

# ***Brwd3* Cas9-KO Strategy**

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# Project Overview

**Project Name**

*Brwd3*

**Project type**

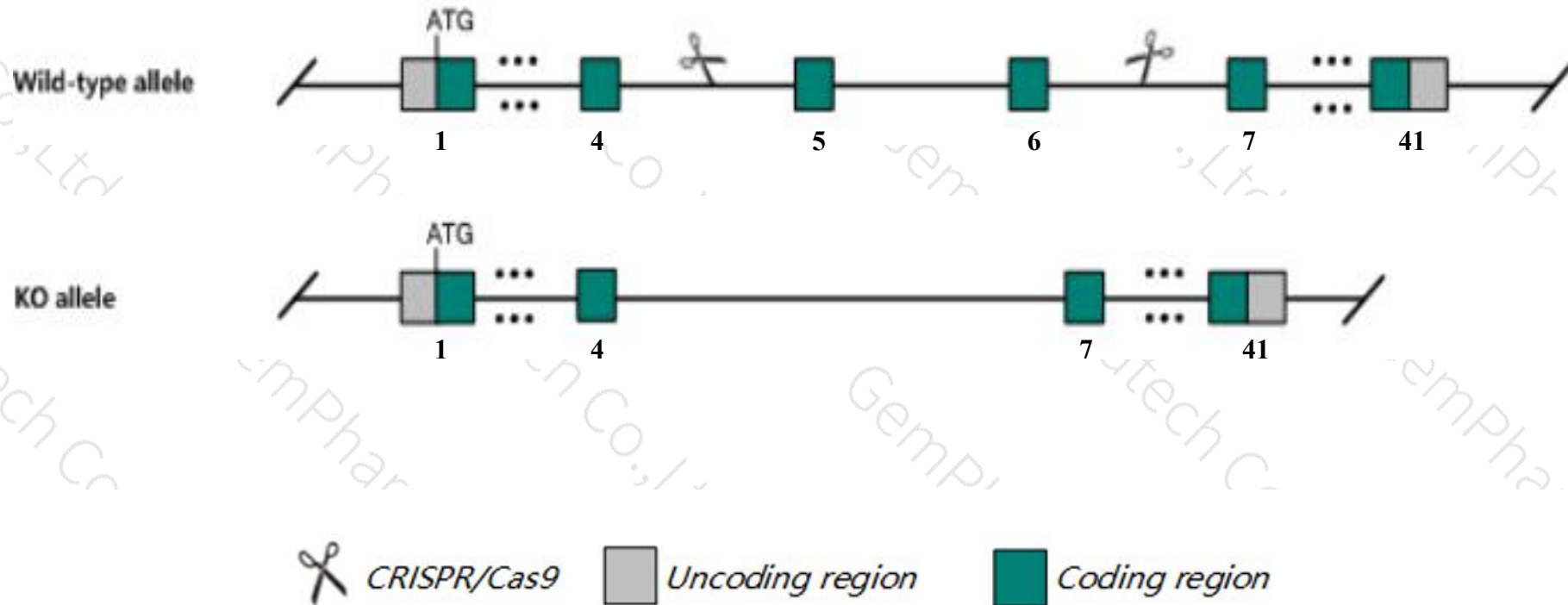
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Brwd3* gene. The schematic diagram is as follows:



- The *Brwd3* gene has 5 transcripts. According to the structure of *Brwd3* gene, exon5-exon6 of *Brwd3*-205(ENSMUST00000150434.7) transcript is recommended as the knockout region. The region contains 250bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Brwd3* 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.

