

# ***Bdkrb1 Cas9-KO Strategy***

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# Project Overview



**Project Name**

***Bdkrb1***

**Project type**

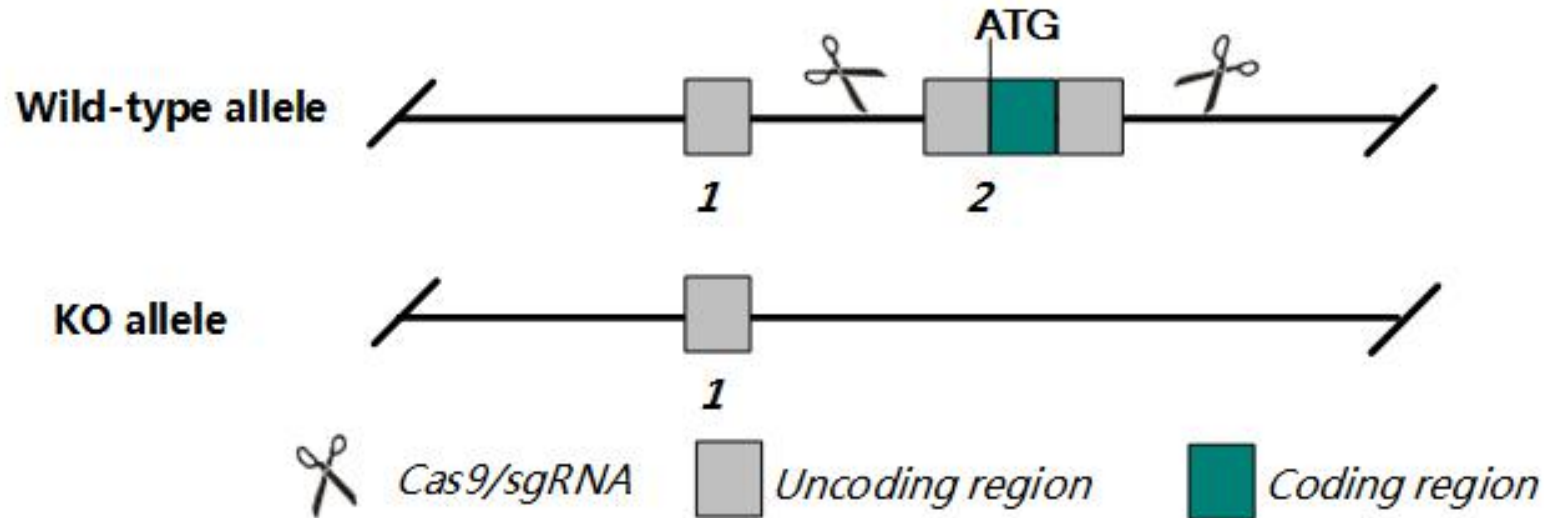
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bdkrb1* gene. The schematic diagram is as follows:



- The *Bdkrb1* gene has 2 transcripts. According to the structure of *Bdkrb1* gene, exon2 of *Bdkrb1-202* (ENSMUST00000182899.1) transcript is recommended as the knockout region. The region contains all the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Bdkrb1* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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, mice homozygous for one null allele display hypoalgesia and altered inflammatory responses while those homozygous for another are reported to have a normal phenotype.
- The *Bdkrb1* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information (NCBI)

## Bdkrb1 bradykinin receptor, beta 1 [ *Mus musculus* (house mouse) ]

Gene ID: 12061, updated on 2-Jul-2019

### Summary

Official Symbol	Bdkrb1 provided by <a href="#">MGI</a>
Official Full Name	bradykinin receptor, beta 1 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:88144</a>
See related	<a href="#">Ensembl:ENSMUSG00000041347</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	B1R; BKR1; B1BKR; Bdkrb; BRADYB1
Orthologs	<a href="#">human</a> <a href="#">all</a>

### Genomic context

Location: 12; 12 E

See Bdkrb1 in [Genome Data Viewer](#)

Exon count: 1

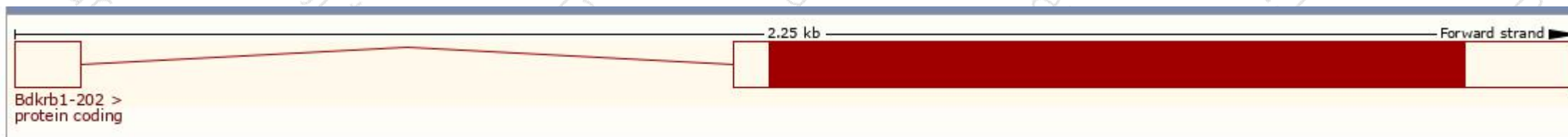
Annotation release	Status	Assembly	Chr	Location
<a href="#">106</a>	current	GRCm38.p4 ( <a href="#">GCF_000001635.24</a> )	12	NC_000078.6 (105604091..105605428)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	12	NC_000078.5 (106842301..106843638)

