Bach2 Cas9-KO Strategy

Designer: Daohua Xu
Reviewer: Huimin Su

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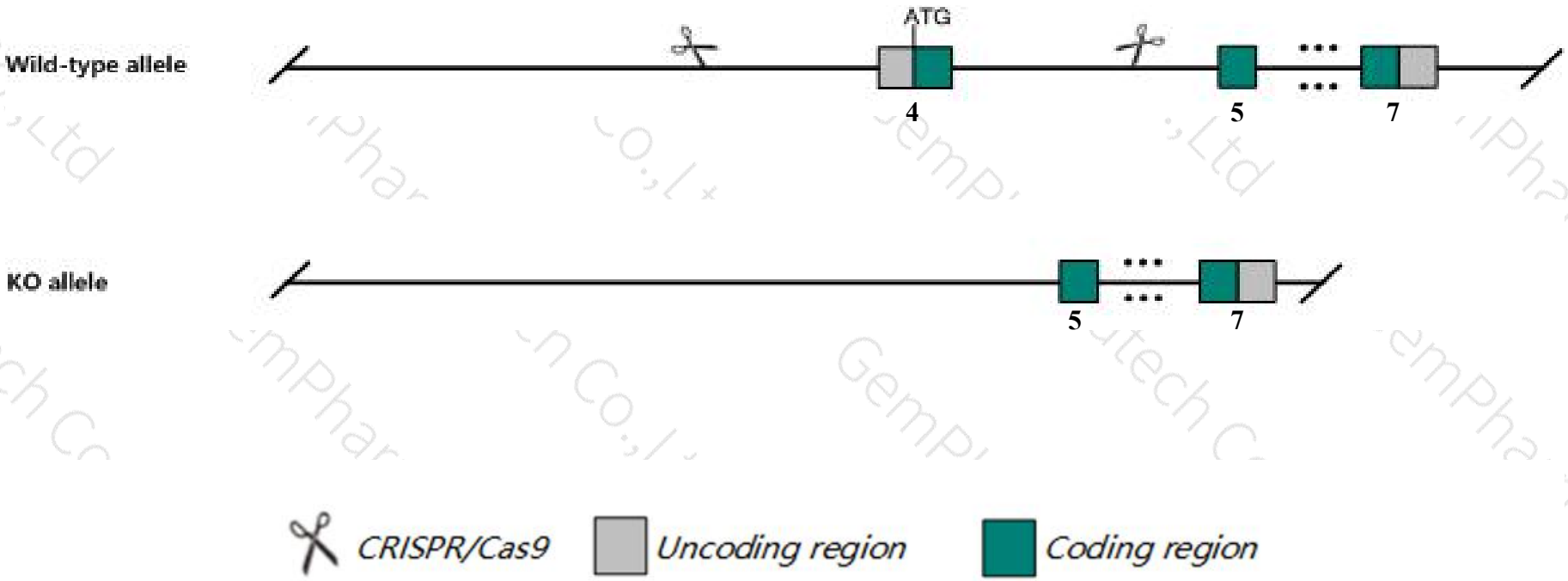
Project Overview

Project Name	***Bach2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bach2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Bach2* gene has 7 transcripts. According to the structure of *Bach2* gene, exon4 of *Bach2-202* (ENSMUST00000108180.8) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Bach2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Homozygous null mice display impaired B cell differentiation and reduced B cell numbers.

➢ The *Bach2* gene is located on the Chr4. 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）

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Bach2 BTB and CNC homology, basic leucine zipper transcription factor 2 [Mus musculus (house mouse)]

