

Cyp7b1 Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Cyp7b1

Project type

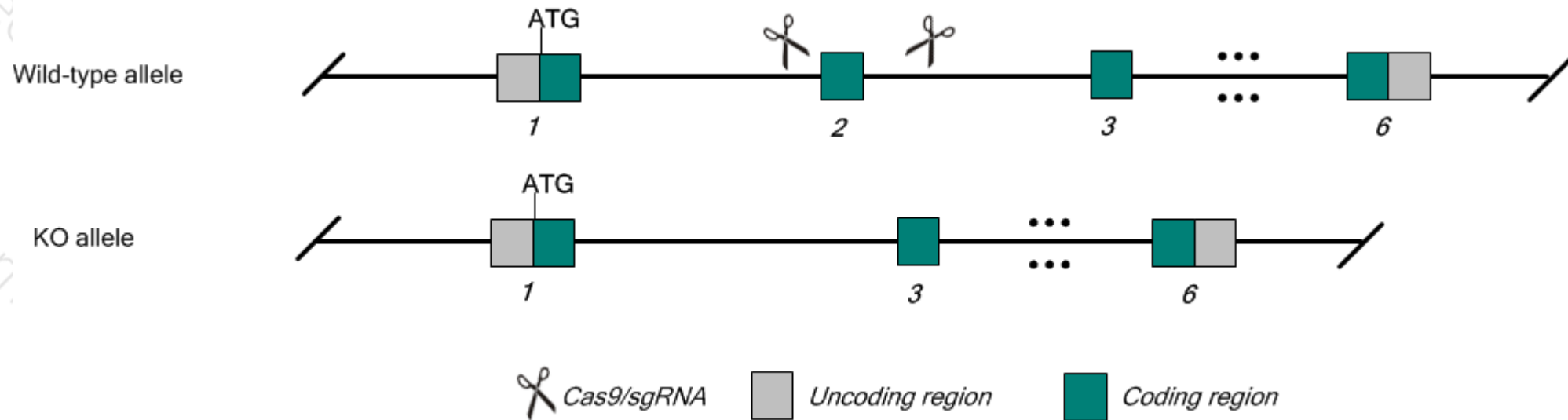
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cyp7b1* gene. The schematic diagram is as follows:



Technical routes

- The *Cyp7b1* gene has 1 transcripts, According to the structure of *Cyp7b1* gene, exon2 of *Cyp7b1-201* transcript is recommended as the knockout region. The region contains the 137bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cyp7b1* 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.

- According to the existing MGI data , Mice homozygous for a knock-out allele show significantly increased levels of 25- and 27-hydroxycholesterol, and reduced IgA levels. Female mice homozygous for a reporter allele display early onset of puberty and early ovarian failure.
- The *Cyp7b1* gene is located in the Chr3. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Cyp7b1 cytochrome P450, family 7, subfamily b, polypeptide 1 [*Mus musculus* (house mouse)]

Gene ID: 13123, updated on 31-Jan-2019

Summary

Official Symbol	Cyp7b1 provided by MGI
Official Full Name	cytochrome P450, family 7, subfamily b, polypeptide 1 provided by MGI
Primary source	MGI:MGI:104978
See related	Ensembl:ENSMUSG00000039519
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	hct-1; AW261589; D3Ert552e
Expression	Broad expression in liver adult (RPKM 7.2), bladder adult (RPKM 3.2) and 19 other tissues See more
Orthologs	human all

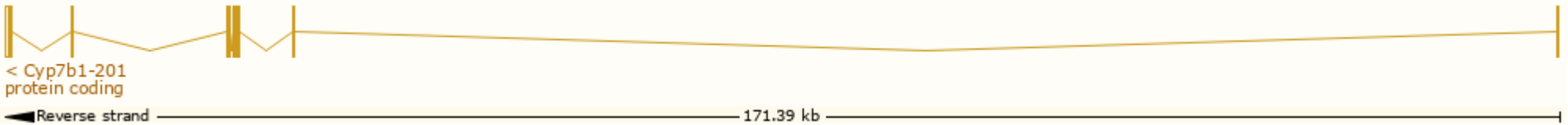
Transcript information (Ensembl)



