

***Col23a1* Cas9-CKO Strategy**

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Project Overview

Project Name

Col23a1

Project type

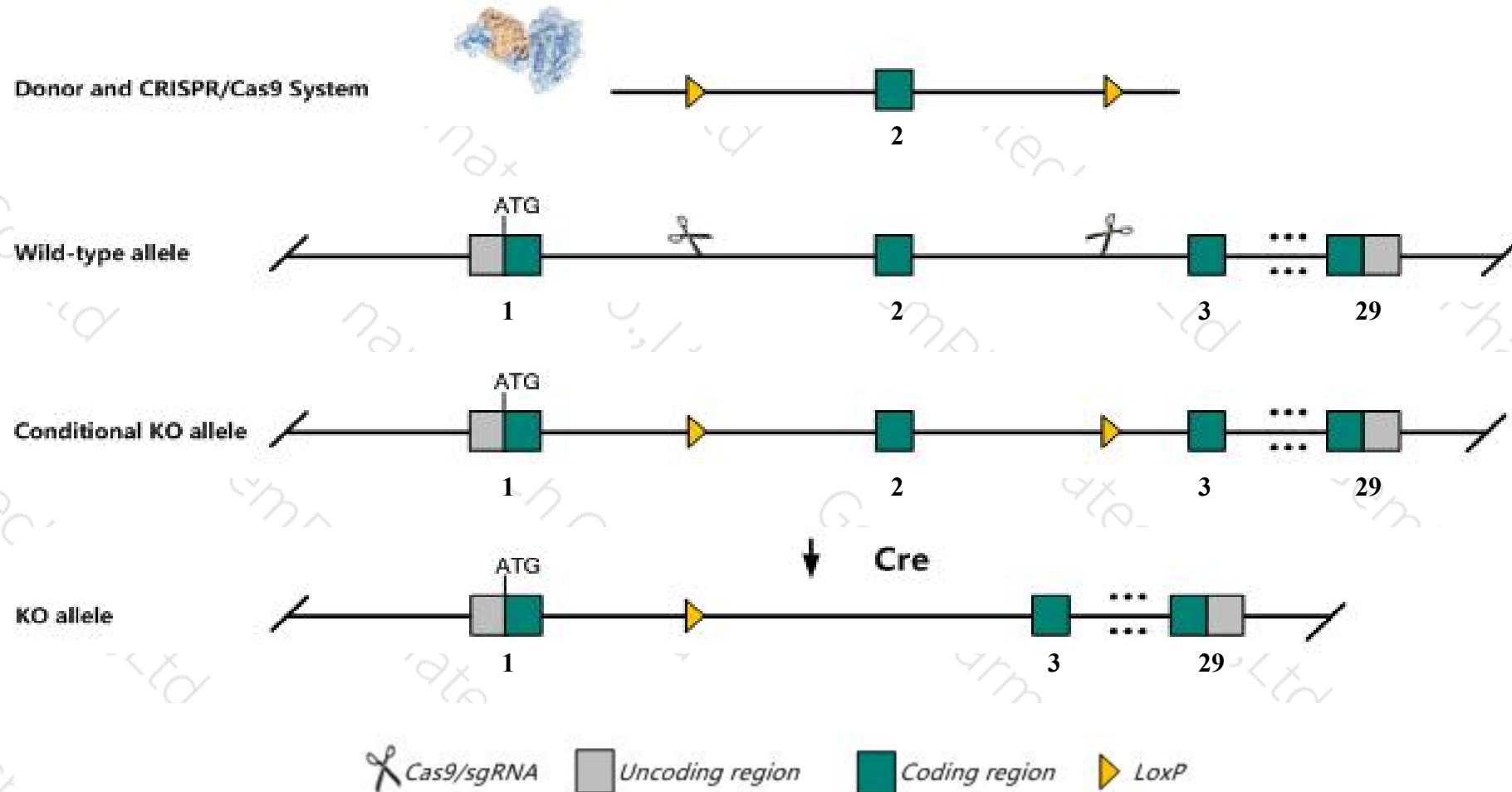
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Col23a1* gene. The schematic diagram is as follows:



Technical routes

- The *Col23a1* gene has 2 transcripts. According to the structure of *Col23a1* gene, exon2 of *Col23a1-201*(ENSMUST00000102765.8) transcript is recommended as the knockout region. The region contains 67bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Col23a1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Col23a1* gene is located on the Chr11. 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.
- Transcript 202 CDS 3' incomplete the influences is unknown.
- 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)

Col23a1 collagen, type XXIII, alpha 1 [Mus musculus (house mouse)]

Gene ID: 237759, updated on 13-Mar-2020

Summary



Official Symbol	Col23a1 provided by MGI
Official Full Name	collagen, type XXIII, alpha 1 provided by MGI
Primary source	MGI:MGI:2653243
See related	Ensembl:ENSMUSG00000063564
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2810458L13Rik, AI429655
Expression	Broad expression in limb E14.5 (RPKM 8.2), lung adult (RPKM 8.0) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

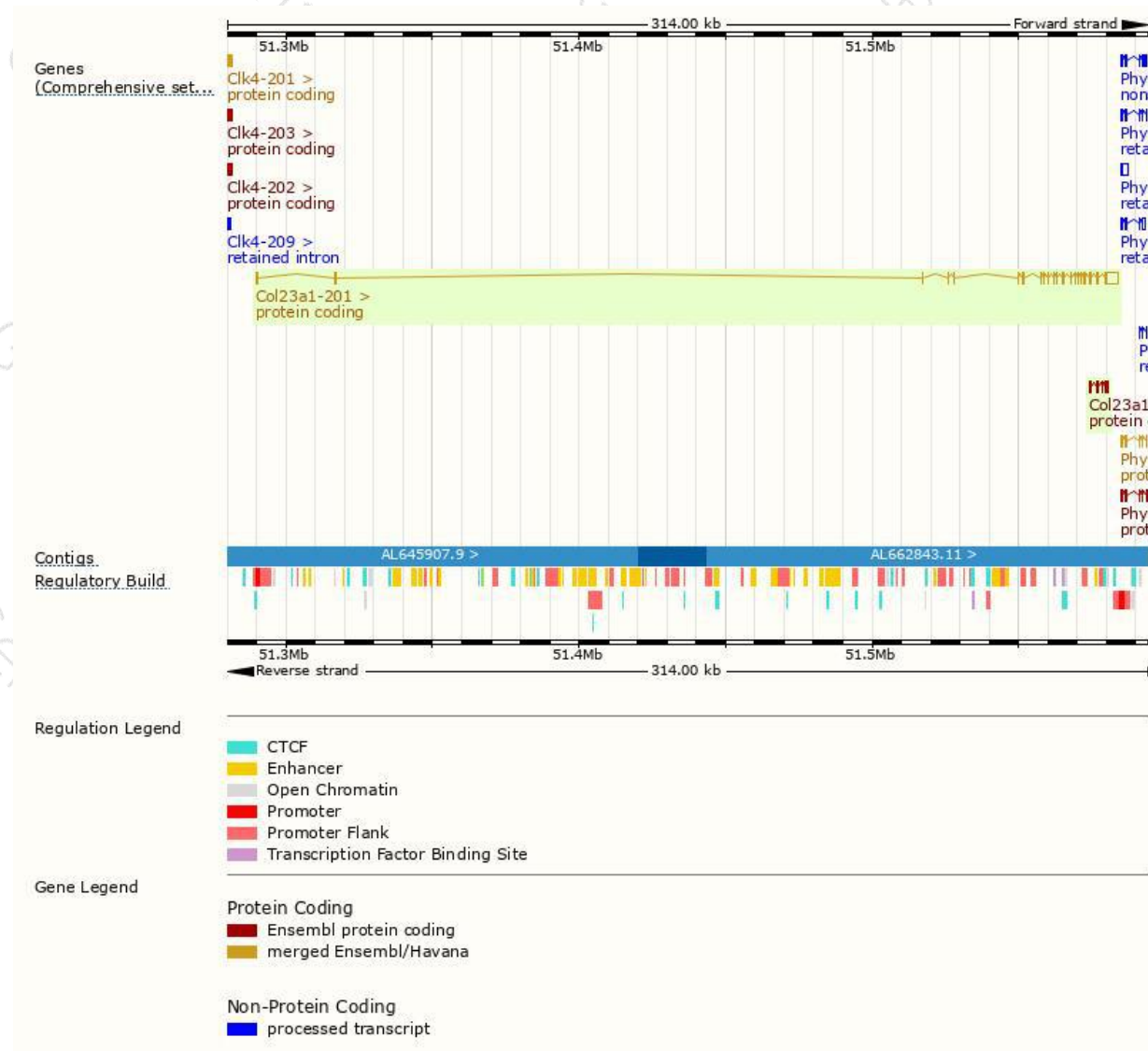
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Col23a1-201	ENSMUST00000102765.8	5658	532aa	Protein coding	CCDS24652	Q8K4G2	TSL:5 GENCODE basic APPRIS P1
Col23a1-202	ENSMUST00000151098.1	521	95aa	Protein coding	-	B1ATK5	CDS 5' incomplete TSL:5

