

Map4k1 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Map4k1

Project type

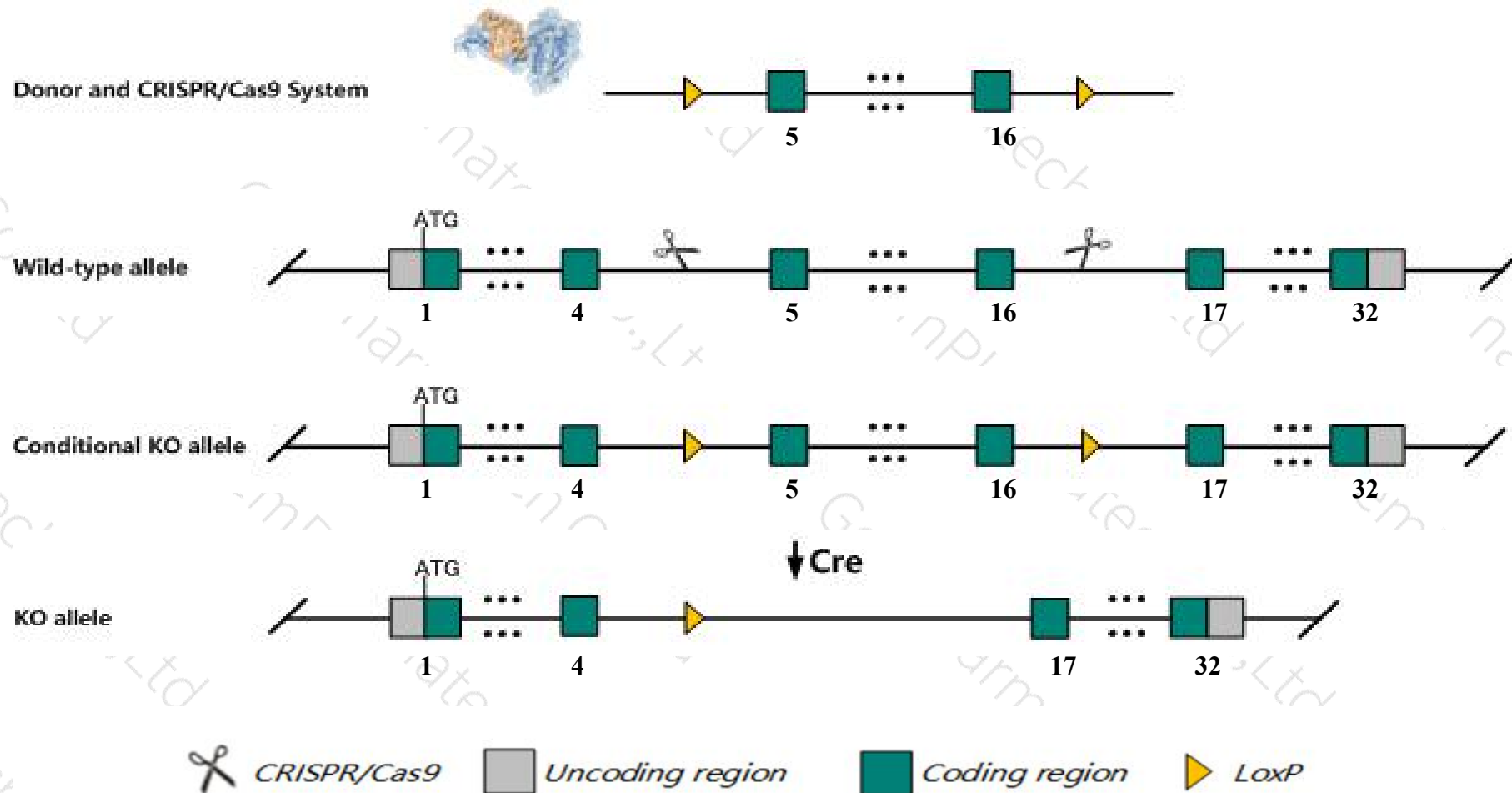
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Map4k1* gene. The schematic diagram is as follows:



Technical routes

- The *Map4k1* gene has 4 transcripts. According to the structure of *Map4k1* gene, exon5-exon16 of *Map4k1-201* (ENSMUST00000085835.7) transcript is recommended as the knockout region. The region contains 838bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Map4k1* 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.

- According to the existing MGI data, Homozygous null mice have increased responses of B and T cells. Dendritic cells are also hyperresponsive to stimulation.
- The *Map4k1* gene is located on the Chr7. 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.

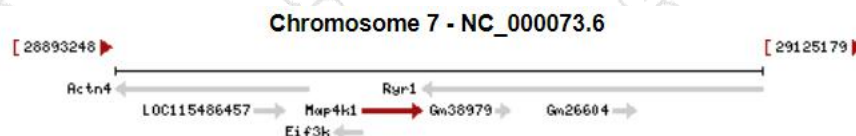
Gene information (NCBI)

Map4k1 mitogen-activated protein kinase kinase kinase kinase 1 [*Mus musculus* (house mouse)]

Gene ID: 26411, updated on 24-Oct-2019

Summary

Official Symbol Map4k1 provided by MGI
Official Full Name mitogen-activated protein kinase kinase kinase kinase 1 provided by MGI
Primary source [MGI:MGI:1346882](#)
See related [Ensembl:ENSMUSG000000037337](#)
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 Hpk1; mHPK1
Expression Biased expression in spleen adult (RPKM 40.1), thymus adult (RPKM 25.1) and 10 other tissues [See more](#)
Orthologs [human](#) [all](#)



Transcript information (Ensembl)

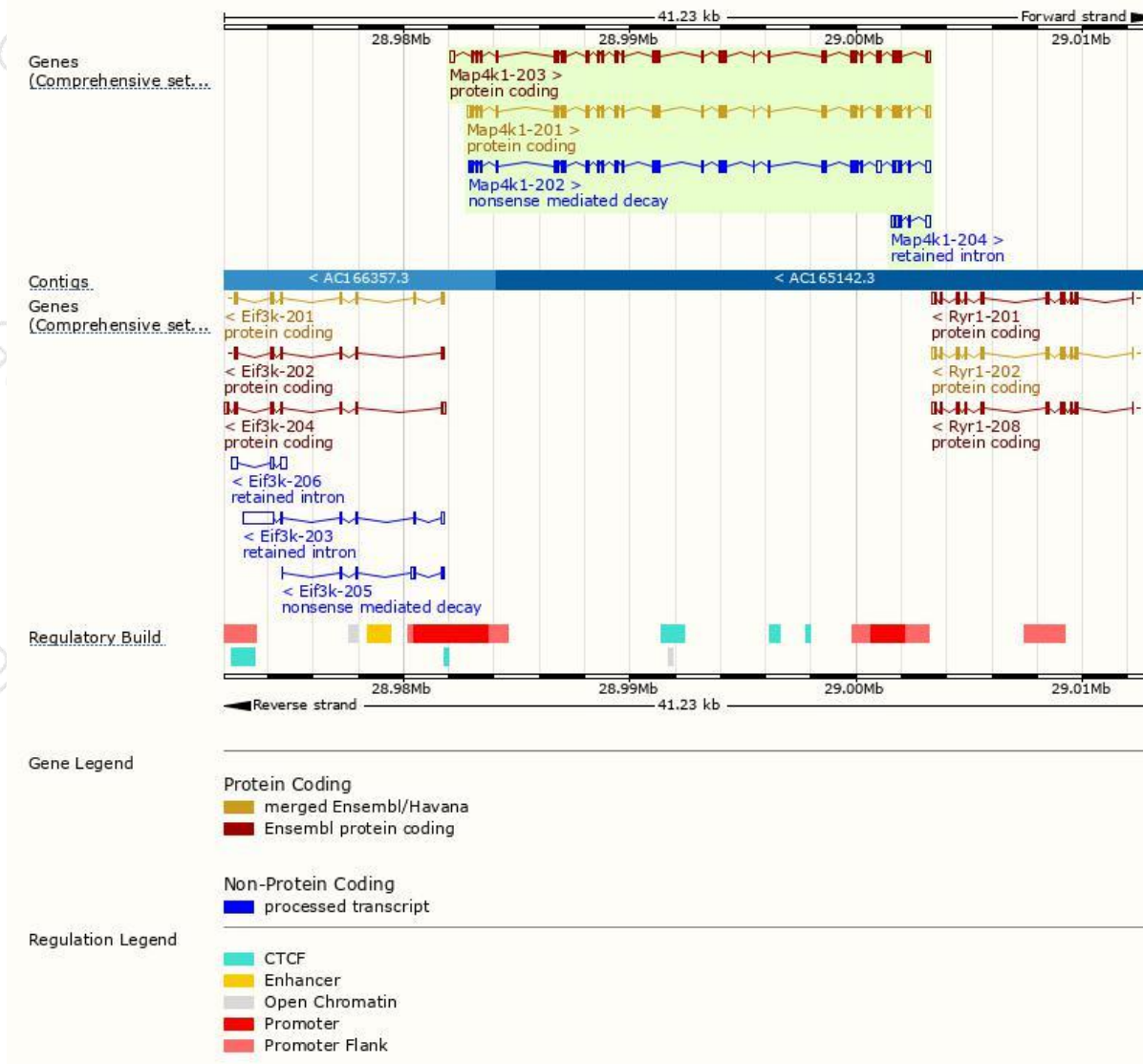
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Map4k1-201	ENSMUST00000085835.7	2724	827aa	ENSMUSP00000082995.6	Protein coding	CCDS39865	P70218	TSL:1 GENCODE basic APPRIS P1
Map4k1-203	ENSMUST00000208227.1	2720	750aa	ENSMUSP00000146807.1	Protein coding	-	Q3UPT4	TSL:1 GENCODE basic
Map4k1-202	ENSMUST00000207185.1	2764	641aa	ENSMUSP00000147189.1	Nonsense mediated decay	-	A0A140LJF0	TSL:1
Map4k1-204	ENSMUST00000208784.1	523	No protein	-	Retained intron	-	-	TSL:1

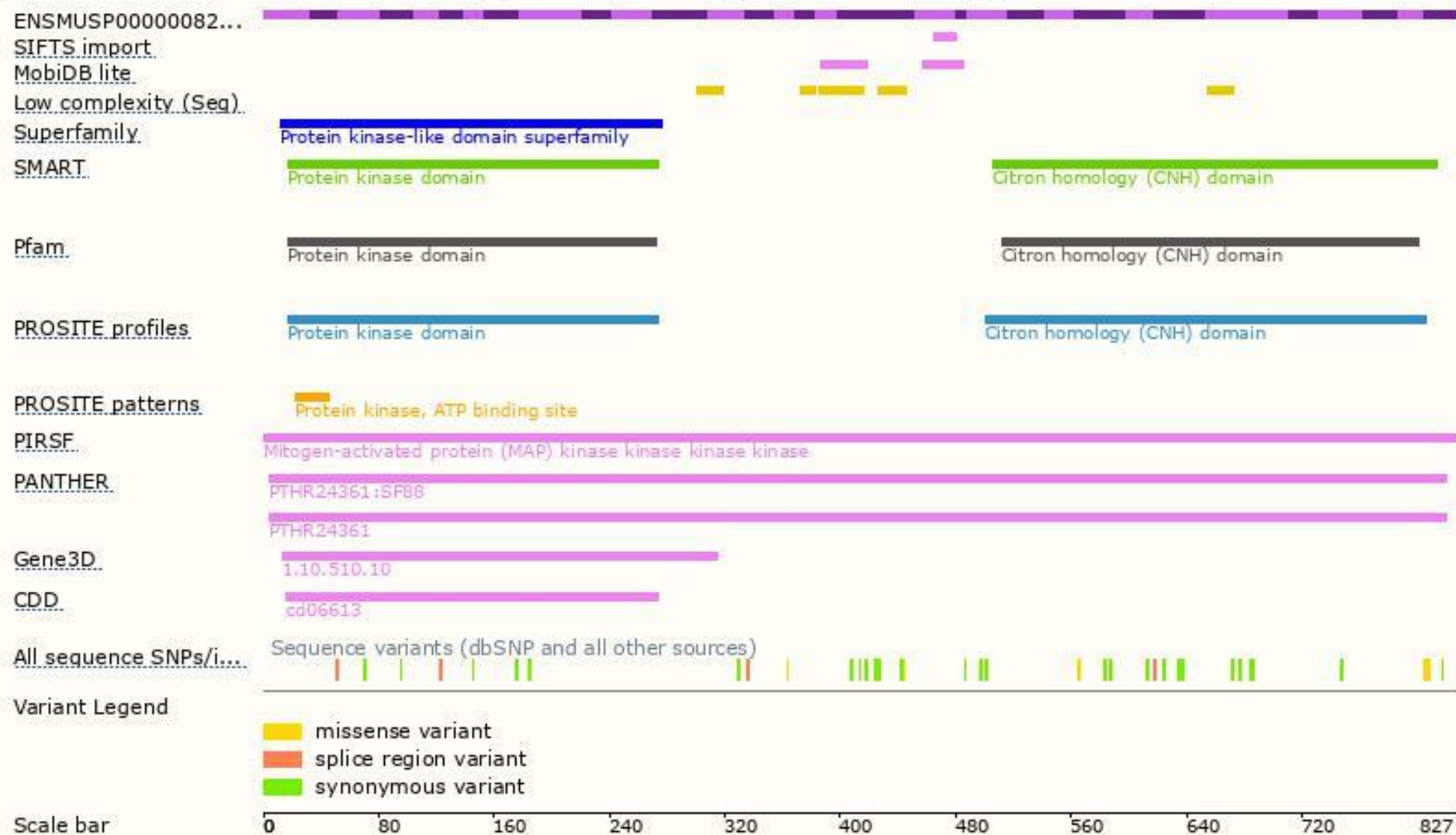
The strategy is based on the design of *Map4k1-201* transcript,The transcription is shown below



