Mybpc1 Cas9-CKO Strategy

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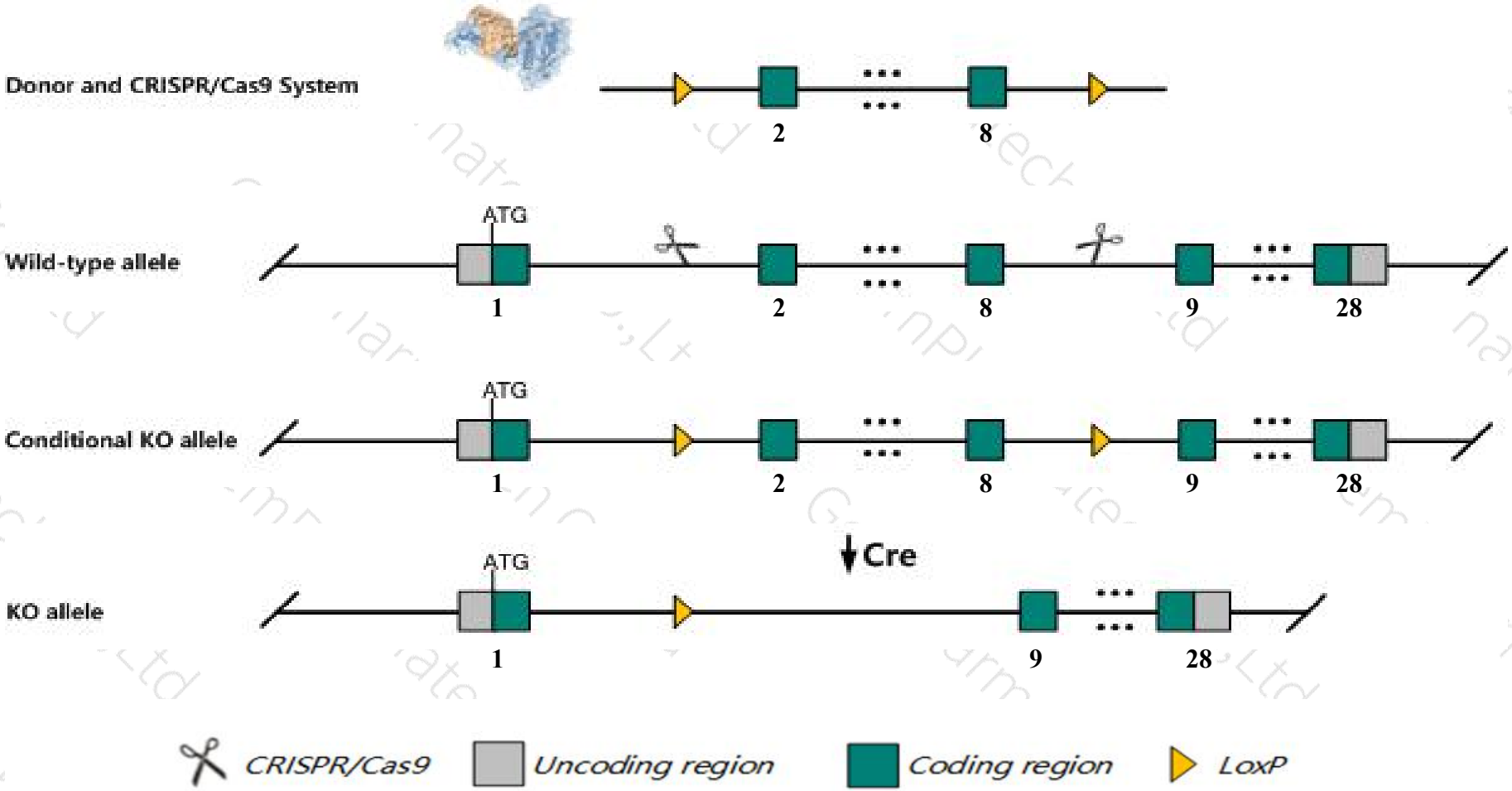
Project Overview

Project Name	***Mybpc1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mybpc1* gene. The schematic diagram is as follows:



Technical routes

- The *Mybpc1* gene has 7 transcripts. According to the structure of *Mybpc1* gene, exon2-exon8 of *Mybpc1-202* (ENSMUST00000121629.7) transcript is recommended as the knockout region.The region contains 568bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Mybpc1* 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 effect on transcript *Mybpc1*-205&206 is unknown.

➢ Transcript *Mybpc1*-203&204 may not be affected.

➢ The *Mybpc1* gene is located on the Chr10. 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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Mybpc1 myosin binding protein C, slow-type [*Mus musculus* (house mouse)]

Gene ID: 109272, updated on 10-Oct-2019

Summary

Official Symbol	Mybpc1 provided by MGI
Official Full Name	myosin binding protein C, slow-type provided by MGI
Primary source	MGI:MGI:1336213
See related	Ensembl:ENSMUSG00000020061
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	8030451F13Rik
Expression	Biased expression in limb E14.5 (RPKM 9.6), mammary gland adult (RPKM 6.9) and 11 other tissues See more
Orthologs	human all

Genomic context

Location: 10; 10 C1

See Mybpc1 in Genome Data Viewer

Exon count: 35

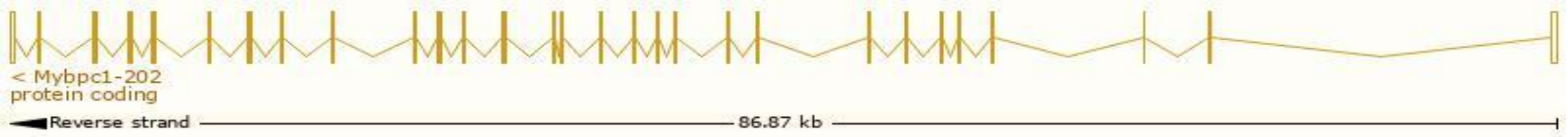
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	10	NC_000076.6 (88518279..88605229, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	10	NC_000076.5 (87981027..88067897, complement)

Transcript information（Ensembl）

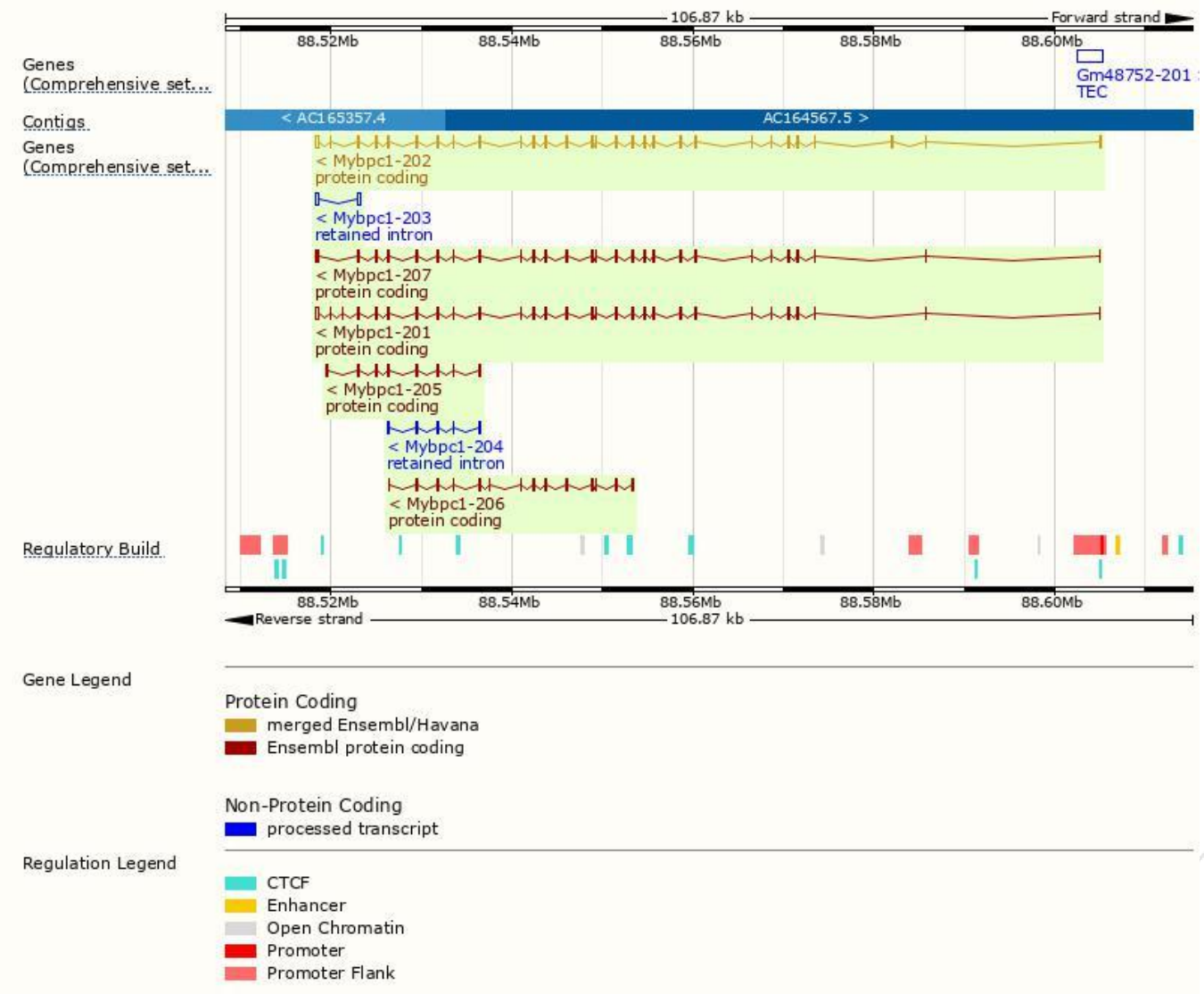
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mybpc1-202	ENSMUST00000121629.7	3922	1124aa	Protein coding	CCDS48666	Q6P6L5	TSL:1 GENCODE basic APPRIS P3
Mybpc1-201	ENSMUST00000119185.7	3752	1127aa	Protein coding	CCDS56739	D3YU50	TSL:1 GENCODE basic APPRIS ALT2
Mybpc1-207	ENSMUST00000238199.1	3650	1139aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Mybpc1-206	ENSMUST00000156573.1	1876	626aa	Protein coding	-	F6RQD1	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Mybpc1-205	ENSMUST00000153964.7	1392	362aa	Protein coding	-	F7D574	CDS 5' incomplete TSL:1
Mybpc1-204	ENSMUST00000148205.1	805	No protein	Retained intron	-	-	TSL:2
Mybpc1-203	ENSMUST00000124144.1	600	No protein	Retained intron	-	-	TSL:1

