Ppfibp1 Cas9-KO Strategy

Designer: Lingyan Wu

Reviewer: Miaomiao Cui

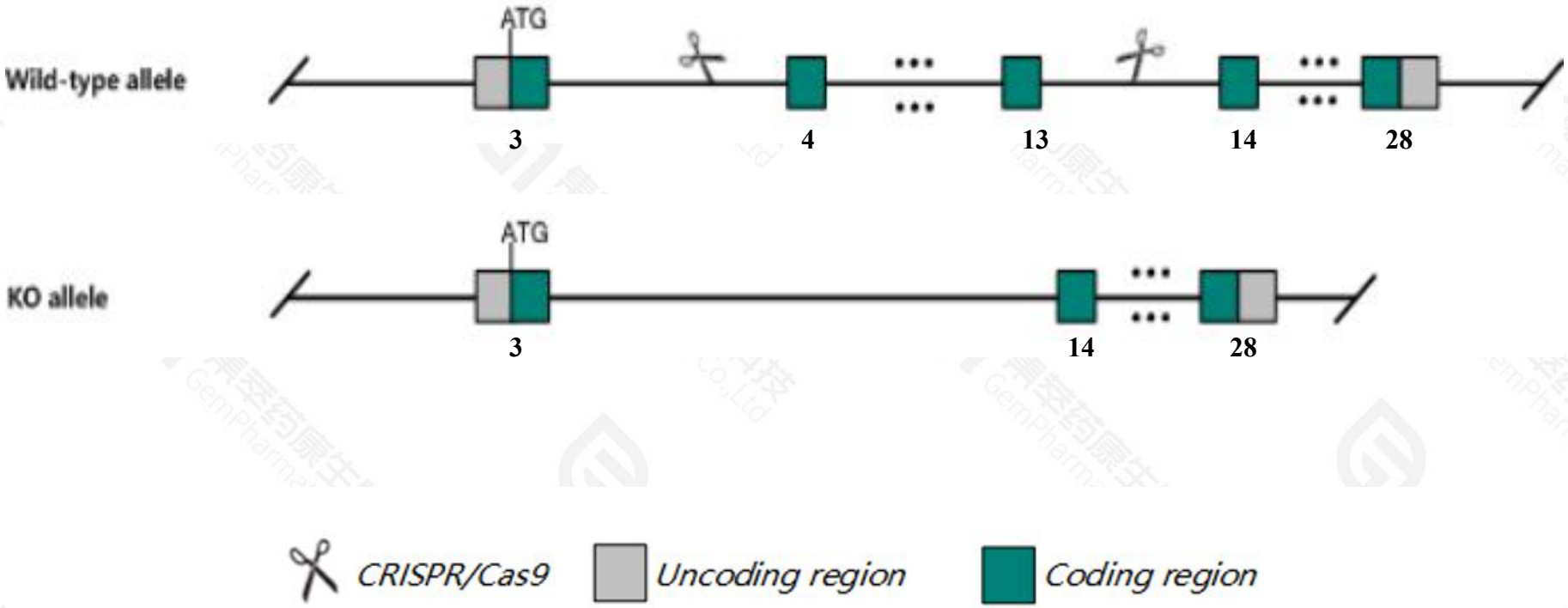
Design Date: 2021-3-11

Project Overview

Project Name	***Ppfibp1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppfibp1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ppfibp1* gene has 12 transcripts. According to the structure of *Ppfibp1* gene, exon4-exon13 of *Ppfibp1-202*(ENSMUST00000111623.8) transcript is recommended as the knockout region.The region contains 1073bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ppfibp1* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ Transcript *Ppfibp1*-206 may not be affected.

➢ The *Ppfibp1* gene is located on the Chr6. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Ppfibp1 PTPRF interacting protein, binding protein 1 (liprin beta 1) [Mus musculus (house mouse)]

Gene ID: 67533, updated on 13-Mar-2020

Summary

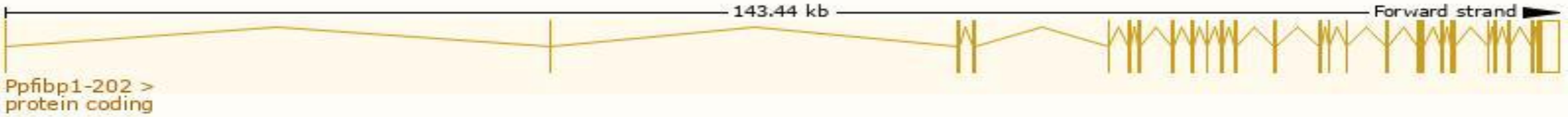
Official Symbol	Ppfibp1 provided by MGI
Official Full Name	PTPRF interacting protein, binding protein 1 (liprin beta 1) provided byMGI
Primary source	MGI:MGI:1914783
See related	Ensembl:ENSMUSG00000016487
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4632409B19Rik, AW214454, AW261454
Expression	Ubiquitous expression in bladder adult (RPKM 15.6), limb E14.5 (RPKM 10.2) and 24 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

