# *Ulk1* Cas9-KO Strategy

**Designer:** Huan Fan

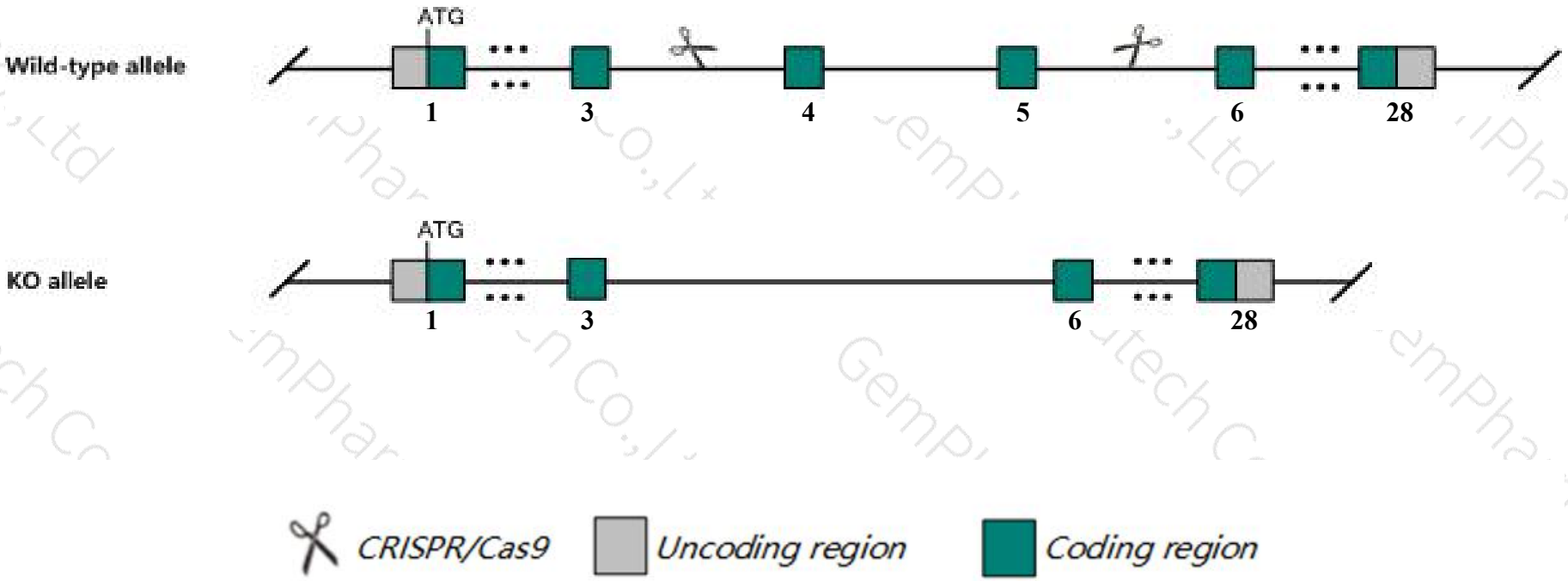
**Design Date:** 2019-7-25

# Project Overview

| | |
|---|---|
| **Project Name** | ***Ulk1*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# 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 v

# Notice

- 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information（NCBI）

集萃药康 GemPharmatech

## 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 |

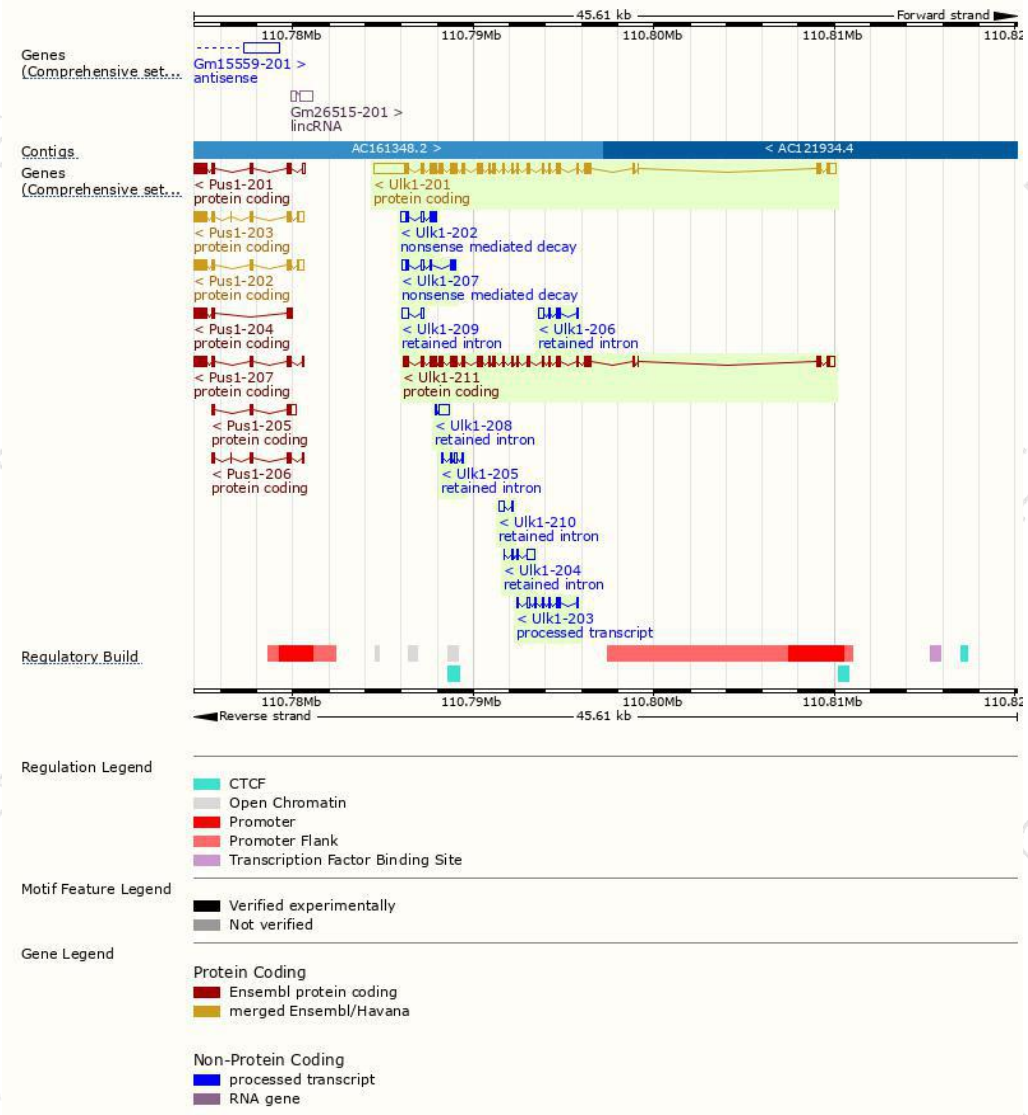
# Transcript information（Ensembl）

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

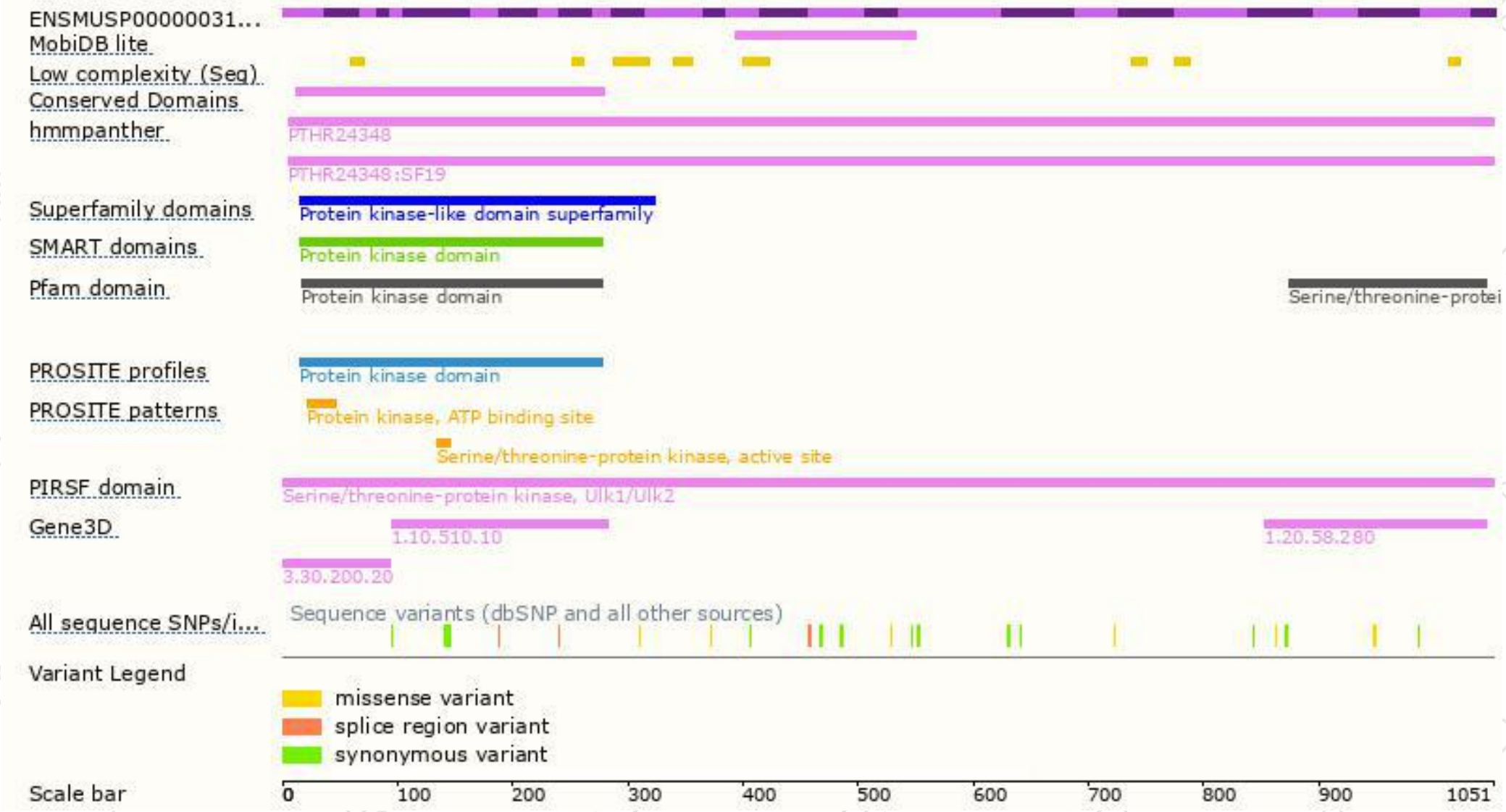
| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| Ulk1-201 | ENSMUST00000031490.10 | 5213 | 1051aa | Protein coding | CCDS19532 | A0A0R4J0B3 | TSL:1 GENCODE basic APPRIS P3 |
| Ulk1-211 | ENSMUST00000200299.1 | 3581 | 1057aa | Protein coding | CCDS84930 | Q6PB82 | TSL:1 GENCODE basic APPRIS ALT2 |
| Ulk1-207 | ENSMUST00000198561.1 | 851 | 86aa | Nonsense mediated decay | - | A0A0G2JFU2 | CDS 5' incomplete TSL:5 |
| Ulk1-202 | ENSMUST00000196094.4 | 783 | 84aa | Nonsense mediated decay | - | A0A0G2JG09 | CDS 5' incomplete TSL:5 |
| Ulk1-203 | ENSMUST00000196440.4 | 675 | No protein | Processed transcript | - | - | TSL:5 |
| Ulk1-204 | ENSMUST00000196883.1 | 645 | No protein | Retained intron | - | - | TSL:3 |
| Ulk1-208 | ENSMUST00000199568.1 | 613 | No protein | Retained intron | - | - | TSL:2 |
| Ulk1-206 | ENSMUST00000198470.1 | 599 | No protein | Retained intron | - | - | TSL:3 |
| Ulk1-209 | ENSMUST00000199717.1 | 535 | No protein | Retained intron | - | - | TSL:2 |
| Ulk1-210 | ENSMUST00000200099.1 | 420 | No protein | Retained intron | - | - | TSL:3 |
| Ulk1-205 | ENSMUST00000197768.1 | 356 | No protein | Retained intron | - | - | TSL:5 |

