GemPharmatech™

Rpl23a Cas9-CKO Strategy

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Reviewer: Miaomiao Cui

Design Date: 2022-10-20

Overview

Target Gene Name

- Rpl23a

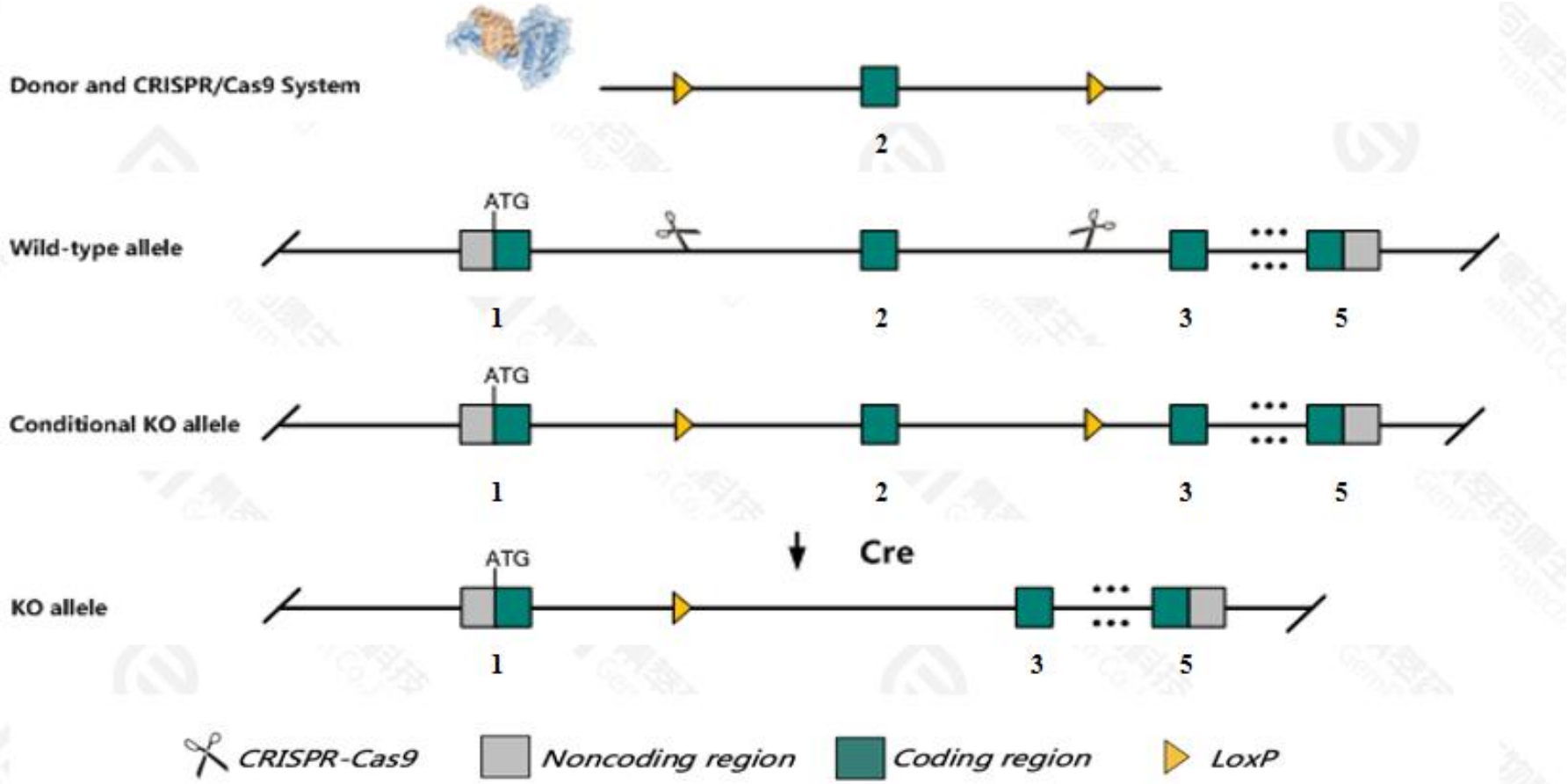
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Rpl23a* gene.

Technical Information

- The *Rpl23a* gene has 3 transcripts. According to the structure of *Rpl23a* gene, exon2 of *Rpl23a-201*(ENSMUST00000102483.5) transcript is recommended as the knockout region.The region contains 184bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Rpl23a* gene. The brief process is as follows: CRISPR-Cas9 system 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Gene Information

Rpl23a ribosomal protein L23A [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 268449, updated on 26-Sep-2022

Summary

Official Symbol	Rpl23a provided by MGI
Official Full Name	ribosomal protein L23A provided by MGI
Primary source	MGI:MGI:3040672
See related	Ensembl:ENSMUSG00000058546 AllianceGenome:MGI:3040672
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	MDA20
Summary	Enables TORC2 complex binding activity. Predicted to be involved in ribosomal large subunit assembly. Predicted to be located in cytosolic ribosome and nucleus. Predicted to be part of cytosolic large ribosomal subunit. Is expressed in brain. Orthologous to human RPL23A (ribosomal protein L23a). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Broad expression in CNS E11.5 (RPKM 878.5), liver E14 (RPKM 813.0) and 23 other tissues See more
Orthologs	human all
NEW	**Try the new Gene table** **Try the new Transcript table**

Genomic context

Location: 11; 11 B5

See Rpl23a in Genome Data Viewer

Exon count: 5

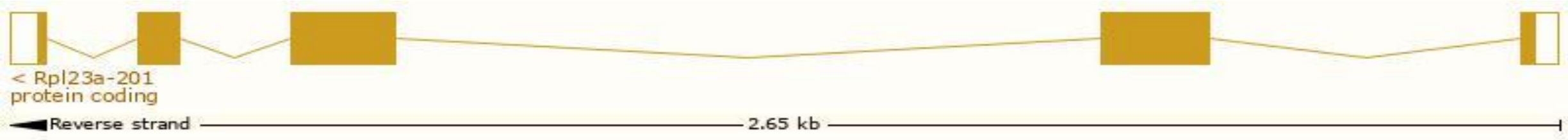
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

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

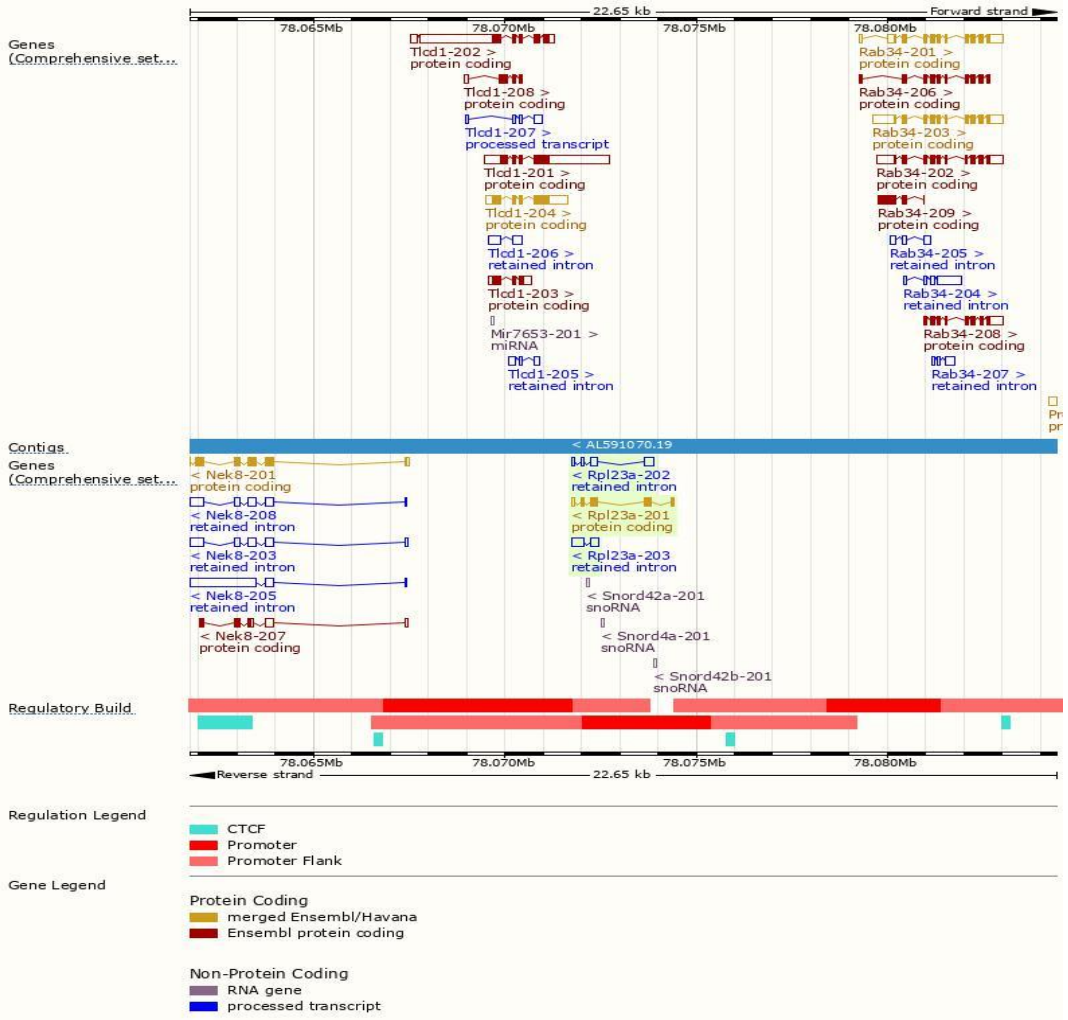
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rpl23a-201	ENSMUST00000102483.5	560	156aa	Protein coding	CCDS25093		TSL:1 , GENCODE basic , APPRIS P1 ,
Rpl23a-202	ENSMUST00000127270.2	588	No protein	Retained intron	-		TSL:1 ,
Rpl23a-203	ENSMUST00000144561.2	503	No protein	Retained intron	-		TSL:1 ,

The strategy is based on the design of *Rpl23a-201* transcript,the transcription is shown below:



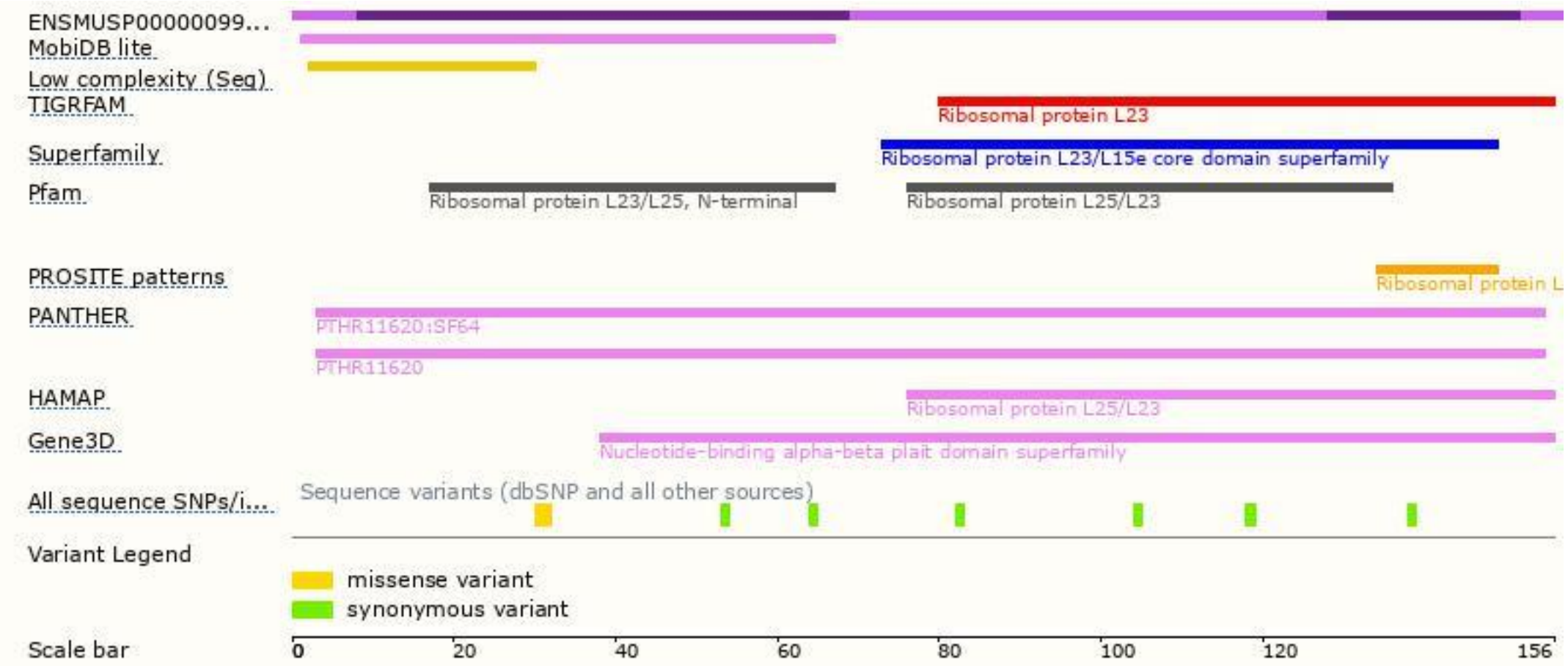
Source: https://www.ensembl.org

Genomic Information



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

Protein Information



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

Important Information

- *Snord42b* gene will be deleted.
- The Intron1 and Intron2 are only 532bp and 1209bp,loxp insertion may affect mRNA splicing.
- The *Rpl23a* gene is located on the Chr11. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.