Fkbp1b Cas9-CKO Strategy

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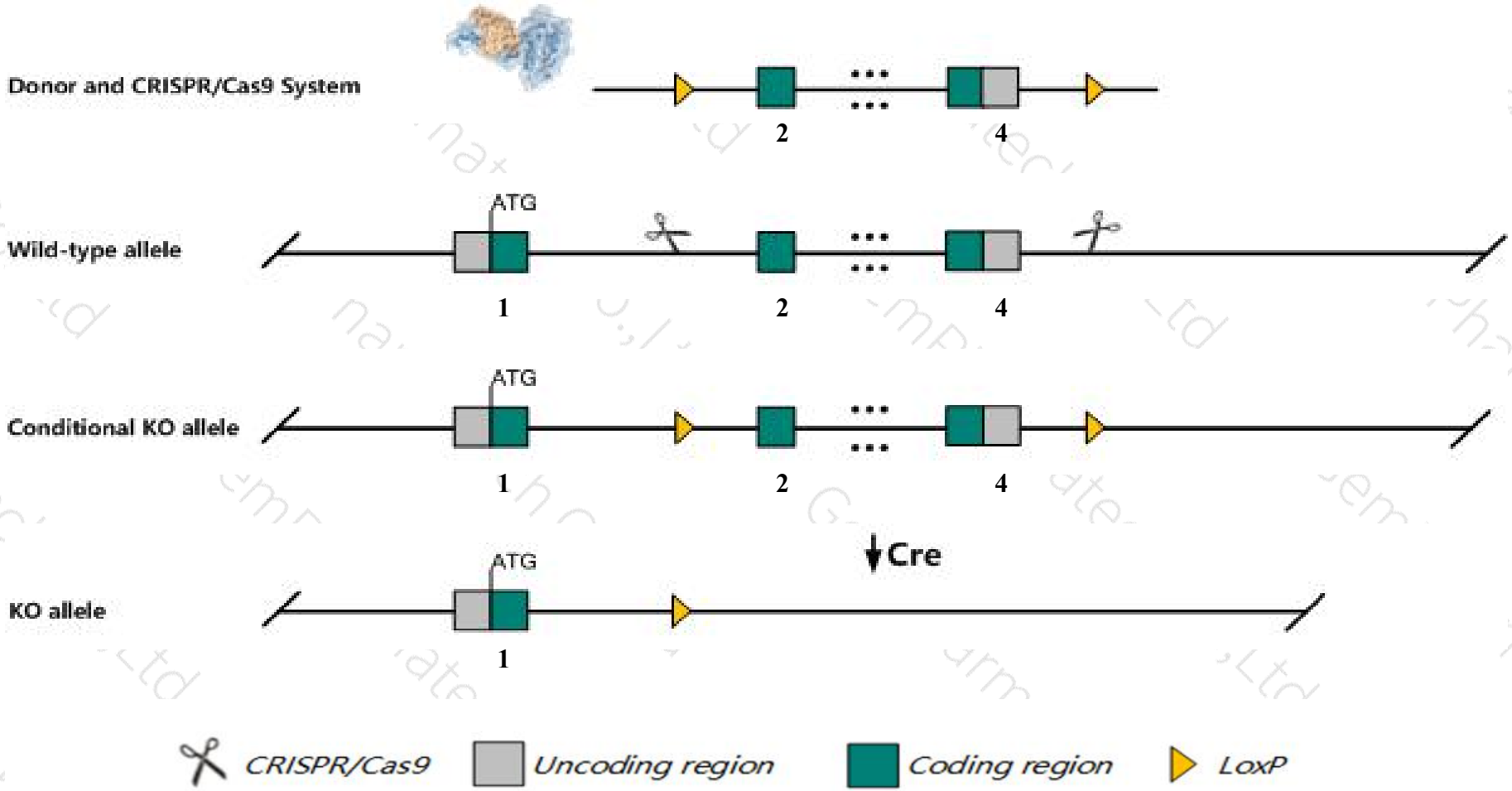
Project Overview

Project Name	***Fkbp1b***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fkbp1b* gene. The schematic diagram is as follows:



Technical routes

- The *Fkbp1b* gene has 2 transcripts. According to the structure of *Fkbp1b* gene, exon2-exon4 of *Fkbp1b-201* (ENSMUST00000020964.6) transcript is recommended as the knockout region.The region contains 290bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Fkbp1b* 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,Homozygotes for a null allele display exercise-induced sudden cardiac death. Homozygotes for a second null allele show impaired glucose tolerance and glucose-driven insulin secretion. Homozygotes for a third null allele show Ca2+ dysregulation and male-specific cardiac hypertrophy and hypertension.

