

Chst1 Cas9-KO Strategy

Designer:

Huimin Su

Reviewer:

Ruirui Zhang

Design Date:

2020-3-12

Project Overview

Project Name

Chst1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chst1* gene. The schematic diagram is as follows:



- The *Chst1* gene has 1 transcript. According to the structure of *Chst1* gene, exon3 of *Chst1-201* (ENSMUST00000065797.6) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Chst1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit increased male sibling aggression when housed together, a small decrease in the peripheral and mesenteric lymph nodes and peripheral blood and a small increase in the peripheral lymph nodes and peripheral blood.
- The *Chst1* 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)

Chst1 carbohydrate sulfotransferase 1 [*Mus musculus* (house mouse)]

Gene ID: 76969, updated on 24-Oct-2019

Summary

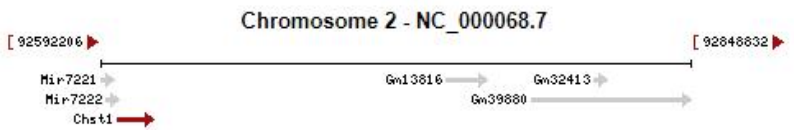
- Official Symbol** Chst1 provided by [MGI](#)
- Official Full Name** carbohydrate sulfotransferase 1 provided by [MGI](#)
- Primary source** [MGI:MGI:1924219](#)
- See related** [Ensembl:ENSMUSG00000027221](#)
- Gene type** protein coding
- RefSeq status** VALIDATED
- Organism** [Mus musculus](#)
- Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
- Also known as** C6ST; Gst1; KSST; GST-1; KS6ST; AW125896; KSGAL6ST; 2610008E20Rik
- Expression** Broad expression in frontal lobe adult (RPKM 51.0), cortex adult (RPKM 49.6) and 16 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 2; 2 E1 [See Chst1 in Genome Data Viewer](#)

Exon count: 5

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (92599632..92615252)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (92439864..92455409)



Transcript information (Ensembl)

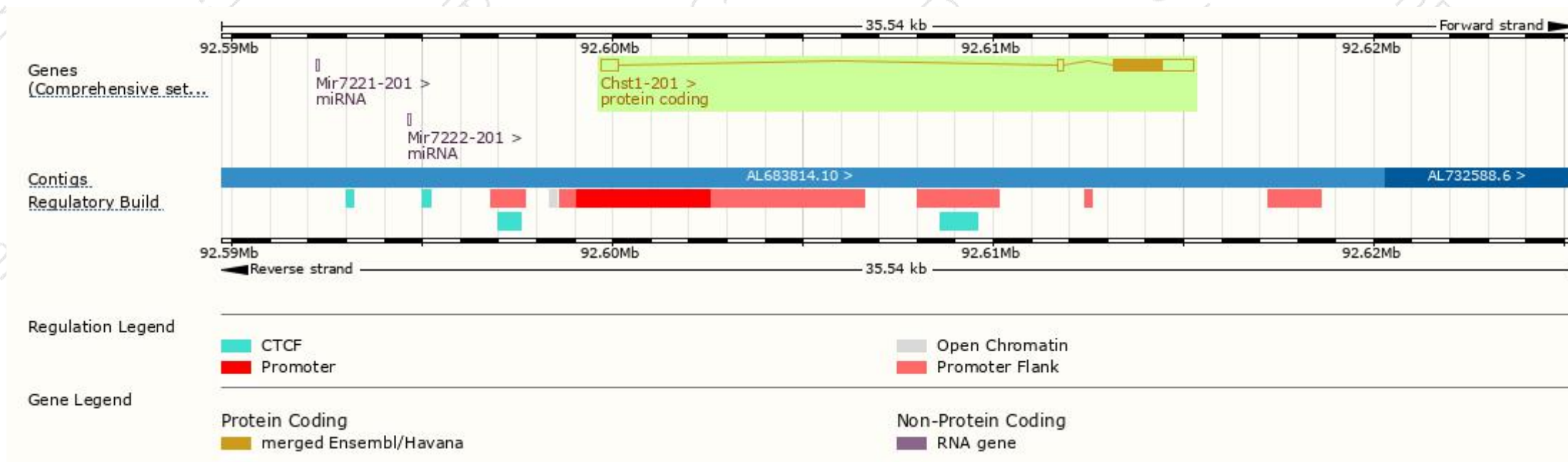
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Chst1-201	ENSMUST00000065797.6	2680	411aa	Protein coding	CCDS16450	Q3UY35 Q9EQC0	TSL:1 Gencode basic APPRIS P1

The strategy is based on the design of *Chst1-201* transcript, the transcription is shown below



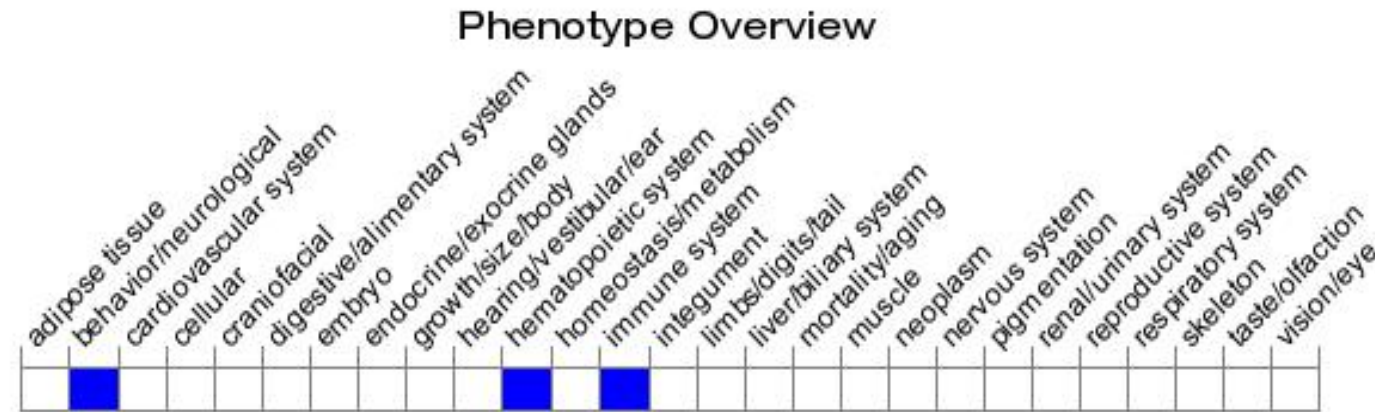
Genomic location distribution



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, mice homozygous for a knock-out allele exhibit increased male sibling aggression when housed together, a small decrease in the peripheral and mesenteric lymph nodes and peripheral blood and a small increase in the peripheral lymph nodes and peripheral blood.

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

Tel: 400-9660890

