

Itga10 Cas9-CKO Strategy

Designer: Jinling Wang

Reviewer: Rui Xiong

Design Date: 2018-11-12

Project Overview

Project Name

Itga10

Project type

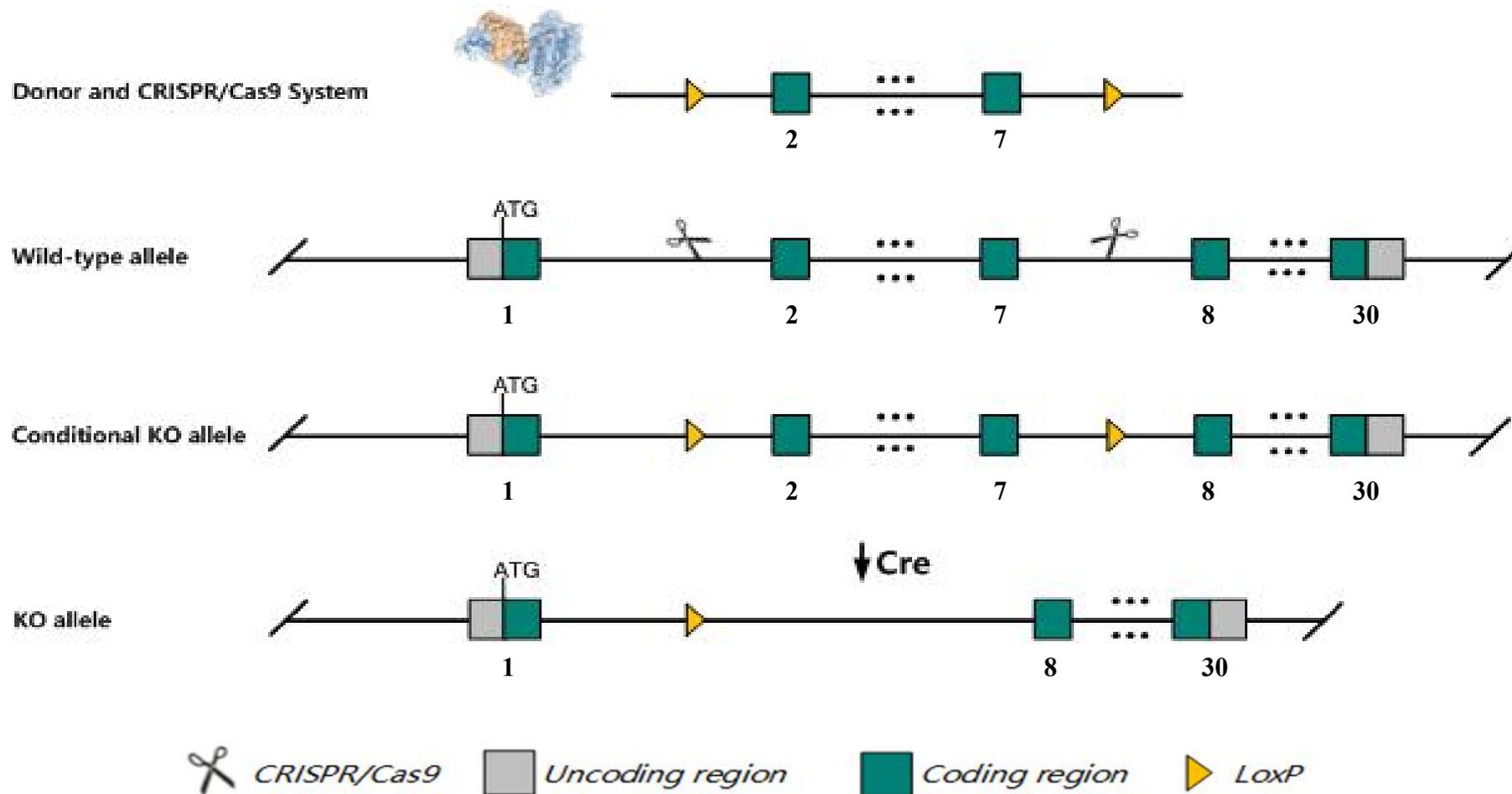
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Itga10* gene. The schematic diagram is as follows:



The *Itga10* gene has 3 transcripts. According to the structure of *Itga10* gene, exon2-exon7 of *Itga10-202*(ENSMUST00000119365.7) transcript is recommended as the knockout region. The region contains 706bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Itga10* 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.

Gm42957-201 will be destroyed.

According to the existing MGI data, homozygous null mice display slightly shortened long bones and mild abnormalities in epiphyseal plate morphology.

The *Itga10* gene is located on the Chr3. 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

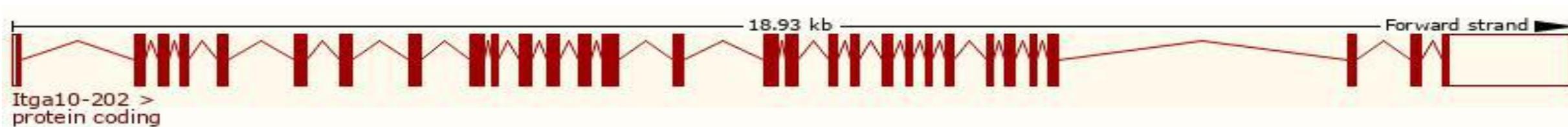


Transcript information Ensembl

The gene has 3 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Itga10-202	ENSMUST00000119365.7	5035	1166aa	Protein coding	CCDS38557	E9PXZ3	TSL:1 GENCODE basic APPRIS P2
Itga10-201	ENSMUST00000029744.5	5044	1167aa	Protein coding	-	E9Q6R1	TSL:5 GENCODE basic APPRIS ALT2
Itga10-203	ENSMUST00000127607.1	902	No protein	Retained intron	-	-	TSL:5

The strategy is based on the design of *Itga10-202* transcript, the transcription is shown below:

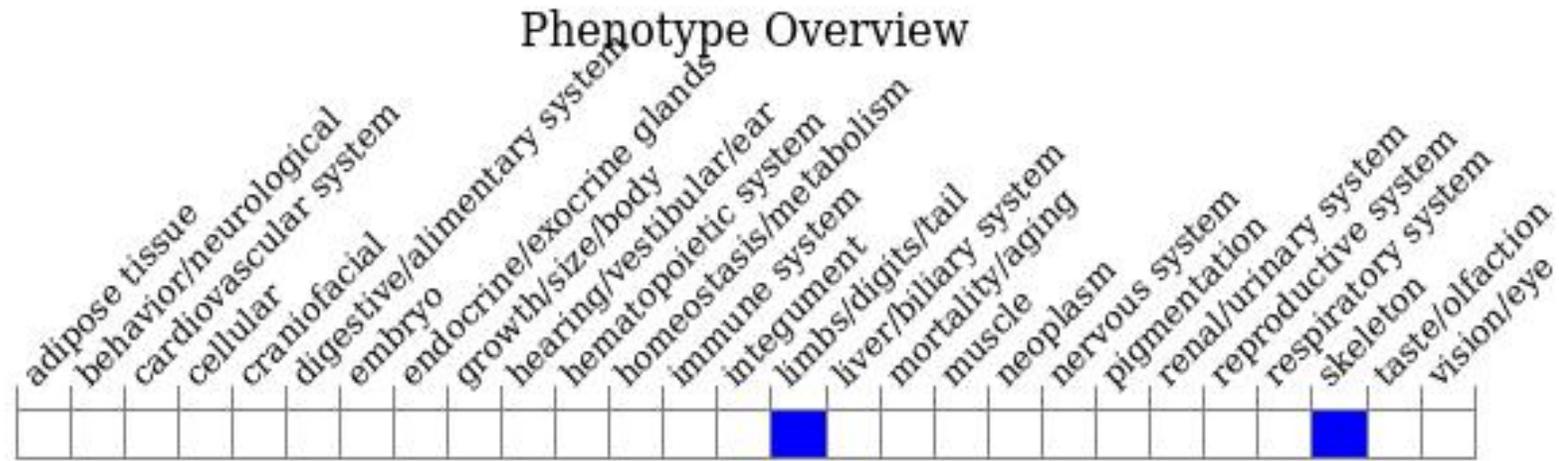


Genomic location distribution



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, homozygous null mice display slightly shortened long bones and a mild abnormalities in ephysiseal plate morphology.

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

Tel: 400-9660890

