

Sult1a1 Cas9-KO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2020-2-17

Project Overview

Project Name

Sult1a1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sult1a1* gene. The schematic diagram is as follows:



- The *Sult1a1* gene has 3 transcripts. According to the structure of *Sult1a1* gene, exon1-exon4 of *Sult1a1-201* (ENSMUST00000106372.10) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Sult1a1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit decrease hepatic DNA adduct formation induced by methyleugenol.
- The *Sult1a1* gene is located on the Chr7. 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)

Sult1a1 sulfotransferase family 1A, phenol-preferring, member 1 [Mus musculus (house mouse)]

Gene ID: 20887, updated on 31-Jan-2019

Summary



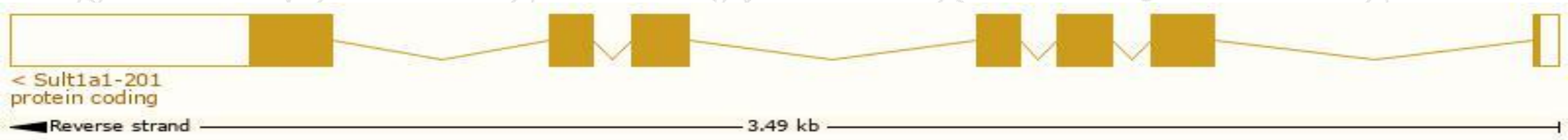
Official Symbol	Sult1a1 provided by MGI
Official Full Name	sulfotransferase family 1A, phenol-preferring, member 1 provided by MGI
Primary source	MGI:MGI:102896
See related	Ensembl:ENSMUSG00000030711
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI266890, PST, ST1A1, ST1A4, Stp, Stp1, mSTp1
Expression	Broad expression in liver adult (RPKM 40.1), liver E18 (RPKM 24.9) and 18 other tissues See more

Transcript information (Ensembl)

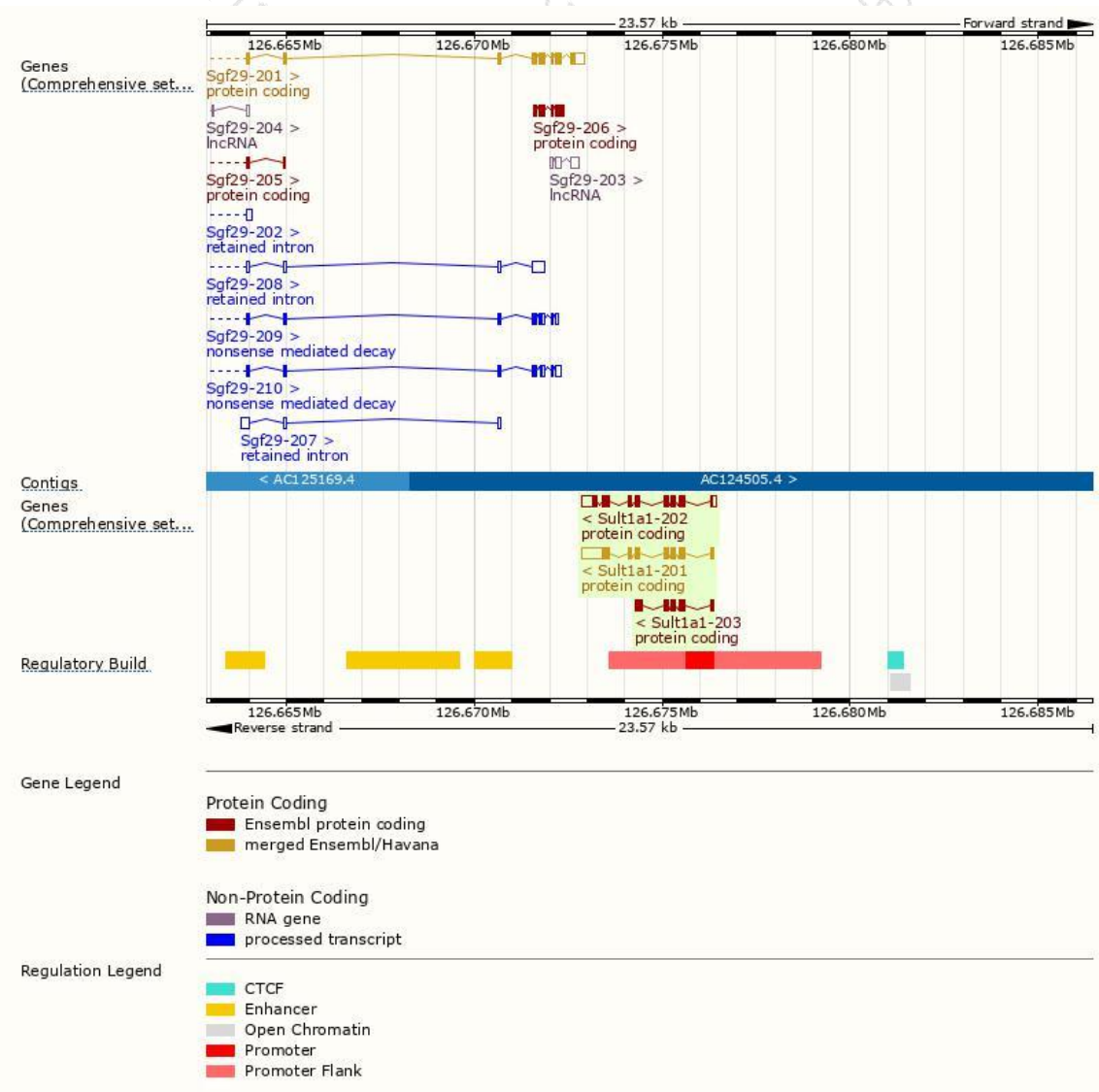
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sult1a1-201	ENSMUST00000106372.10	1370	263aa	Protein coding	CCDS40128	Q91W19	TSL:1 GENCODE basic
Sult1a1-202	ENSMUST00000106373.8	1289	298aa	Protein coding	-	E9QNL5	TSL:1 GENCODE basic APPRIS P1
Sult1a1-203	ENSMUST00000155419.2	622	188aa	Protein coding	-	D3Z2P8	CDS 3' incomplete TSL:3

