

***Bdp1* Cas9-CKO Strategy**

Designer: JiaYu

Reviewer: Xiaojing Li

Design Date: 2020-8-14

Project Overview

Project Name

Bdp1

Project type

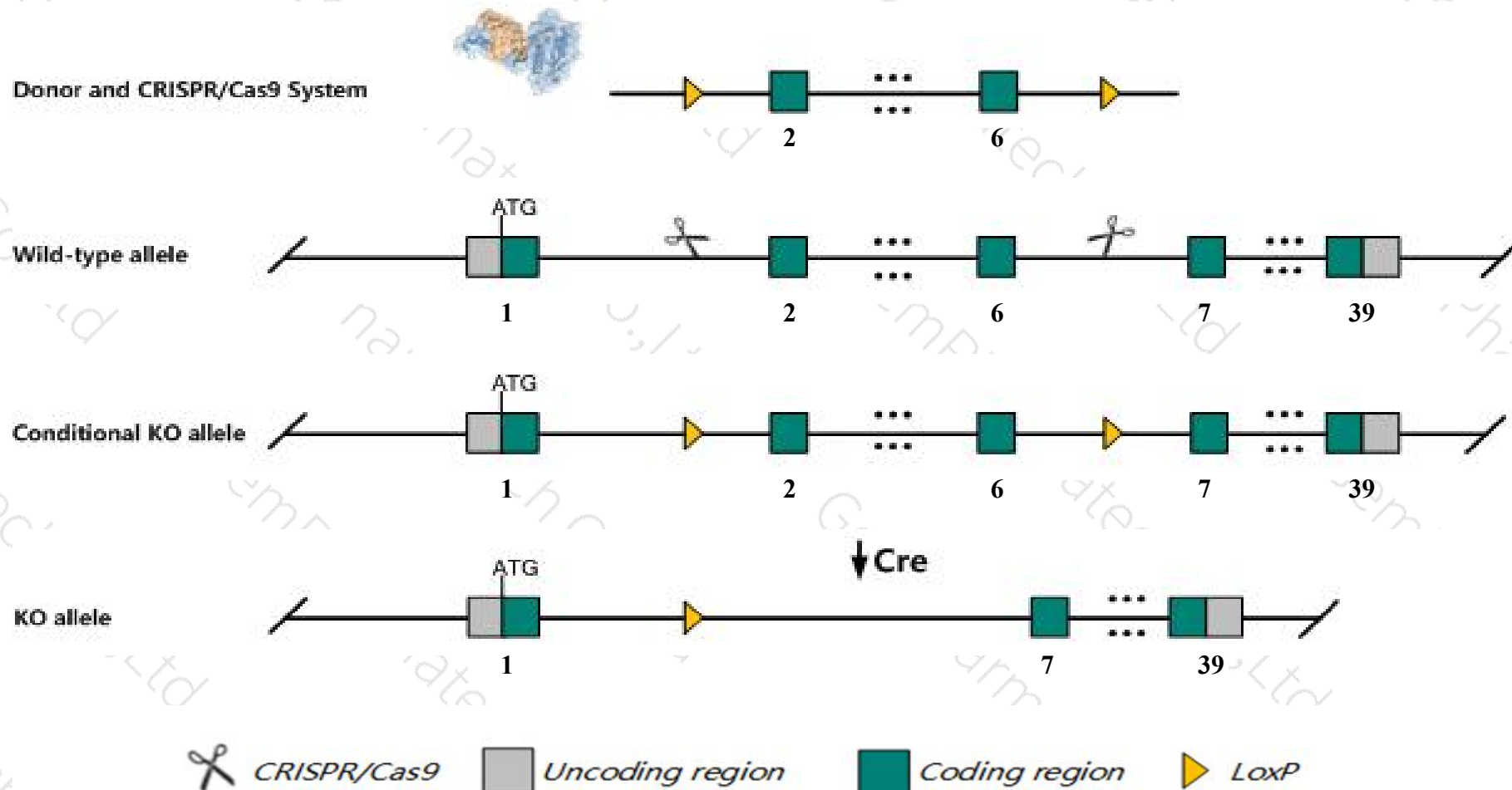
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Bdp1* gene has 7 transcripts. According to the structure of *Bdp1* gene, exon2-exon6 of *Bdp1-201*(ENSMUST00000038104.11) transcript is recommended as the knockout region. The region contains 713bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Bdp1* 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 *Bdp1* gene is located on the Chr13. 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)

