

***Mbnl1* Cas9-KO Strategy**

Designer: Lixin LYU

Project Overview

Project Name

Mbnl1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mbn11* gene. The schematic diagram is as follows:



- The *Mbnl1* gene has 25 transcripts. According to the structure of *Mbnl1* gene, exon3-exon6 of *Mbnl1-201* (ENSMUST00000099087.7) transcript is recommended as the knockout region. The region contains 784bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mbnl1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a targeted mutation that disrupts exon 3 exhibit myotonia, cataracts and RNA splicing defects.
- *Gm37488* gene will be deleted together in this strategy.
- The *Mbnl1* gene is located on the Chr3. 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)

Mbnl1 muscleblind like splicing factor 1 [Mus musculus (house mouse)]

Gene ID: 56758, updated on 9-Apr-2019

Summary



Official Symbol	Mbnl1 provided by MGI
Official Full Name	muscleblind like splicing factor 1 provided by MGI
Primary source	MGI:MGI:1928482
See related	Ensembl:ENSMUSG00000027763
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	Mbnl, mKIAA0428
Expression	Ubiquitous expression in adrenal adult (RPKM 37.9), thymus adult (RPKM 23.1) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

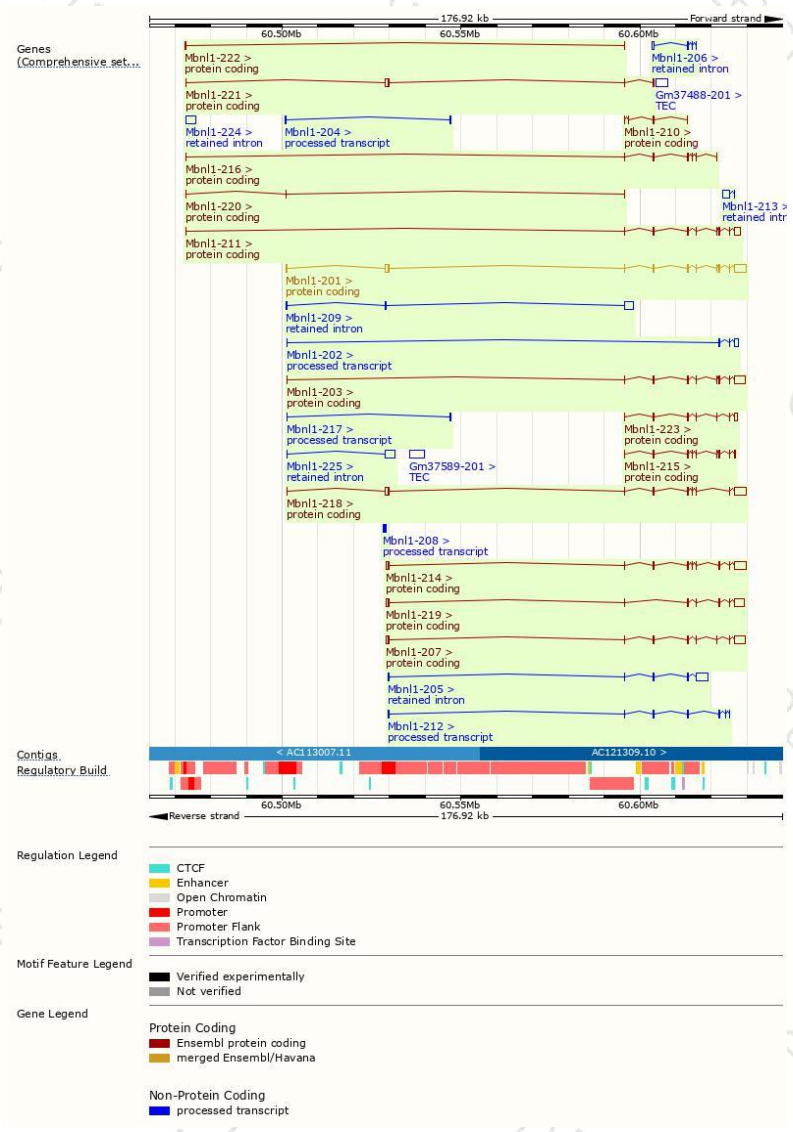
The gene has 25 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mbnl1-201	ENSMUST00000099087.7	5655	381aa	Protein coding	CCDS17378	G3X9Q0	TSL:1 GENCODE basic APPRIS P3
Mbnl1-218	ENSMUST00000194069.5	5460	347aa	Protein coding	CCDS79916	A0A0A6YWB0	TSL:1 GENCODE basic
Mbnl1-207	ENSMUST00000192607.5	4552	341aa	Protein coding	CCDS79917	Q9JKP5	TSL:1 GENCODE basic APPRIS ALT:1
Mbnl1-203	ENSMUST00000191747.5	4046	254aa	Protein coding	CCDS79919	Q3U570	TSL:1 GENCODE basic