Gene ID: 12014, updated on 9-Apr-2019

Summary

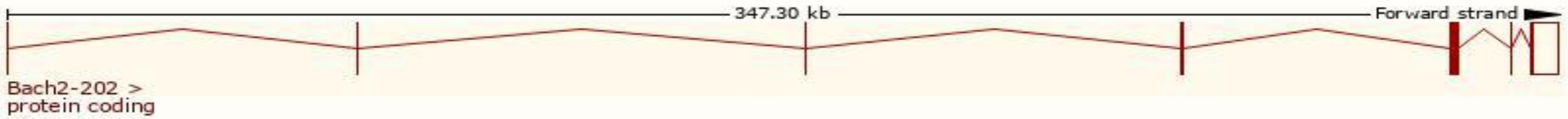
Official Symbol	Bach2 provided by MGI
Official Full Name	BTB and CNC homology, basic leucine zipper transcription factor 2 provided by MGI
Primary source	MGI:MGI:894679
See related	Ensembl:ENSMUSG00000040270
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	E030004N02Rik
Expression	Broad expression in whole brain E14.5 (RPKM 5.3), CNS E14 (RPKM 5.0) and 24 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

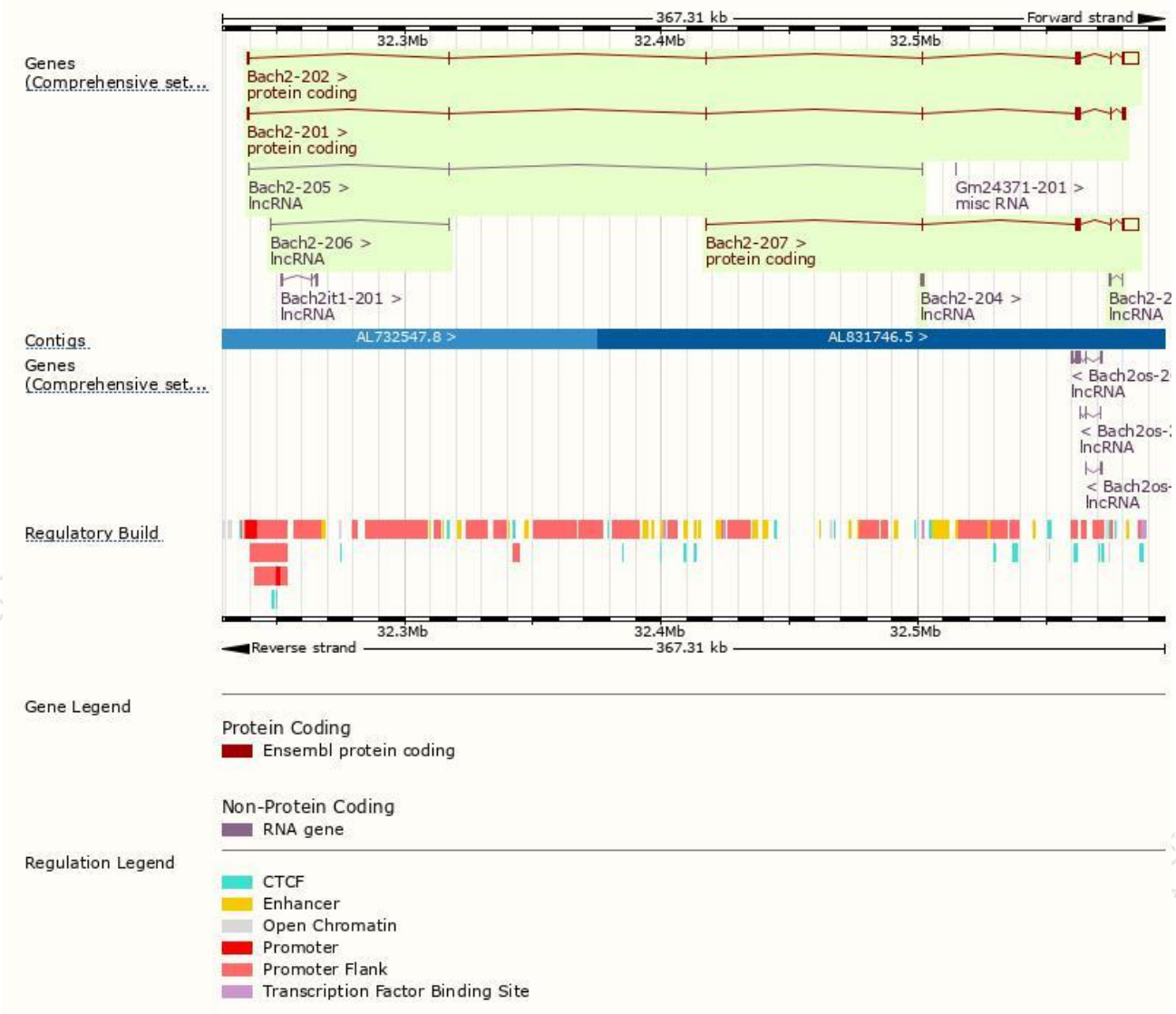
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bach2-202	ENSMUST00000108180.8	8882	839aa	Protein coding	CCDS51135	P97303	TSL:5 GENCODE basic APPRIS P1
Bach2-207	ENSMUST00000171600.1	8493	839aa	Protein coding	CCDS51135	P97303	TSL:1 GENCODE basic APPRIS P1
Bach2-201	ENSMUST00000037416.12	3462	716aa	Protein coding	-	P97303	TSL:5 GENCODE basic
Bach2-204	ENSMUST00000146748.1	658	No protein	lncRNA	-	-	TSL:1
Bach2-203	ENSMUST00000125263.1	538	No protein	lncRNA	-	-	TSL:5
Bach2-205	ENSMUST00000149201.7	336	No protein	lncRNA	-	-	TSL:5
Bach2-206	ENSMUST00000156430.1	331	No protein	lncRNA	-	-	TSL:3

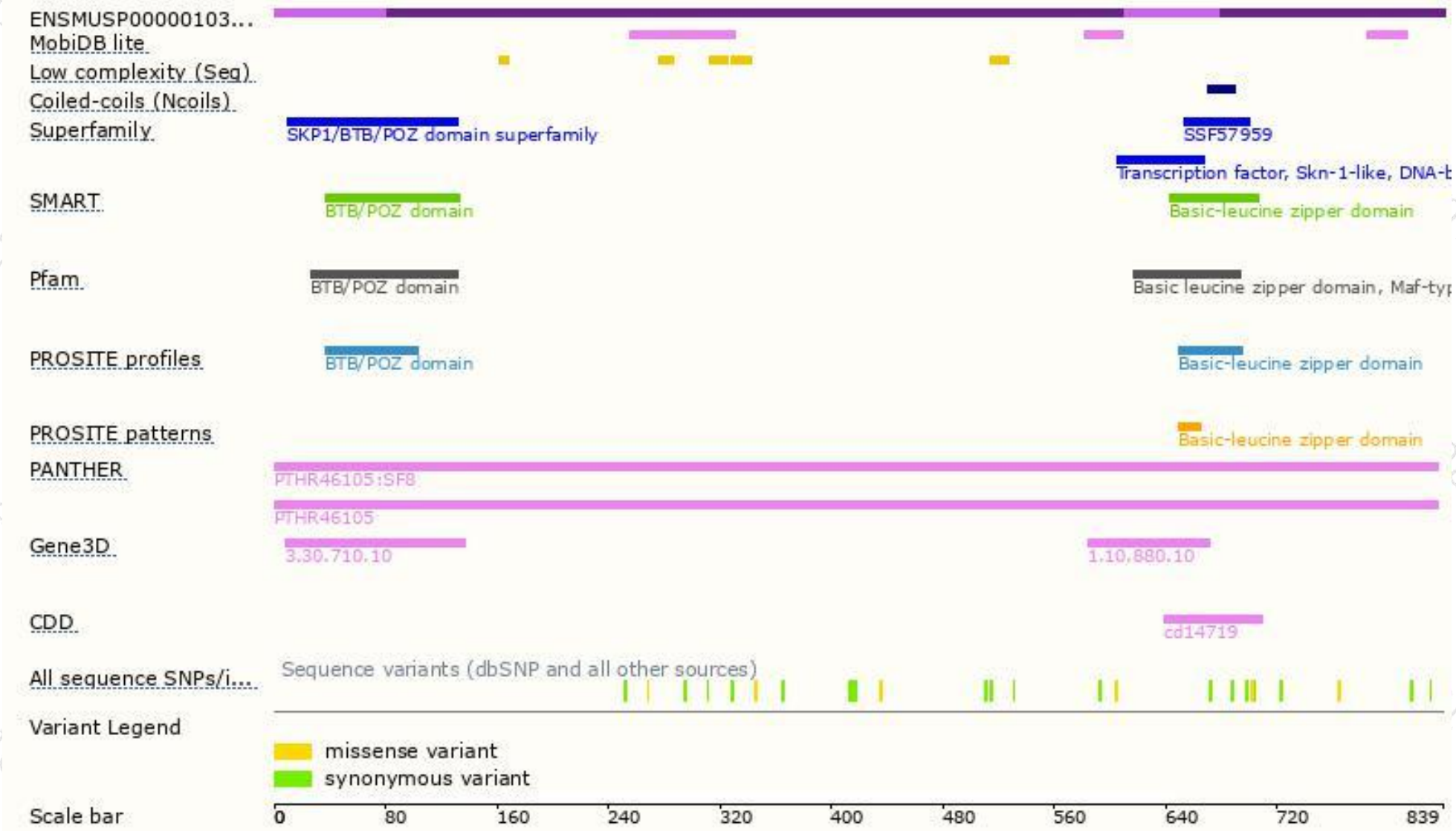
The strategy is based on the design of *Bach2-202* transcript,The transcription is shown below



