Jmjd1c Cas9-KO Strategy

Designer: Huan Wang

Reviewer: Huan Fan

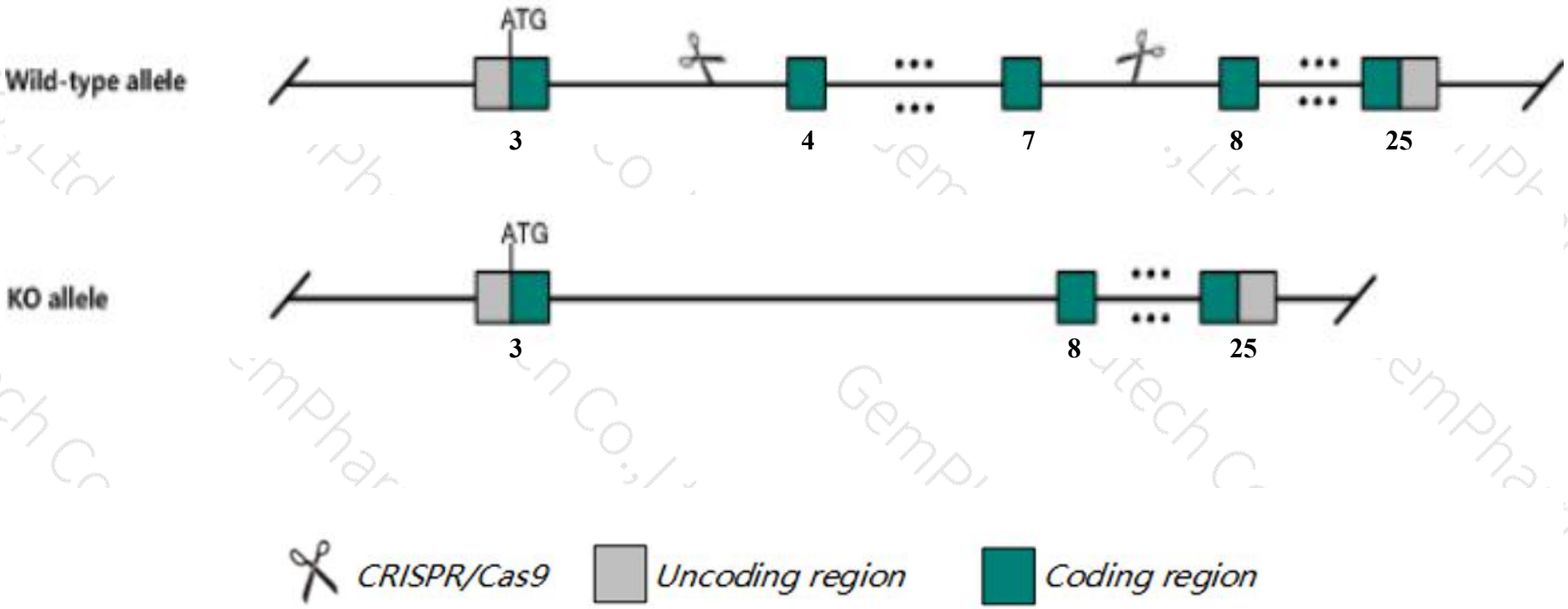
Design Date: 2020-3-6

Project Overview

Project Name	***Jmjd1c***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Jmjd1c* gene. The schematic diagram is as follows:



Technical routes

➢ The *Jmjd1c* gene has 12 transcripts. According to the structure of *Jmjd1c* gene, exon4-exon7 of *Jmjd1c-206* (ENSMUST00000173689.7) transcript is recommended as the knockout region.The region contains 2144bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Jmjd1c* gene. The brief process is as follows: CRISPR/Cas9 systen

Notice

- According to the existing MGI data,Mice homozygous for a null allele exhibit an age-dependent male infertility phenotype, characterized by early loss of undifferentiated spermatogonia, and a progressive reduction in testis size/weight and male germ cells, partly due to increased male germ cell apoptosis.

- The *Jmjd1c* 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.

