

Csgalnact1 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Csgalnact1

Project type

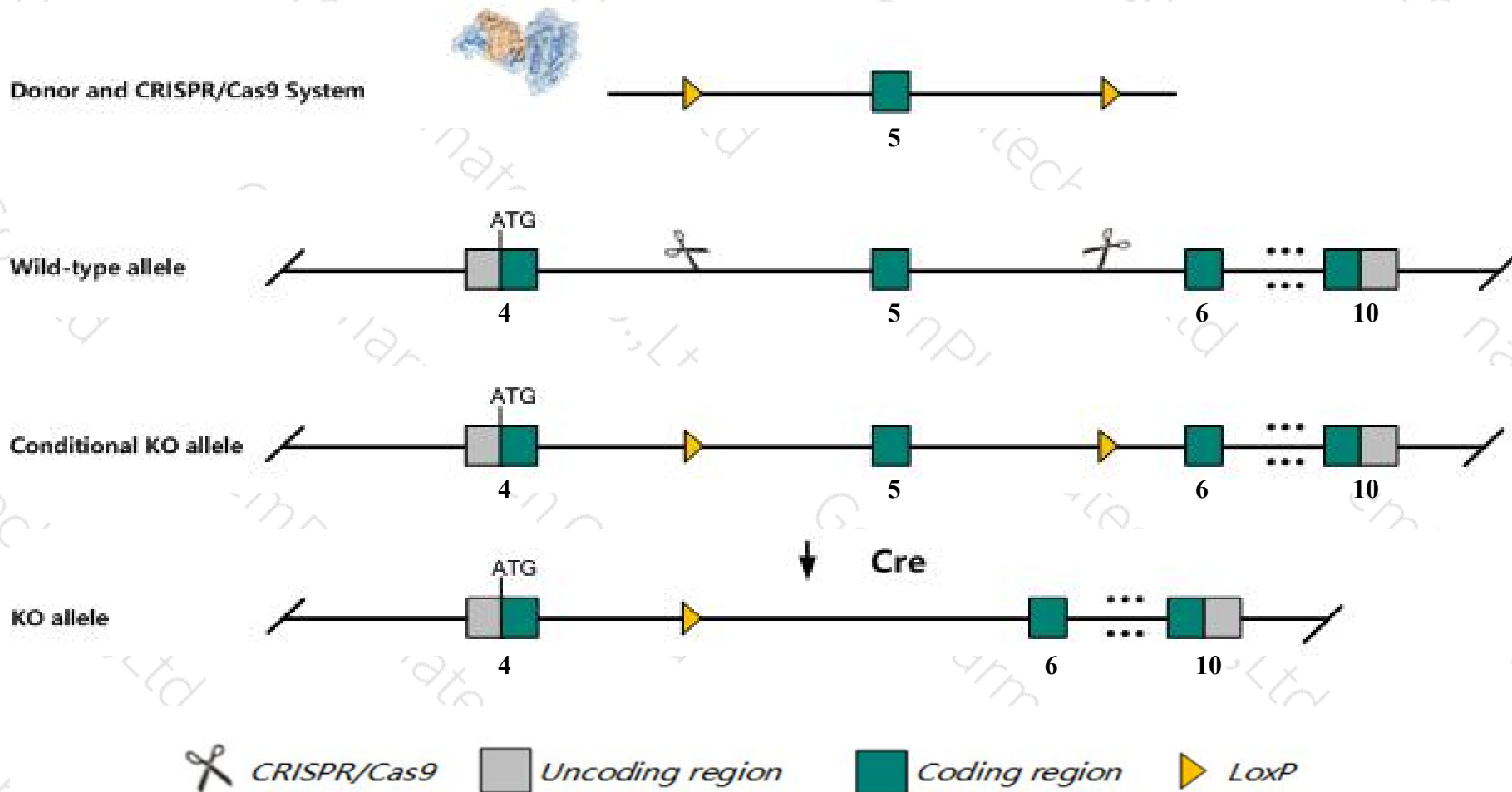
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Csgalnact1* gene. The schematic diagram is as follows:



