

Cyp17a1 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Cyp17a1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cyp17a1* gene. The schematic diagram is as follows:



- The *Cyp17a1* gene has 4 transcripts. According to the structure of *Cyp17a1* gene, exon1-exon3 of *Cyp17a1*-201 (ENSMUST00000026012.7) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cyp17a1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous null embryos display early embryonic lethality.
- The KO region contains functional region of the *Gm6967* gene. Knockout the region may affect the function of *Gm6967* gene.
- The *Cyp17a1* gene is located on the Chr19. 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)

Cyp17a1 cytochrome P450, family 17, subfamily a, polypeptide 1 [Mus musculus (house mouse)]

Gene ID: 13074, updated on 19-Mar-2019

Summary



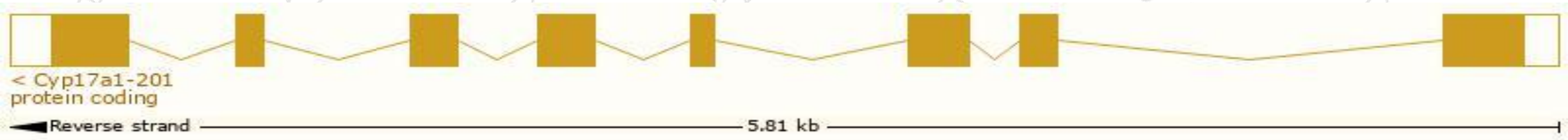
Official Symbol	Cyp17a1 provided by MGI
Official Full Name	cytochrome P450, family 17, subfamily a, polypeptide 1 provided by MGI
Primary source	MGI:MGI:88586
See related	Ensembl:ENSMUSG000000003555
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Cyp17, p450c17
Expression	Biased expression in ovary adult (RPKM 93.6), testis adult (RPKM 75.6) and 3 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

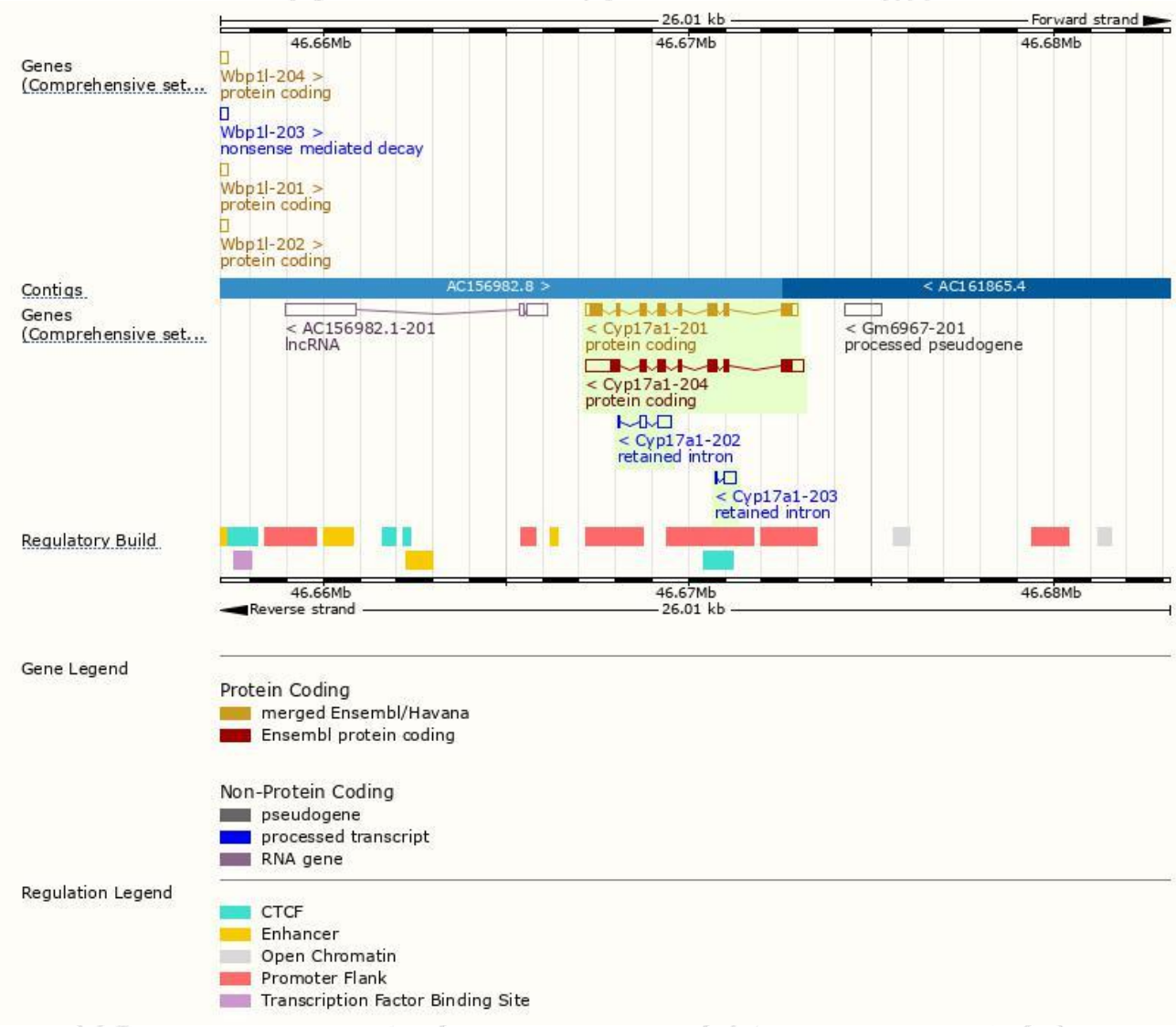
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cyp17a1-201	ENSMUST00000026012.7	1815	507aa	Protein coding	CCDS29882	P27786 Q53YJ1	TSL:1 GENCODE basic APPRIS P1
Cyp17a1-204	ENSMUST00000236174.1	2403	455aa	Protein coding	-	-	GENCODE basic
Cyp17a1-202	ENSMUST00000131142.1	569	No protein	Retained intron	-	-	TSL:5
Cyp17a1-203	ENSMUST00000156577.1	377	No protein	Retained intron	-	-	TSL:3

