

***Brd2* Cas9-KO Strategy**

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Project Overview

Project Name

Brd2

Project type

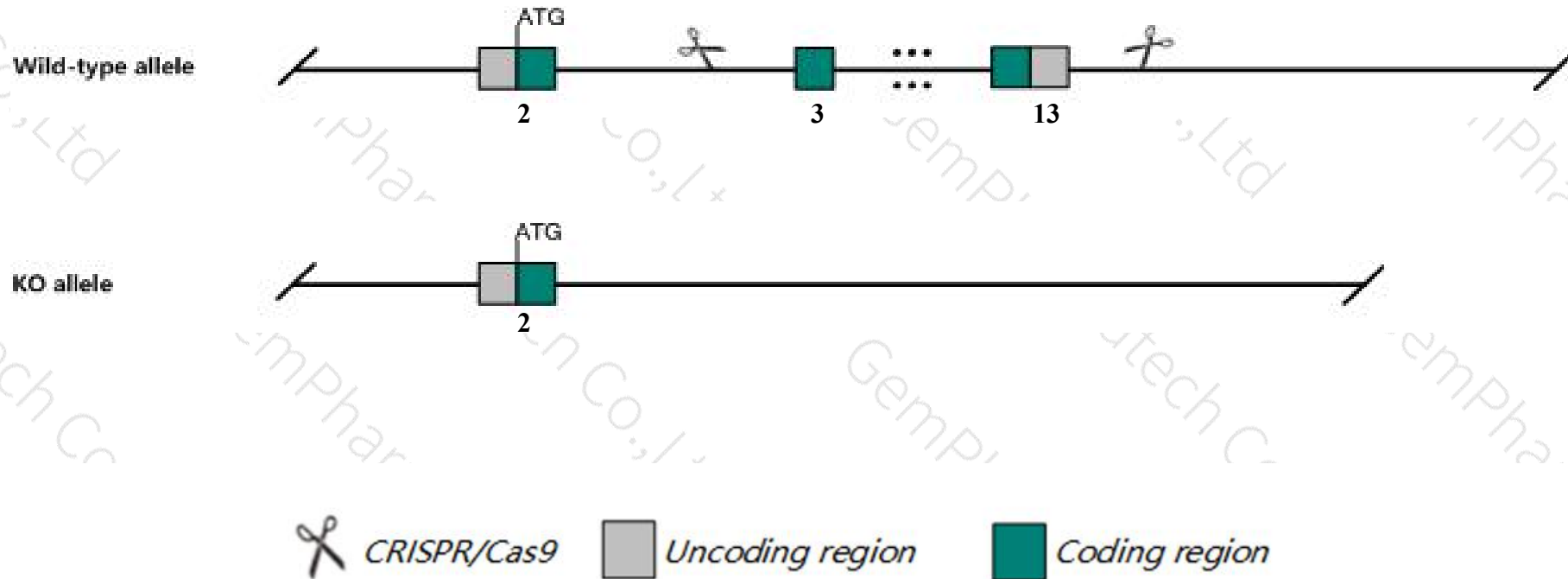
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Brd2* gene. The schematic diagram is as follows:



- The *Brd2* gene has 19 transcripts. According to the structure of *Brd2* gene, exon3-exon13 of *Brd2-201* (ENSMUST00000025193.13) transcript is recommended as the knockout region. The region contains 2371bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Brd2* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a null mutation display embryonic lethality during organogenesis with decreased embryo size, decreased cell proliferation, a delay in the cell cycle, and increased cell death. Heterozygous mice also display decreased cell proliferation.
- The *Brd2* gene is located on the Chr17. 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)

Brd2 bromodomain containing 2 [Mus musculus (house mouse)]

