Masp2 Cas9-CKO Strategy

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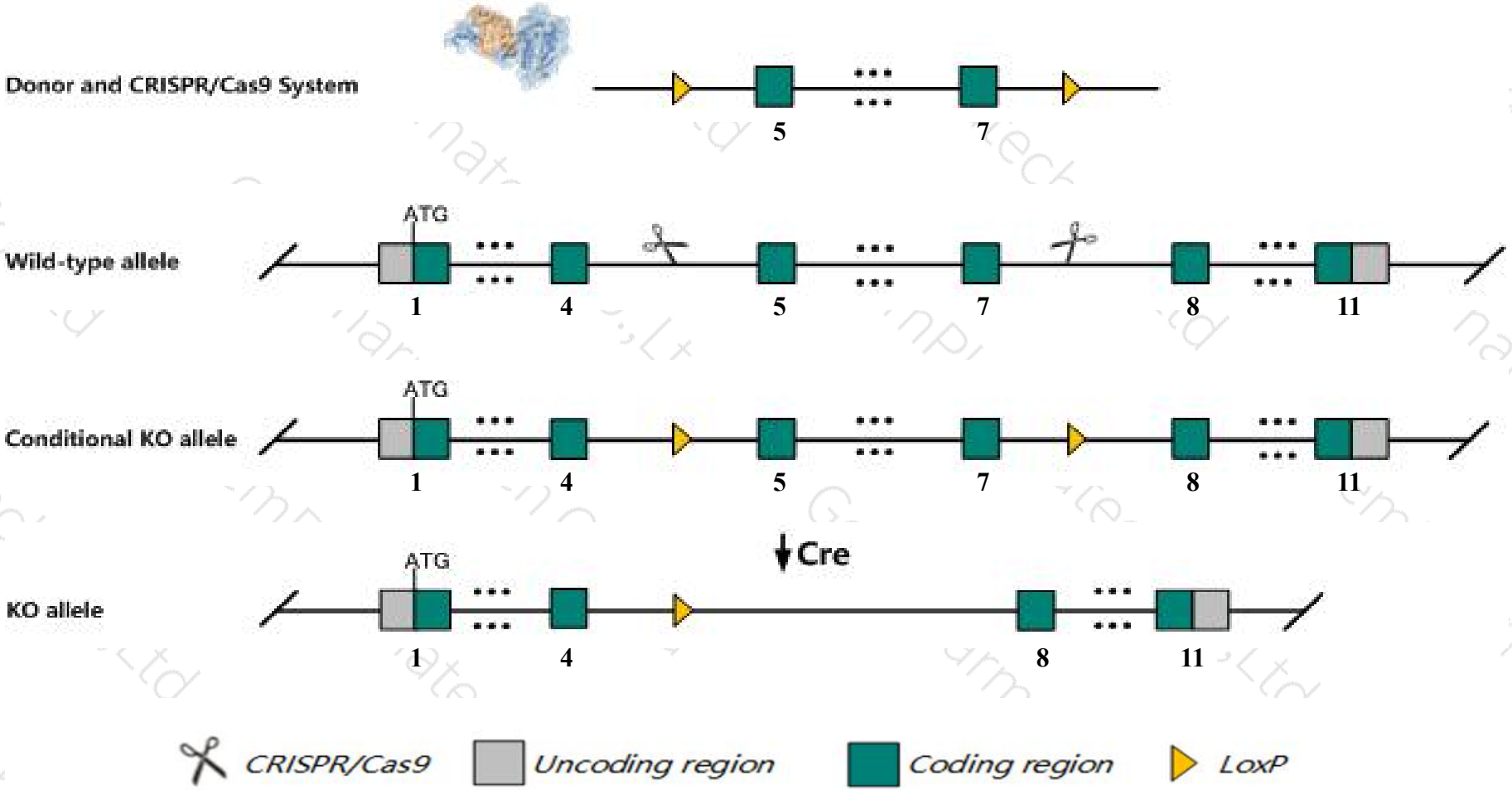
Design Date: 2019-9-11
Reviewer: JiaYu

Project Overview

Project Name	***Masp2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Masp2* gene. The schematic diagram is as follows:



Technical routes

- The *Masp2* gene has 4 transcripts. According to the structure of *Masp2* gene, exon5-exon7 of *Masp2-201* (ENSMUST00000052060.6) transcript is recommended as the knockout region.The region contains 464bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Masp2* 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.

