

Mcoln3 Cas9-KO Strategy

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Design Date: 2021-4-20

Project Overview

Project Name

Mcoln3

Project type

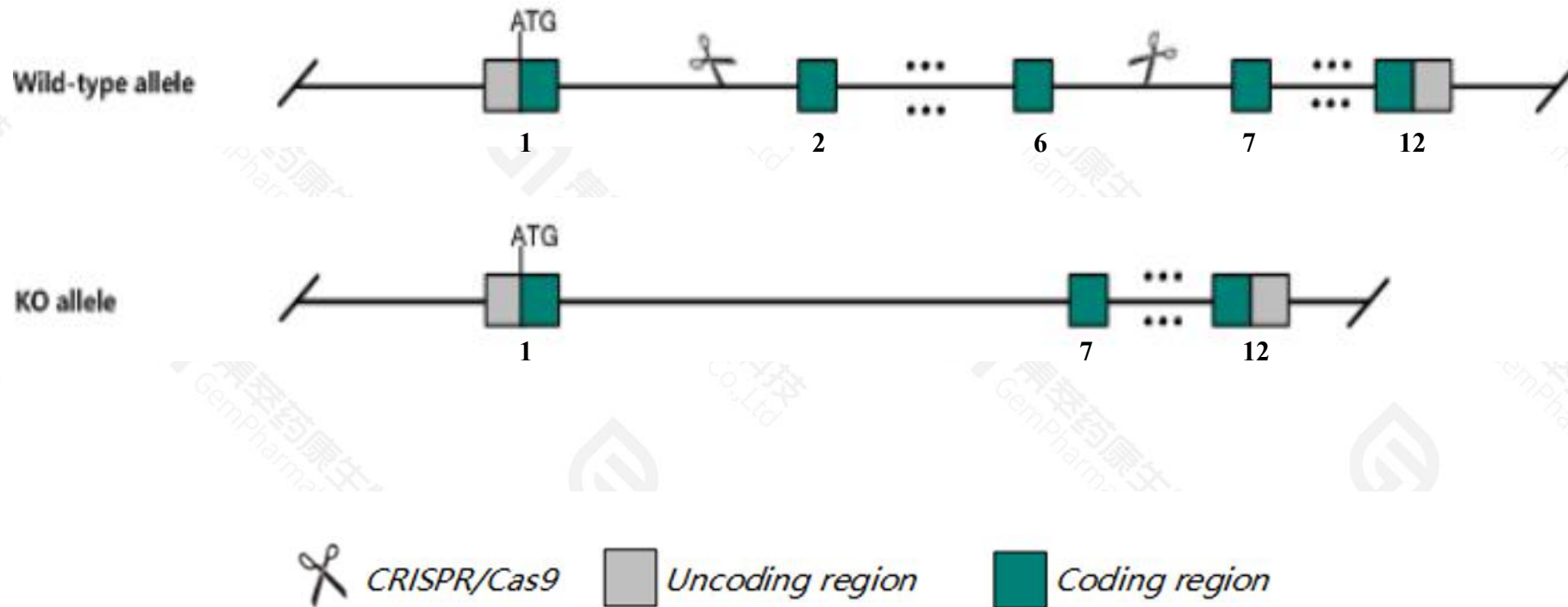
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mcoln3* gene. The schematic diagram is as follows:



- The *Mcoln3* gene has 3 transcripts. According to the structure of *Mcoln3* gene, exon2-exon6 of *Mcoln3-201*(ENSMUST00000039450.5) transcript is recommended as the knockout region. The region contains 604bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mcoln3* gene. The brief process is as follows: CRISPR/Cas9 system 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, heterozygotes show normal/diluted/white hair patches, circling, hyperactivity, deafness, and reduced fertility. Homozygotes are white with small patches of color and show severe behavioral abnormalities, poor postnatal viability and are nearly infertile.
- The *Mcoln3* gene is located on 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Mcoln3 mucolipin 3 [Mus musculus (house mouse)]

Gene ID: 171166, updated on 17-Dec-2020

Summary



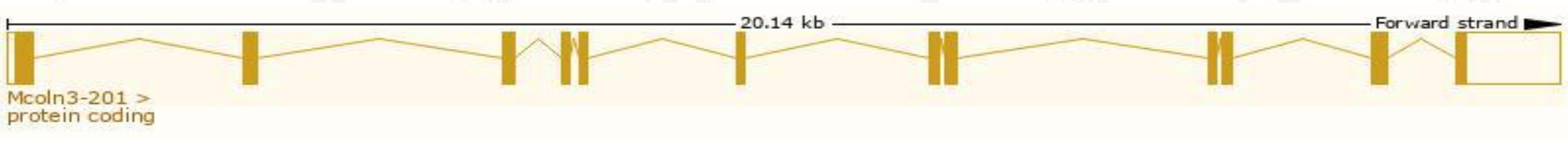
Official Symbol	Mcoln3 provided by MGI
Official Full Name	mucolipin 3 provided by MGI
Primary source	MGI:MGI:1890500
See related	Ensembl:ENSMUSG00000036853
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	6720490O21Rik, TRP, TRPML3, Va
Expression	Biased expression in placenta adult (RPKM 3.2), kidney adult (RPKM 2.7) and 9 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

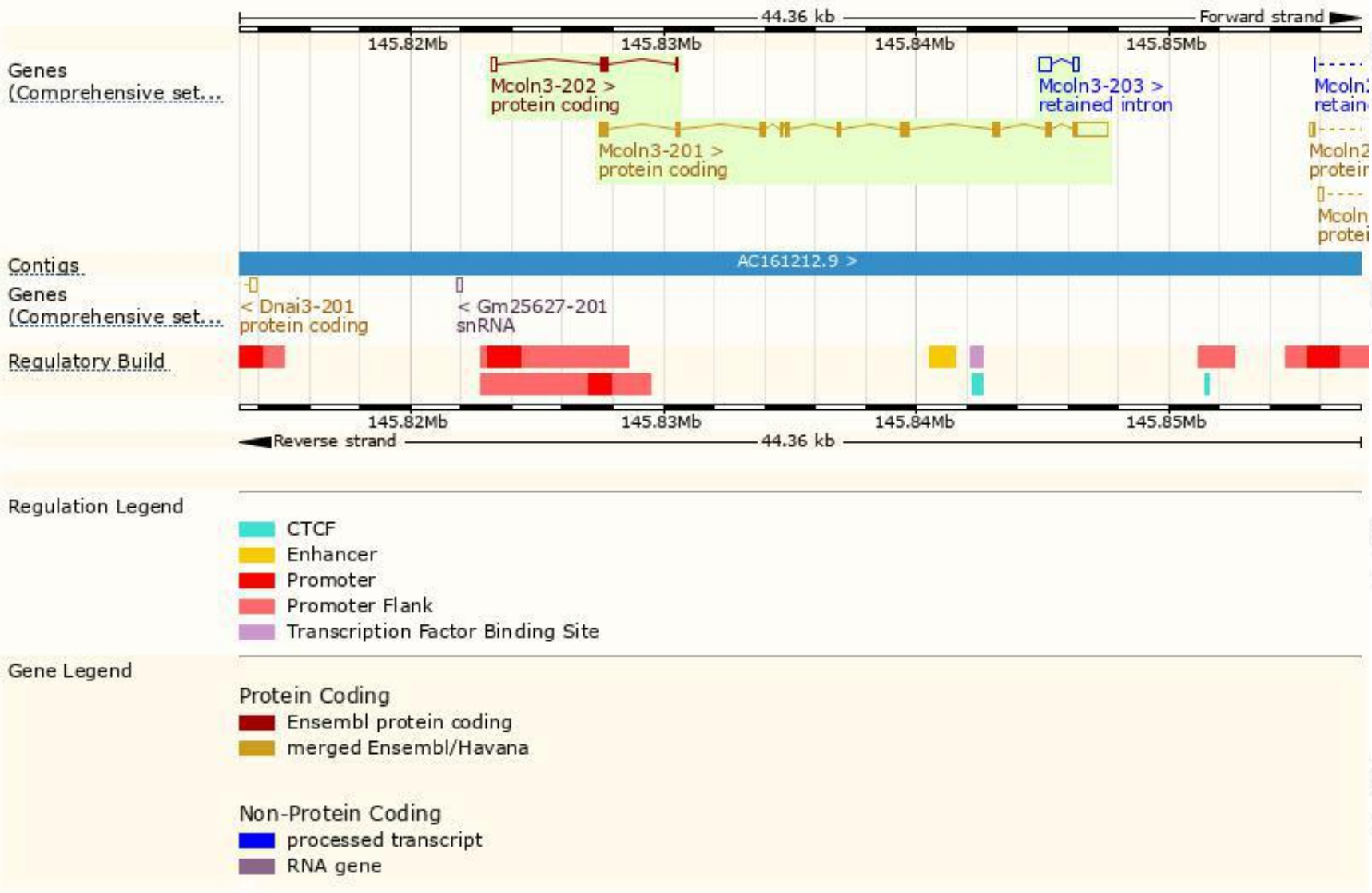
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mcoln3-201	ENSMUST00000039450.5	2991	553aa	Protein coding	CCDS17900		TSL:1 , GENCODE basic , APPRIS P1 ,
Mcoln3-202	ENSMUST00000140214.3	477	96aa	Protein coding	-		CDS 3' incomplete , TSL:2 ,
Mcoln3-203	ENSMUST00000146689.3	698	No protein	Retained intron	-		TSL:2 ,

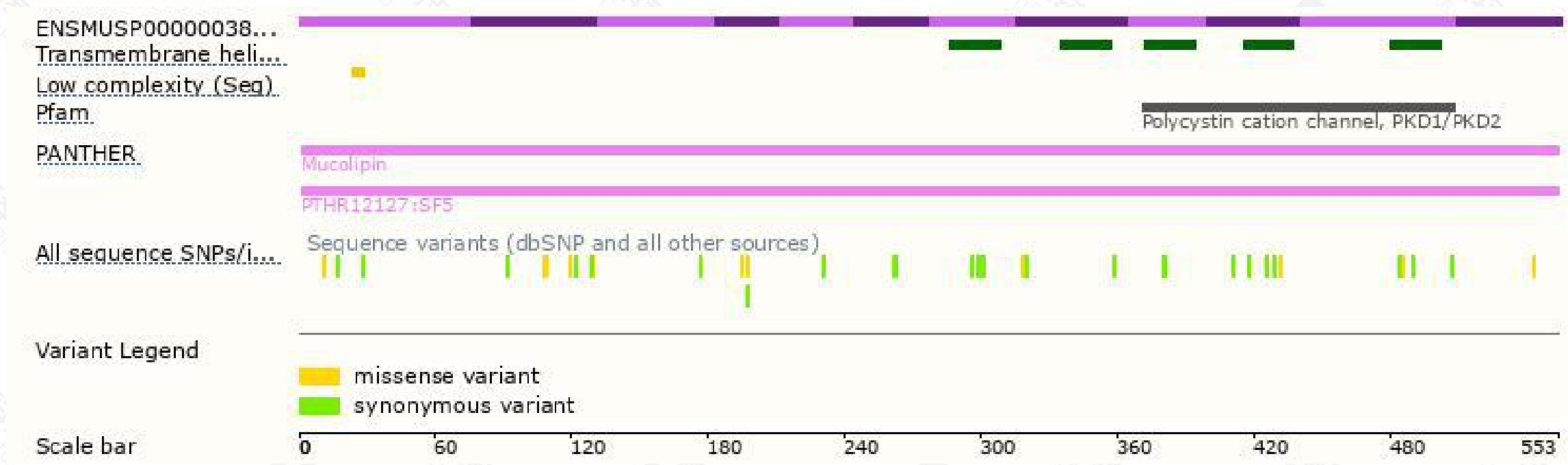
The strategy is based on the design of *Mcoln3-201* transcript,the transcription is shown below:



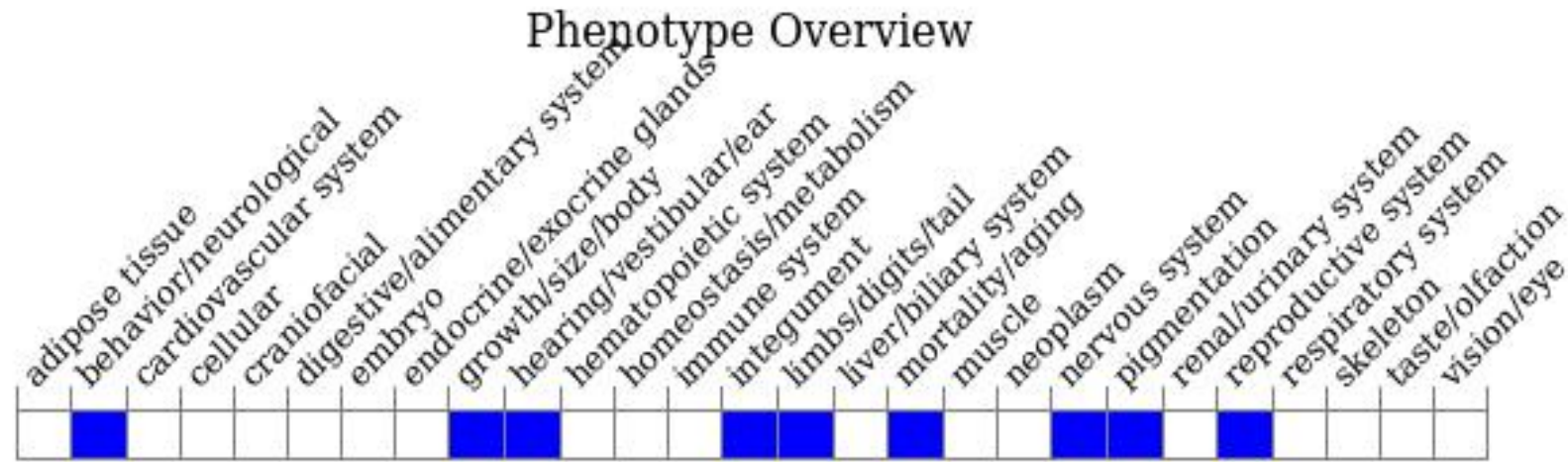
Genomic location distribution



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, heterozygotes show normal/diluted/white hair patches, circling, hyperactivity, deafness, and reduced fertility. Homozygotes are white with small patches of color and show severe behavioral abnormalities, poor postnatal viability and are nearly infertile.

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