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

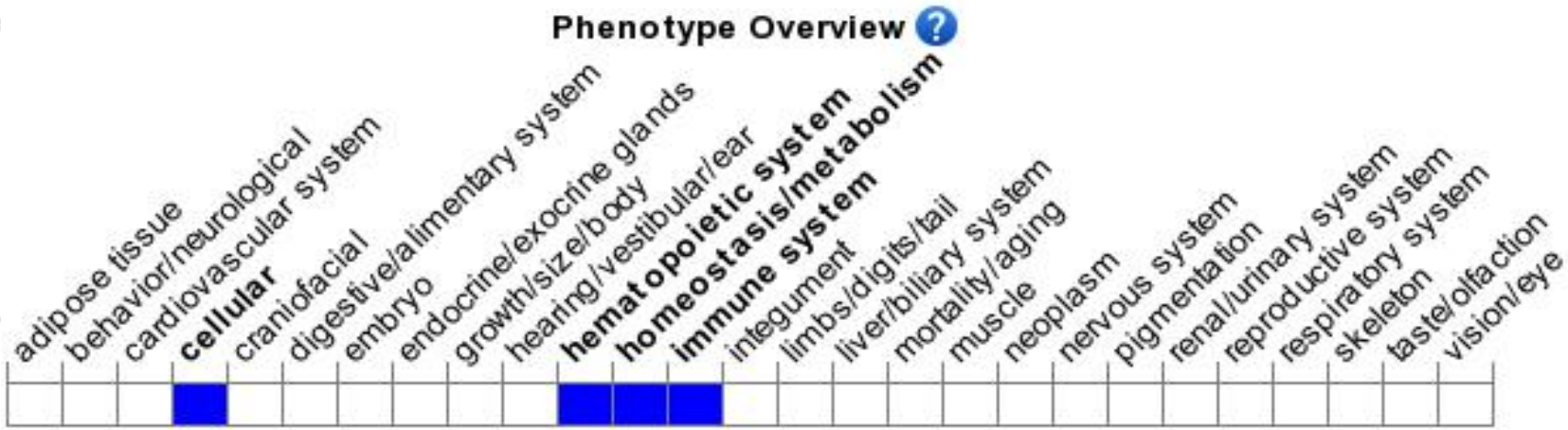
# Genomic location distribution



# 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.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd