Frmd5 Cas9-CKO Strategy

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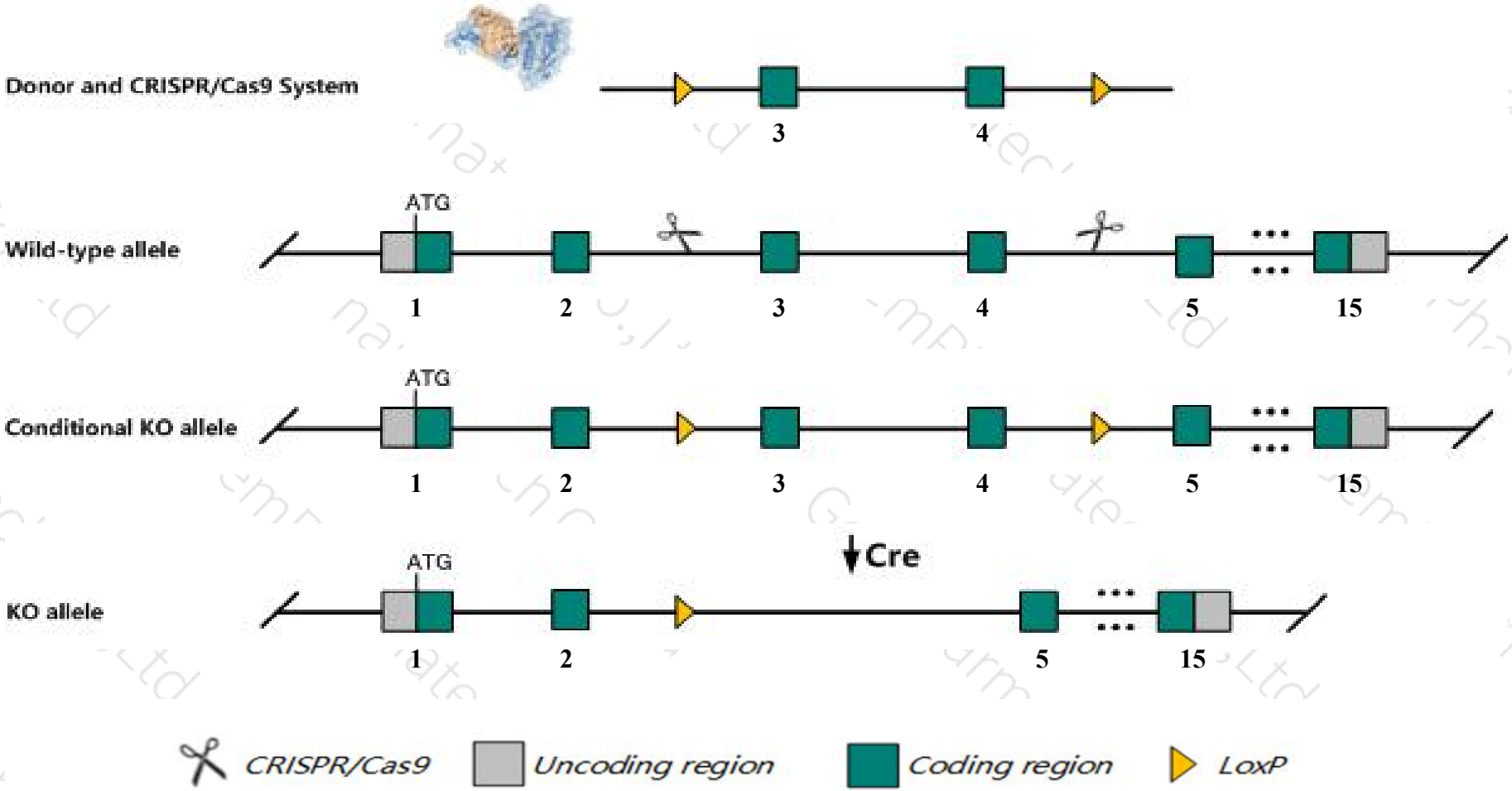
Project Overview

Project Name	***Frmd5***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Frmd5* gene. The schematic diagram is as follows:



Technical routes

➢ The *Frmd5* gene has 13 transcripts. According to the structure of *Frmd5* gene, exon3-exon4 of *Frmd5-207*(ENSMUST00000138157.7) transcript is recommended as the knockout region.The region contains 122bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Frmd5* 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 *Frmd5* 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）

集萃药康 GemPharmatech

Frmd5 FERM domain containing 5 [Mus musculus (house mouse)]

Gene ID: 228564, updated on 13-Mar-2020

Summary

Official Symbol	Frmd5 provided by MGI
Official Full Name	FERM domain containing 5 provided byMGI
Primary source	MGI:MGI:2442557
See related	Ensembl:ENSMUSG00000027238
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	1500032A09Rik, A930004K21Rik, R75430
Expression	Biased expression in heart adult (RPKM 21.0), adrenal adult (RPKM 20.2) and 9 other tissuesSee more
Orthologs	human all

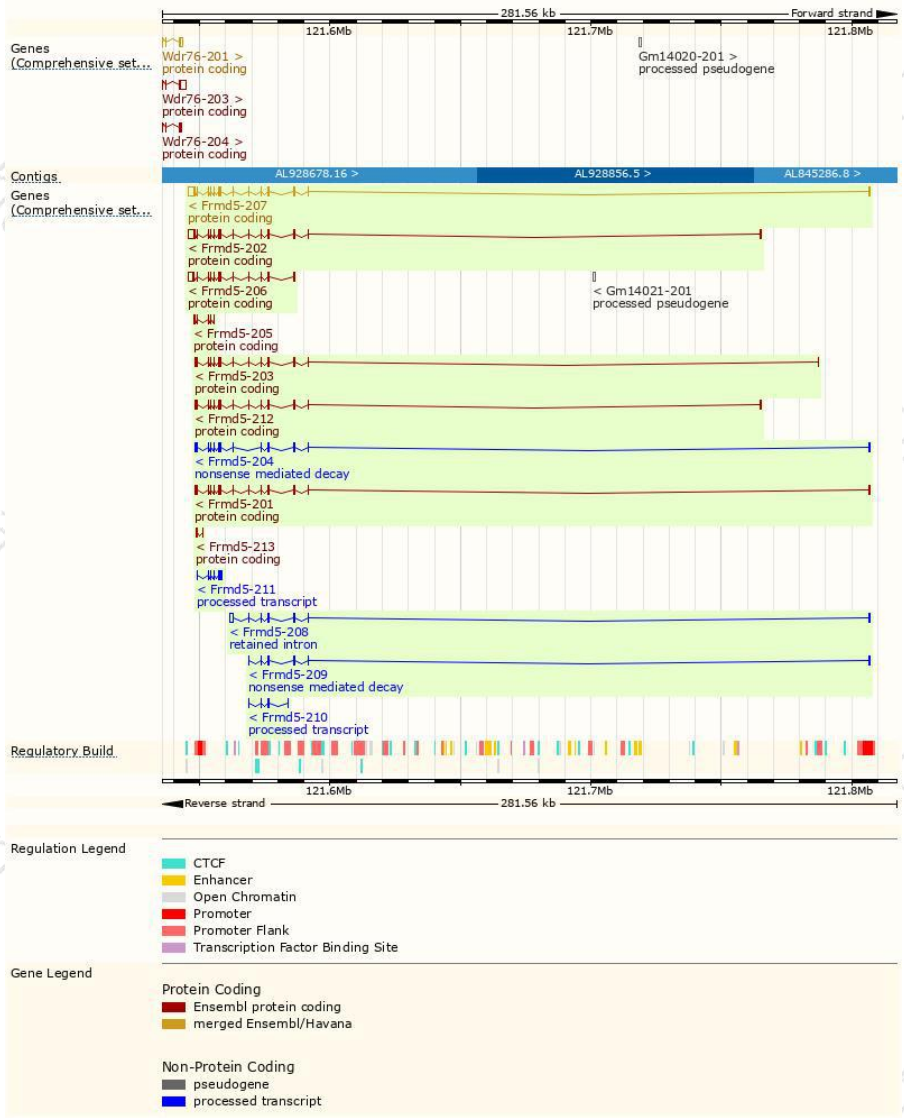
Transcript information（Ensembl）

The gene has 13 transcripts,all transcripts are shown below:

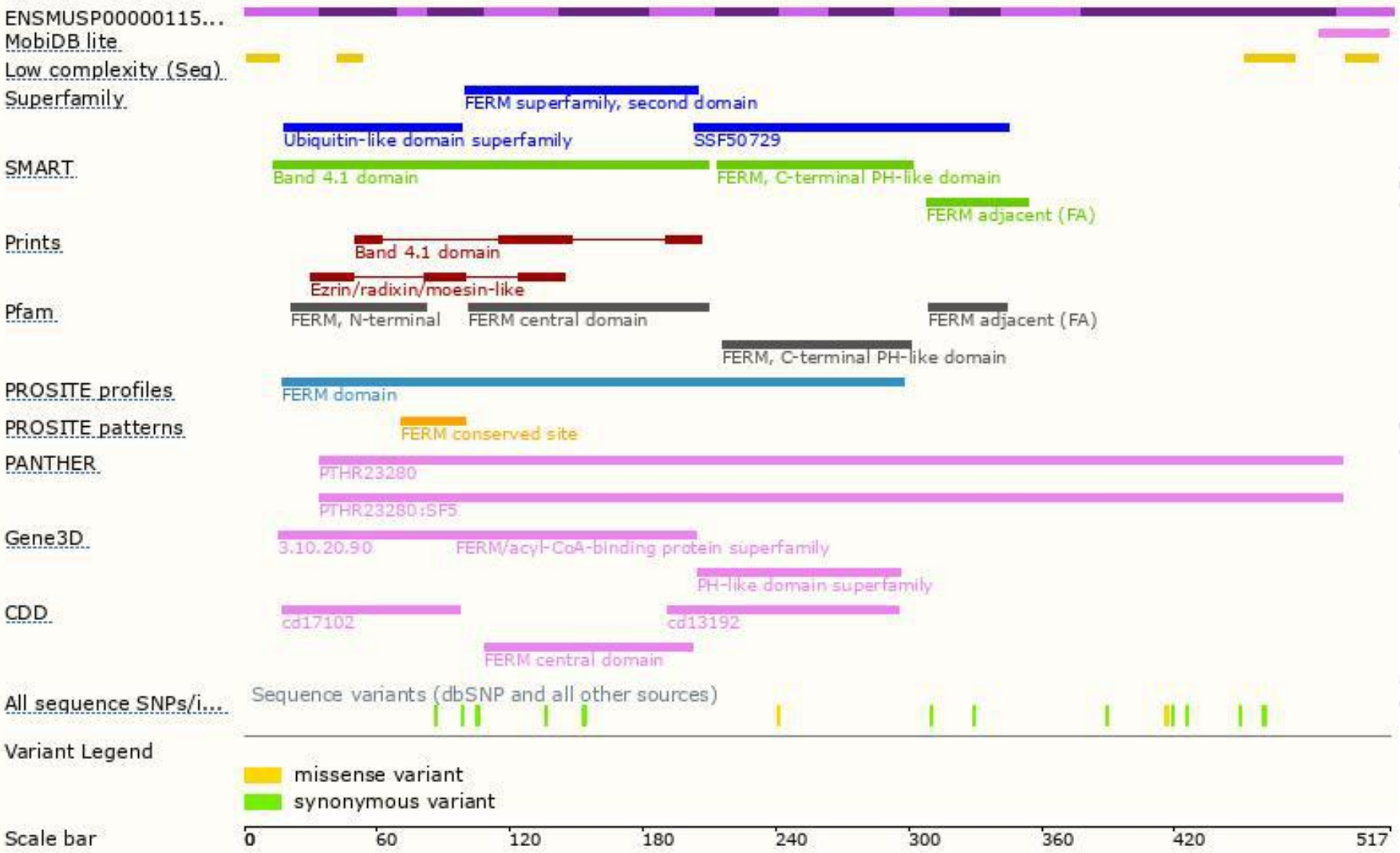
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Frmd5-207	ENSMUST00000138157.7	4230	517aa	Protein coding	CCDS16649	Q6P5H6	TSL:1 GENCODE basic APPRIS P2
Frmd5-202	ENSMUST00000110593.8	3950	509aa	Protein coding	-	B0R0D4	CDS 5' incomplete TSL:1
Frmd5-206	ENSMUST00000133898.7	3354	440aa	Protein coding	-	F6XM46	CDS 5' incomplete TSL:5
Frmd5-203	ENSMUST00000121219.7	2262	481aa	Protein coding	-	Q6P5H6	TSL:1 GENCODE basic
Frmd5-201	ENSMUST00000110592.1	2222	570aa	Protein coding	-	A2AR56	TSL:5 GENCODE basic APPRIS ALT1
Frmd5-212	ENSMUST00000155570.7	1861	500aa	Protein coding	-	B0R0D5	CDS 5' incomplete TSL:1
Frmd5-213	ENSMUST00000212518.1	922	256aa	Protein coding	-	A0A1D5RLQ6	TSL:5 GENCODE basic
Frmd5-205	ENSMUST00000131092.7	755	206aa	Protein coding	-	F6XLQ6	CDS 5' incomplete TSL:3
Frmd5-204	ENSMUST00000128428.7	1987	216aa	Nonsense mediated decay	-	F2Z484	TSL:1
Frmd5-209	ENSMUST00000145075.7	890	120aa	Nonsense mediated decay	-	F2Z448	TSL:3
Frmd5-211	ENSMUST00000153932.1	673	No protein	Processed transcript	-	-	TSL:3
Frmd5-210	ENSMUST00000153704.1	504	No protein	Processed transcript	-	-	TSL:5
Frmd5-208	ENSMUST00000142016.7	2454	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Frmd5-207* transcript,the transcription is shown below:

