

Galns Cas9-CKO Strategy

Designer:

JiaYu

Reviewer:

Xiaojing Li

Design Date:

2020-2-17

Project Overview

Project Name

Galns

Project type

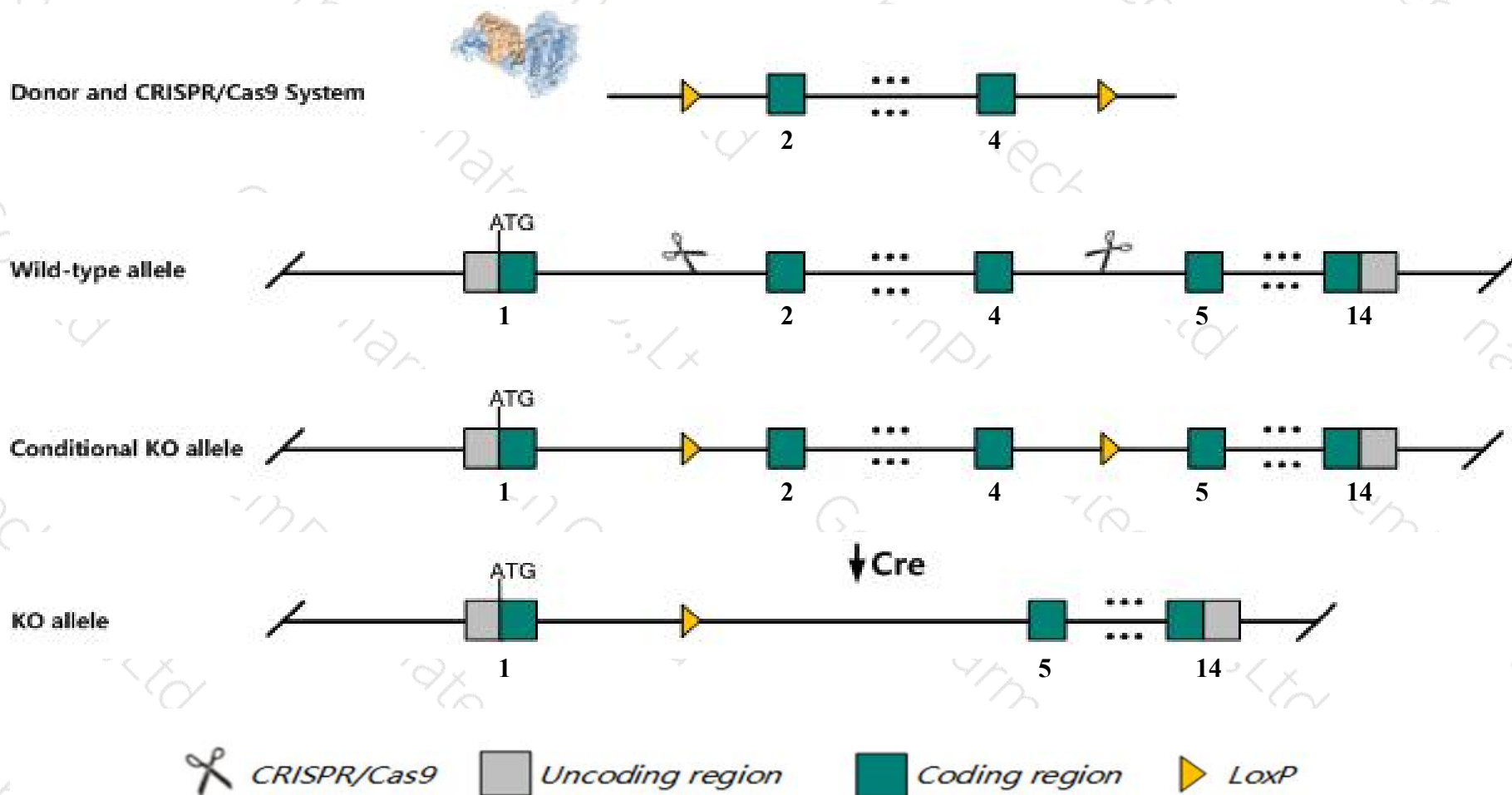
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Galns* gene has 3 transcripts. According to the structure of *Galns* gene, exon2-exon4 of *Galns*-201 (ENSMUST00000015171.10) transcript is recommended as the knockout region. The region contains 302bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Galns* 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, Homozygous mutant mice are viable, fertile, and healthy in spite of lysosomal storage.
- The flox region is in the intron of the Gm20388 gene, which may affect the regulation of this gene.
- The *Galns* 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)

