

Ulk1 Cas9-CKO Strategy

Designer:

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Design Date:

2019-7-25

Project Overview

Project Name

Ulk1

Project type

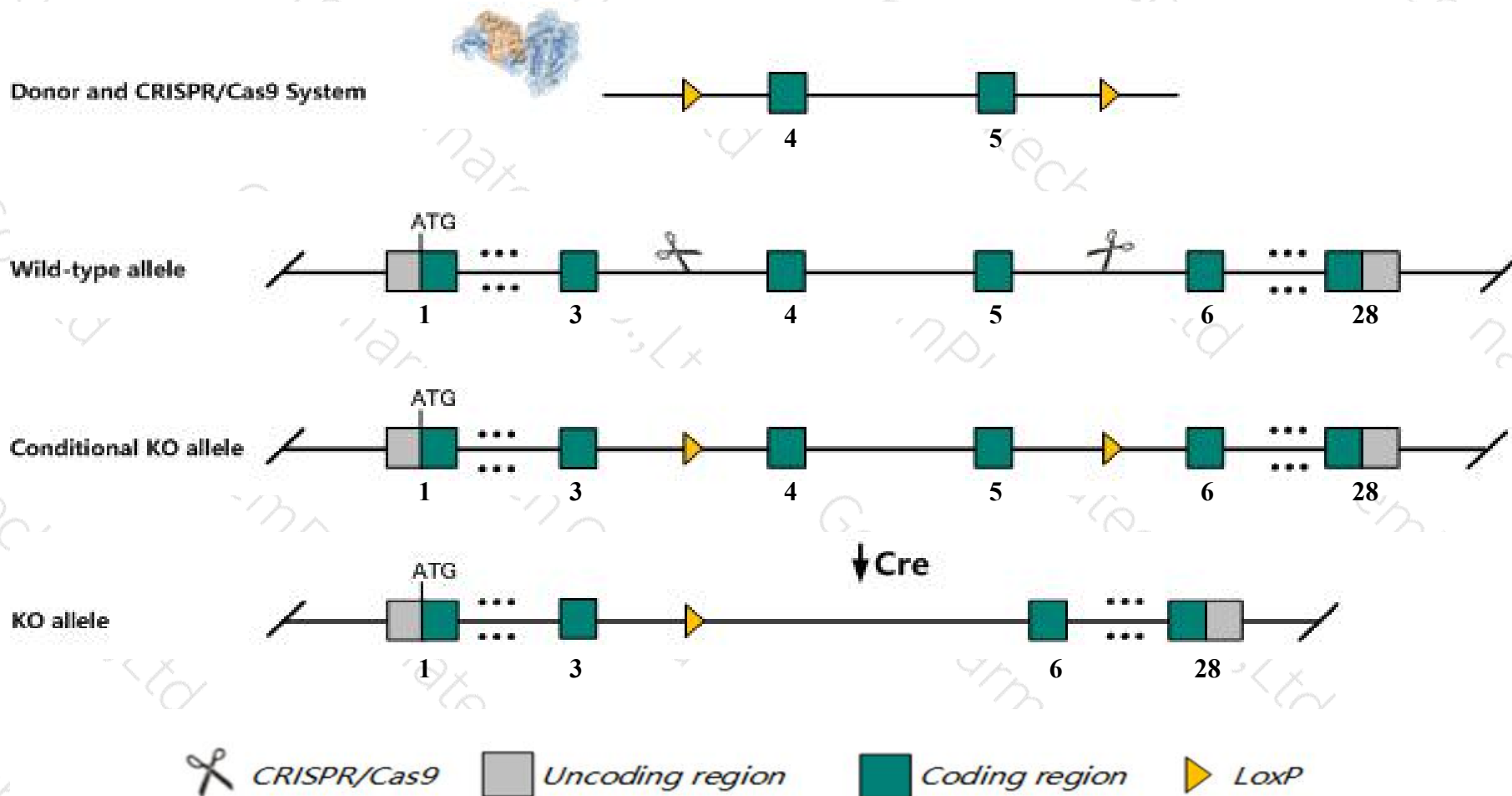
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ulk1* gene. The schematic diagram is as follows:



Technical routes

- The *Ulk1* gene has 11 transcripts. According to the structure of *Ulk1* gene, exon4-exon5 of *Ulk1-201* (ENSMUST00000031490.10) transcript is recommended as the knockout region. The region contains 70bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ulk1* 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.

