

Chst3 Cas9-KO Strategy

Designer:

Huimin Su

Reviewer:

Ruirui Zhang

Design Date:

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Project Overview

Project Name

Chst3

Project type

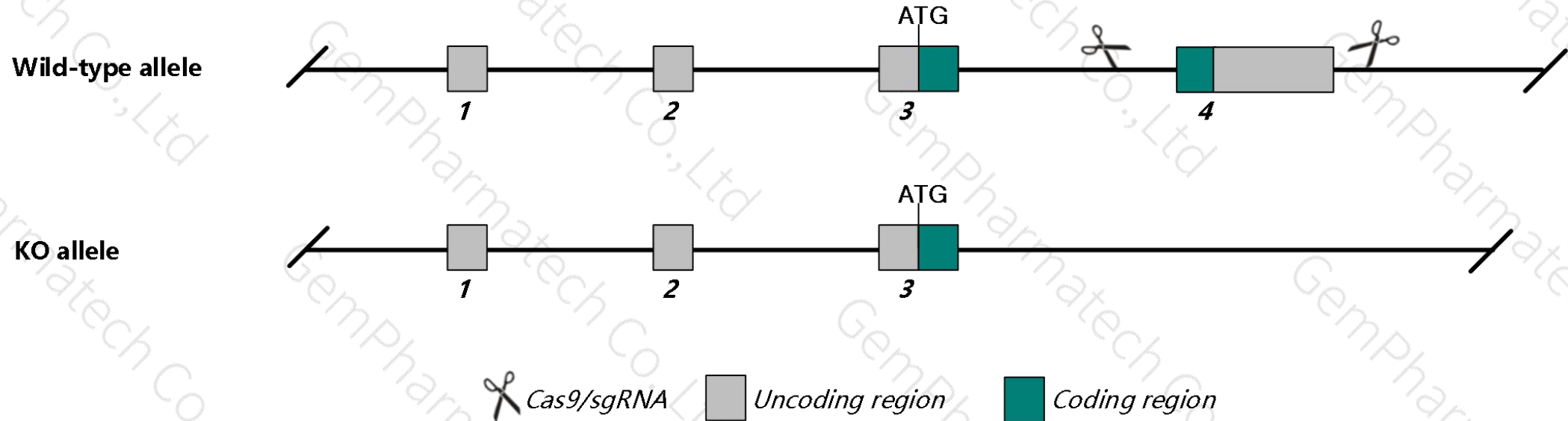
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chst3* gene. The schematic diagram is as follows:



- The *Chst3* gene has 3 transcripts. According to the structure of *Chst3* gene, exon4 of *Chst3-202* (ENSMUST00000135158.8) 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 *Chst3* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI date, Homozygous mutation of this gene results in significantly reduced numbers of naive T lymphocytes in the spleen at 5-6 weeks of age. Brain development and morphology is normal in mutant animals but for some alleles behavioral abnormalities are seen.
- The *Chst3* gene is located on the Chr10. 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)

Chst3 carbohydrate sulfotransferase 3 [*Mus musculus* (house mouse)]

Gene ID: 53374, updated on 12-Aug-2019

Summary

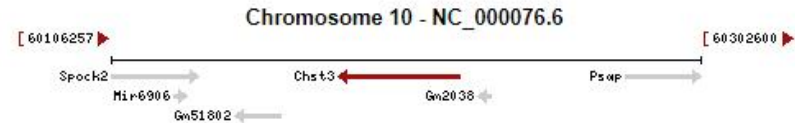
Official Symbol Chst3 provided by [MGI](#)
Official Full Name carbohydrate sulfotransferase 3 provided by [MGI](#)
Primary source [MGI:MGI:1858224](#)
See related [Ensembl:ENSMUSG000000057337](#)
Gene type protein coding
RefSeq status VALIDATED
Organism [Mus musculus](#)
Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as C6ST; GST-0; C6ST-1
Expression Biased expression in spleen adult (RPKM 18.8), mammary gland adult (RPKM 4.5) and 5 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 10; 10 B4 [See Chst3 in Genome Data Viewer](#)

Exon count: 7

Annotation release	Status	Assembly	Chr	Location
108	current	GRCh38.p6 (GCF_000001635.26)	10	NC_000076.6 (60181527..60222114, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	10	NC_000076.5 (59644275..59682008, complement)

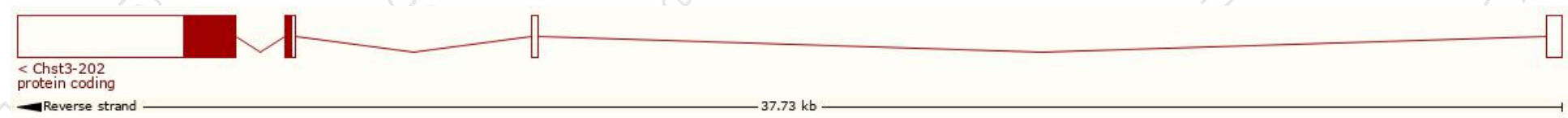


Transcript information (Ensembl)

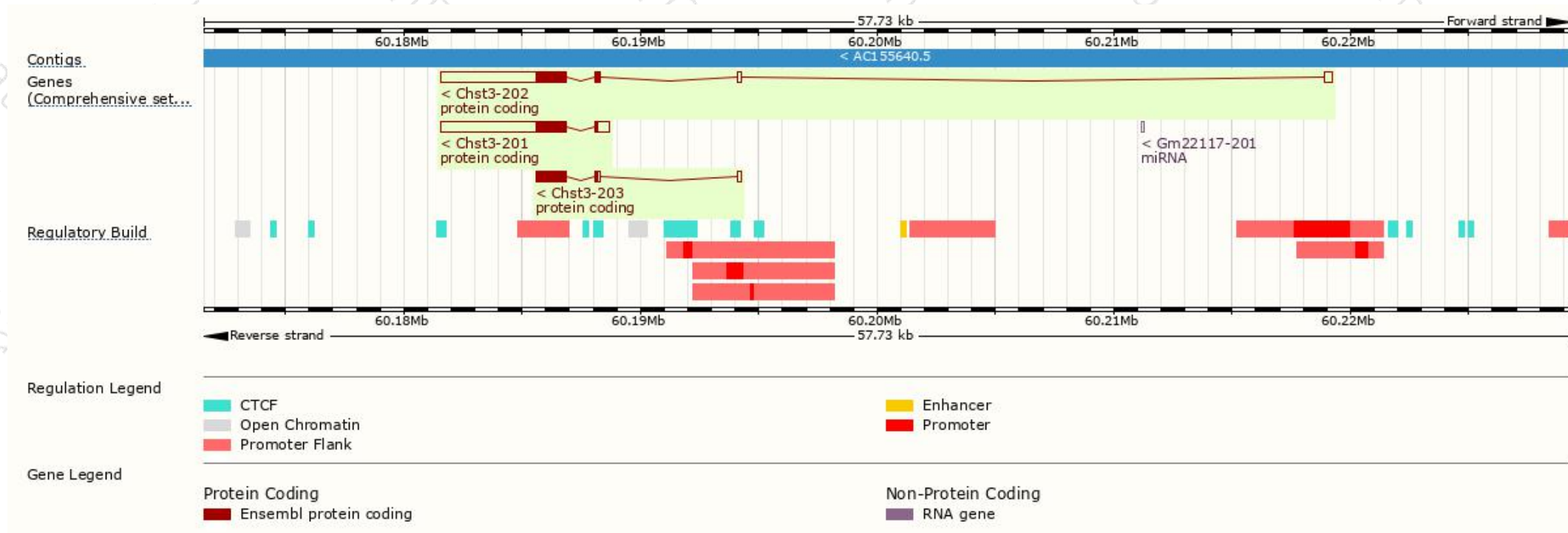
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Chst3-202	ENSMUST00000135158.8	6108	478aa	Protein coding	CCDS23871	G5E8X5	TSL:5 GENCODE basic APPRIS P2
Chst3-201	ENSMUST00000068690.6	5985	472aa	Protein coding	-	O88199	TSL:1 GENCODE basic APPRIS ALT2
Chst3-203	ENSMUST00000167915.1	1672	472aa	Protein coding	-	O88199	TSL:1 GENCODE basic APPRIS ALT2

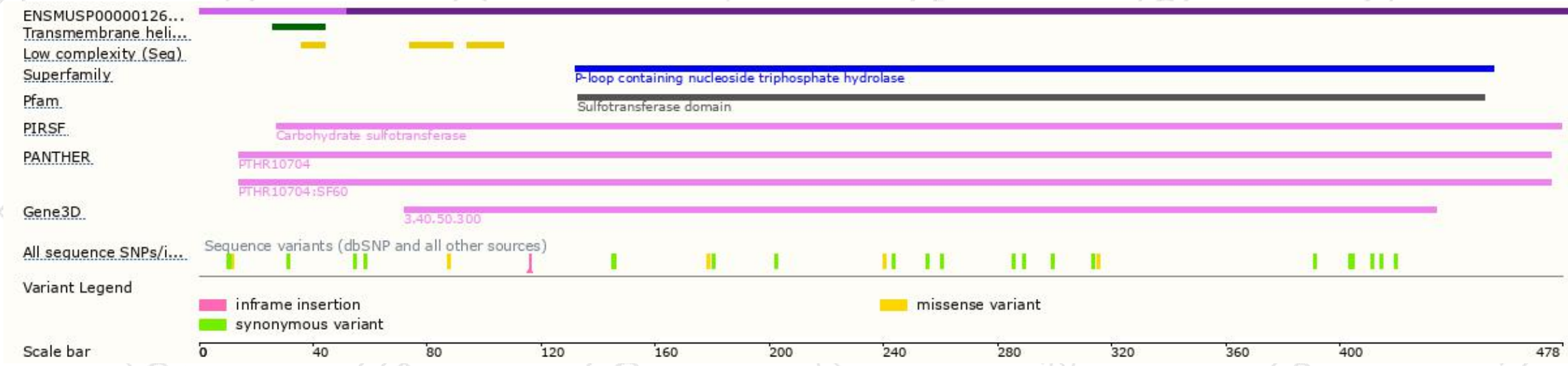
The strategy is based on the design of *Chst3-202* transcript,The transcription is shown below



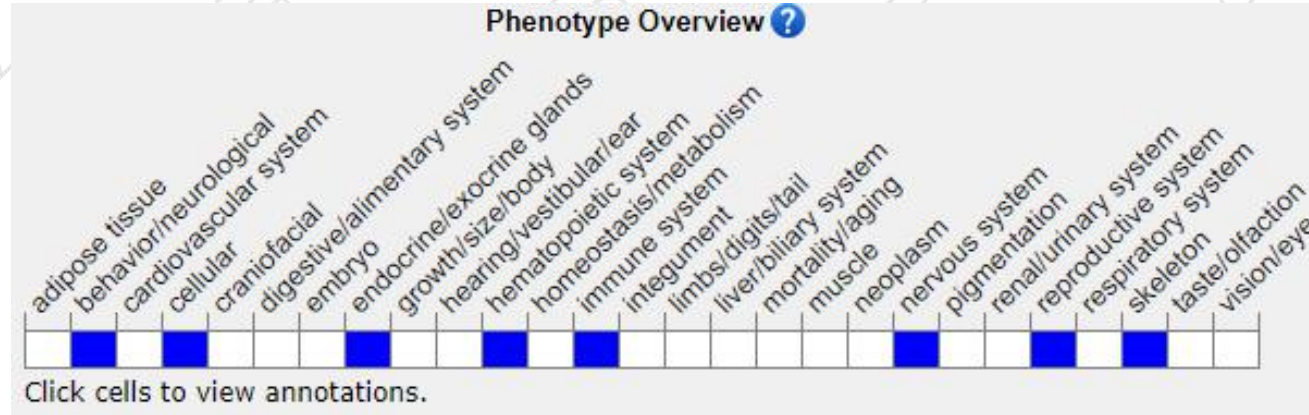
Genomic location distribution



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/>).

Homozygous mutation of this gene results in significantly reduced numbers of naive T lymphocytes in the spleen at 5-6 weeks of age. Brain development and morphology is normal in mutant animals but for some alleles behavioral abnormalities are seen.

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

Tel: 400-9660890