# Transcript information (Ensembl)

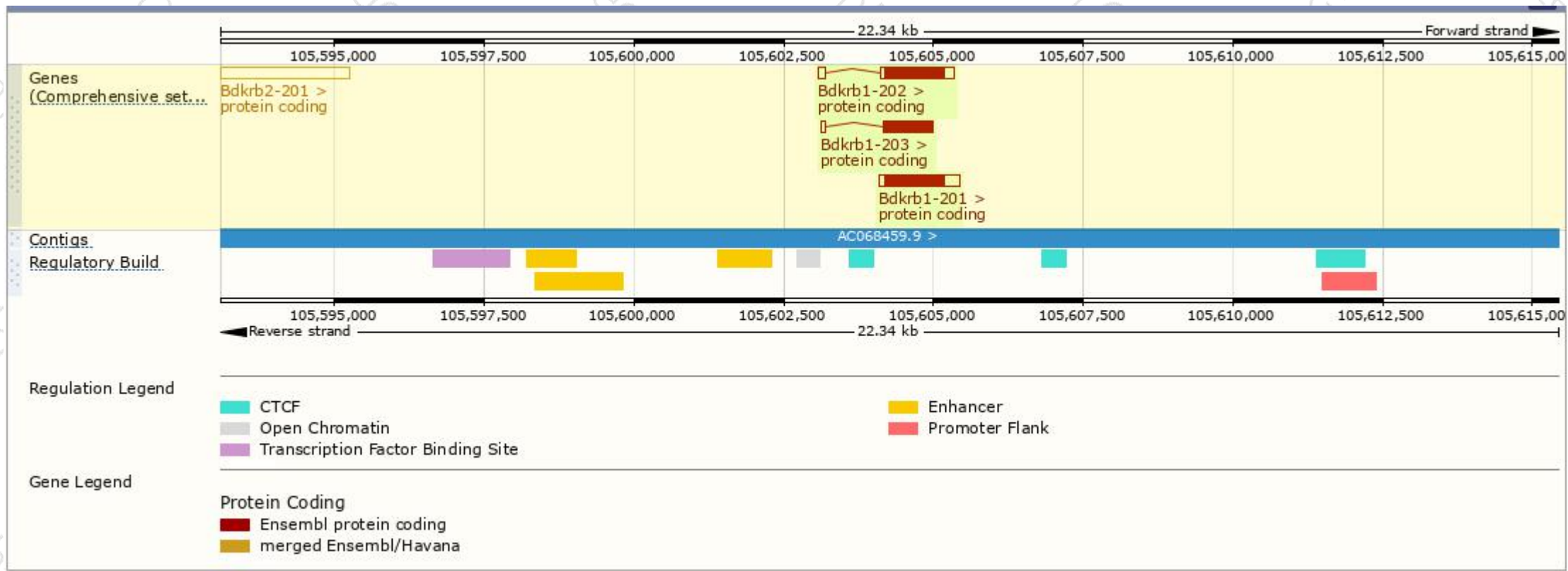
The gene has 3 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bdkrb1-201	<a href="#">ENSMUST00000041229.4</a>	1338	<a href="#">334aa</a>	Protein coding	<a href="#">CCDS26155</a>	<a href="#">Q0VBD7</a> <a href="#">Q61125</a>	TSL:NA GENCODE basic APPRIS P1
Bdkrb1-202	<a href="#">ENSMUST00000182899.1</a>	1313	<a href="#">334aa</a>	Protein coding	<a href="#">CCDS26155</a>	<a href="#">Q0VBD7</a> <a href="#">Q61125</a>	TSL:5 GENCODE basic APPRIS P1
Bdkrb1-203	<a href="#">ENSMUST00000183086.1</a>	879	<a href="#">268aa</a>	Protein coding	-	<a href="#">S4R1G8</a>	CDS 3' incomplete TSL:5

The strategy is based on the design of *Bdkrb1-202* transcript, The transcription is shown below

