

***Brd7* Cas9-KO Strategy**

Designer: Jinling Wang

Reviewer: Longyun Hu

Design Date: 2018/12/10

Project Overview

Project Name

Brd7

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Brd7* gene. The schematic diagram is as follows:



- The *Brd7* gene has 7 transcripts. According to the structure of *Brd7* gene, exon3-exon4 of *Brd7*-201(ENSMUST00000034085.7) transcript is recommended as the knockout region. The region contains 188bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Brd7* 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.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit impaired cognitive behavior and dendrite morphology in the medial prefrontal cortex. Mice homozygous for a different knock-out allele die in utero prior to E16.5, showing fetal growth retardation and altered limb, blood vessel and organ development.
- The *Brd7* gene is located on the Chr8. 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)

Brd7 bromodomain containing 7 [Mus musculus (house mouse)]

Gene ID: 26992, updated on 13-Mar-2020

Summary



Official Symbol Brd7 provided by [MGI](#)

Official Full Name bromodomain containing 7 provided by [MGI](#)

Primary source [MGI:MGI:1349766](#)

See related [Ensembl:ENSMUSG00000031660](#)

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 BP75, CELTIX1, Ptpn13ip

Expression Ubiquitous expression in CNS E11.5 (RPKM 13.7), CNS E14 (RPKM 11.2) and 28 other tissues [See more](#)

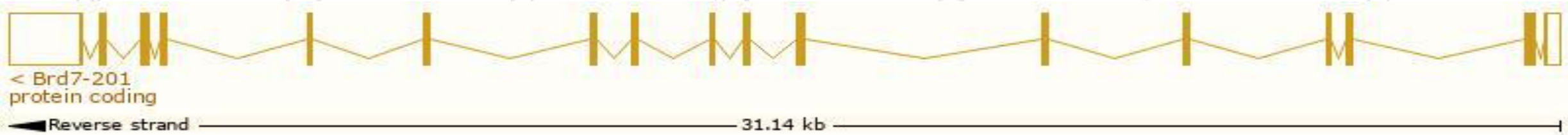
Orthologs [human all](#)

Transcript information (Ensembl)

