Lonp1 Cas9-CKO Strategy

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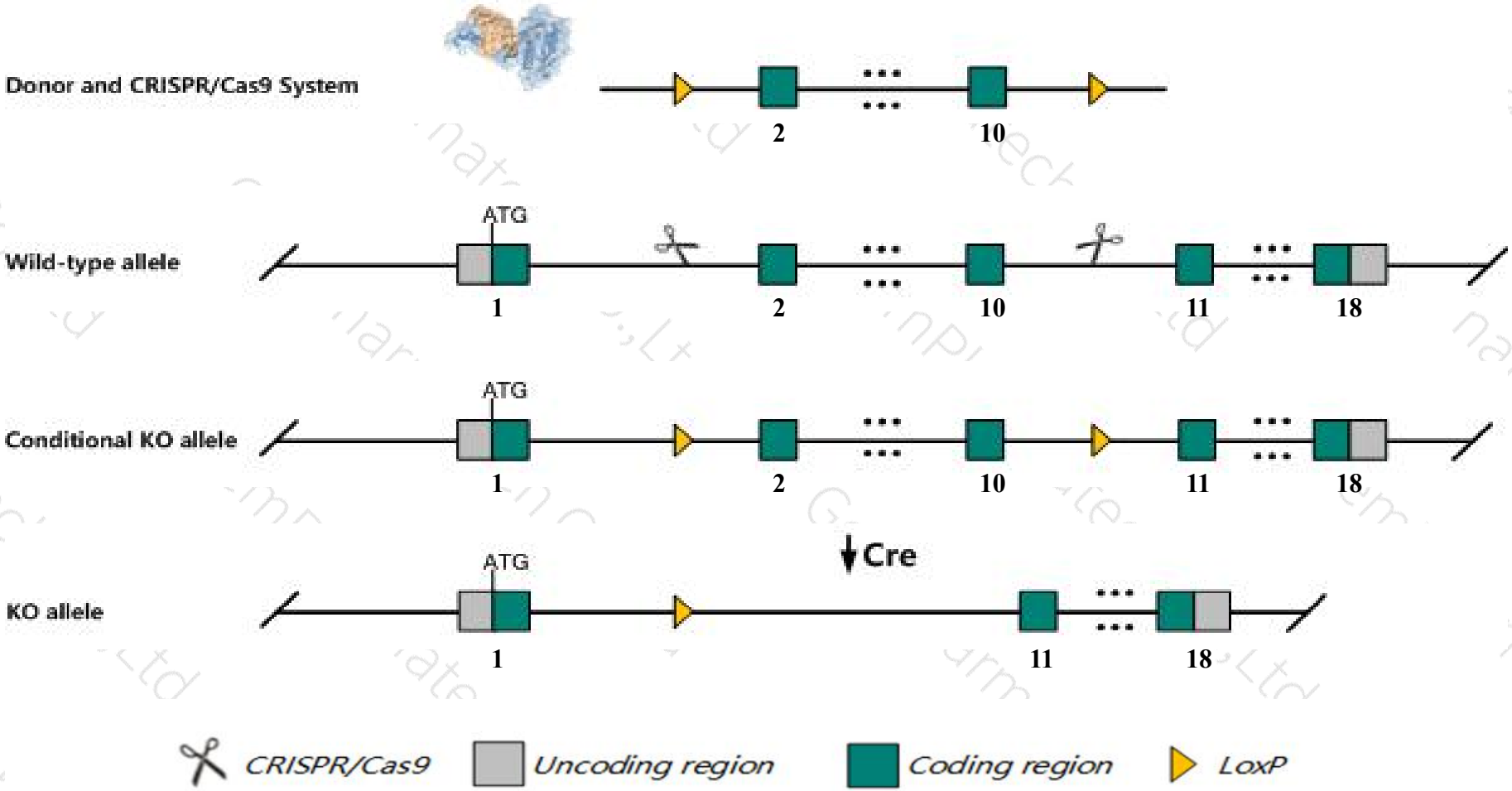
Project Overview

Project Name	***Lonp1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lonp1* gene. The schematic diagram is as follows:



Technical routes

- The *Lonp1* gene has 2 transcripts. According to the structure of *Lonp1* gene, exon2-exon10 of *Lonp1-201* (ENSMUST00000047226.9) transcript is recommended as the knockout region.The region contains 1259bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Lonp1* 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,Mice homozygous for a knock-out allele exhibit embryonic lethality with embryonic growth retardation, small size and decreased mitochondrial DNA content. Mice heterozygous for this allele exhibit reduced chemically-induced tumors.

➢ The *Lonp1* gene is located on the Chr17. 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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Lonp1 lon peptidase 1, mitochondrial [Mus musculus (house mouse)]

Gene ID: 74142, updated on 7-Apr-2019

Summary

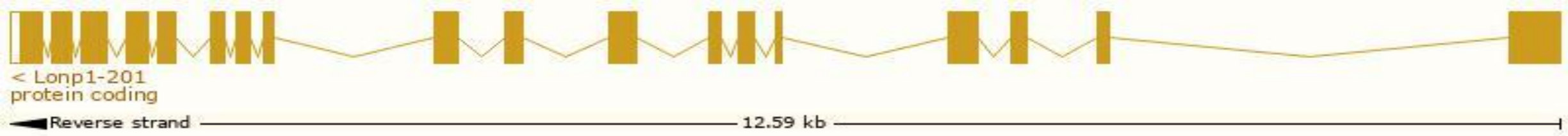
Official Symbol	Lonp1 provided by MGI
Official Full Name	lon peptidase 1, mitochondrial provided by MGI
Primary source	MGI:MGI:1921392
See related	Ensembl:ENSMUSG00000041168
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200017E13Rik, LON, Prss15
Expression	Broad expression in adrenal adult (RPKM 284.2), ovary adult (RPKM 104.2) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

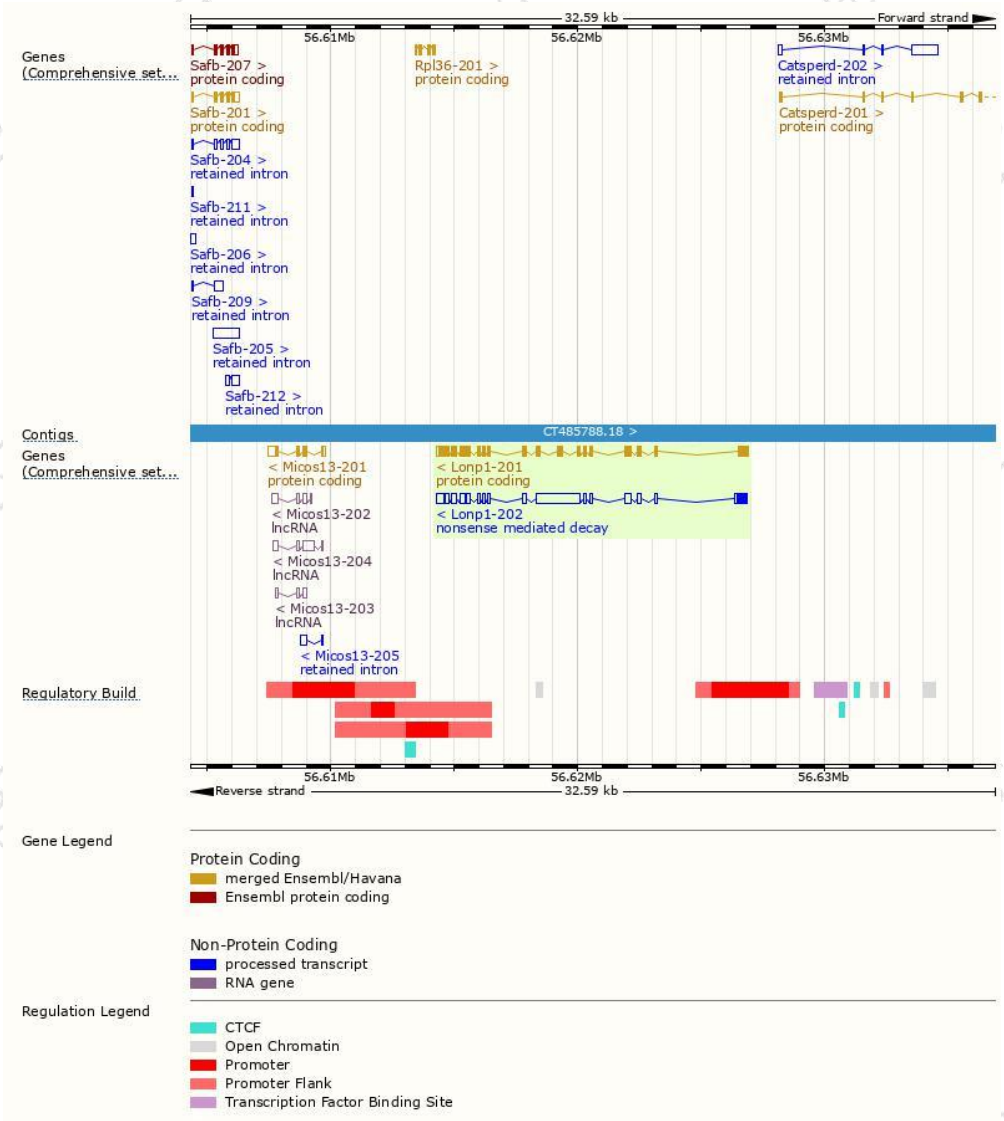
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lonp1-201	ENSMUST00000047226.9	2951	949aa	Protein coding	CCDS28910	Q8CGK3	TSL:1 GENCODE basic APPRIS P1
Lonp1-202	ENSMUST00000233732.1	4362	141aa	Nonsense mediated decay	-	A0A3B2W834	

The strategy is based on the design of *Lonp1-201* transcript,The transcription is shown below

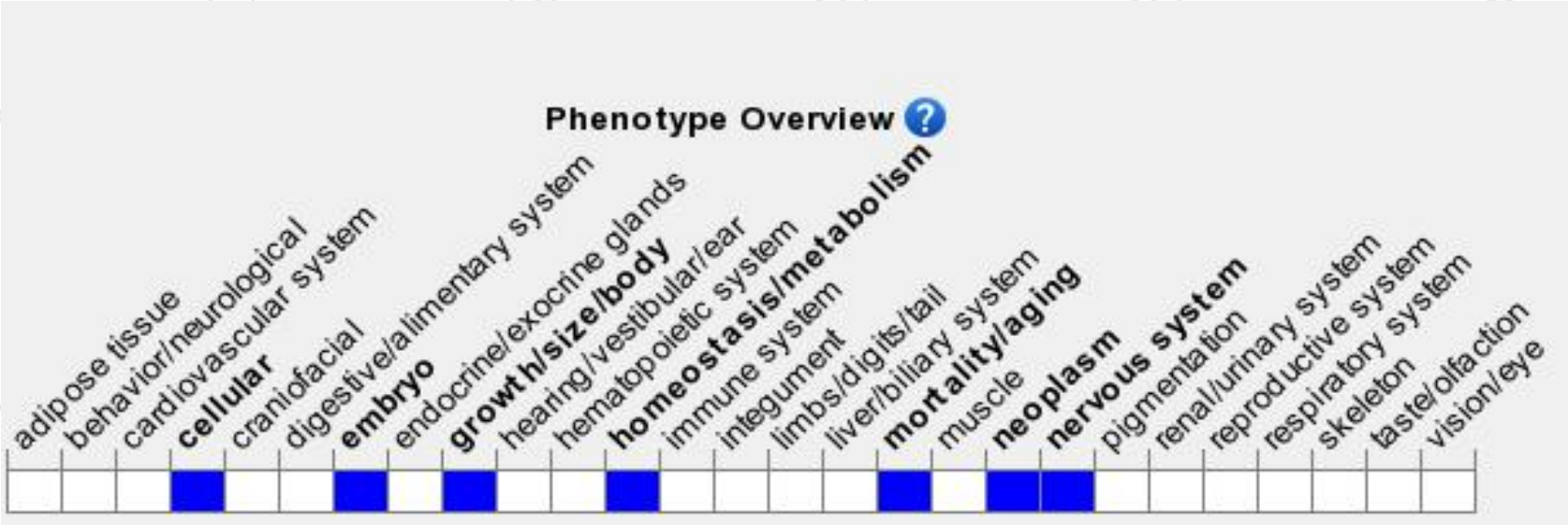


Genomic location distribution



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

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