

Sulf2 Cas9-KO Strategy

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Overview

Target Gene Name

- Sulf2

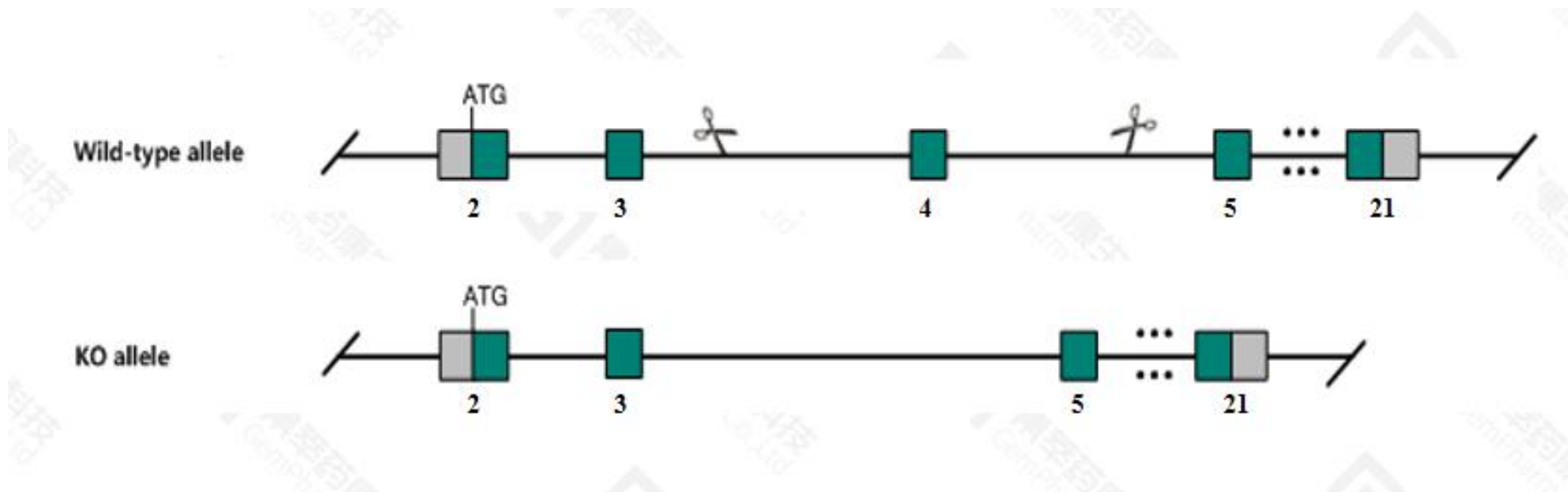
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Sulf2* gene.

Technical Information

- The *Sulf2* gene has 7 transcripts. According to the structure of *Sulf2* gene, exon4 of *Sulf2*-202(ENSMUST00000109249.9) transcript is recommended as the knockout region. The region contains 152bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Sulf2* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

Gene Information

Sulf2 sulfatase 2 [Mus musculus (house mouse)]

Gene ID: 72043, updated on 12-Jun-2022

Summary	
Official Symbol	Sulf2 provided by MGI
Official Full Name	sulfatase 2 provided by MGI
Primary source	MGI:MGI:1919293
See related	Ensembl:ENSMUSG00000006800
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	2010004N24Rik, AU020235, MSulf-2, mKIAA1247
Expression	Broad expression in ovary adult (RPKM 145.3), limb E14.5 (RPKM 91.2) and 21 other tissues See more
Orthologs	human all

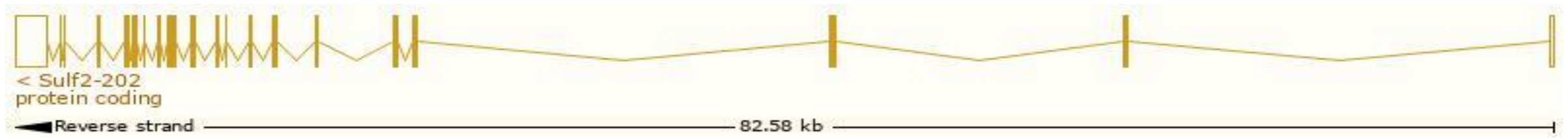
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