- The *Csgalnact1* gene has 8 transcripts. According to the structure of *Csgalnact1* gene, exon5 of *Csgalnact1-201* (ENSMUST00000078350.12) transcript is recommended as the knockout region. The region contains 217bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Csgalnact1* 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit decreased body weight and length, short limbs, and abnormal cartilage.
- The *Csgalnact1* gene is located on the Chr8. 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)

Csgalnact1 chondroitin sulfate N-acetylgalactosaminyltransferase 1 [Mus musculus (house mouse)]

Gene ID: 234356, updated on 12-Feb-2019

Summary



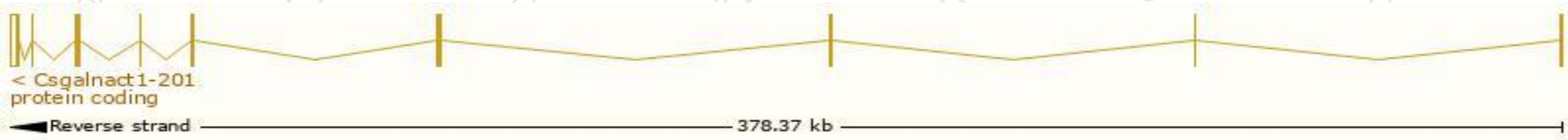
Official Symbol	Csgalnact1 provided by MGI
Official Full Name	chondroitin sulfate N-acetylgalactosaminyltransferase 1 provided by MGI
Primary source	MGI:MGI:2442354
See related	Ensembl:ENSMUSG00000036356
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4732435N03Rik, CSGalNAcT-1
Expression	Broad expression in limb E14.5 (RPKM 2.6), frontal lobe adult (RPKM 2.2) and 19 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