Notice

➢ According to the existing MGI data,Homozygous disruption of the exon encoding the small mannose-binding lectin (MBL)-associated protein results in a defective lectin-mediated complement pathway with a 20% reduction in the ability of serum components to cleave C3 and C4 in the presence of mannose.

➢ The *Masp2* 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）

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Masp2 mannan-binding lectin serine peptidase 2 [Mus musculus (house mouse)]

Gene ID: 17175, updated on 19-Mar-2019

Summary

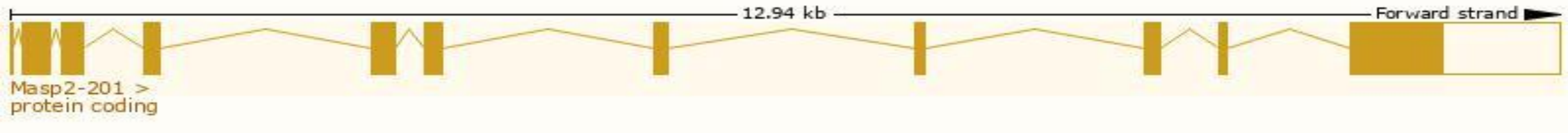
Official Symbol	Masp2 provided by MGI
Official Full Name	mannan-binding lectin serine peptidase 2 provided by MGI
Primary source	MGI:MGI:1330832
See related	Ensembl:ENSMUSG00000028979
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	MASP-2, MAp19
Expression	Broad expression in liver adult (RPKM 80.9), liver E18 (RPKM 34.9) and 18 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	Biotype	CCDS	UniProt	Flags
Masp2-201	ENSMUST00000052060.6	3058	685aa	Protein coding	CCDS18941	Q91WP0	TSL:1 GENCODE basic APPRIS P1
Masp2-202	ENSMUST00000105701.8	738	185aa	Protein coding	CCDS18942	Q91WP0	TSL:1 GENCODE basic
Masp2-204	ENSMUST00000154898.7	1181	No protein	Retained intron	-	-	TSL:1
Masp2-203	ENSMUST00000136647.1	794	No protein	Retained intron	-	-	TSL:1

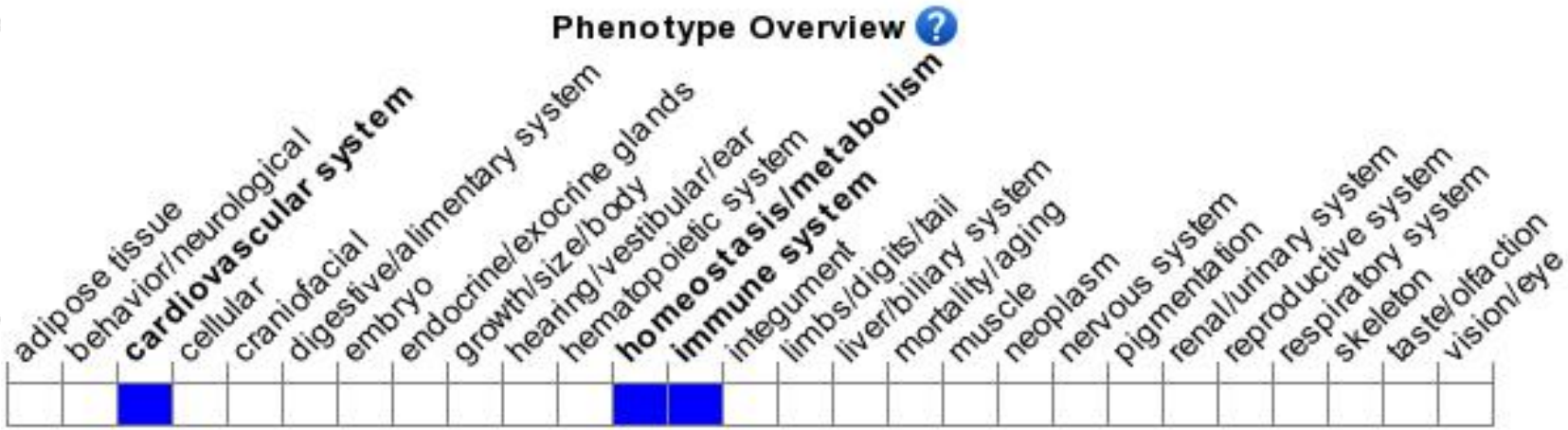
The strategy is based on the design of *Masp2-201* transcript,The transcription is shown below



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/).

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

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