

***Taok2* Cas9-CKO Strategy**

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Project Overview

Project Name

Taok2

Project type

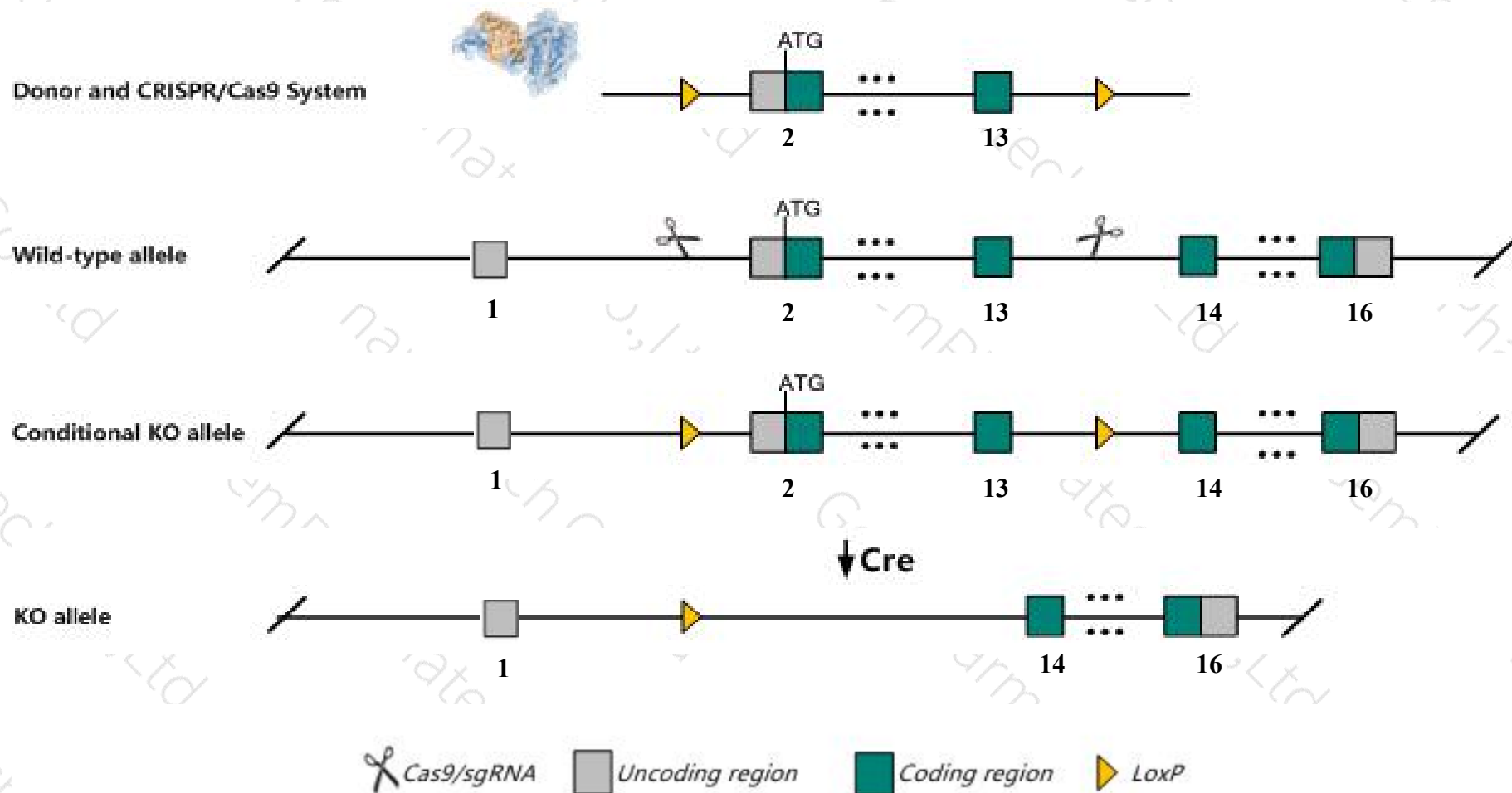
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Taok2* gene. The schematic diagram is as follows:



Technical routes

- The *Taok2* gene has 5 transcripts. According to the structure of *Taok2* gene, exon2-exon13 of *Taok2*-202(ENSMUST00000117394.1) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Taok2* 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, mice homozygous for a transgenic gene disruption exhibit decreased body size. Mice homozygous for a targeted allele exhibit resistance to the ataxic effect of alcohol, reduced blood ethanol content, increased alcohol consumption, impaired CPP for alcohol, and impaired habituation in an open field.
- *Taok2-205* transcript is incomplete, so the effect on it is unknown.
- The *Taok2* 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)

Taok2 TAO kinase 2 [Mus musculus (house mouse)]

Gene ID: 381921, updated on 13-Mar-2020

Summary



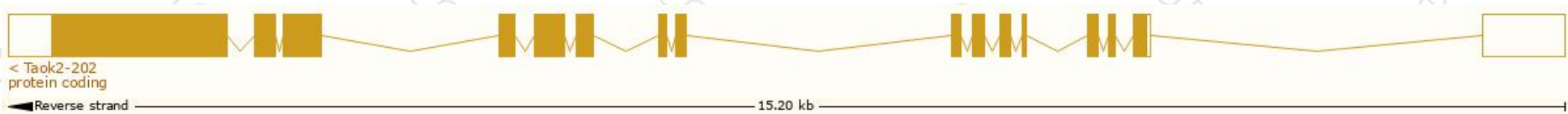
Official Symbol	Taok2 provided by MGI
Official Full Name	TAO kinase 2 provided by MGI
Primary source	MGI:MGI:1915919
See related	Ensembl:ENSMUSG00000059981
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110033K02Rik, B230344N16, MAP3K17, PSK, PSK1, TAO1, TAO2, mKIAA0881
Expression	Ubiquitous expression in lung adult (RPKM 32.8), ovary adult (RPKM 27.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

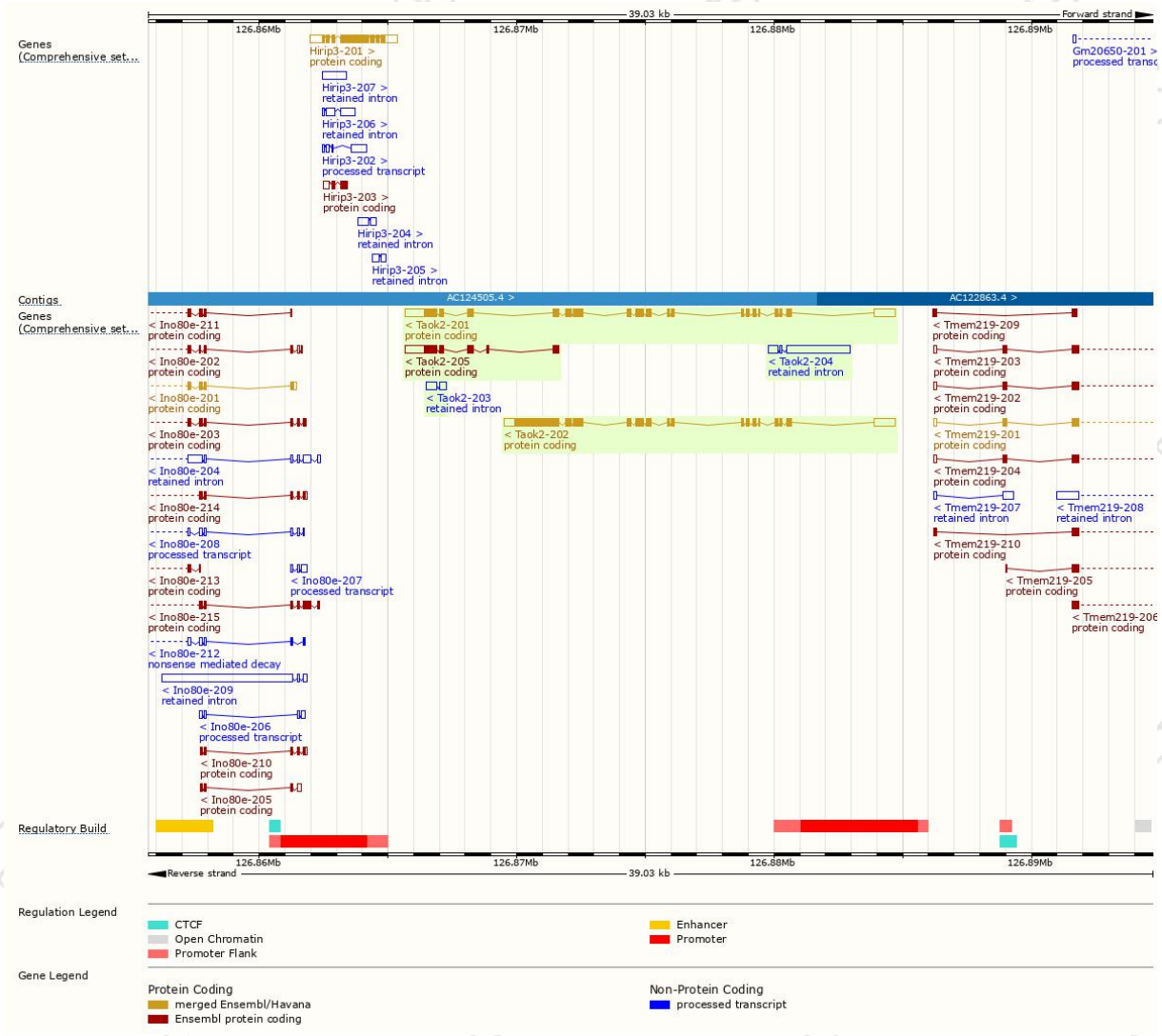
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Taok2-205	ENSMUST00000214525.1	1943	407aa	Protein coding	-	A0A1L1SSV8	CDS 5' incomplete TSL:5
Taok2-201	ENSMUST00000071268.10	4720	1055aa	Protein coding	CCDS52404	Q6ZQ29	TSL:1 GENCODE basic APPRIS ALT2
Taok2-202	ENSMUST00000117394.1	4985	1240aa	Protein coding	CCDS52403	Q6ZQ29	TSL:1 GENCODE basic APPRIS P4
Taok2-204	ENSMUST00000156273.1	2892	No protein	Retained intron	-	-	TSL:1
Taok2-203	ENSMUST00000130371.1	669	No protein	Retained intron	-	-	TSL:2

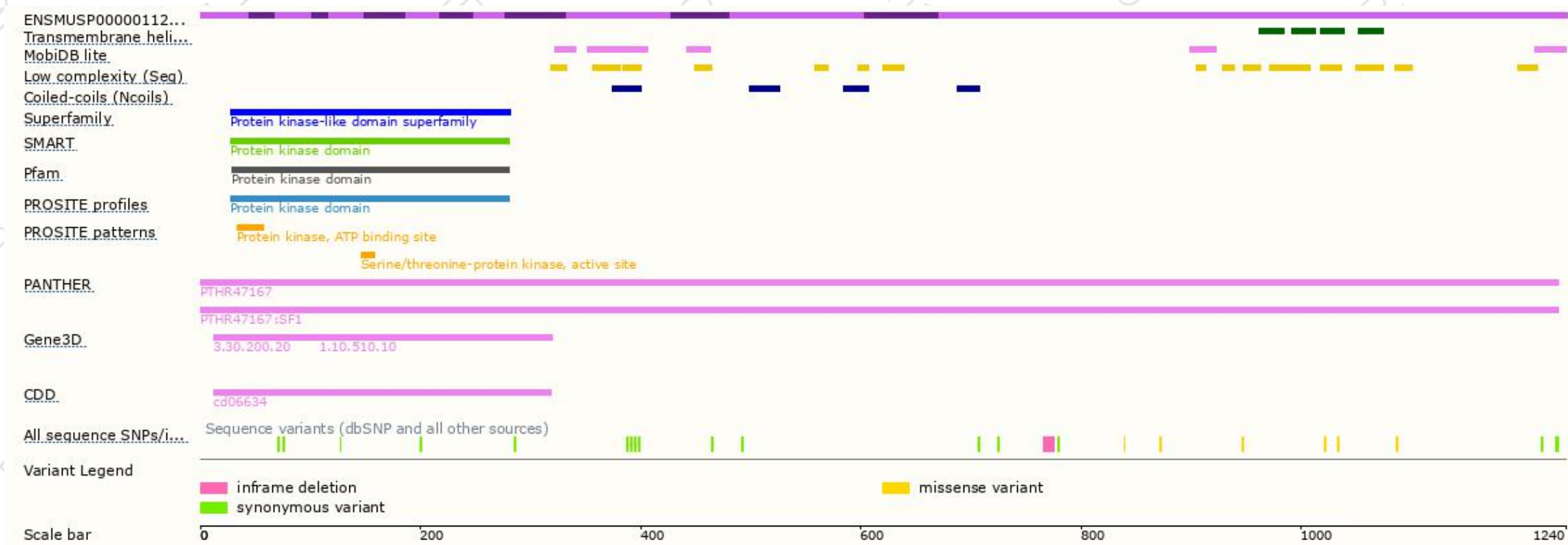
The strategy is based on the design of *Taok2-202* transcript,the transcription is shown below:



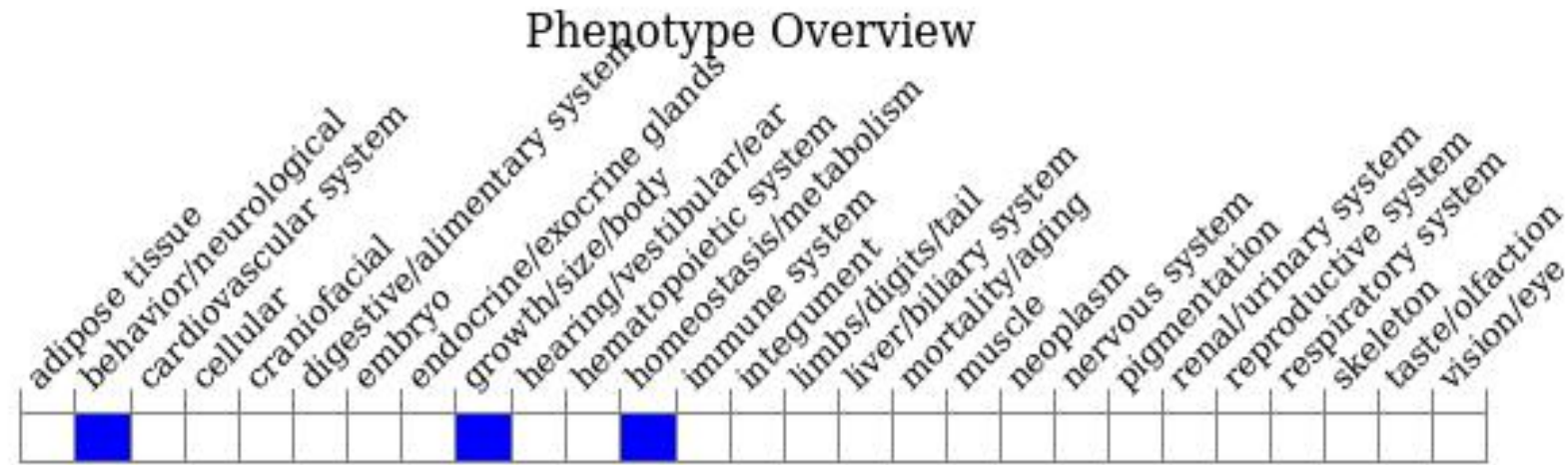
Genomic location distribution



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, mice homozygous for a transgenic gene disruption exhibit decreased body size.

Mice homozygous for a targeted allele exhibit resistance to the ataxic effect of alcohol, reduced blood ethanol content, increased alcohol consumption, impaired CPP for alcohol, and impaired habituation in an open field.

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

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