

***Kdm4a* Cas9-CKO Strategy**

Designer: Jinling Wang

Reviewer: Yun Li

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Project Overview

Project Name

Kdm4a

Project type

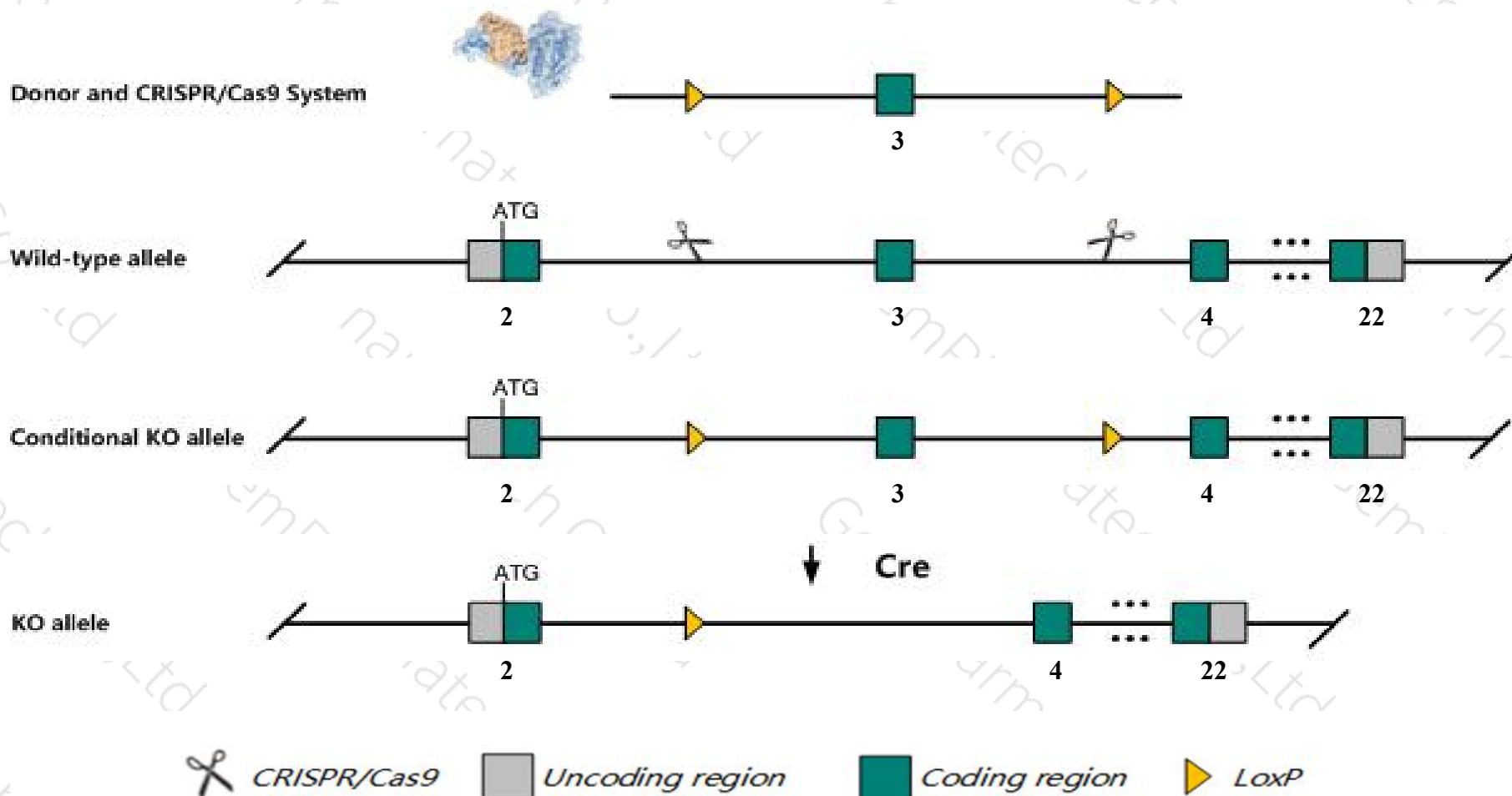
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kdm4a* gene. The schematic diagram is as follows:



Technical routes

- The *Kdm4a* gene has 6 transcripts. According to the structure of *Kdm4a* gene, exon3 of *Kdm4a*-204(ENSMUST00000106406.8) transcript is recommended as the knockout region. The region contains 176bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kdm4a* 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

- The *Kdm4a* gene is located on the Chr4. 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)

Kdm4a lysine (K)-specific demethylase 4A [Mus musculus (house mouse)]

Gene ID: 230674, updated on 13-Mar-2020

Summary



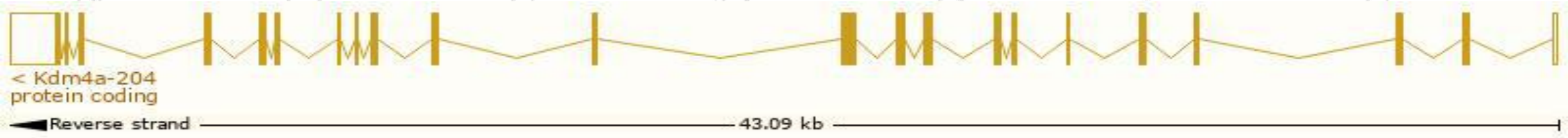
Official Symbol	Kdm4a provided by MGI
Official Full Name	lysine (K)-specific demethylase 4A provided by MGI
Primary source	MGI:MGI:2446210
See related	Ensembl:ENSMUSG00000033326
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	D4Ert222e, JHDM3A, Jmjd2, Jmjd2a, mKIAA0677
Expression	Ubiquitous expression in CNS E11.5 (RPKM 27.6), CNS E14 (RPKM 25.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

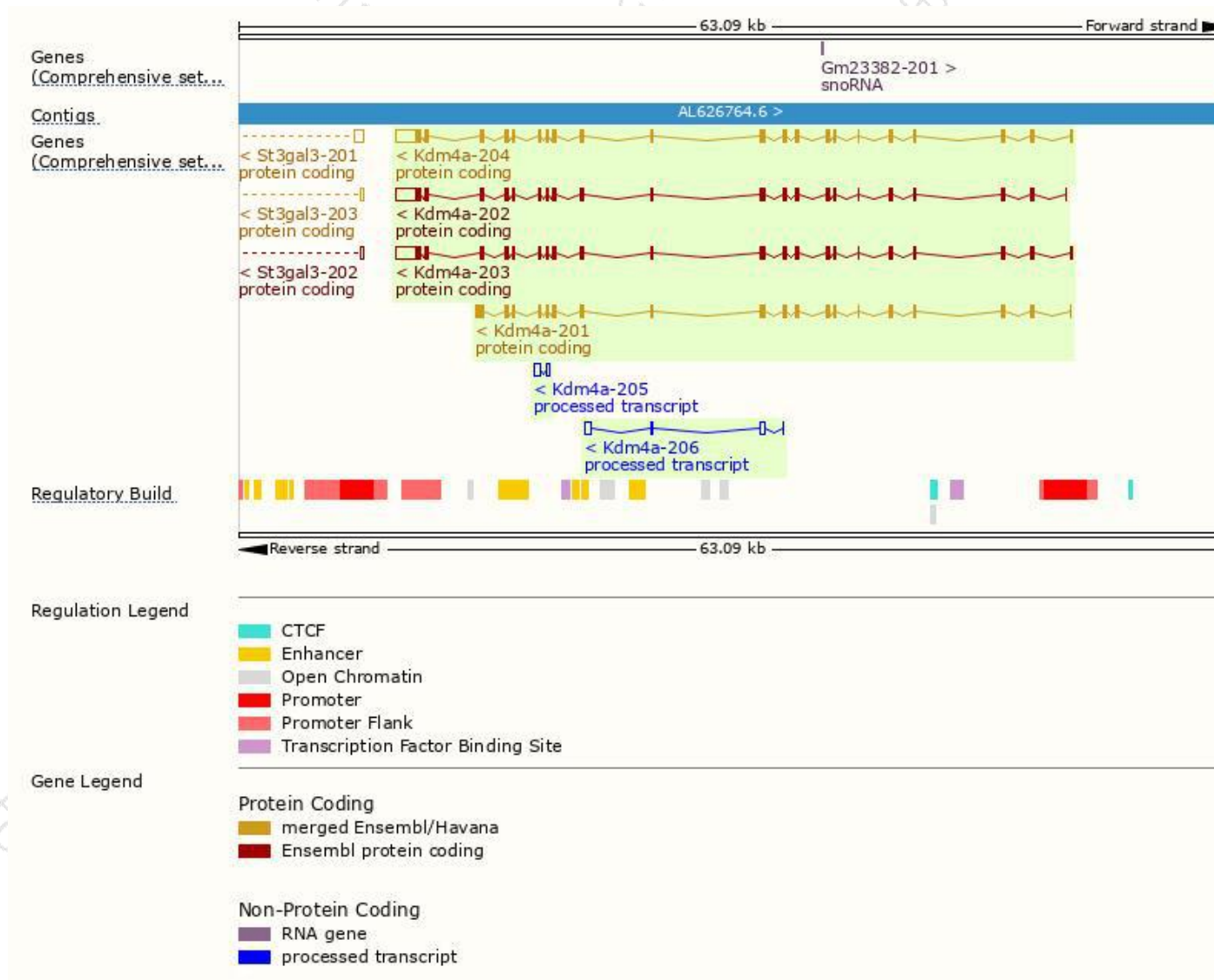
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kdm4a-204	ENSMUST00000106406.8	4663	1064aa	Protein coding	CCDS51282	Q8BW72	TSL:1 GENCODE basic APPRIS ALT2
Kdm4a-202	ENSMUST00000097911.8	4550	1064aa	Protein coding	CCDS51282	Q8BW72	TSL:1 GENCODE basic APPRIS ALT2
Kdm4a-203	ENSMUST00000106403.7	4536	1064aa	Protein coding	CCDS51282	Q8BW72	TSL:1 GENCODE basic APPRIS ALT2
Kdm4a-201	ENSMUST00000050288.8	3279	1033aa	Protein coding	CCDS18545	A2A8L9	TSL:1 GENCODE basic APPRIS P3
Kdm4a-206	ENSMUST00000164821.1	801	No protein	Processed transcript	-	-	TSL:5
Kdm4a-205	ENSMUST00000152808.1	553	No protein	Processed transcript	-	-	TSL:2

The strategy is based on the design of *Kdm4a-204* transcript,the transcription is shown below:



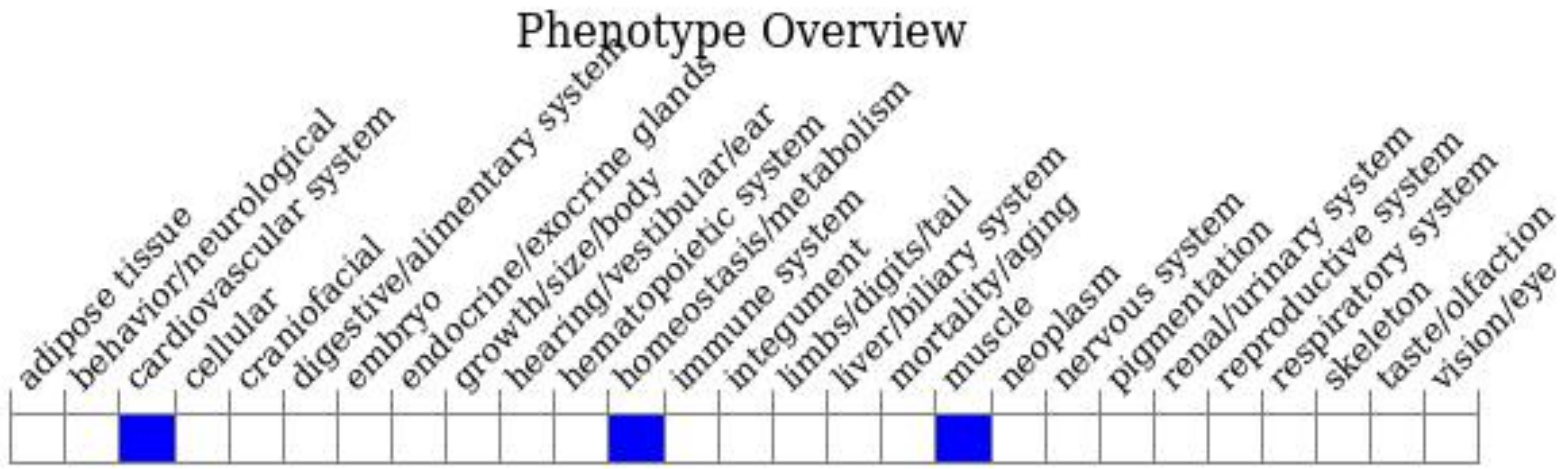
Genomic location distribution



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/>).

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

Tel: 400-9660890

