

Cyp11a1 Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Cyp11a1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cyp11a1* gene. The schematic diagram is as follows:



- The *Cyp11a1* gene has 4 transcripts. According to the structure of *Cyp11a1* gene, exon2-exon4 of *Cyp11a1-201* (ENSMUST00000034874.13) transcript is recommended as the knockout region. The region contains 560bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cyp11a1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous null mice are exhibit a steroid deficiency and die within days of birth showing signs of dehydration. Males are feminized with female external genitalia and underdeveloped gonads. Mice homozgyous for another knock-out allele exhibit abnormal adrenal development and neonatal lethality.
- The *Cyp11a1* gene is located on the Chr9. 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)

Cyp11a1 cytochrome P450, family 11, subfamily a, polypeptide 1 [Mus musculus (house mouse)]

Gene ID: 13070, updated on 19-Mar-2019

Summary



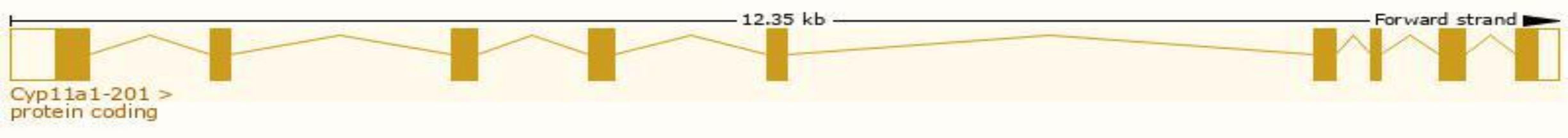
Official Symbol	Cyp11a1 provided by MGI
Official Full Name	cytochrome P450, family 11, subfamily a, polypeptide 1 provided by MGI
Primary source	MGI:MGI:88582
See related	Ensembl:ENSMUSG00000032323
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Cyp11a, Cypxia1, D9Ert411e, P450scc, Scc, csc
Expression	Biased expression in adrenal adult (RPKM 494.9), ovary adult (RPKM 389.8) and 1 other tissue See more
Orthologs	human all

Transcript information (Ensembl)

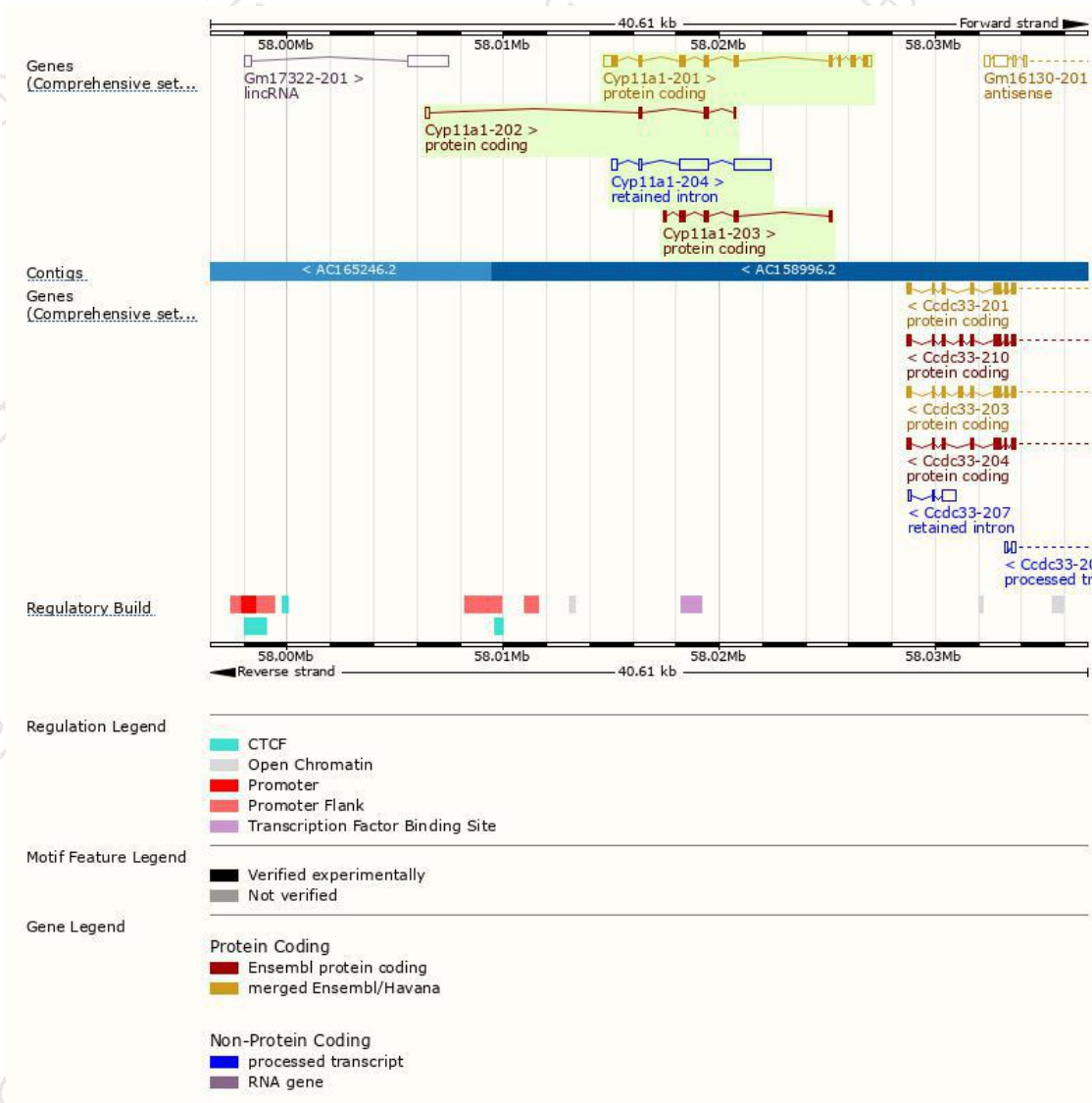
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cyp11a1-201	ENSMUST00000034874.13	2120	526aa	Protein coding	CCDS40653	Q9QZ82	TSL:1 GENCODE basic APPRIS P1
Cyp11a1-203	ENSMUST00000188539.1	848	279aa	Protein coding	-	A0A087WRU6	CDS 3' incomplete TSL:2
Cyp11a1-202	ENSMUST00000188116.6	539	115aa	Protein coding	-	A0A087WRA8	CDS 3' incomplete TSL:3
Cyp11a1-204	ENSMUST00000188944.1	3439	No protein	Retained intron	-	-	TSL:1

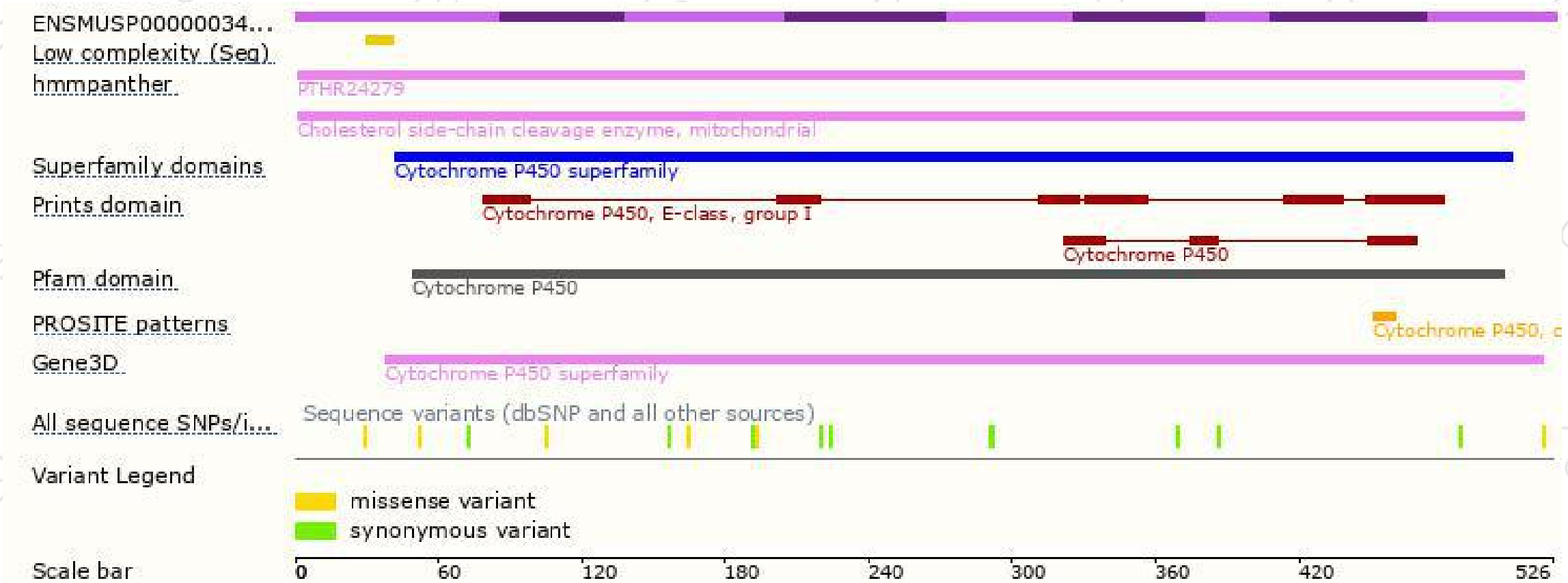
The strategy is based on the design of *Cyp11a1-201* transcript,The transcription is shown below