- According to the existing MGI data, Null homozygotes have blood defects including an increase in mean corpuscular volume and the presence of red blood cells that contain mitochondria.
- The *Ulk1* gene is located on the Chr5. 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)

Ulk1 unc-51 like kinase 1 [Mus musculus (house mouse)]

Gene ID: 22241, updated on 31-Jan-2019

Summary



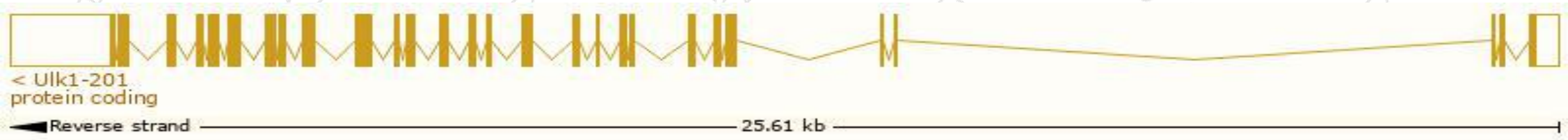
Official Symbol	Ulk1 provided by MGI
Official Full Name	unc-51 like kinase 1 provided by MGI
Primary source	MGI:MGI:1270126
See related	Ensembl:ENSMUSG00000029512
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AU041434, Unc51.1, mKIAA0722
Expression	Ubiquitous expression in thymus adult (RPKM 26.1), adrenal adult (RPKM 23.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

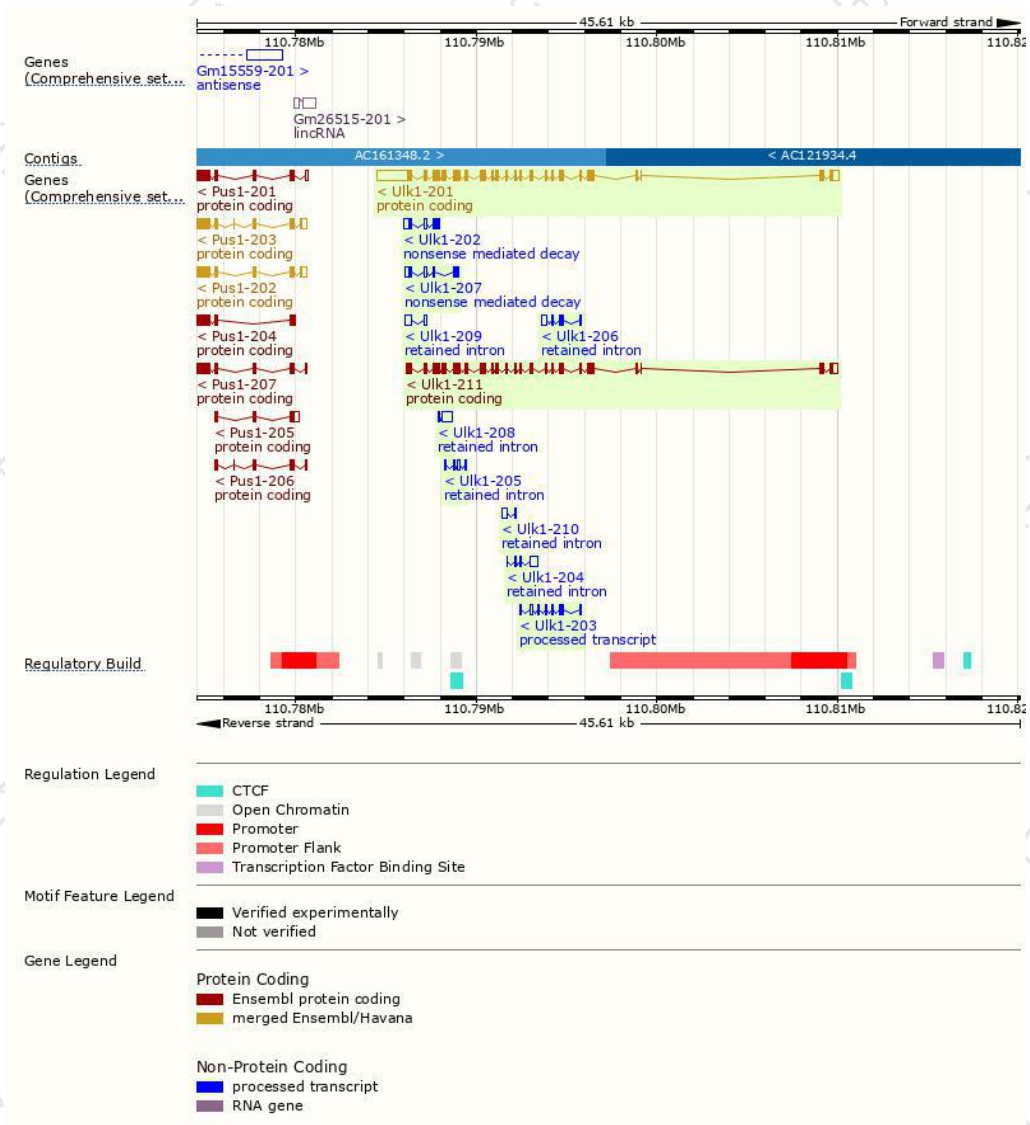
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
UIk1-201	ENSMUST00000031490.10	5213	1051aa	Protein coding	CCDS19532	A0A0R4J0B3	TSL:1 GENCODE basic APPRIS P3
UIk1-211	ENSMUST000000200299.1	3581	1057aa	Protein coding	CCDS84930	Q6PB82	TSL:1 GENCODE basic APPRIS ALT 2
UIk1-207	ENSMUST000000198561.1	851	86aa	Nonsense mediated decay	-	A0A0G2JFU2	CDS 5' incomplete TSL:5
UIk1-202	ENSMUST000000196094.4	783	84aa	Nonsense mediated decay	-	A0A0G2JG09	CDS 5' incomplete TSL:5
UIk1-203	ENSMUST000000196440.4	675	No protein	Processed transcript	-	-	TSL:5
UIk1-204	ENSMUST000000196883.1	645	No protein	Retained intron	-	-	TSL:3
UIk1-208	ENSMUST000000199568.1	613	No protein	Retained intron	-	-	TSL:2
UIk1-206	ENSMUST000000198470.1	599	No protein	Retained intron	-	-	TSL:3
UIk1-209	ENSMUST000000199717.1	535	No protein	Retained intron	-	-	TSL:2
UIk1-210	ENSMUST000000200099.1	420	No protein	Retained intron	-	-	TSL:3
UIk1-205	ENSMUST000000197768.1	356	No protein	Retained intron	-	-	TSL:5

