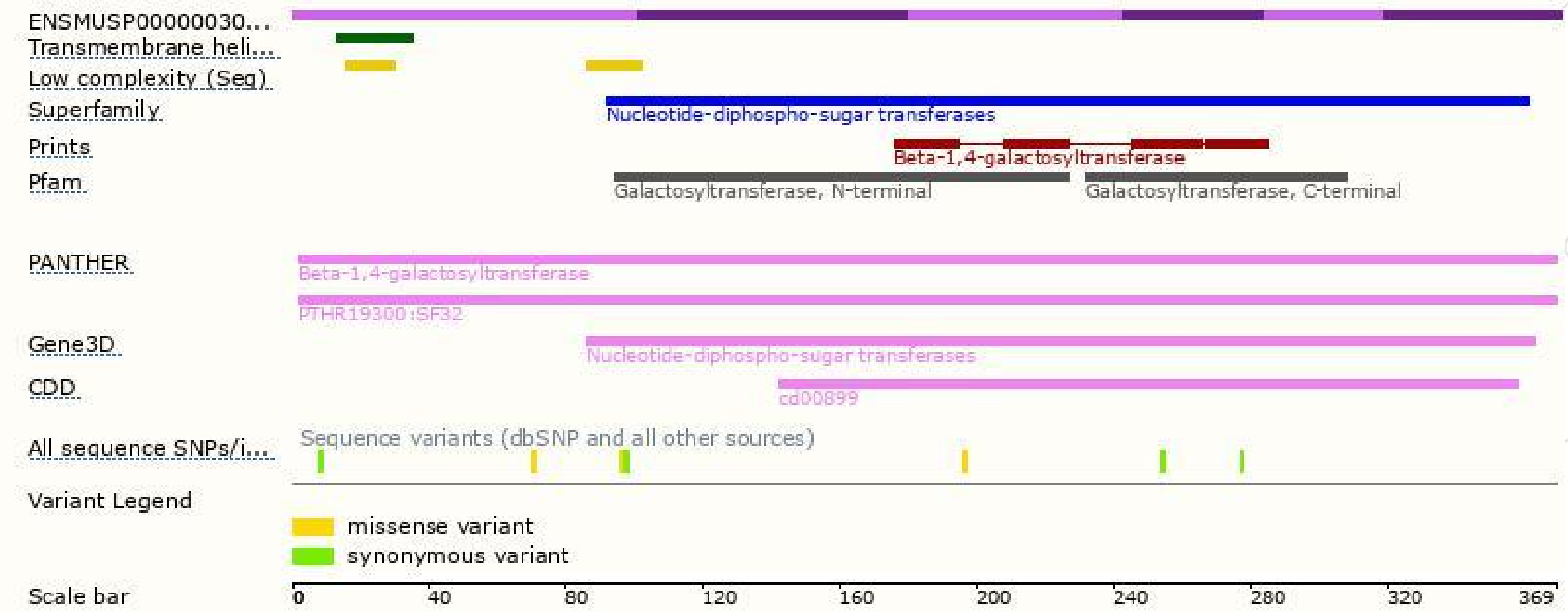
The strategy is based on the design of *B4galt2-201* transcript,The transcription is shown below



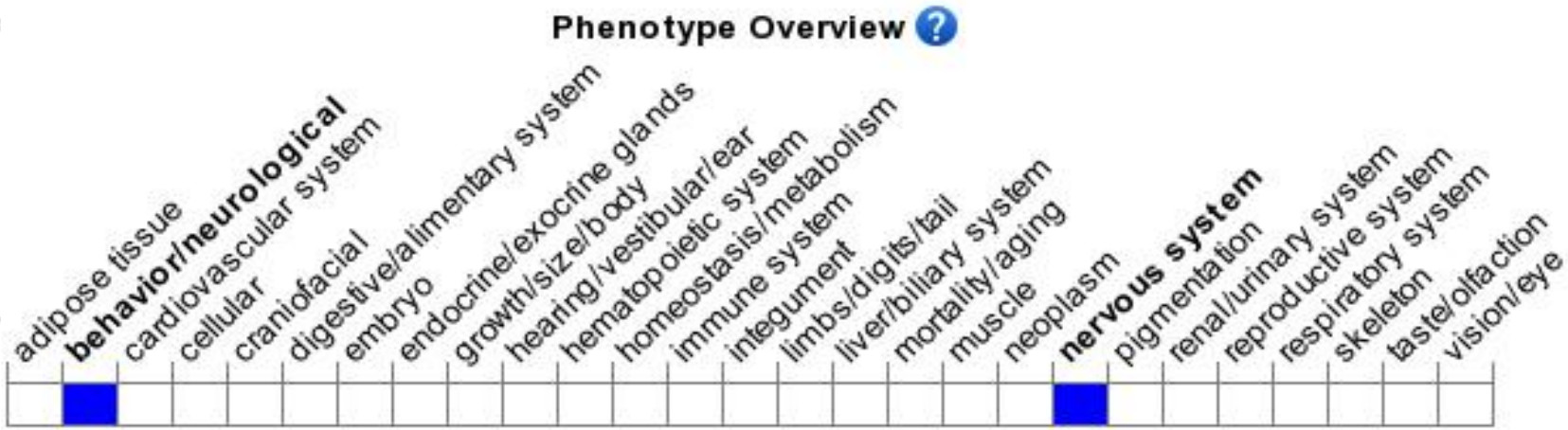
Genomic location distribution



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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