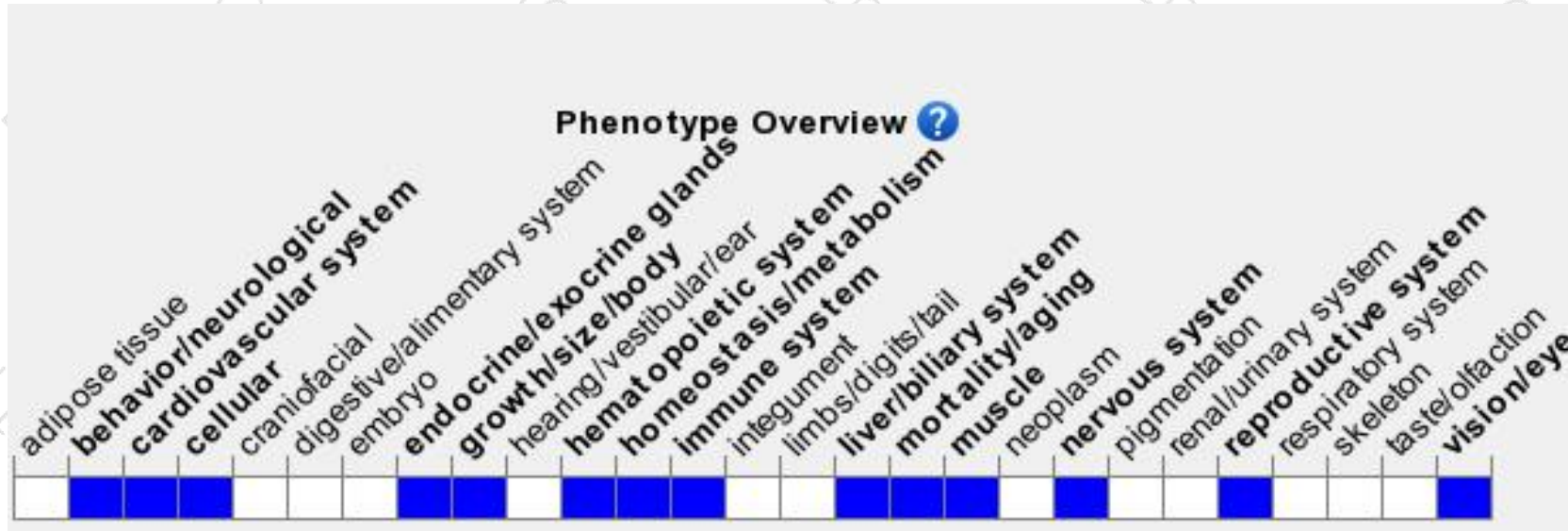
Genomic location distribution



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 mice exhibit a steroid deficiency and die within days of birth showing signs of dehydration. Males are feminized with female external genitalia and underdeveloped gonads. Mice homozygous for another knock-out allele exhibit abnormal adrenal development and neonatal lethality.

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

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