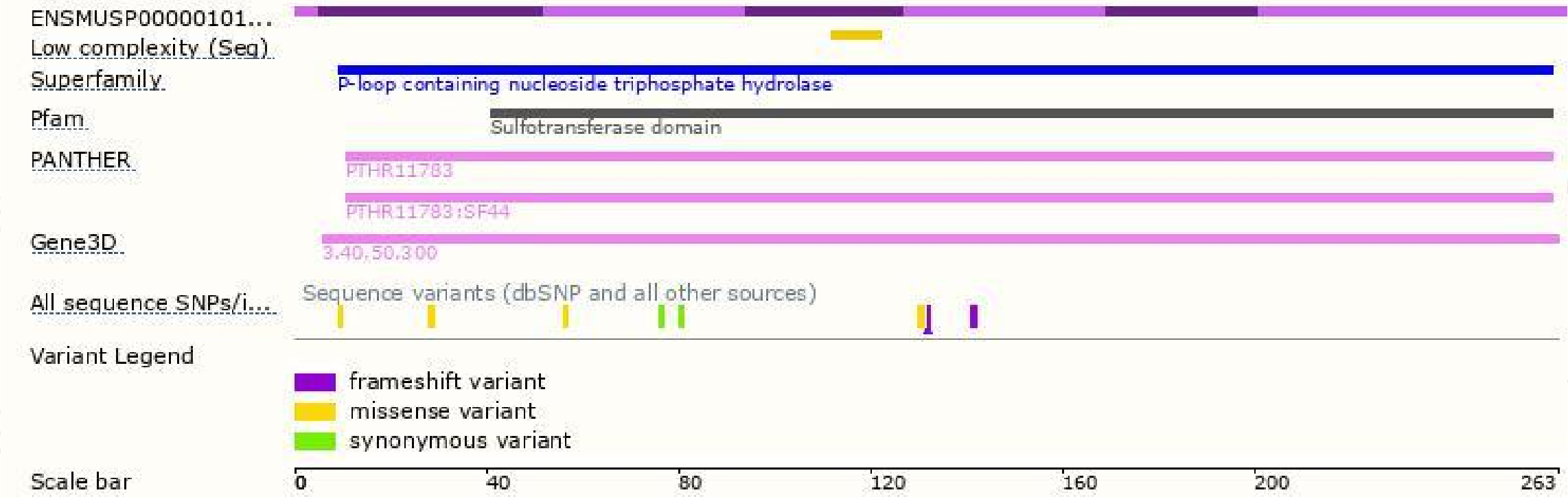
The strategy is based on the design of *Sult1a1-201* transcript,The transcription is shown below



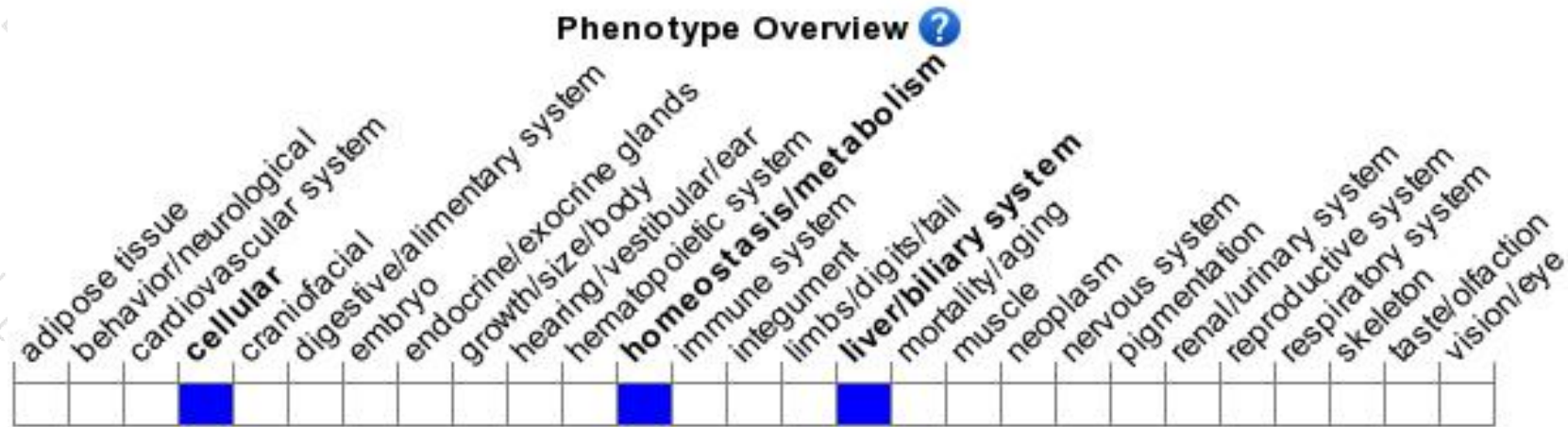
Genomic location distribution



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 decrease hepatic DNA adduct formation induced by methyleugenol.

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

Tel: 400-9660890

