

***Leo1* Cas9-CKO Strategy**

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Design Date: 2019-9-11
Reviewer: Jia Yu

Project Overview

Project Name

Leo1

Project type

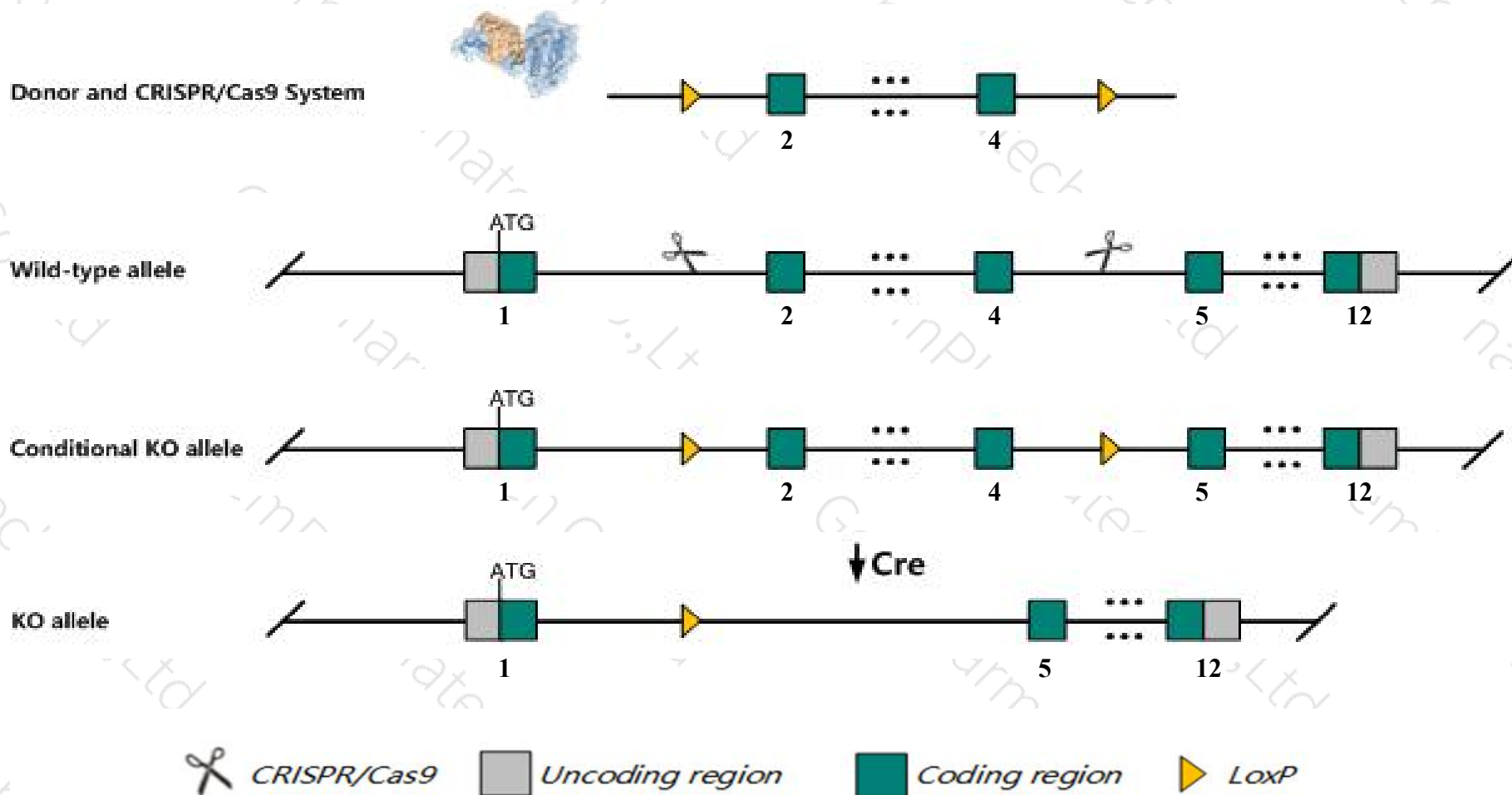
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Leo1* gene has 3 transcripts. According to the structure of *Leo1* gene, exon2-exon4 of *Leo1-201* (ENSMUST00000048937.5) transcript is recommended as the knockout region. The region contains 959bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Leo1* 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 *Leo1* gene is located on the Chr9. 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)

Leo1 Leo1, Paf1/RNA polymerase II complex component [Mus musculus (house mouse)]

Gene ID: 235497, updated on 31-Jan-2019

Summary



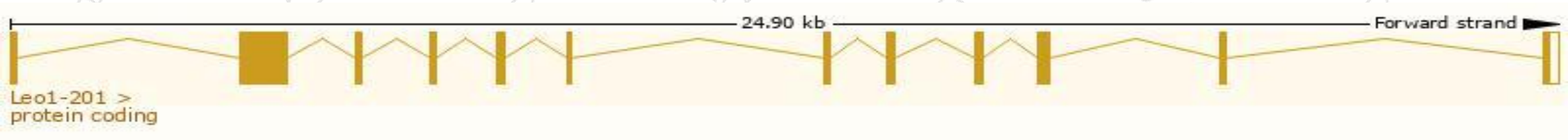
Official Symbol	Leo1 provided by MGI
Official Full Name	Leo1, Paf1/RNA polymerase II complex component provided by MGI
Primary source	MGI:MGI:2685031
See related	Ensembl:ENSMUSG00000042487
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm185
Expression	Ubiquitous expression in CNS E11.5 (RPKM 11.3), CNS E14 (RPKM 6.8) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

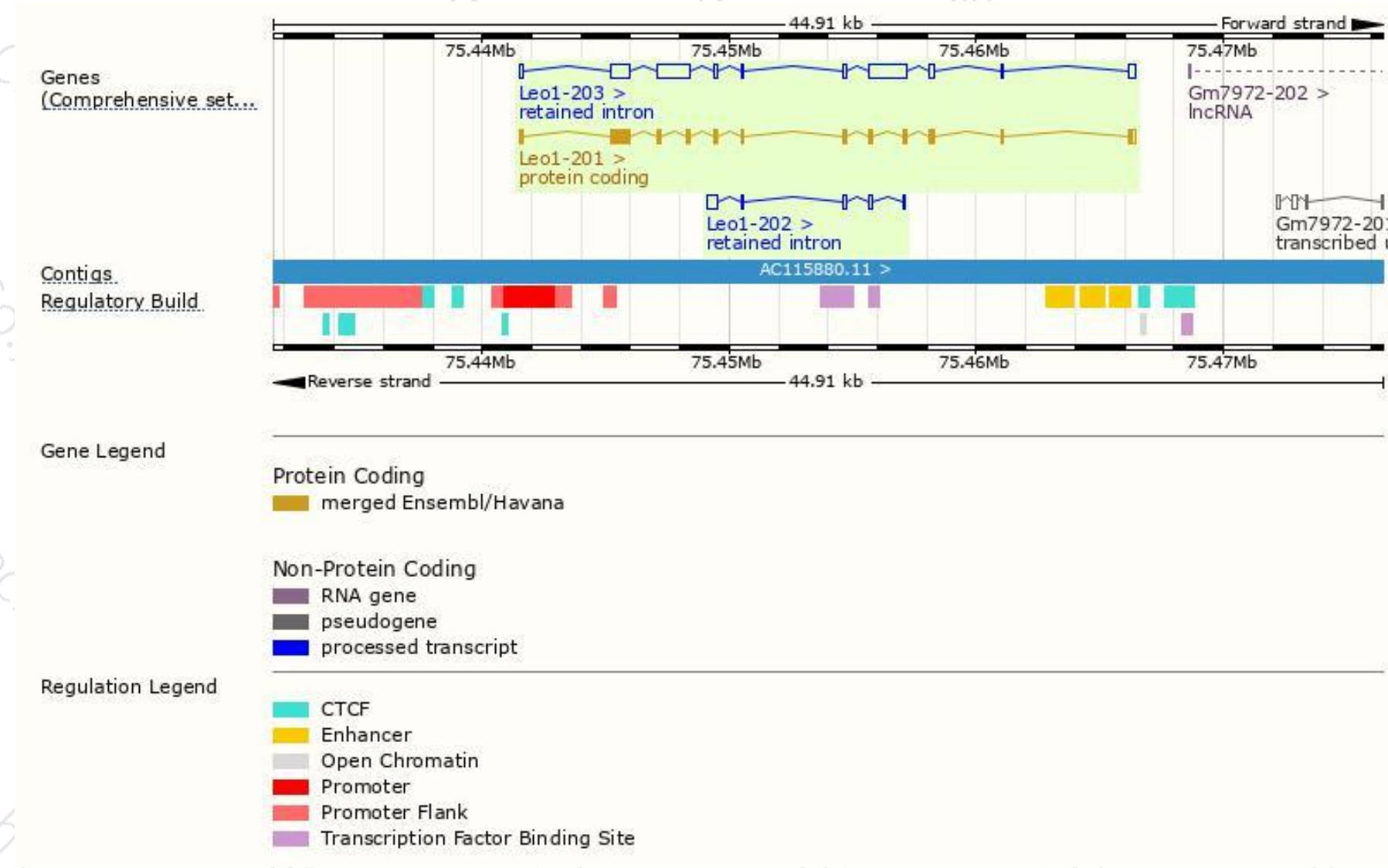
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Leo1-201	ENSMUST00000048937.5	2180	667aa	Protein coding	CCDS23343	Q5XJE5	TSL:1 GENCODE basic APPRIS P1
Leo1-203	ENSMUST00000213767.1	4569	No protein	Retained intron	-	-	TSL:1
Leo1-202	ENSMUST00000213248.1	777	No protein	Retained intron	-	-	TSL:5

