

Med21 Cas9-CKO Strategy

Designer: Lingyan Wu

Reviewer: Miaomiao Cui

Design Date: 2021-5-27

Project Overview

Project Name

Med21

Project type

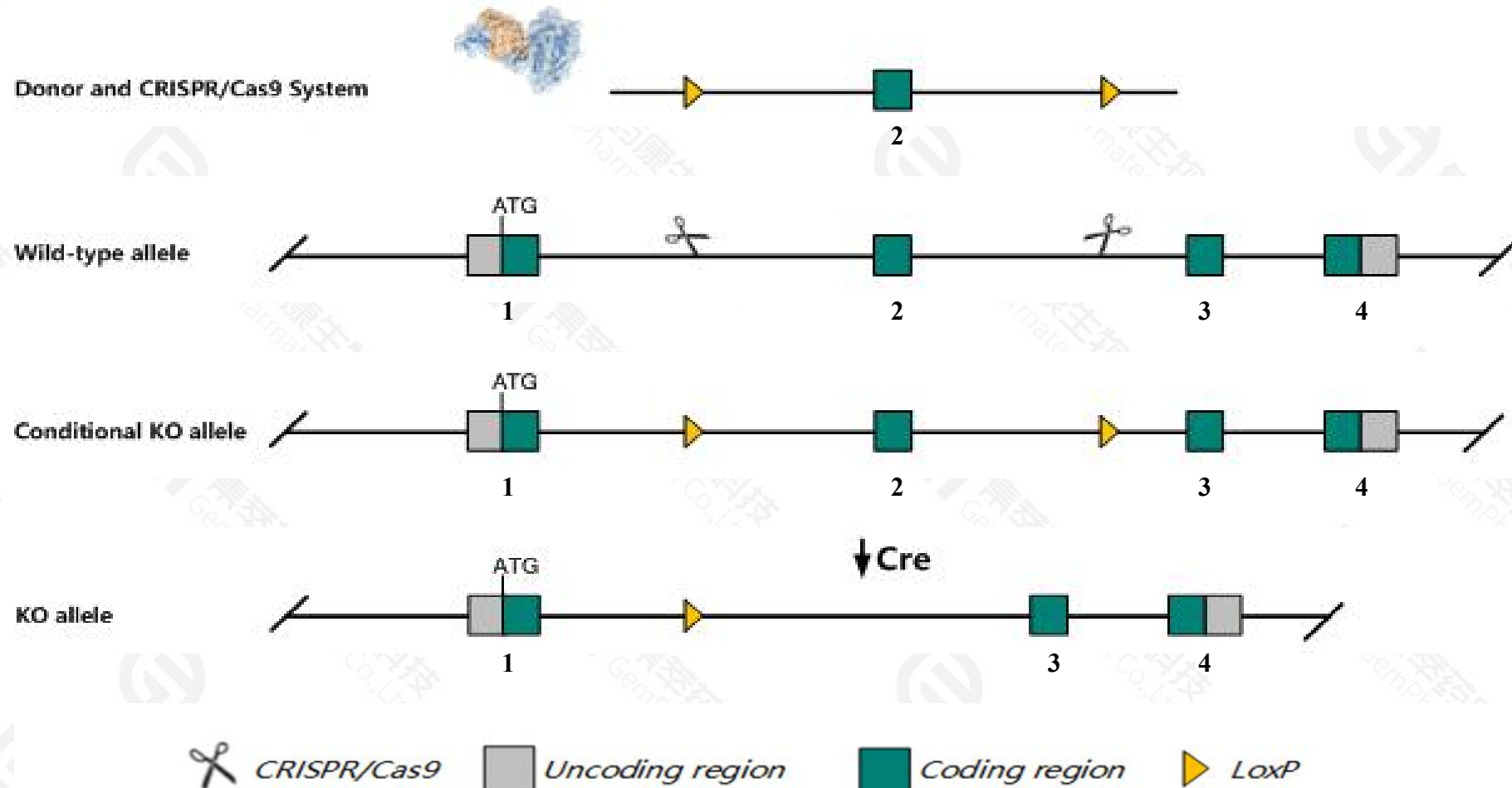
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Med21* gene. The schematic diagram is as follows:



- The *Med21* gene has 7 transcripts. According to the structure of *Med21* gene, exon2 of *Med21-201*(ENSMUST00000032429.9) transcript is recommended as the knockout region. The region contains 115bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Med21* gene. The brief process is as follows: CRISPR/Cas9 system 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 will be 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.

Notice

- According to the existing MGI data, embryos homozygous for a targeted null mutation die at the blastocyst stage.
- The *Med21* gene is located on the Chr6. 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)

Med21 mediator complex subunit 21 [Mus musculus (house mouse)]

Gene ID: 108098, updated on 3-Oct-2020

Summary



Official Symbol	Med21 provided by MGI
Official Full Name	mediator complex subunit 21 provided by MGI
Primary source	MGI:MGI:1347064
See related	Ensembl:ENSMUSG00000030291
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	0610007L03Rik, AI449604, D19234, D6Ertd782, D6Ertd782e, Sr, Srb7, Sur, Surb7
Expression	Ubiquitous expression in placenta adult (RPKM 38.3), limb E14.5 (RPKM 28.4) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

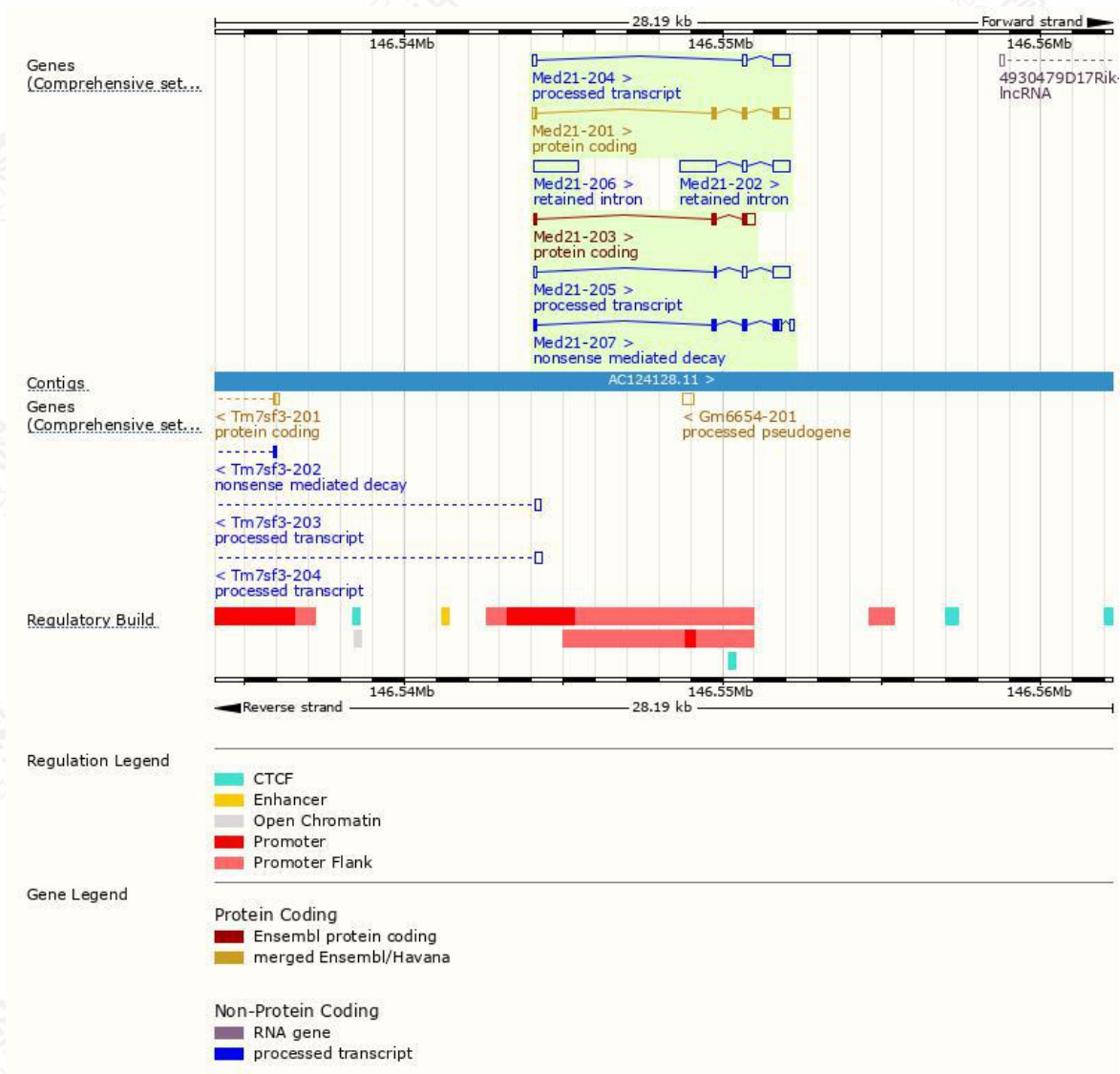
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Med21-201	ENSMUST00000032429.9	814	144aa	Protein coding	CCDS20700		TSL:1 , GENCODE basic , APPRIS P1 ,
Med21-203	ENSMUST00000111650.4	572	90aa	Protein coding	-		TSL:2 , GENCODE basic ,
Med21-207	ENSMUST00000204040.2	623	144aa	Nonsense mediated decay	CCDS20700		TSL:3 ,
Med21-204	ENSMUST00000125539.8	699	No protein	Processed transcript	-		TSL:3 ,
Med21-205	ENSMUST00000134387.8	689	No protein	Processed transcript	-		TSL:2 ,
Med21-202	ENSMUST00000075077.3	1713	No protein	Retained intron	-		TSL:2 ,
Med21-206	ENSMUST00000203416.2	1395	No protein	Retained intron	-		TSL:NA ,