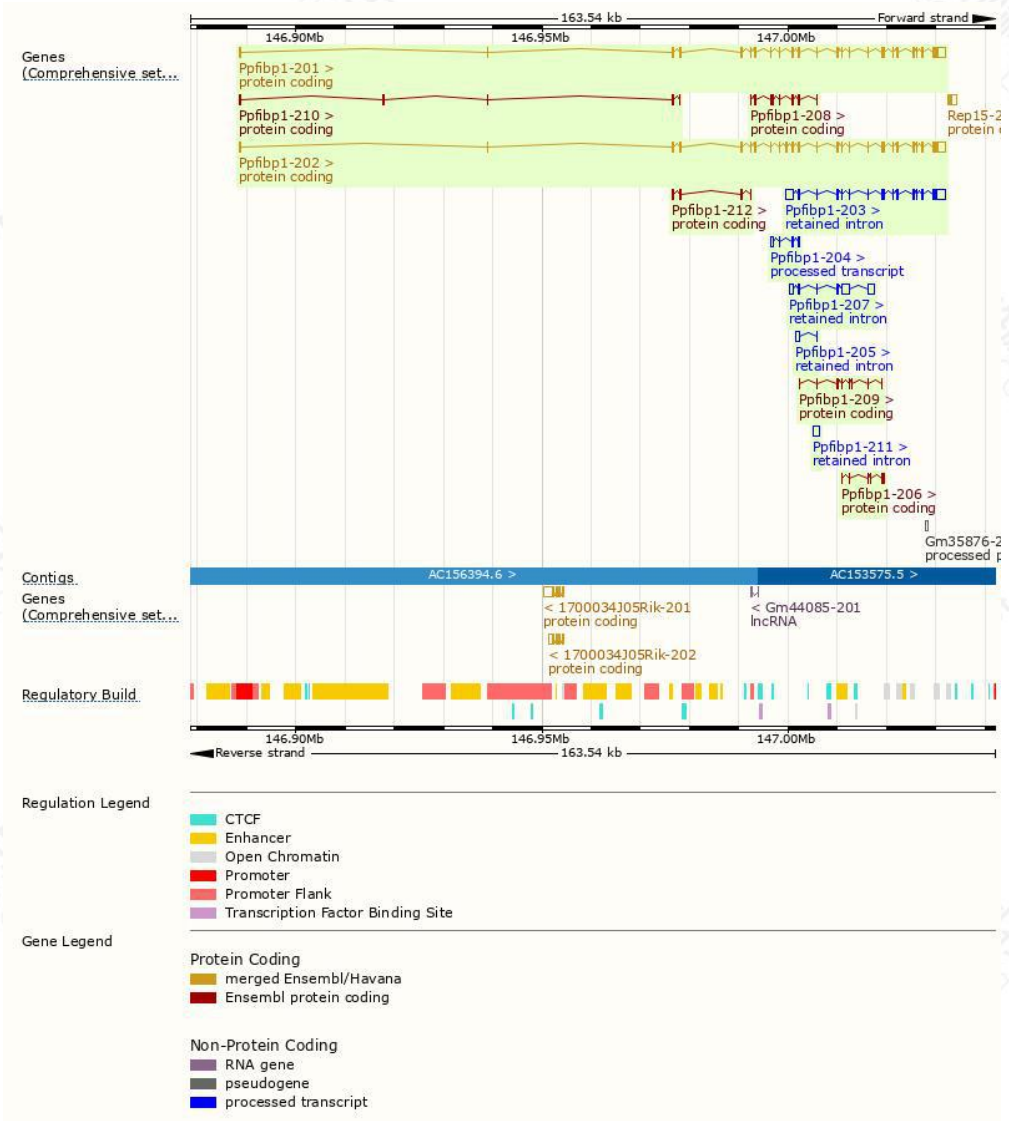
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppfibp1-201	ENSMUST00000016631.13	4851	969aa	Protein coding	CCDS39715	Q8C8U0	TSL:1 GENCODE basic APPRIS P3
Ppfibp1-202	ENSMUST00000111623.8	4782	980aa	Protein coding	CCDS51958	Q8C8U0	TSL:1 GENCODE basic APPRIS ALT2
Ppfibp1-209	ENSMUST00000155415.7	761	254aa	Protein coding	-	F6S1C4	CDS 5' and 3' incomplete TSL:3
Ppfibp1-208	ENSMUST00000154221.1	727	242aa	Protein coding	-	F7CUU8	CDS 5' and 3' incomplete TSL:5
Ppfibp1-206	ENSMUST00000136837.1	579	193aa	Protein coding	-	F6YZ95	CDS 5' and 3' incomplete TSL:3
Ppfibp1-212	ENSMUST00000204660.1	547	130aa	Protein coding	-	A0A0N4SUZ5	CDS 3' incomplete TSL:3
Ppfibp1-210	ENSMUST00000203730.2	530	25aa	Protein coding	-	A0A0N4SVG3	CDS 3' incomplete TSL:5
Ppfibp1-204	ENSMUST00000126774.1	700	No protein	Processed transcript	-	-	TSL:3
Ppfibp1-203	ENSMUST00000123902.7	5118	No protein	Retained intron	-	-	TSL:1
Ppfibp1-207	ENSMUST00000149203.1	3915	No protein	Retained intron	-	-	TSL:2
Ppfibp1-211	ENSMUST00000204028.1	1218	No protein	Retained intron	-	-	TSL:NA
Ppfibp1-205	ENSMUST00000133825.1	724	No protein	Retained intron	-	-	TSL:3