Bdp1 B double prime 1, subunit of RNA polymerase III transcription initiation factor IIIB [Mus musculus (house mouse)]

Gene ID: 544971, updated on 13-Mar-2020

Summary



Official Symbol Bdp1 provided by [MGI](#)

Official Full Name B double prime 1, subunit of RNA polymerase III transcription initiation factor IIIB provided by [MGI](#)

Primary source [MGI:MGI:1347077](#)

See related [Ensembl:ENSMUSG00000049658](#)

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 AI662220, AW049390, AW456745, B130055N23Rik, G630013P12Rik, TAF3B1, TFC5, TFIIB150, TFIIB90, Tfmr, mKIAA1241

Expression Ubiquitous expression in CNS E11.5 (RPKM 3.1), liver E14 (RPKM 2.4) and 26 other tissues [See more](#)

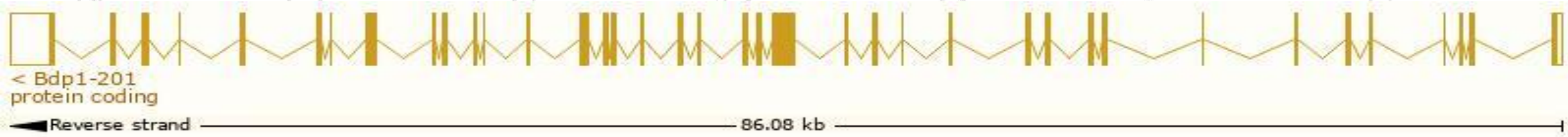
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

