

K1 Cas9-CKO Strategy

Designer: Xiaojing Li

Reviewer: Jia Yu

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Overview

Target Gene Name

- K1

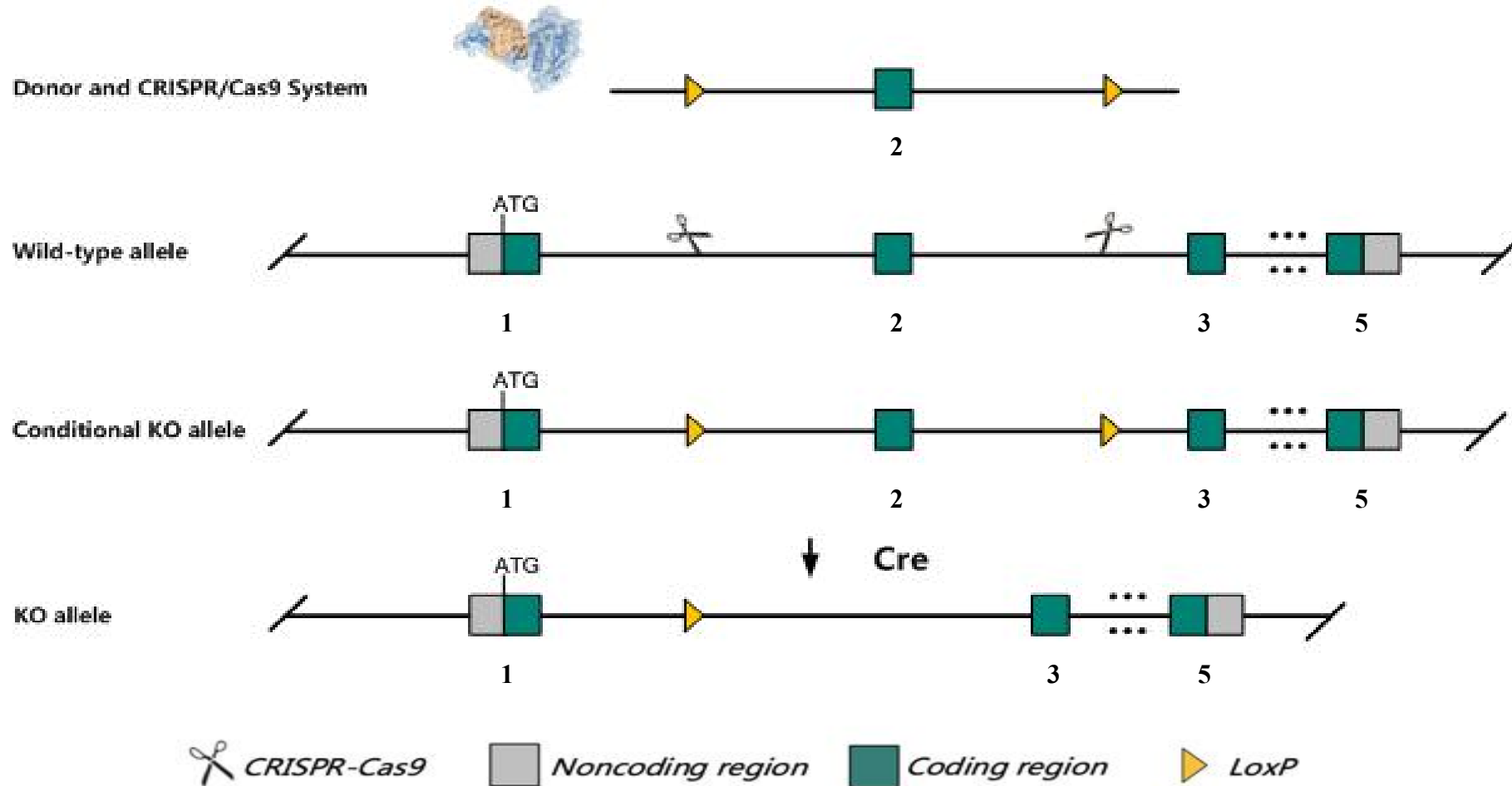
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



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

Technical Information

- The *Kl* gene has 2 transcripts. According to the structure of *Kl* gene, exon2 of *Kl*-201 (ENSMUST00000078856.8) transcript is recommended as the knockout region. The region contains 511bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Kl* 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

KI klotho [Mus musculus (house mouse)]

Gene ID: 16591, updated on 13-Mar-2020

Summary

Official Symbol	KI provided by MGI
Official Full Name	klotho provided by MGI
Primary source	MGI:MGI:1101771
See related	Ensembl:ENSMUSG00000058488
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	alpha-kl
Expression	Restricted expression toward kidney adult (RPKM 58.5) See more
Orthologs	human all

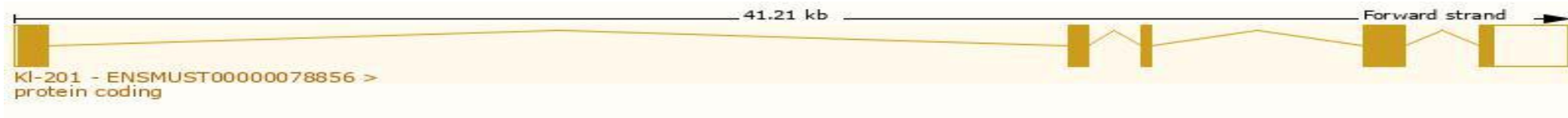
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

