

Mcm6 Cas9-KO Strategy

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Project Overview

Project Name

Mcm6

Project type

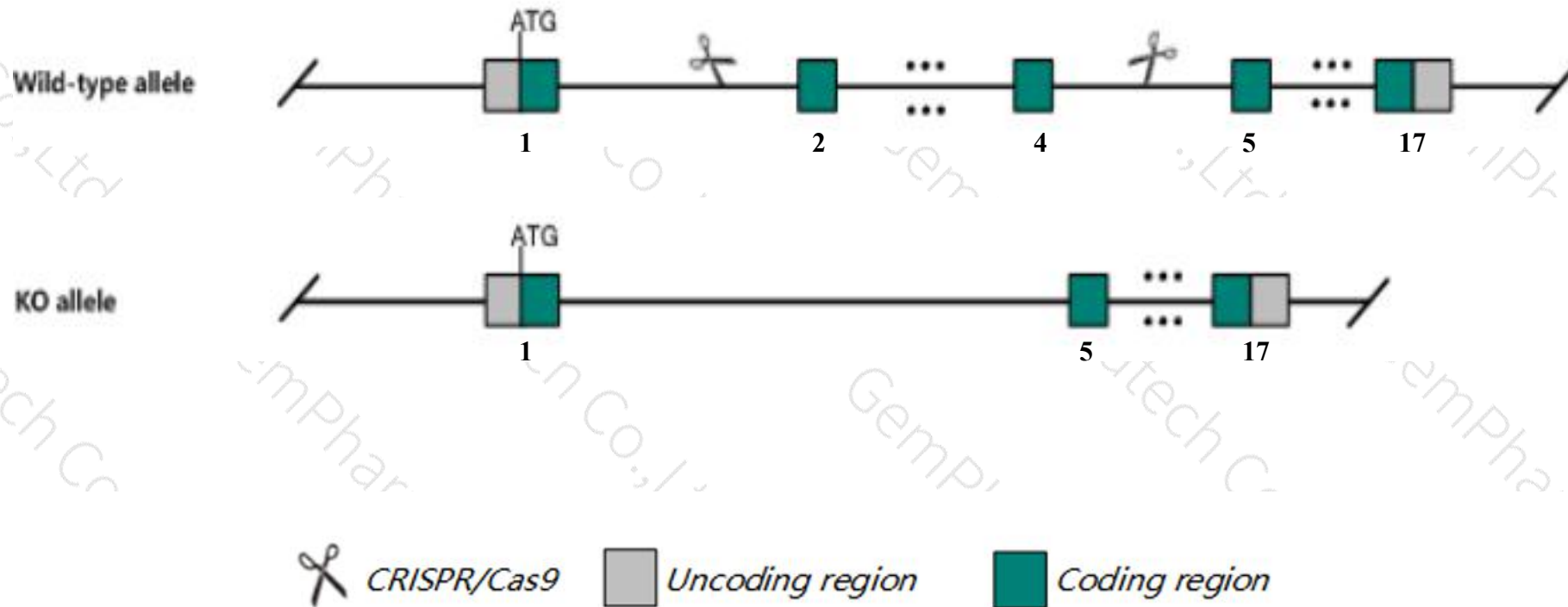
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mcm6* gene. The schematic diagram is as follows:



- The *Mcm6* gene has 4 transcripts. According to the structure of *Mcm6* gene, exon2-exon4 of *Mcm6*-201(ENSMUST00000027601.10) transcript is recommended as the knockout region. The region contains 508bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mcm6* 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, mice homozygous for a gene trapped allele exhibit prenatal lethality. Mice heterozygous for this allele exhibit increased micronuclei-containing red blood cells.
- The *Mcm6* gene is located on the Chr1. 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)

Mcm6 minichromosome maintenance complex component 6 [Mus musculus (house mouse)]

Gene ID: 17219, updated on 13-Mar-2020

Summary



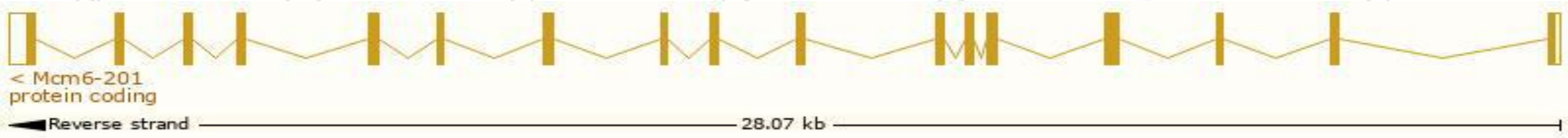
Official Symbol	Mcm6 provided by MGI
Official Full Name	minichromosome maintenance complex component 6 provided by MGI
Primary source	MGI:MGI:1298227
See related	Ensembl:ENSMUSG00000026355
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ASP-I1, D1Wsu22e, Mcmd6
Expression	Biased expression in liver E14 (RPKM 53.6), liver E14.5 (RPKM 45.3) and 14 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

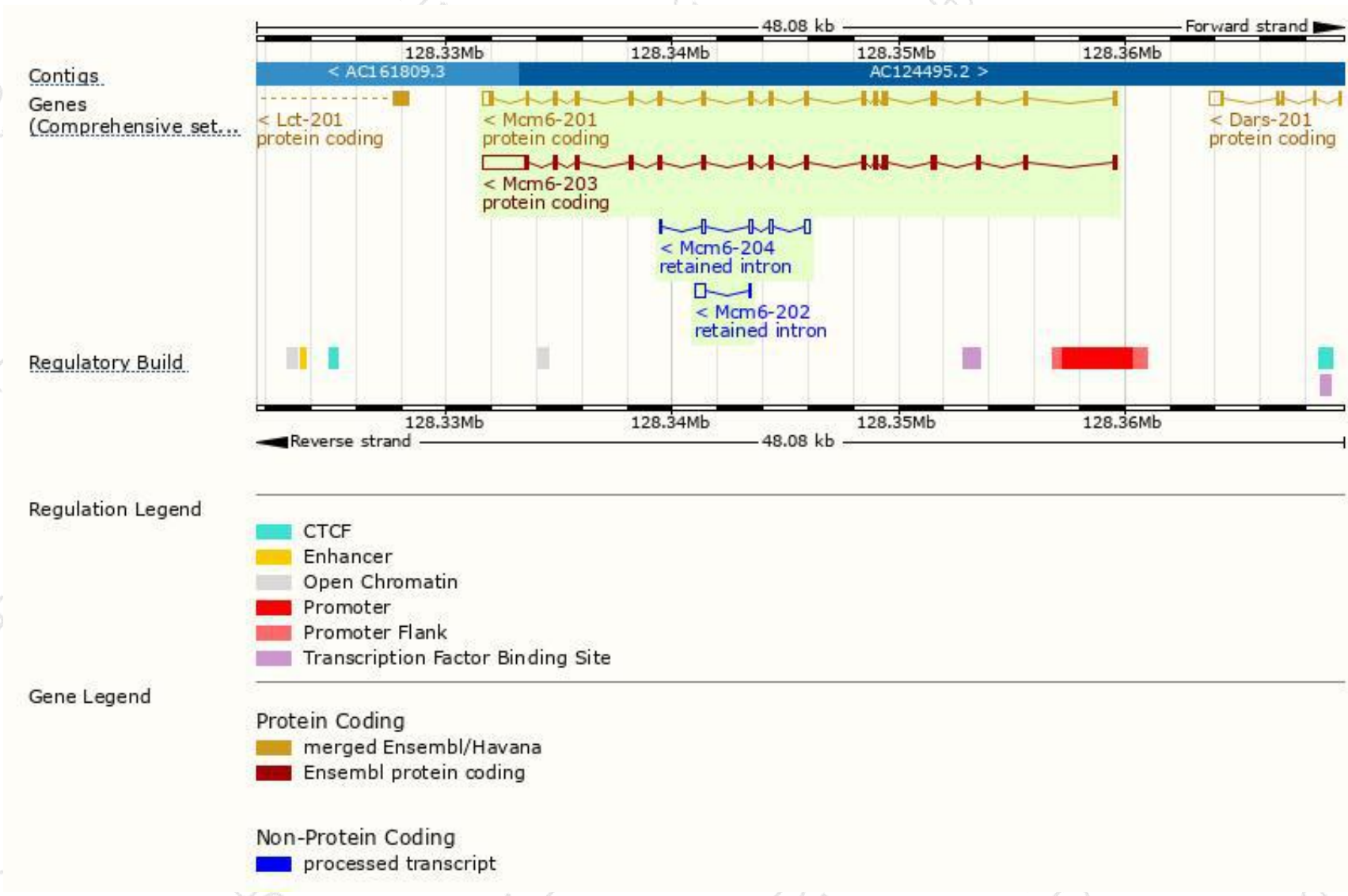
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mcm6-203	ENSMUST00000190495.1	4355	794aa	Protein coding	CCDS83586	Q3ULG5	TSL:1 GENCODE basic
Mcm6-201	ENSMUST00000027601.10	2910	821aa	Protein coding	CCDS15252	P97311 Q542I2	TSL:1 GENCODE basic APPRIS P1
Mcm6-204	ENSMUST00000191454.1	588	No protein	Retained intron	-	-	TSL:2
Mcm6-202	ENSMUST00000188755.1	471	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Mcm6-201* transcript,the transcription is shown below:



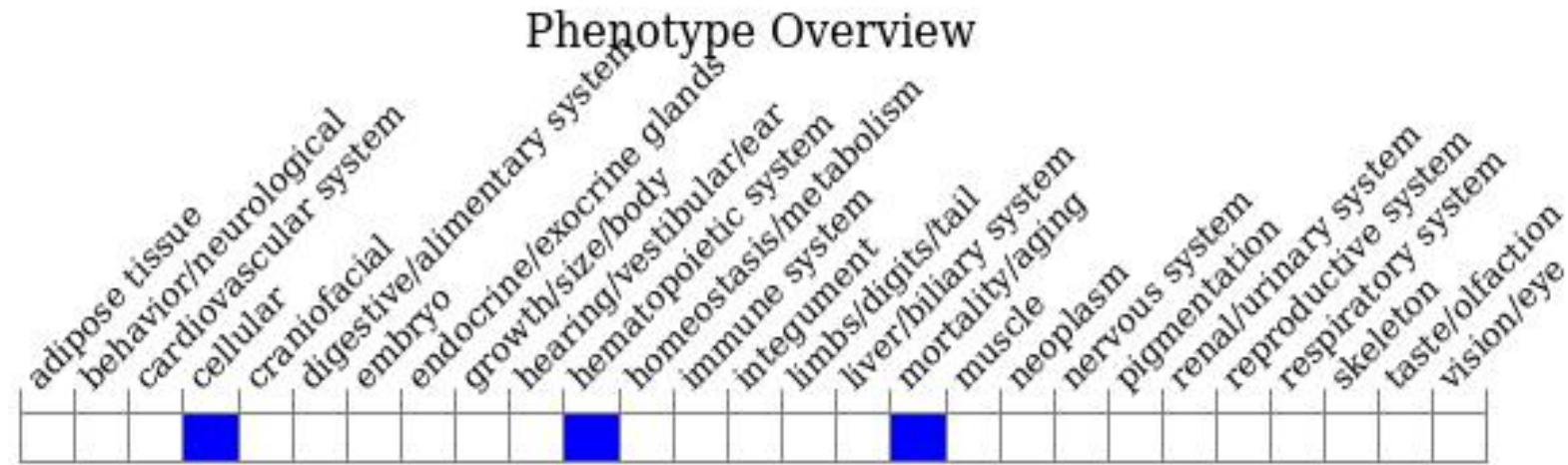
Genomic location distribution



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, mice homozygous for a gene trapped allele exhibit prenatal lethality. Mice heterozygous for this allele exhibit increased micronuclei-containing red blood cells.

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

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