

# ***Cdkl1* Cas9-CKO Strategy**

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# Project Overview

**Project Name**

*Cdkl1*

**Project type**

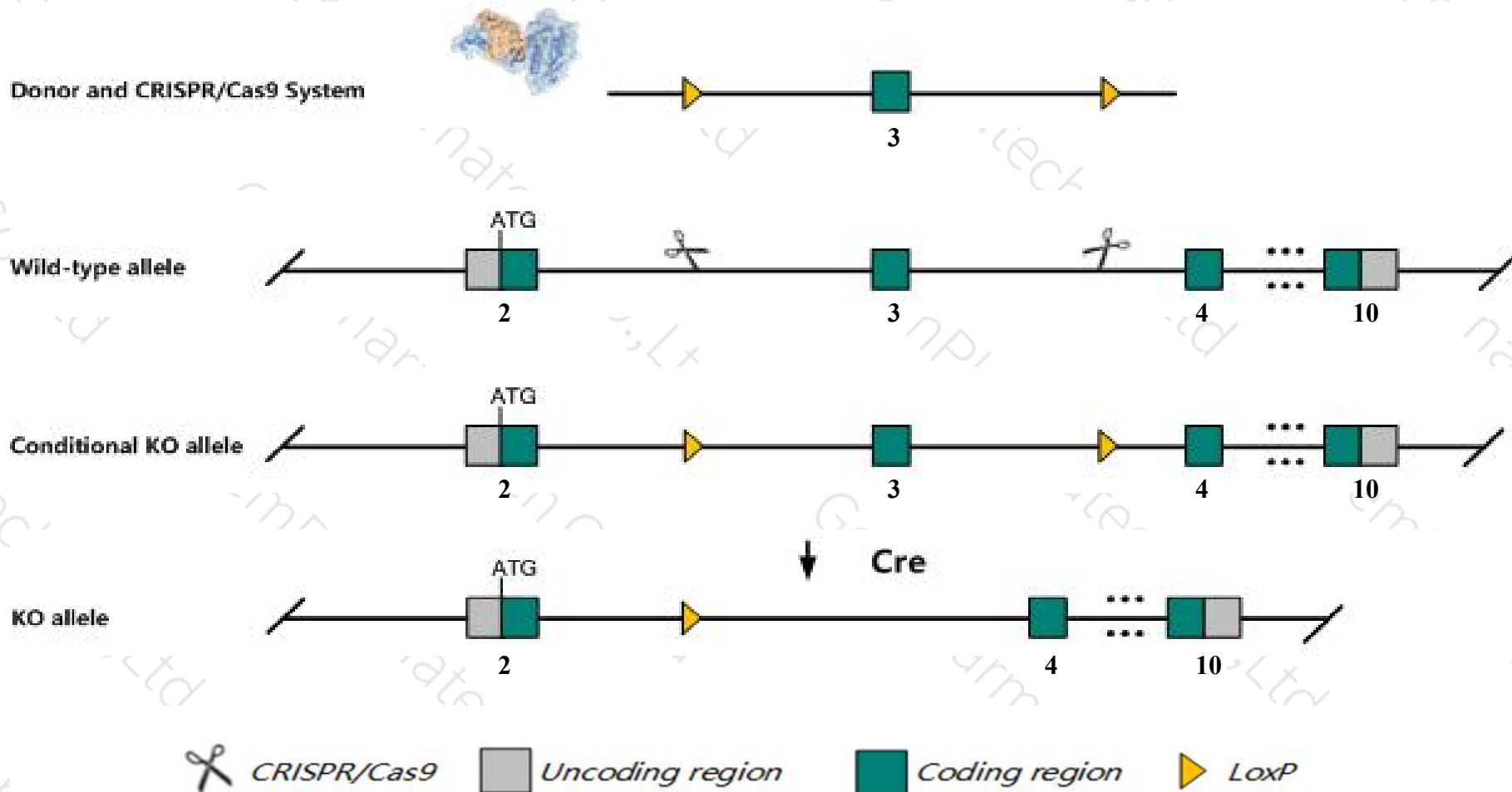
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdkl1* gene. The schematic diagram is as follows:



# Technical routes

- The *Cdkl1* gene has 2 transcripts. According to the structure of *Cdkl1* gene, exon3 of *Cdkl1-201* (ENSMUST00000021377.4) transcript is recommended as the knockout region. The region contains 122bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cdkl1* 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.

# Notice

- The *Cdkl1* gene is located on the Chr12. 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)

## Cdkl1 cyclin-dependent kinase-like 1 (CDC2-related kinase) [ *Mus musculus* (house mouse) ]

Gene ID: 71091, updated on 14-Aug-2019

### Summary

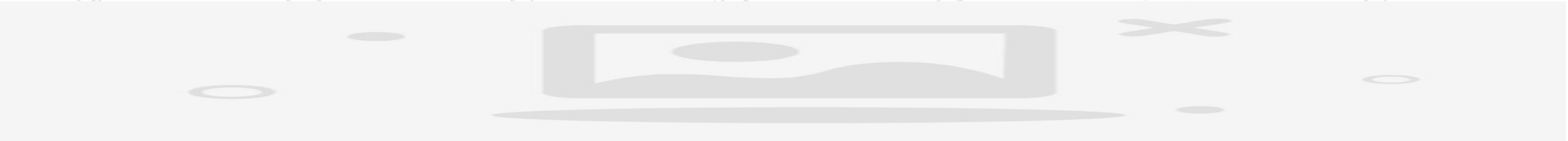
Official Symbol	Cdkl1 provided by <a href="#">MGI</a>
Official Full Name	cyclin-dependent kinase-like 1 (CDC2-related kinase) provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1918341</a>
See related	<a href="#">Ensembl:ENSMUSG000000020990</a>
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4933411O17Rik
Expression	Biased expression in kidney adult (RPKM 23.9), ovary adult (RPKM 3.4) and 7 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