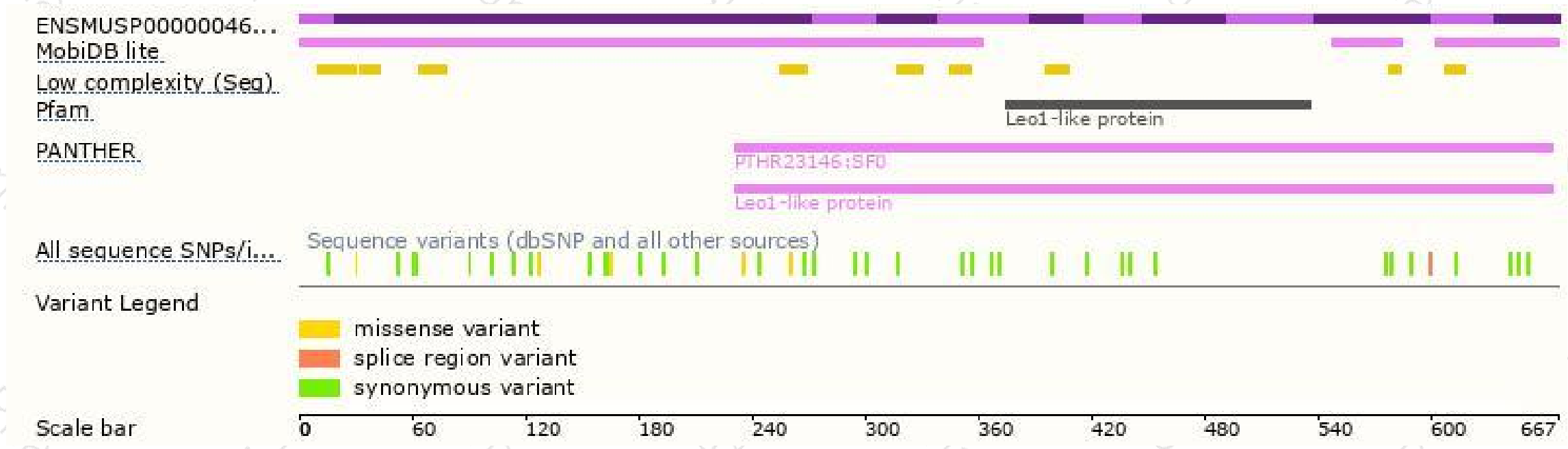
The strategy is based on the design of *Leo1-201* transcript,The transcription is shown below



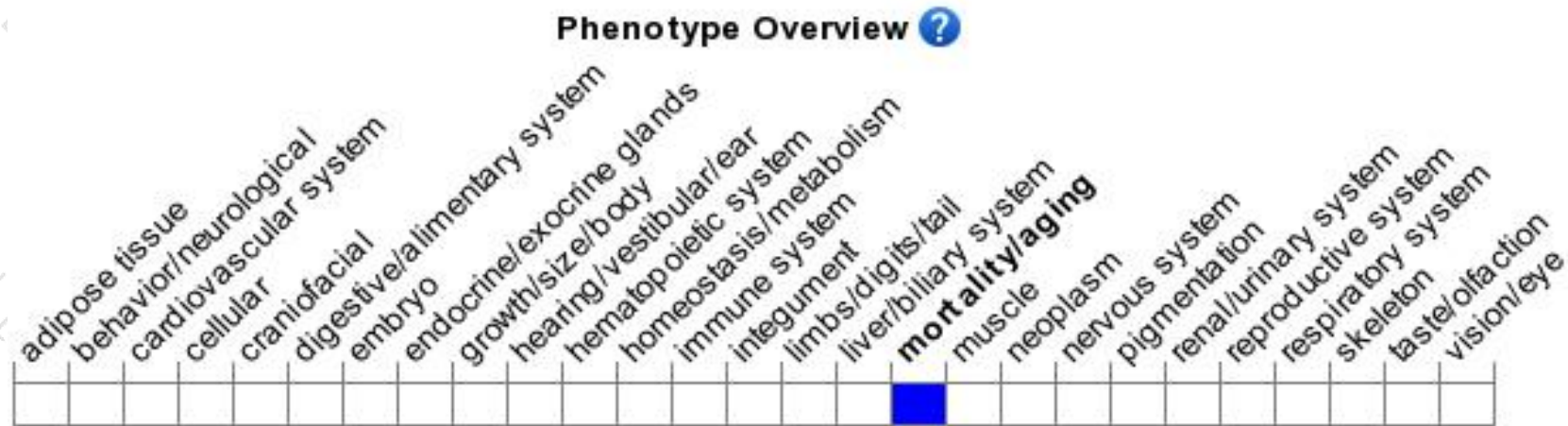
Genomic location distribution



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/>).

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

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