

***Kdm5b* Cas9-KO Strategy**

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Project Overview

Project Name

Kdm5b

Project type

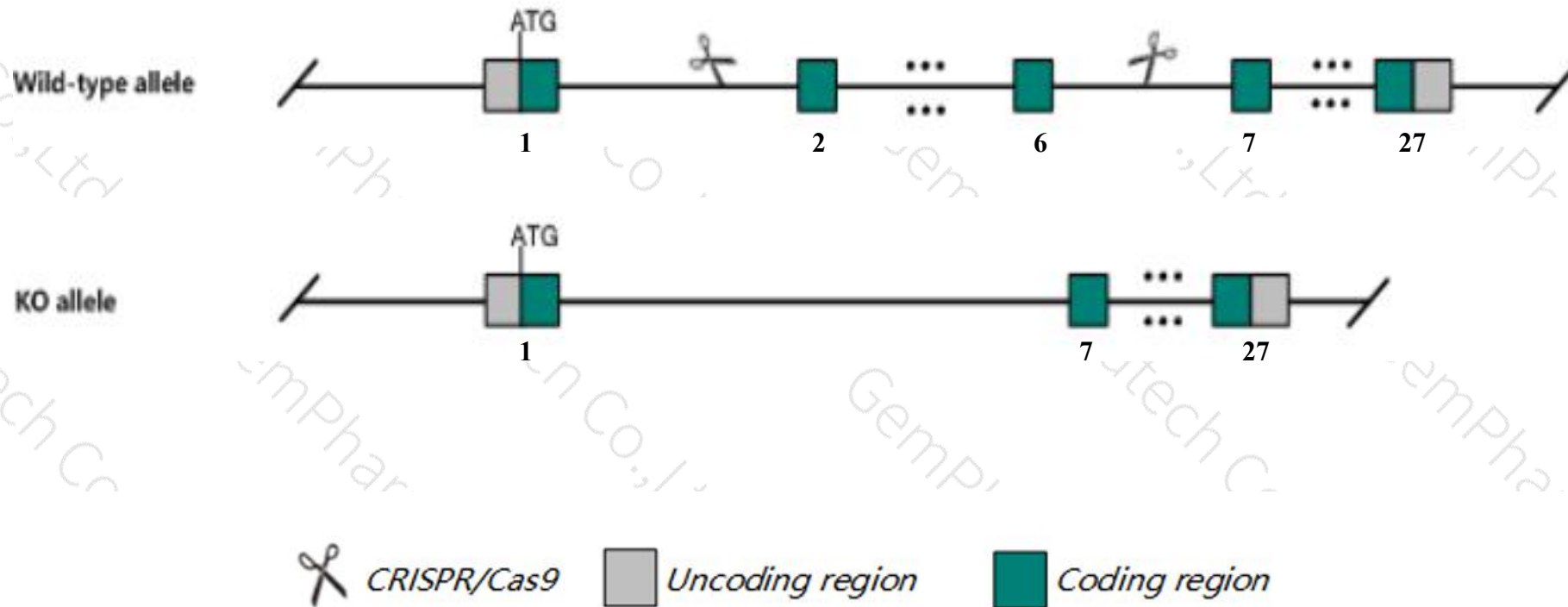
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kdm5b* gene. The schematic diagram is as follows:



- The *Kdm5b* gene has 6 transcripts. According to the structure of *Kdm5b* gene, exon2-exon6 of *Kdm5b-201* (ENSMUST00000047714.13) 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 *Kdm5b* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, mice homozygous for a gene trapped allele exhibit decreased body weight, background-sensitive premature mortality, decreased female fertility, delayed mammary gland development, decreased serum estradiol levels, and reduced mammary epithelial cell proliferation in early puberty.
- The *Kdm5b* 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)

Kdm5b lysine (K)-specific demethylase 5B [Mus musculus (house mouse)]

Gene ID: 75605, updated on 15-Mar-2020

Summary



Official Symbol Kdm5b provided by [MGI](#)

Official Full Name lysine (K)-specific demethylase 5B provided by [MGI](#)

Primary source [MGI:MGI:1922855](#)

See related [Ensembl:ENSMUSG00000042207](#)

Gene type protein coding

RefSeq status REVIEWED

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as 2010009J12Rik, 2210016I17Rik, AW556288, D1Ert202e, Jarid1b, PLU-1, PUT1, Plu1, RBBP2H1A, Rb-Bp2, mKIAA4034

Summary This gene encodes a lysine-specific histone demethylase that belongs to the jumonji/ARID domain-containing family of histone demethylases. The encoded protein is capable of demethylating tri-, di- and monomethylated lysine 4 of histone H3. This protein plays a role in the transcriptional repression or certain tumor suppressor genes and is upregulated in certain cancer cells. This protein may also play a role in genome stability and DNA repair. Homozygous mutant mice display decreased body weight, decreased female fertility, lower uterine weight, and a delay in mammary development. Knockout of this gene has also been associated with embryonic lethality. [provided by RefSeq, Dec 2016]

Expression Ubiquitous expression in testis adult (RPKM 14.9), CNS E11.5 (RPKM 13.4) and 28 other tissues [See more](#)

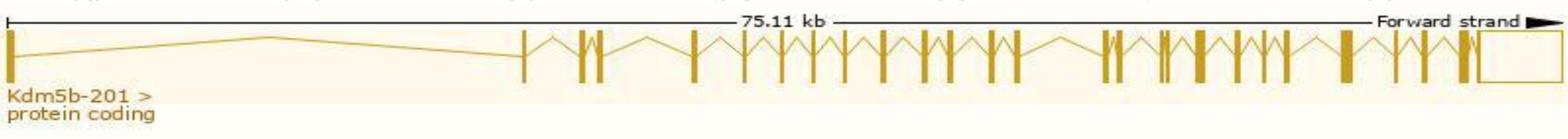
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

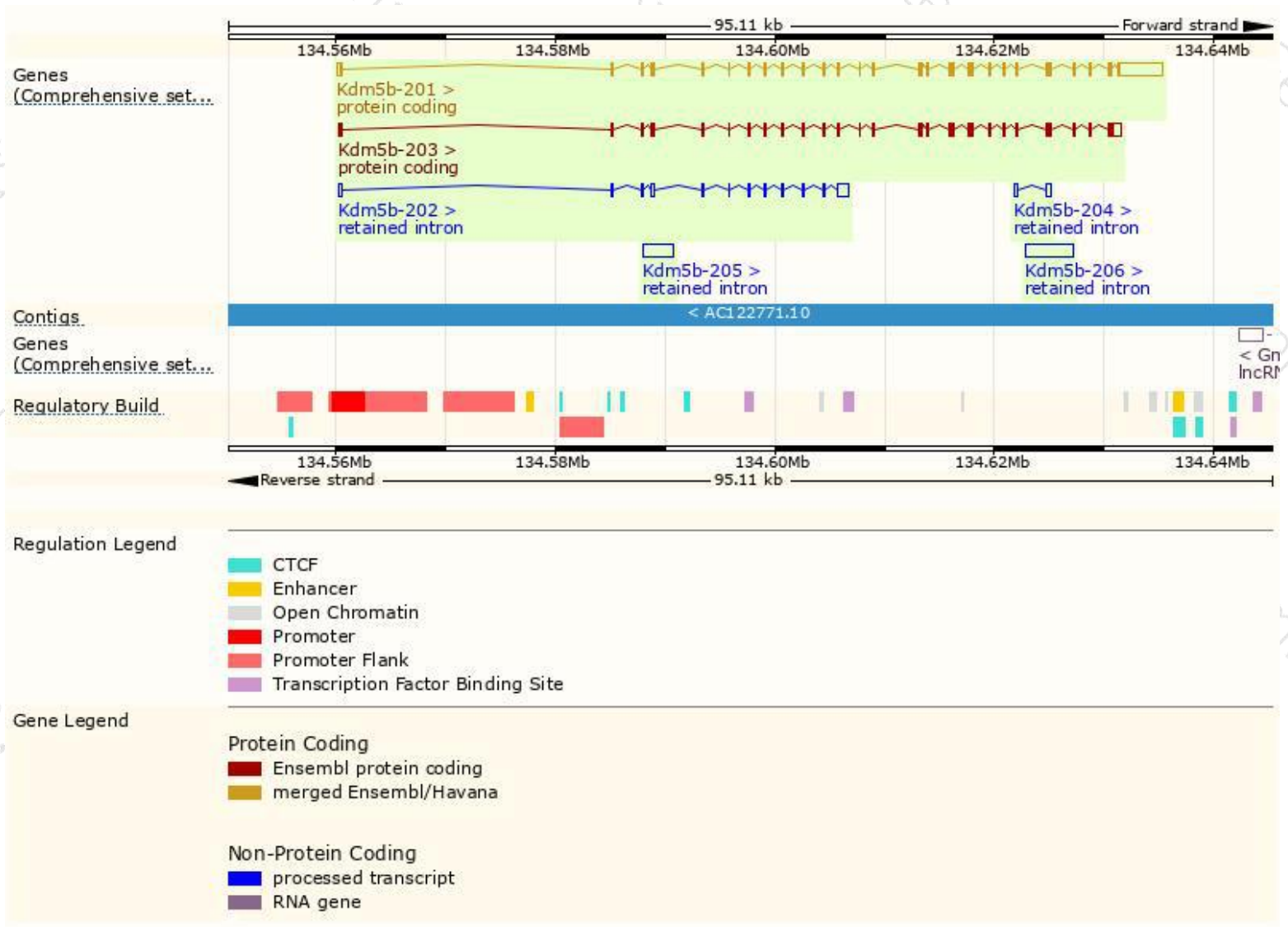
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kdm5b-201	ENSMUST00000047714.13	8714	1544aa	Protein coding	CCDS35716	Q80Y84	TSL:1 GENCODE basic APPRIS P1
Kdm5b-203	ENSMUST00000112198.2	5413	1517aa	Protein coding	-	Q80Y84	TSL:1 GENCODE basic
Kdm5b-206	ENSMUST00000191572.1	4402	No protein	Retained intron	-	-	TSL:NA
Kdm5b-202	ENSMUST00000112197.2	2740	No protein	Retained intron	-	-	TSL:1
Kdm5b-205	ENSMUST00000186128.1	2710	No protein	Retained intron	-	-	TSL:NA
Kdm5b-204	ENSMUST00000133725.1	605	No protein	Retained intron	-	-	TSL:2

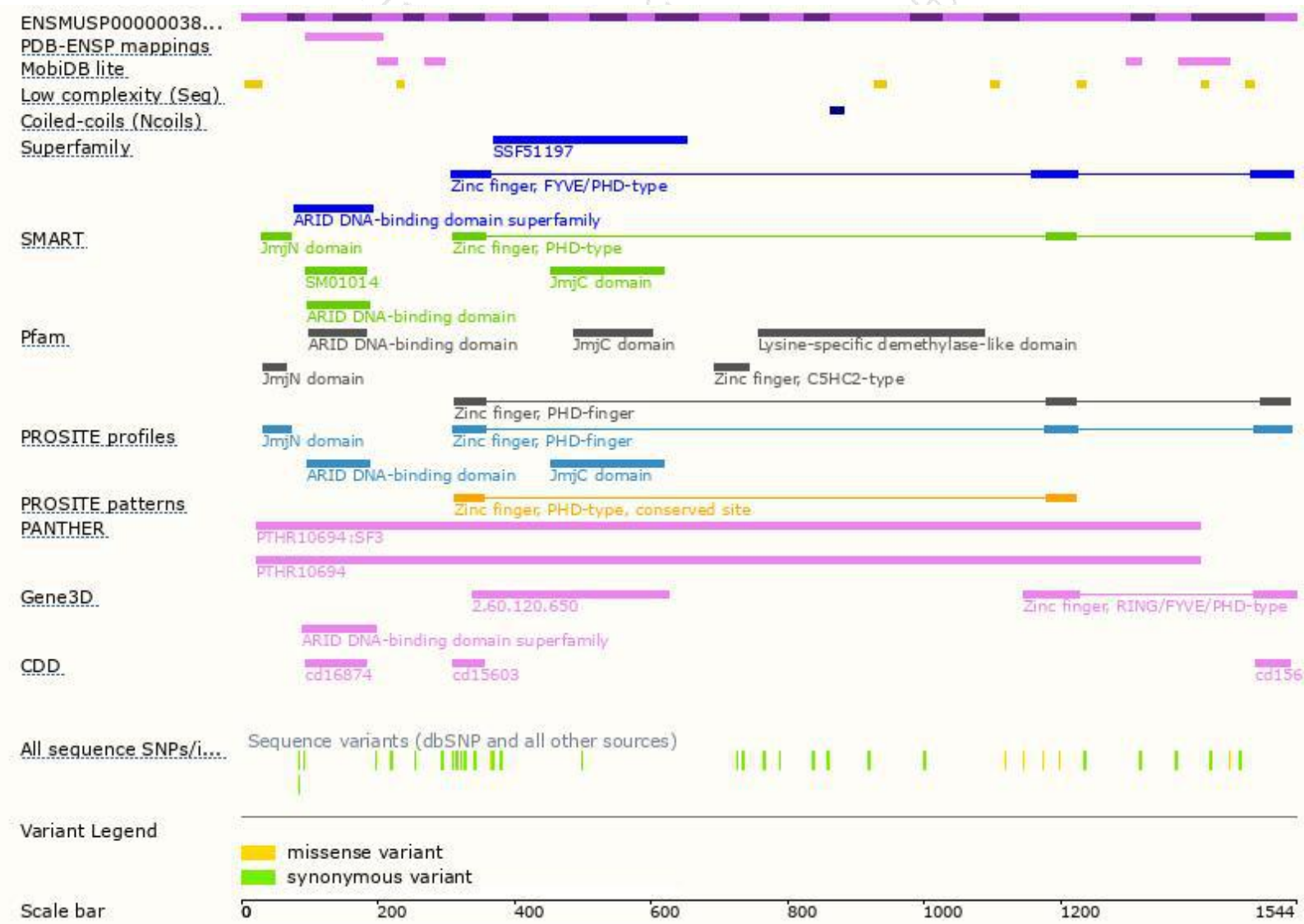
The strategy is based on the design of *Kdm5b-201* transcript,the transcription is shown below:



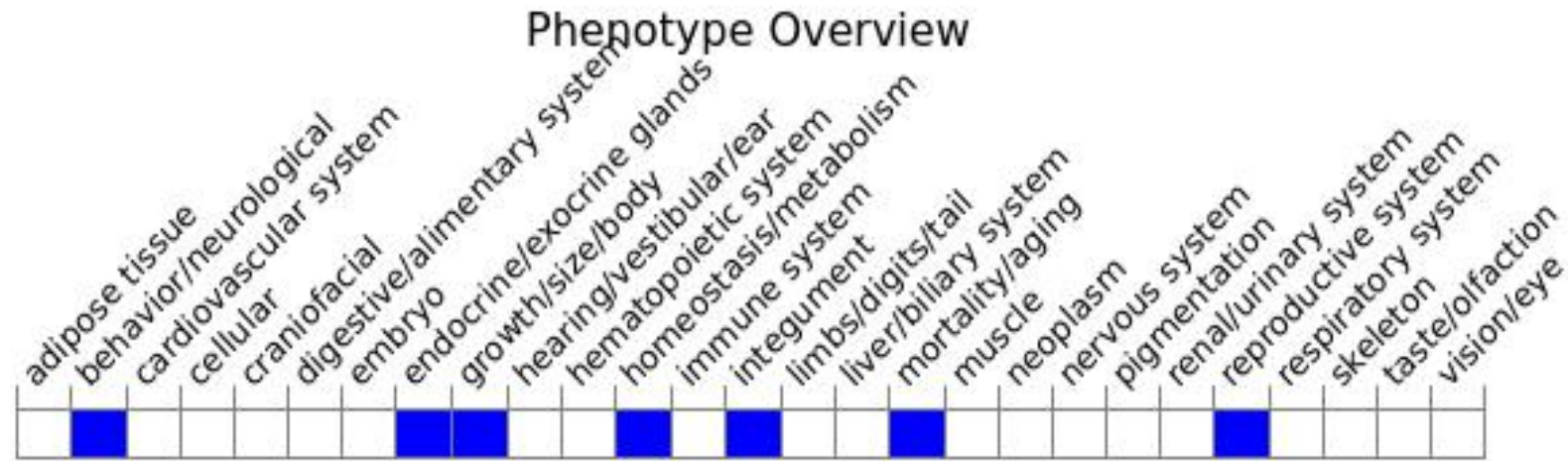
Genomic location distribution



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 decreased body weight, background-sensitive premature mortality, decreased female fertility, delayed mammary gland development, decreased serum levels, and reduced mammary epithelial cell proliferation in early puberty.

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

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