Sfmbt2 Cas9-CKO Strategy

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Project Overview

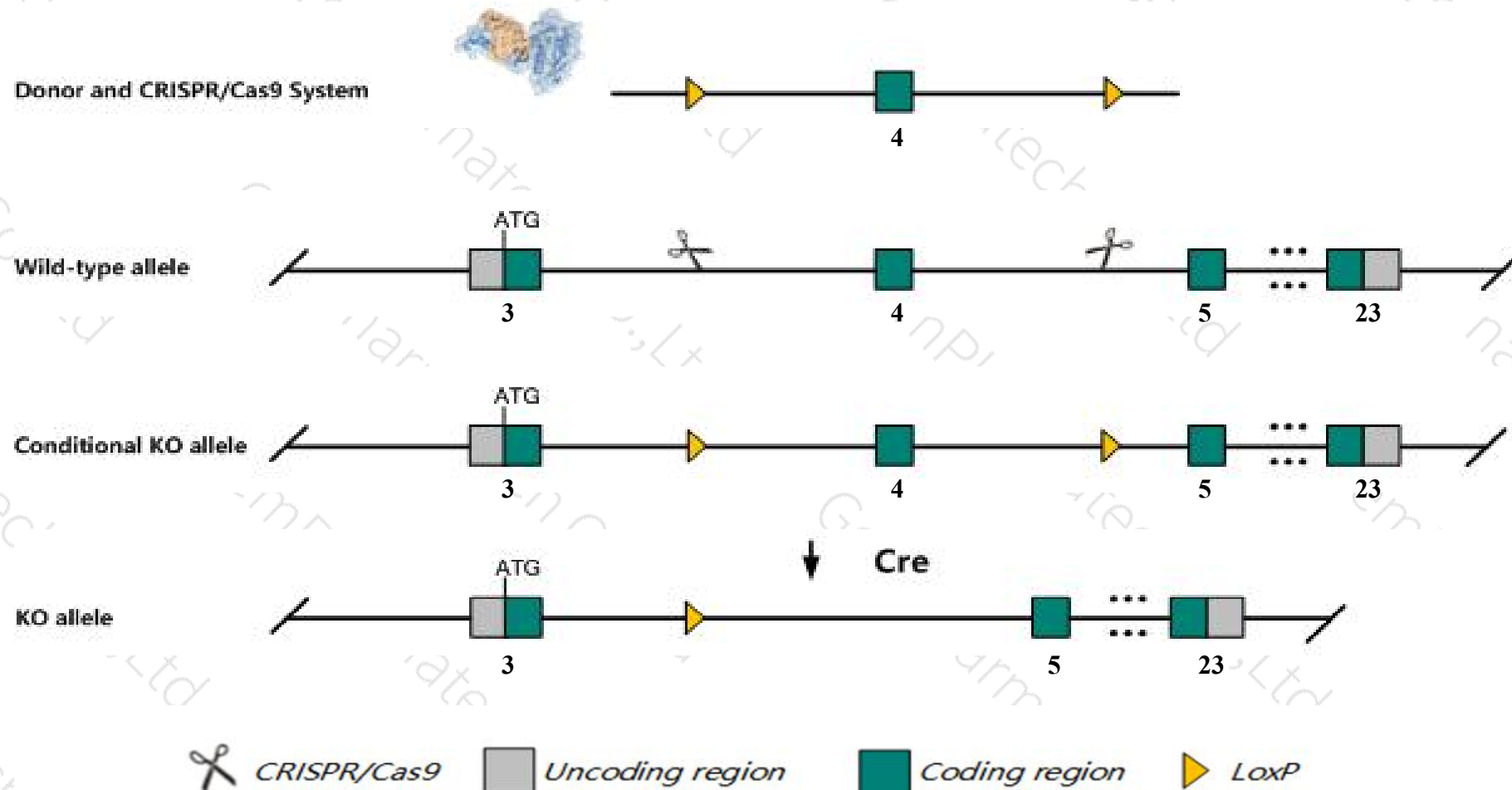|	
Project Name	*Sfmbt2*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sfmbt2* gene. The schematic diagram is as follows:

Technical routes

➤ The *Sfmbt2* gene has 7 transcripts. According to the structure of *Sfmbt2* gene, exon4 of *Sfmbt2-201* (ENSMUST00000041105.6) transcript is recommended as the knockout region.The region contains 95bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Sfmbt2* 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

➤ Transcript *Sfmbt2*-207 may not be affected.

➤ The *Sfmbt2* gene is located on the Chr2. 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）

Sfmbt2   Scm-like with four mbt domains 2 [*Mus musculus* (house mouse)]

Gene ID: 353282, updated on 24-Oct-2019

⊡ Summary

Official Symbol	Sfmbt2 provided by MGI
Official Full Name	Scm-like with four mbt domains 2 provided by MGI
Primary source	MGI:MGI:2447794
See related	Ensembl:ENSMUSG00000061186
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	D2Wsu23e; D330030P06Rik
Expression	Biased expression in placenta adult (RPKM 7.9) and testis adult (RPKM 2.9) See more
Orthologs	human all

⊡ Genomic context

Location: 2 A1; 2 7.81 cM

See Sfmbt2 in Genome Data Viewer

Exon count: 28

| Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (10370440..10595253)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (10294209..10516787)

Transcript information（Ensembl）

The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sfmbt2-201	ENSMUST00000041105.6	7874	975aa	Protein coding	CCDS57152	Q3UH63	TSL:5 GENCODE basic APPRIS ALT2
Sfmbt2-205	ENSMUST00000116594.8	7821	942aa	Protein coding	CCDS38046	Q3UH07	TSL:1 GENCODE basic APPRIS P3
Sfmbt2-204	ENSMUST00000114864.8	1901	183aa	Protein coding	CCDS57153	Q8BG70	TSL:1 GENCODE basic
Sfmbt2-202	ENSMUST00000114861.7	1813	183aa	Protein coding	CCDS57153	Q8BG70	TSL:5 GENCODE basic
Sfmbt2-203	ENSMUST00000114862.7	1763	183aa	Protein coding	CCDS57153	Q8BG70	TSL:1 GENCODE basic
Sfmbt2-206	ENSMUST00000126531.7	659	No protein	lncRNA	-	-	TSL:3
Sfmbt2-207	ENSMUST00000145398.7	367	No protein	lncRNA	-	-	TSL:2

The strategy is based on the design of *Sfmbt2-201* transcript,The transcription is shown below
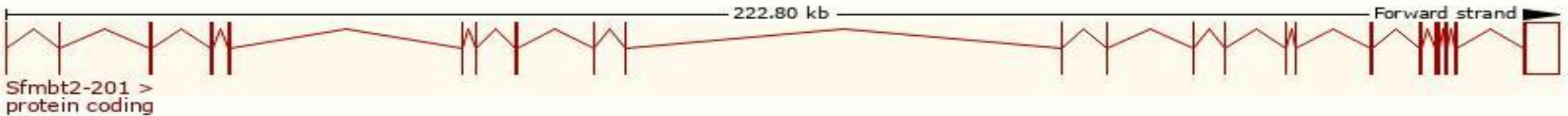
Genomic location distribution
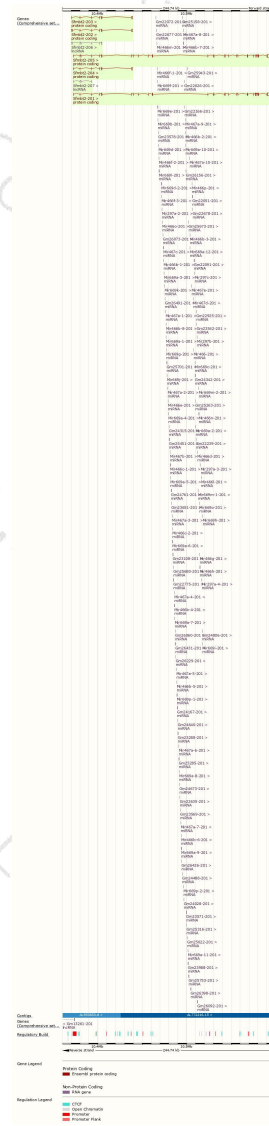
Protein domain

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