

Zpbp2 Cas9-CKO Strategy

Designer: Shuang Zhang

Reviewer: Yun Li

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Project Overview

Project Name

Zpbp2

Project type

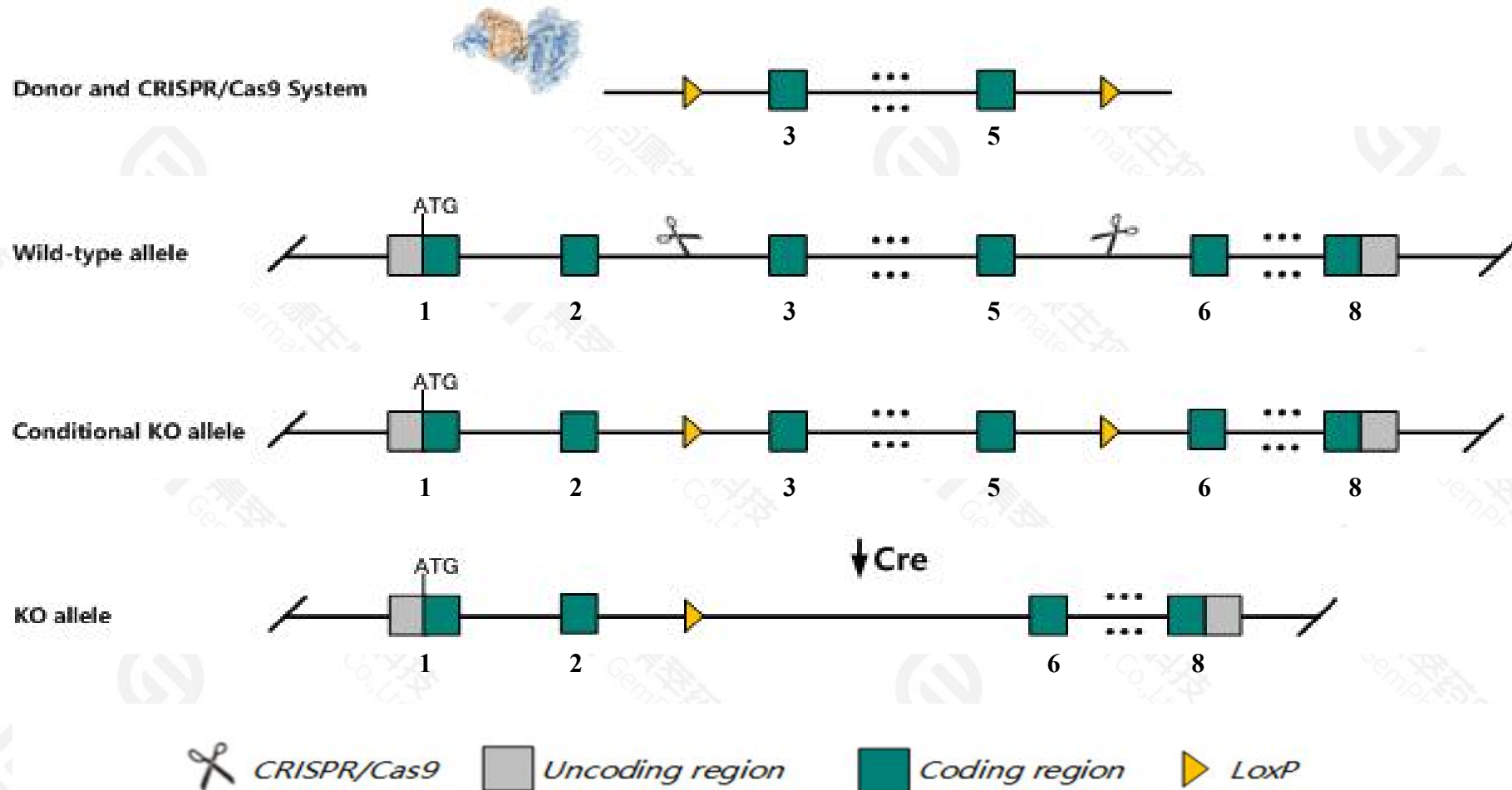
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zbp2* gene. The schematic diagram is as follows:



- The *Zpbp2* gene has 6 transcripts. According to the structure of *Zpbp2* gene, exon3-exon5 of *Zpbp2*-201(ENSMUST00000017339.12) transcript is recommended as the knockout region. The region contains 507bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zpbp2* 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.

- According to the existing MGI data, male mice homozygous for a null mutation display reduced fecundity, mild teratozoospermia, and delayed fertilization.
- The *Zpbp2* gene is located on the Chr11. 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)

Zpbp2 zona pellucida binding protein 2 [Mus musculus (house mouse)]

Gene ID: 69376, updated on 25-Sep-2020

Summary



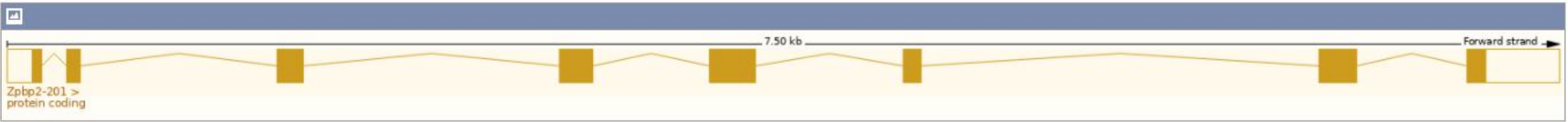
Official Symbol	Zpbp2 provided by MGI
Official Full Name	zona pellucida binding protein 2 provided by MGI
Primary source	MGI:MGI:1916626
See related	Ensembl:ENSMUSG00000017195
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700017D11Rik, 2610022C02Rik, ZPBPL
Expression	Restricted expression toward testis adult (RPKM 85.4) See more
Orthologs	human all

Transcript information (Ensembl)

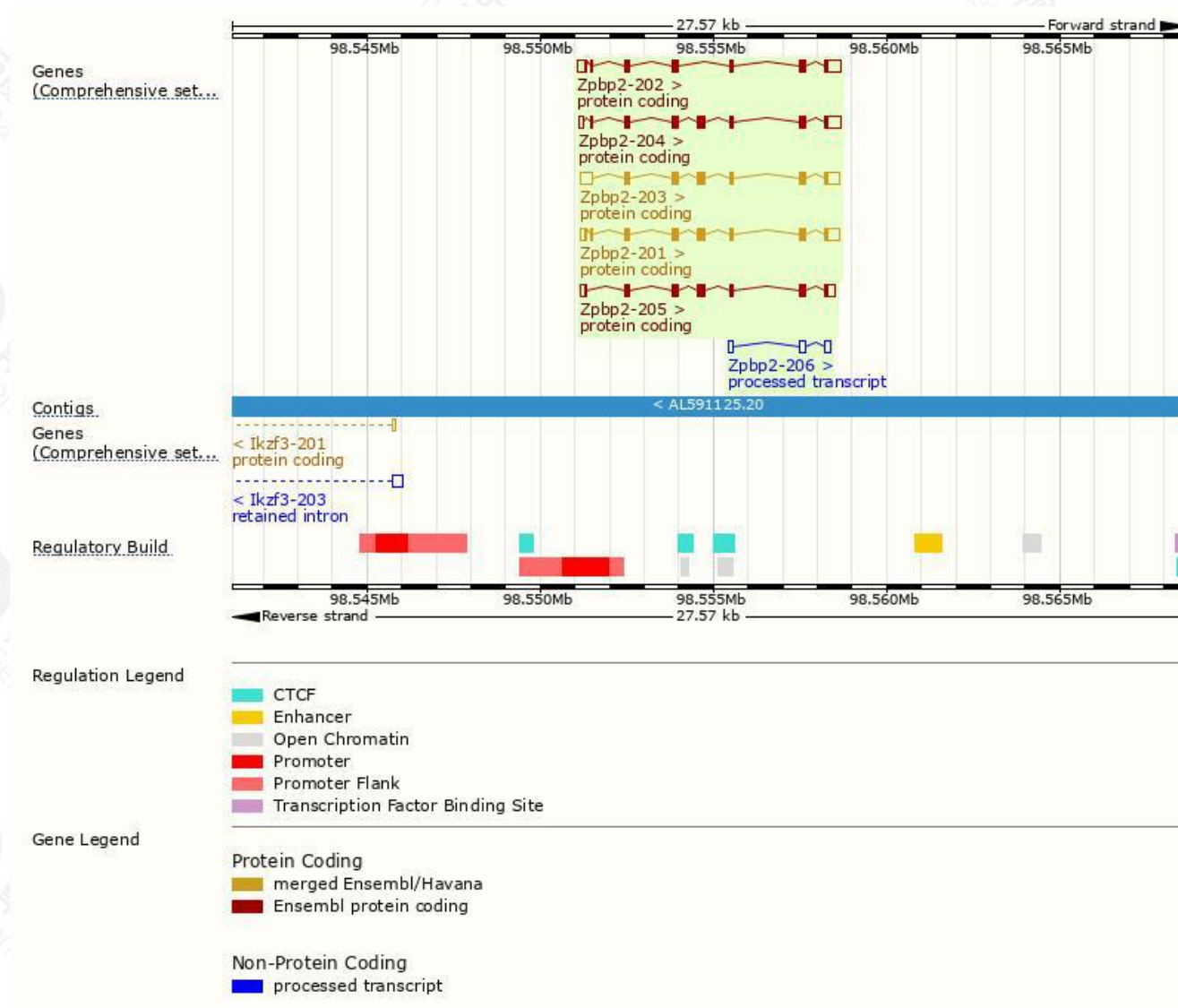
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zpbp2-203	ENSMUST00000107509.8	1577	272aa	Protein coding	CCDS48903		TSL:1 , GENCODE basic , APPRIS ALT2 ,
Zpbp2-201	ENSMUST00000017339.12	1455	326aa	Protein coding	CCDS25353		TSL:1 , GENCODE basic , APPRIS P3 ,
Zpbp2-204	ENSMUST00000107511.8	1395	272aa	Protein coding	CCDS48903		TSL:1 , GENCODE basic , APPRIS ALT2 ,
Zpbp2-202	ENSMUST00000081033.13	1300	253aa	Protein coding	CCDS25354		TSL:1 , GENCODE basic ,
Zpbp2-205	ENSMUST00000107513.3	1240	304aa	Protein coding	-		TSL:5 , GENCODE basic , APPRIS ALT2 ,
Zpbp2-206	ENSMUST00000126236.2	484	No protein	Processed transcript	-		TSL:3 ,

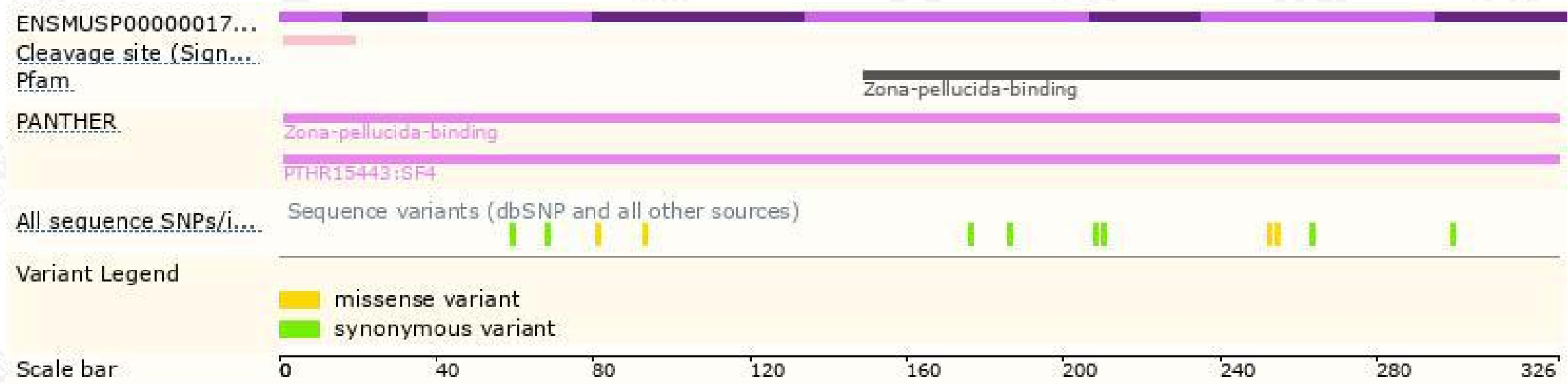
The strategy is based on the design of *Zpbp2-201* transcript,the transcription is shown below:



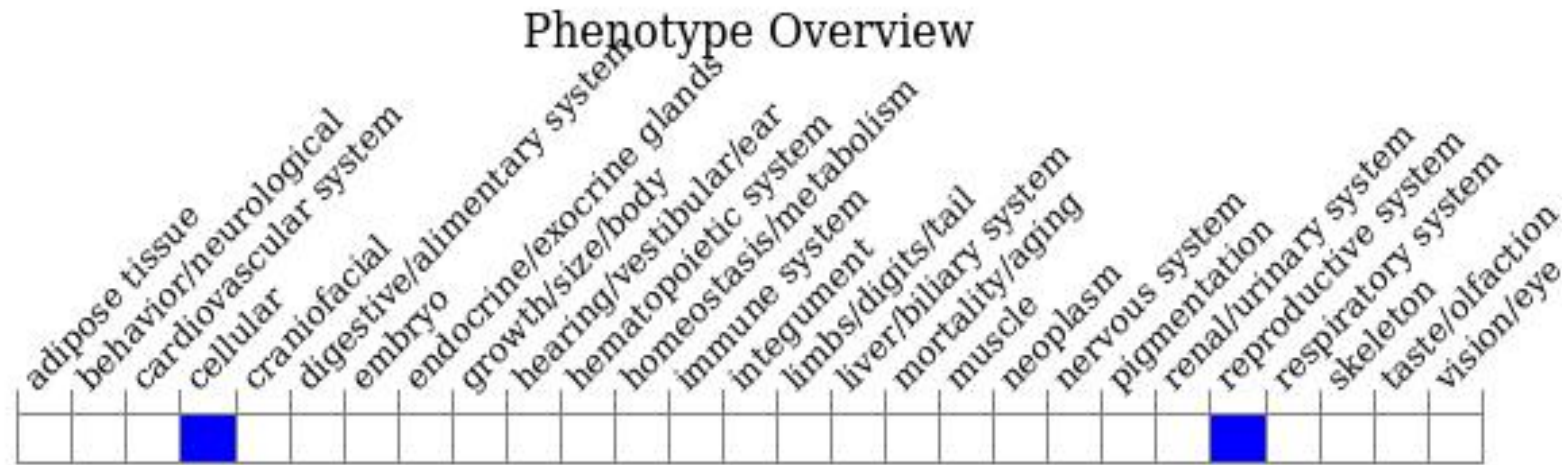
Genomic location distribution



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/>).

According to the existing MGI data, male mice homozygous for a null mutation display reduced fecundity, mild teratozoospermia, and delayed fertilization.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

