Btaf1 Cas9-KO Strategy

Designer: Zihe Cui

Reviewer: Yanhua Shen

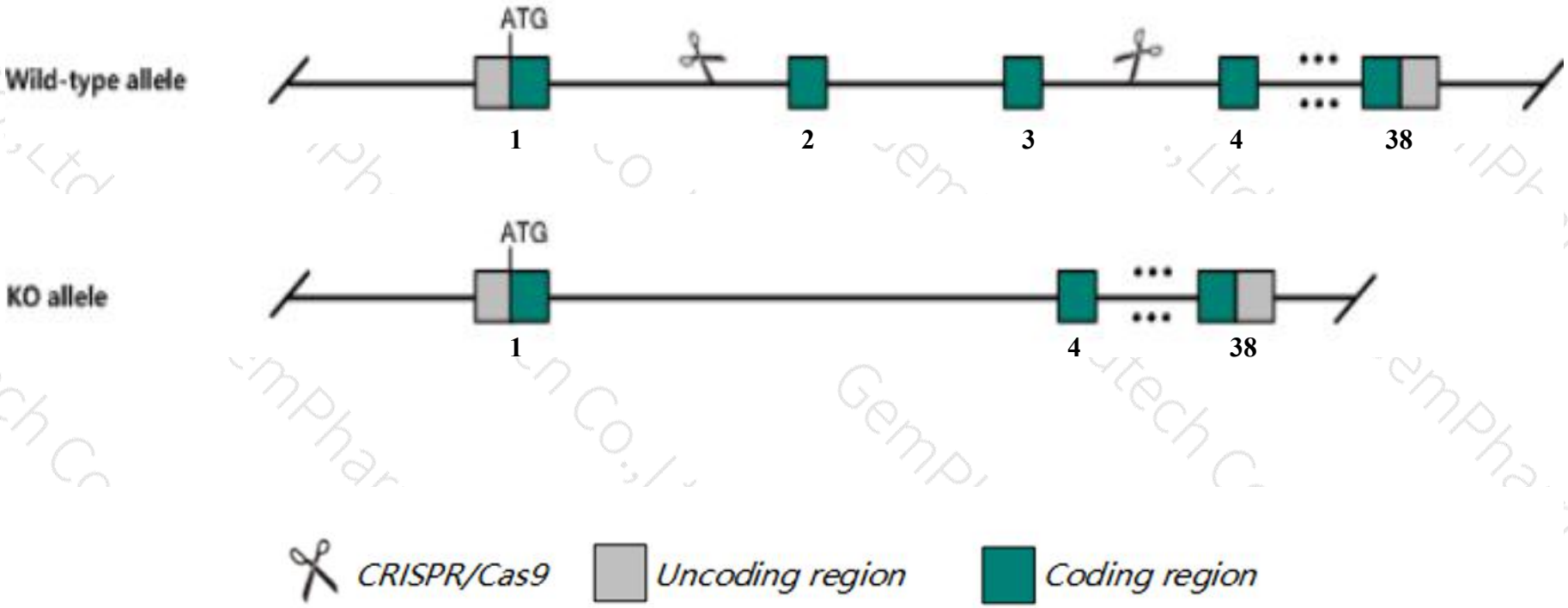
Design Date: 2020-9-30

Project Overview

Project Name	***Btaf1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Btaf1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Btaf1* gene has 3 transcripts. According to the structure of *Btaf1* gene, exon2-exon3 of *Btaf1-201*(ENSMUST00000099494.3) transcript is recommended as the knockout region.The region contains 239bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Btaf1* 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.

Notice

➢ According to the existing MGI data,embryos homozygous for a gene-trapped allele display growth retardation. Embryos homozygous for an ENU-induced allele show growth retardation, edema, abnormal blood circulation, myocardial trabeculae hypoplasia, and delayed head and brain development.

➢ Transcript *Btaf1-202/203* may not be affected.

➢ The *Btaf1* gene is located on the Chr19. 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）

集萃药康 GemPharmatech

Btaf1 B-TFIID TATA-box binding protein associated factor 1 [*Mus musculus* (house mouse)]

Gene ID: 107182, updated on 27-Sep-2020

Summary

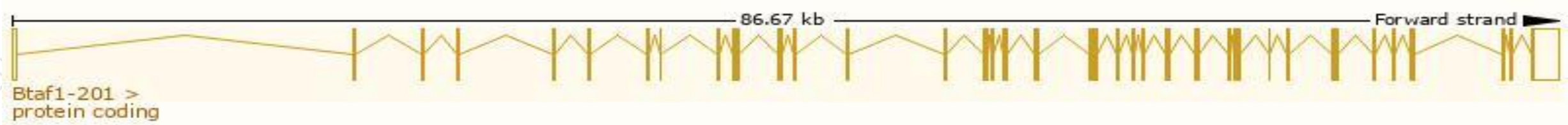
Official Symbol	Btaf1 provided by MGI
Official Full Name	B-TFIID TATA-box binding protein associated factor 1 provided by MGI
Primary source	MGI:MGI:2147538
See related	Ensembl:ENSMUSG00000040565
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	TAF170; AI414500; AI447930; E430027O22Rik
Expression	Ubiquitous expression in testis adult (RPKM 6.3), liver E14 (RPKM 5.8) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

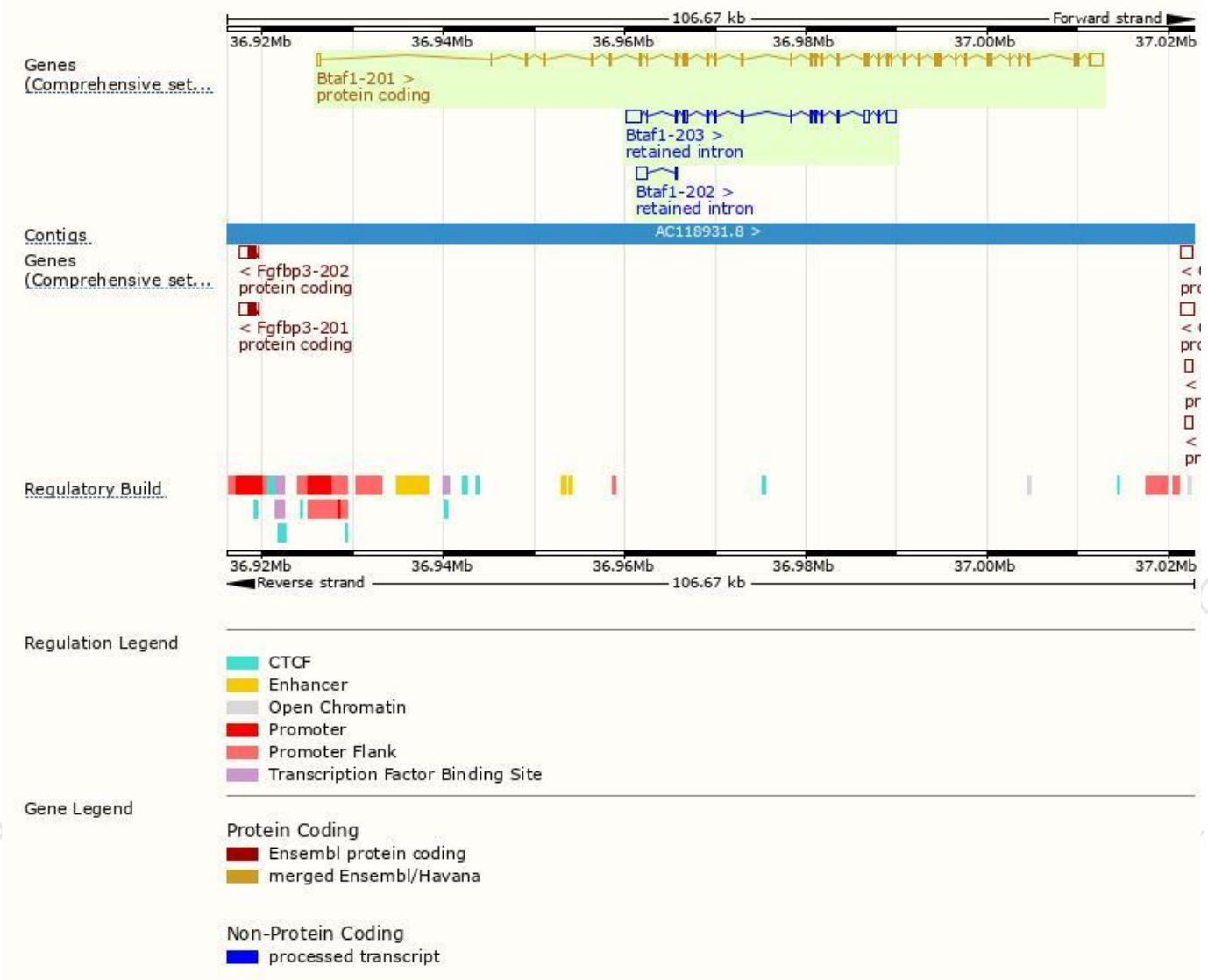
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Btaf1-201	ENSMUST00000099494.3	7204	1848aa	Protein coding	CCDS37969	E9QAE3	TSL:1 GENCODE basic APPRIS P1
Btaf1-203	ENSMUST00000238041.1	4876	No protein	Retained intron	-	-	
Btaf1-202	ENSMUST00000236343.1	1400	No protein	Retained intron	-	-	

The strategy is based on the design of *Btaf1-201* transcript,the transcription is shown below:

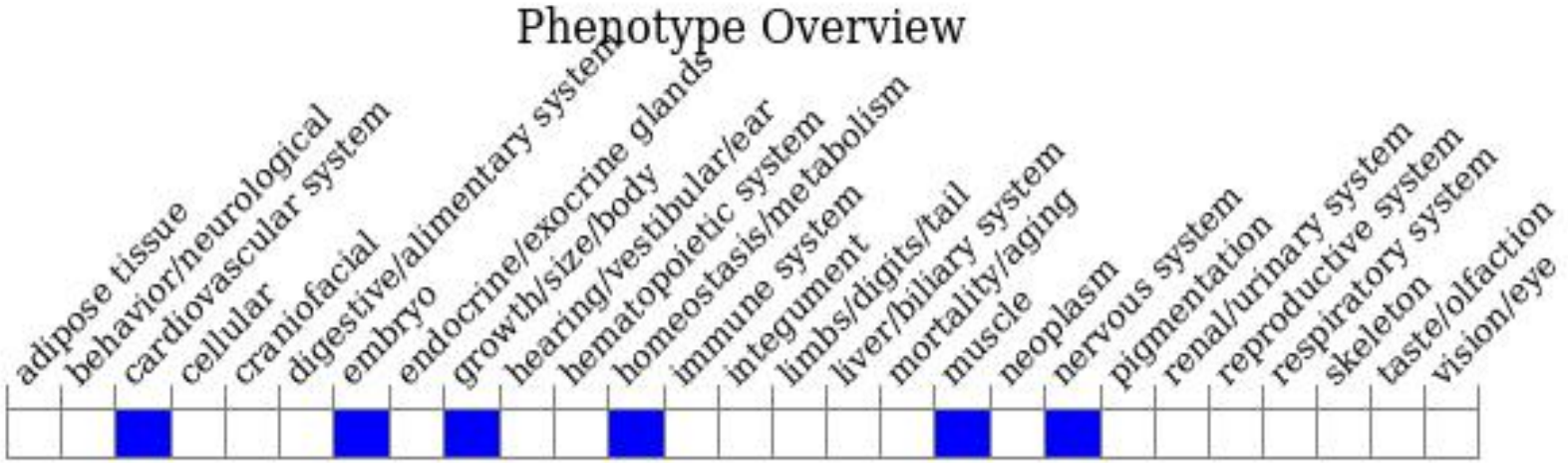


Genomic location distribution



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,embryos homozygous for a gene-trapped allele display growth retardation. Embryos homozygous for an ENU-induced allele show growth retardation, edema, abnormal blood circulation, myocardial trabeculae hypoplasia, and delayed head and brain development.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd