B4galt5 Cas9-KO Strategy

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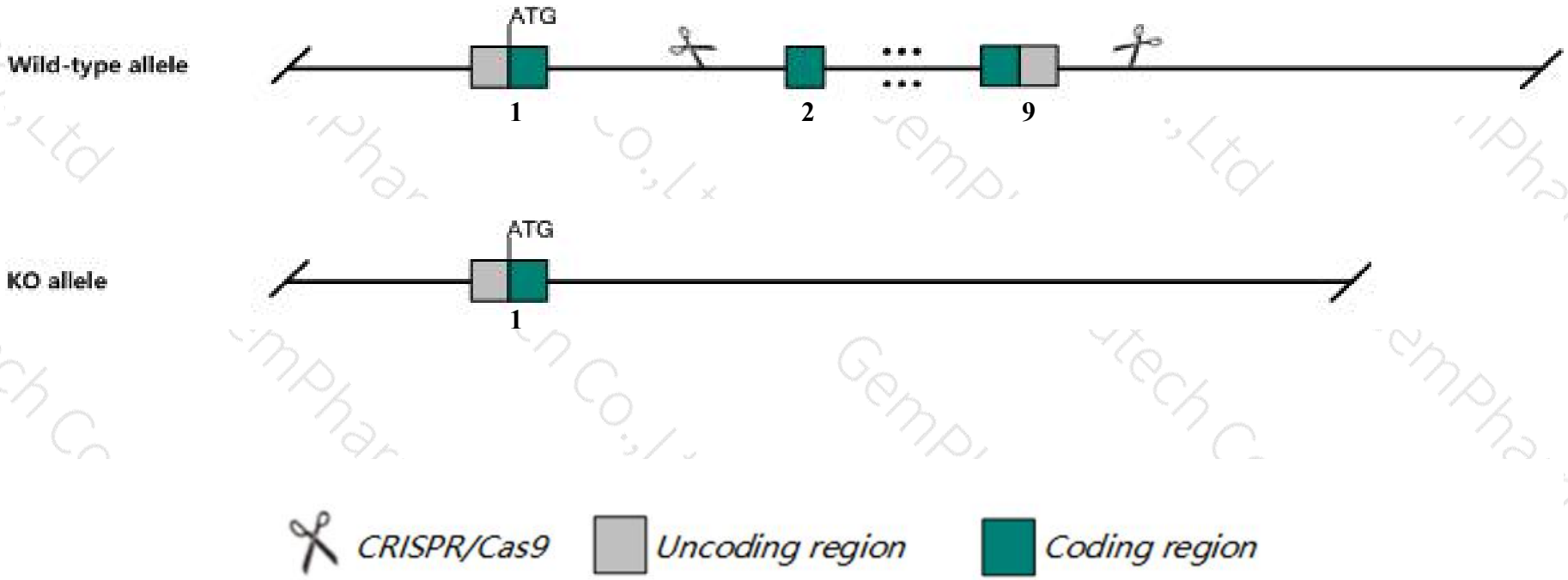
Project Overview

Project Name	***B4galt5***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *B4galt5* gene. The schematic diagram is as follows:



Technical routes

➢ The *B4galt5* gene has 4 transcripts. According to the structure of *B4galt5* gene, exon2-exon9 of *B4galt5-201* (ENSMUST00000109221.8) 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 *B4galt5* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous mutation of this gene results in lethality before weaning. Heterozygous mutant mice exhibit increased anxiety-like response.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- The effect of transcript 203 is unknown.
- The *B4galt5* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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B4galt5 UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 5 [*Mus musculus* (house mouse)]

Gene ID: 56336, updated on 12-Aug-2019

Summary

Official Symbol	B4galt5 provided by MGI
Official Full Name	UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 5 provided by MGI
Primary source	MGI:MGI:1927169
See related	Ensembl:ENSMUSG00000017929
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	AW049941; AW539721; 9430078I07Rik
Expression	Ubiquitous expression in small intestine adult (RPKM 13.1), adrenal adult (RPKM 12.5) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 2; 2 H3

