Clec11a Cas9-CKO Strategy

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Overview

Target Gene Name

- Clec11a

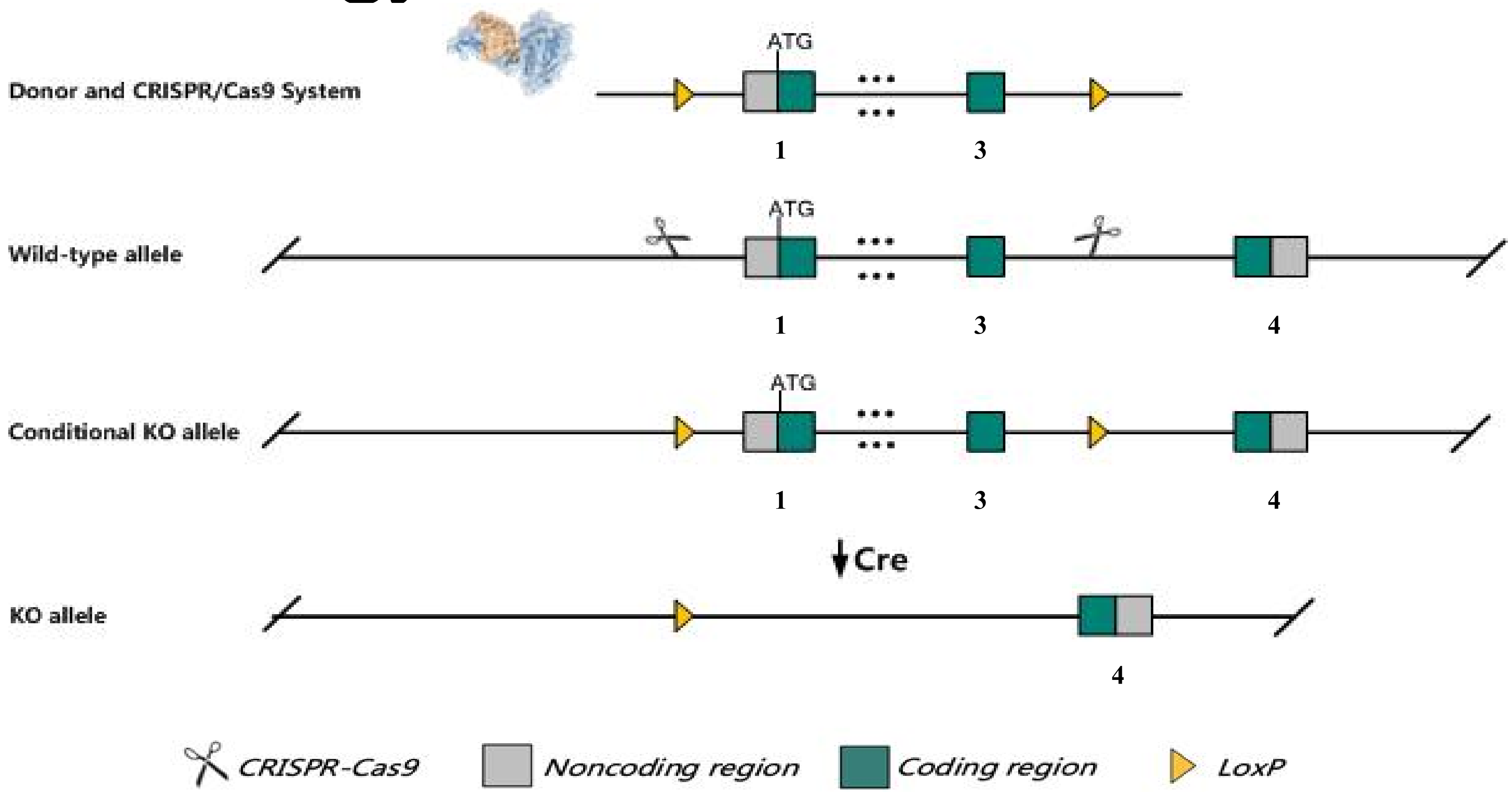
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Clec11a* gene.

