

Acly Cas9-CKO Strategy

Designer:

Daohua Xu

Project Overview

Project Name

Acly

Project type

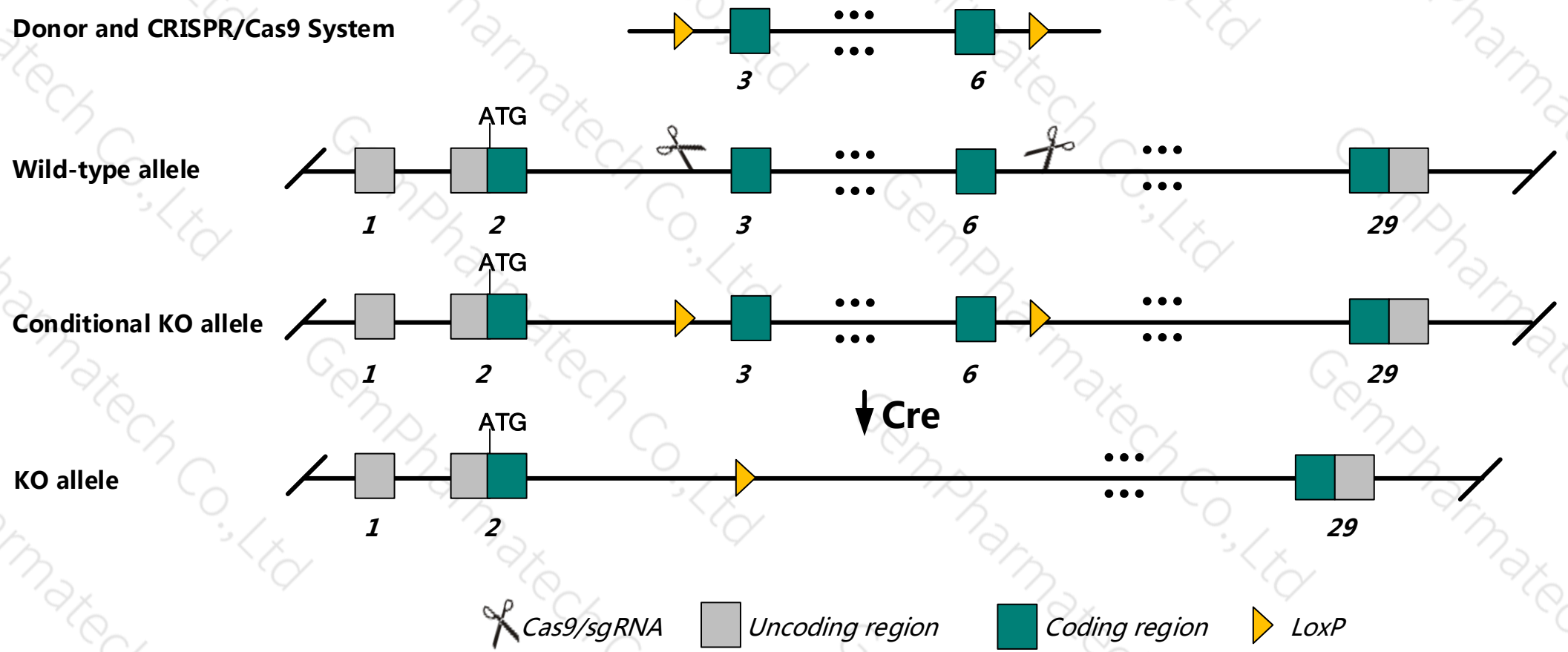
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Acly* gene has 7 transcripts. According to the structure of *Acly* gene, exon3-exon6 of *Acly*-203 (ENSMUST00000107389.7) transcript is recommended as the knockout region. The region contains 457bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acly* 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 or cell types.

