GemPharmatech™

Mybbp1a Cas9-CKO Strategy

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Reviewer: Jia Yu

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Overview

Target Gene Name

- Mybbp1a

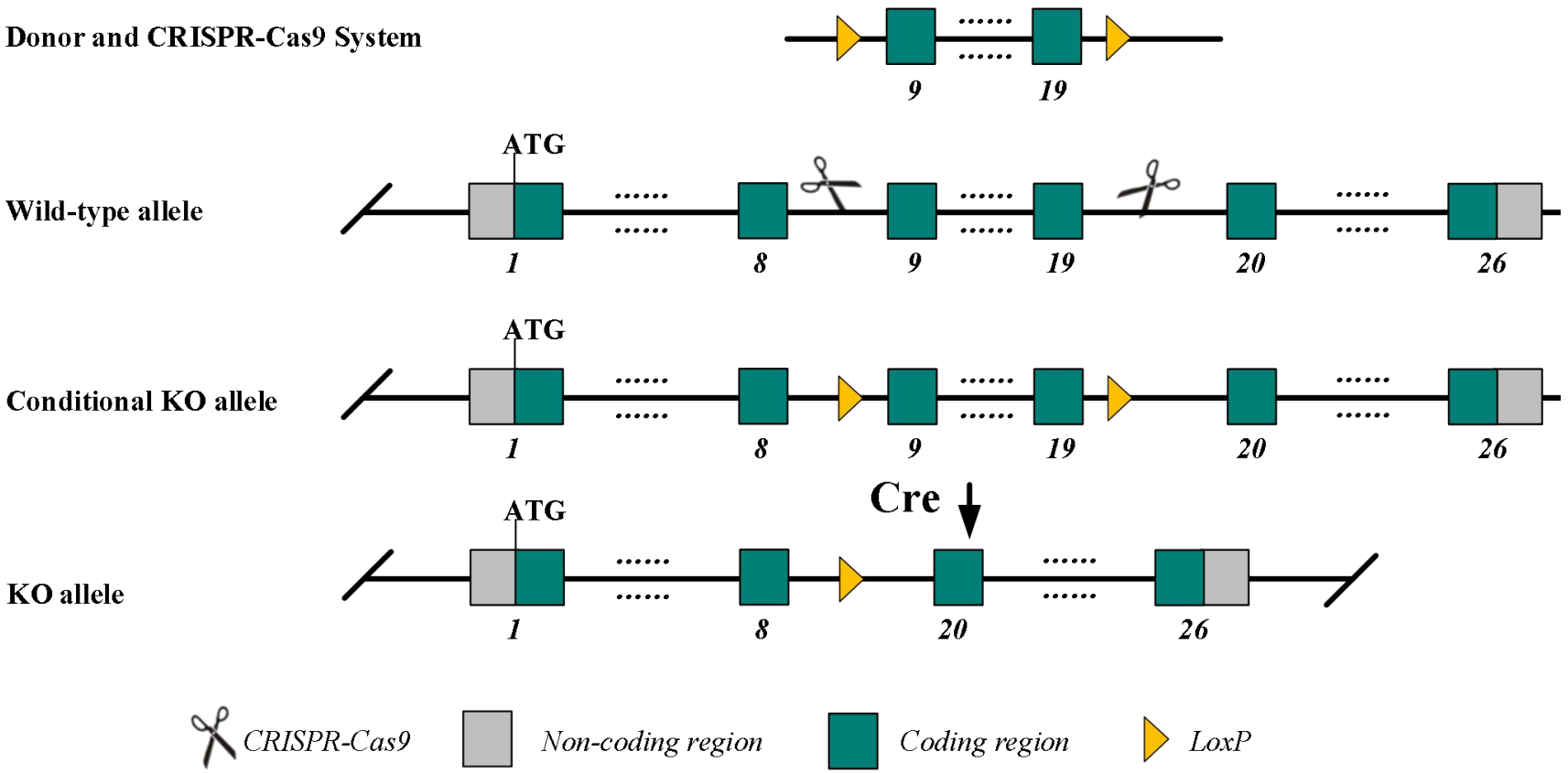
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Mybbp1a* gene.

Technical Information

- The *Mybbp1a* gene has 8 transcripts. According to the structure of *Mybbp1a* gene, exon9-19 of *Mybbp1a*-201 (ENSMUST00000045633.6) transcript is recommended as the knockout region. The region contains 1622bp of coding sequences. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Mybbp1a* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information

Mybbp1a MYB binding protein (P160) 1a [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 18432, updated on 7-Sep-2023

Summary

Official Symbol	Mybbp1a provided by MGI
Official Full Name	MYB binding protein (P160) 1a provided by MGI
Primary source	MGI:MGI:106181
See related	Ensembl:ENSMUSG00000040463 AllianceGenome:MGI:106181
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	P160; p67MBP; p160MBP
Summary	Enables E-box binding activity and transcription corepressor activity. Involved in circadian regulation of gene expression and negative regulation of transcription, DNA-templated. Acts upstream of or within respiratory electron transport chain. Located in cytoplasm and nucleolus. Part of NLS-dependent protein nuclear import complex. Is expressed in several structures, including alimentary system; brain; genitourinary system; integumental system; and limb. Orthologous to human MYBBP1A (MYB binding protein 1a). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in CNS E11.5 (RPKM 38.4), ovary adult (RPKM 36.1) and 28 other tissues See more
Orthologs	human all

NEW **Try the new Gene table**

Try the new Transcript table

Genomic context

Location: 11 B4; 11 44.29 cM — See Mybbp1a in Genome Data Viewer

Exon count: 26

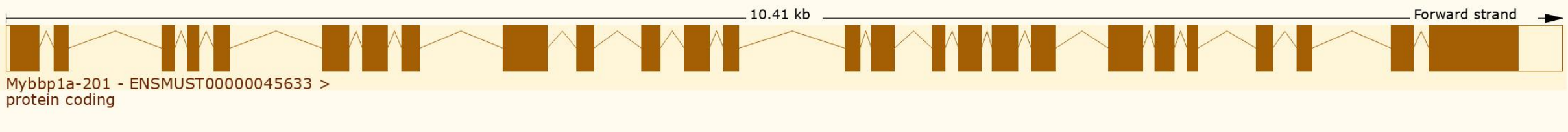
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

The gene has 8 transcripts, all transcript are shown below:

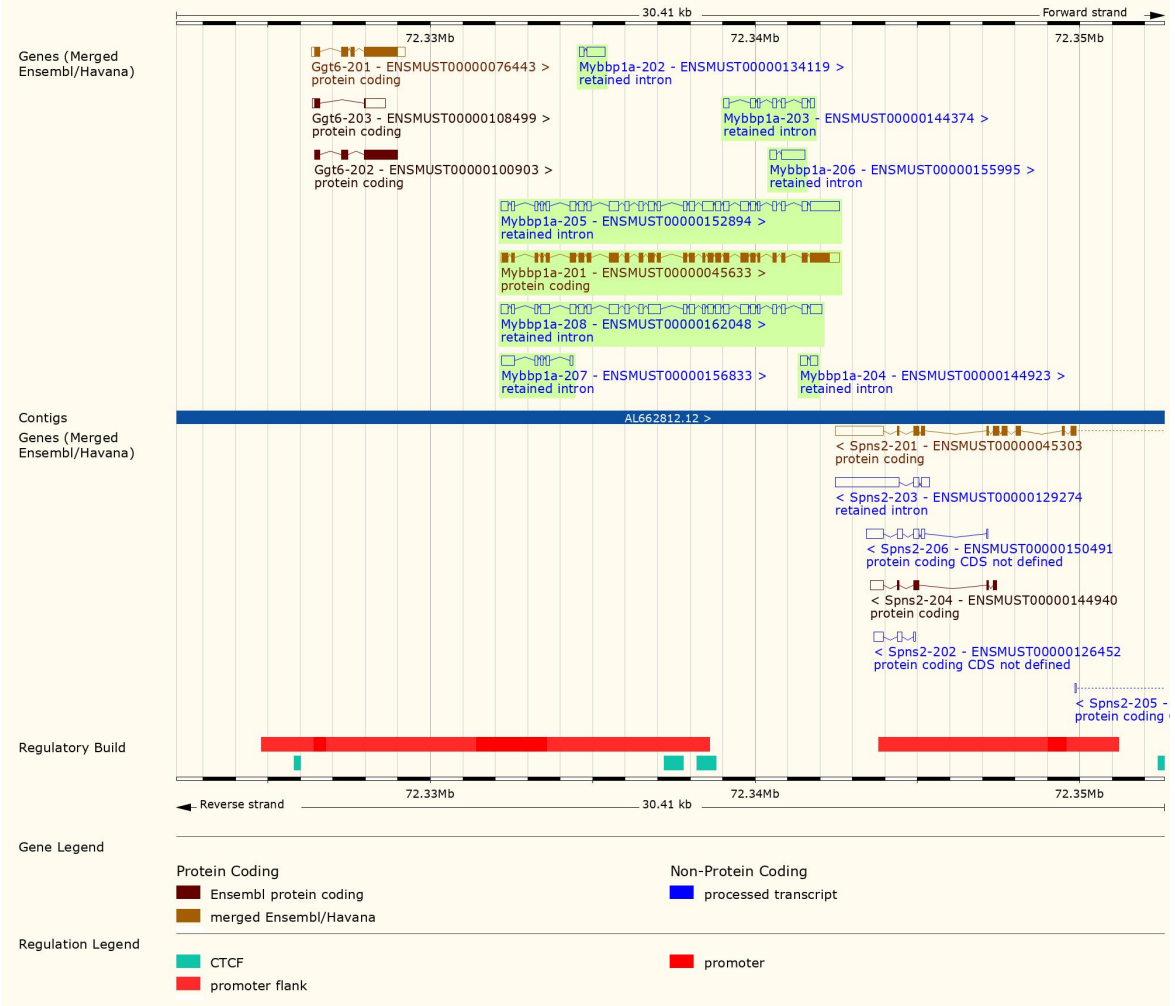
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000045633.6	Mybbp1a-201	4358	1344aa	Protein coding	CCDS24986	Q3U2W2 Q7TPV4	Ensembl Canonical, GENCODE basic, APPRIS P1, TSL:1
ENSMUST00000152894.8	Mybbp1a-205	4448	No protein	Retained intron		-	TSL:1
ENSMUST00000162048.8	Mybbp1a-208	4014	No protein	Retained intron		-	TSL:1
ENSMUST00000155995.2	Mybbp1a-206	910	No protein	Retained intron		-	TSL:3
ENSMUST00000144374.2	Mybbp1a-203	856	No protein	Retained intron		-	TSL:3
ENSMUST00000156833.2	Mybbp1a-207	762	No protein	Retained intron		-	TSL:5
ENSMUST00000134119.2	Mybbp1a-202	698	No protein	Retained intron		-	TSL:3
ENSMUST00000144923.2	Mybbp1a-204	427	No protein	Retained intron		-	TSL:2

The strategy is based on the design of *Mybbp1a*-201 transcript, the transcription is shown below:



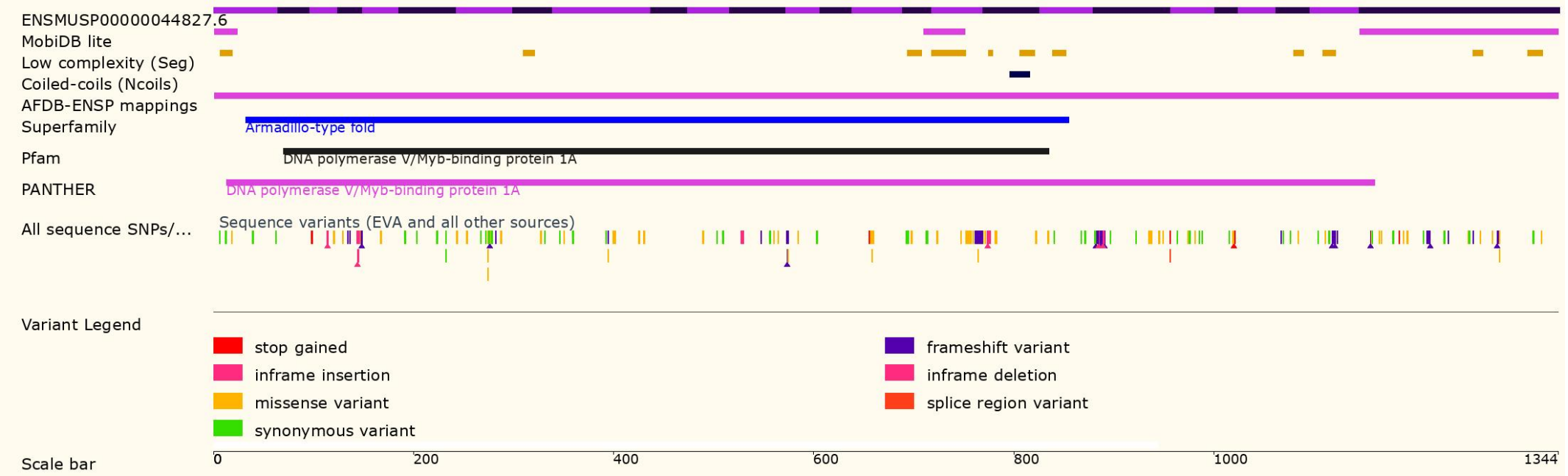
Source: https://www.ensembl.org

Genomic Information



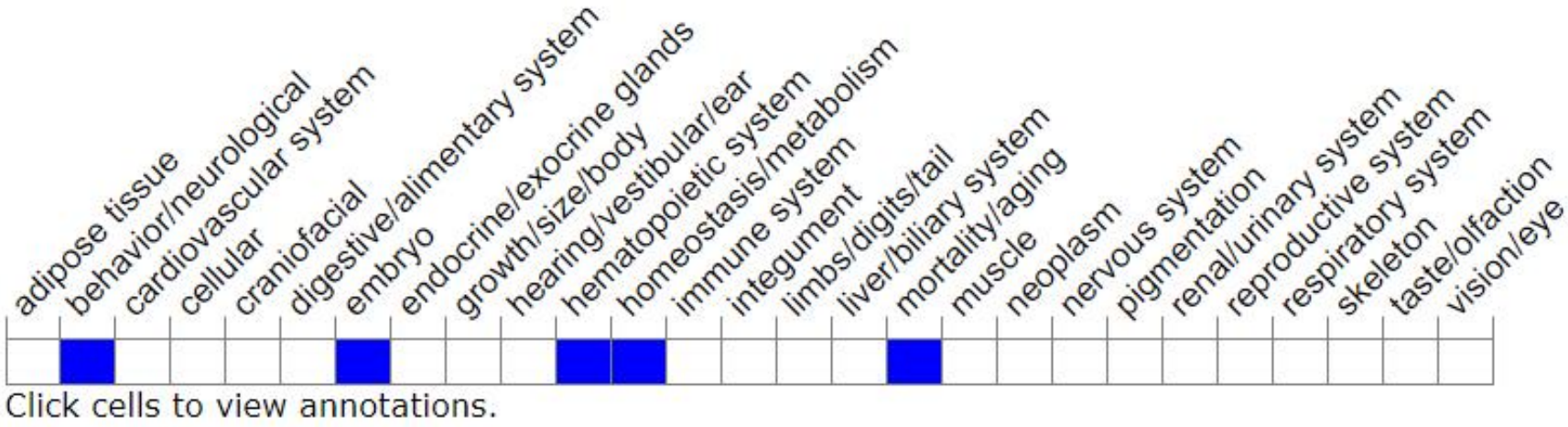
Source: : https://www.ensembl.org

Protein Information



Source: : https://www.ensembl.org

Mouse Phenotype Information (MGI)



Mice homozygous for a targeted allele exhibit embryonic lethality before blastocyst formation.

Source: https://www.informatics.jax.org

Important Information

- According theMGI data, mice homozygous for a targeted allele exhibit embryonic lethality before blastocyst formation.
- There are many residual amino acids at the N-terminal.
- The intron 8-9(561 bp) and intron 19-18(354 bp) are small and the impact is unknown.
- *Mybbp1a* is located on Chr2. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.