Galns galactosamine (N-acetyl)-6-sulfate sulfatase [Mus musculus (house mouse)]

Gene ID: 50917, updated on 31-Jan-2019

Summary



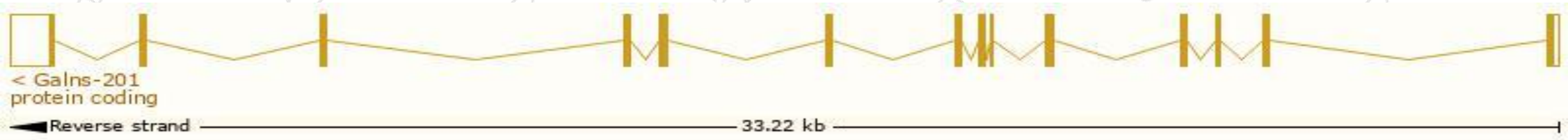
Official Symbol	Galns provided by MGI
Official Full Name	galactosamine (N-acetyl)-6-sulfate sulfatase provided by MGI
Primary source	MGI:MGI:1355303
See related	Ensembl:ENSMUSG00000015027
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	mFLJ00319
Expression	Ubiquitous expression in placenta adult (RPKM 15.5), kidney adult (RPKM 12.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

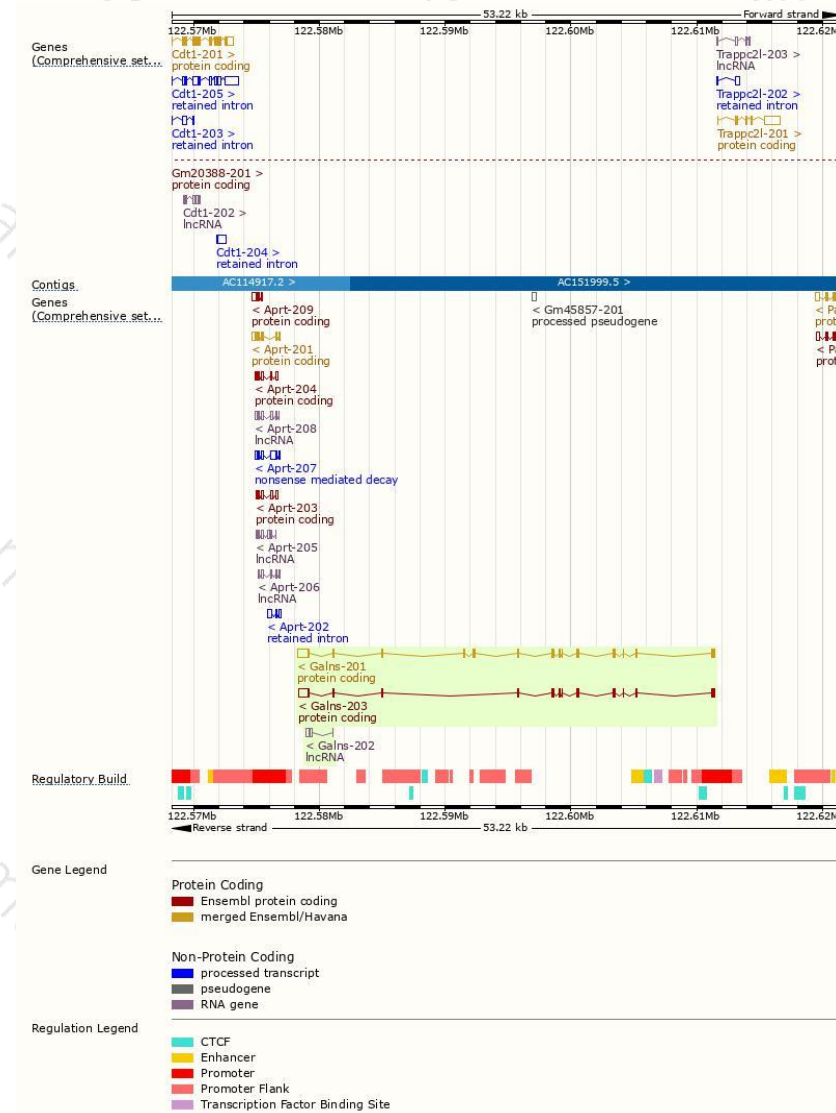
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Galns-201	ENSMUST00000015171.10	2557	520aa	Protein coding	CCDS40504	Q571E4	TSL:1 GENCODE basic APPRIS P1
Galns-203	ENSMUST00000212319.1	2111	440aa	Protein coding	CCDS85625	Q8CC47	TSL:1 GENCODE basic
Galns-202	ENSMUST00000211906.1	381	No protein	lncRNA	-	-	TSL:1

