

Sod3 Cas9-KO Strategy

Designer: Shilei Zhu

Design Date: 2019-7-22

Project Overview

Project Name

Sod3

Project type

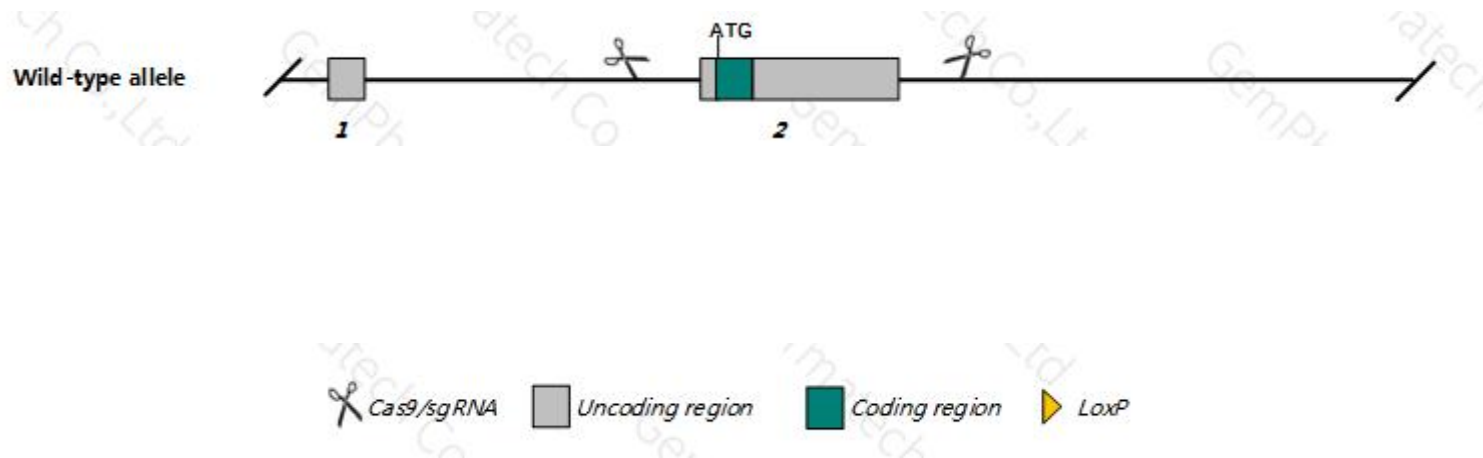
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sod3* gene. The schematic diagram is as follows:



- The *Sod3* gene has 1 transcripts. According to the structure of *Sod3* gene, exon2 of *Sod3*-201 (ENSMUST00000162415.8) transcript is recommended as the knockout region. The region contains all coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Sod3* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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.

- According to the existing MGI data Mice homozygous for a knock-out allele exhibit increased sensitivity to hyperoxia, increased LPS-stimulated spleen production of TNF, and enhanced severity of collagen-induced arthritis.
- The *Sod3* gene is located on the Chr5. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Sod3 superoxide dismutase 3, extracellular [*Mus musculus* (house mouse)]

Gene ID: 20657, updated on 19-Mar-2019

Summary

Official Symbol Sod3 provided by [MGI](#)

Official Full Name superoxide dismutase 3, extracellular provided by [MGI](#)

Primary source [MGI:MGI:103181](#)

See related [Ensembl:ENSMUSG000000072941](#)

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 EC-SOD; AI314465

Expression Biased expression in adrenal adult (RPKM 494.2), lung adult (RPKM 264.4) and 10 other tissues [See more](#)

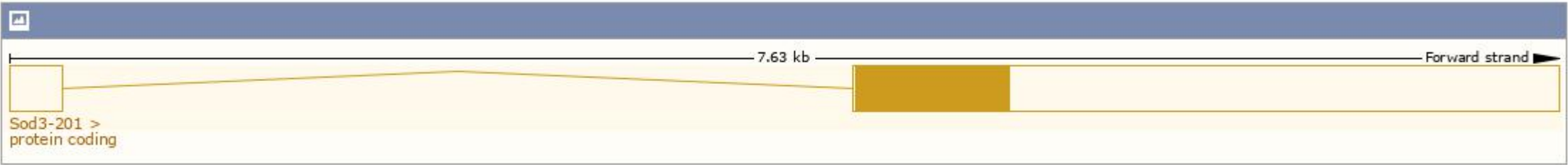
Orthologs [human](#) [all](#)

Transcript information Ensembl

The gene has 1 transcript, and the transcript is:

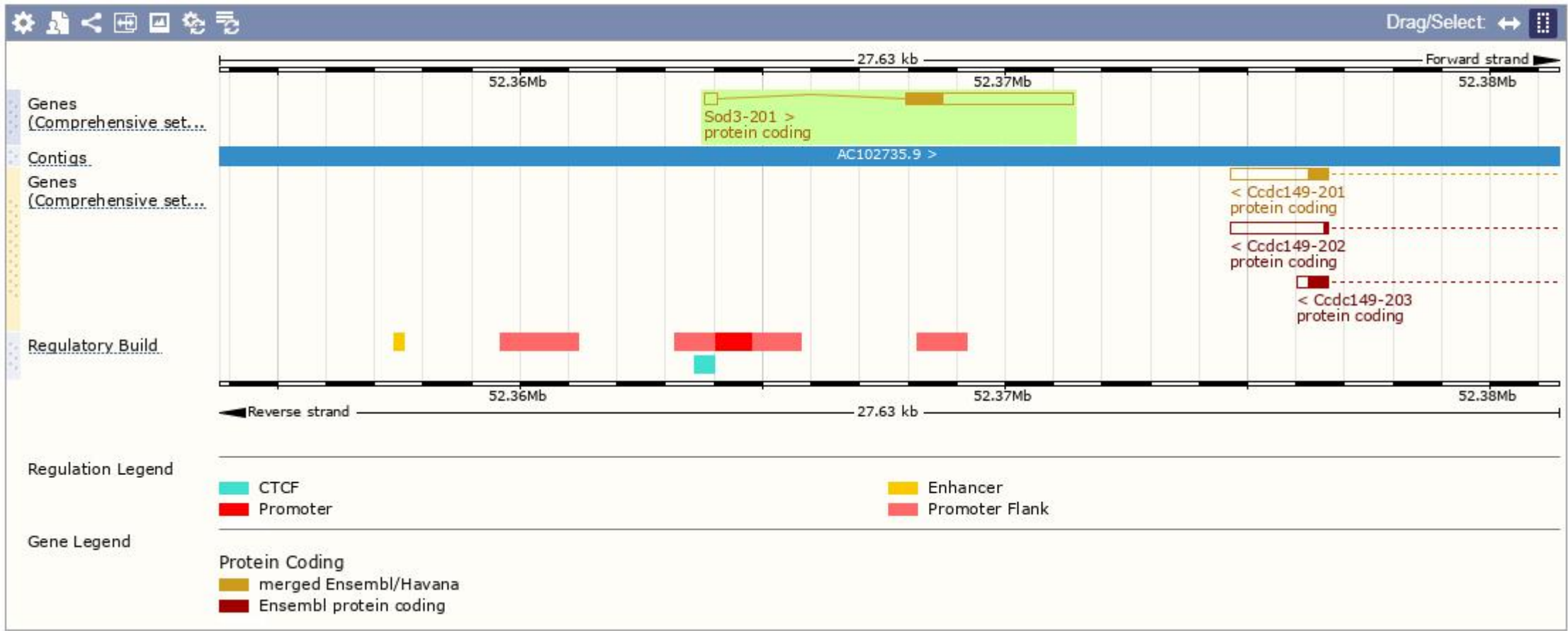
Show/hide columns (1 hidden)							Filter		
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags		
Sod3-201	ENSMUST00000101208.5	3738	251aa	Protein coding	CCDS19283	O09164 Q542X9	TSL:1	GENCODE basic	APPRIS P1

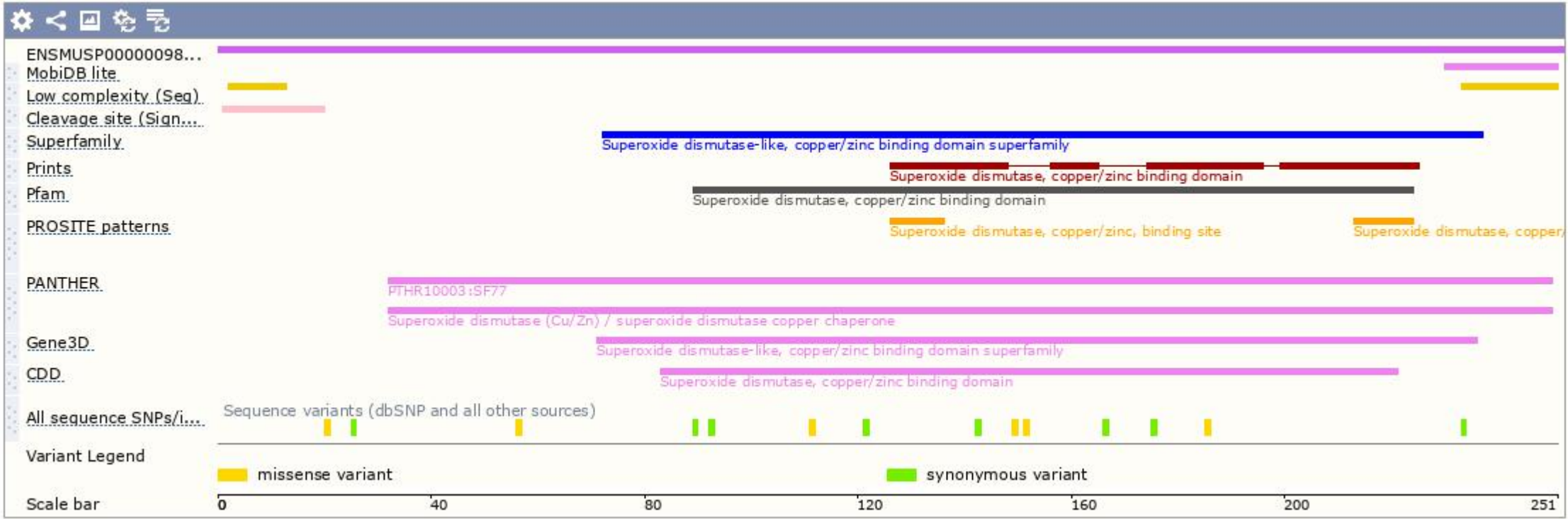
The strategy is based on the design of *Sod3*-201 transcript, The transcription is shown below



Statistics Exons: 2, Coding exons: 1, Transcript length: 3,738 bps, Translation length: 251 residues

Genomic location distribution





Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>) .

Mice homozygous for a knock-out allele exhibit increased sensitivity to hyperoxia, increased LPS-stimulated spleen production of TNF, and enhanced severity of collagen-induced arthritis.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