The gene has 7 transcripts, all transcripts are shown below:

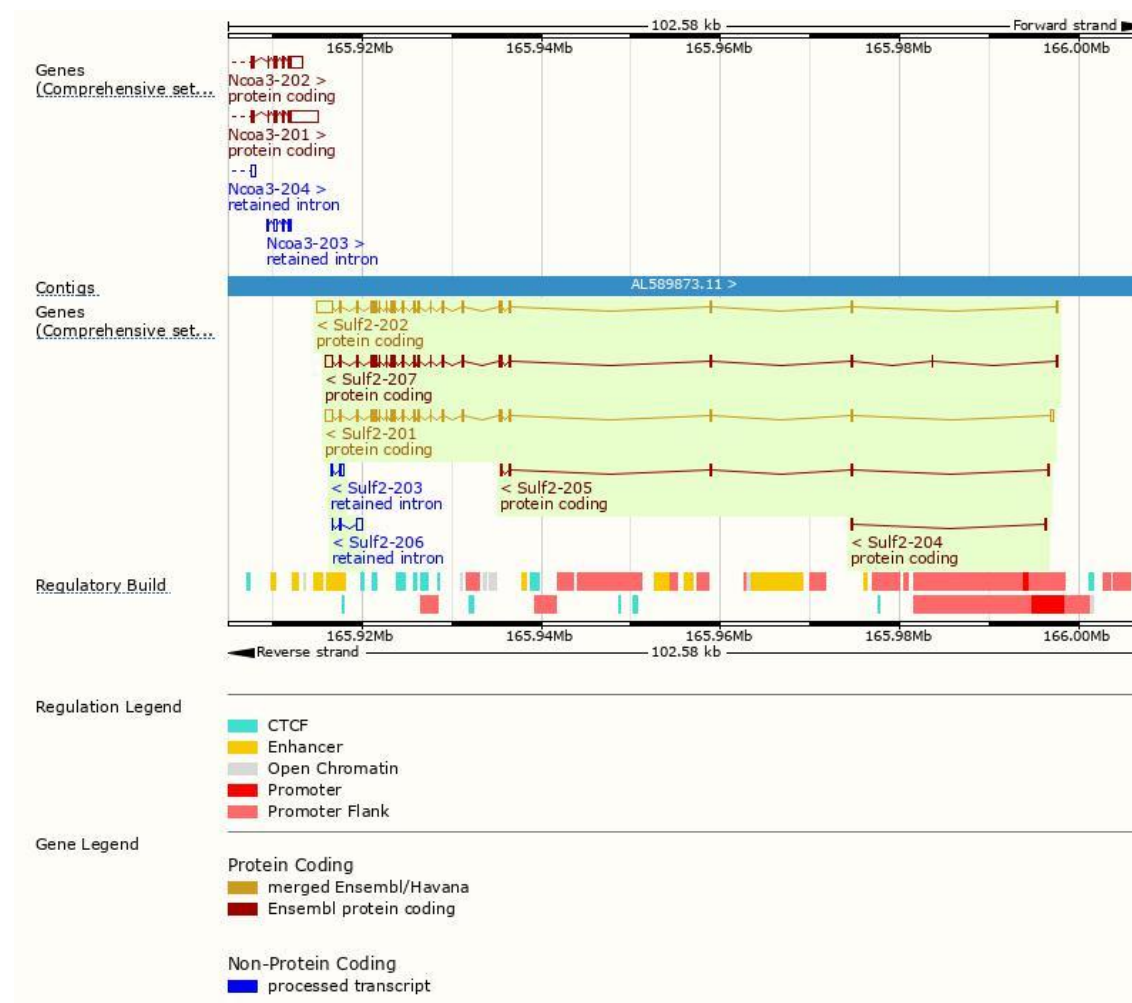
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sulf2-202	ENSMUST00000109249.9	4580	875aa	Protein coding	CCDS17086		TSL:1 , GENCODE basic , APPRIS P1 ,
Sulf2-201	ENSMUST00000088086.4	3927	875aa	Protein coding	CCDS17086		TSL:1 , GENCODE basic , APPRIS P1 ,
Sulf2-207	ENSMUST00000146497.9	3808	875aa	Protein coding	CCDS17086		TSL:5 , GENCODE basic , APPRIS P1 ,
Sulf2-205	ENSMUST00000139266.2	897	225aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Sulf2-204	ENSMUST00000133395.2	341	56aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Sulf2-206	ENSMUST00000143996.2	694	No protein	Retained intron	-		TSL:2 ,
Sulf2-203	ENSMUST00000125503.8	450	No protein	Retained intron	-		TSL:2 ,