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

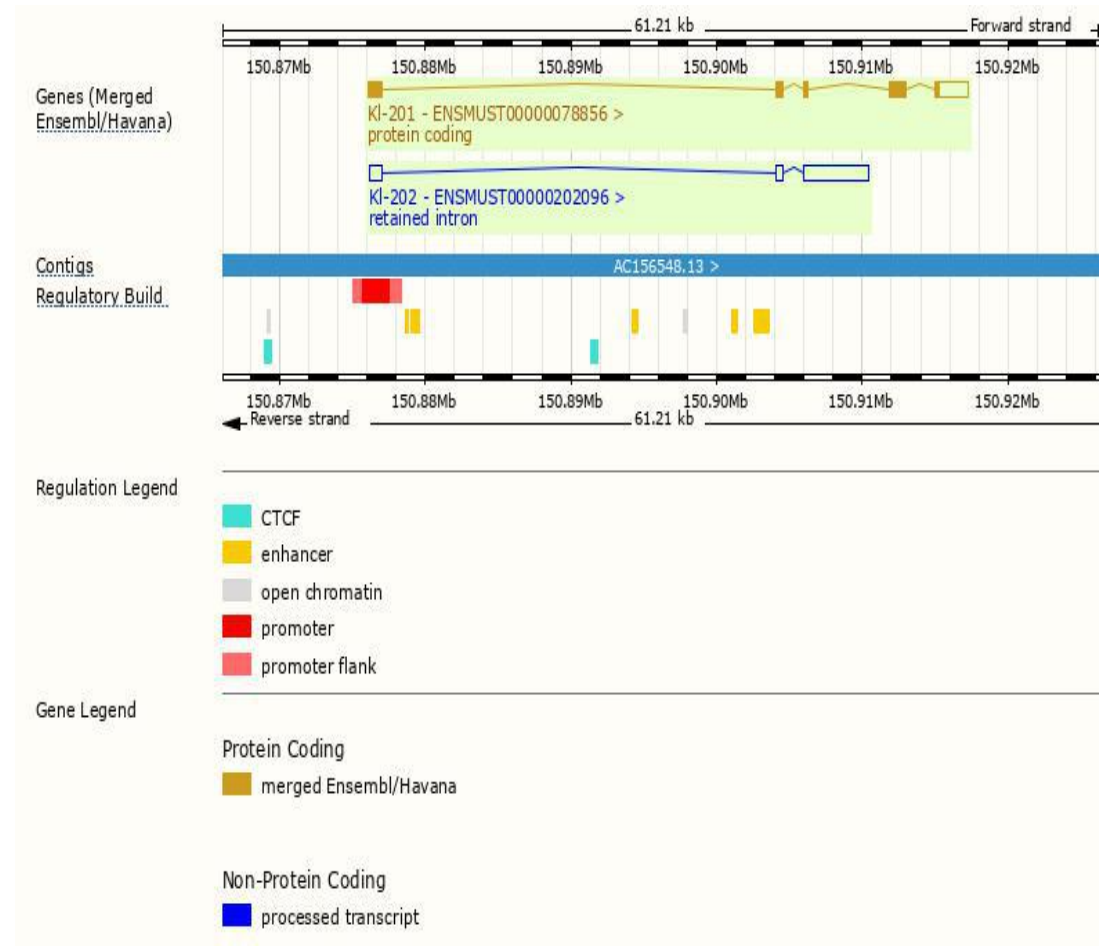
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000078856.8	KI-201	5118	1014aa	Protein coding	CCDS19889	O35082-1	Ensembl Canonical Gencode basic APPRIS P1 TSL:1
ENSMUST00000202096.2	KI-202	5828	No protein	Retained intron		-	TSL:1

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



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

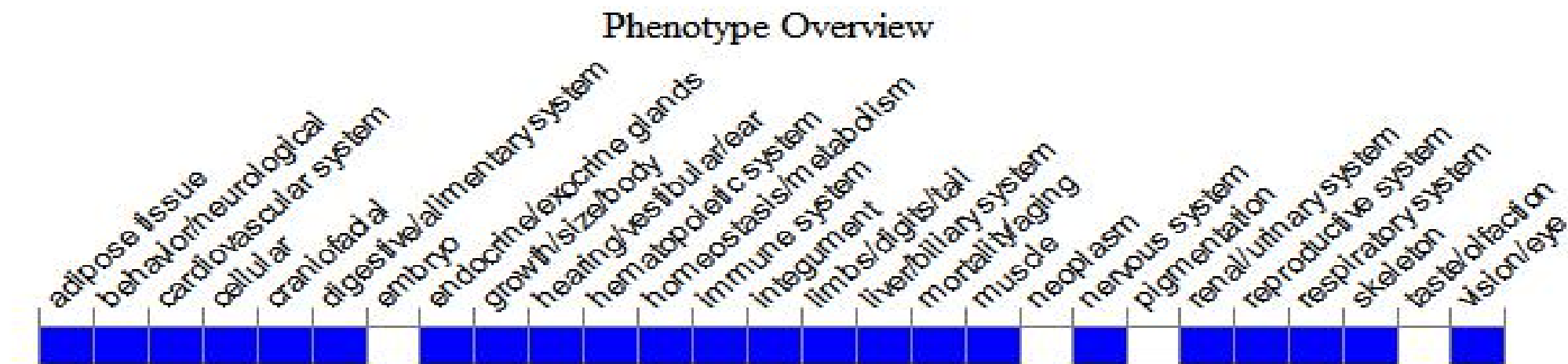
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



- Homozygous mutant mice have a short lifespan and growth retardation with one allele homeostatic imbalances and soft tissue calcification are also seen. With a second allele abnormal cancellous bone and femur morphology are seen.

Important Information

- *Kl* is located on Chr5. 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.