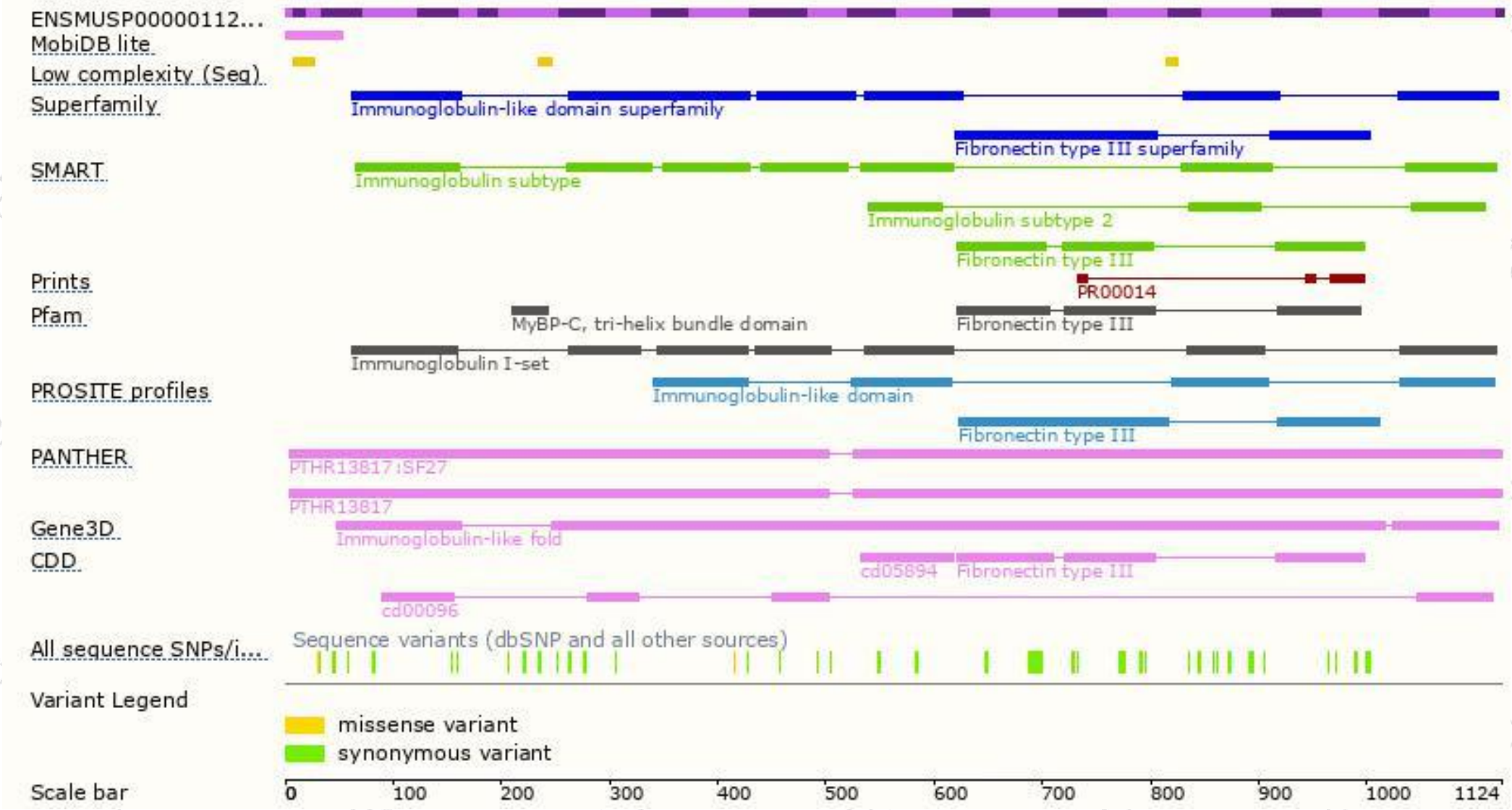
The strategy is based on the design of *Mybpc1-202* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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