The strategy is based on the design of *Sulf2*-202 transcript, the transcription is shown below:

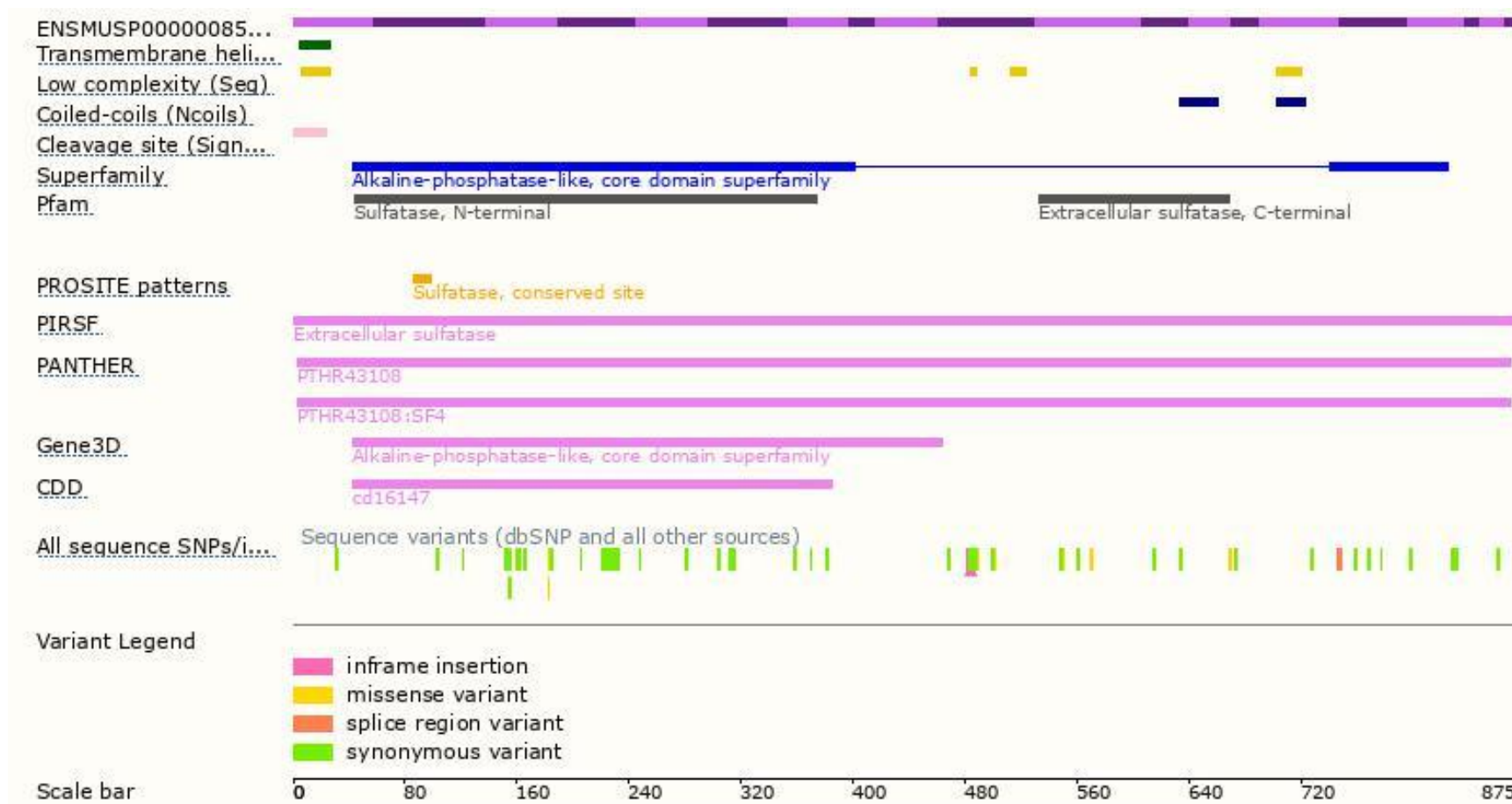


Source: <https://www.ensembl.org>

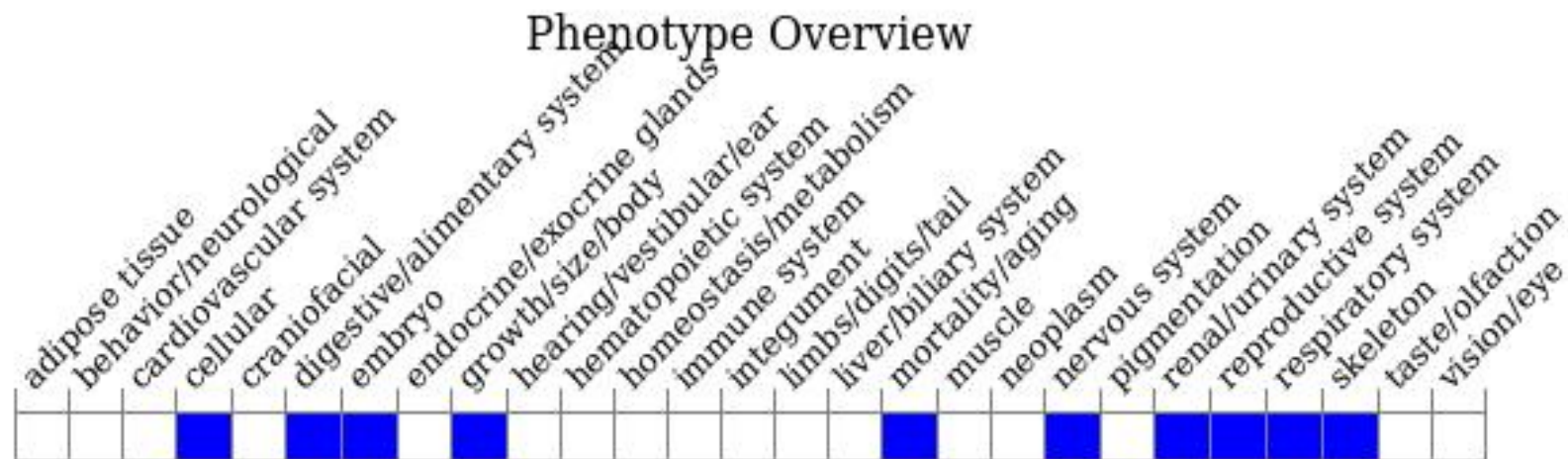
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



- Phenotypes affected by the mutations of *Sulf2* gene are marked in blue. Homozygous disruption of this gene may lead to a partially penetrant, strain-dependent phenotype of embryonic lethality, reduced postnatal body weight, lung abnormalities, brain malformations, and reduced fertility. Mice homozygous for a hypomorphic gene-trap allele display skeletal defects.

Important Information

- Transcript *Sulf2-204* may not be affected.
- *Sulf2* is located on Chr2. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.