Gene information（NCBI）

集萃药康 GemPharmatech

Jmjd1c jumonji domain containing 1C [Mus musculus (house mouse)]

Gene ID: 108829, updated on 7-Apr-2019

Summary

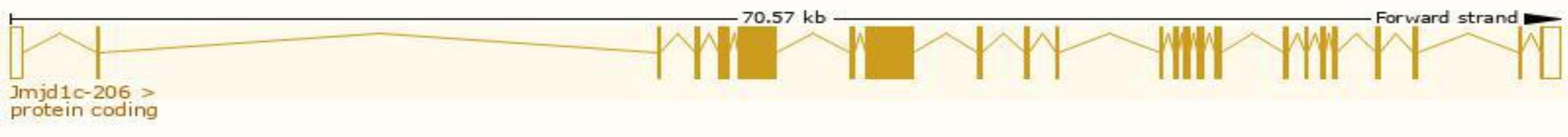
Official Symbol	Jmjd1c provided by MGI
Official Full Name	jumonji domain containing 1C provided byMGI
Primary source	MGI:MGI:1918614
See related	Ensembl:ENSMUSG00000037876
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5430433L24Rik, D630035I23Rik, Jmjdic, TRIP8
Expression	Ubiquitous expression in cerebellum adult (RPKM 6.3), CNS E14 (RPKM 5.6) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 12 transcripts,all transcripts are shown below:

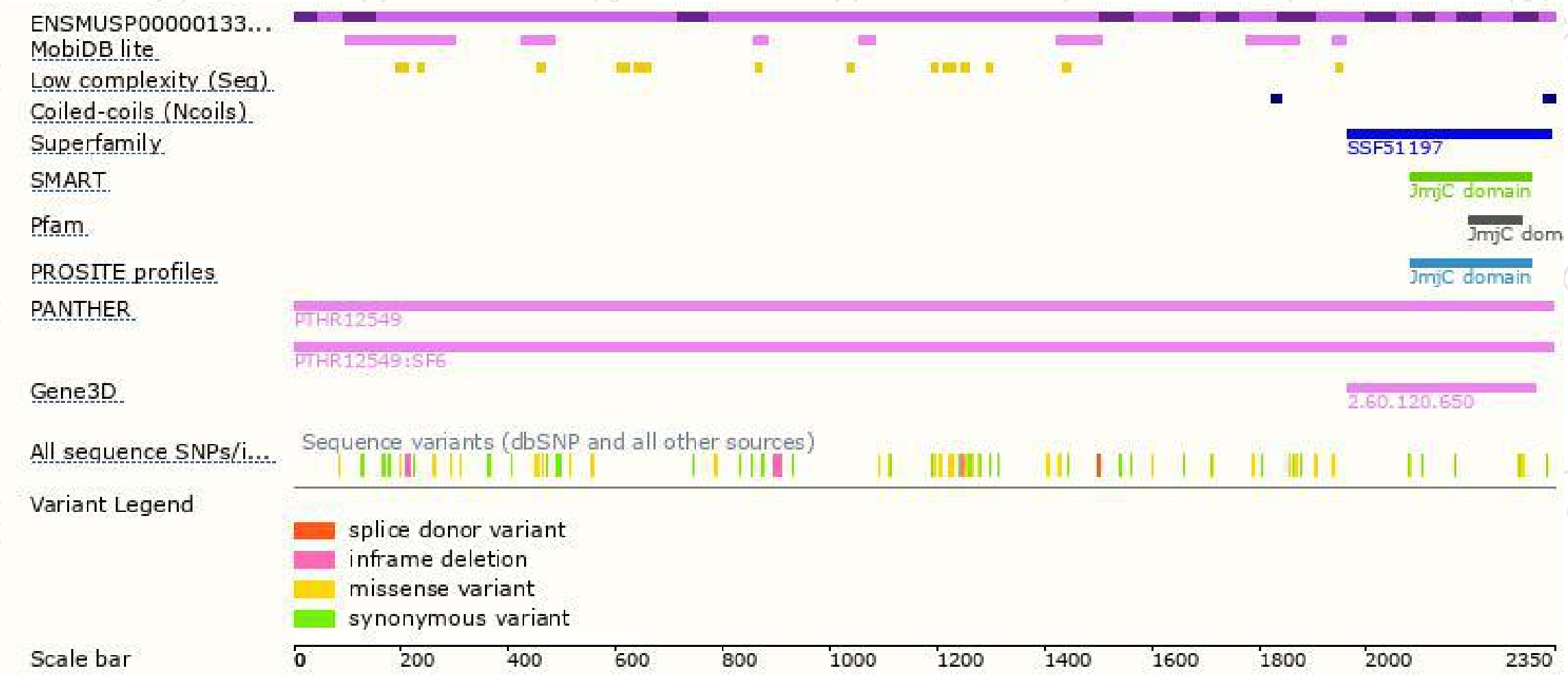
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Jmjd1c-206	ENSMUST00000173689.7	8609	2350aa	Protein coding	CCDS56708	Q69ZK6	TSL:2 GENCODE basic APPRIS ALT2
Jmjd1c-201	ENSMUST00000051446.15	8382	2530aa	Protein coding	CCDS56707	A0A0A0MQ98	TSL:5 GENCODE basic APPRIS P4
Jmjd1c-211	ENSMUST00000174408.7	8377	2531aa	Protein coding	-	G3UZM1	TSL:5 GENCODE basic APPRIS ALT2
Jmjd1c-210	ENSMUST00000174317.7	3076	744aa	Protein coding	-	G3UYW3	CDS 3' incomplete TSL:1
Jmjd1c-212	ENSMUST00000219563.1	6003	No protein	Retained intron	-	-	TSL:NA
Jmjd1c-209	ENSMUST00000174062.7	2772	No protein	Retained intron	-	-	TSL:1
Jmjd1c-208	ENSMUST00000173949.1	2574	No protein	Retained intron	-	-	TSL:1
Jmjd1c-203	ENSMUST00000173236.1	2365	No protein	Retained intron	-	-	TSL:1
Jmjd1c-205	ENSMUST00000173661.7	1579	No protein	Retained intron	-	-	TSL:1
Jmjd1c-204	ENSMUST00000173295.1	651	No protein	Retained intron	-	-	TSL:2
Jmjd1c-202	ENSMUST00000173187.1	522	No protein	Retained intron	-	-	TSL:3
Jmjd1c-207	ENSMUST00000173762.1	2015	No protein	lncRNA	-	-	TSL:1