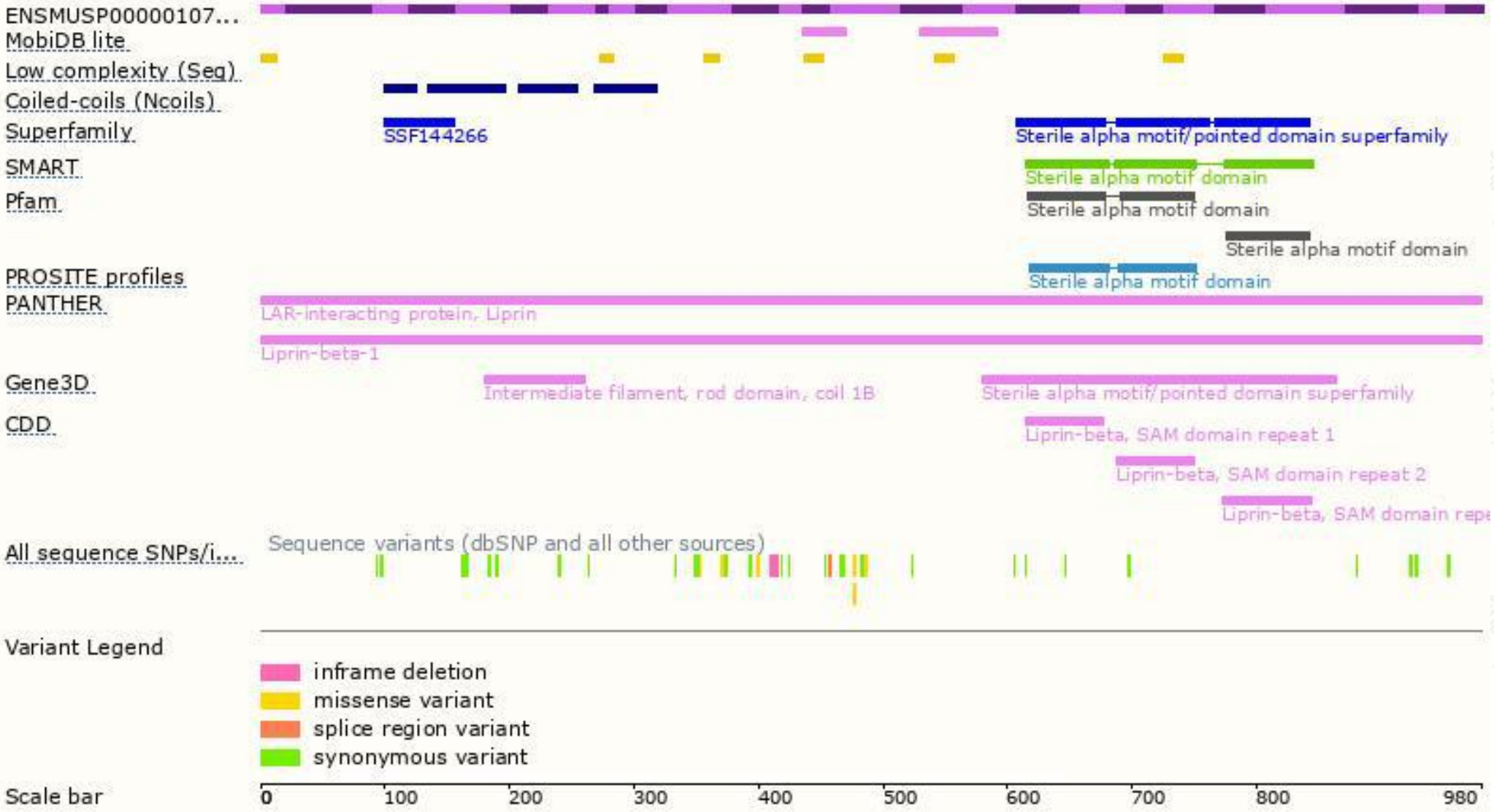
The strategy is based on the design of *Ppfibp1-202* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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