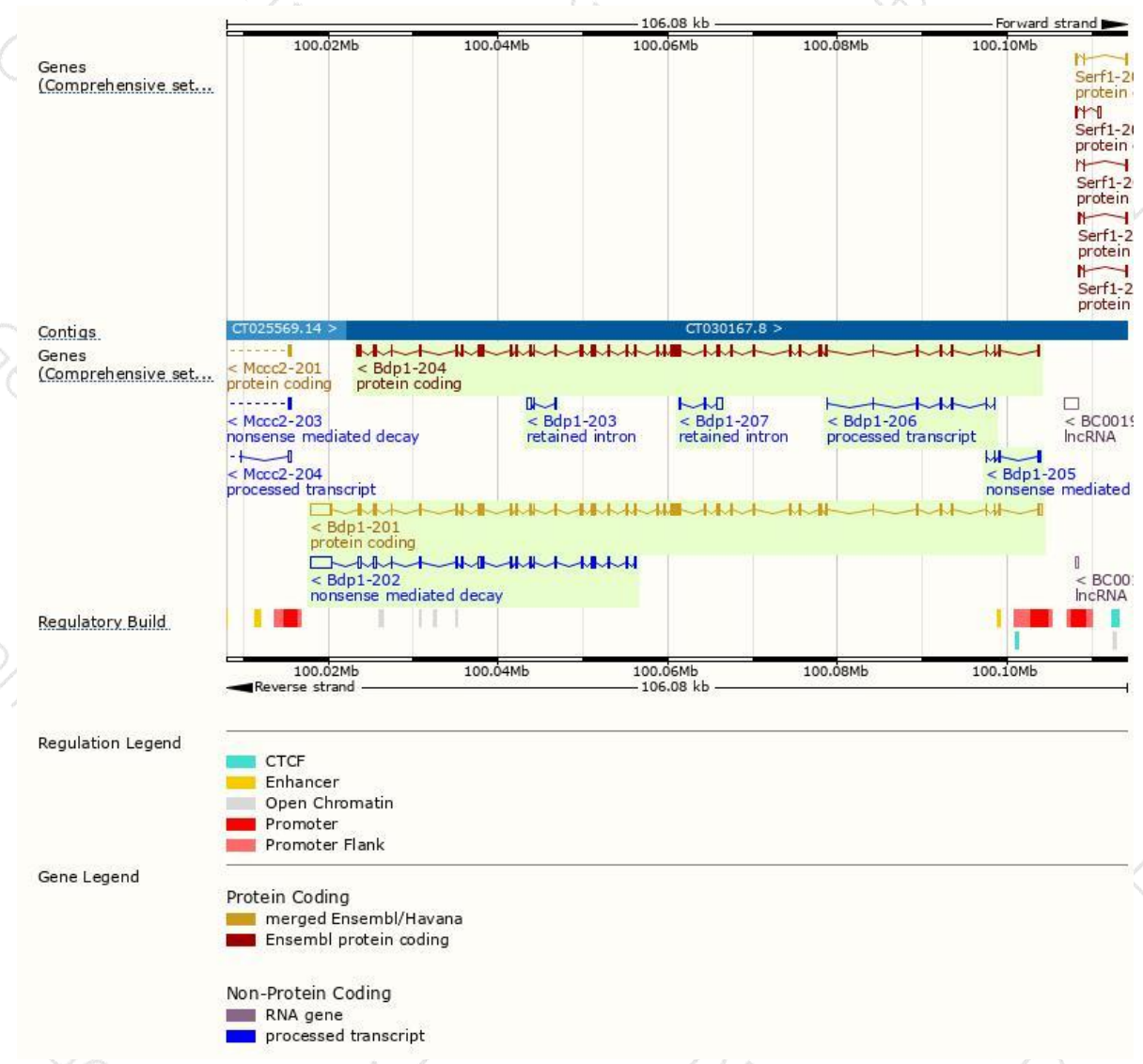
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bdp1-201	ENSMUST00000038104.11	9921	2467aa	Protein coding	CCDS49343	Q571C7	TSL:5 GENCODE basic APPRIS P2
Bdp1-204	ENSMUST00000109379.8	7567	2471aa	Protein coding	-	Q571C7	TSL:5 GENCODE basic APPRIS ALT2
Bdp1-202	ENSMUST00000099262.9	5352	325aa	Nonsense mediated decay	-	F8VQC2	CDS 5' incomplete TSL:1
Bdp1-205	ENSMUST00000163097.1	631	128aa	Nonsense mediated decay	-	E9PYY8	TSL:3
Bdp1-206	ENSMUST00000167203.1	628	No protein	Processed transcript	-	-	TSL:5
Bdp1-207	ENSMUST00000167815.1	809	No protein	Retained intron	-	-	TSL:2
Bdp1-203	ENSMUST00000105697.2	636	No protein	Retained intron	-	-	TSL:2

