

Rfc5 Cas9-CKO Strategy

Designer: Xueting Zhang

Reviewer: Yanhua Shen

Date: 2020-03-16

Project Overview

Project Name

Rfc5

Project type

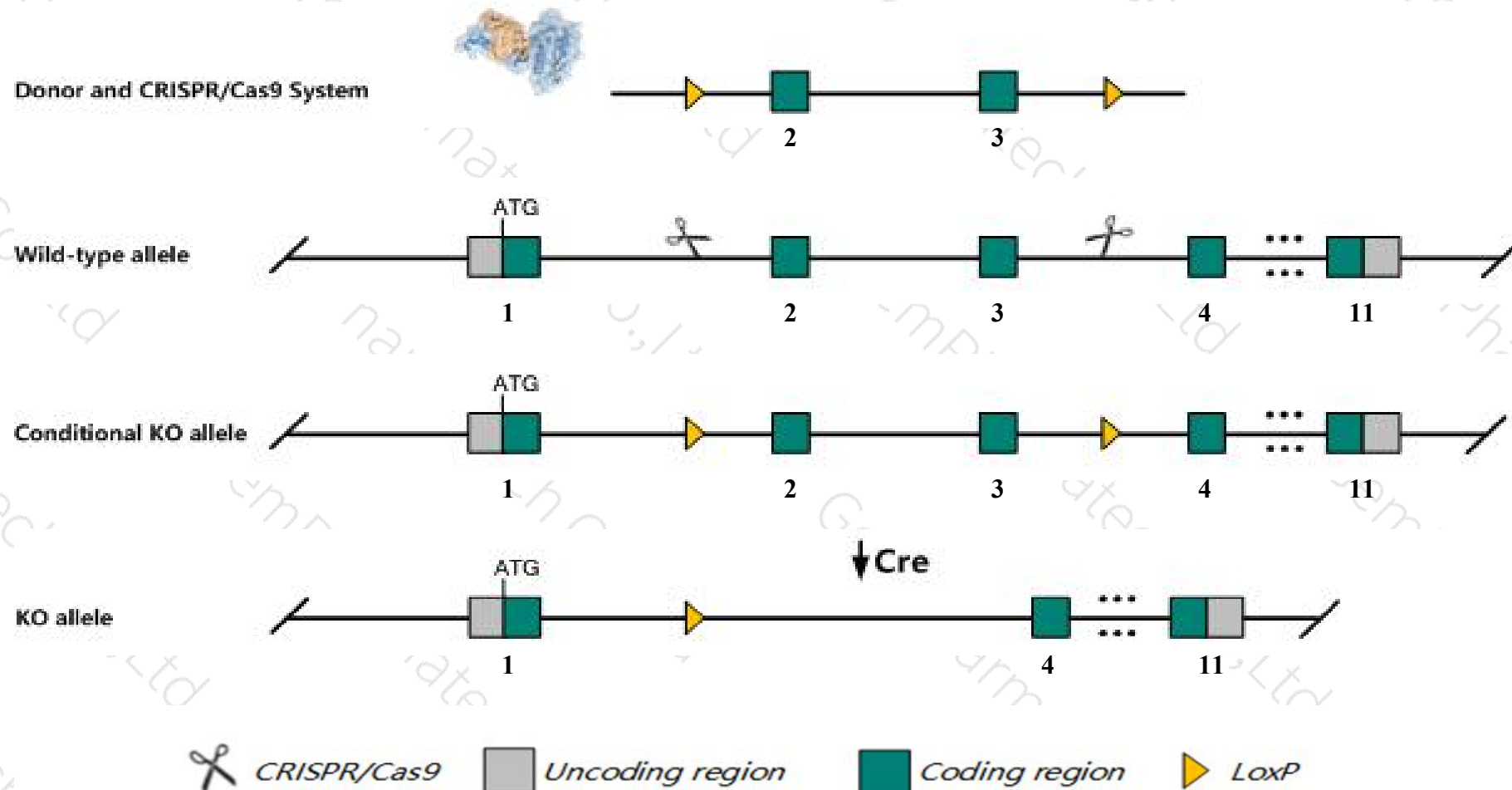
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rfc5* gene. The schematic diagram is as follows:



- The *Rfc5* gene has 6 transcripts. According to the structure of *Rfc5* gene, exon2-exon3 of *Rfc5-201* (ENSMUST00000086461.12) transcript is recommended as the knockout region. The region contains 202bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rfc5* 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.

Notice

- Transcript *Rfc5*-203&205 may not be affected.
- The floxed region is near to the N-terminal of *Gm15728* gene, this strategy may influence the regulatory function of the N-terminal of *Gm15728* gene.
- The *Rfc5* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Rfc5 replication factor C (activator 1) 5 [*Mus musculus* (house mouse)]

Gene ID: 72151, updated on 13-Mar-2020

Summary

- Official Symbol** Rfc5 provided by [MGI](#)
- Official Full Name** replication factor C (activator 1) 5 provided by [MGI](#)
- Primary source** [MGI:MGI:1919401](#)
- See related** [Ensembl:ENSMUSG00000029363](#)
- Gene type** protein coding
- RefSeq status** PROVISIONAL
- Organism** [Mus musculus](#)
- Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
- Also known as** 36kDa; Recc5; 36.5kDa; 2610020K06Rik; 2610209F07Rik
- Expression** Ubiquitous expression in liver E14 (RPKM 17.2), liver E14.5 (RPKM 16.9) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 5; 5 F See Rfc5 in [Genome Data Viewer](#)

Exon count: 11

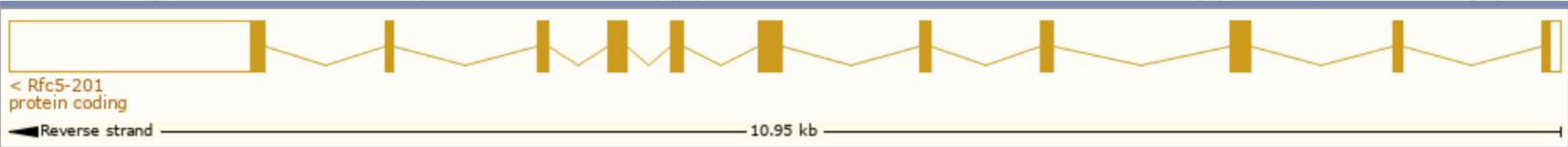
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	5	NC_000071.6 (117379145..117389023, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	5	NC_000071.5 (117829154..117839032, complement)

Transcript information (Ensembl)

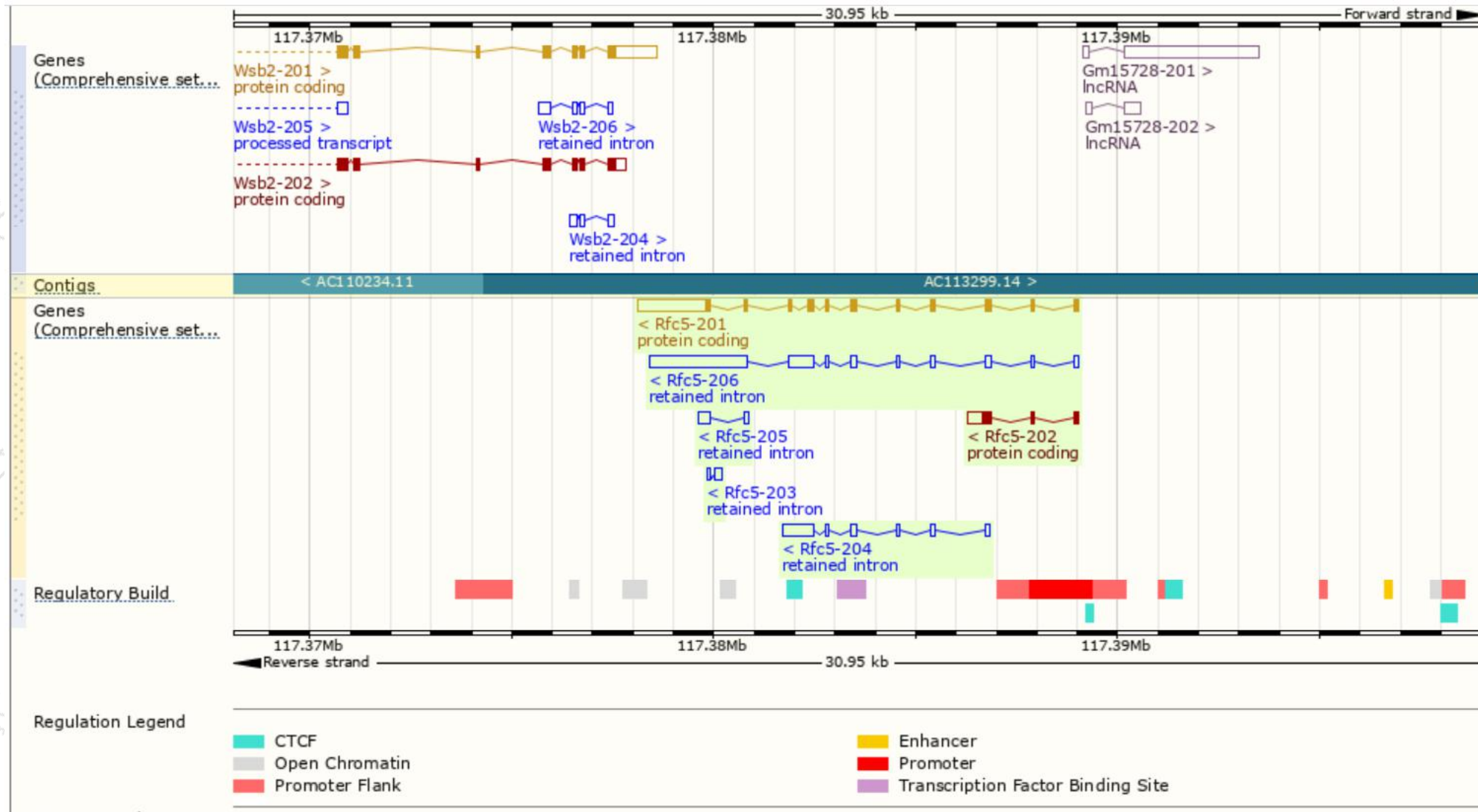
The gene has 6 transcripts, and all the transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rfc5-201	ENSMUST00000086461.12	2796	339aa	Protein coding	CCDS39235	Q5HZI8 Q9D0F6	TSL:1 GENCODE basic APPRIS P1
Rfc5-202	ENSMUST00000111953.1	772	112aa	Protein coding	-	D3Z1Y6	TSL:1 GENCODE basic
Rfc5-206	ENSMUST00000150962.7	3751	No protein	Retained intron	-	-	TSL:2
Rfc5-204	ENSMUST00000126262.1	1256	No protein	Retained intron	-	-	TSL:2
Rfc5-205	ENSMUST00000129369.1	375	No protein	Retained intron	-	-	TSL:2
Rfc5-203	ENSMUST00000123392.1	264	No protein	Retained intron	-	-	TSL:5