See B4galt5 in Genome Data Viewer

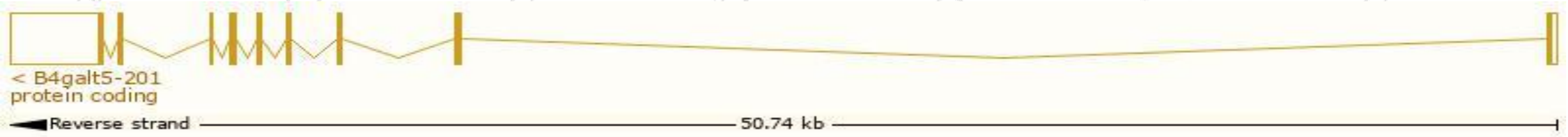
Exon count: 9

Transcript information（Ensembl）

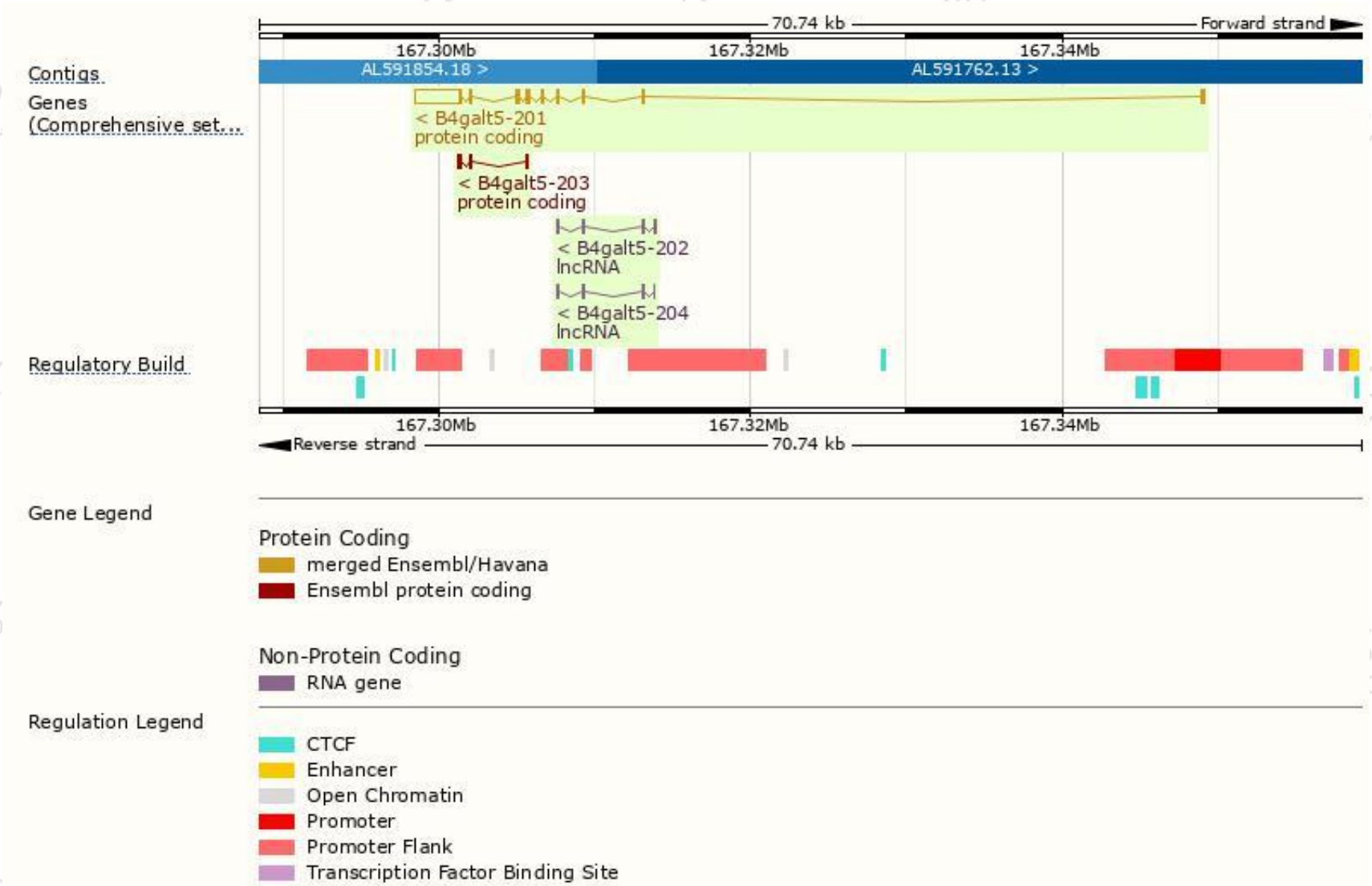
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
B4galt5-201	ENSMUST00000109221.8	4210	388aa	Protein coding	CCDS17098	Q9JMK0	TSL:1 GENCODE basic APPRIS P1
B4galt5-203	ENSMUST00000149698.1	425	96aa	Protein coding	-	F6XV02	CDS 5' incomplete TSL:3
B4galt5-202	ENSMUST00000133557.1	361	No protein	lncRNA	-	-	TSL:5
B4galt5-204	ENSMUST00000155623.7	361	No protein	lncRNA	-	-	TSL:2

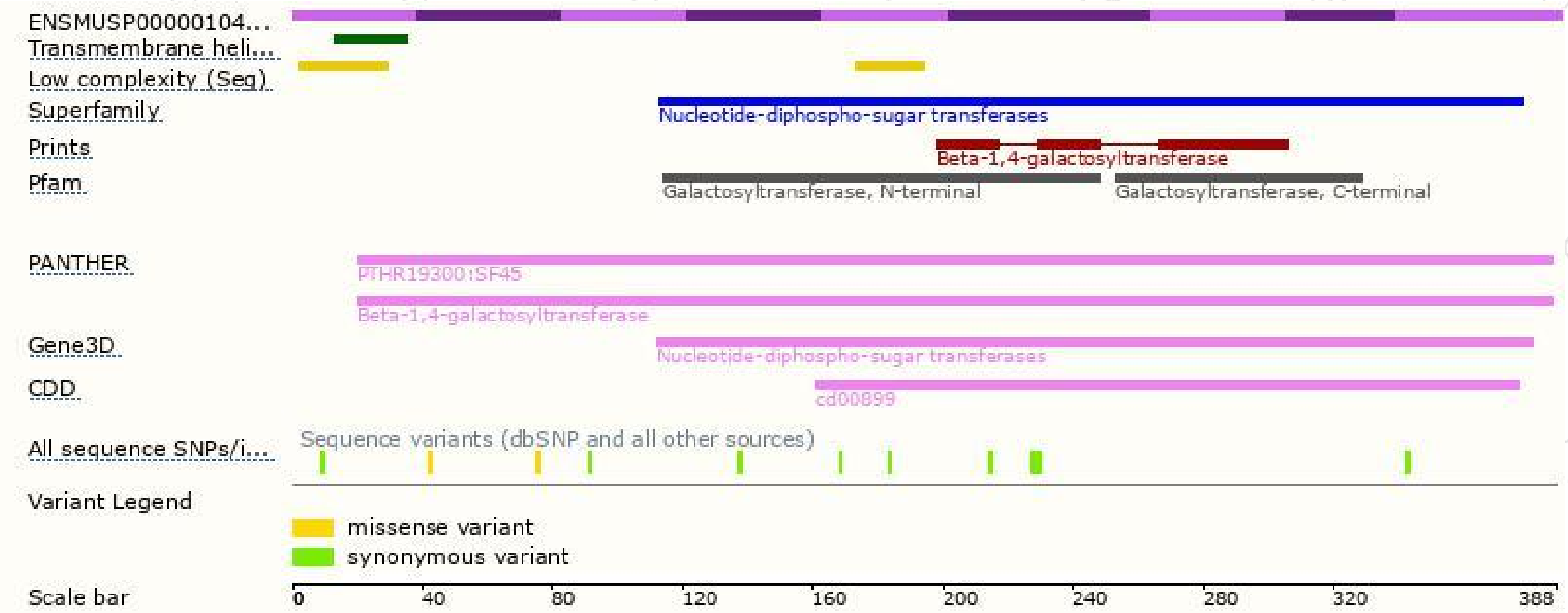
The strategy is based on the design of *B4galt5-201* transcript,The transcription is shown below



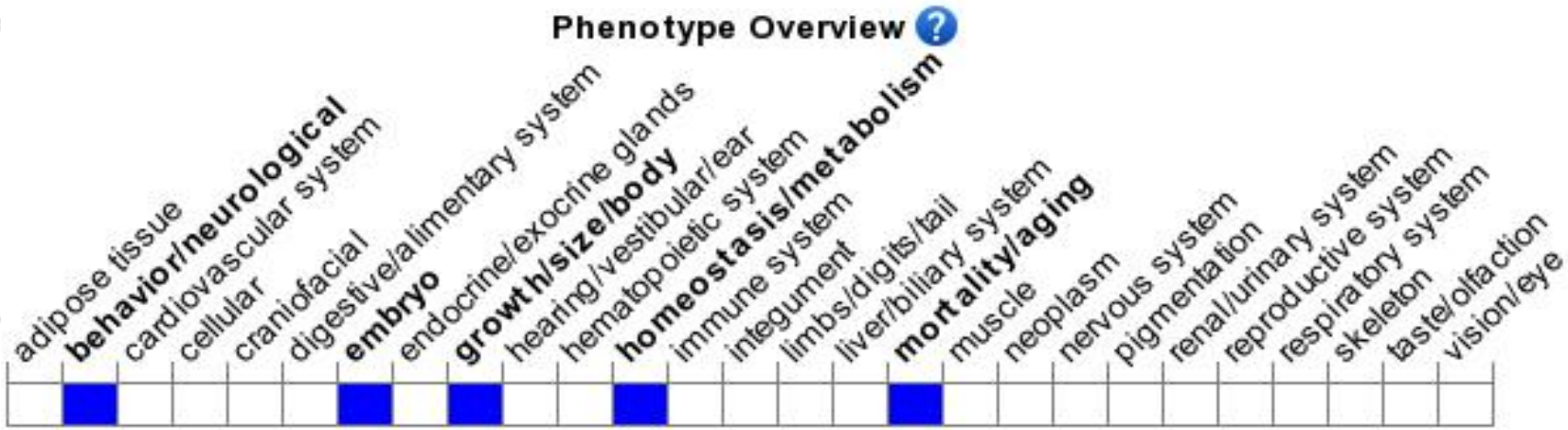
Genomic location distribution



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/).

According to the existing MGI data,Homozygous mutation of this gene results in lethality before weaning. Heterozygous mutant mice exhibit increased anxiety-like response.

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

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