

Mapkap1 Cas9-CKO Strategy

Designer: Xueting Zhang

Project Overview

Project Name

Mapkap1

Project type

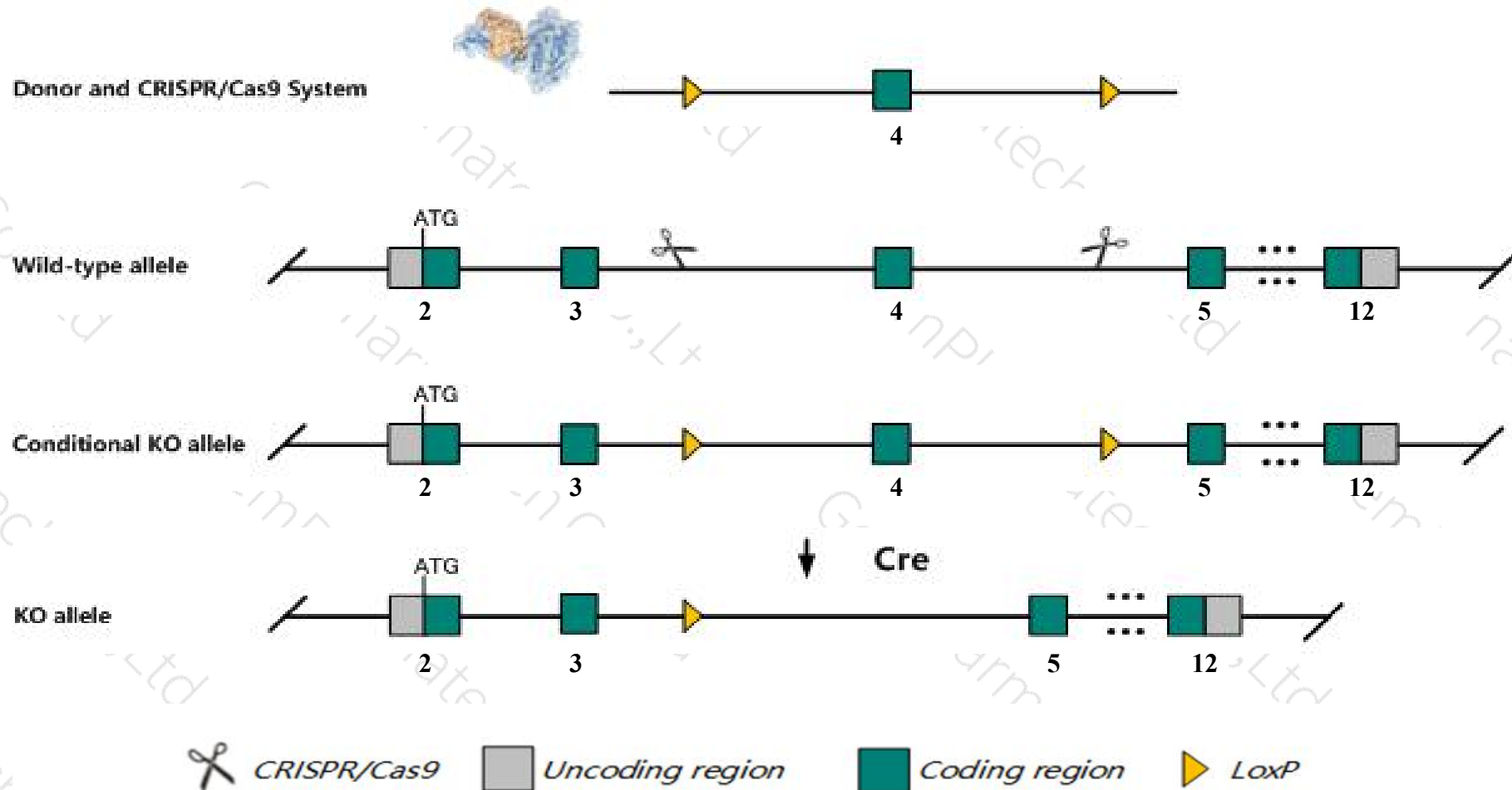
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mapkap1* gene. The schematic diagram is as follows:



- The *Mapkap1* gene has 11 transcripts. According to the structure of *Mapkap1* gene, exon4 of *Mapkap1-209* (ENSMUST00000147337.7) transcript is recommended as the knockout region. The region contains 149bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mapkap1* 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 exhibit embryonic lethality due to early developmental abnormalities. Mutant mouse embryonic fibroblasts display increased susceptibility to stress-induced apoptosis.
- The effect on transcript *Mapkap1*-208 is unknown.
- The *Mapkap1* gene is located on the Chr2. 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)

Mapkap1 mitogen-activated protein kinase associated protein 1 [Mus musculus (house mouse)]

Gene ID: 227743, updated on 19-Feb-2019

Summary



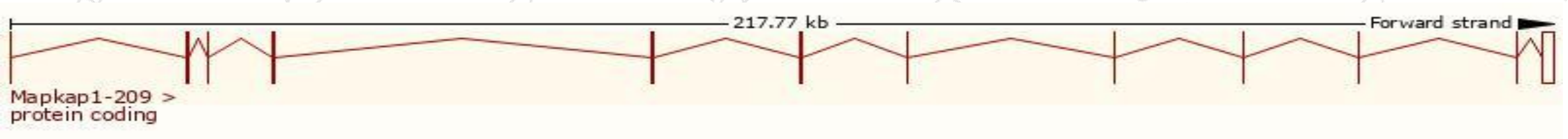
Official Symbol	Mapkap1 provided by MGI
Official Full Name	mitogen-activated protein kinase associated protein 1 provided by MGI
Primary source	MGI:MGI:2444554
See related	Ensembl:ENSMUSG00000038696
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI591529, D230039K05Rik, Sin1
Expression	Ubiquitous expression in CNS E18 (RPKM 15.7), CNS E14 (RPKM 14.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

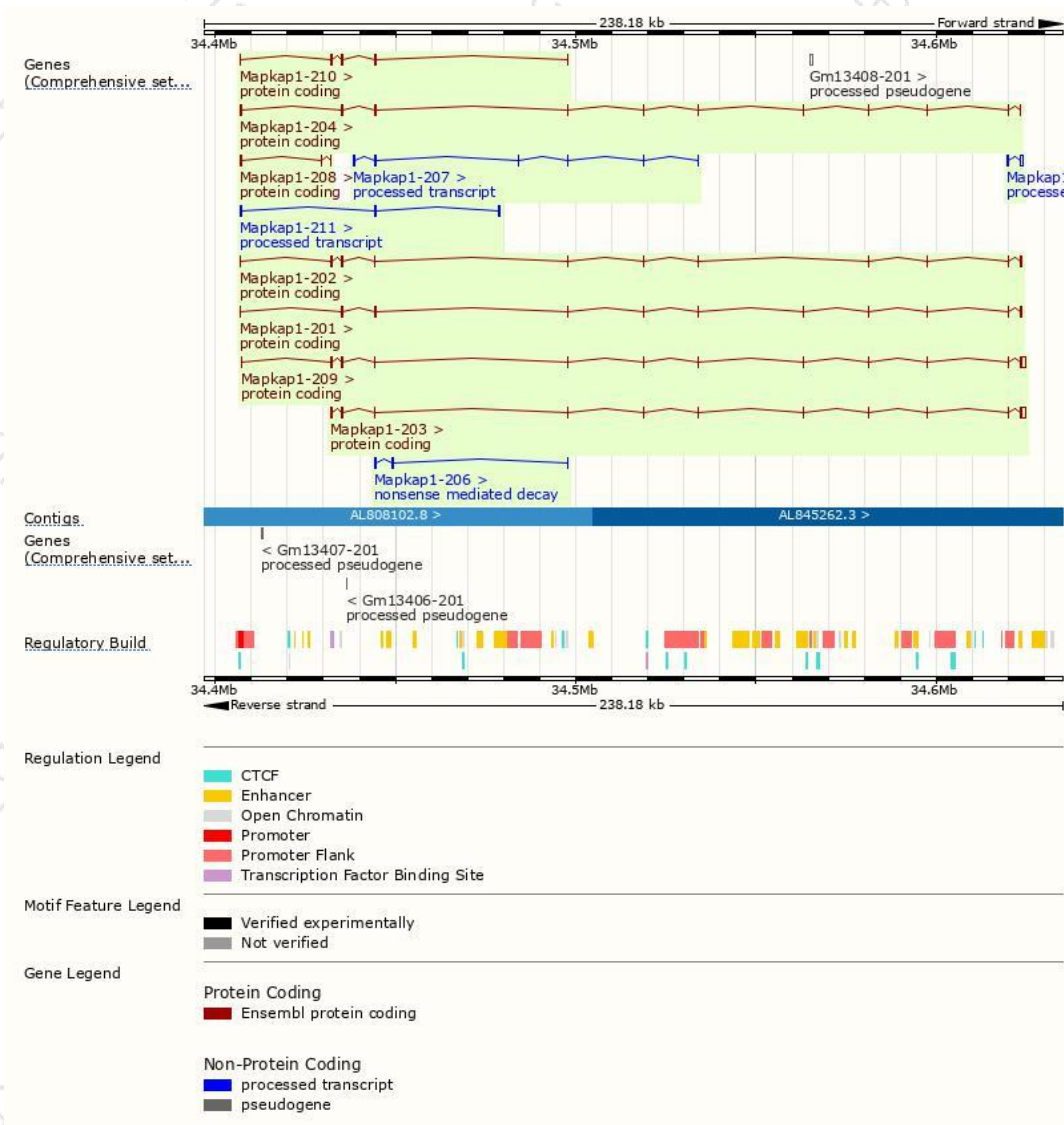
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mapkap1-209	ENSMUST00000147337.7	3111	522aa	Protein coding	CCDS15948	Q8BKH7	TSL:1 GENCODE basic APPRIS P2
Mapkap1-203	ENSMUST00000113126.2	3018	522aa	Protein coding	CCDS15948	Q8BKH7	TSL:1 GENCODE basic APPRIS P2
Mapkap1-201	ENSMUST00000113123.7	1530	330aa	Protein coding	CCDS71035	Q8BKH7	TSL:5 GENCODE basic
Mapkap1-202	ENSMUST00000113124.7	1758	486aa	Protein coding	-	Q8BKH7	TSL:5 GENCODE basic APPRIS ALT 1
Mapkap1-204	ENSMUST00000124443.7	1630	306aa	Protein coding	-	A2AR15	CDS 3' incomplete TSL:1
Mapkap1-210	ENSMUST00000149383.7	661	171aa	Protein coding	-	A0A0A6YW60	CDS 3' incomplete TSL:5
Mapkap1-208	ENSMUST00000141253.1	625	20aa	Protein coding	-	A0A0A6YVX6	CDS 3' incomplete TSL:3
Mapkap1-206	ENSMUST00000137021.1	376	40aa	Nonsense mediated decay	-	A0A0A6YY51	CDS 5' incomplete TSL:5
Mapkap1-207	ENSMUST00000138933.7	735	No protein	Processed transcript	-	-	TSL:3
Mapkap1-205	ENSMUST00000129633.1	691	No protein	Processed transcript	-	-	TSL:3
Mapkap1-211	ENSMUST00000156967.7	606	No protein	Processed transcript	-	-	TSL:3