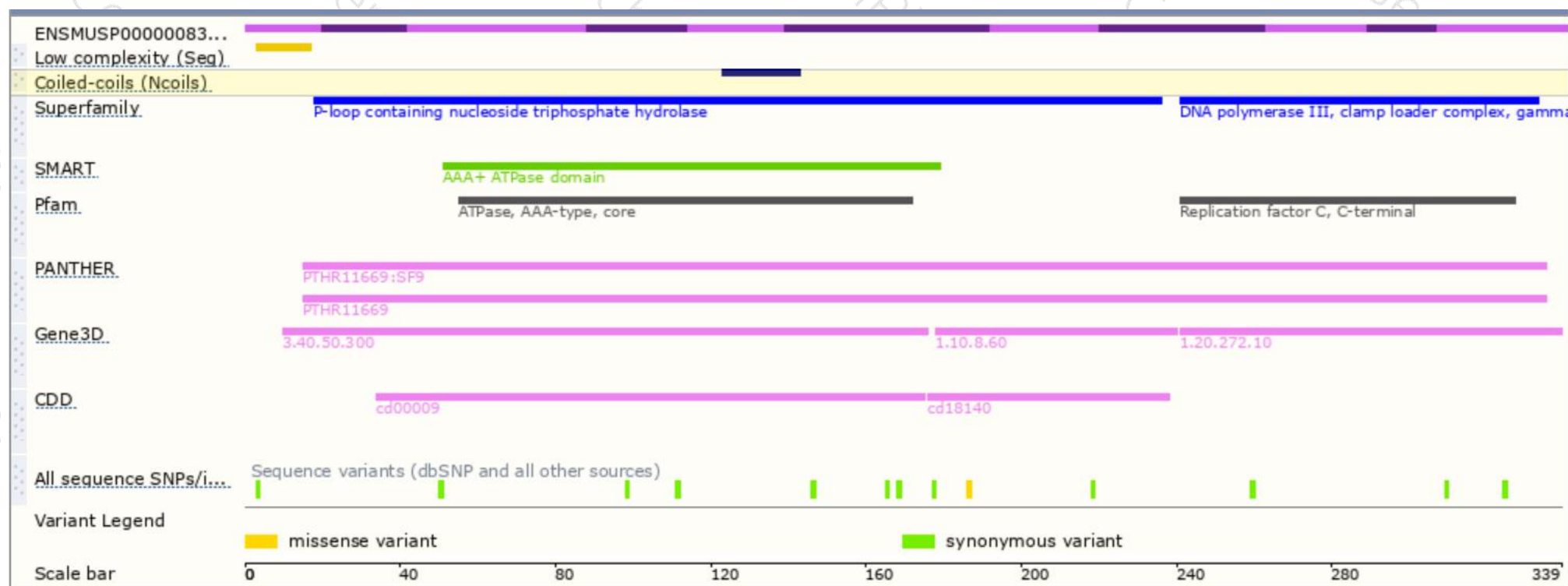
The strategy is based on the design of *Rfc5-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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

Tel: 400-9660890