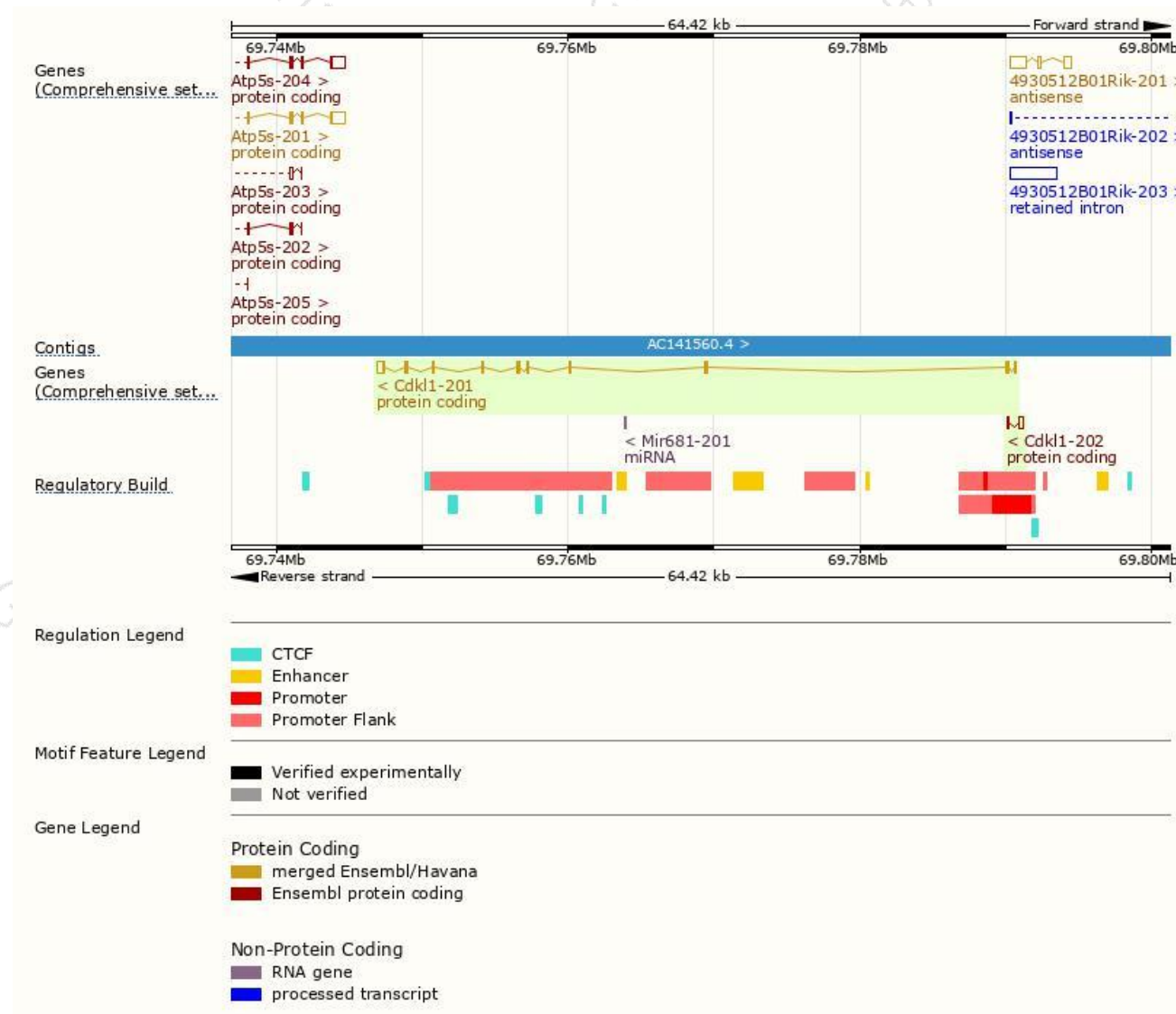
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdkl1-201	<a href="#">ENSMUST00000021377.4</a>	1689	<a href="#">352aa</a>	Protein coding	<a href="#">CCDS25955</a>	<a href="#">Q14BG3</a> <a href="#">Q8CEQ0</a>	TSL:1 GENCODE basic APPRIS P1
Cdkl1-202	<a href="#">ENSMUST00000221646.1</a>	465	<a href="#">1aa</a>	Protein coding	-	-	CDS 3' incomplete TSL:2

The strategy is based on the design of *Cdkl1-201* transcript,The transcription is shown below



# Genomic location distribution





# Protein domain

ENSMUSP00000021...

Conserved Domains

hmmpanther

PTHR24056:SF192

PTHR24056

Superfamily domains

Protein kinase-like domain superfamily

SMART domains

Protein kinase domain

Pfam domain

Protein kinase domain

PROSITE profiles

Protein kinase domain

PROSITE patterns

Protein kinase, ATP binding site

Serine/threonine-protein kinase, active site

Gene3D

3.30.200.20

1.10.510.10

All sequence SNPs/i...

Sequence variants (dbSNP and all other sources)

Variant Legend

 synonymous variant

Scale bar

0 40 80 120 160 200 240 280 320 352

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

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