

Cyp4f15 Cas9-CKO Strategy

Designer: Daohua Xu

Reviewer: Xueting Zhang

Design Date: 2020-10-12

Project Overview

Project Name

Cyp4f15

Project type

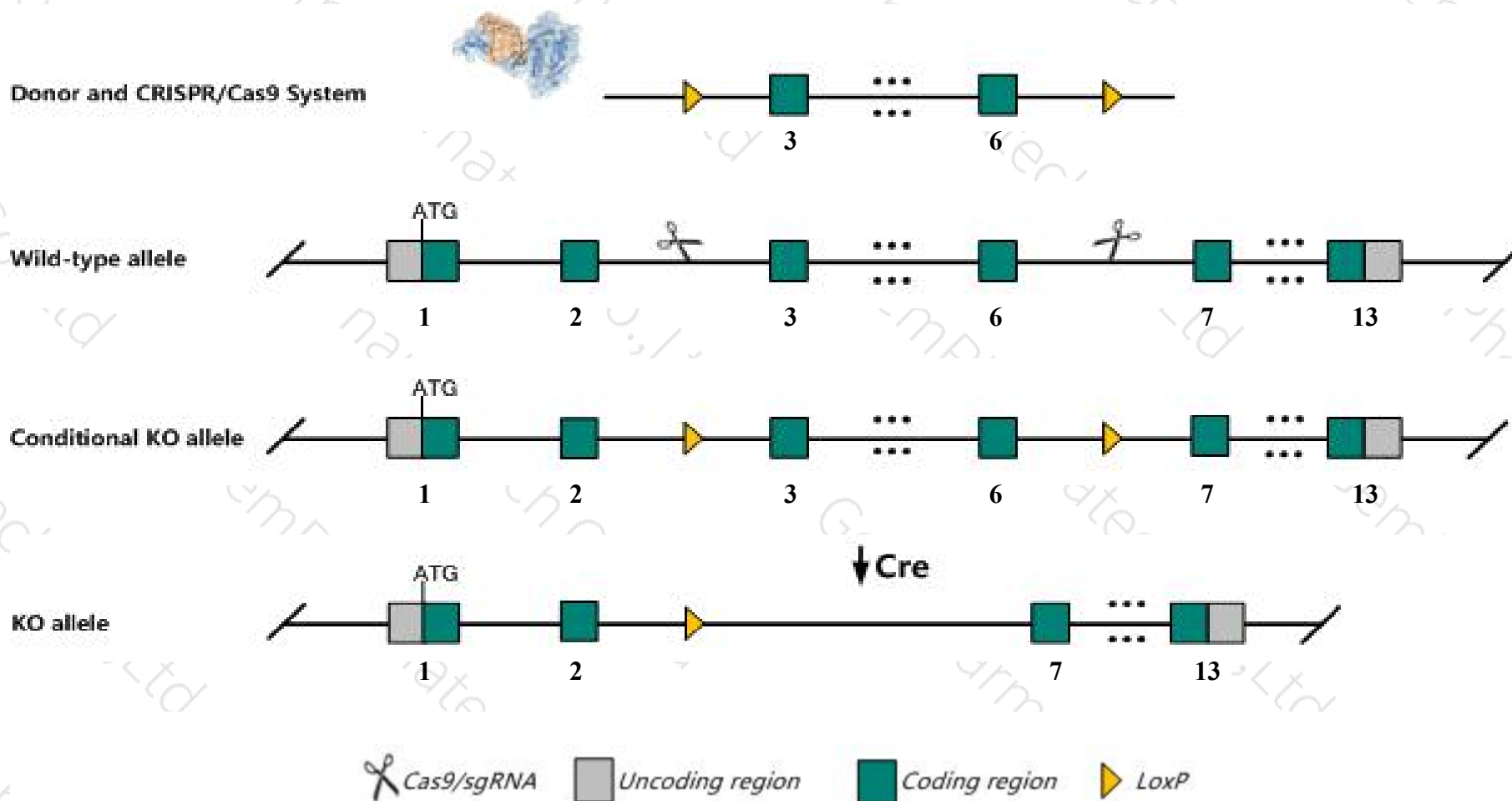
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cyp4f15* gene. The schematic diagram is as follows:



Technical routes

- The *Cyp4f15* gene has 4 transcripts. According to the structure of *Cyp4f15* gene, exon3-exon6 of *Cyp4f15*-204(ENSMUST00000168171.7) transcript is recommended as the knockout region. The region contains 449bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cyp4f15* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Cyp4f15* gene is located on the Chr17. 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)

Cyp4f15 cytochrome P450, family 4, subfamily f, polypeptide 15 [Mus musculus (house mouse)]

Gene ID: 106648, updated on 13-Mar-2020

Summary

Official Symbol	Cyp4f15 provided by MGI
Official Full Name	cytochrome P450, family 4, subfamily f, polypeptide 15 provided by MGI
Primary source	MGI:MGI:2146921
See related	Ensembl:ENSMUSG00000073424
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	AI787289, Cyp4f-15
Expression	Biased expression in liver adult (RPKM 70.8), bladder adult (RPKM 60.4) and 4 other tissues See more

