

# *Pvalb* Cas9-KO Strategy

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# Project Overview

**Project Name**

***Pvalb***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- The *Pvalb* gene has 2 transcripts. According to the structure of *Pvalb* gene, exon2 of *Pvalb-201* (ENSMUST00000005860.15) transcript is recommended as the knockout region. The region contains 133bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pvalb* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for deletion of this marker show slower contraction-relaxation of fast twitch muscle and increased force generation. Abnormalities are also reported in Purkinje cell morphology.
- The *Pvalb* gene is located on the Chr15. 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)

## Pvalb parvalbumin [ *Mus musculus* (house mouse) ]

Gene ID: 19293, updated on 19-Nov-2019

### Summary

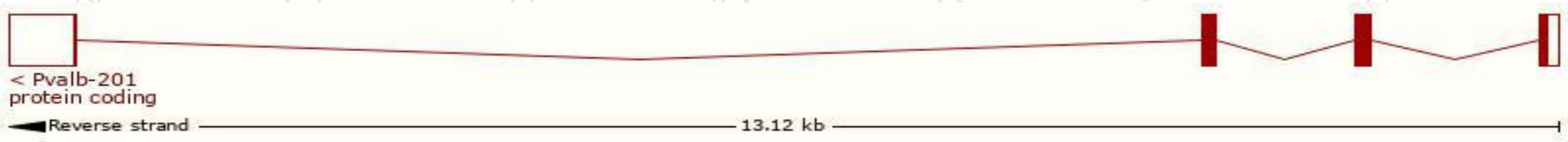
Official Symbol	Pvalb provided by <a href="#">MGI</a>
Official Full Name	parvalbumin provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:97821</a>
See related	<a href="#">Ensembl:ENSMUSG000000005716</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PV; Pva; Parv
Expression	Biased expression in cerebellum adult (RPKM 192.6), mammary gland adult (RPKM 147.4) and 2 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

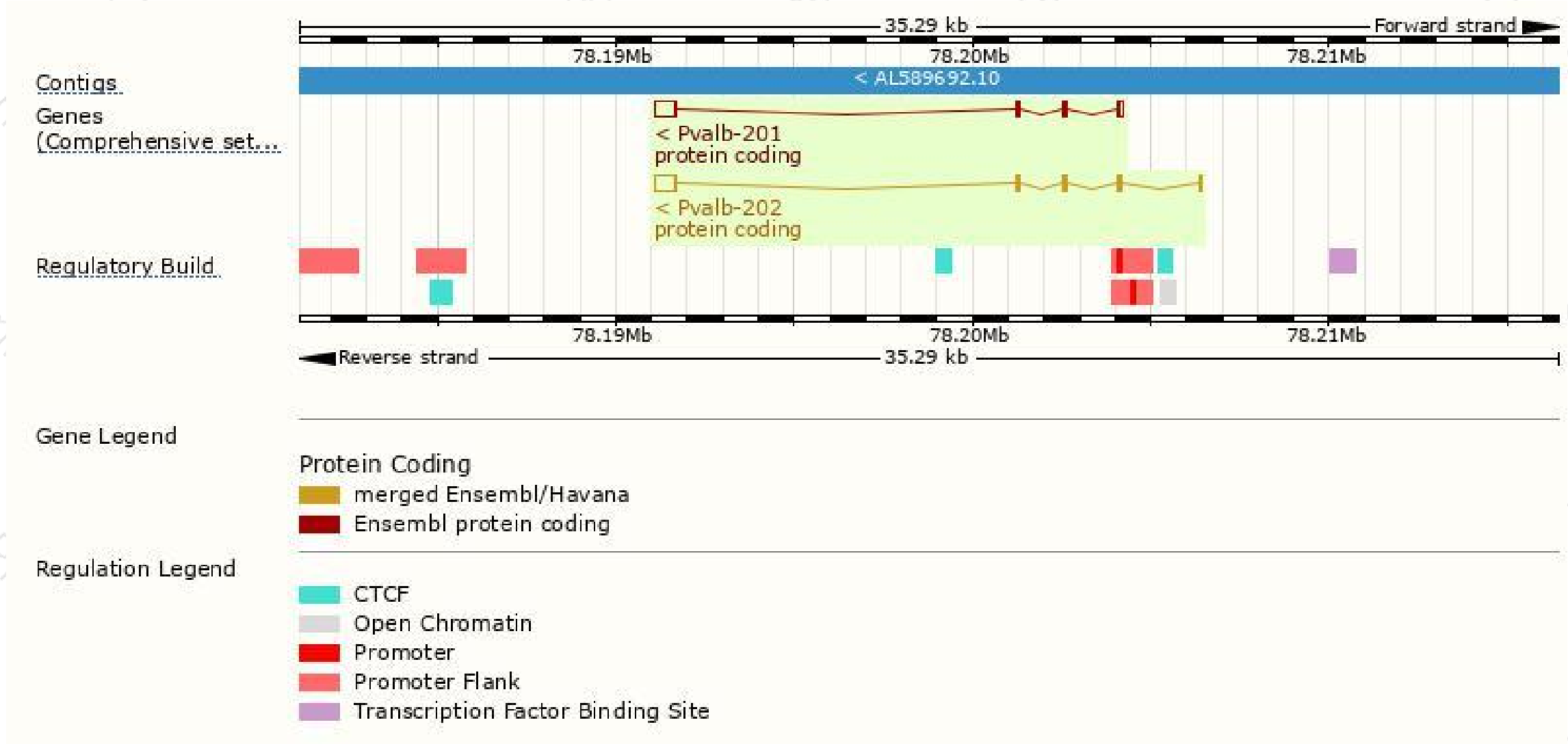
The gene has 2 transcripts,all transcripts are shown below:

Name ▲	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pvalb-201	<a href="#">ENSMUST00000005860.15</a>	977	<a href="#">110aa</a>	Protein coding	<a href="#">CCDS27609</a>	<a href="#">P32848</a> <a href="#">Q545M7</a>	TSL:1 Gencode basic APPRIS P1
Pvalb-202	<a href="#">ENSMUST00000120592.1</a>	953	<a href="#">110aa</a>	Protein coding	<a href="#">CCDS27609</a>	<a href="#">P32848</a> <a href="#">Q545M7</a>	TSL:1 Gencode basic APPRIS P1

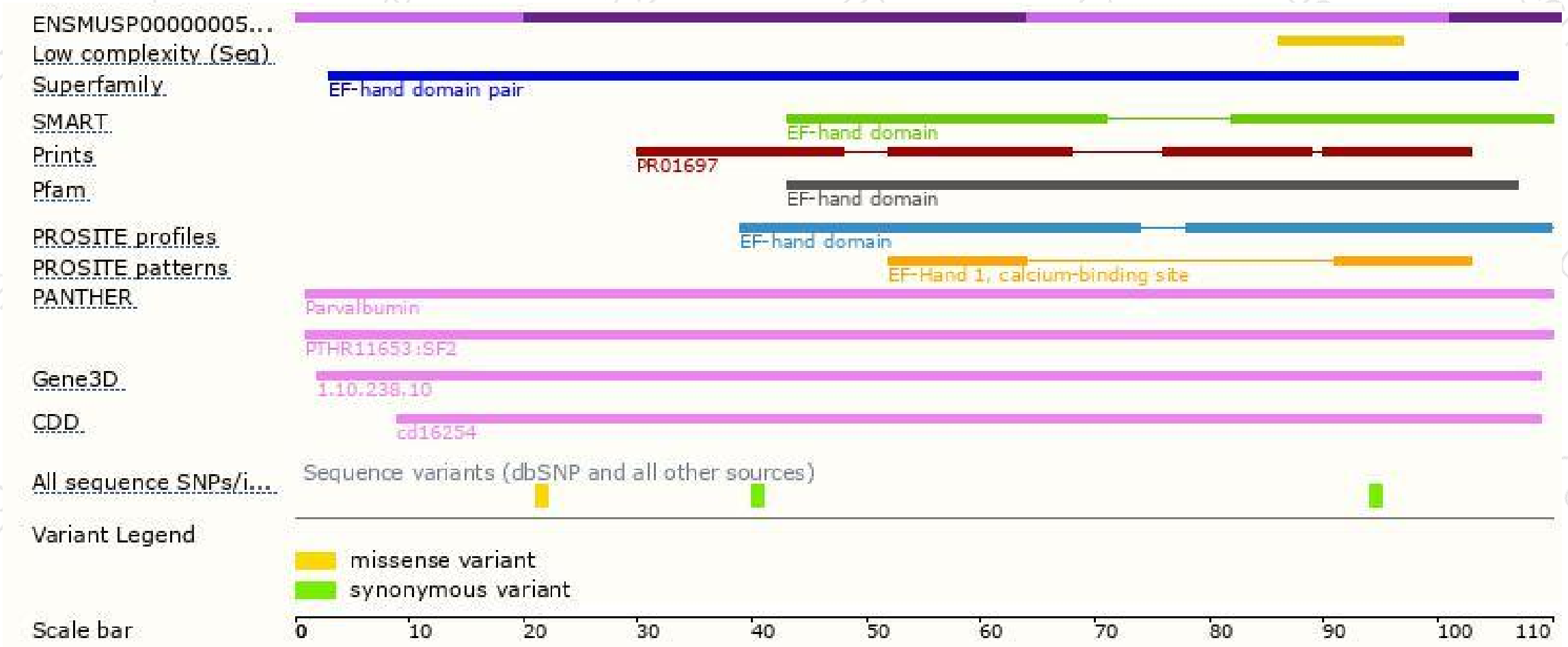
The strategy is based on the design of *Pvalb-201* transcript,The transcription is shown below



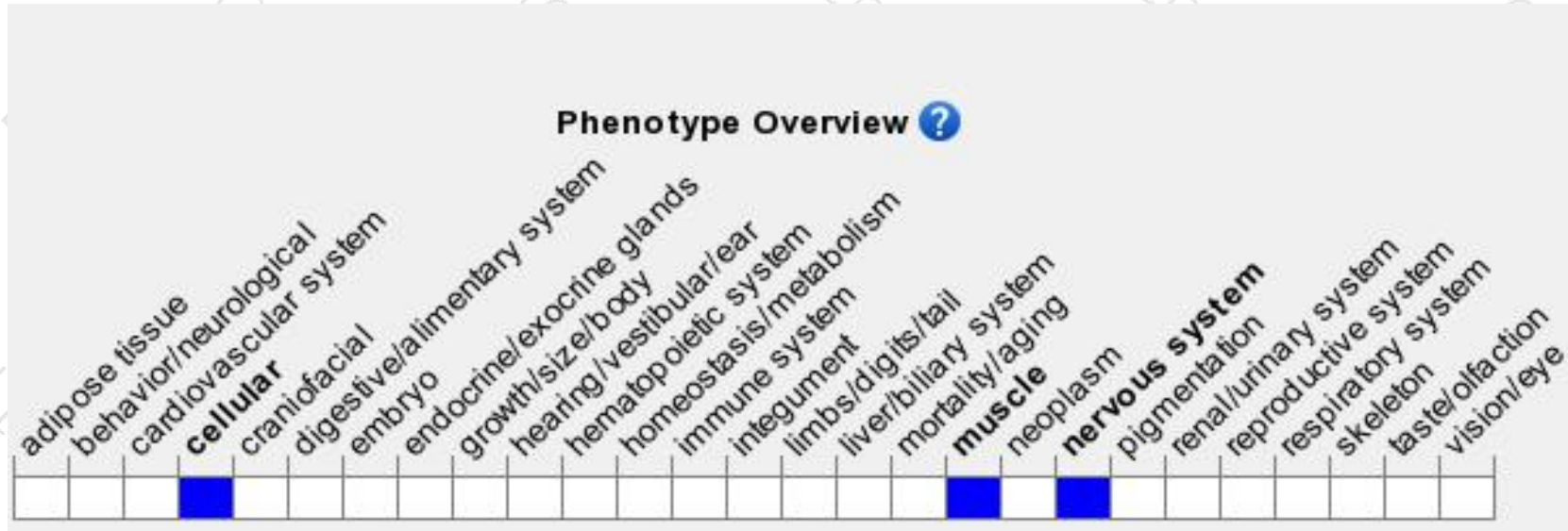
# Genomic location distribution



# 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, Mice homozygous for deletion of this marker show slower contraction-relaxation of fast twitch muscle and increased force generation. Abnormalities are also reported in Purkinje cell morphology.

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

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