Mbnl1-211	ENSMUST00000192807.5	2906	289aa	Protein coding	CCDS79918	Q3U581	TSL:1 GENCODE basic
Mbnl1-214	ENSMUST00000193517.5	5151	387aa	Protein coding	-	A0A0A6YVVB	TSL:5 GENCODE basic APPRIS ALT:1
Mbnl1-219	ENSMUST00000194201.5	4319	302aa	Protein coding	-	A0A0A6YXE3	TSL:5 GENCODE basic
Mbnl1-221	ENSMUST00000195077.5	1553	182aa	Protein coding	-	A0A0A6YXP3	CDS 3' incomplete TSL:5
Mbnl1-223	ENSMUST00000195817.2	1441	209aa	Protein coding	-	A0A0A6YWJ5	CDS 5' incomplete TSL:5
Mbnl1-215	ENSMUST00000193518.5	1343	302aa	Protein coding	-	A0A0A6YXQ4	CDS 5' incomplete TSL:5
Mbnl1-216	ENSMUST00000193647.5	974	257aa	Protein coding	-	A0A0A6YWG1	CDS 3' incomplete TSL:5
Mbnl1-210	ENSMUST00000192757.5	576	192aa	Protein coding	-	A0A0A6YXL7	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:2
Mbnl1-220	ENSMUST00000195001.1	367	18aa	Protein coding	-	A0A0A6YX59	CDS 3' incomplete TSL:2
Mbnl1-222	ENSMUST00000195724.5	346	23aa	Protein coding	-	A0A0A6YXG7	CDS 3' incomplete TSL:3
Mbnl1-202	ENSMUST00000191638.5	1508	No protein	Processed transcript	-	-	TSL:1
Mbnl1-212	ENSMUST00000193130.5	1019	No protein	Processed transcript	-	-	TSL:5
Mbnl1-208	ENSMUST00000192623.1	732	No protein	Processed transcript	-	-	TSL:2
Mbnl1-204	ENSMUST00000192086.1	373	No protein	Processed transcript	-	-	TSL:3
Mbnl1-217	ENSMUST00000194003.5	350	No protein	Processed transcript	-	-	TSL:3
Mbnl1-205	ENSMUST00000192394.5	4314	No protein	Retained intron	-	-	TSL:1
Mbnl1-225	ENSMUST00000195839.5	3026	No protein	Retained intron	-	-	TSL:1
Mbnl1-209	ENSMUST00000192637.1	2934	No protein	Retained intron	-	-	TSL:1
Mbnl1-224	ENSMUST00000195832.1	2728	No protein	Retained intron	-	-	TSL:NA
Mbnl1-213	ENSMUST00000193175.1	2053	No protein	Retained intron	-	-	TSL:1
Mbnl1-206	ENSMUST00000192520.1	822	No protein	Retained intron	-	-	TSL:3