Gene ID: 14312, updated on 31-Jan-2019

Summary



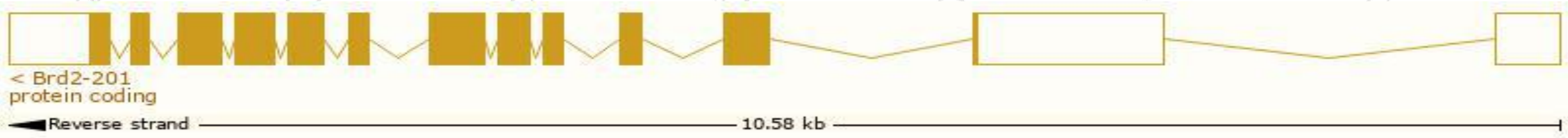
Official Symbol	Brd2 provided by MGI
Official Full Name	bromodomain containing 2 provided by MGI
Primary source	MGI:MGI:99495
See related	Ensembl:ENSMUSG00000024335
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW228947, D17H6S113E, Frg-1, Fsrg-1, Fsrg1, Nat, Ring3, Rnf3, mKIAA4005
Expression	Ubiquitous expression in thymus adult (RPKM 36.3), adrenal adult (RPKM 32.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

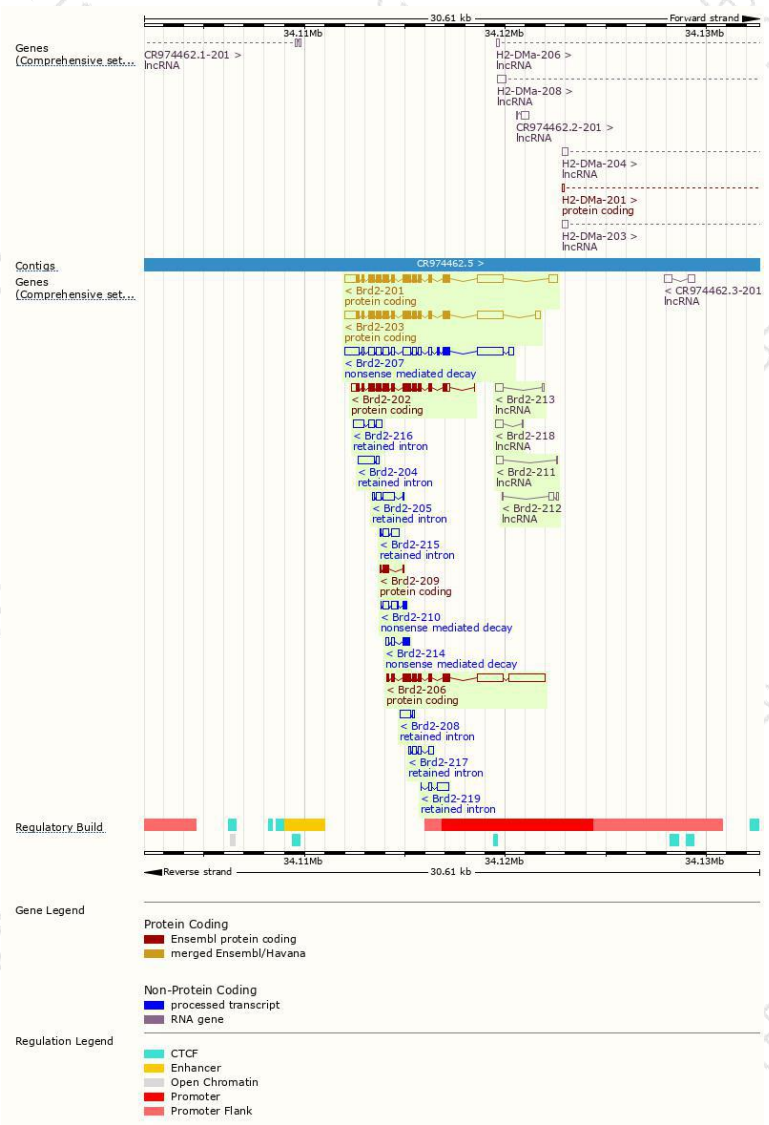
The gene has 19 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Brd2-201	ENSMUST00000025193.13	4657	798aa	Protein coding	CCDS28641	B2RS09_Q7JJ13	TSL:1 GENCODE basic APPRIS P2
Brd2-203	ENSMUST00000114242.8	4483	798aa	Protein coding	CCDS28641	B2RS09_Q7JJ13	TSL:1 GENCODE basic APPRIS P2
Brd2-206	ENSMUST00000151986.1	4482	473aa	Protein coding	-	I7HPW1	CDS 3' incomplete TSL:1
Brd2-202	ENSMUST00000095347.12	2617	752aa	Protein coding	-	U3KL T0	TSL:5 GENCODE basic APPRIS ALT2
Brd2-209	ENSMUST00000173032.1	406	136aa	Protein coding	-	G3UZR9	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Brd2-207	ENSMUST00000154232.8	4520	146aa	Nonsense mediated decay	-	Q3TH63	TSL:5
Brd2-210	ENSMUST00000173204.1	771	64aa	Nonsense mediated decay	-	S4R1Z1	CDS 5' incomplete TSL:3
Brd2-214	ENSMUST00000235313.1	638	132aa	Nonsense mediated decay	-	-	CDS 5' incomplete
Brd2-216	ENSMUST00000236090.1	1109	No protein	Retained intron	-	-	
Brd2-205	ENSMUST00000148143.2	975	No protein	Retained intron	-	-	TSL:5
Brd2-204	ENSMUST00000142570.1	961	No protein	Retained intron	-	-	TSL:1
Brd2-219	ENSMUST00000237872.1	747	No protein	Retained intron	-	-	
Brd2-215	ENSMUST00000235347.1	684	No protein	Retained intron	-	-	
Brd2-217	ENSMUST00000236781.1	654	No protein	Retained intron	-	-	
Brd2-208	ENSMUST00000155286.1	610	No protein	Retained intron	-	-	TSL:2
Brd2-213	ENSMUST00000179722.1	463	No protein	lncRNA	-	-	TSL:2
Brd2-218	ENSMUST00000237345.1	442	No protein	lncRNA	-	-	
Brd2-211	ENSMUST00000177828.1	396	No protein	lncRNA	-	-	TSL:3
Brd2-212	ENSMUST00000179687.1	366	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Brd2-201* transcript,The transcription is shown below



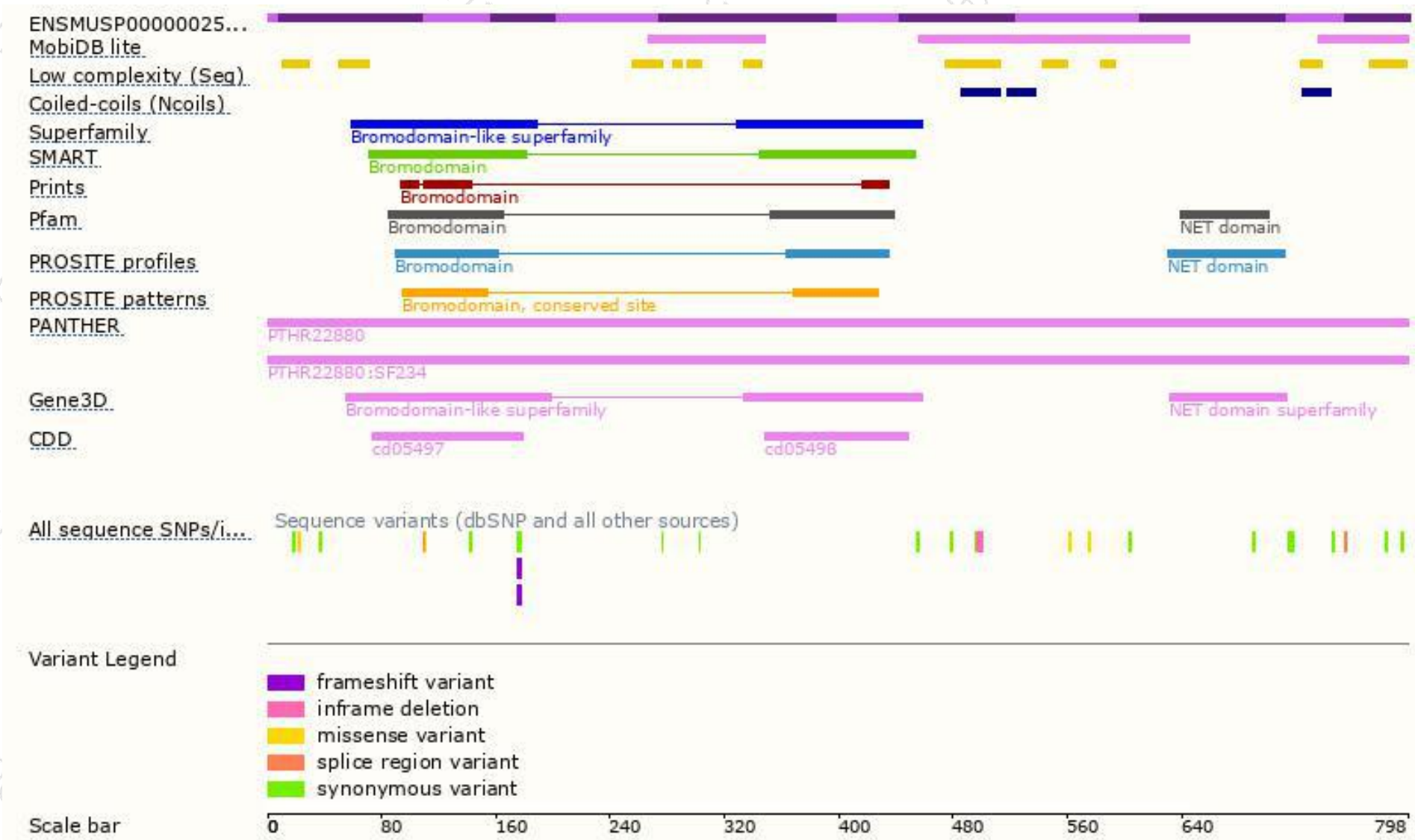
Genomic location distribution



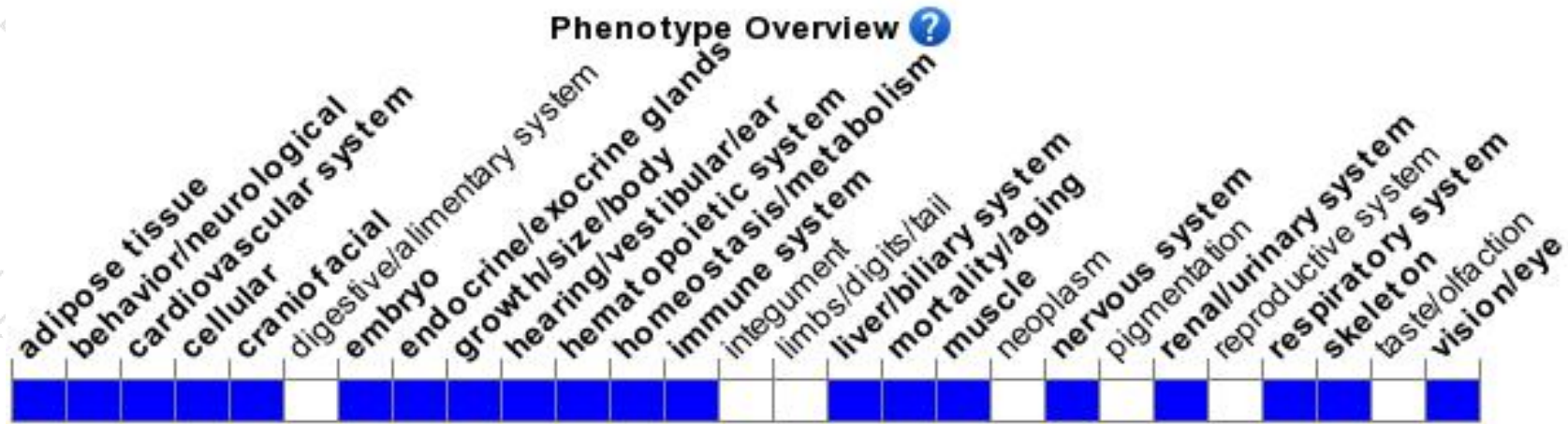
Protein domain



集萃药康
GemPharmatech



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 null mutation display embryonic lethality during organogenesis with decreased embryo size, decreased cell proliferation, a delay in the cell cycle, and increased cell death.

Heterozygous mice also display decreased cell proliferation.

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

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