

Rfx1 Cas9-CKO Strategy

Designer:

Project Overview

Project Name

Rfx1

Project type

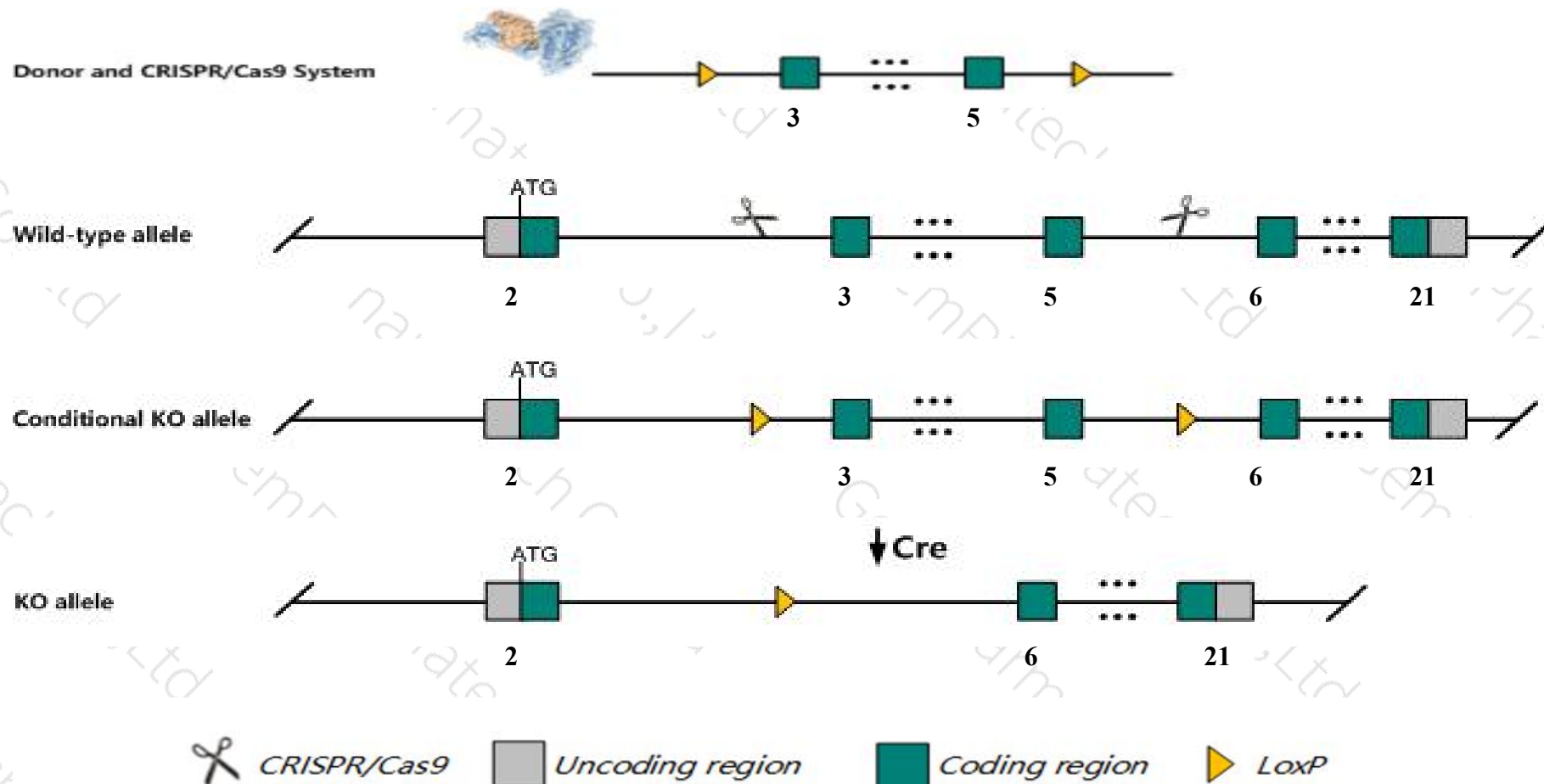
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rfx1* gene. The schematic diagram is as follows:



Technical routes

- The *Rfx1* gene has 4 transcripts. According to the structure of *Rfx1* gene, exon3-exon5 of *Rfx1-201* (ENSMUST00000005600.5) transcript is recommended as the knockout region. The region contains 302bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rfx1* 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 gene trap allele die prior to implantation.
- The *Rfx1* gene is located on the Chr8. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Rfx1 regulatory factor X, 1 (influences HLA class II expression) [Mus musculus (house mouse)]

