

Msh4 Cas9-KO Strategy

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Design Date: 2020-4-20

Project Overview

Project Name

Msh4

Project type

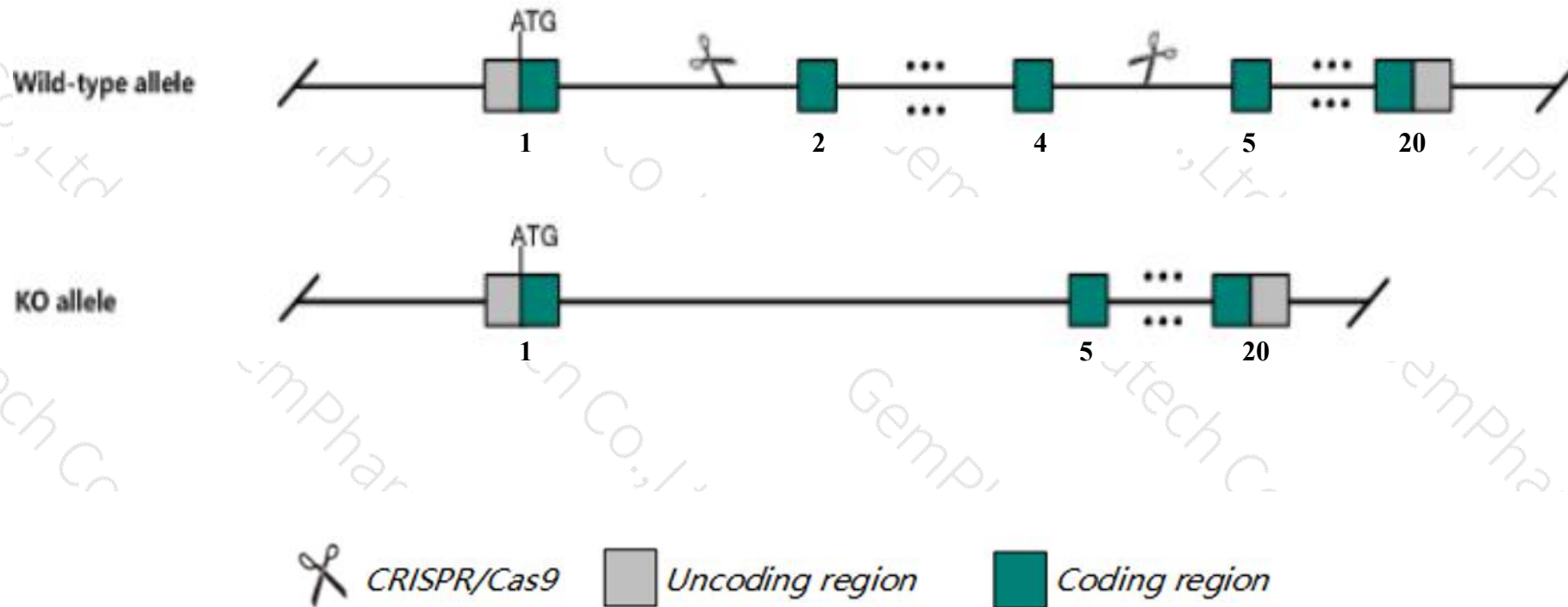
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Msh4* gene. The schematic diagram is as follows:



- The *Msh4* gene has 8 transcripts. According to the structure of *Msh4* gene, exon2-exon4 of *Msh4-201* (ENSMUST00000005630.10) transcript is recommended as the knockout region. The region contains 452bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Msh4* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, homozygotes for a targeted null mutation exhibit male and female sterility associated with failure to undergo pairing during meiosis.
- The *Msh4* 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.

Gene information (NCBI)

Msh4 mutS homolog 4 [Mus musculus (house mouse)]

Gene ID: 55993, updated on 13-Mar-2020

Summary



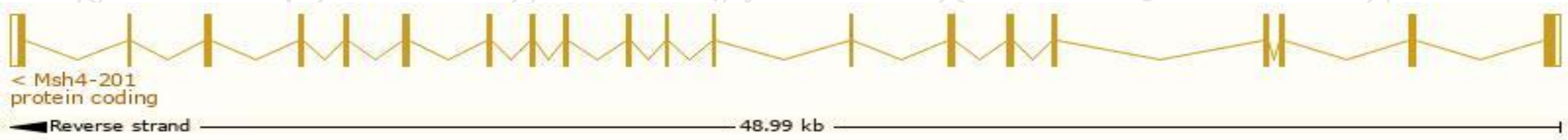
Official Symbol	Msh4 provided by MGI
Official Full Name	mutS homolog 4 provided by MGI
Primary source	MGI:MGI:1860077
See related	Ensembl:ENSMUSG000000005493
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930485C04Rik, AV144863, mMsh4
Expression	Biased expression in testis adult (RPKM 2.5) and ovary adult (RPKM 0.1) See more
Orthologs	human all

Transcript information (Ensembl)

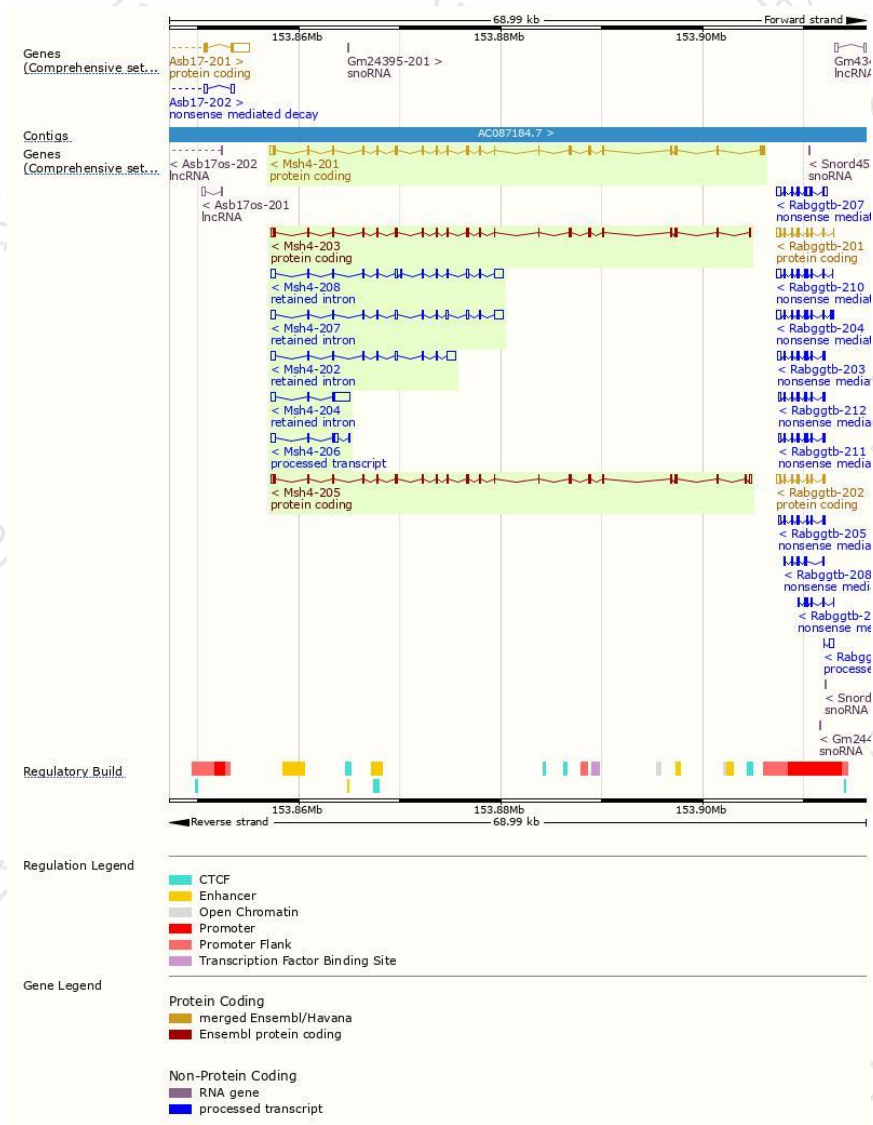
The gene has 8 transcripts,all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Msh4-201	ENSMUST00000005630.10	3325	958aa	Protein coding	CCDS38678	A6H6D5 & Q99MT2	TSL:1 GENCODE basic APPRIS P3
Msh4-202	ENSMUST00000186220.6	2156	No protein	Retained intron	-	-	TSL:1
Msh4-203	ENSMUST00000188338.6	2802	870aa	Protein coding	-	A0A087WQG8	TSL:2 GENCODE basic APPRIS ALT2
Msh4-204	ENSMUST00000189189.6	2129	No protein	Retained intron	-	-	TSL:1
Msh4-205	ENSMUST00000190449.1	3110	764aa	Protein coding	CCDS80067	A0A087WQN0	TSL:1 GENCODE basic APPRIS ALT2
Msh4-206	ENSMUST00000191083.6	1000	No protein	Processed transcript	-	-	TSL:5
Msh4-207	ENSMUST00000191504.6	2640	No protein	Retained intron	-	-	TSL:1
Msh4-208	ENSMUST00000191606.1	2664	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Msh4-201* transcript,The transcription is shown below