- The *Fkbp1b* gene is located on the Chr12. 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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Fkbp1b FK506 binding protein 1b [*Mus musculus* (house mouse)]

Gene ID: 14226, updated on 16-Dec-2019

Summary

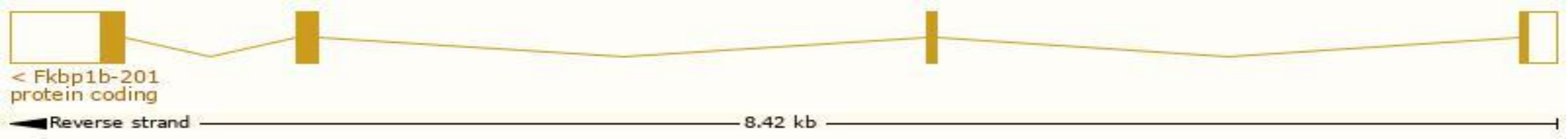
Official Symbol	Fkbp1b provided by MGI
Official Full Name	FK506 binding protein 1b provided by MGI
Primary source	MGI:MGI:1336205
See related	Ensembl:ENSMUSG00000020635
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	12.6kDa; AW494148; FKBP12.6; calstabin2
Expression	Broad expression in frontal lobe adult (RPKM 19.1), CNS E18 (RPKM 18.2) and 21 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

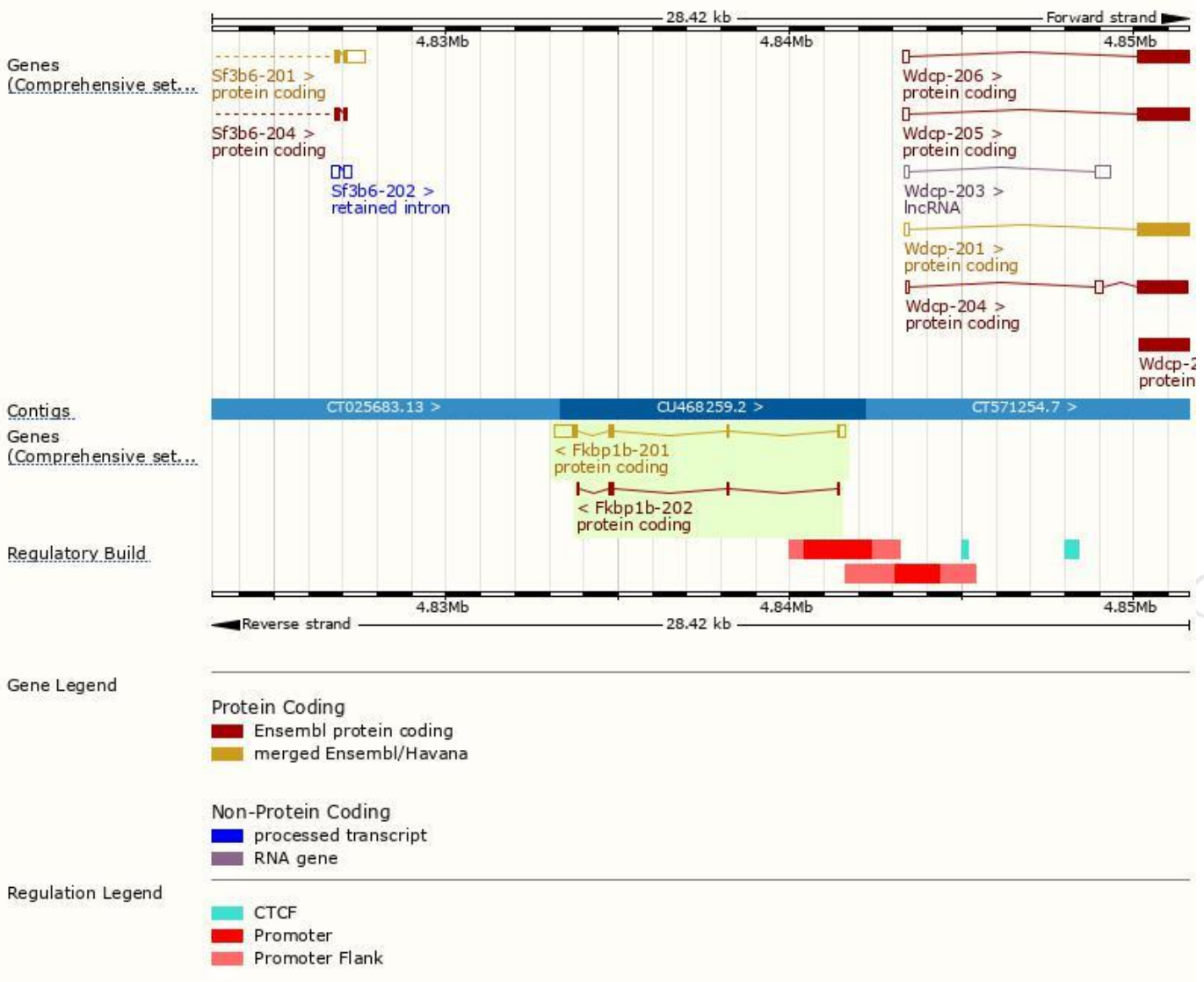
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fkbp1b-201	ENSMUST00000020964.6	976	108aa	Protein coding	CCDS25792	A9E3L2 Q9Z2I2	TSL:1 GENCODE basic APPRIS P1
Fkbp1b-202	ENSMUST00000219880.1	246	80aa	Protein coding	-	Q80YE1	TSL:1 GENCODE basic

