

Map3k14 Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Map3k14

Project type

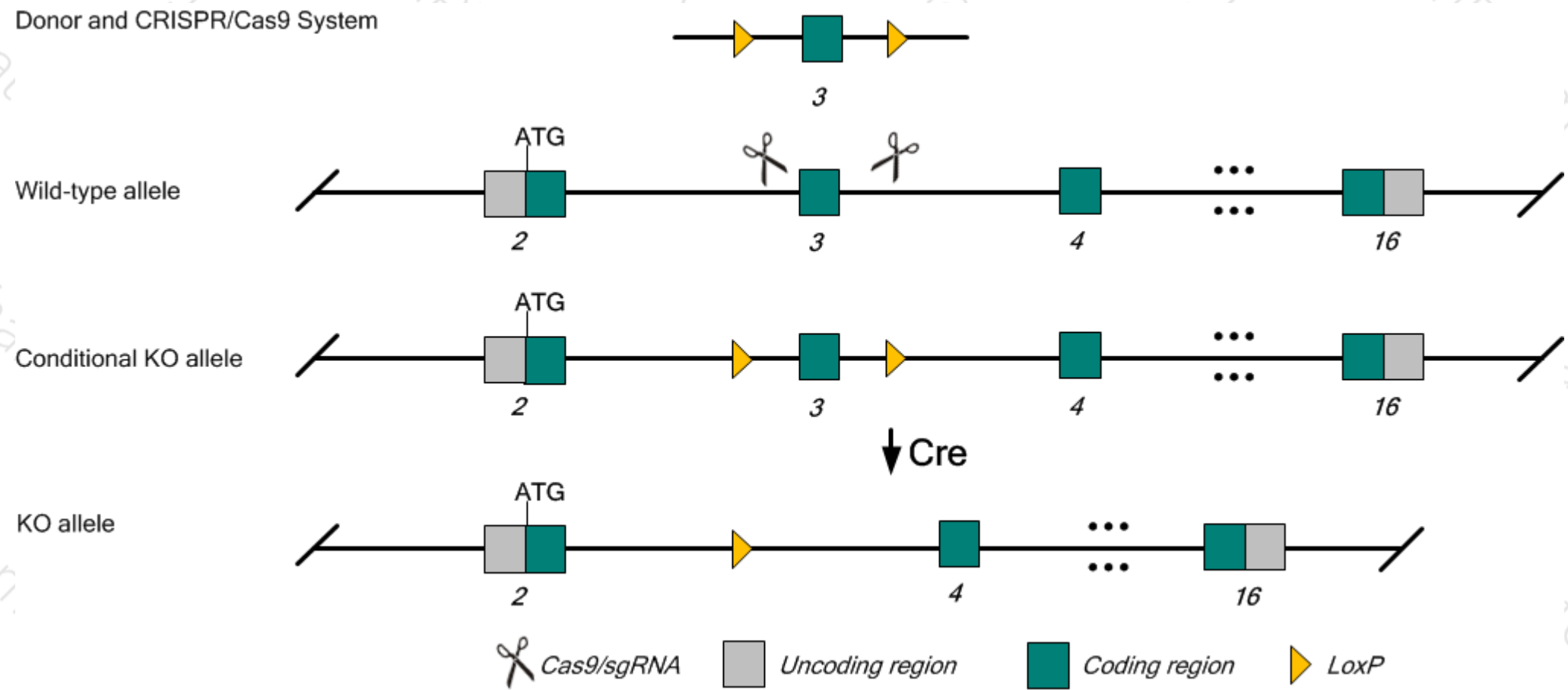
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Map3k14* gene. The schematic diagram is as follows:



- The *Map3k14* gene has 4 transcripts, According to the structure of *Map3k14* gene, exon3 of *Map3k14-201* transcript is recommended as the knockout region. The region contains the 70bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Map3k14* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues or cell types.