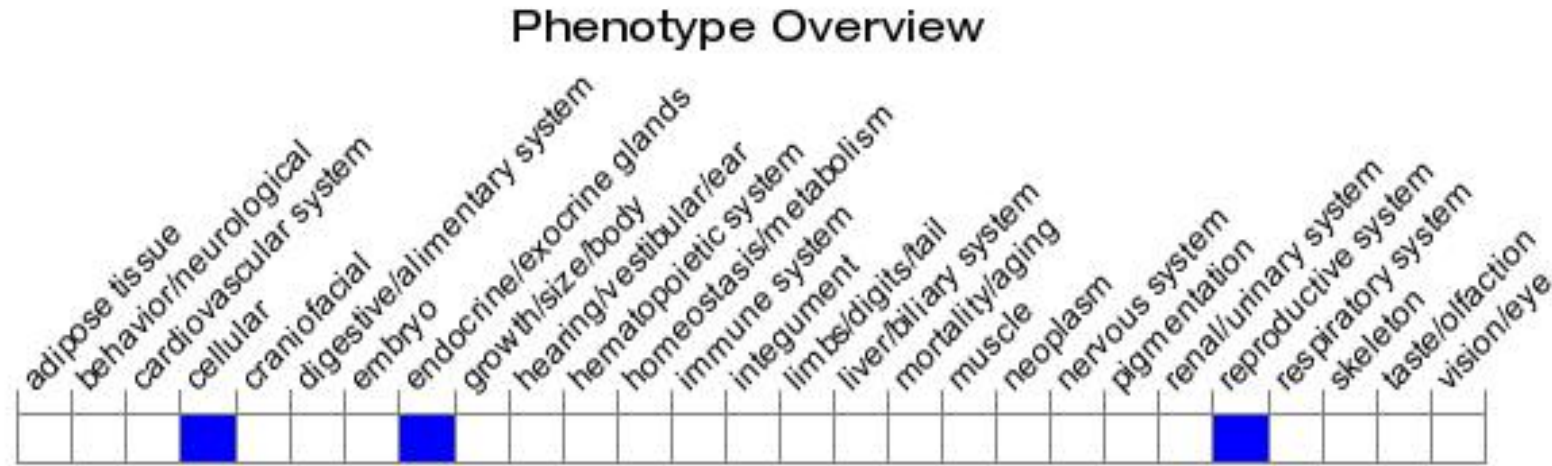
Genomic location distribution



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, Homozygotes for a targeted null mutation exhibit male and female sterility associated with failure to undergo pairing during meiosis.

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

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