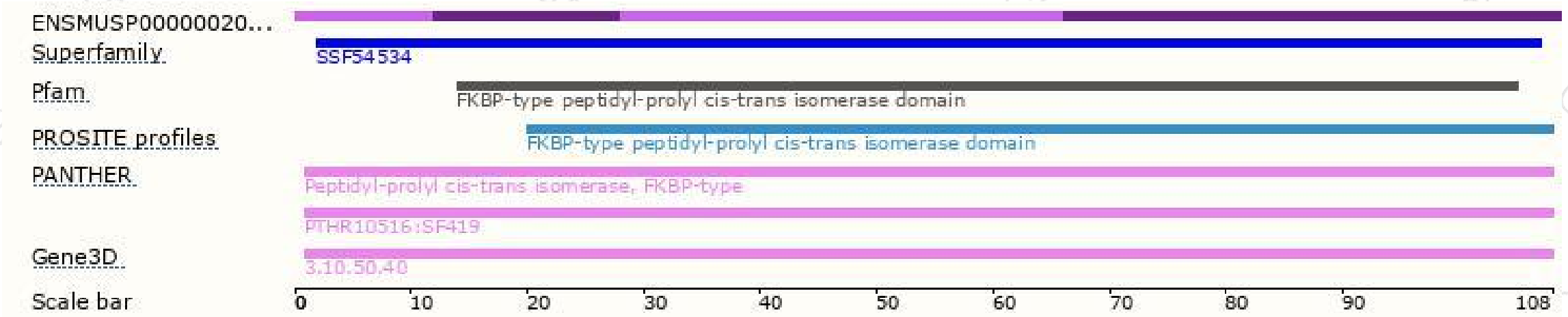
The strategy is based on the design of *Fkbp1b-201* transcript,The transcription is shown below



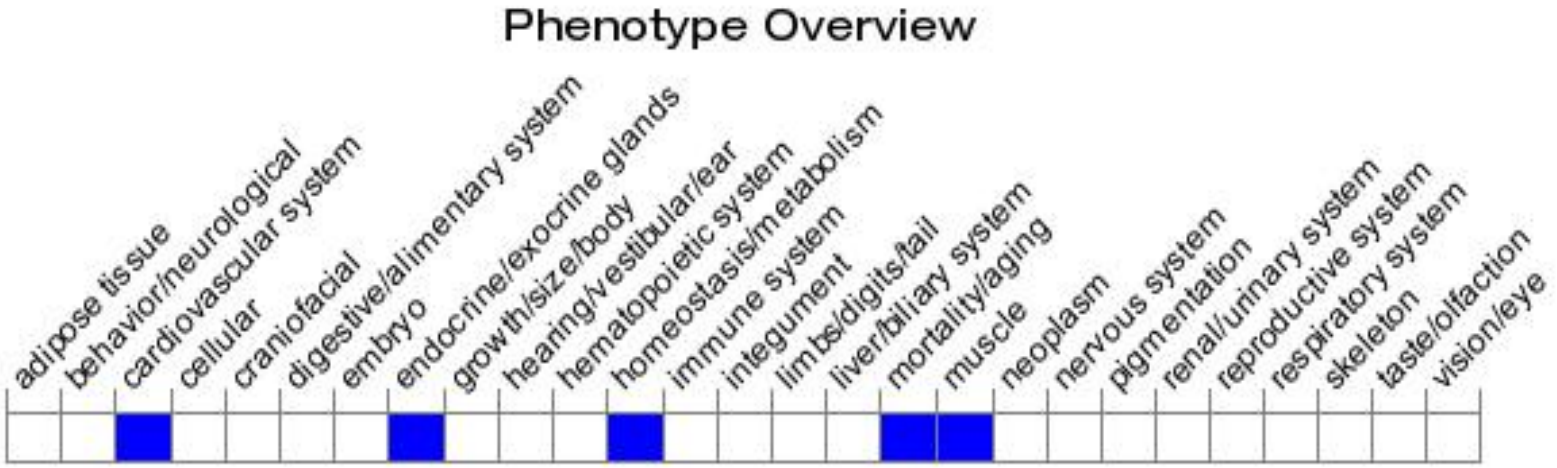
Genomic location distribution



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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