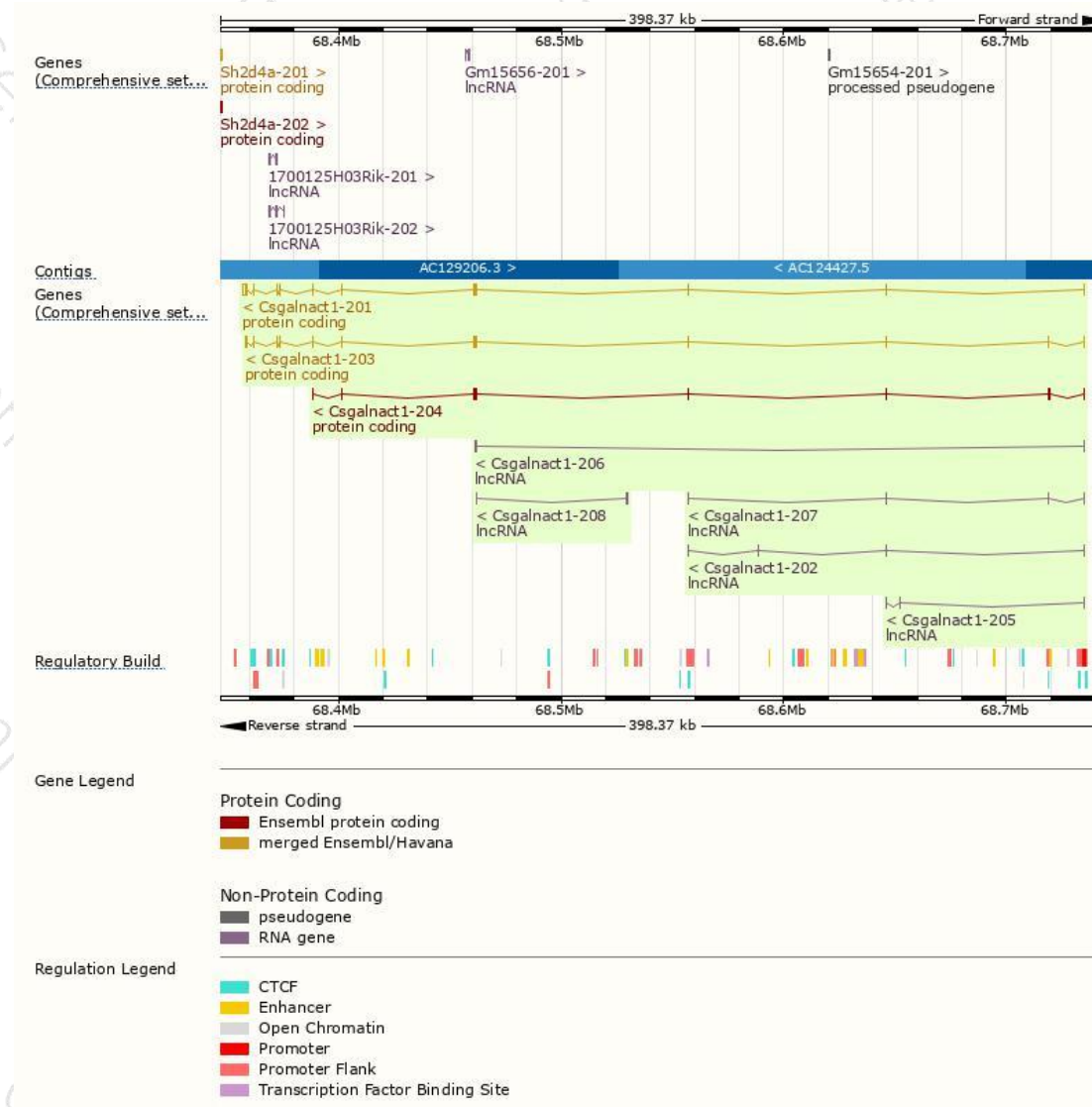
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Csgalnact1-201	ENSMUST00000078350.12	3943	530aa	Protein coding	CCDS22341	Q8BJQ9	TSL:1 GENCODE basic APPRIS P1
Csgalnact1-203	ENSMUST00000130214.7	3029	530aa	Protein coding	CCDS22341	Q8BJQ9	TSL:1 GENCODE basic APPRIS P1
Csgalnact1-204	ENSMUST00000136060.7	2204	300aa	Protein coding	-	A0A0R4J1S7	CDS 3' incomplete TSL:1
Csgalnact1-207	ENSMUST00000150083.7	679	No protein	lncRNA	-	-	TSL:5
Csgalnact1-206	ENSMUST00000143586.7	361	No protein	lncRNA	-	-	TSL:2
Csgalnact1-202	ENSMUST00000125727.7	348	No protein	lncRNA	-	-	TSL:3
Csgalnact1-205	ENSMUST00000139141.1	346	No protein	lncRNA	-	-	TSL:2
Csgalnact1-208	ENSMUST00000211871.1	346	No protein	lncRNA	-	-	TSL:3