Genomic location distribution

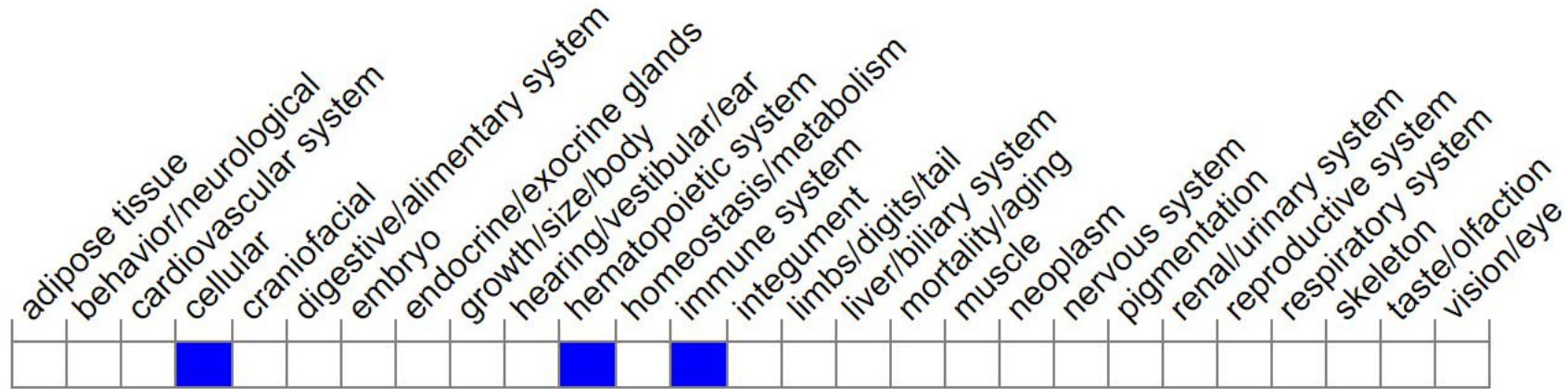


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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, Homozygous null mice have increased responses of B and T cells. Dendritic cells are also hyperresponsive to stimulation.

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

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