Lcn2 Cas9-CKO Strategy

Designer: **Huan Wang**

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Project Overview

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Project Name	***Lcn2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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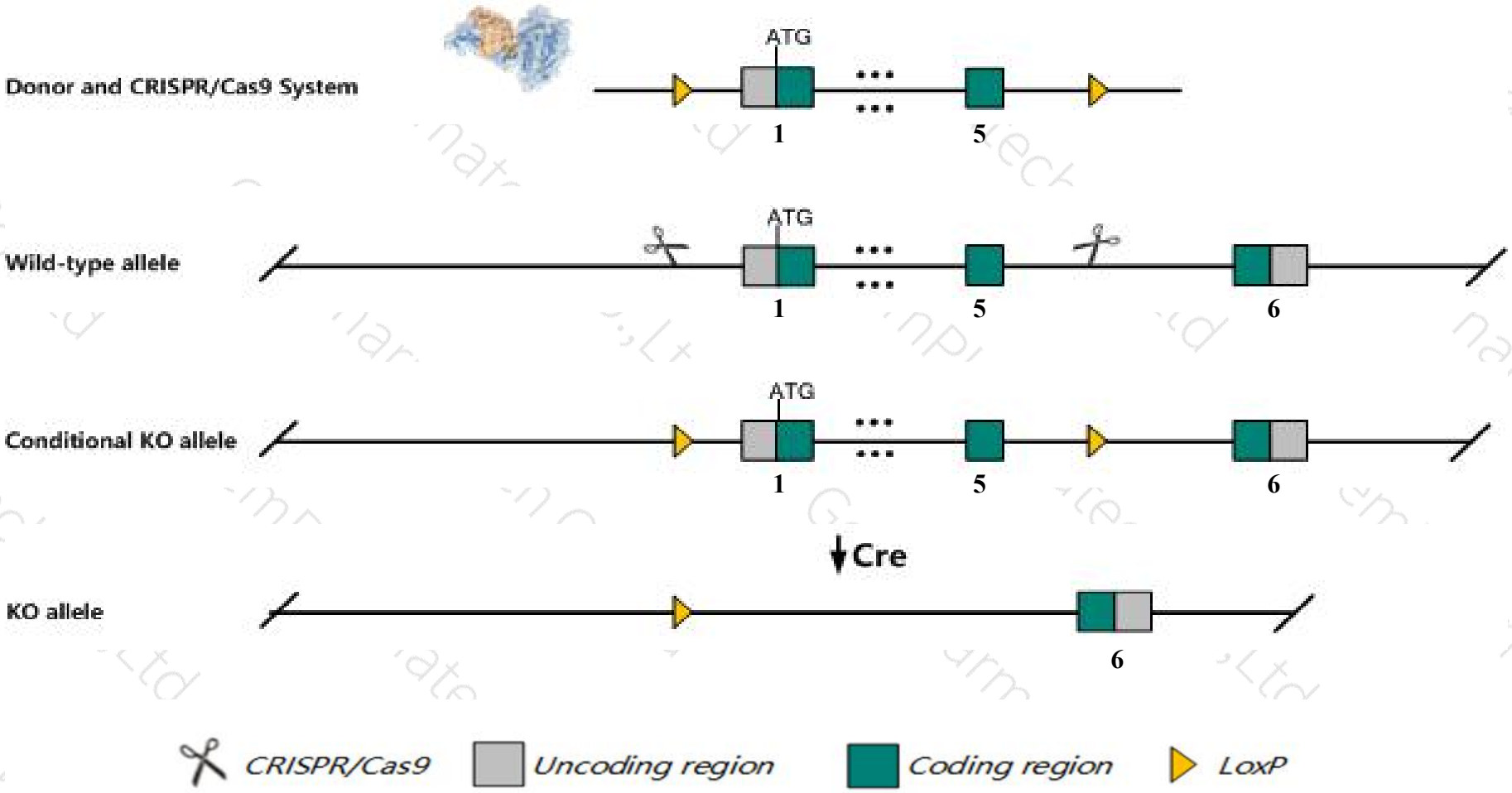
This model will use CRISPR/Cas9 technology to edit the *Lcn2* gene. The schematic diagram is as follows:



Technical routes

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- The *Lcn2* gene has 6 transcripts. According to the structure of *Lcn2* gene, exon1-exon5 of *Lcn2-201* (ENSMUST00000050785.13) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Lcn2* 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

- According to the existing MGI data,Homozygous mutants are more susceptible to infection with bacteria that utilize enterochelin-type siderophores to acquire iron and impaired thermogenesis. Mice homozygous for another knock-out allele exhibit apoptotic defects in hematopoietic cells.

- The *Lcn2* gene is located on the Chr2. 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）

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Lcn2 lipocalin 2 [Mus musculus (house mouse)]

Gene ID: 16819, updated on 9-Apr-2019

Summary

Official Symbol	Lcn2 provided by MGI
Official Full Name	lipocalin 2 provided by MGI
Primary source	MGI:MGI:96757
See related	Ensembl:ENSMUSG00000026822
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	24p3, AW212229, NRL, Sip24
Expression	Biased expression in genital fat pad adult (RPKM 1633.0), liver E18 (RPKM 272.6) and 3 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

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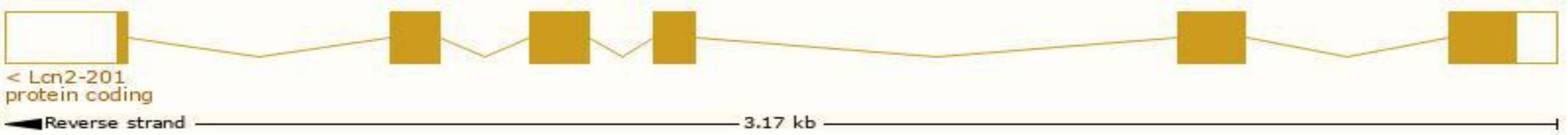
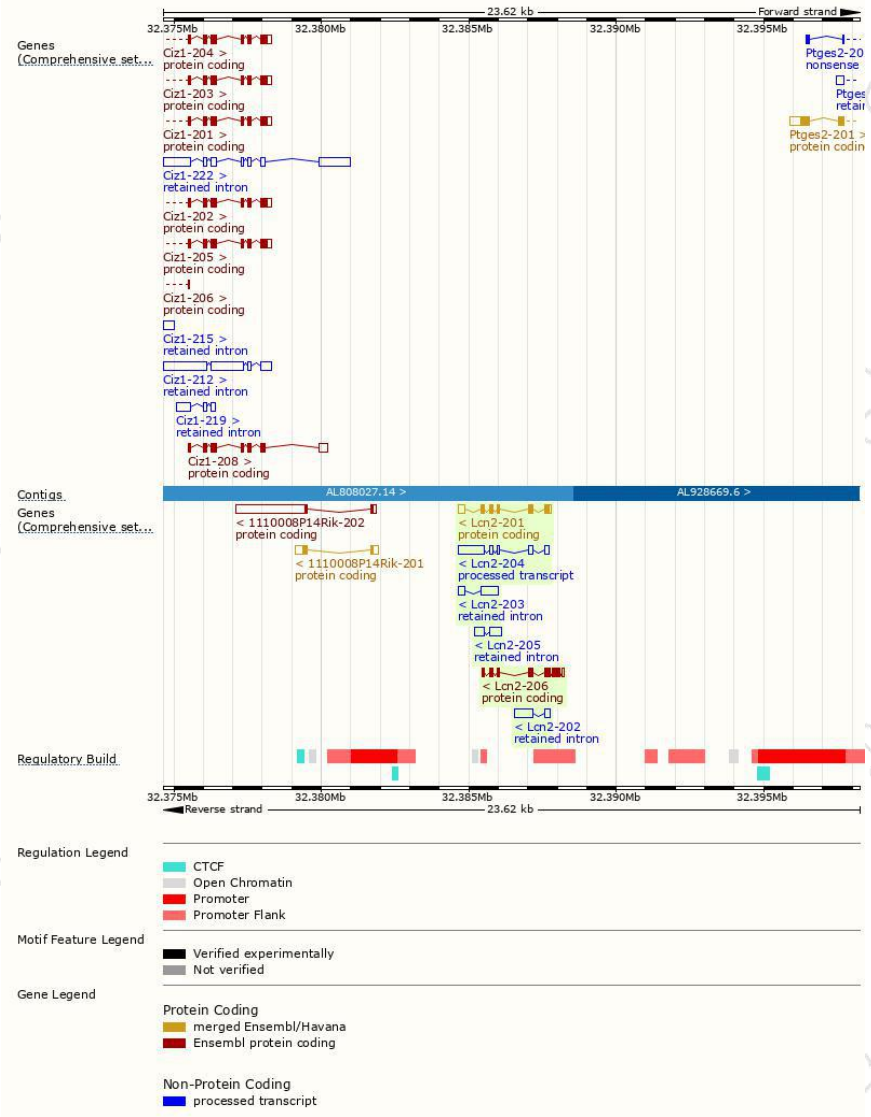
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lcn2-201	ENSMUST00000050785.13	915	200aa	Protein coding	CCDS15913	P11672	TSL:1 GENCODE basic APPRIS P1
Lcn2-206	ENSMUST00000192241.1	908	271aa	Protein coding	-	A0A0A6YW77	CDS 3' incomplete TSL:5
Lcn2-204	ENSMUST00000147219.1	1374	No protein	Processed transcript	-	-	TSL:2
Lcn2-203	ENSMUST00000144569.1	827	No protein	Retained intron	-	-	TSL:2
Lcn2-202	ENSMUST00000136509.1	789	No protein	Retained intron	-	-	TSL:2
Lcn2-205	ENSMUST00000155830.1	740	No protein	Retained intron	-	-	TSL:2

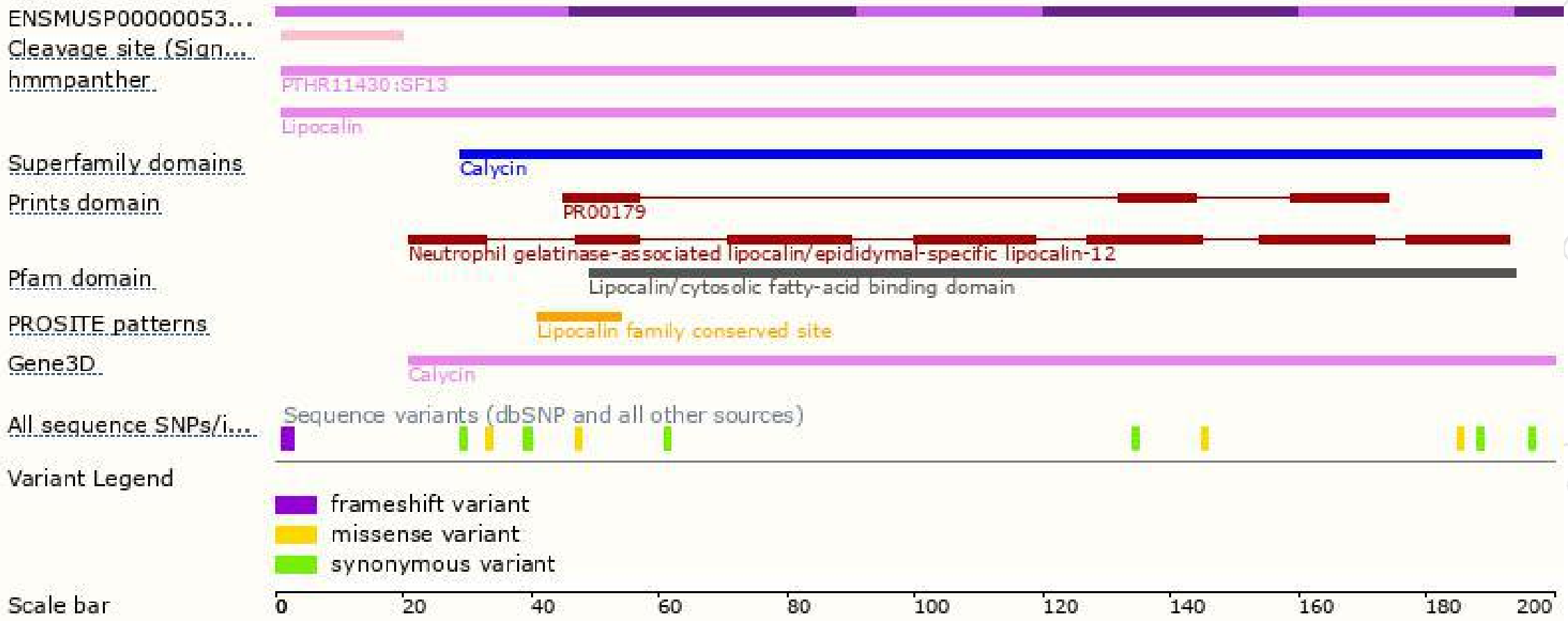
The strategy is based on the design of *Lcn2-201* transcript,The transcription is shown below



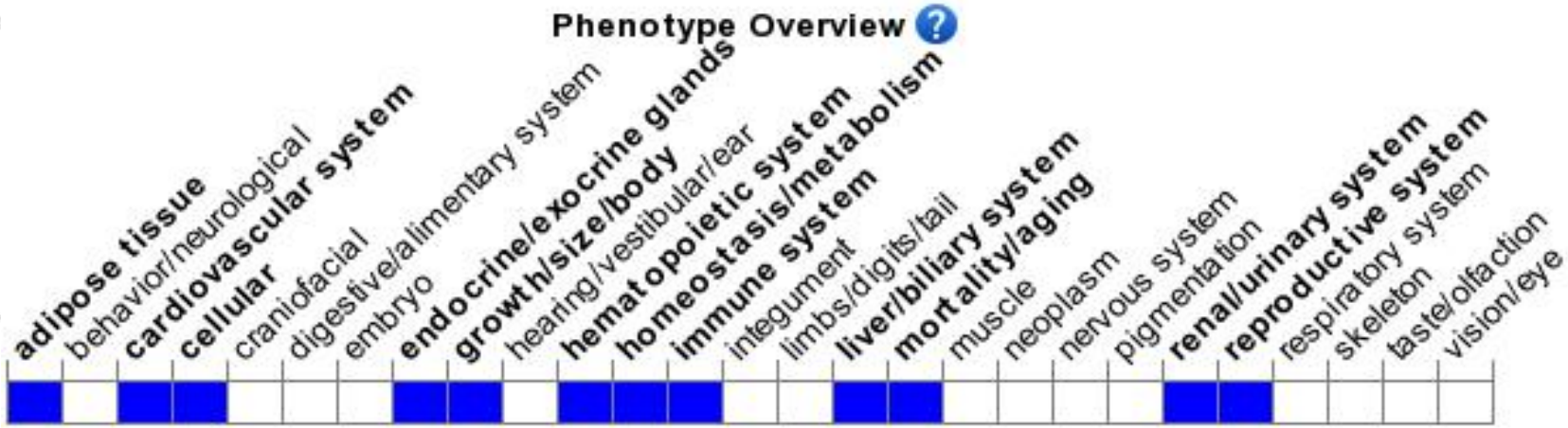
Genomic location distribution



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/).

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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