- According to the existing MGI data , Homozygotes for a spontaneous mutation exhibit deficiencies in cellular and humoral immunity, susceptibility to infections, absence of lymph nodes and Peyer's patches, failure of isotype switching, and inflammation of exocrine organs.
- Transcript *Map3k14-202*, *Map3k14-204* may not be affected.
- The *Map3k14* gene is located in the Chr11 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Map3k14 mitogen-activated protein kinase kinase kinase 14 [*Mus musculus* (house mouse)]

Gene ID: 53859, updated on 31-Jan-2019

Summary

Official Symbol	Map3k14 provided by MGI
Official Full Name	mitogen-activated protein kinase kinase kinase 14 provided by MGI
Primary source	MGI:MGI:1858204
See related	Ensembl:ENSMUSG00000020941
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	Nik; aly
Expression	Broad expression in spleen adult (RPKM 11.8), thymus adult (RPKM 8.3) and 23 other tissues See more
Orthologs	human all

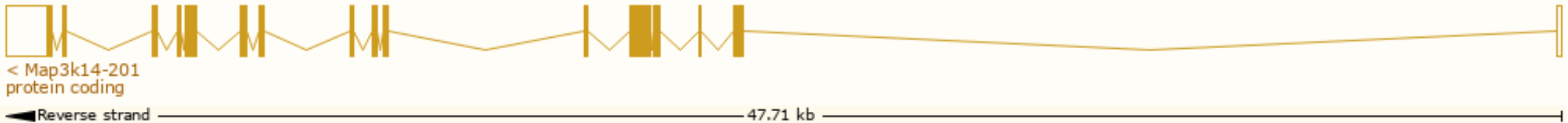
Transcript information (Ensembl)



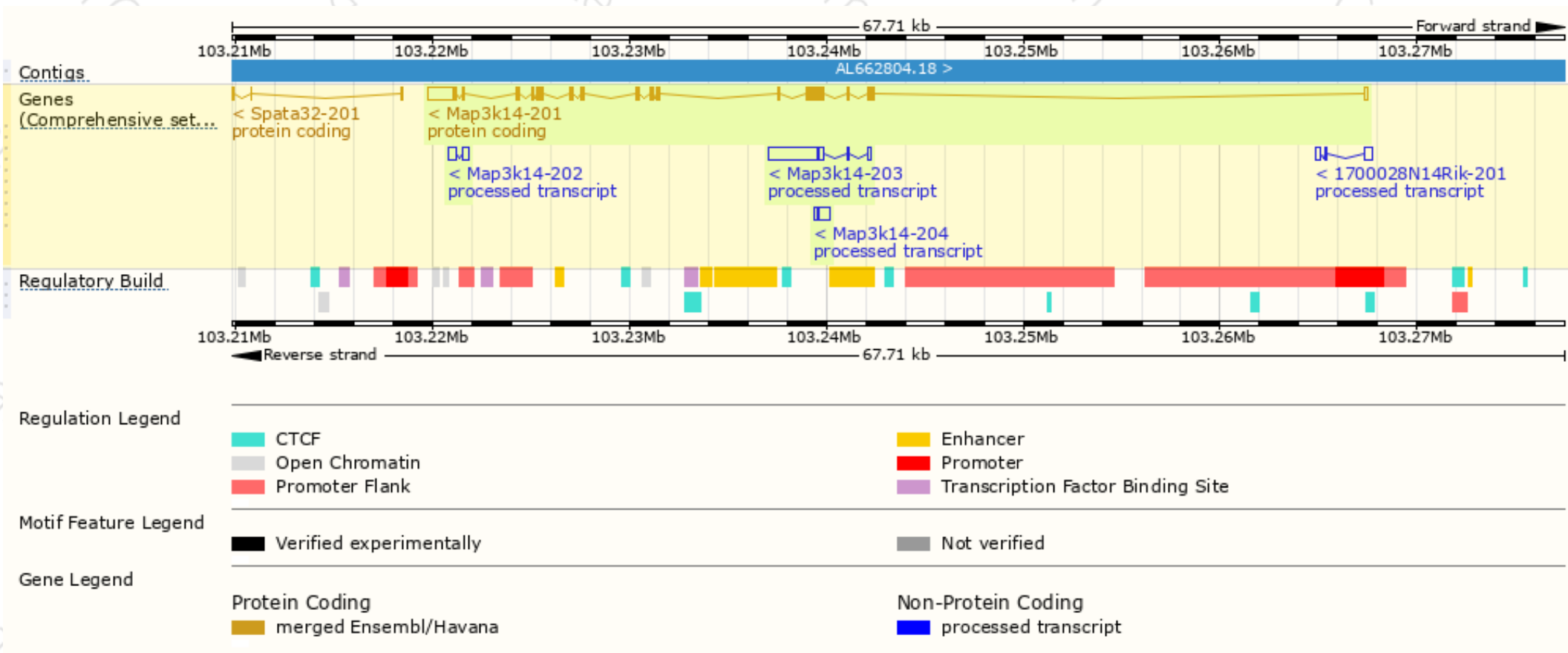
The gene has 4 transcripts, and all transcripts are shown below :