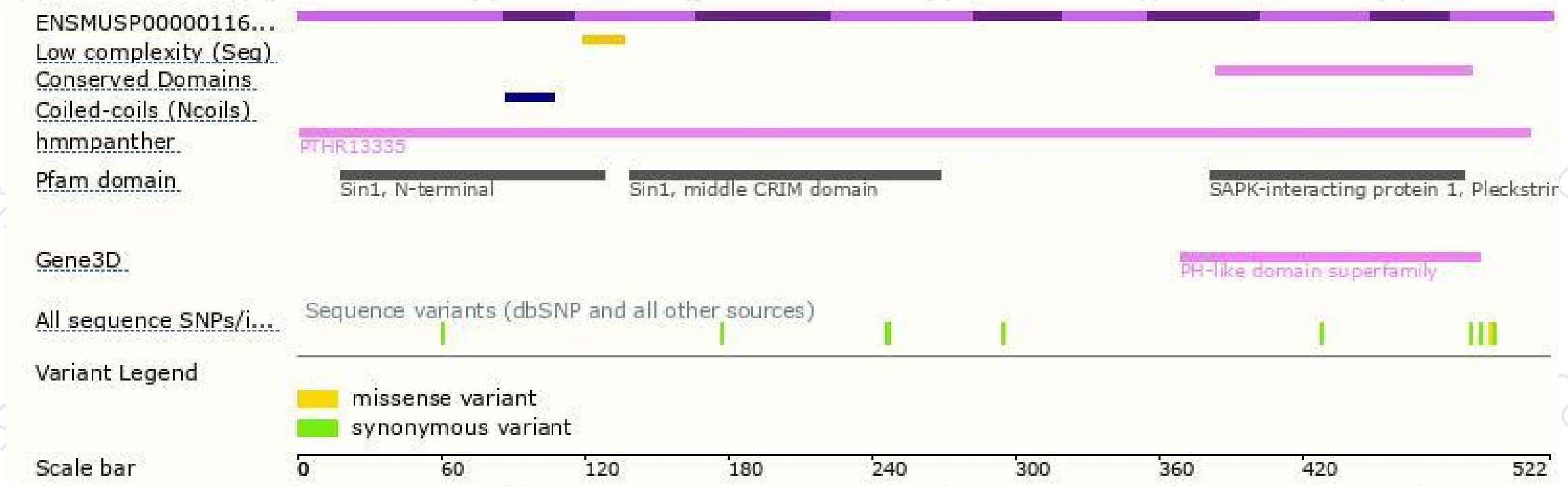
The strategy is based on the design of *Mapkap1-209* transcript,The transcription is shown below



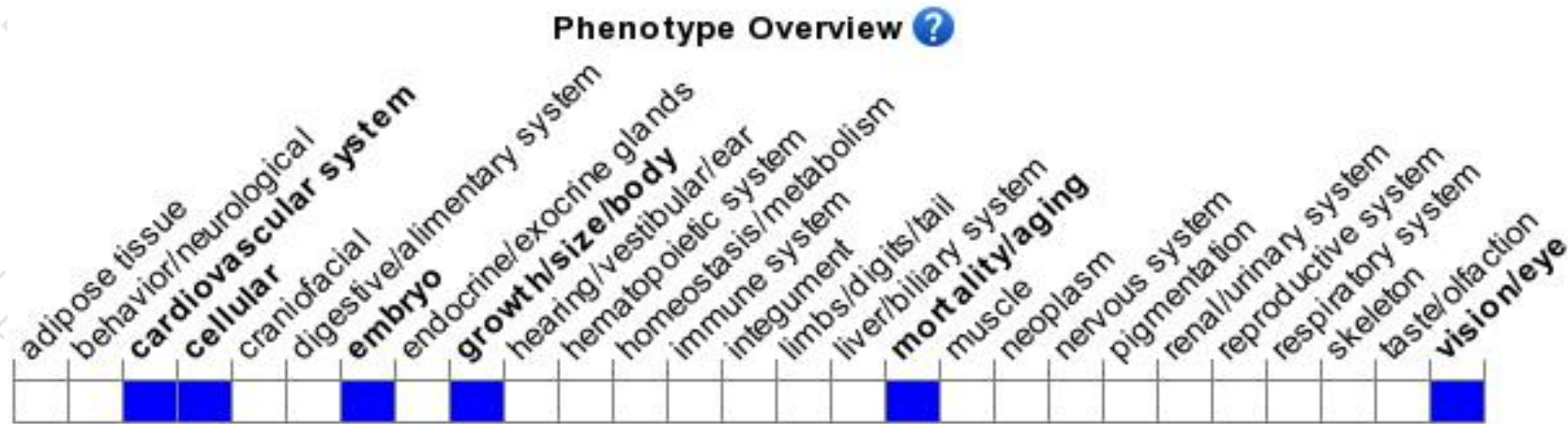
Genomic location distribution



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, Homozygous null mice exhibit embryonic lethality due to early developmental abnormalities. Mutant mouse embryonic fibroblasts display increased susceptibility to stress-induced apoptosis.

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

Tel: 400-9660890