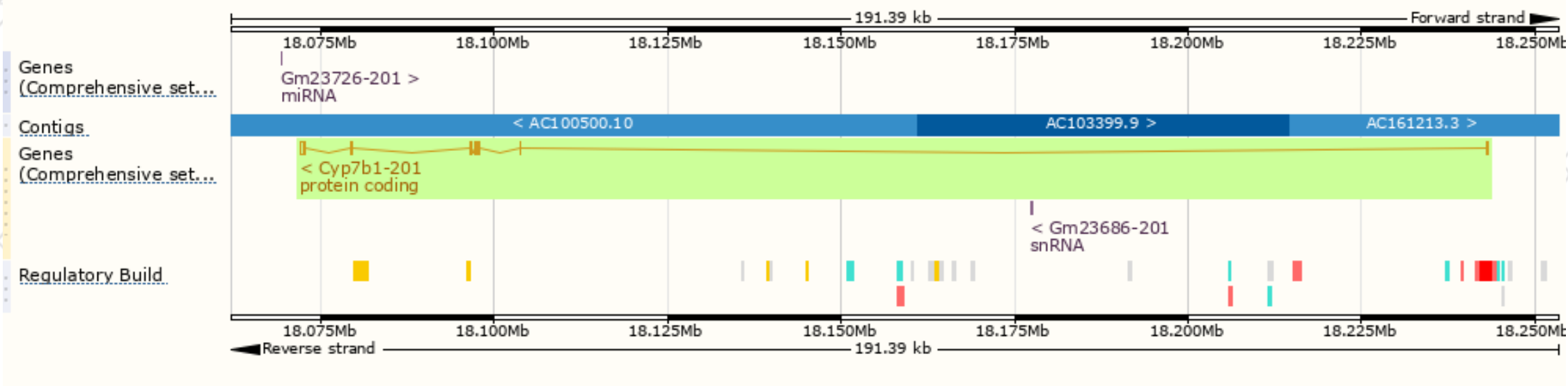
The gene has 1 transcripts, and all transcripts are shown below :

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Cyp7b1-201	ENSMUST00000035625.6	2166	507aa	Protein coding	CCDS17254	Q60991	NM_007825 NP_031851	TSL:1 Gencode basic APPRIS P1

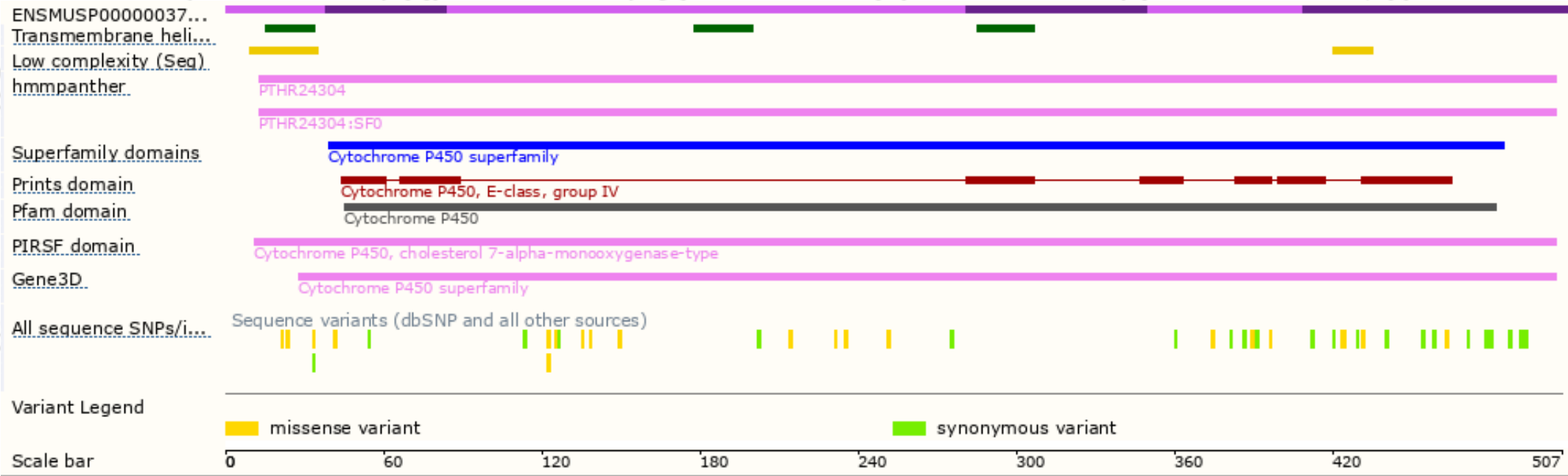
The strategy is based on the design of *Cyp7b1-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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