

***Khdc4* Cas9-CKO Strategy**

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Reviewer:

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Project Overview

Project Name

Khdc4

Project type

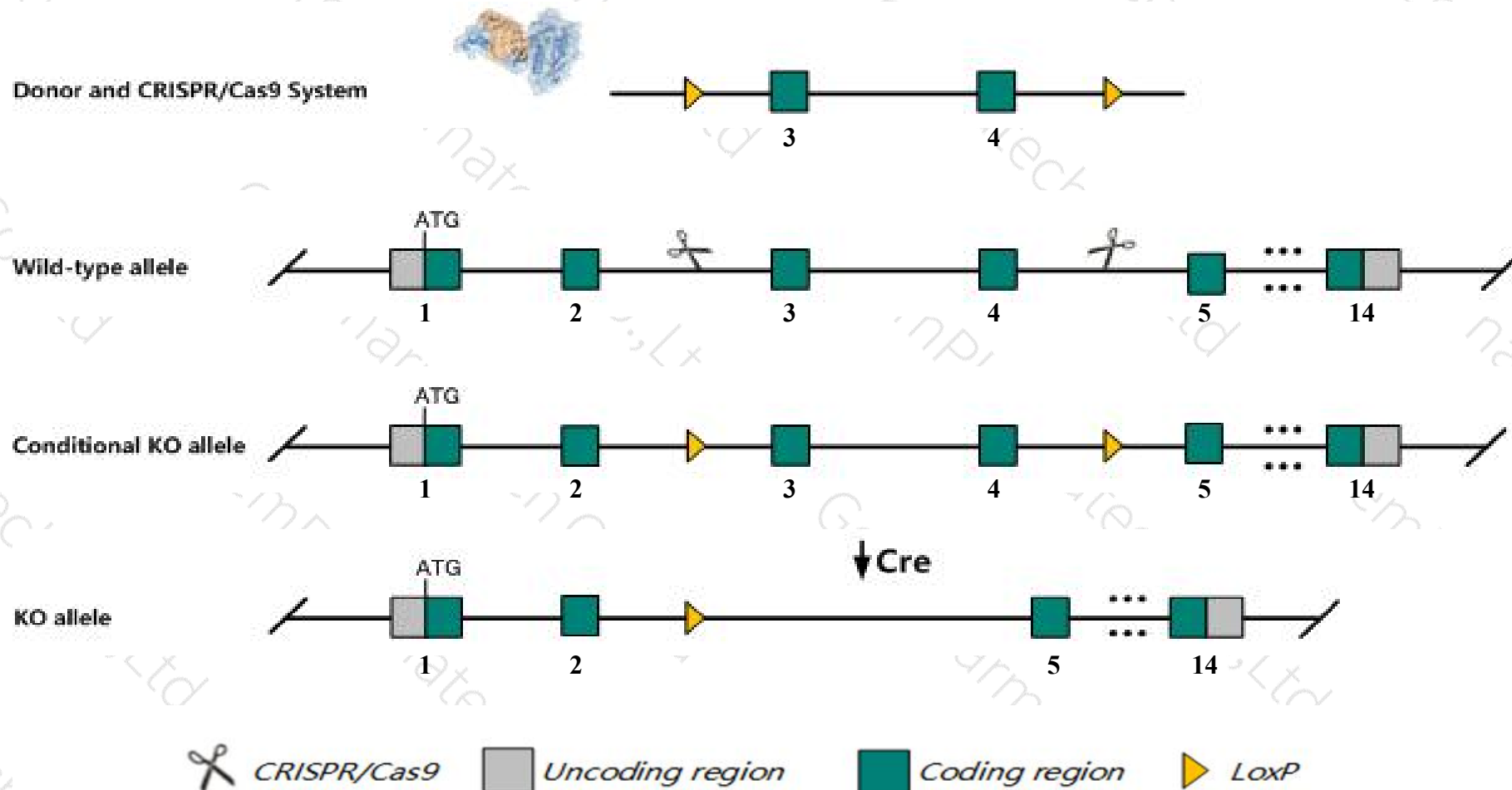
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Khdc4* gene. The schematic diagram is as follows:



- The *Khdc4* gene has 10 transcripts. According to the structure of *Khdc4* gene, exon3-exon4 of *Khdc4-201* (ENSMUST00000029696.10) transcript is recommended as the knockout region. The region contains 209bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Khdc4* 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.

- The distance between the *Khdc4* gene and the *Gm43714-201* gene is about 2.5kb, and the insertion of loxp may affect the regulation of the 5' end of the *Gm43714-201* gene.
- The *Khdc4* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Khdc4 KH domain containing 4, pre-mRNA splicing factor [*Mus musculus* (house mouse)]

Gene ID: 74200, updated on 12-Aug-2019

Summary

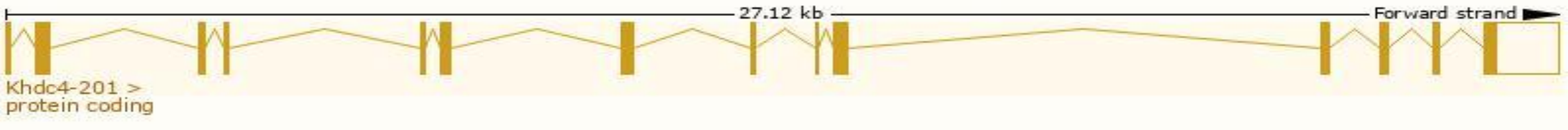
Official Symbol	Khdc4 provided by MGI
Official Full Name	KH domain containing 4, pre-mRNA splicing factor provided by MGI
Primary source	MGI:MGI:1921450
See related	Ensembl:ENSMUSG00000028060
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Blom7; AI256352; AI451678; Kiaa0907; 2810403A07Rik; A430106P18Rik
Expression	Ubiquitous expression in limb E14.5 (RPKM 32.4), CNS E14 (RPKM 30.0) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

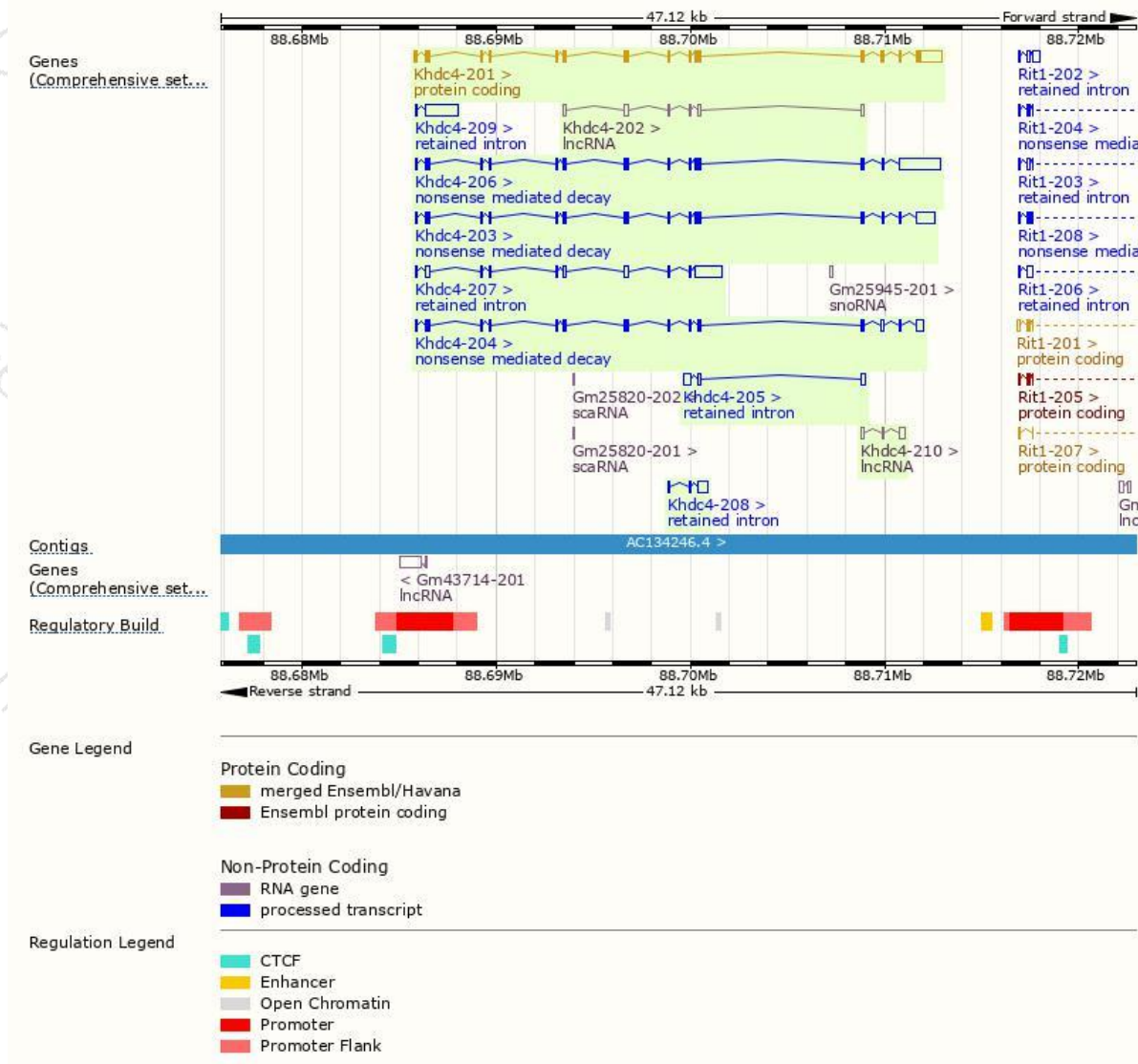
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Khdc4-201	ENSMUST00000029696.10	2981	612aa	Protein coding	CCDS17483	Q3TCX3	TSL:1 GENCODE basic APPRIS P1
Khdc4-206	ENSMUST00000199684.4	3636	487aa	Nonsense mediated decay	-	Q3TCX3	TSL:2
Khdc4-203	ENSMUST00000198042.4	2567	487aa	Nonsense mediated decay	-	Q3TCX3	TSL:5
Khdc4-204	ENSMUST00000198078.1	1922	432aa	Nonsense mediated decay	-	A0A0G2JEG2	TSL:5
Khdc4-207	ENSMUST00000200364.4	2388	No protein	Retained intron	-	-	TSL:2
Khdc4-209	ENSMUST00000200588.1	1793	No protein	Retained intron	-	-	TSL:1
Khdc4-205	ENSMUST00000198721.1	727	No protein	Retained intron	-	-	TSL:3
Khdc4-208	ENSMUST00000200438.1	684	No protein	Retained intron	-	-	TSL:2
Khdc4-202	ENSMUST00000197300.4	757	No protein	lncRNA	-	-	TSL:3
Khdc4-210	ENSMUST00000200622.1	571	No protein	lncRNA	-	-	TSL:3

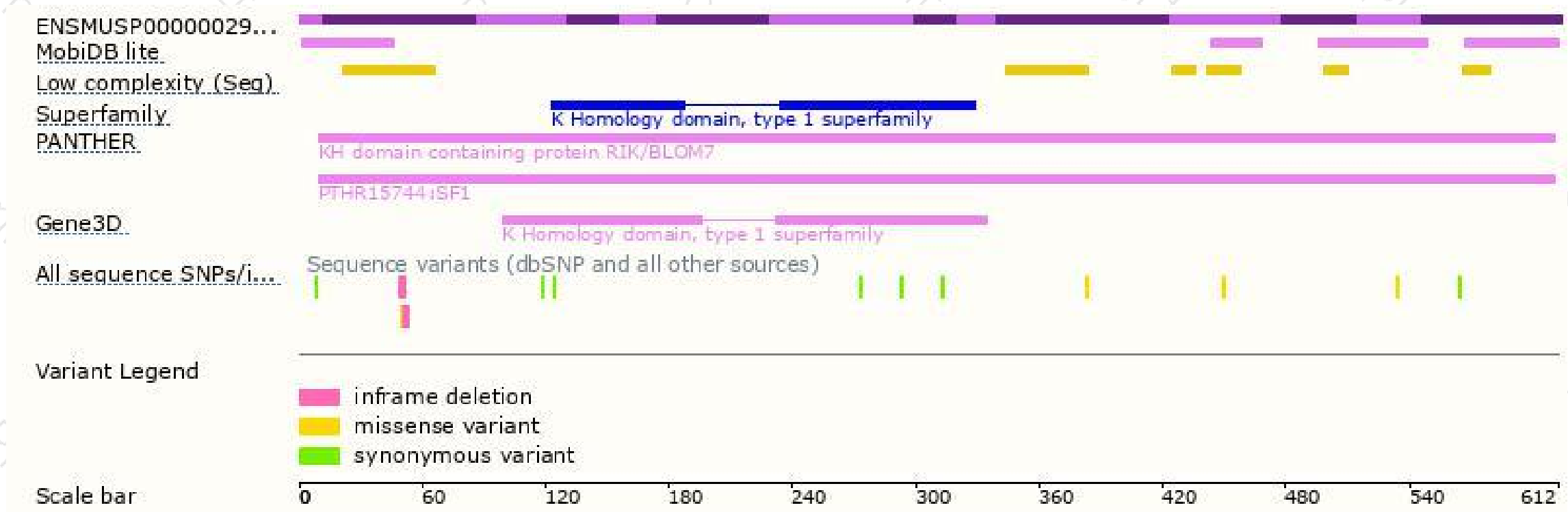
The strategy is based on the design of *Khdc4-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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