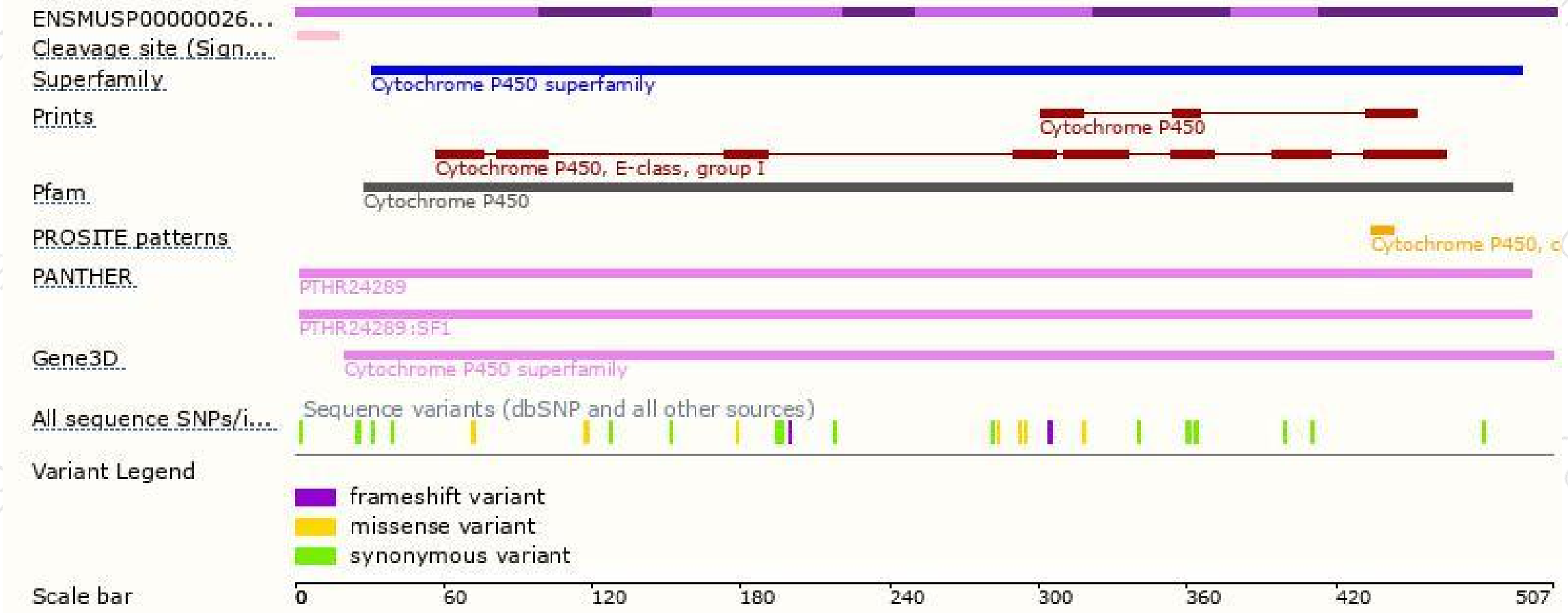
The strategy is based on the design of *Cyp17a1-201* transcript,The transcription is shown below



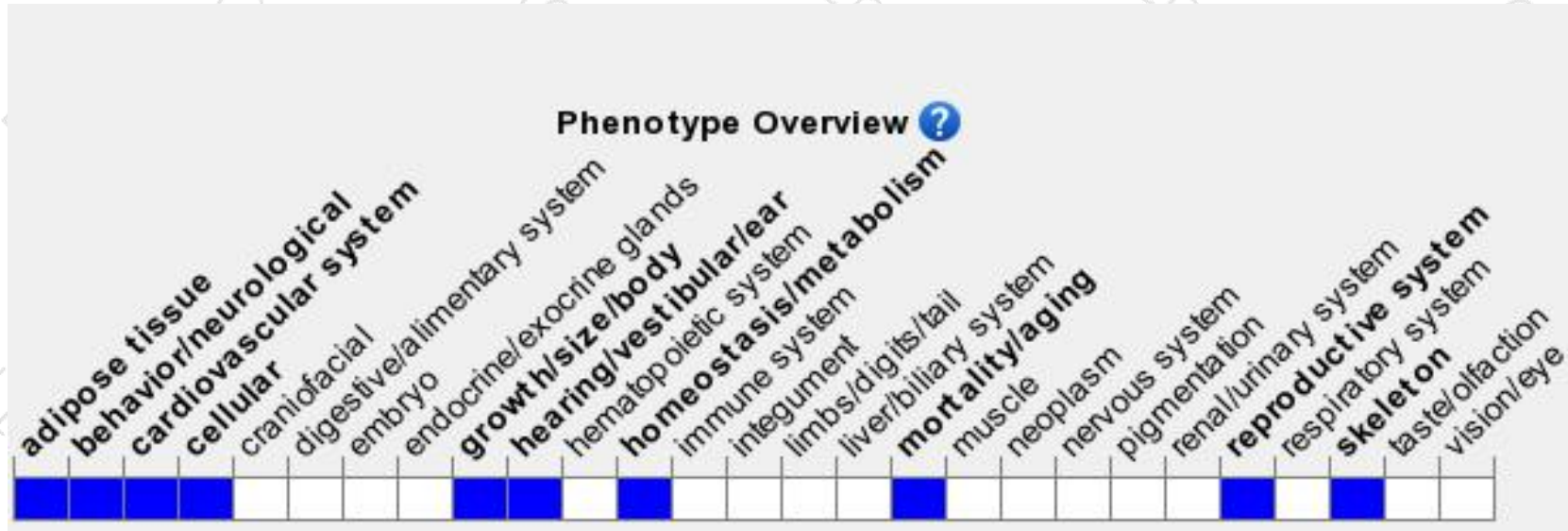
Genomic location distribution



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, Homozygous null embryos display early embryonic lethality.

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

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