Mlxip Cas9-CKO Strategy

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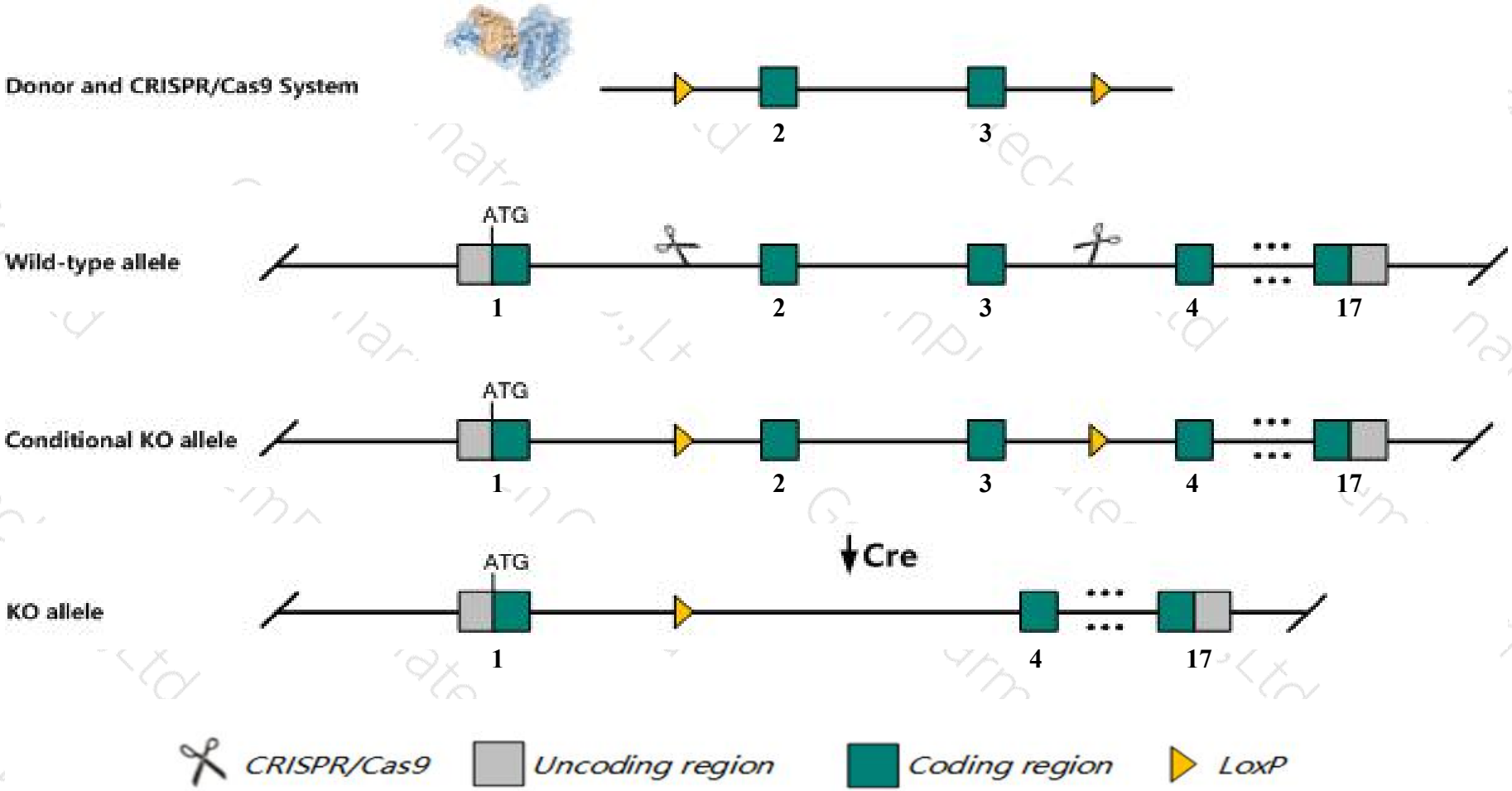
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Mlxip* gene has 4 transcripts. According to the structure of *Mlxip* gene, exon2-exon3 of *Mlxip-201* (ENSMUST00000068237.11) transcript is recommended as the knockout region.The region contains 193bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Mlxip* 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 null allele display metabolic and performance abnormalities in response to mild exercise and improved sprint exercise performance.

- The *Mlxip* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Mlxip MLX interacting protein [Mus musculus (house mouse)]

Gene ID: 208104, updated on 31-Jan-2019

Summary

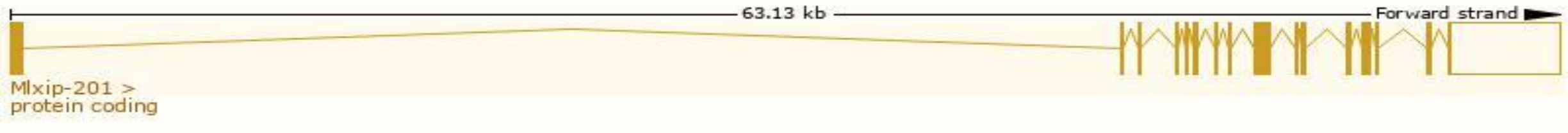
Official Symbol	Mlxip provided by MGI
Official Full Name	MLX interacting protein provided by MGI
Primary source	MGI:MGI:2141183
See related	Ensembl:ENSMUSG00000038342
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW228700, Mir, bHLHe36
Expression	Ubiquitous expression in spleen adult (RPKM 18.7), colon adult (RPKM 18.0) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

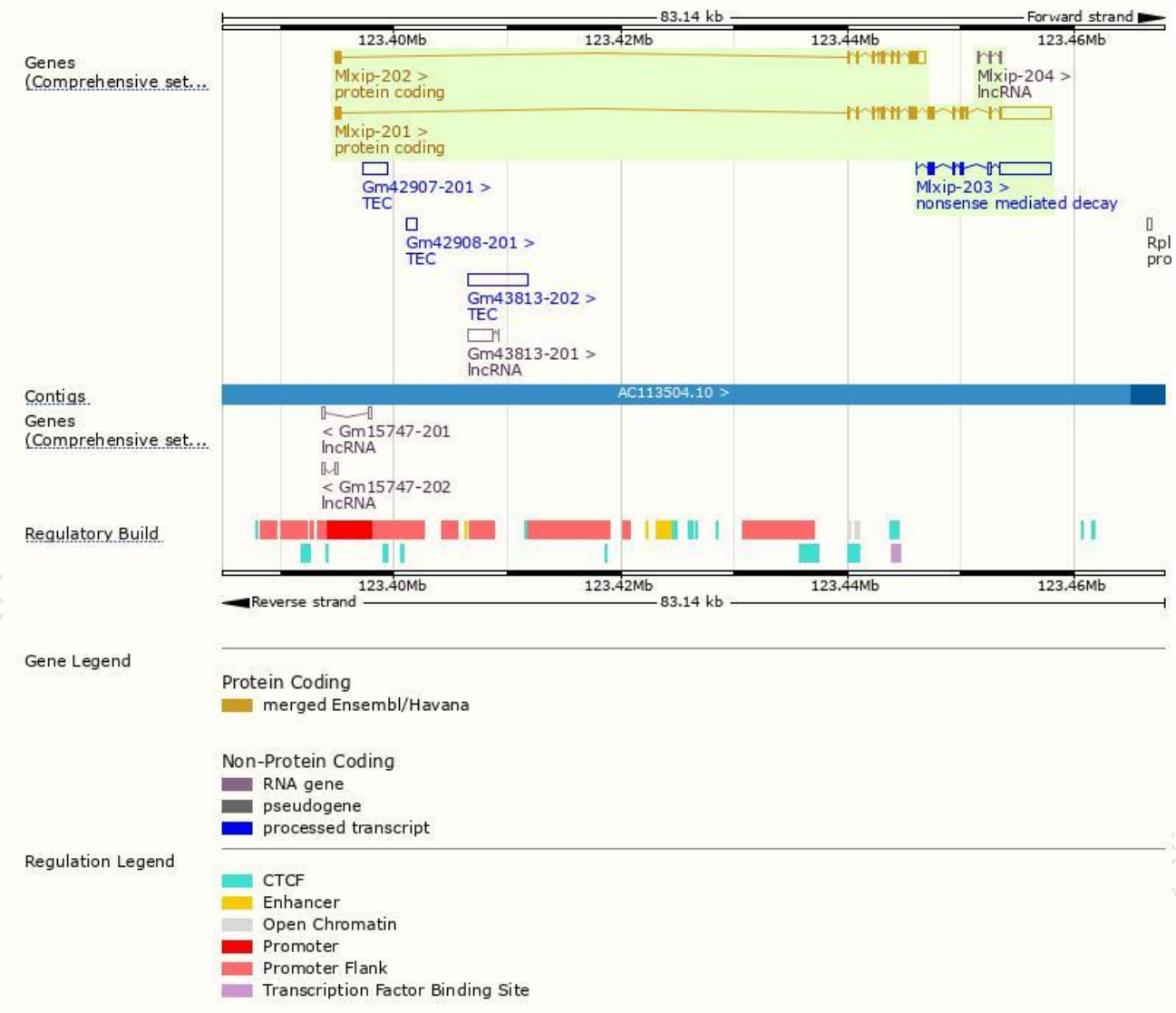
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mlxip-201	ENSMUST00000068237.11	7303	917aa	Protein coding	CCDS19662	G5E8D8	TSL:1 GENCODE basic APPRIS P1
Mlxip-202	ENSMUST00000111596.7	2653	614aa	Protein coding	CCDS39268	B2RQ56	TSL:1 GENCODE basic
Mlxip-203	ENSMUST00000135961.1	5510	241aa	Nonsense mediated decay	-	F6UPM1	CDS 5' incomplete TSL:1
Mlxip-204	ENSMUST00000199458.1	405	No protein	lncRNA	-	-	TSL:3