The strategy is based on the design of *Ulk1-201* transcript,The transcription is shown below



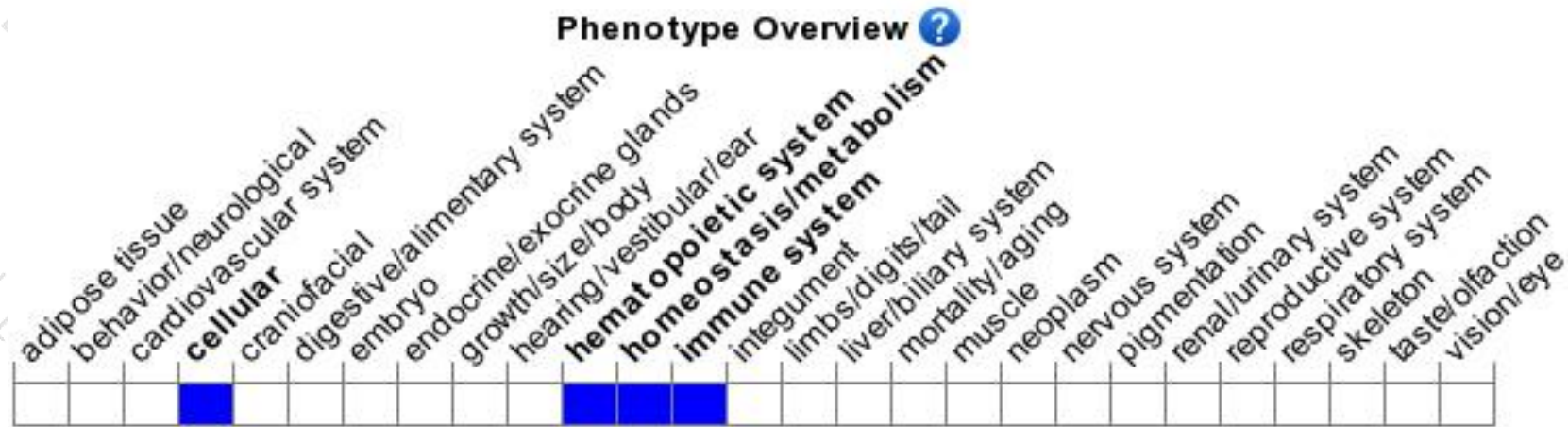
Genomic location distribution



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/>).

According to the existing MGI data, Null homozygotes have blood defects including an increase in mean corpuscular volume and the presence of red blood cells that contain mitochondria.

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

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