

Braf Cas9-KO Strategy

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Project Overview

Project Name

Braf

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



Technical routes

- The *Braf* gene has 5 transcripts. According to the structure of *Braf* gene, exon5-8 of *Braf*-201 transcript (ENSMUST00000002487.14) is recommended as the Knockout region. The region contains 473bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Braf* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9, sgRNA 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.

- According to the existing MGI data , Homozygous null embryos die during organogenesis, are smaller, have enlarged blood vessels, hemorrhaging, poor circulation, slow heartbeat and abnormal endothelial cell development. Mice homozygous for a targeted allele activated in neurons exhibit impaired neuronal differentiation.
- The *Braf* gene is located on the Chr6. 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)

Braf Braf transforming gene [*Mus musculus* (house mouse)]

Gene ID: 109880, updated on 21-May-2019

Summary

Official Symbol Braf provided by [MGI](#)

Official Full Name Braf transforming gene provided by [MGI](#)

Primary source [MGI:MGI:88190](#)

See related [Ensembl:ENSMUSG00000002413](#)

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 B-raf; Braf2; Braf-2; C87398; AA120551; AA387315; AA473386; C230098H17; D6Ert631e; 9930012E13Rik

Expression Ubiquitous expression in frontal lobe adult (RPKM 6.7), bladder adult (RPKM 6.5) and 25 other tissues [See more](#)

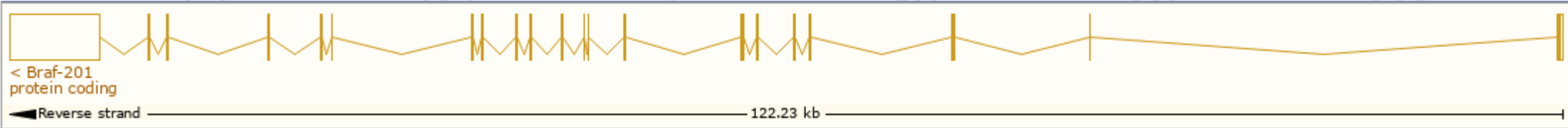
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

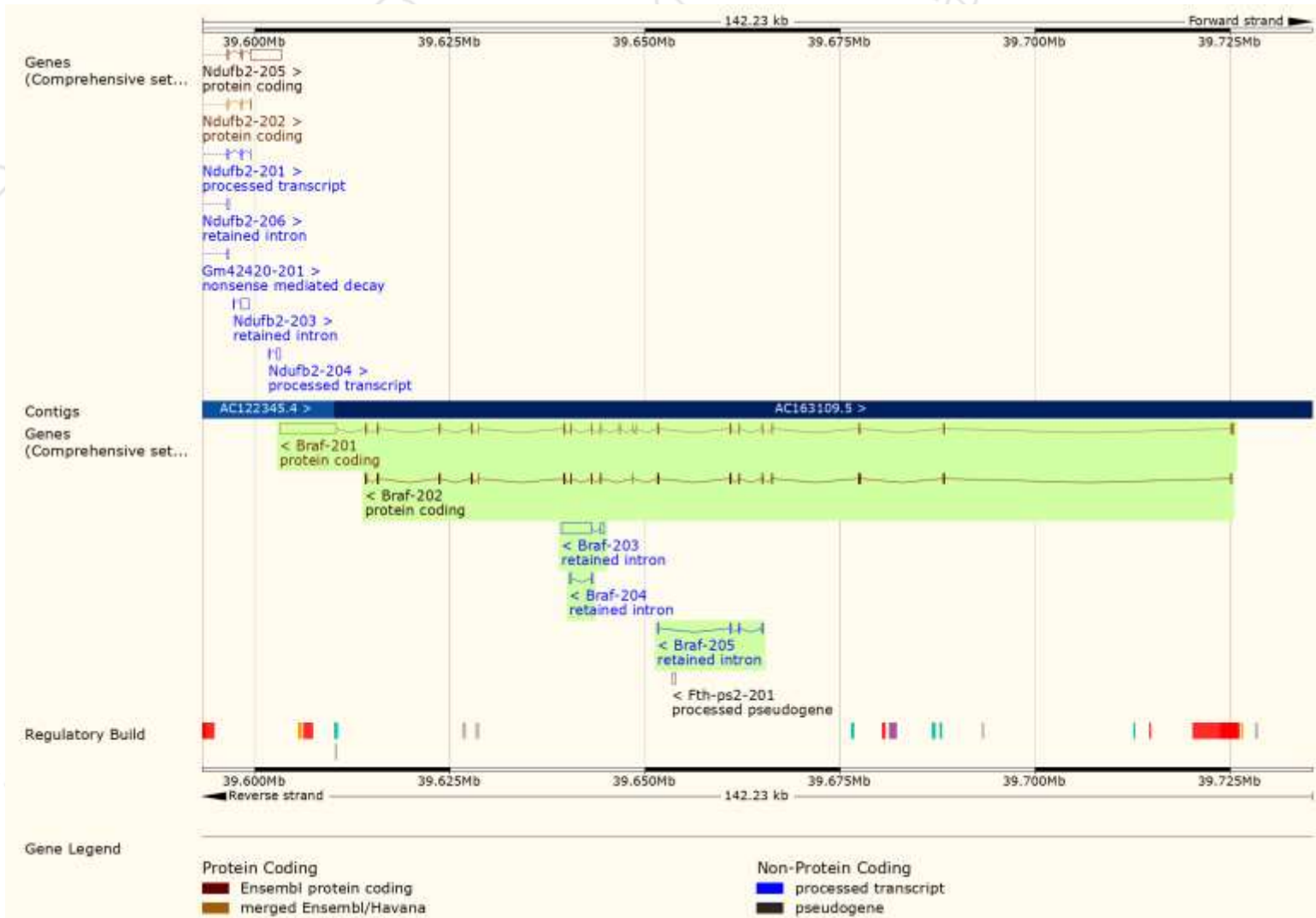
The gene has 5 transcripts, and all transcripts are shown below :

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Braf-201	ENSMUST00000002487.14	9728	804aa	 Protein coding	CCDS39463	P28028	TSL:1 Gencode basic APPRIS P1
Braf-202	ENSMUST00000101497.3	2253	750aa	 Protein coding	-	F6SZ47	CDS 5' incomplete TSL:5
Braf-203	ENSMUST00000167073.1	4475	No protein	 Retained intron	-	-	TSL:1
Braf-204	ENSMUST00000167169.1	384	No protein	 Retained intron	-	-	TSL:3
Braf-205	ENSMUST00000169647.1	528	No protein	 Retained intron	-	-	TSL:2

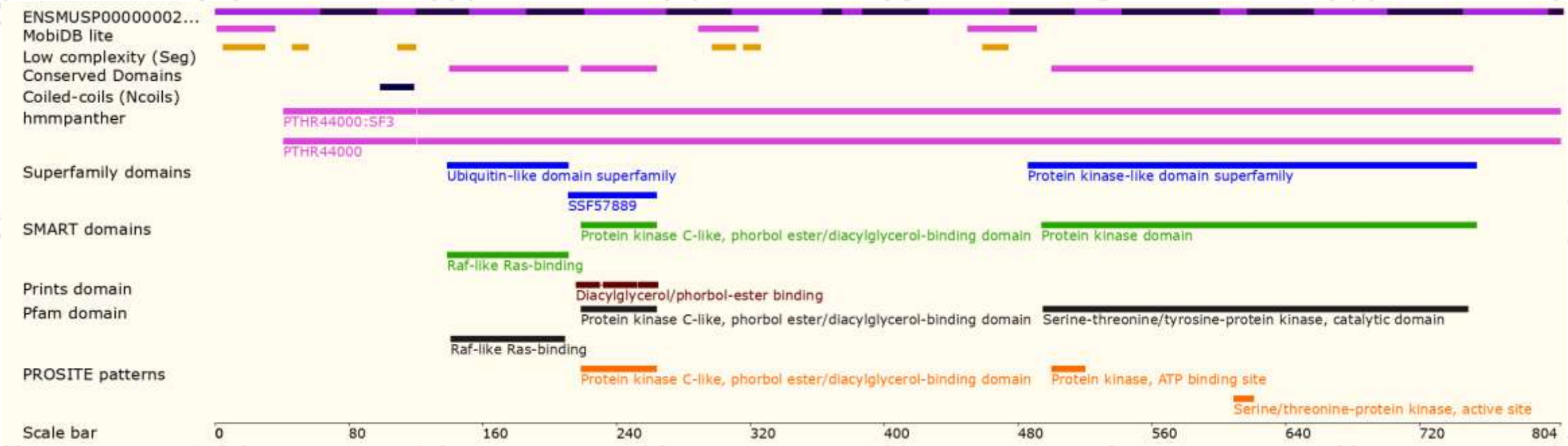
The strategy is based on the design of *Braf*-201 transcript, The transcription is shown below