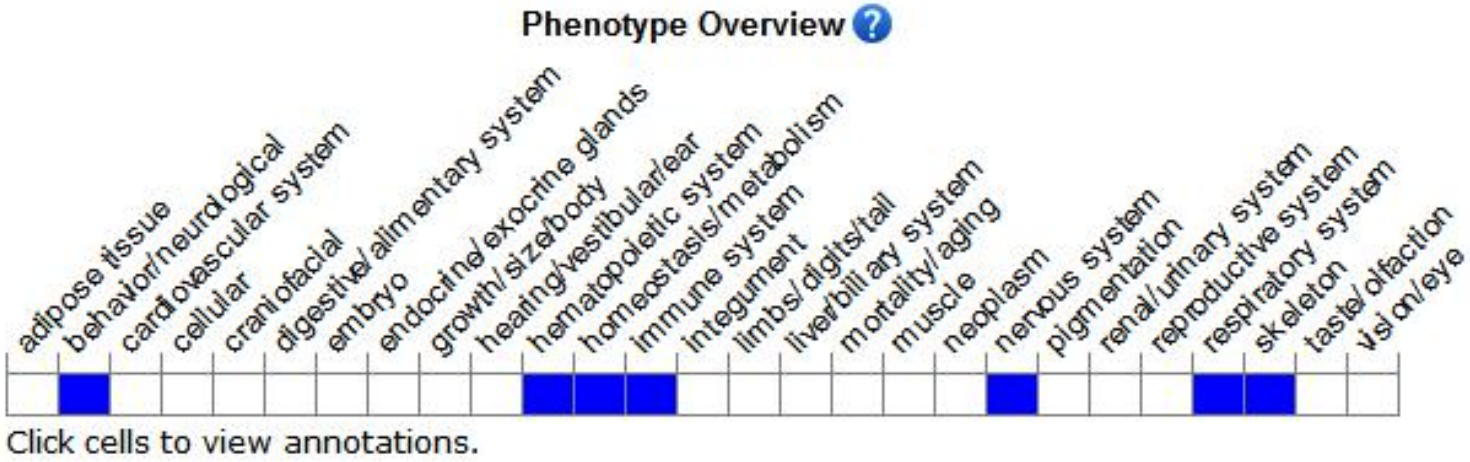
Genomic location distribution



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/).

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GemPharmatech

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

Tel: 400-9660890

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GemPharmatech Co.,Ltd