- According to the existing MGI data, male chimeras hemizygous for a gene trapped allele exhibit short tail buds, microcephaly and, in some cases, embryonic growth retardation.
- The *Brwd3* gene is located on the ChrX. 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)

## Brwd3 bromodomain and WD repeat domain containing 3 [Mus musculus (house mouse)]

Gene ID: 382236, updated on 13-Mar-2020

### Summary



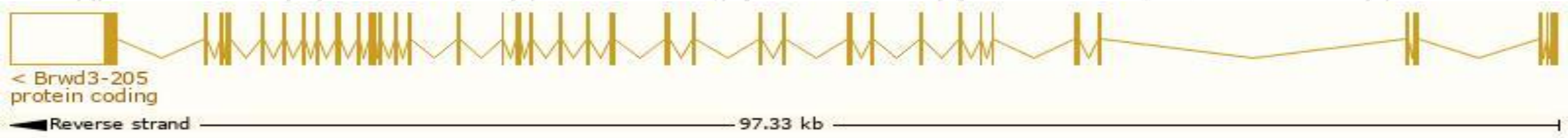
<b>Official Symbol</b>	Brwd3 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	bromodomain and WD repeat domain containing 3 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:3029414</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000063663</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Brodl, D030064D06Rik, Gm10452, Gm596
<b>Expression</b>	Broad expression in placenta adult (RPKM 3.9), CNS E11.5 (RPKM 1.8) and 20 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

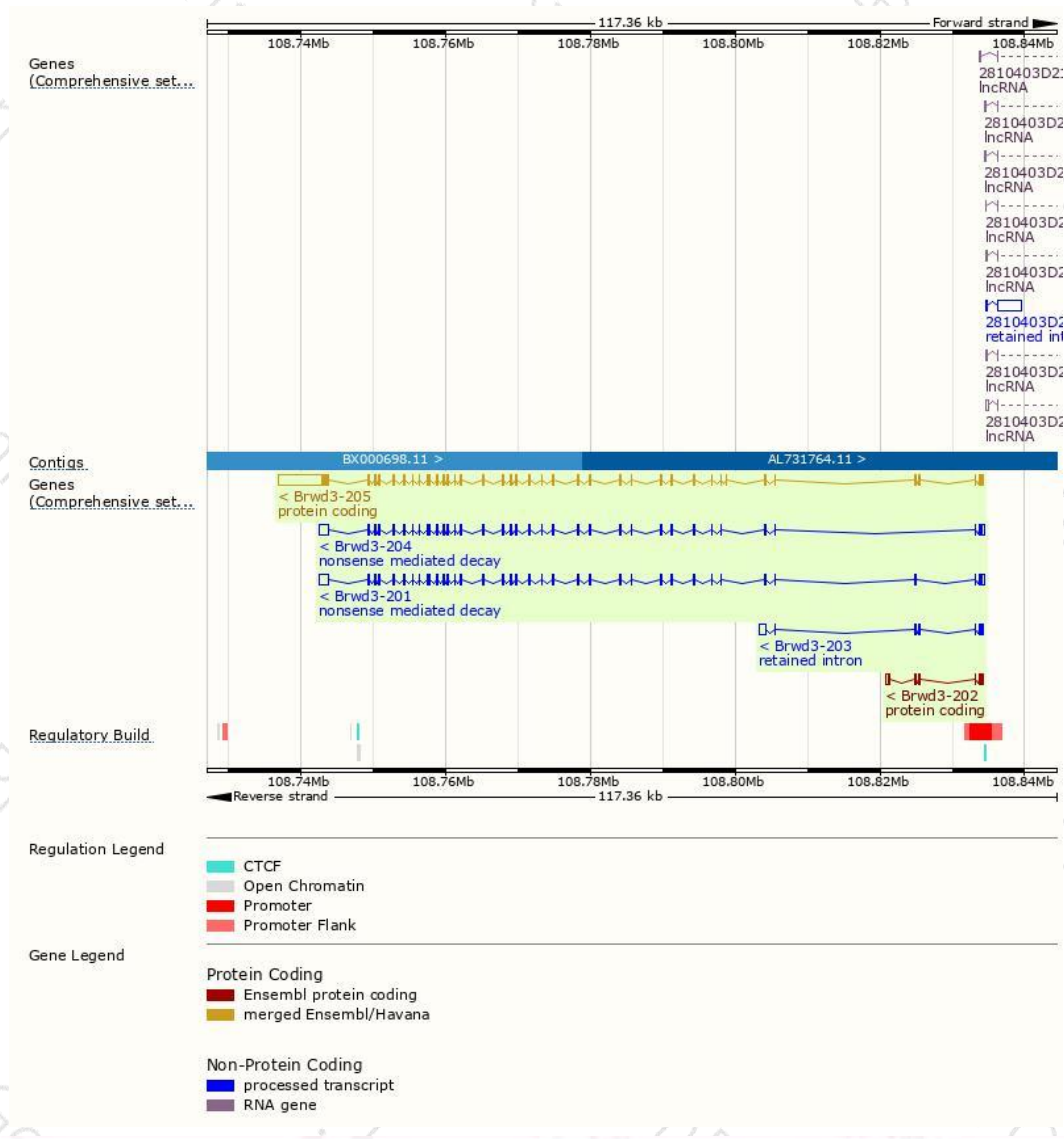
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Brwd3-205	<a href="#">ENSMUST00000150434.7</a>	11619	<a href="#">1799aa</a>	Protein coding	<a href="#">CCDS41100</a>	<a href="#">A2AHJ4</a>	TSL:5 GENCODE basic APPRIS P1
Brwd3-202	<a href="#">ENSMUST00000101283.3</a>	1066	<a href="#">181aa</a>	Protein coding	-	<a href="#">A2AHJ4</a>	TSL:1 GENCODE basic
Brwd3-201	<a href="#">ENSMUST00000041866.11</a>	5839	<a href="#">84aa</a>	Nonsense mediated decay	-	<a href="#">G3UZO0</a>	TSL:5
Brwd3-204	<a href="#">ENSMUST00000144521.7</a>	5740	<a href="#">60aa</a>	Nonsense mediated decay	-	<a href="#">G3UXF9</a>	TSL:5
Brwd3-203	<a href="#">ENSMUST00000134434.1</a>	1654	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Brwd3-205* transcript,the transcription is shown below:

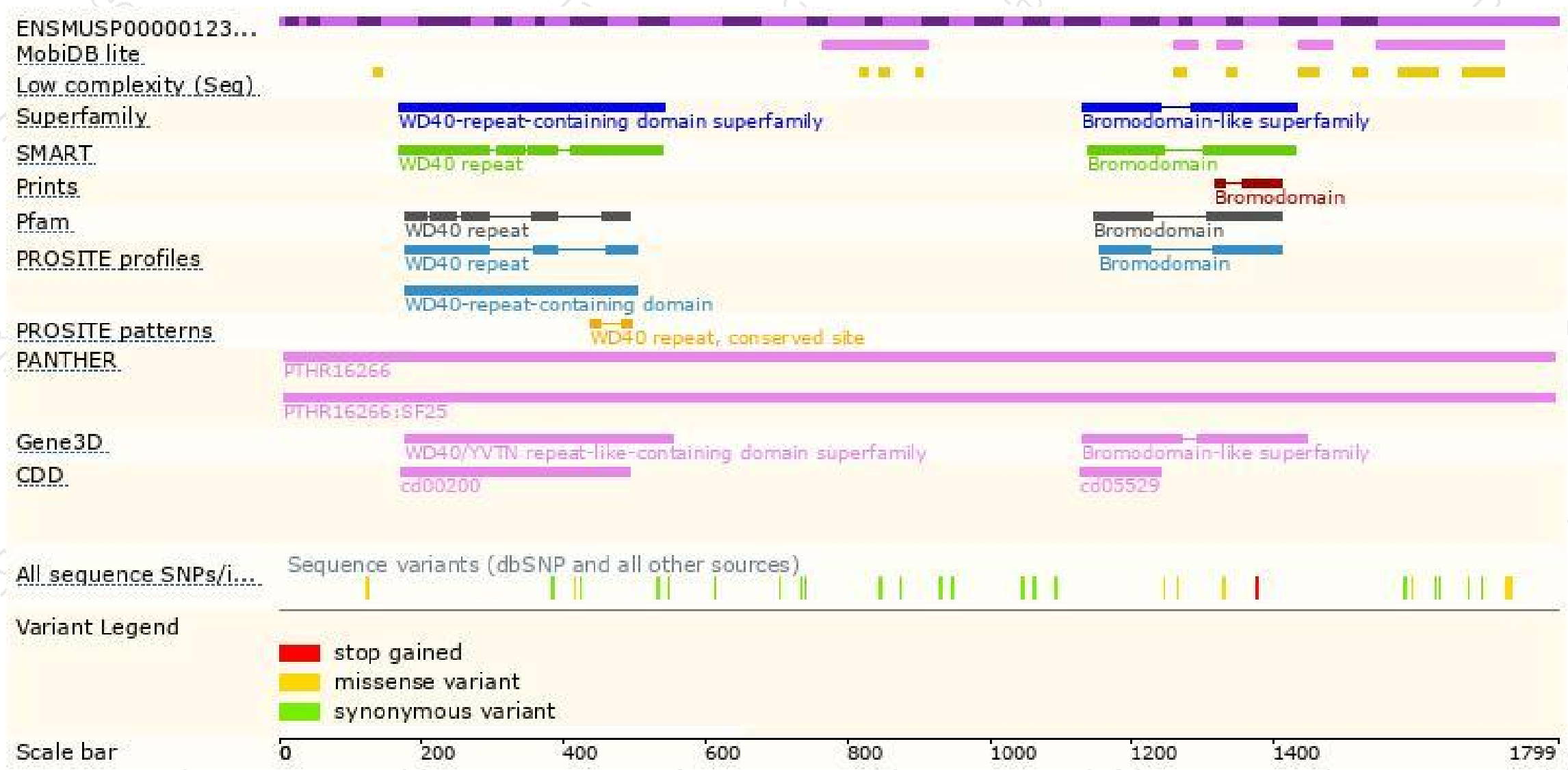


# Genomic location distribution

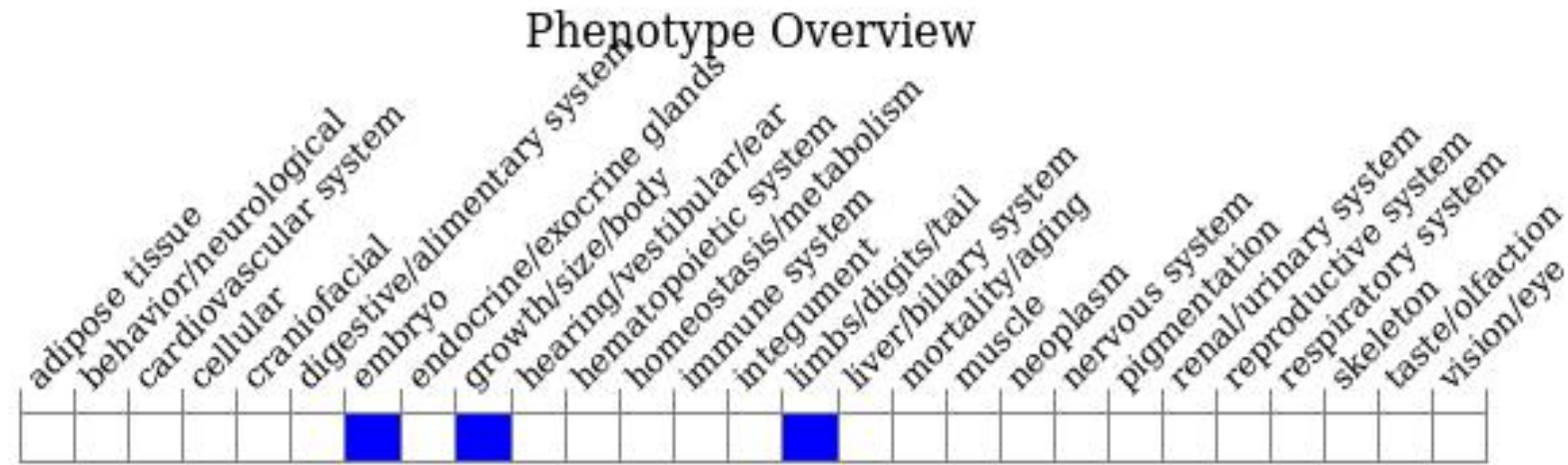




# Protein domain



# 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, male chimeras hemizygous for a gene trapped allele exhibit short tail buds, microcephaly and, in some cases, embryonic growth retardation.

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

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