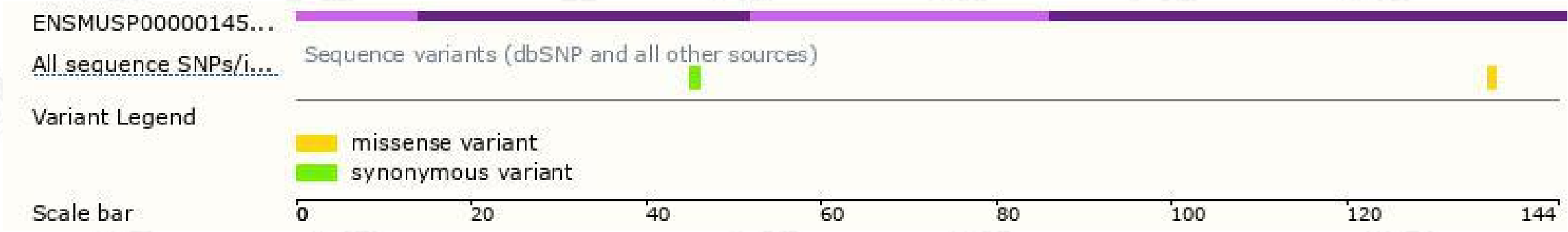
The strategy is based on the design of *Med21-201* transcript,the transcription is shown below:



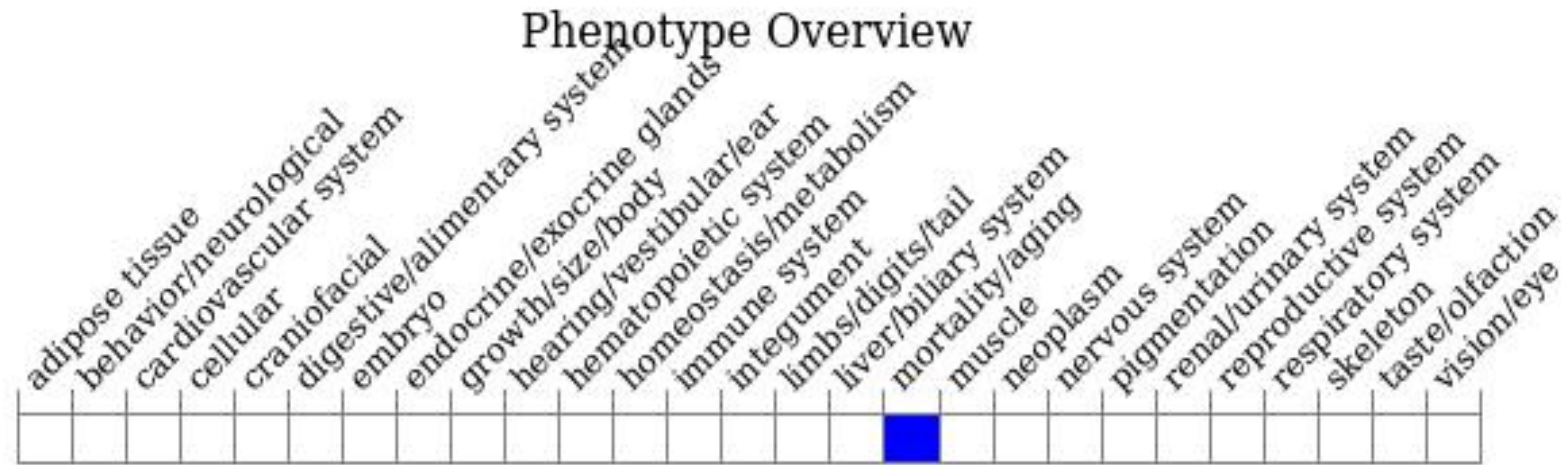
Genomic location distribution



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, embryos homozygous for a targeted null mutation die at the blastocyst stage.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