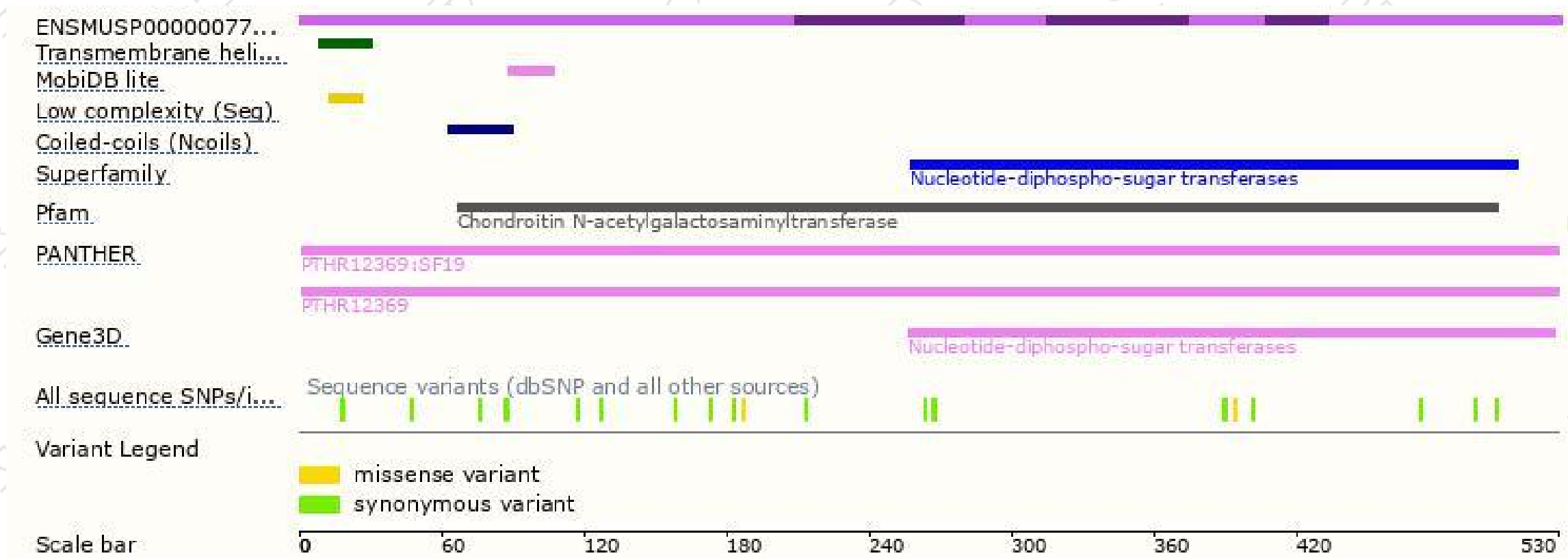
The strategy is based on the design of *Csgalnact1-201* transcript,The transcription is shown below



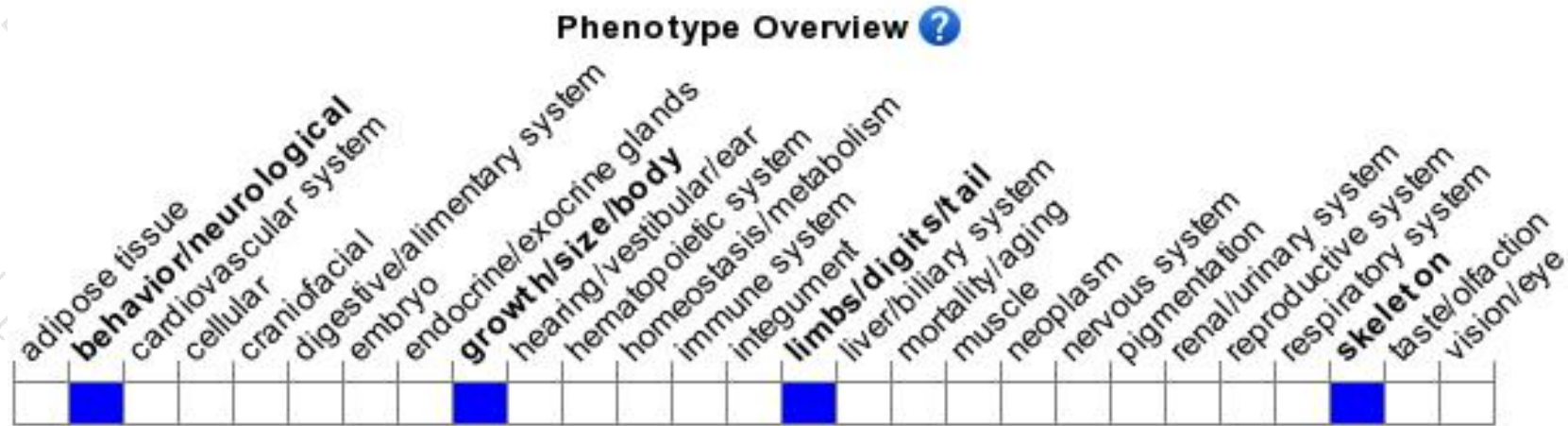
Genomic location distribution



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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