Gene ID: 19724, updated on 31-Jan-2019

Summary



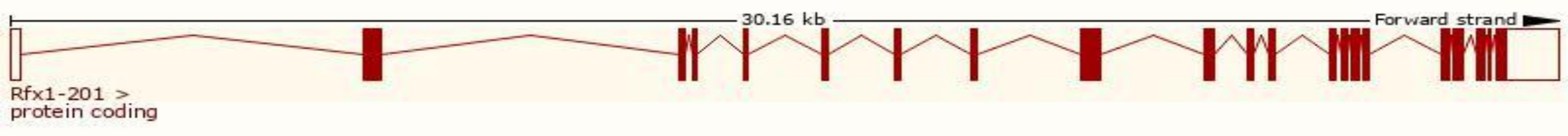
Official Symbol	Rfx1 provided by MGI
Official Full Name	regulatory factor X, 1 (influences HLA class II expression) provided by MGI
Primary source	MGI:MGI:105982
See related	Ensembl:ENSMUSG00000031706
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI047719, AI385641
Expression	Ubiquitous expression in testis adult (RPKM 37.0), thymus adult (RPKM 23.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

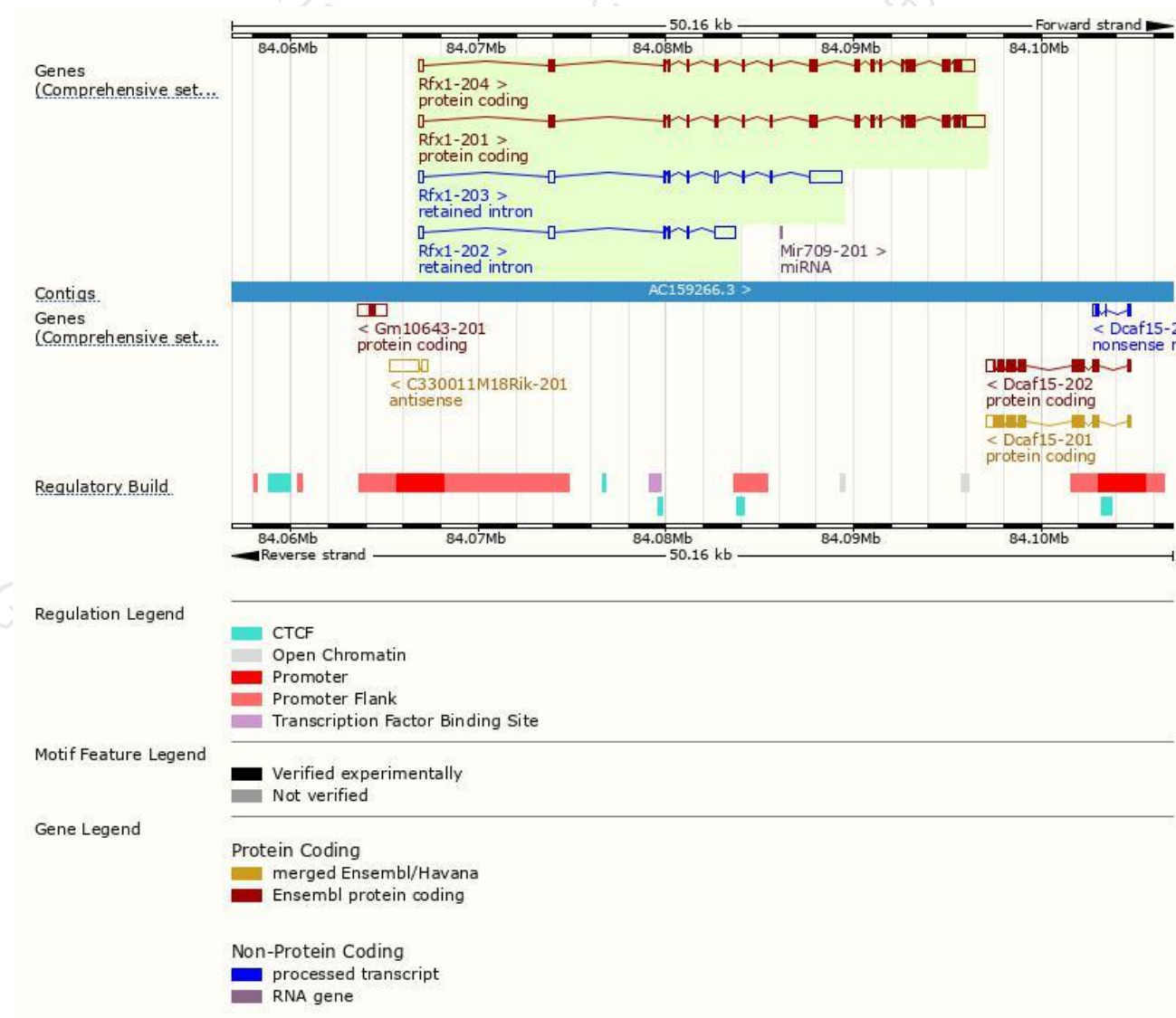
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rfx1-201	ENSMUST00000005600.5	4172	963aa	Protein coding	CCDS22468	P48377	TSL:1 GENCODE basic APPRIS P2
Rfx1-204	ENSMUST00000211046.1	3677	910aa	Protein coding	-	A0A1B0GRV3	TSL:5 GENCODE basic APPRIS ALT2
Rfx1-203	ENSMUST00000210660.1	2820	No protein	Retained intron	-	-	TSL:1
Rfx1-202	ENSMUST00000209362.1	1892	No protein	Retained intron	-	-	TSL:1

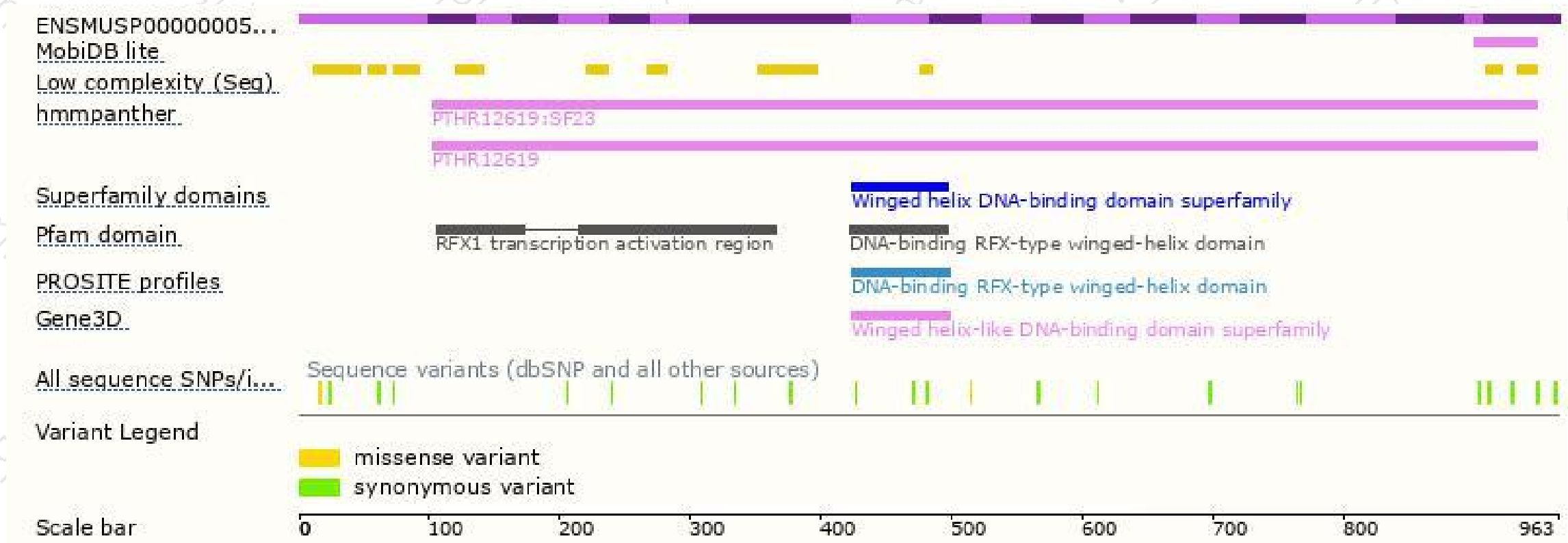
The strategy is based on the design of *Rfx1-201* transcript,The transcription is shown below



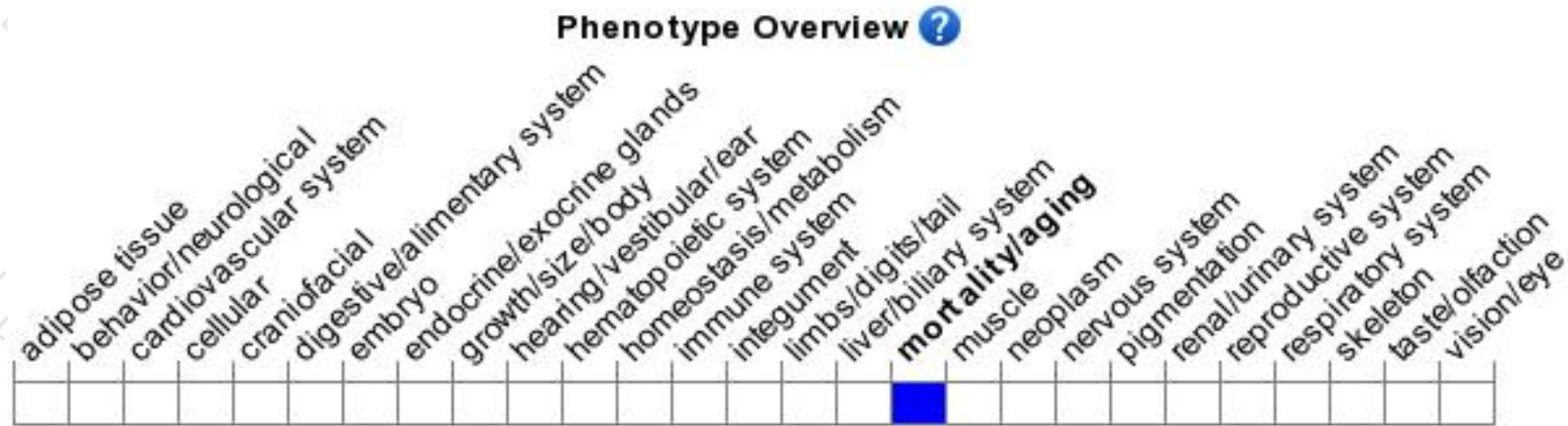
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a gene trap allele die prior to implantation.

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

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