Technical Information

- The *Clec11a* gene has 1 transcript. According to the structure of *Clec11a* gene, exon1-exon3 of *Clec11a*-201 (ENSMUST00000004587.11) transcript is recommended as the knockout region. The region contains start codon ATG. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Clec11a* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information

Clec11a C-type lectin domain family 11, member a [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 20256, updated on 12-May-2024

Summary

Official Symbol	Clec11a provided by MGI
Official Full Name	C-type lectin domain family 11, member a provided by MGI
Primary source	MGI:MGI:1298219
See related	Ensembl:ENSMUSG00000004473 AllianceGenome:MGI:1298219
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	Scgf; Clecsf3
Summary	Predicted to enable growth factor activity. Predicted to be involved in ossification and positive regulation of cell population proliferation. Predicted to be located in extracellular region. Predicted to be active in extracellular space. Is expressed in alimentary system; central nervous system; renal vasculature; retina nuclear layer; and skeleton. Orthologous to human CLEC11A (C-type lectin domain containing 11A). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Broad expression in ovary adult (RPKM 13.9), limb E14.5 (RPKM 11.9) and 26 other tissues See more
Orthologs	human all

NEW **Try the new Gene table**
Try the new Transcript table

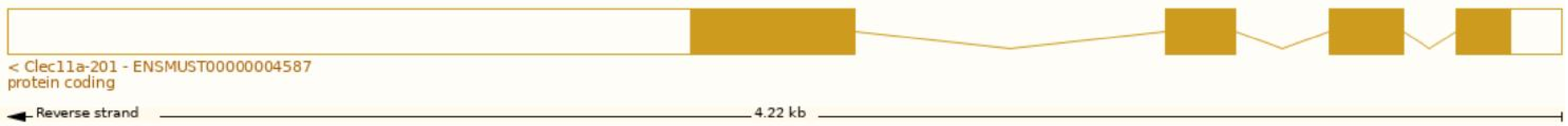
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

The gene has 1 transcript,and the transcript is shown below:

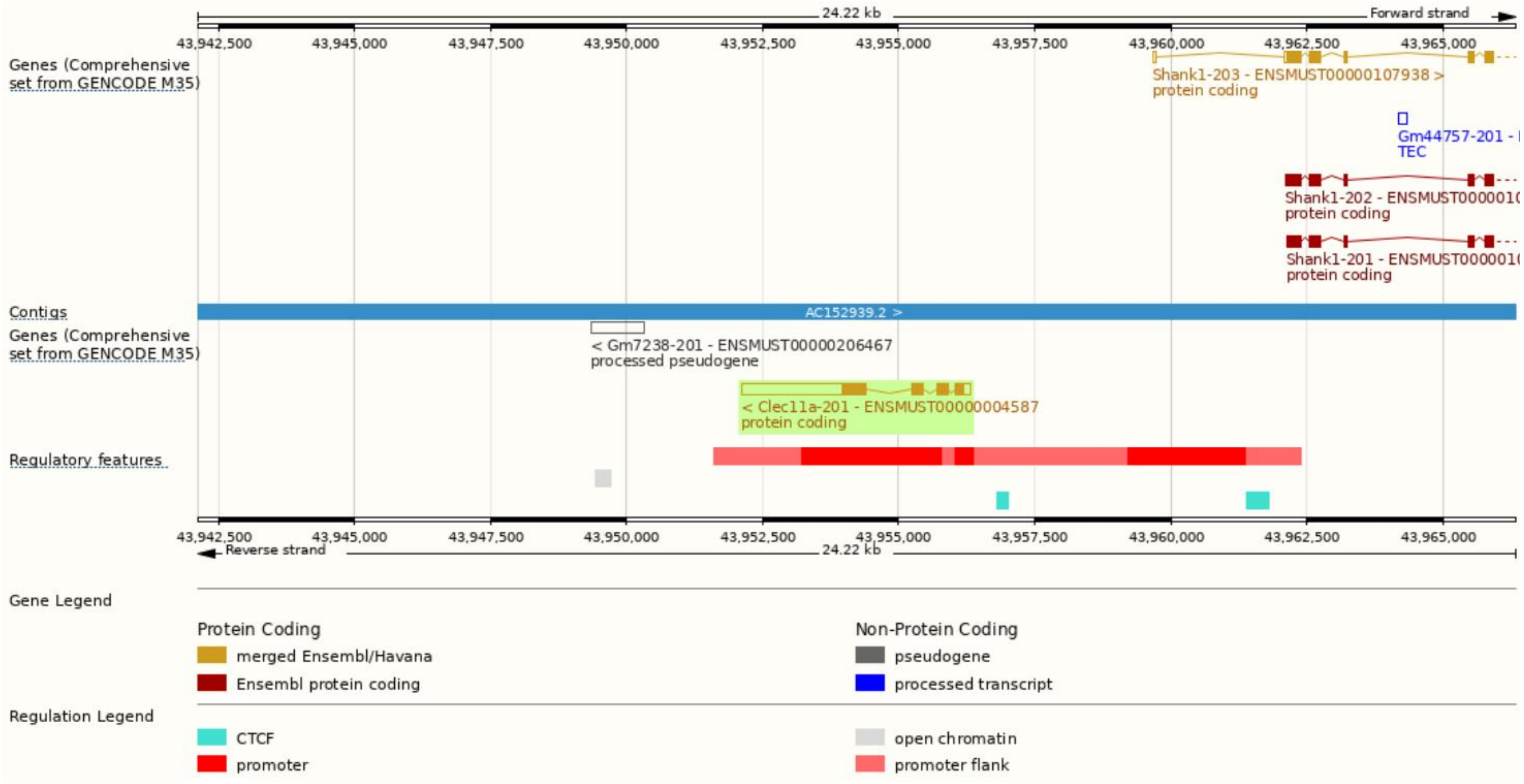
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000004587.11	Clec11a-201	2978	328aa	Protein coding	CCDS21203	O88200	Ensembl Canonical GENCODE basic APPRIS P1 TSL:1

