

# *Map3k6* Cas9-CKO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Map3k6*

**Project type**

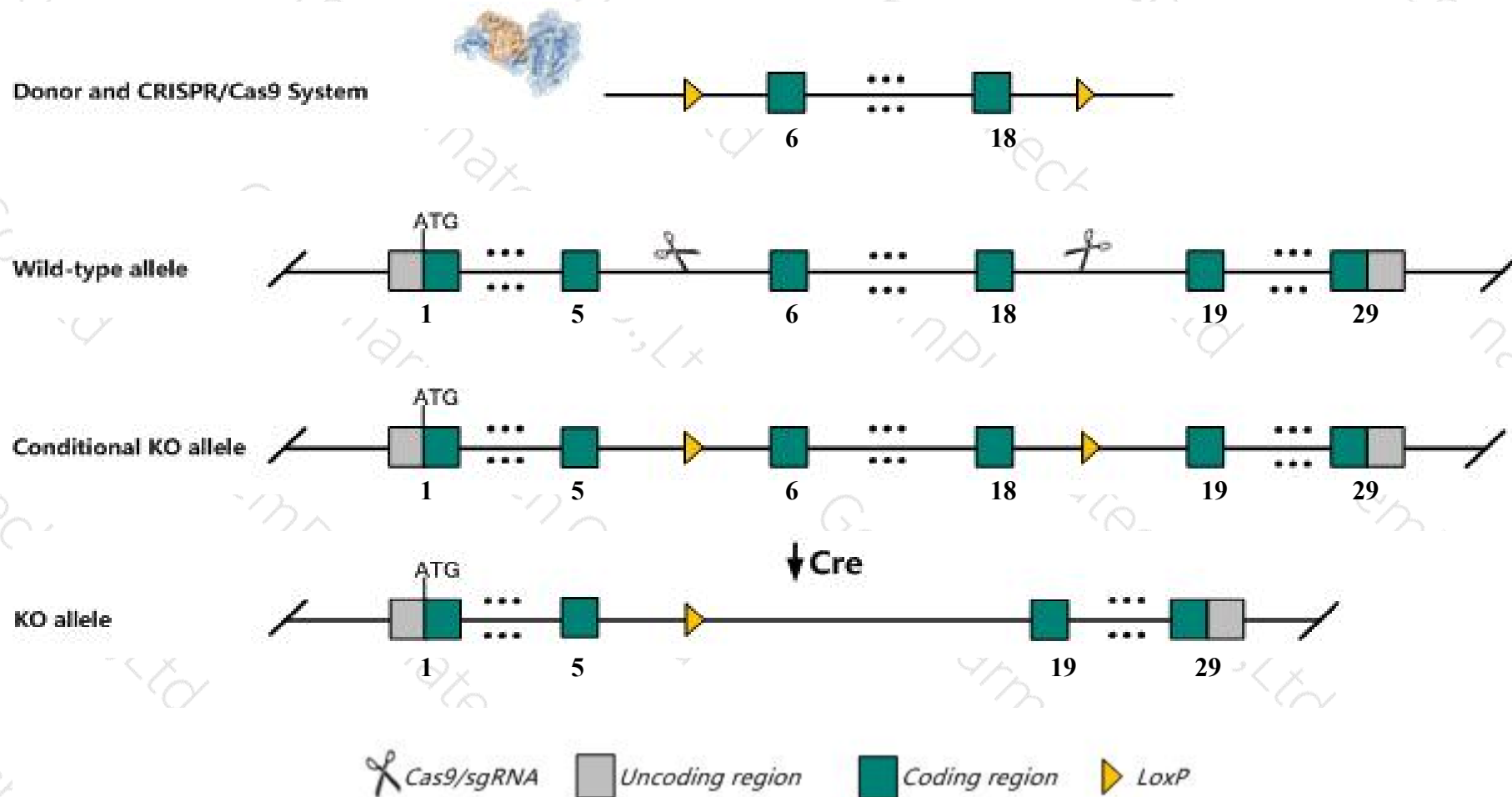
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Map3k6* gene. The schematic diagram is as follows:



# Technical routes

- The *Map3k6* gene has 4 transcripts. According to the structure of *Map3k6* gene, exon6-exon18 of *Map3k6-201* (ENSMUST00000030677.6) transcript is recommended as the knockout region. The region contains 1561bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Map3k6* 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 and cell types.