Transcript information (Ensembl)

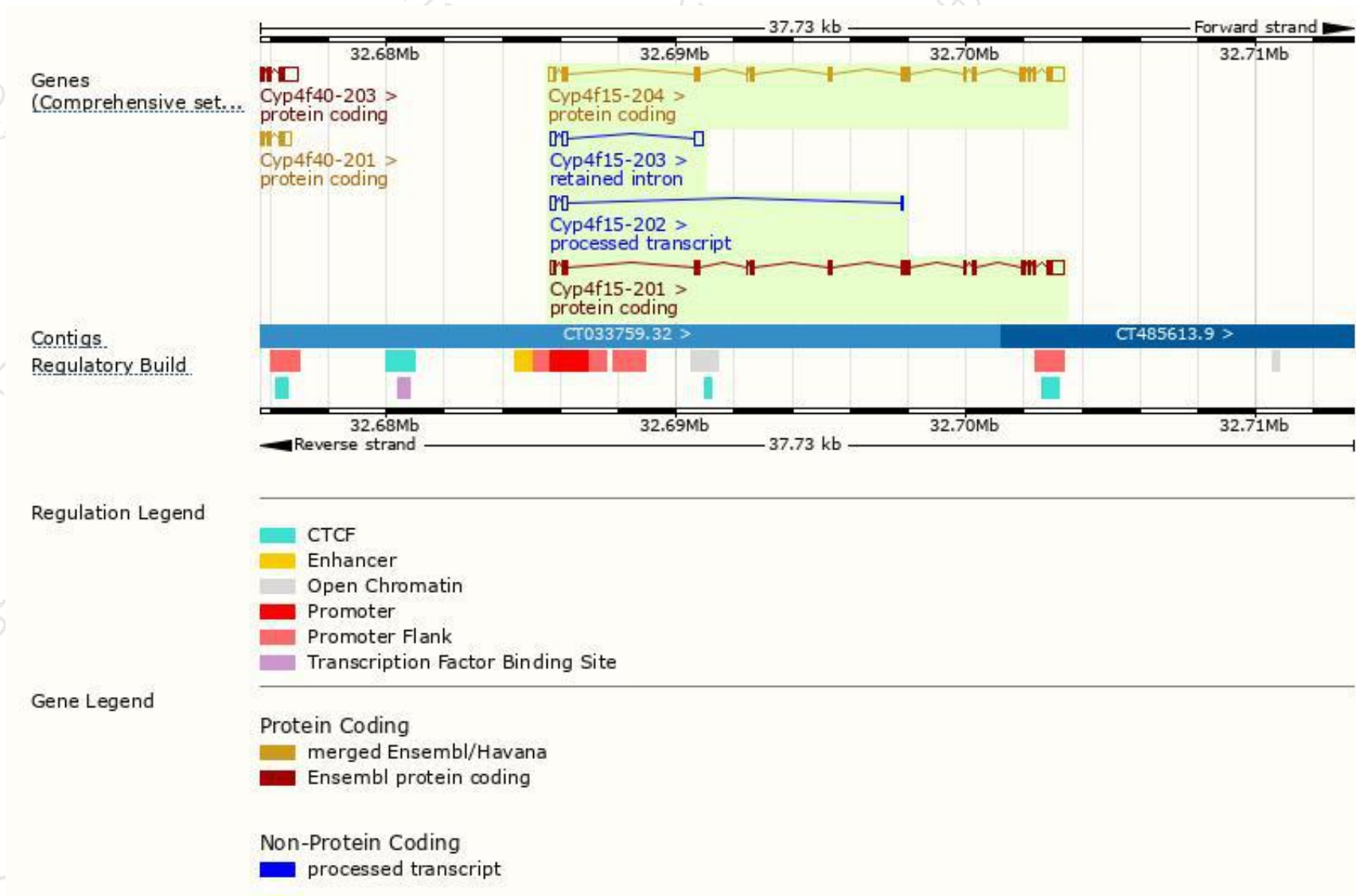
The gene has 4 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cyp4f15-204	ENSMUST00000168171.7	2168	534aa	Protein coding	CCDS28620	Q99N18	TSL:1 GENCODE basic APPRIS P3
Cyp4f15-201	ENSMUST00000008801.6	2095	527aa	Protein coding	CCDS84293	Q8VCA4	TSL:1 GENCODE basic APPRIS ALT2
Cyp4f15-202	ENSMUST00000163907.1	384	No protein	Processed transcript	-	-	TSL:3
Cyp4f15-203	ENSMUST00000167789.7	602	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Cyp4f15-204* transcript, the transcription is shown below:



Genomic location distribution



Protein domain



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

Tel: 025-5864 1534

