GemPharmatech™

Jrk Cas9-KO Strategy

Designer: Shanhong Tao

Reviewer: Longyun Hu

Design Date: 2023-05-15

Overview

Target Gene Name

- Jrk

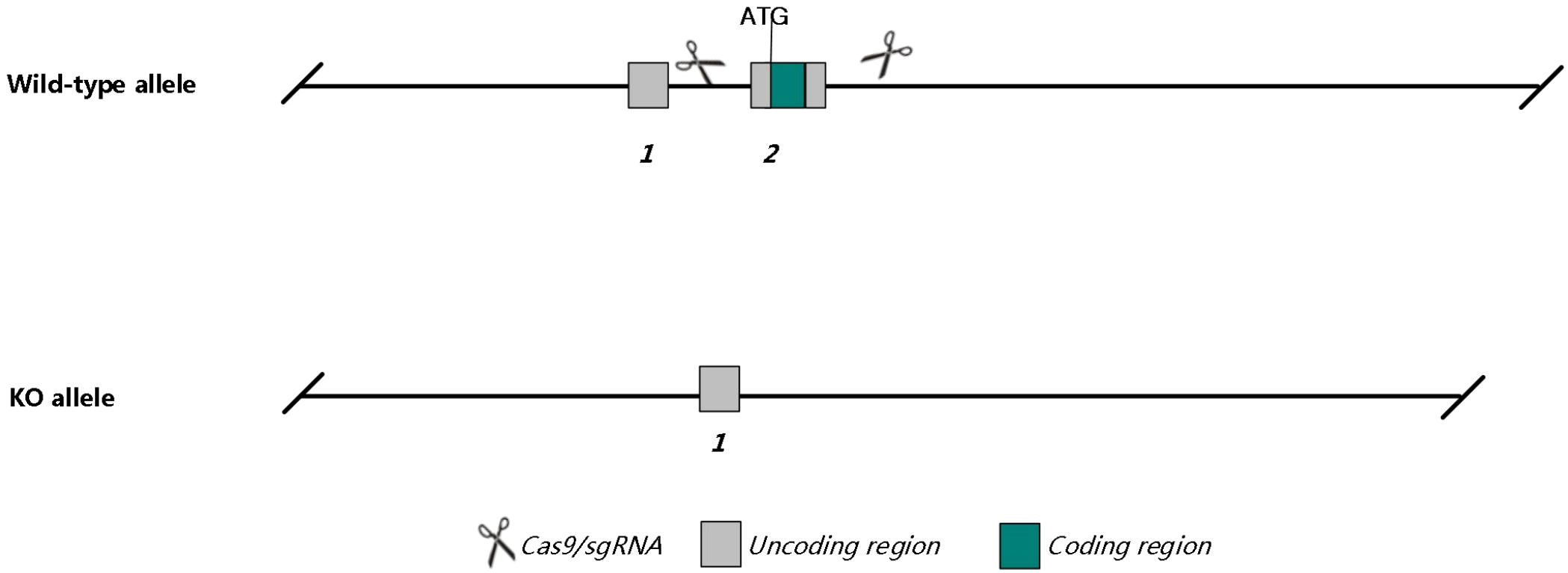
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



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

Technical Information

- The *Jrk* gene has 1 transcript. According to the structure of *Jrk* gene, exon2 of *Jrk*-201 (ENSMUST00000050234.4) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Jrk* 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

Jrk jerky [Mus musculus (house mouse)]

Gene ID: 16469, updated on 12-Apr-2023

Summary

Official Symbol	Jrk provided by MGI
Official Full Name	jerky provided by MGI
Primary source	MGI:MGI:106214
See related	Ensembl:ENSMUSG00000046380
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
Expression	Ubiquitous expression in testis adult (RPKM 4.1), ovary adult (RPKM 2.6) and 28 other tissues See more
Orthologs	human all

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

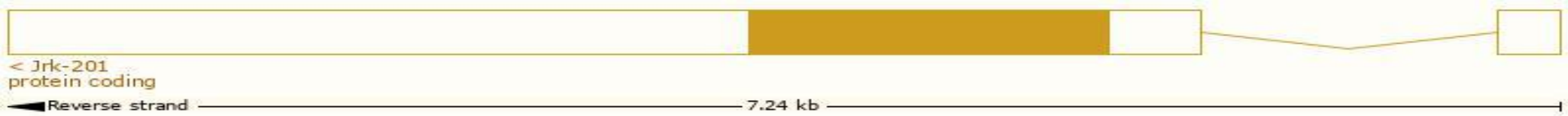
Transcript Information

The gene has 1 transcript,and the transcript is shown below:

Show/hide columns (1 hidden) Filter

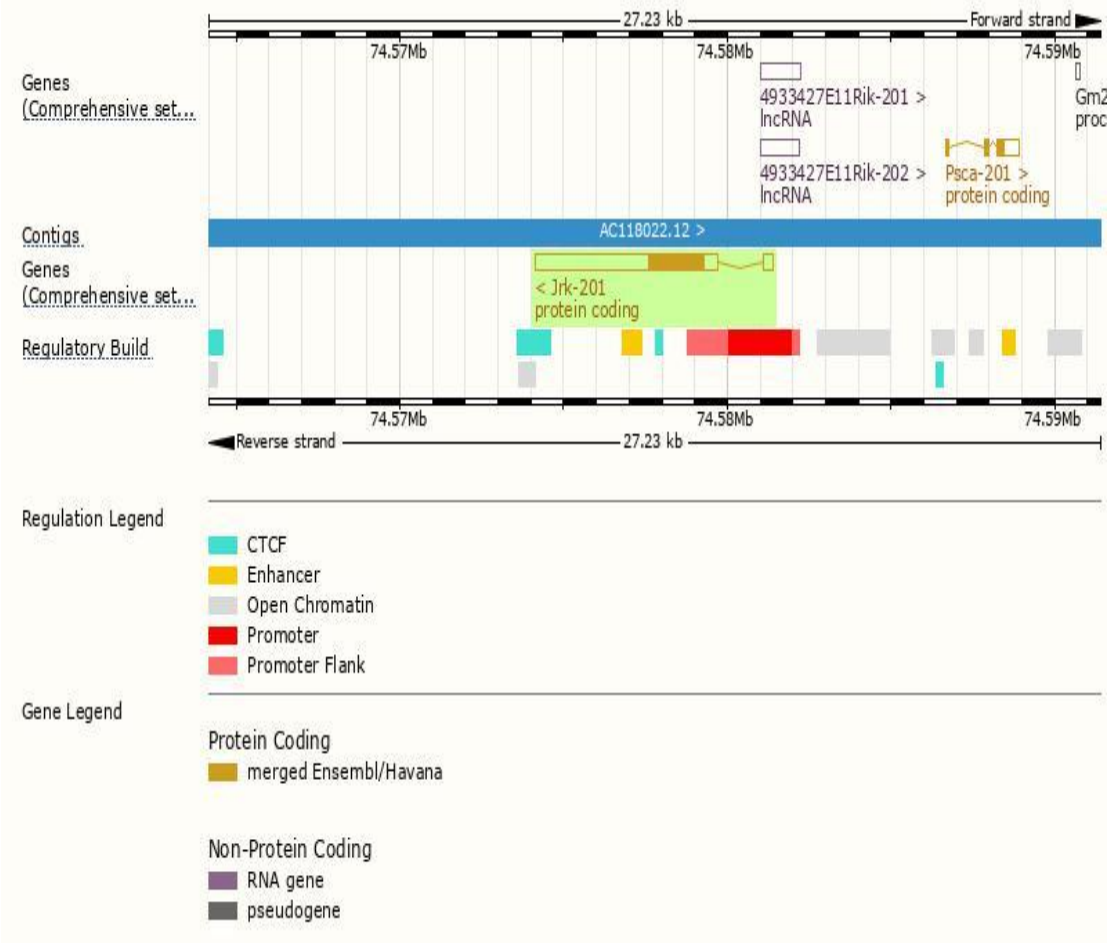
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000050234.4	Jrk-201	5853	557aa	Protein coding	CCDS27524	Q543Z9 Q60976	Ensembl Canonical GENCODE basic APPRIS P1 TSL:1

The strategy is based on the design of Jrk-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

- *Jrk* is located on Chr15. 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.