- According to the existing MGI data, Homozygous and heterozygous null mice display an increased incidence of chemically induced skin tumors and homozygous mice also show resistance to induced apoptosis.
- Transcript *Map3k6-204* lncRNA may not be affected.
- The *Map3k6* 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.



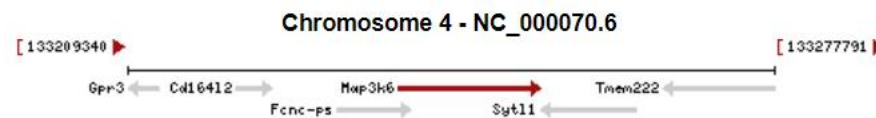
# Gene information (NCBI)

## Map3k6 mitogen-activated protein kinase kinase kinase 6 [ *Mus musculus* (house mouse) ]

Gene ID: 53608, updated on 14-Sep-2019

### Summary

**Official Symbol** Map3k6 provided by MGI  
**Official Full Name** mitogen-activated protein kinase kinase kinase 6 provided by MGI  
**Primary source** [MGI:MGI:1855691](#)  
**See related** [Ensembl:ENSMUSG00000028862](#)  
**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** Ask2; MEKK6; MAPKKK6  
**Expression** Broad expression in large intestine adult (RPKM 10.4), genital fat pad adult (RPKM 9.5) and 21 other tissues [See more](#)  
**Orthologs** [human](#) [all](#)

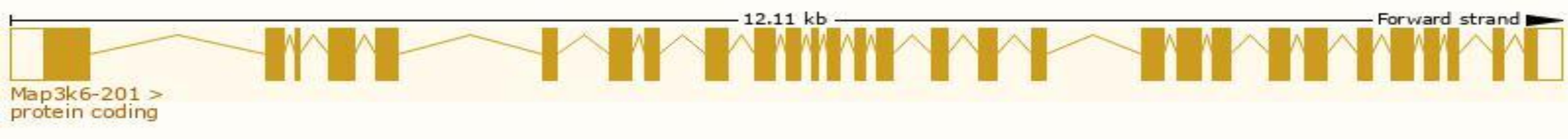


# Transcript information (Ensembl)

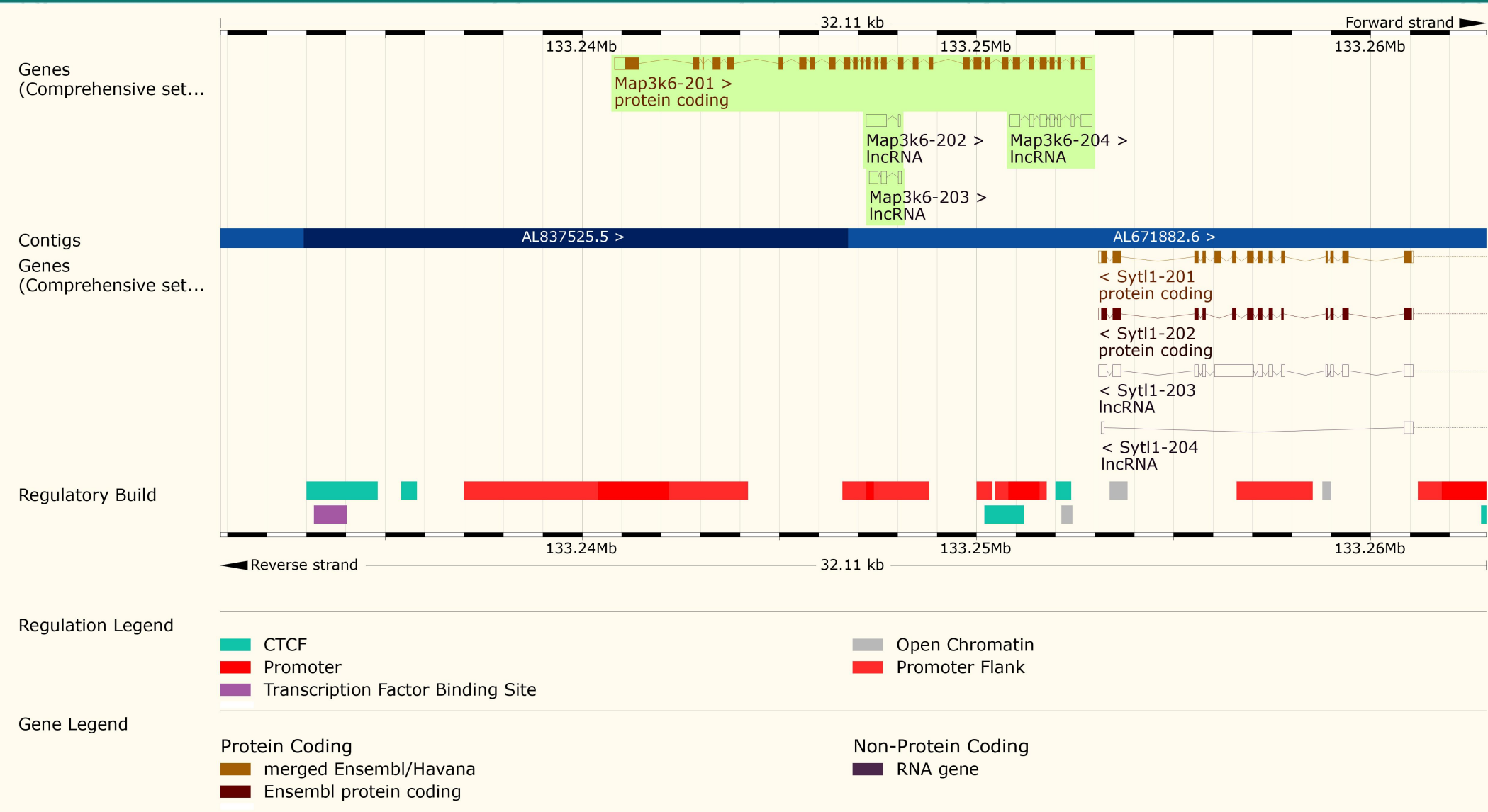
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Map3k6-201	<a href="#">ENSMUST00000030677.6</a>	4334	<a href="#">1291aa</a>	<a href="#">ENSMUSP00000030677.6</a>	Protein coding	<a href="#">CCDS18744</a>	<a href="#">A0A0A0MQ82</a>	TSL:1 GENCODE basic APPRIS P1
Map3k6-204	<a href="#">ENSMUST00000134895.1</a>	1062	No protein	-	lncRNA	-	-	TSL:1
Map3k6-202	<a href="#">ENSMUST00000123612.1</a>	570	No protein	-	lncRNA	-	-	TSL:3
Map3k6-203	<a href="#">ENSMUST00000127681.1</a>	443	No protein	-	lncRNA	-	-	TSL:2

The strategy is based on the design of *Map3k6-201* transcript,The transcription is shown below



# Genomic location distribution



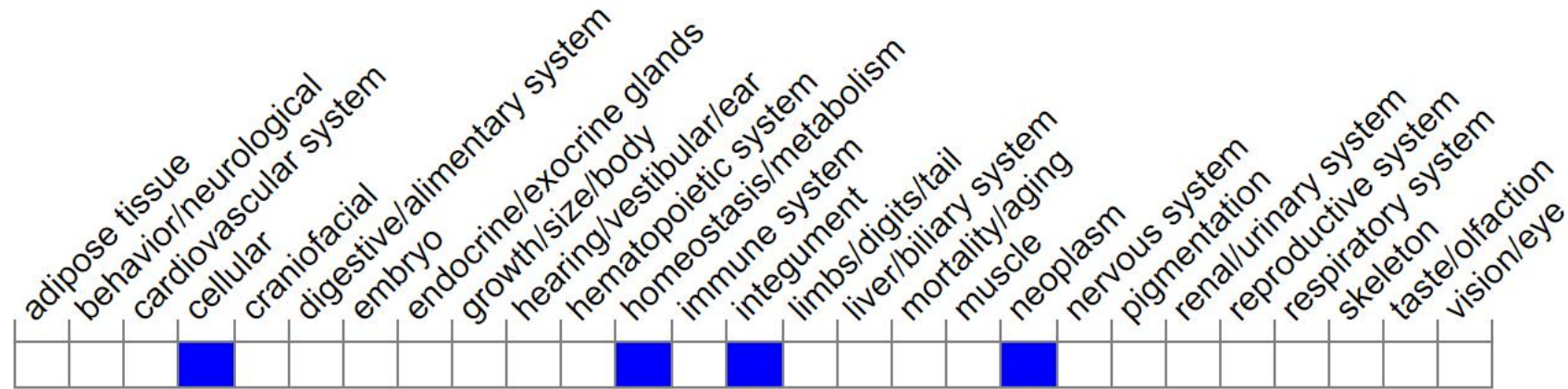


# Protein domain



# 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 and heterozygous null mice display an increased incidence of chemically induced skin tumors and homozygous mice also show resistance to induced apoptosis.

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

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