

***Bnip1* Cas9-CKO Strategy**

Designer:

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Design Date:

2019-7-19

Project Overview

Project Name

Bnip1

Project type

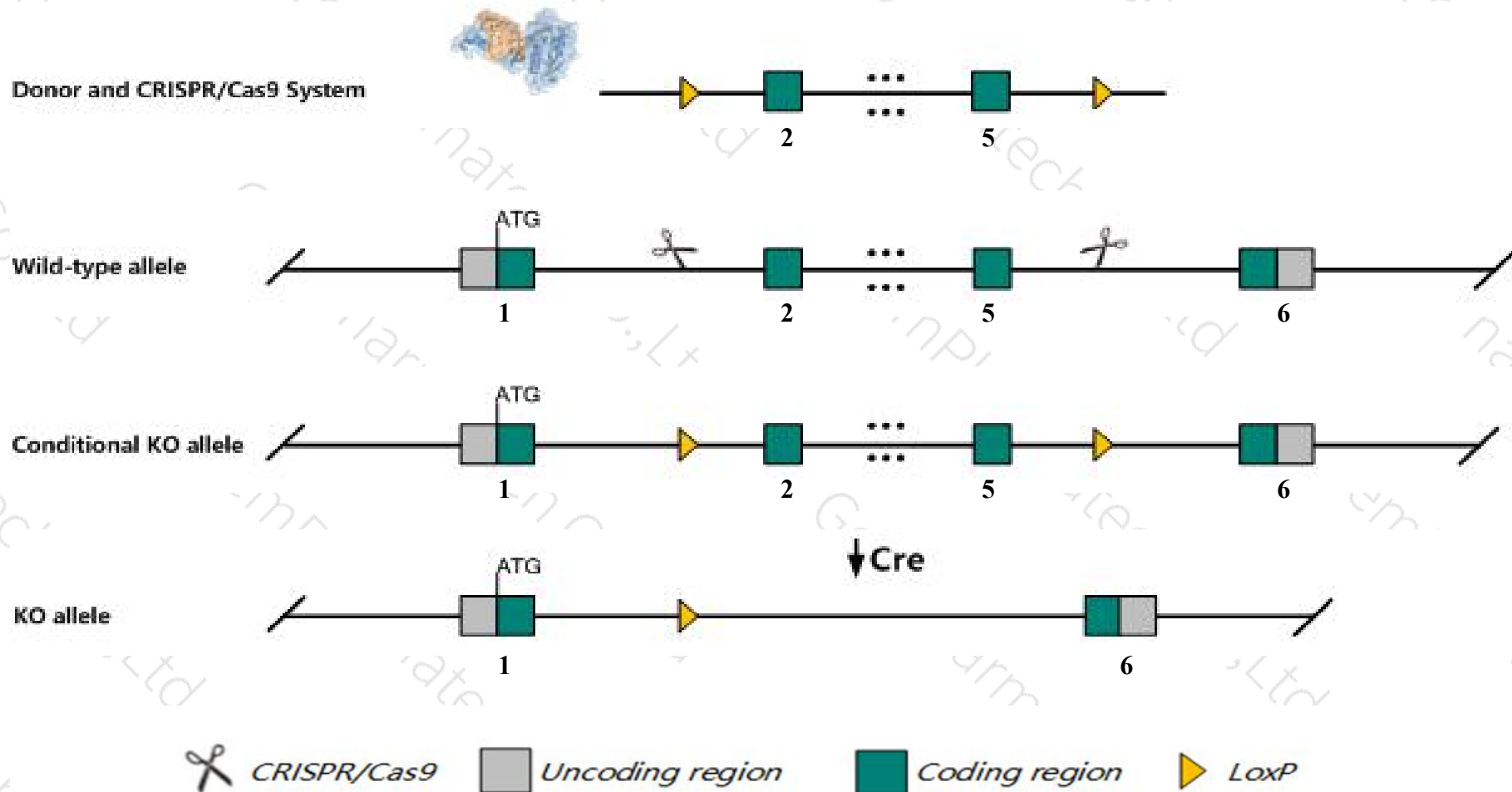
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bnip1* gene. The schematic diagram is as follows:



Technical routes

- The *Bnip1* gene has 9 transcripts. According to the structure of *Bnip1* gene, exon2-exon5 of *Bnip1-201* (ENSMUST00000015725.15) transcript is recommended as the knockout region. The region contains 406bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Bnip1* 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 *Bnip1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Bnip1 BCL2/adenovirus E1B interacting protein 1 [Mus musculus (house mouse)]

Gene ID: 224630, updated on 31-Jan-2019

Summary



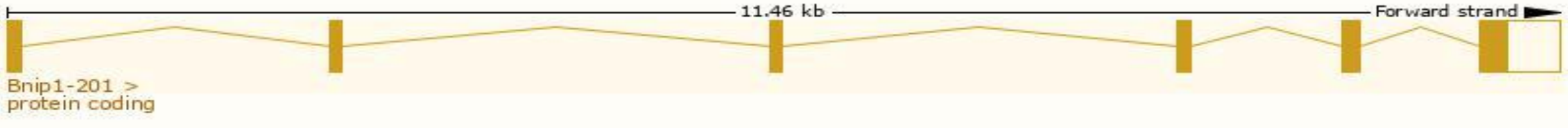
Official Symbol	Bnip1 provided by MGI
Official Full Name	BCL2/adenovirus E1B interacting protein 1 provided by MGI
Primary source	MGI:MGI:109328
See related	Ensembl:ENSMUSG00000024191
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2010005M06Rik, 5930429G21Rik, Sec20
Expression	Ubiquitous expression in limb E14.5 (RPKM 6.5), CNS E18 (RPKM 6.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

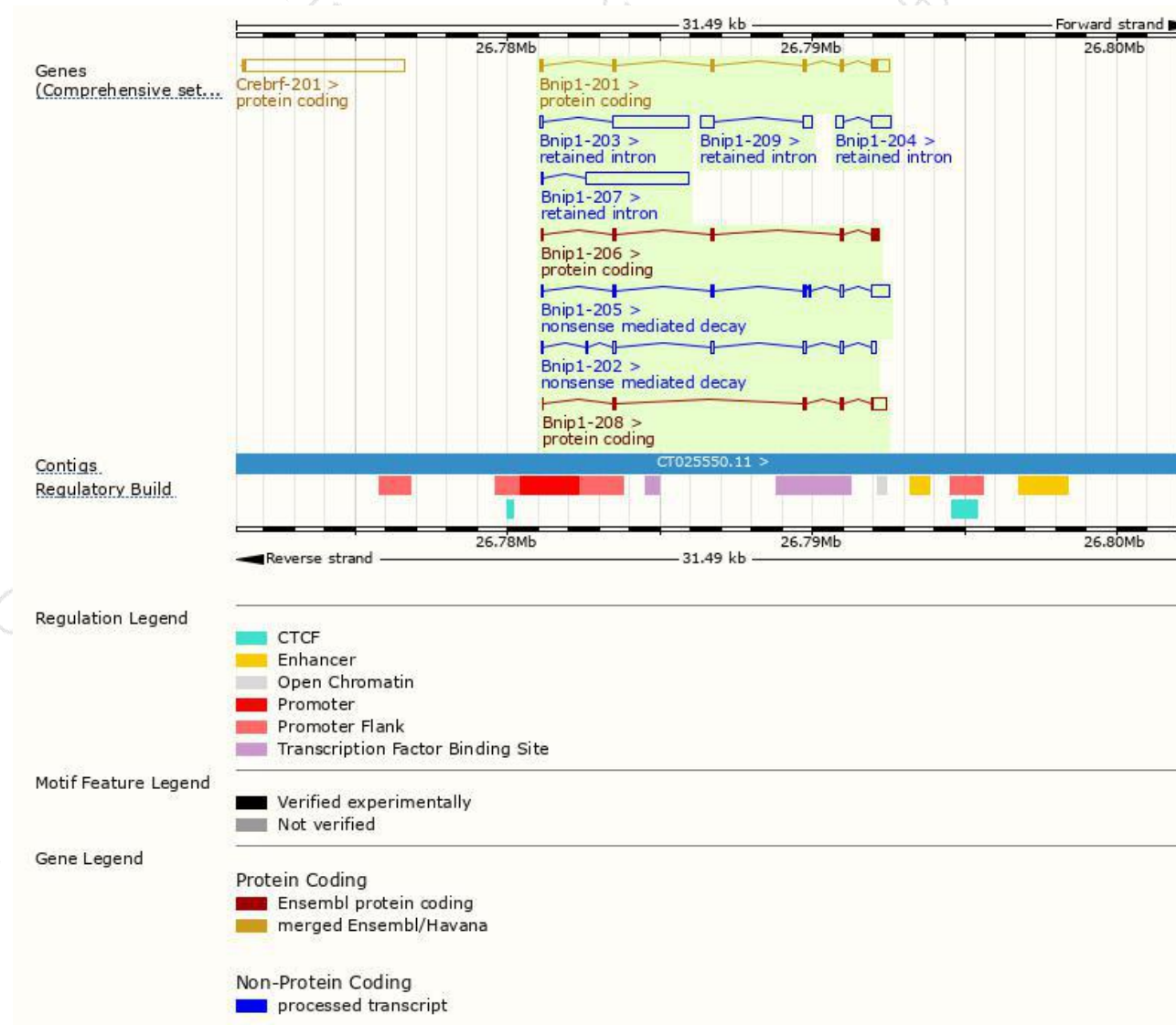
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bnip1-201	ENSMUST00000015725.15	1098	228aa	Protein coding	CCDS28555	Q6QD59	TSL:1 GENCODE basic APPRIS P1
Bnip1-208	ENSMUST00000137989.1	818	125aa	Protein coding	-	F6QGF9	CDS 5' incomplete TSL:5
Bnip1-206	ENSMUST00000135824.7	629	194aa	Protein coding	-	B8JJI4	TSL:5 GENCODE basic
Bnip1-202	ENSMUST00000126505.2	1139	45aa	Nonsense mediated decay	-	F6WZQ6	TSL:5
Bnip1-205	ENSMUST00000134344.7	1087	126aa	Nonsense mediated decay	-	F7C279	CDS 5' incomplete TSL:5
Bnip1-207	ENSMUST00000135899.1	3443	No protein	Retained intron	-	-	TSL:1
Bnip1-203	ENSMUST00000128461.1	2584	No protein	Retained intron	-	-	TSL:1
Bnip1-204	ENSMUST00000131362.1	895	No protein	Retained intron	-	-	TSL:1
Bnip1-209	ENSMUST00000147516.1	747	No protein	Retained intron	-	-	TSL:3

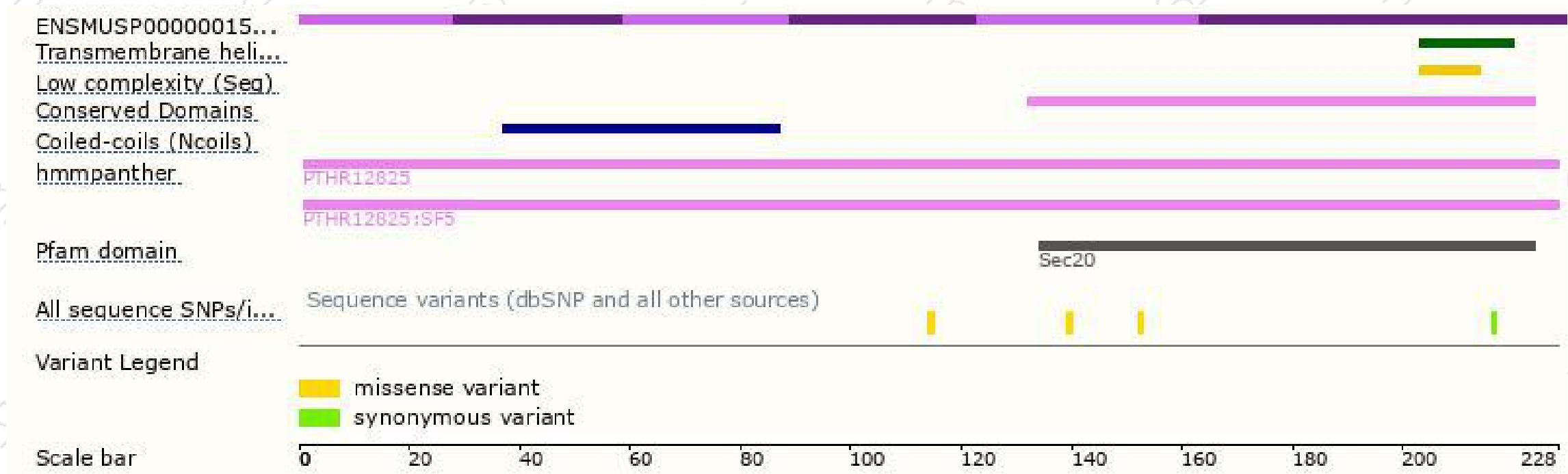
The strategy is based on the design of *Bnip1-201* transcript,The transcription is shown below



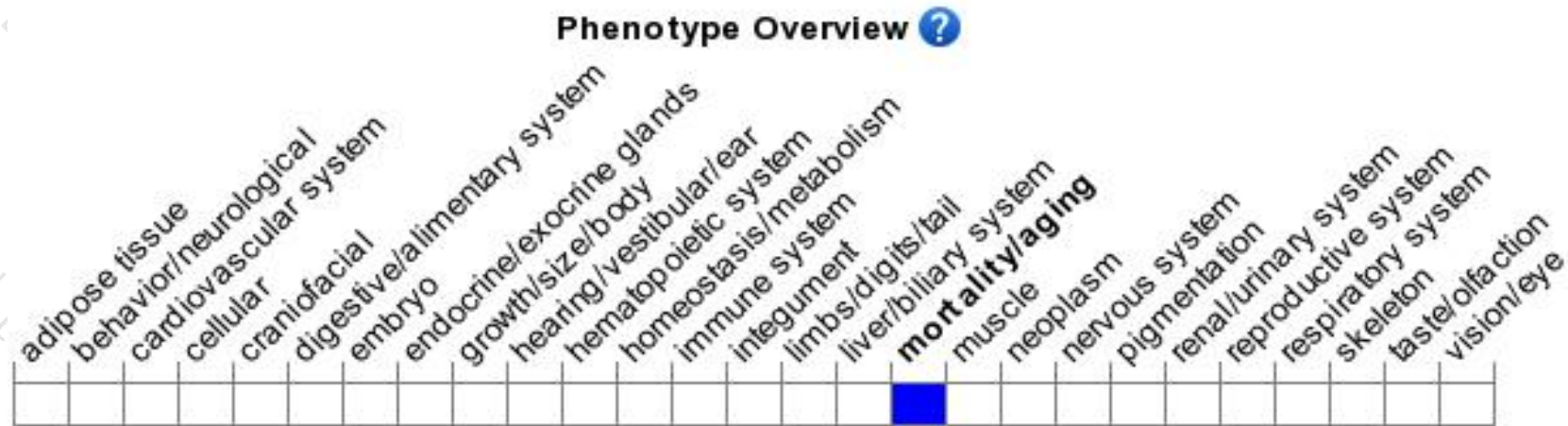
Genomic location distribution



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.

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