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

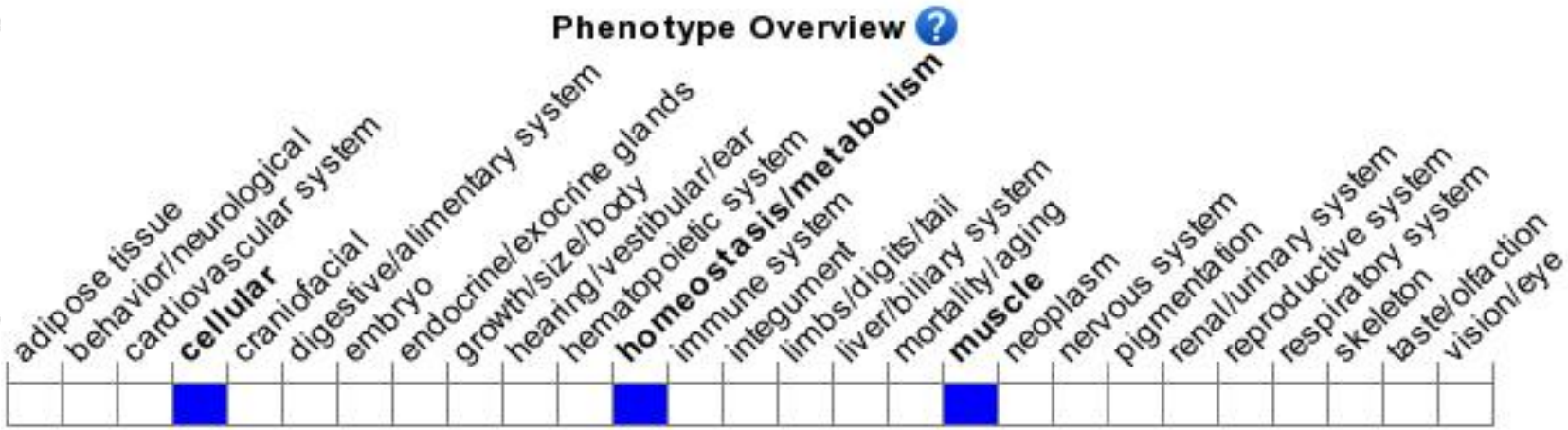


Genomic location distribution



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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