- According to the existing MGI data , Homozygous null mutation of this gene results in embryonic lethality. Heterozygous mutants display no obvious abnormalities. Mice homozygous for a transgenic gene disruption exhibit embryonic lethality at E7.
- The *Acly* 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.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)



Acly ATP citrate lyase [*Mus musculus* (house mouse)]

Gene ID: 104112, updated on 5-Jul-2019

Summary

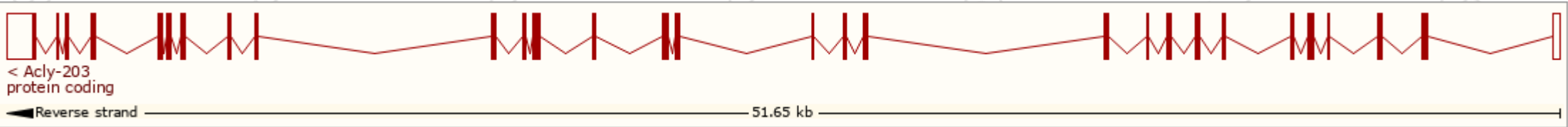
Official Symbol	Acly provided by MGI
Official Full Name	ATP citrate lyase provided by MGI
Primary source	MGI:MGI:103251
See related	Ensembl:ENSMUSG00000020917
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW538652; A730098H14Rik
Expression	Broad expression in subcutaneous fat pad adult (RPKM 333.0), mammary gland adult (RPKM 298.7) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

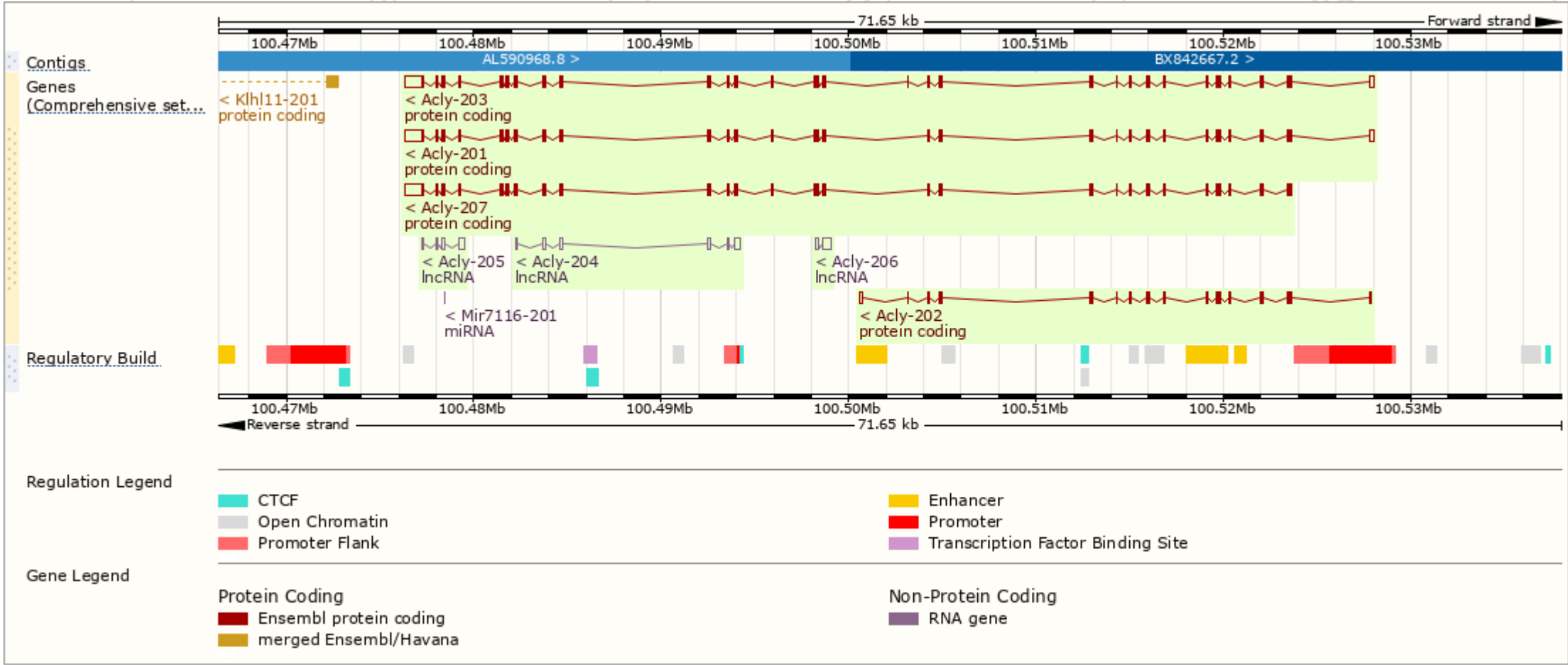
The gene has 7 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Acly-203	ENSMUST00000107389.7	4426	1101aa	Protein coding	CCDS56807	Q3V117	TSL:1	GENCODE basic APPRIS ALT1
Acly-201	ENSMUST00000007131.15	4393	1091aa	Protein coding	CCDS25425	Q91V92	TSL:1	GENCODE basic APPRIS P3
Acly-207	ENSMUST00000165111.7	4162	1091aa	Protein coding	CCDS25425	Q91V92	TSL:1	GENCODE basic APPRIS P3
Acly-202	ENSMUST00000107385.1	1741	491aa	Protein coding	-	Q3TS02	TSL:1	GENCODE basic
Acly-204	ENSMUST00000152969.1	772	No protein	lncRNA	-	-	TSL:2	
Acly-205	ENSMUST00000154151.1	601	No protein	lncRNA	-	-	TSL:1	
Acly-206	ENSMUST00000154888.1	584	No protein	lncRNA	-	-	TSL:3	

The strategy is based on the design of *Acly*-203 transcript, The transcription is shown below



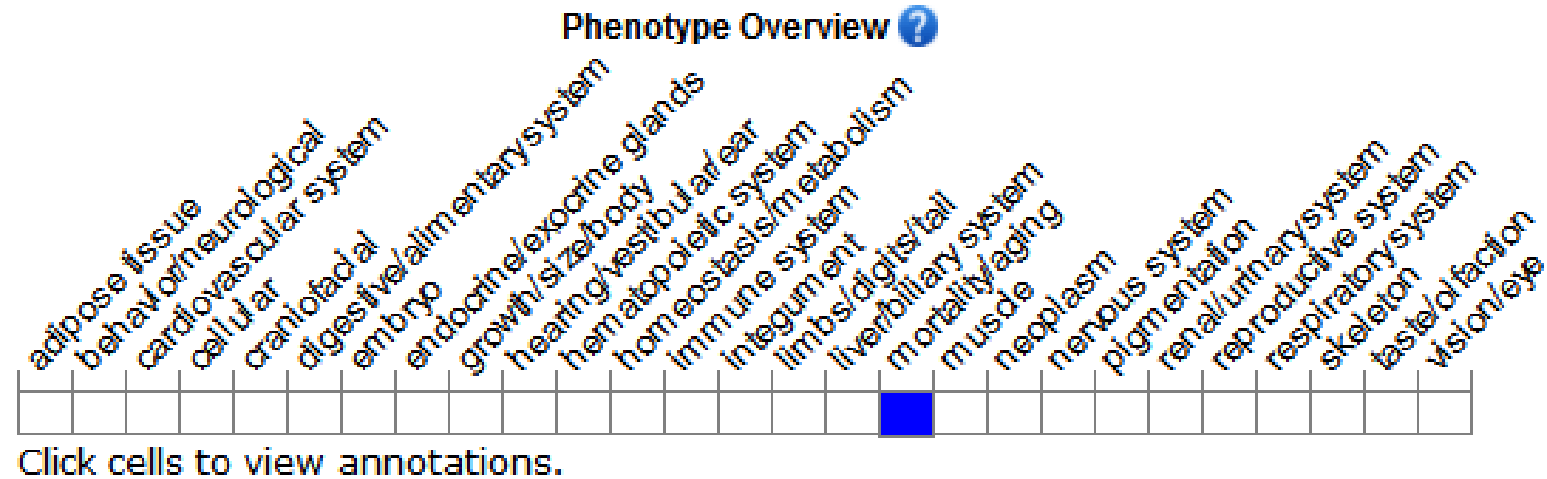
Genomic location distribution



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, Homozygous null mutation of this gene results in embryonic lethality.

Heterozygous mutants display no obvious abnormalities. Mice homozygous for a transgenic gene disruption exhibit embryonic lethality at E7.

If you have any questions, you are welcome to inquire.
Tel: 025-5864 1534



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