The strategy is based on the design of *Jmjd1c-206* transcript,The transcription is shown below

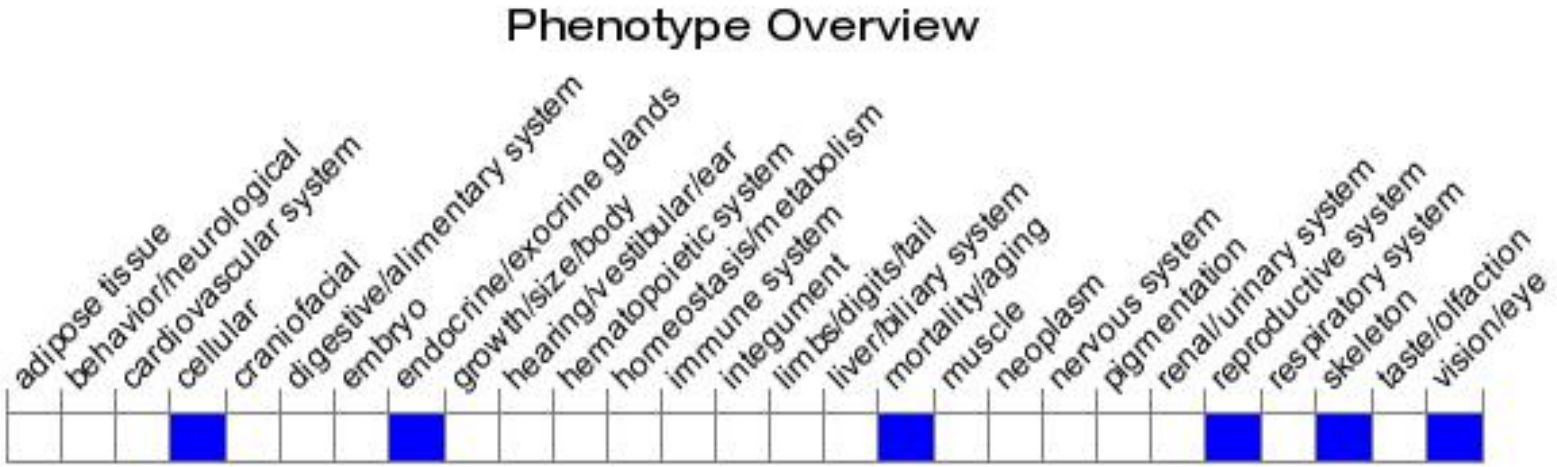


Genomic location distribution

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/).

According to the existing MGI data,Mice homozygous for a null allele exhibit an age-dependent male infertility phenotype, characterized by early loss of undifferentiated spermatogonia, and a progressive reduction in testis size/weight and male germ cells, partly due to increased male germ cell apoptosis.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd