

***Brf1* Cas9-CKO Strategy**

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Project Overview

Project Name

Brf1

Project type

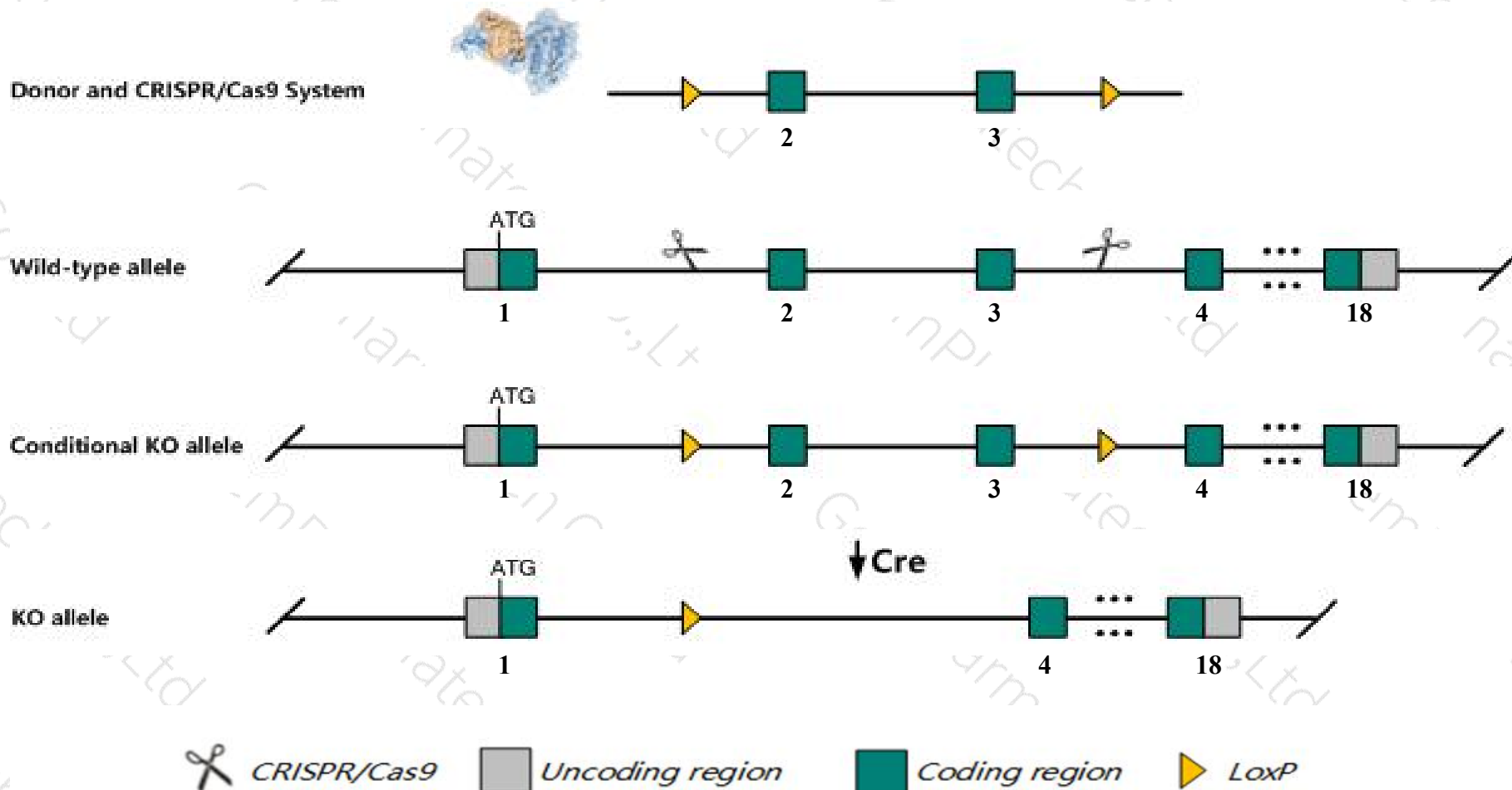
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Brf1* gene has 9 transcripts. According to the structure of *Brf1* gene, exon2-exon3 of *Brf1-201* (ENSMUST00000011302.8) transcript is recommended as the knockout region. The region contains 257bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Brf1* 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.

- The floxed region is near to the N-terminal of *9230104M06Rik* gene, this strategy may influence the regulatory function of the N-terminal of *9230104M06Rik* gene.
- Transcript *Brf1*-203&204&205&206&209 may not be affected.
- The *Brf1* gene is located on the Chr12. 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)

Brf1 BRF1, RNA polymerase III transcription initiation factor 90 kDa subunit [*Mus musculus* (house mouse)]

Gene ID: 72308, updated on 12-Aug-2019

Summary

Official Symbol Brf1 provided by [MGI](#)
Official Full Name BRF1, RNA polymerase III transcription initiation factor 90 kDa subunit provided by [MGI](#)
Primary source [MGI:MGI:1919558](#)
See related [Ensembl:ENSMUSG00000011158](#)
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 GTF3B; TAF3C; TAFIII90; TFIIB90; mTFIIB90; 2510002F24Rik
Expression Ubiquitous expression in thymus adult (RPKM 20.5), ovary adult (RPKM 14.2) and 28 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 12; 12 F1

See Brf1 in [Genome Data Viewer](#)

Exon count: 23

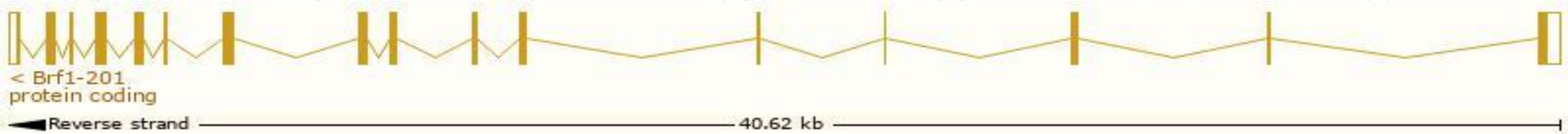
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	12	NC_000078.6 (112955631..113000706, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	12	NC_000078.5 (114198073..114238832, complement)

Transcript information (Ensembl)

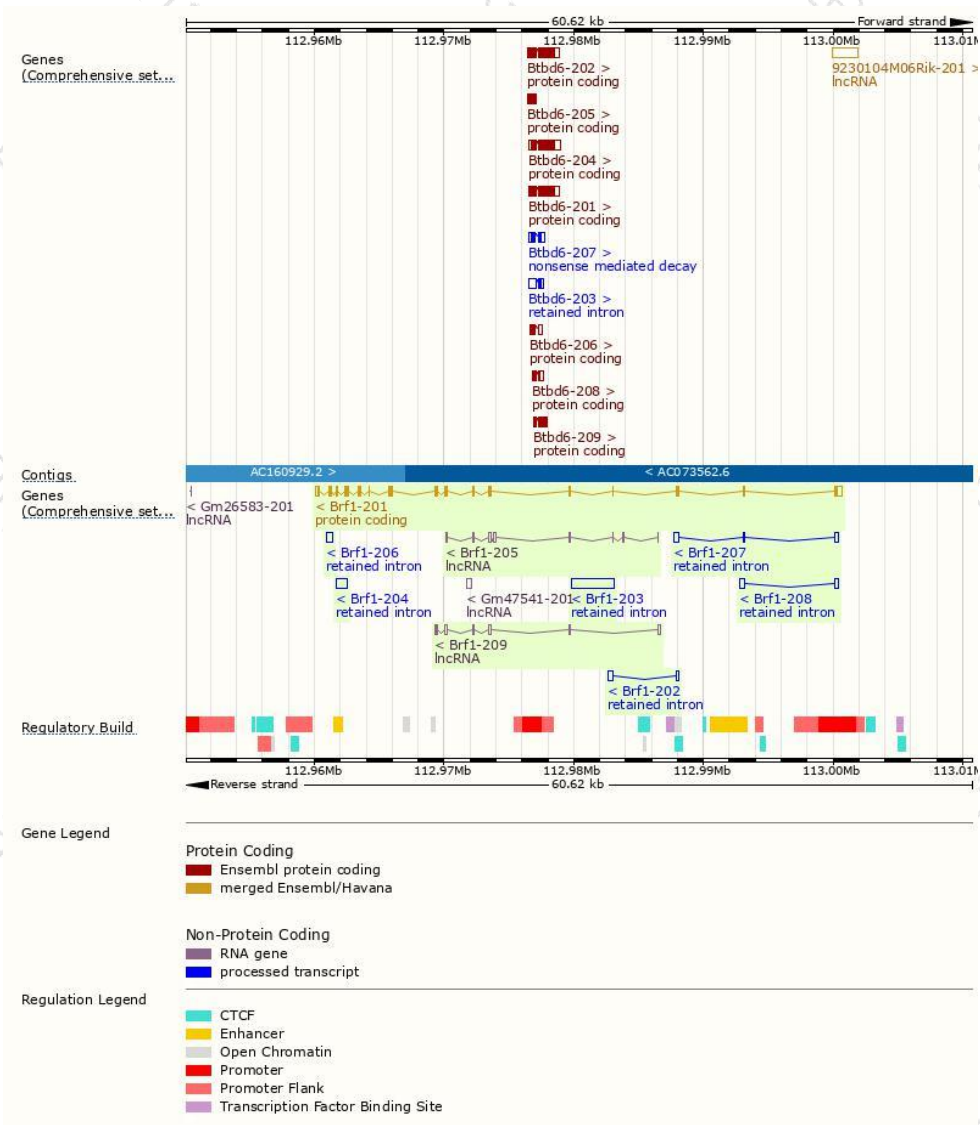
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Brf1-201	ENSMUST00000011302.8	2615	676aa	Protein coding	CCDS49195	G3X8S2	TSL:5 GENCODE basic APPRIS P1
Brf1-203	ENSMUST00000221415.1	3280	No protein	Retained intron	-	-	TSL:NA
Brf1-204	ENSMUST00000221537.1	792	No protein	Retained intron	-	-	TSL:NA
Brf1-207	ENSMUST00000222247.1	687	No protein	Retained intron	-	-	TSL:2
Brf1-208	ENSMUST00000223037.1	600	No protein	Retained intron	-	-	TSL:2
Brf1-202	ENSMUST00000221409.1	556	No protein	Retained intron	-	-	TSL:5
Brf1-206	ENSMUST00000221754.1	455	No protein	Retained intron	-	-	TSL:NA
Brf1-209	ENSMUST00000223506.1	843	No protein	lncRNA	-	-	TSL:5
Brf1-205	ENSMUST00000221680.1	796	No protein	lncRNA	-	-	TSL:5

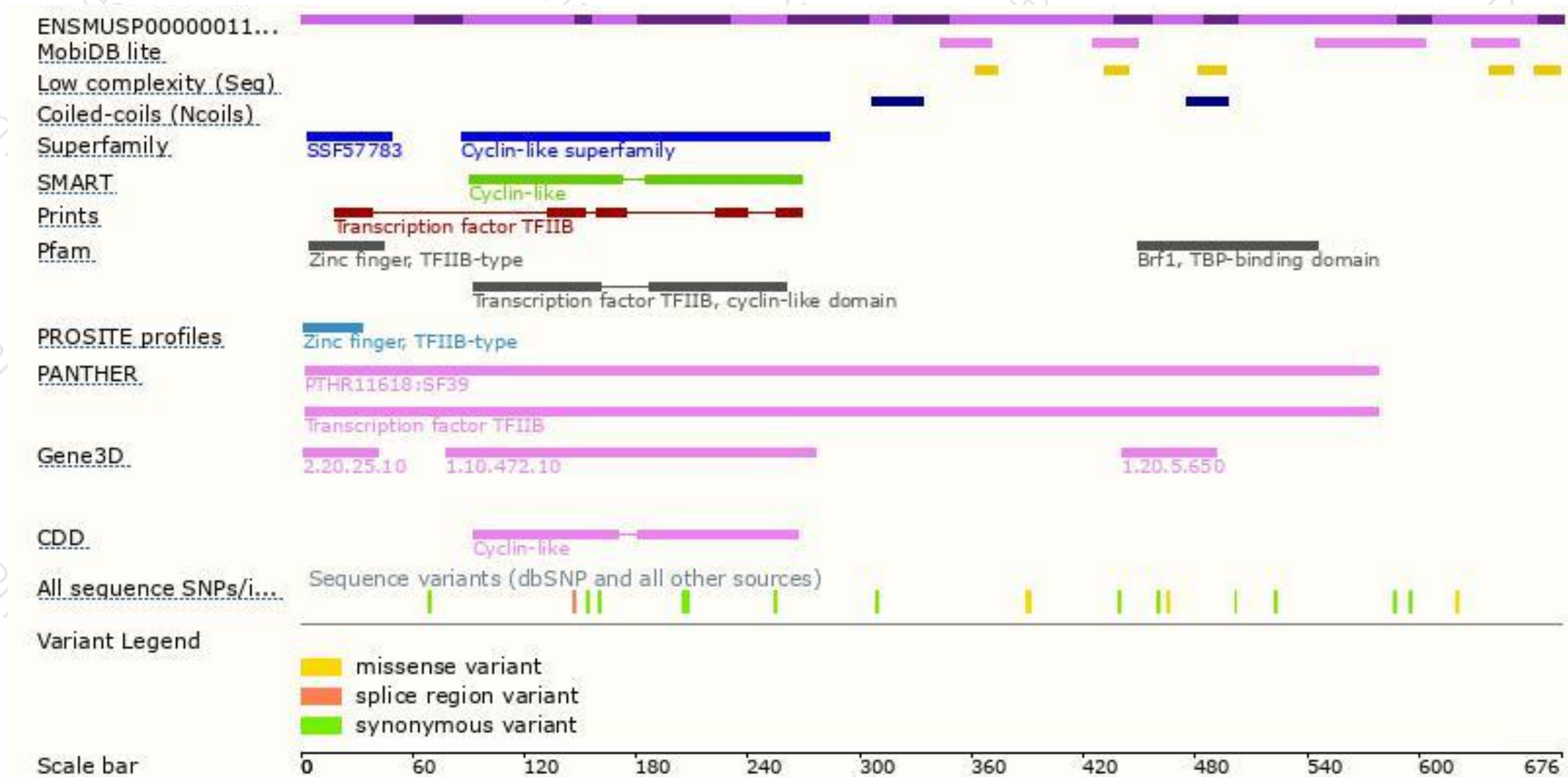
The strategy is based on the design of *Brf1-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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