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Map3k14-201	ENSMUST00000021324.2	4246	942aa	Protein coding	CCDS25516	Q544K4 Q9WUL6	NM_016896 NP_058592	TSL:1 GENCODE basic APPRIS P1
Map3k14-203	ENSMUST00000152300.1	2961	No protein	Processed transcript	-	-	-	TSL:1
Map3k14-202	ENSMUST00000146163.1	734	No protein	Processed transcript	-	-	-	TSL:2
Map3k14-204	ENSMUST00000152677.1	722	No protein	Processed transcript	-	-	-	TSL:3

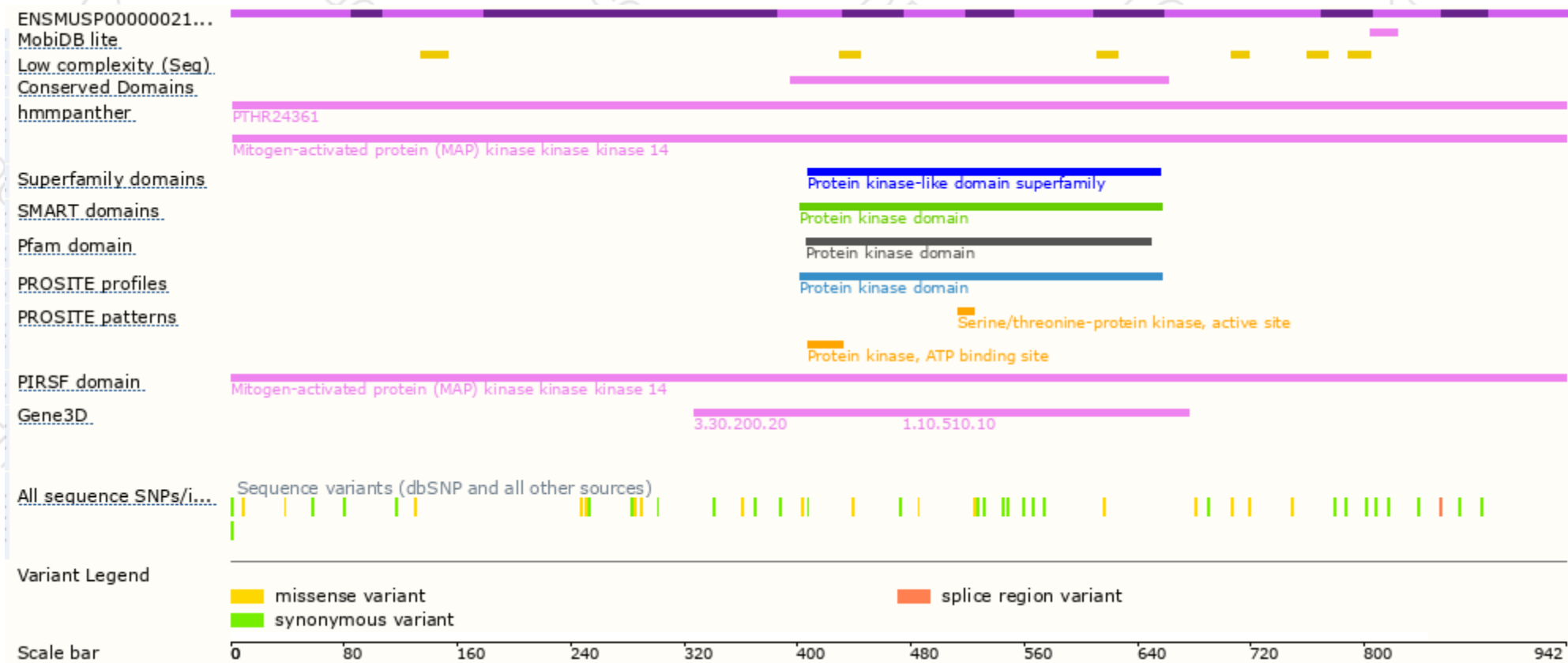
The strategy is based on the design of *Map3k14-201* transcript, The transcription is shown below



Genomic location distribution



Protein domain



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