

Pbx3 Cas9-KO Strategy

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Project Overview

Project Name

Pbx3

Project type

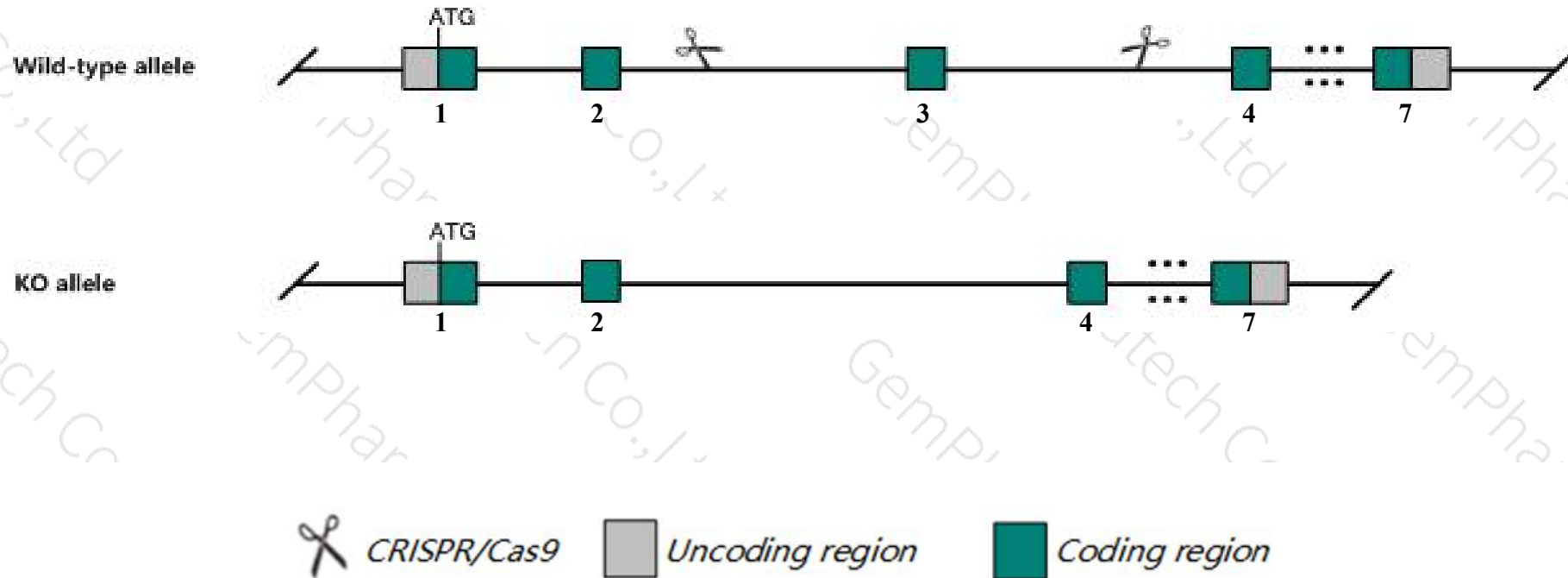
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pbx3* gene. The schematic diagram is as follows:



- The *Pbx3* gene has 10 transcripts. According to the structure of *Pbx3* gene, exon3 of *Pbx3-202* (ENSMUST00000113132.8) transcript is recommended as the knockout region. The region contains 242bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pbx3* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Homozygous null mice display neonatal lethality with hypoventilation and respiratory failure.
- Transcript *Pbx3*-208 may not be affected.
- The *Pbx3* gene is located on the Chr2. 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)

Pbx3 pre B cell leukemia homeobox 3 [Mus musculus (house mouse)]

Gene ID: 18516, updated on 31-Jan-2019

Summary



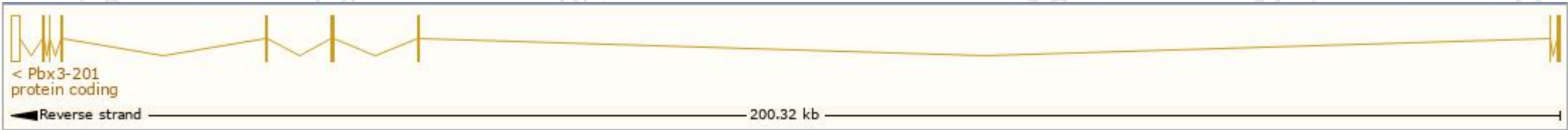
Official Symbol	Pbx3 provided by MGI
Official Full Name	pre B cell leukemia homeobox 3 provided by MGI
Primary source	MGI:MGI:97496
See related	Ensembl:ENSMUSG00000038718
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Broad expression in whole brain E14.5 (RPKM 32.9), CNS E14 (RPKM 31.9) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

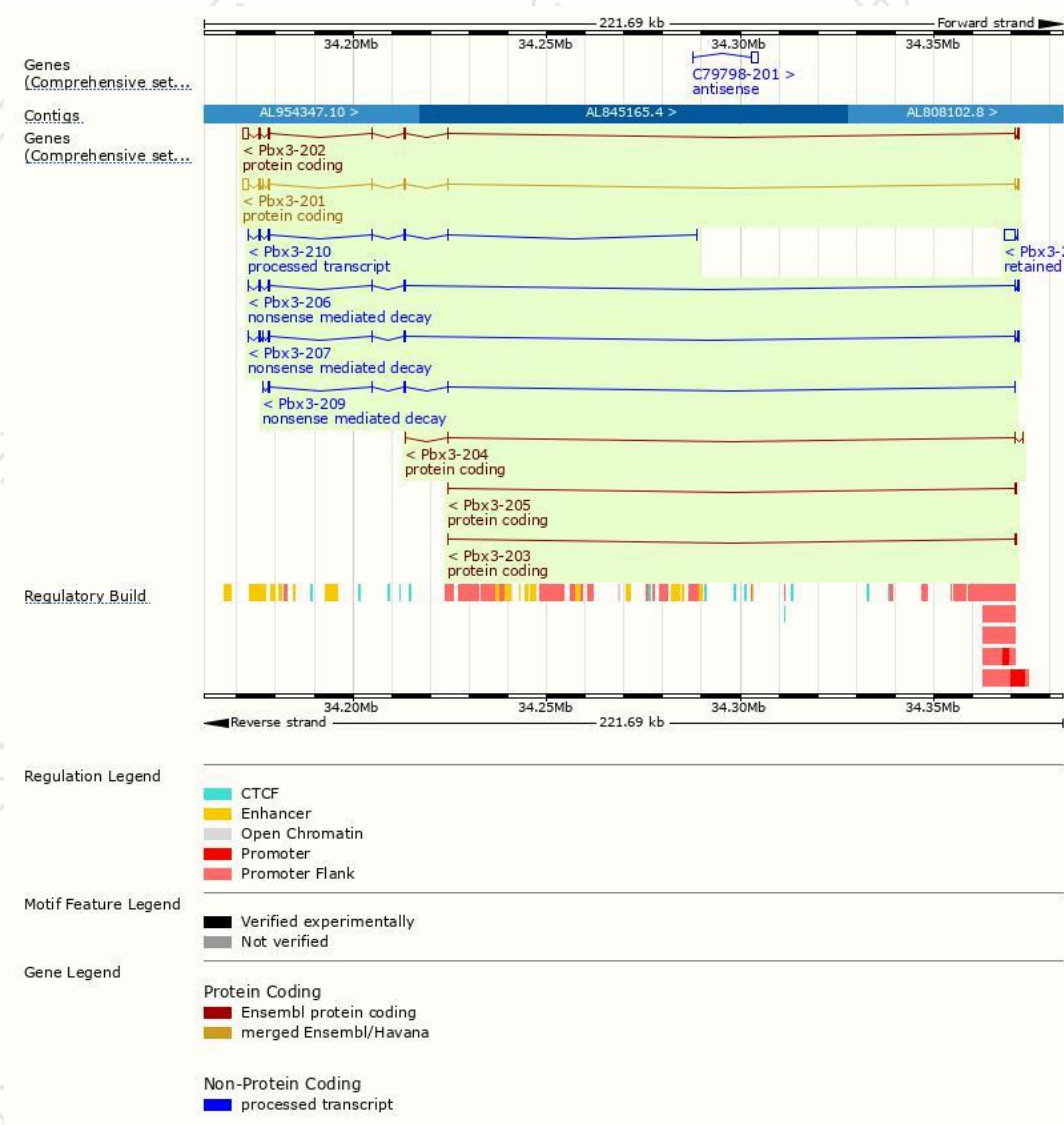
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pbx3-202	ENSMUST00000113132.8	2734	351aa	Protein coding	CCDS71033	Q35317	TSL:1 GENCODE basic APPRIS ALT1
Pbx3-201	ENSMUST00000040638.14	2587	434aa	Protein coding	CCDS15947	Q35317	TSL:1 GENCODE basic APPRIS P3
Pbx3-205	ENSMUST00000141653.2	518	96aa	Protein coding	-	B2FDH3	CDS 3' incomplete TSL:3
Pbx3-204	ENSMUST00000138021.3	447	128aa	Protein coding	-	H3BK27	CDS 3' incomplete TSL:3
Pbx3-203	ENSMUST00000127353.2	440	54aa	Protein coding	-	B2FDH2	CDS 3' incomplete TSL:3
Pbx3-207	ENSMUST00000153278.7	1063	93aa	Nonsense mediated decay	-	D6RCU6	TSL:5
Pbx3-206	ENSMUST00000143776.7	950	93aa	Nonsense mediated decay	-	D6RCU6	TSL:5
Pbx3-209	ENSMUST00000175855.2	621	44aa	Nonsense mediated decay	-	H3BLL9	CDS 5' incomplete TSL:5
Pbx3-210	ENSMUST00000176213.7	1026	No protein	Processed transcript	-	-	TSL:5
Pbx3-208	ENSMUST00000155423.2	2858	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Pbx3-201* transcript,The transcription is shown below



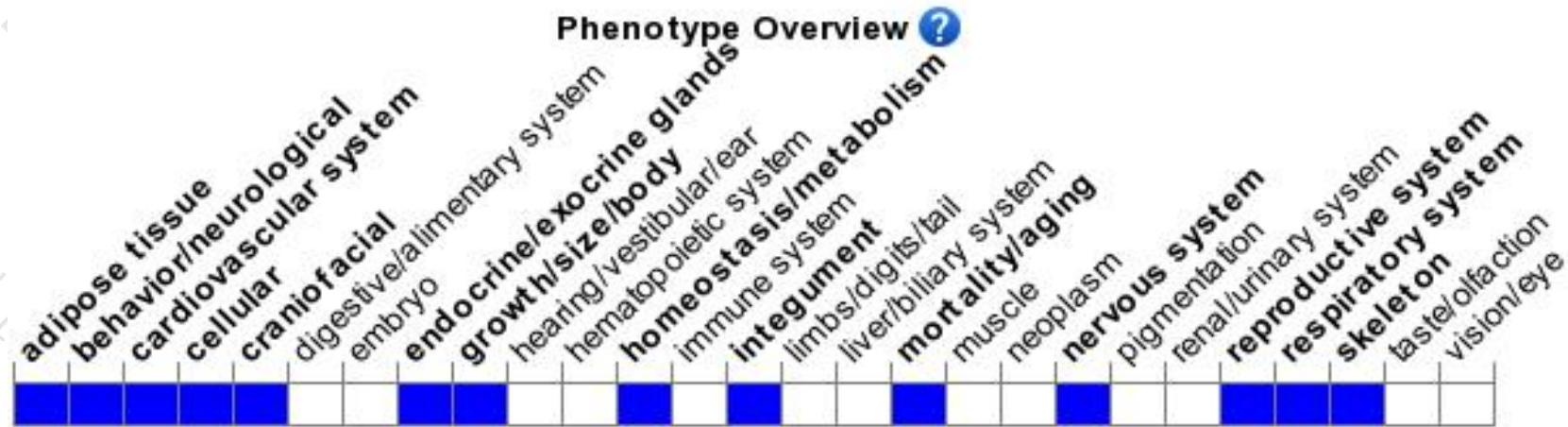
Genomic location distribution



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, Homozygous null mice display neonatal lethality with hypoventilation and respiratory failure.

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

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