

Qrsl1 Cas9-KO Strategy

Designer: Huan Wang

Reviewer: Yumeng Wang

Design Date: 2021-7-19

Project Overview

Project Name

Qrs11

Project type

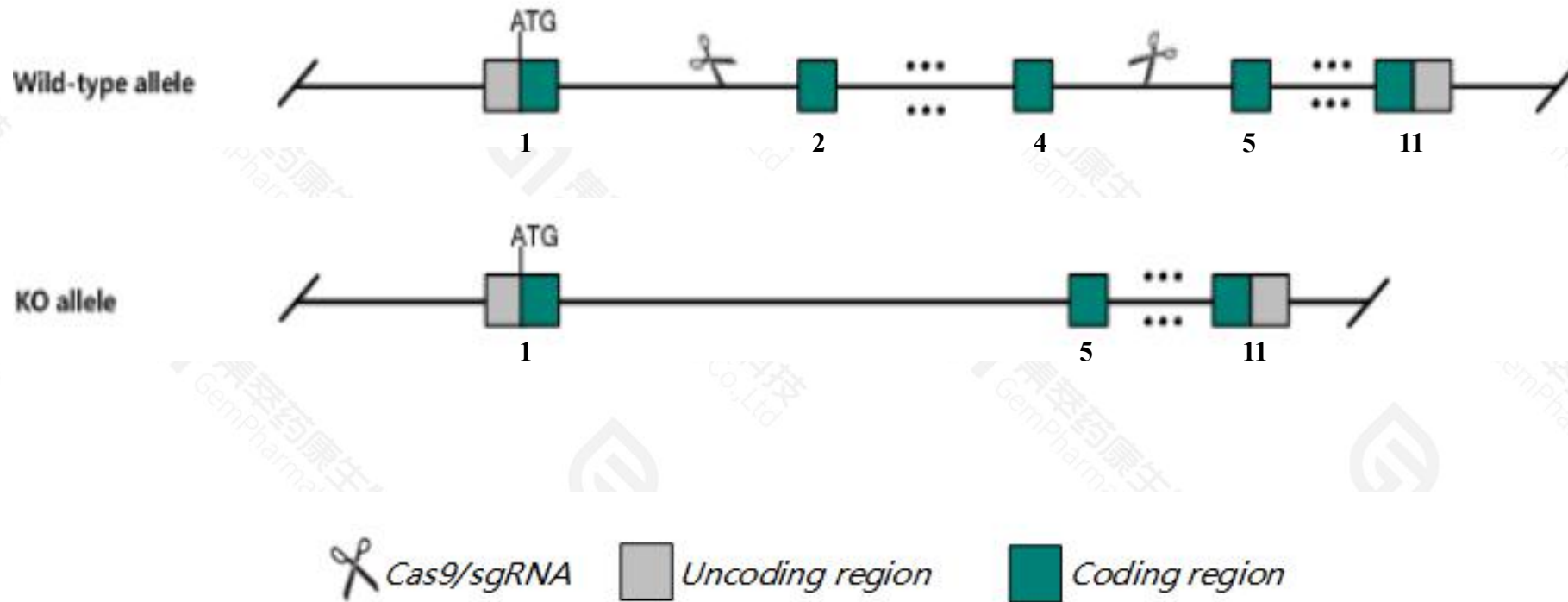
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Qrs11* gene. The schematic diagram is as follows:



- The *Qrs11* gene has 5 transcripts. According to the structure of *Qrs11* gene, exon2-exon4 of *Qrs11-201*(ENSMUST00000020012.7) transcript is recommended as the knockout region. The region contains 356bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Qrs11* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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 *Qrs11* gene is located on the Chr10. 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.

Qrs11 glutaminyl-tRNA synthase (glutamine-hydrolyzing)-like 1 [Mus musculus (house mouse)]

Gene ID: 76563, updated on 25-Sep-2020

Summary



Official Symbol Qrs11 provided by [MGI](#)

Official Full Name glutaminyl-tRNA synthase (glutamine-hydrolyzing)-like 1 provided by [MGI](#)

Primary source [MGI:MGI:1923813](#)

See related [Ensembl:ENSMUSG00000019863](#)

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 2700038P16Rik, C80053, Ga, Gata

Expression Ubiquitous expression in heart adult (RPKM 9.9), CNS E11.5 (RPKM 7.7) and 28 other tissues [See more](#)

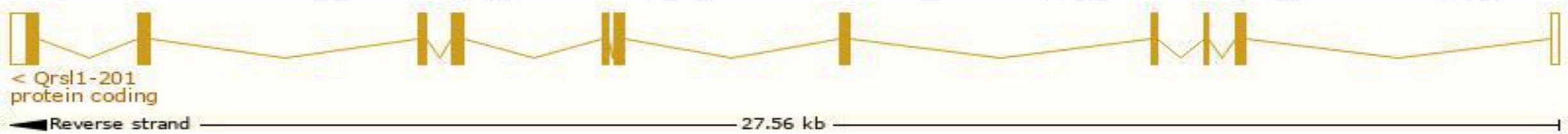
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

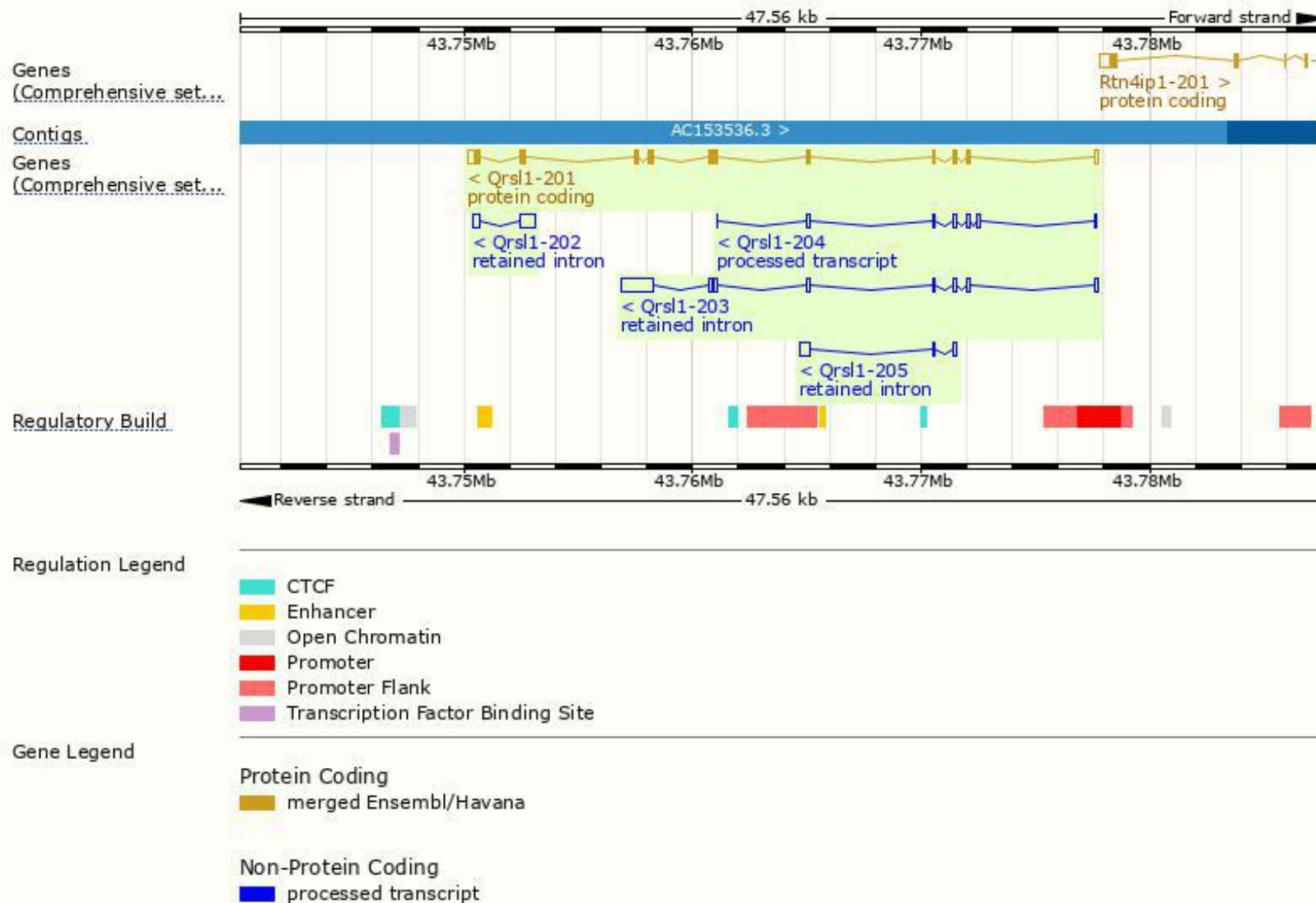
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Qrsl1-201	ENSMUST00000020012.7	1981	525aa	Protein coding	CCDS35894		TSL:1 , GENCODE basic , APPRIS P1 ,
Qrsl1-204	ENSMUST00000216786.2	759	No protein	Processed transcript	-		TSL:5 ,
Qrsl1-203	ENSMUST00000154405.2	2290	No protein	Retained intron	-		TSL:1 ,
Qrsl1-202	ENSMUST00000146937.2	918	No protein	Retained intron	-		TSL:2 ,
Qrsl1-205	ENSMUST00000217541.2	664	No protein	Retained intron	-		TSL:3 ,

The strategy is based on the design of *Qrsl1-201* transcript,the transcription is shown below:



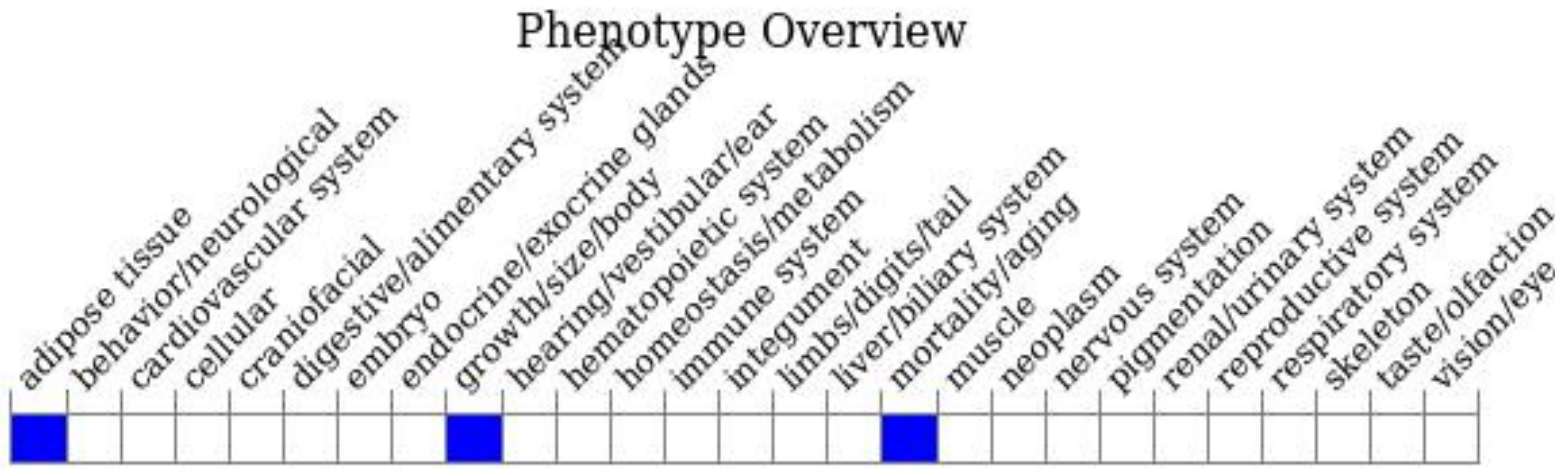
Genomic location distribution



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/>).

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

Tel: 025-5864 1534