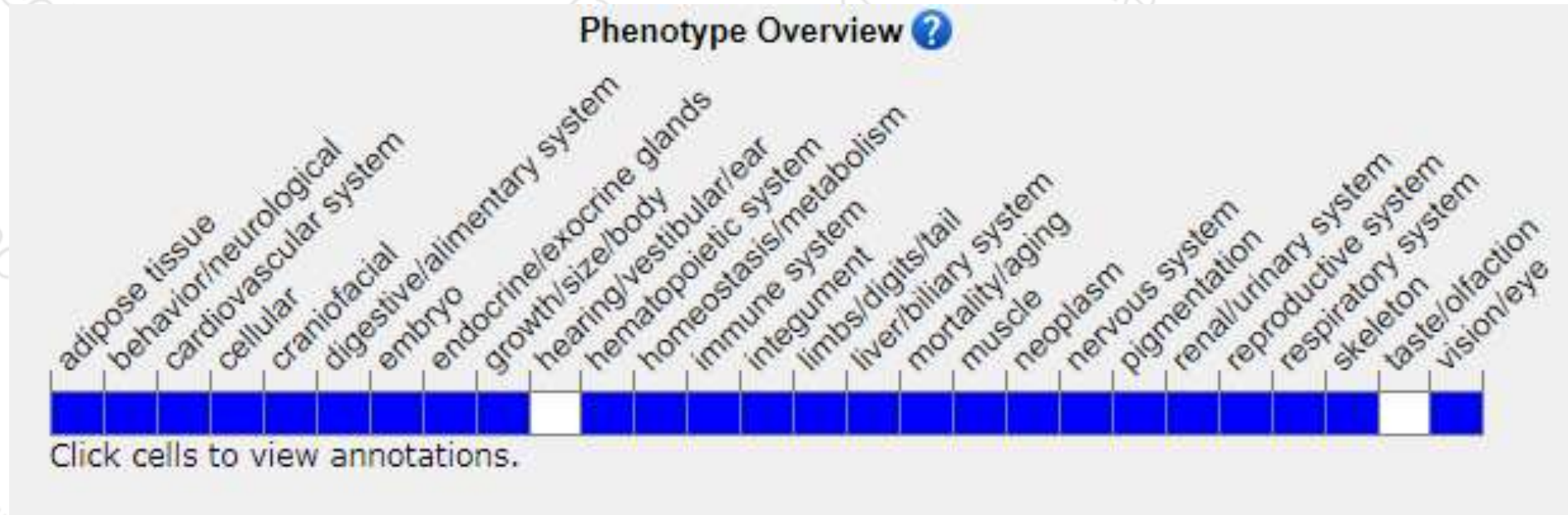
Genomic location distribution



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/>).

Homozygous null embryos die during organogenesis, are smaller, have enlarged blood vessels, hemorrhaging, poor circulation, slow heartbeat and abnormal endothelial cell development. Mice homozygous for a targeted allele activated in neurons exhibit impaired neuronal differentiation.

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