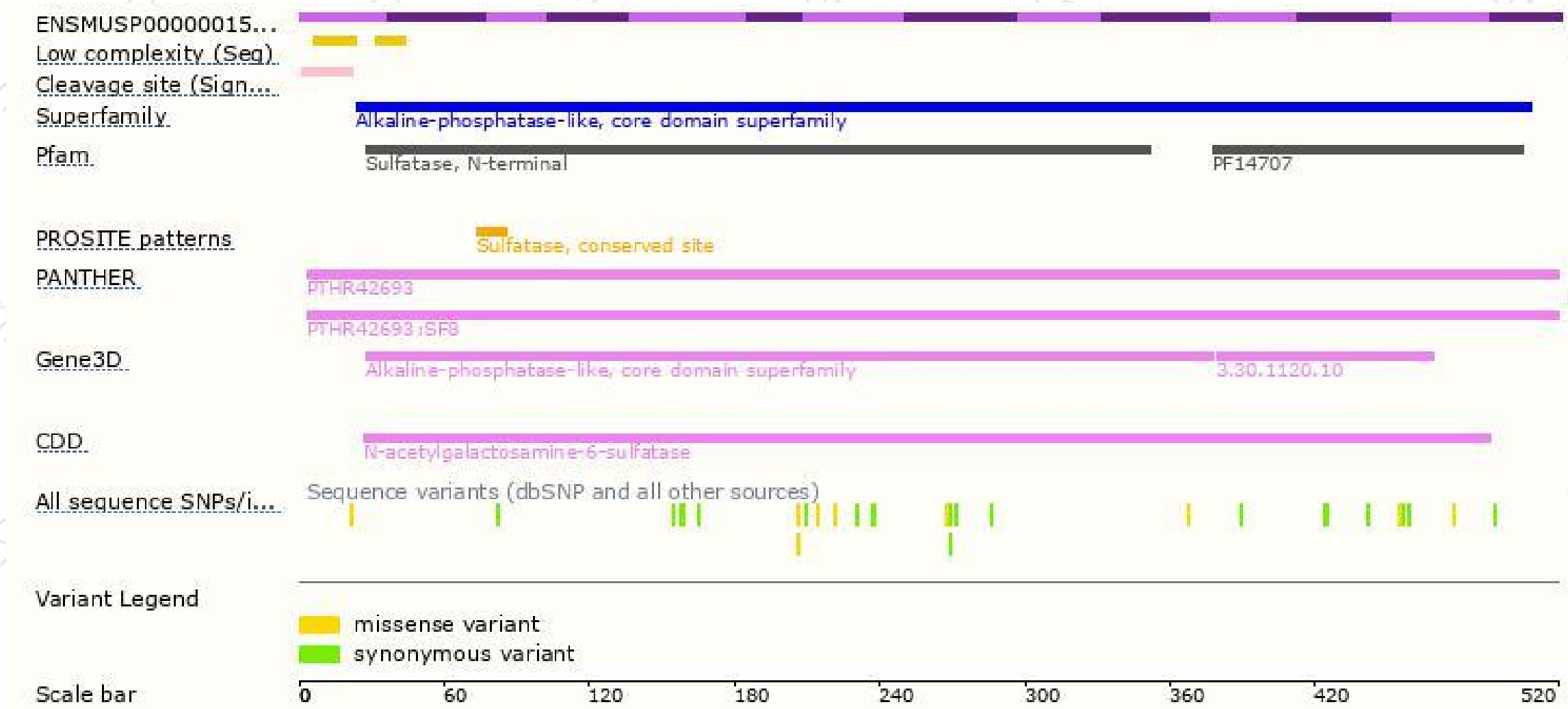
The strategy is based on the design of *Galns-201* transcript,The transcription is shown below