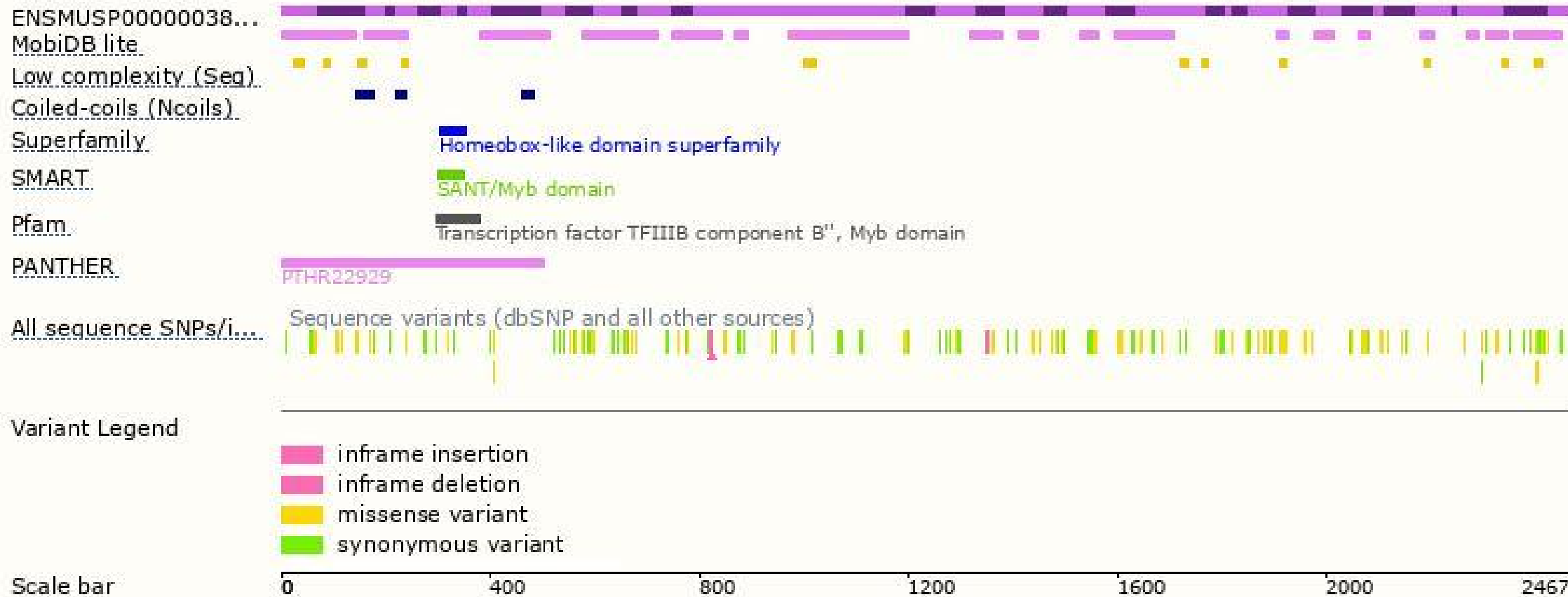
The strategy is based on the design of *Bdp1-201* transcript,the transcription is shown below:



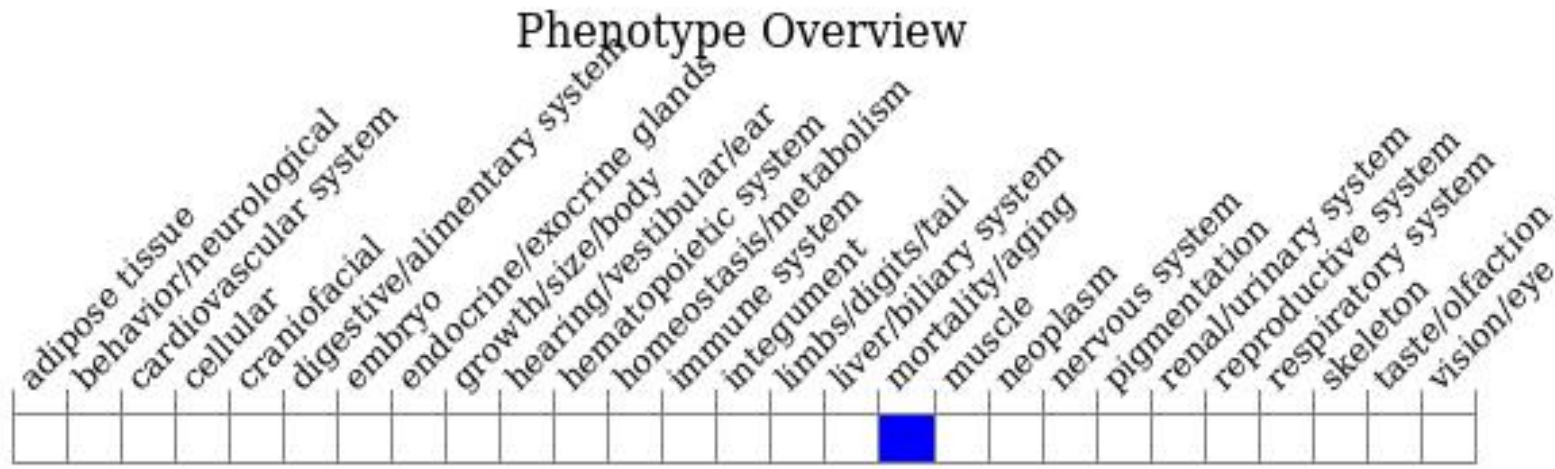
Genomic location distribution



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/>).

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

Tel: 400-9660890