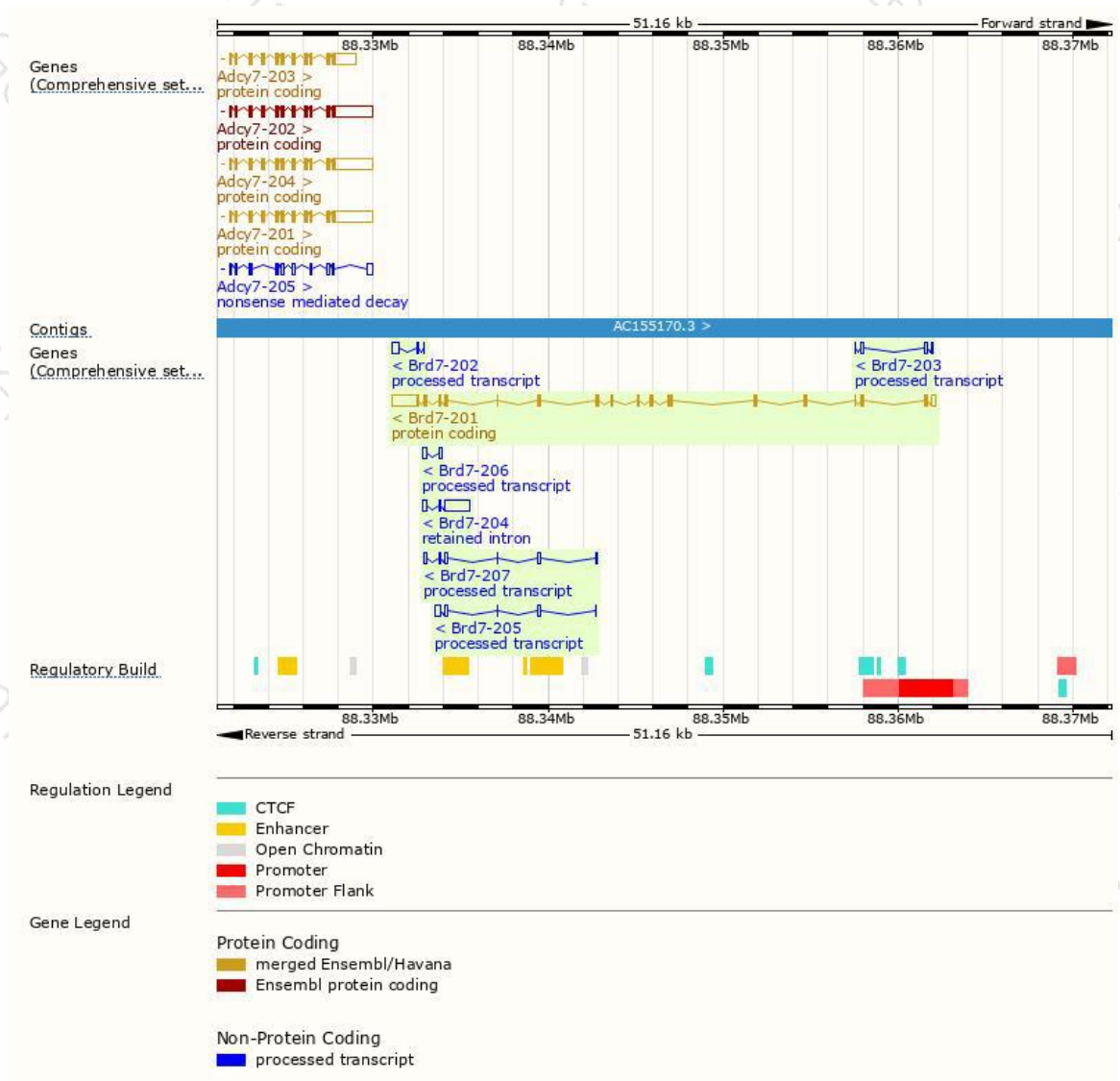
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Brd7-201	ENSMUST00000034085.7	3625	651aa	Protein coding	CCDS22510	O88665	TSL:1 GENCODE basic APPRIS P1
Brd7-207	ENSMUST00000149841.7	667	No protein	Processed transcript	-	-	TSL:3
Brd7-205	ENSMUST00000145609.1	636	No protein	Processed transcript	-	-	TSL:2
Brd7-203	ENSMUST00000135471.1	511	No protein	Processed transcript	-	-	TSL:2
Brd7-202	ENSMUST00000131748.1	508	No protein	Processed transcript	-	-	TSL:2
Brd7-206	ENSMUST00000146370.1	422	No protein	Processed transcript	-	-	TSL:1
Brd7-204	ENSMUST00000139675.7	1746	No protein	Retained intron	-	-	TSL:1

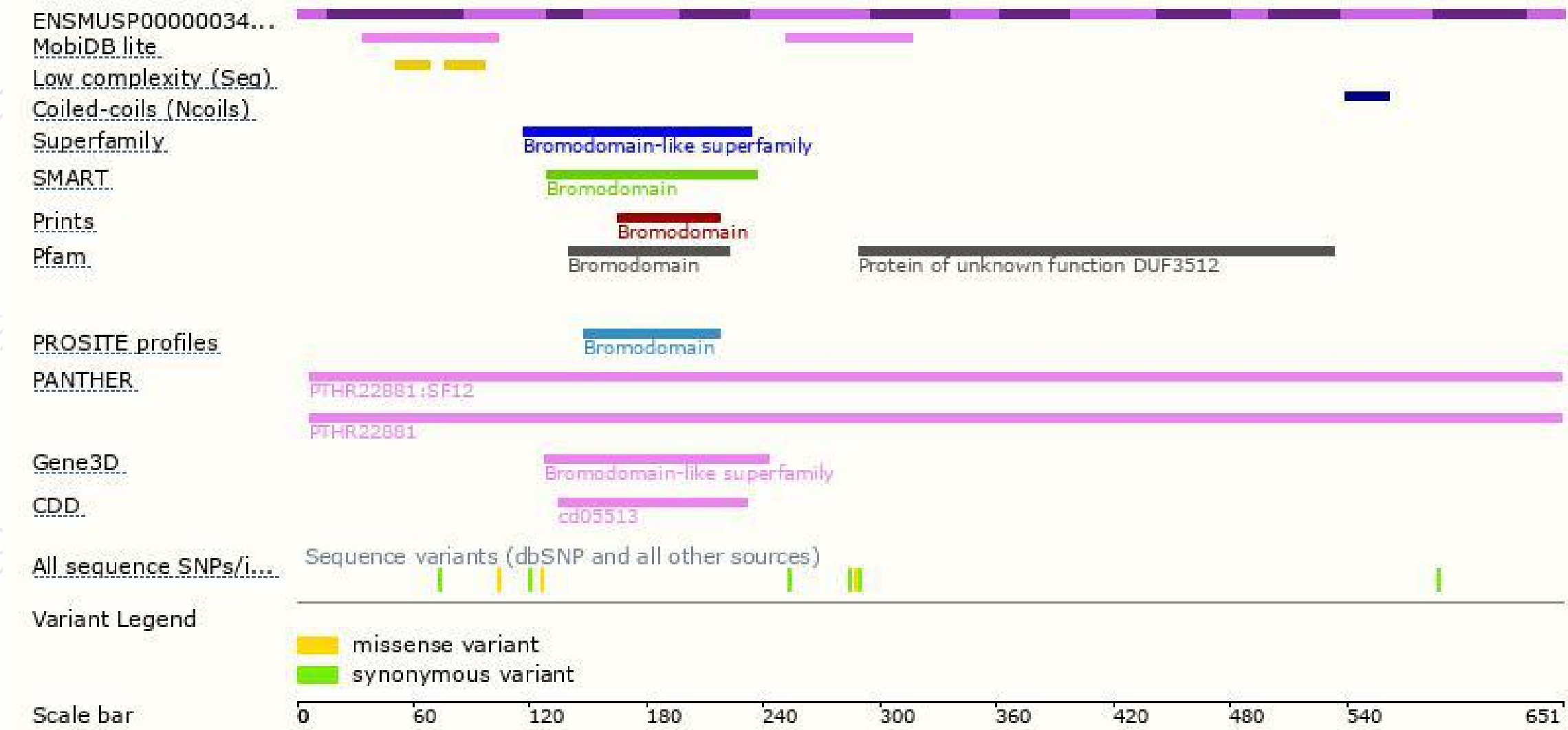
The strategy is based on the design of *Brd7-201* transcript,the transcription is shown below:



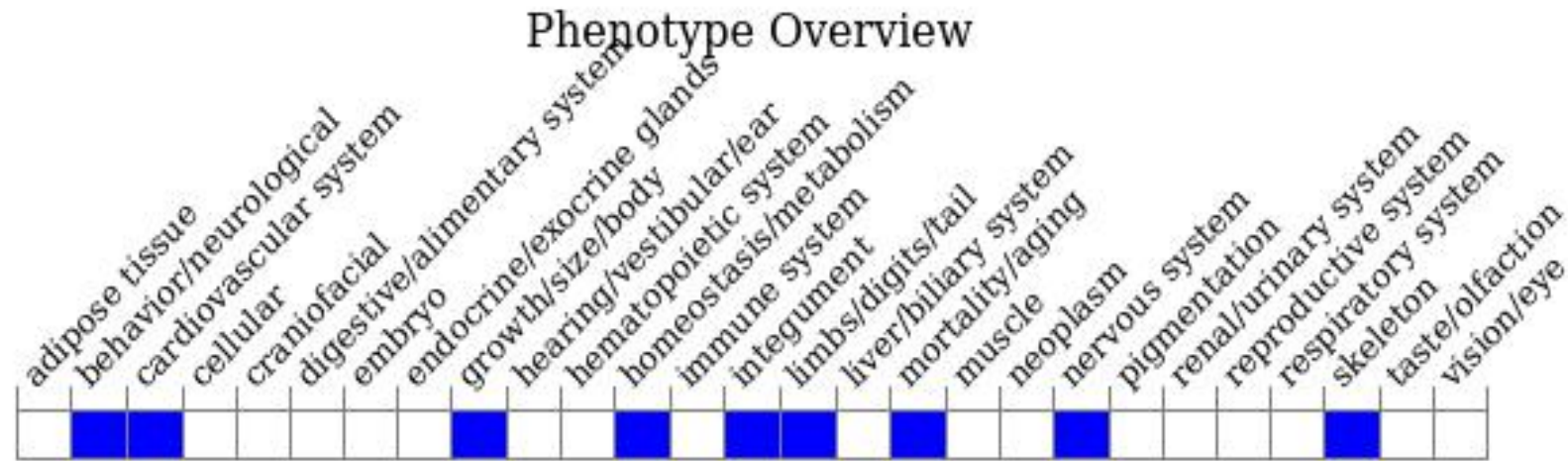
Genomic location distribution



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, mice homozygous for a knock-out allele exhibit impaired cognitive behavior and dendrite morphology in the medial prefrontal cortex. Mice homozygous for a different knock-out allele die in utero prior to E16.5, showing fetal growth retardation and altered limb, blood vessel and organ development.

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

Tel: 400-9660890