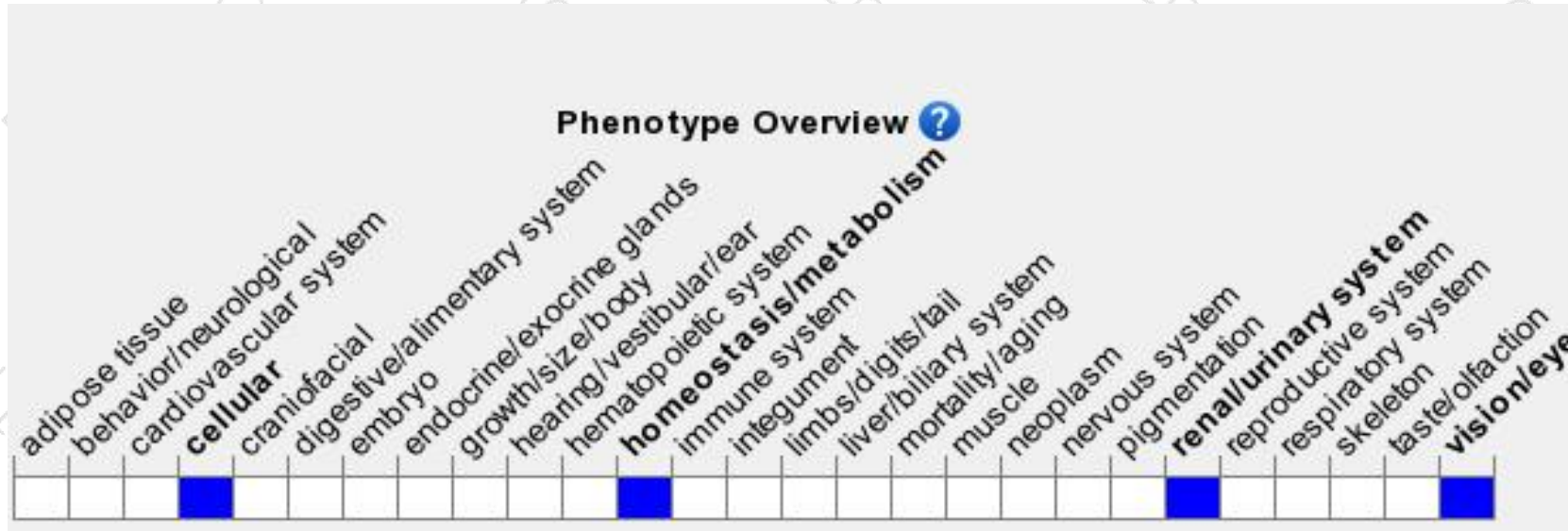
Genomic location distribution



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 mutant mice are viable, fertile, and healthy in spite of lysosomal storage.

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

Tel: 400-9660890