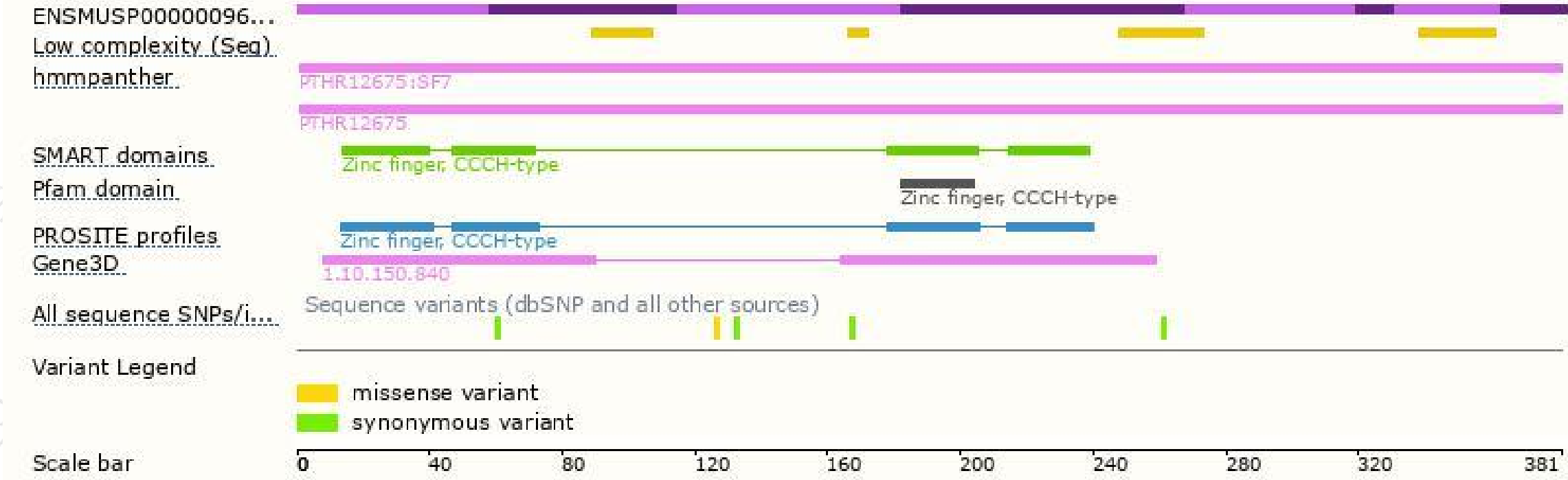
The strategy is based on the design of *Mbnl1-201* transcript,The transcription is shown below



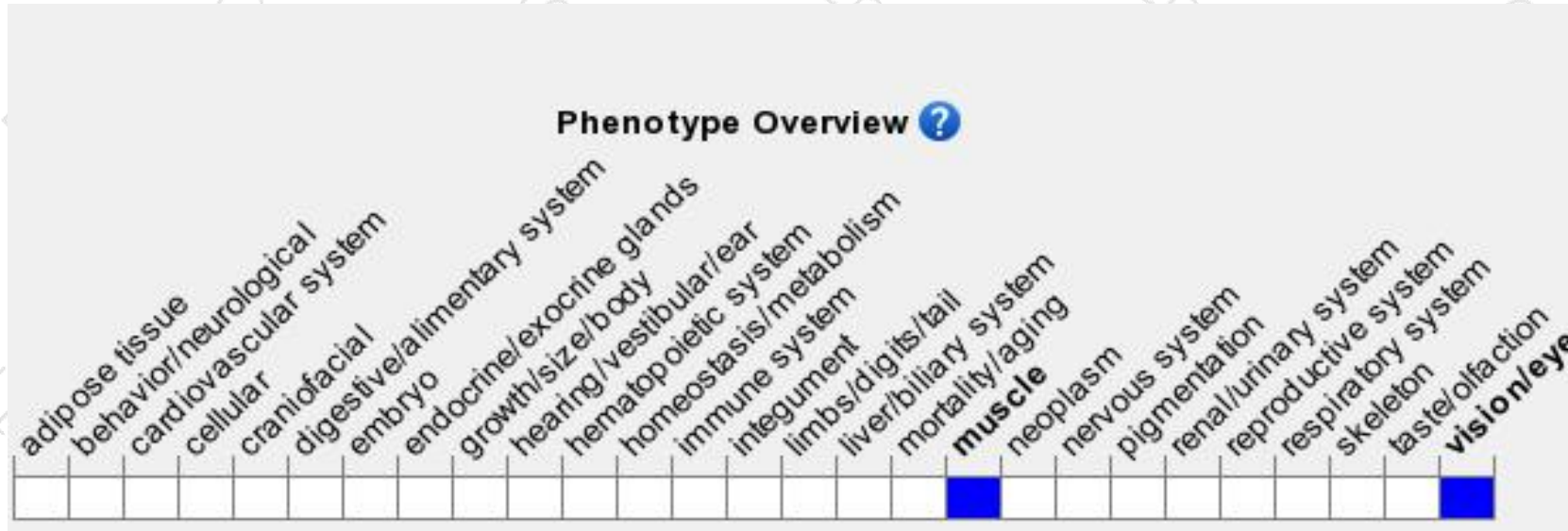
Genomic location distribution



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 a targeted mutation that disrupts exon 3 exhibit myotonia, cataracts and RNA splicing defects.

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

Tel: 400-9660890