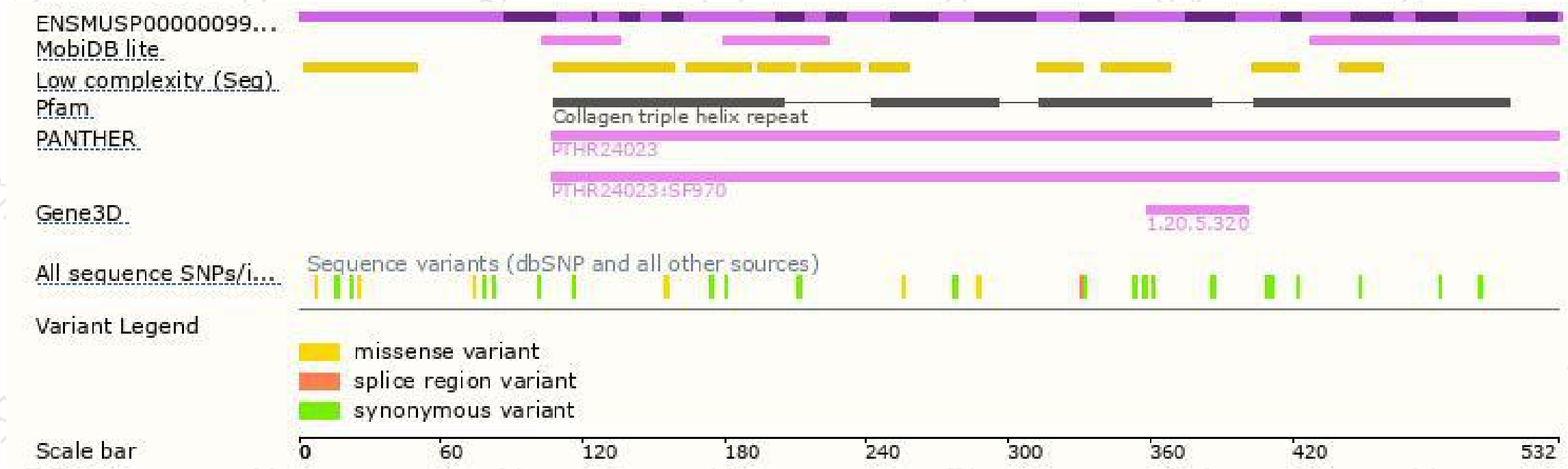
The strategy is based on the design of *Col23a1-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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