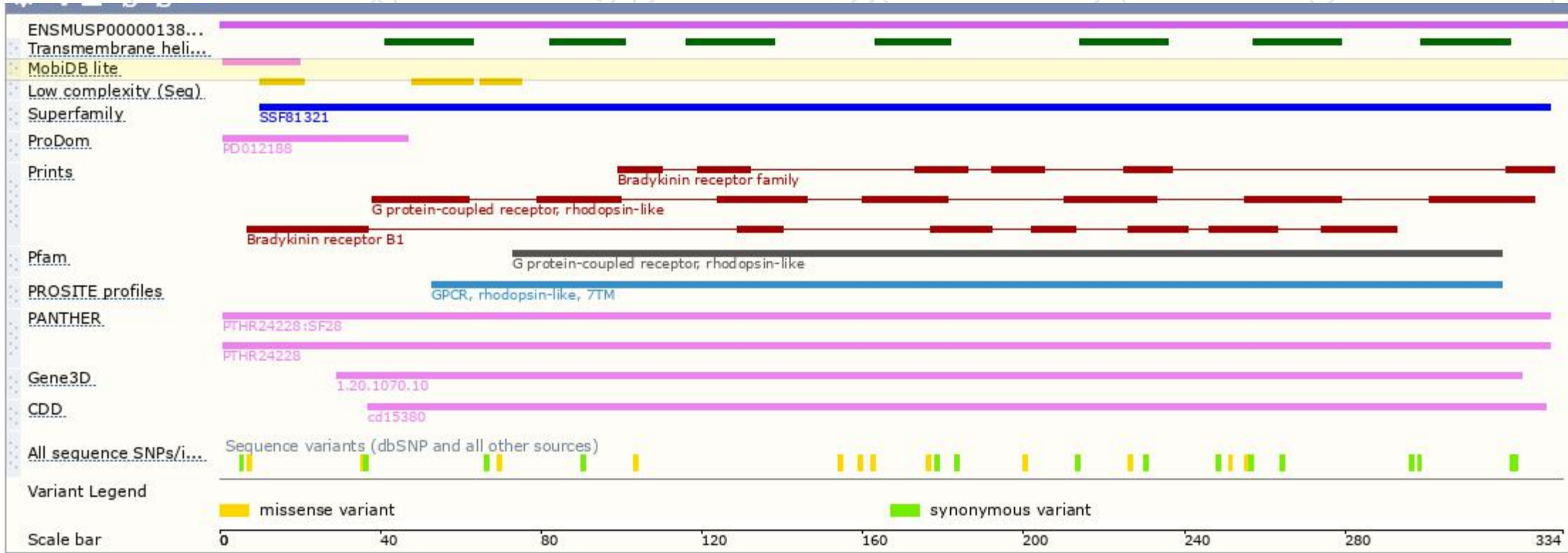


# Genomic location distribution

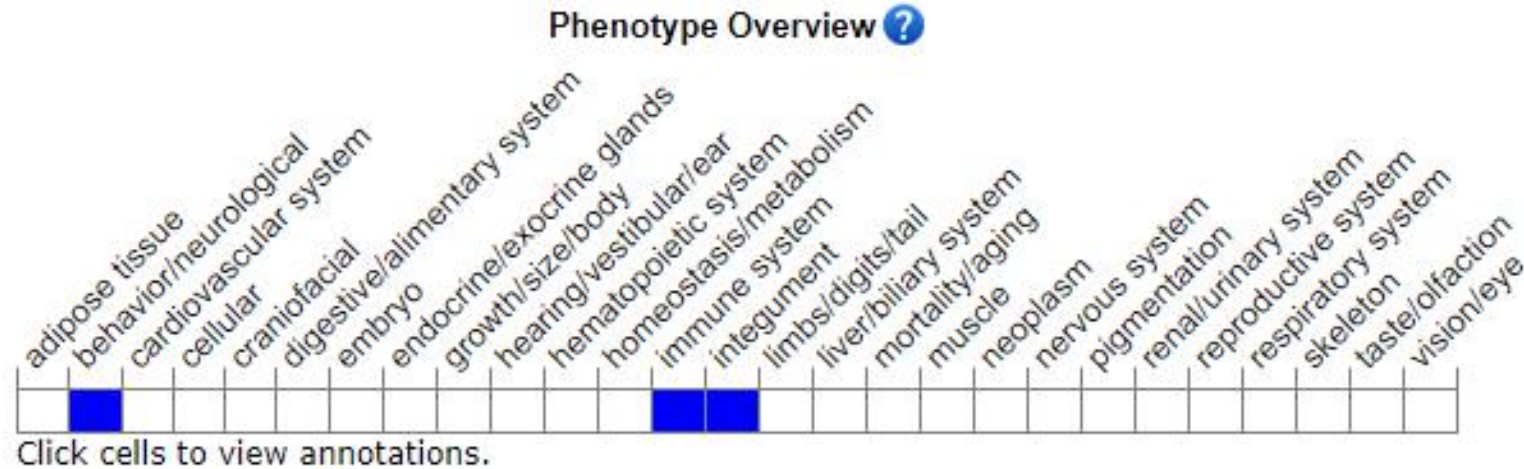




# Protein domain



# Mouse phenotype description(MGI)



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

Mice homozygous for one null allele display hypoalgesia and altered inflammatory responses while those homozygous for another are reported to have a normal phenotype.

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

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