The strategy is based on the design of *Clec11a*-201 transcript, the transcription is shown below:



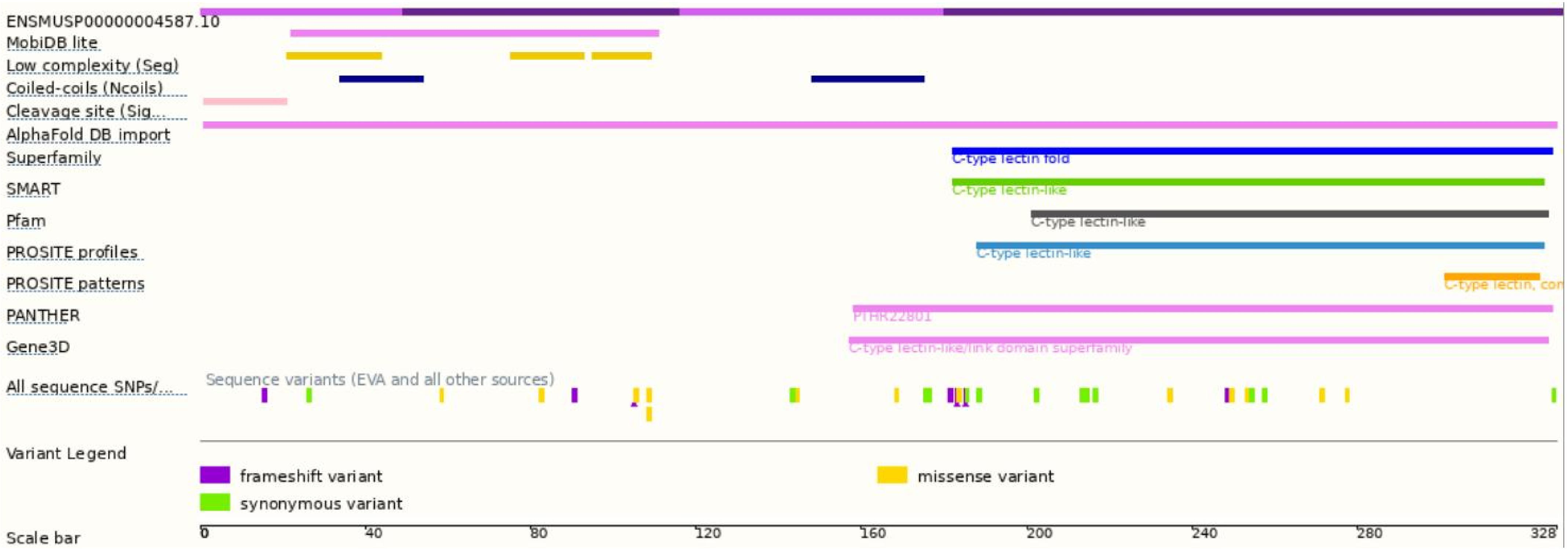
Source: https://www.ensembl.org

Genomic Information

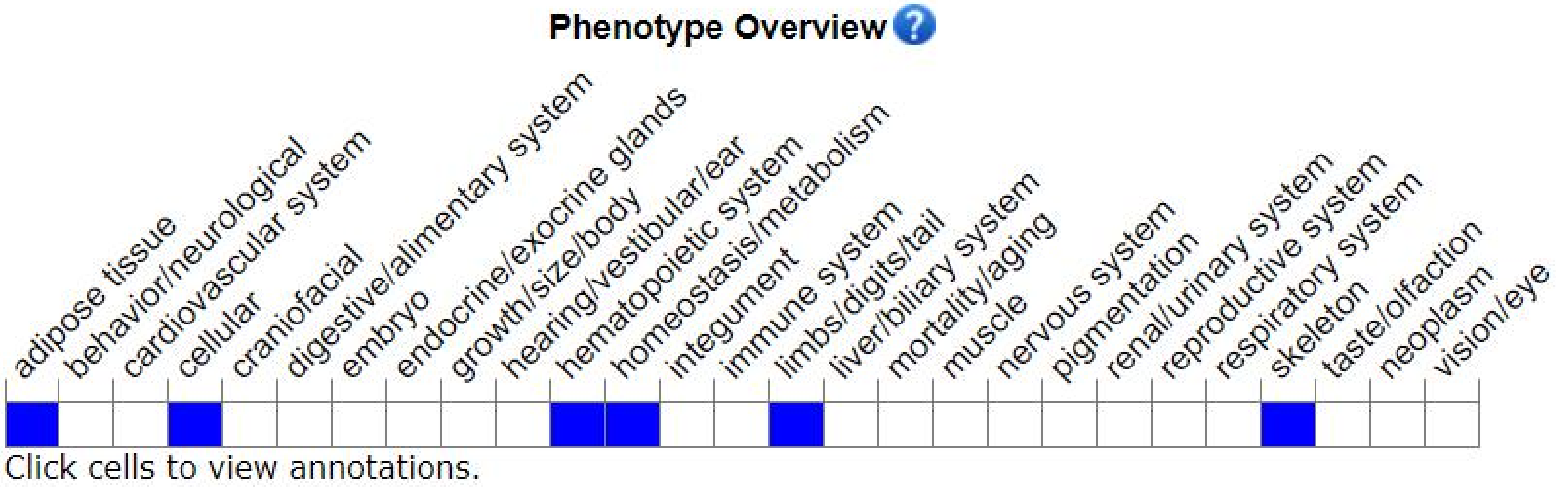


Source: : https://www.ensembl.org

Protein Information



Mouse Phenotype Information (MGI)



- Mice homozygous for a knock-out allele exhibit decreased bone volume in limb bones and vertebrae, reduced bone strength, and delayed fracture healing. Bone marrow stromal cells display impaired osteogenic differentiation.

Important Information

- According to the existing data (MGI), mice homozygous for a knock-out allele exhibit decreased bone volume in limb bones and vertebrae, reduced bone strength, and delayed fracture healing. Bone marrow stromal cells display impaired osteogenic differentiation.
- The Loxp insertion site is about 1.7 kb away from the 5' terminal of *Shank1*, which may affect the 5' terminal regulation of this gene.
- The Loxp insertion site is about 4.5 kb away from the 5' terminal of *Gm7238*, which may affect the 5' terminal regulation of this gene.
- The knockout region contains the start codon ATG, which may be followed by the generation of new ATG. It may generate a new protein and the fuction is unknow.
- *Clec11a* is located on Chr 7. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.