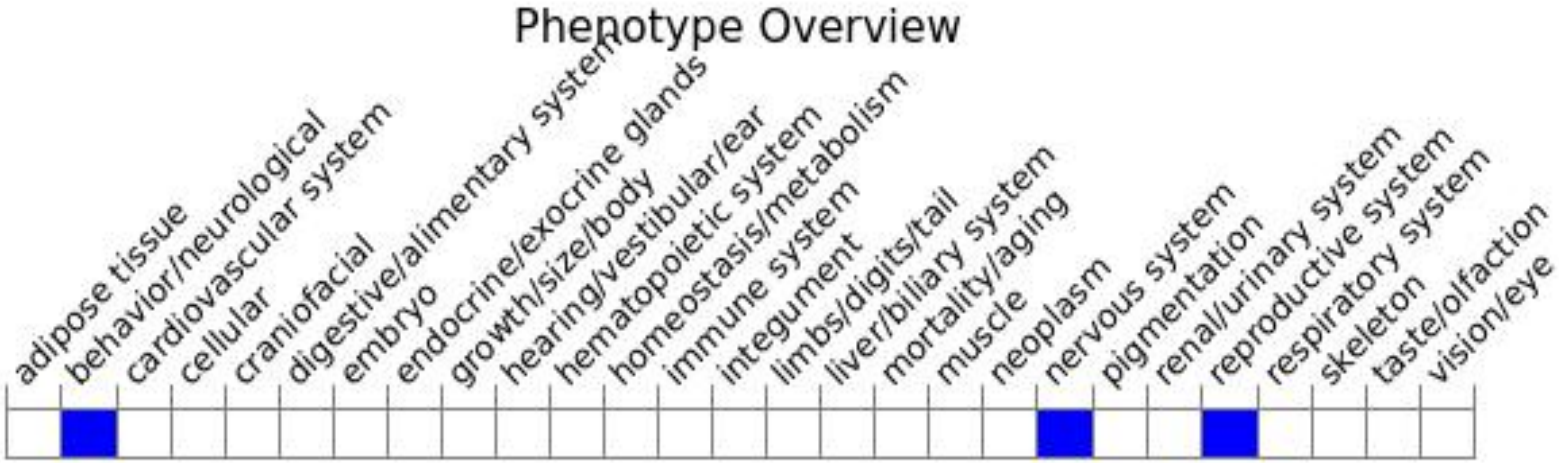
Genomic location distribution



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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