

Myo9a Cas9-CKO Strategy

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Project Overview

Project Name

Myo9a

Project type

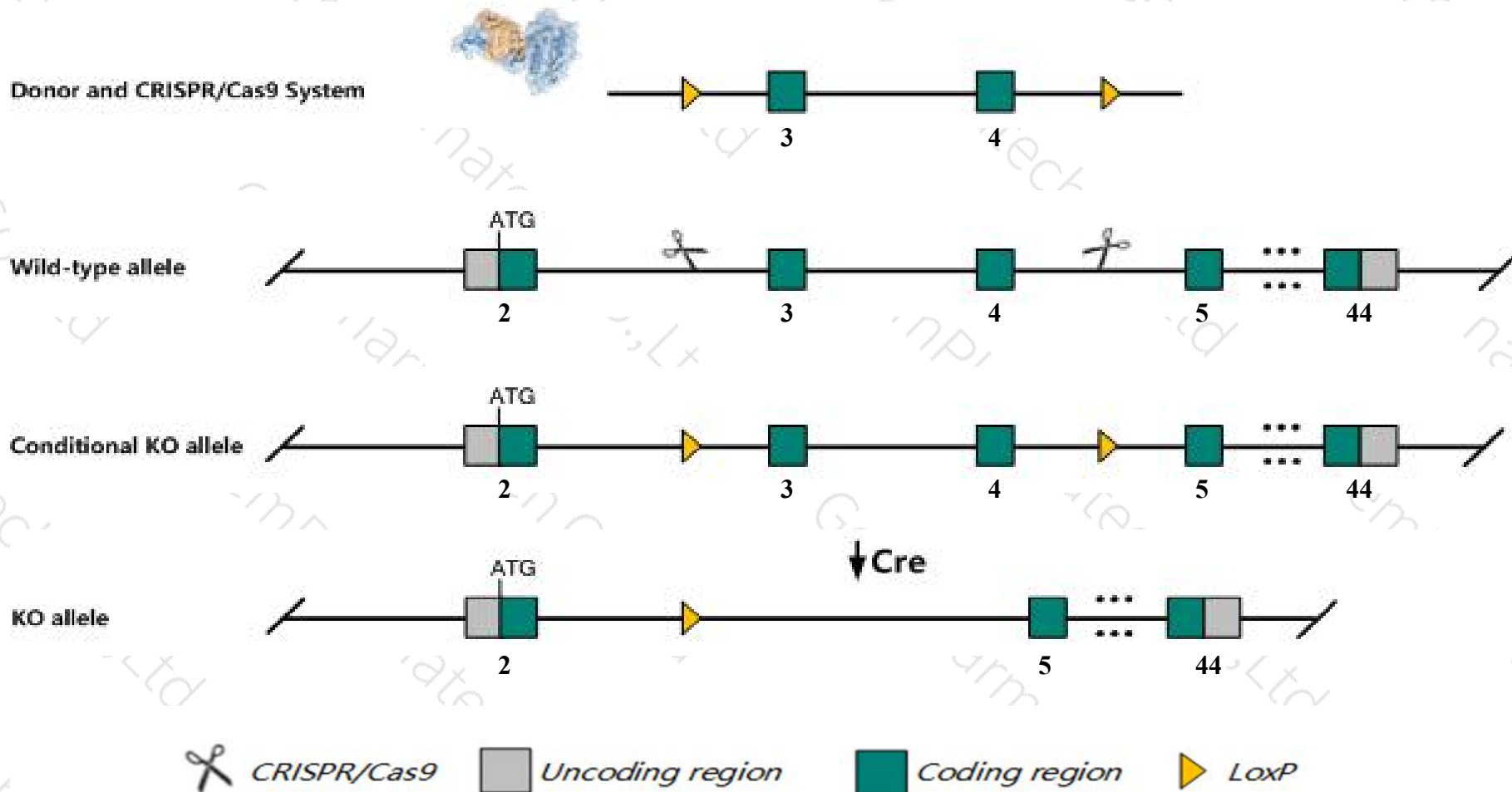
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Myo9a* gene. The schematic diagram is as follows:



- The *Myo9a* gene has 8 transcripts. According to the structure of *Myo9a* gene, exon3-exon4 of *Myo9a-206* (ENSMUST00000136740.7) transcript is recommended as the knockout region. The region contains 158bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Myo9a* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Homozygous KO leads to obstructive hydrocephaly caused by blockage of the third ventricle and the rostral aqueduct caused by developmental failures of their ependymal cells.
- The *Myo9a* gene is located on the Chr9. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Myo9a myosin IXa [Mus musculus (house mouse)]

Gene ID: 270163, updated on 10-Feb-2019

Summary



Official Symbol	Myo9a provided by MGI
Official Full Name	myosin IXa provided by MGI
Primary source	MGI:MGI:107735
See related	Ensembl:ENSMUSG00000039585
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	4732465J09Rik, C130068I12Rik, C230003M11
Expression	Broad expression in CNS E18 (RPKM 7.1), whole brain E14.5 (RPKM 5.5) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

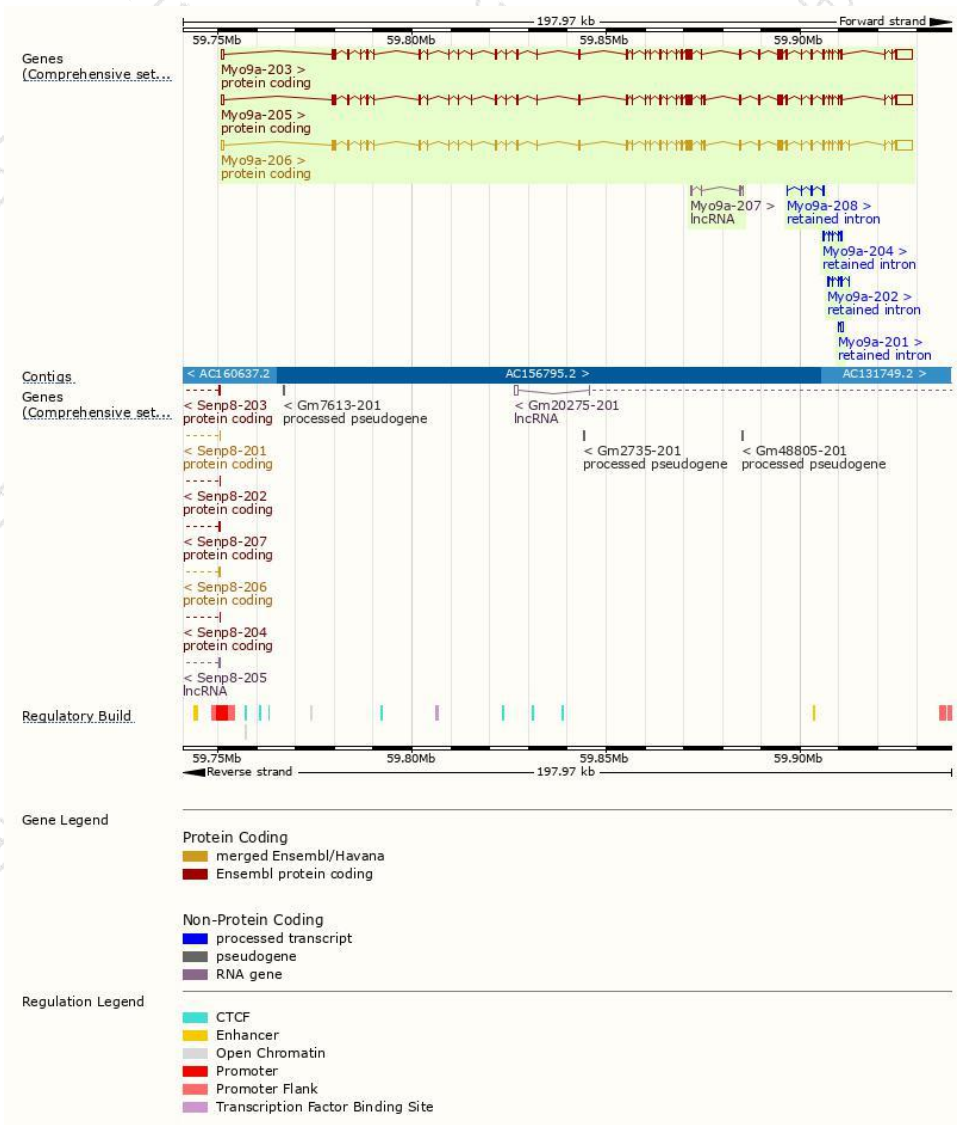
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Myo9a-206	ENSMUST00000136740.7	12252	2631aa	Protein coding	CCDS52820	D3Z3A8	TSL:5 GENCODE basic APPRIS P2
Myo9a-205	ENSMUST00000135298.7	12198	2613aa	Protein coding	-	Q8C170	TSL:5 GENCODE basic APPRIS ALT2
Myo9a-203	ENSMUST00000128341.1	11985	2542aa	Protein coding	-	Q8C170	TSL:5 GENCODE basic APPRIS ALT2
Myo9a-202	ENSMUST00000127933.1	783	No protein	Retained intron	-	-	TSL:3
Myo9a-204	ENSMUST00000130497.7	679	No protein	Retained intron	-	-	TSL:3
Myo9a-208	ENSMUST00000151167.1	564	No protein	Retained intron	-	-	TSL:5
Myo9a-201	ENSMUST00000126631.1	407	No protein	Retained intron	-	-	TSL:2
Myo9a-207	ENSMUST00000147364.1	515	No protein	lncRNA	-	-	TSL:3

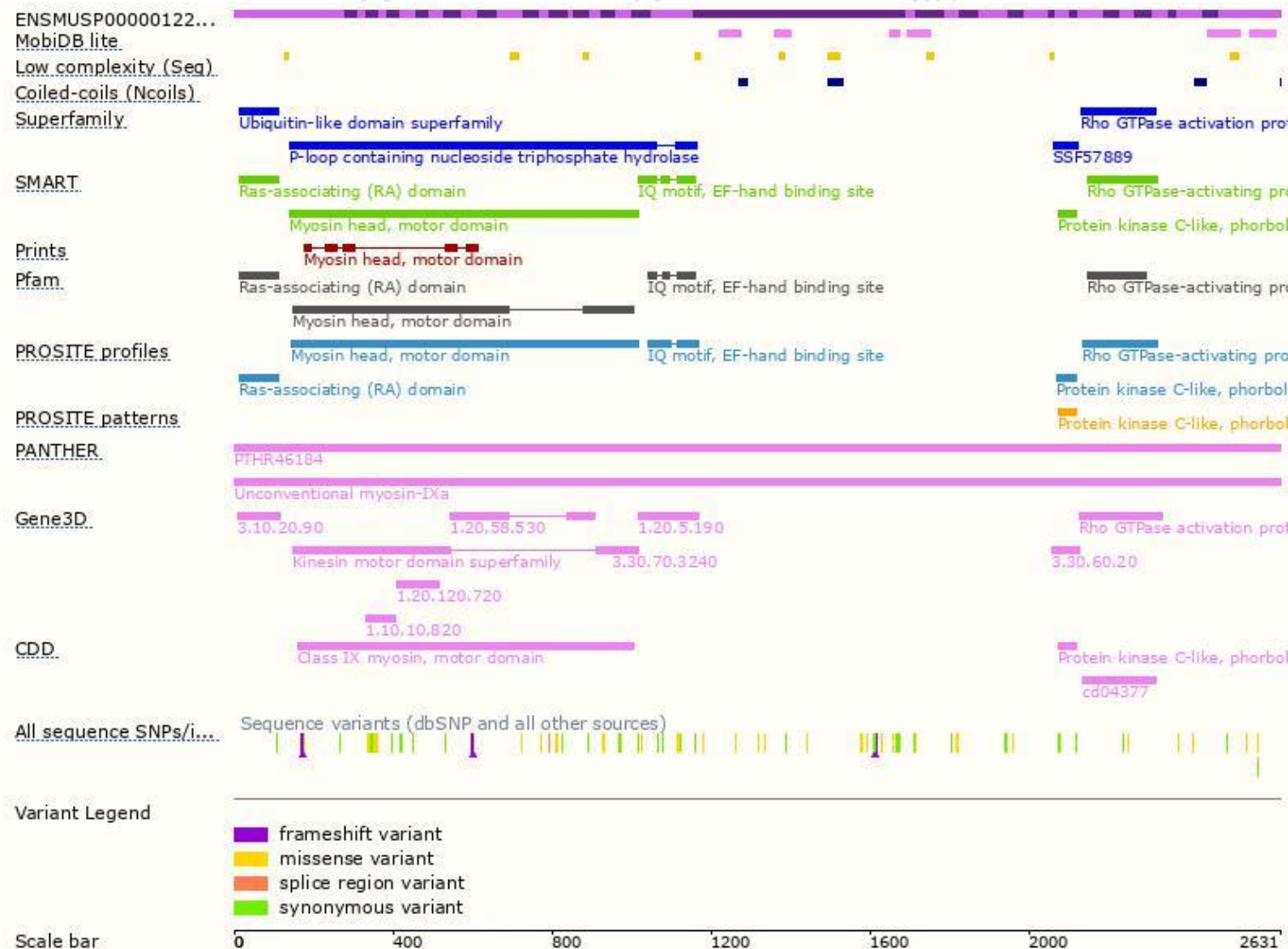
The strategy is based on the design of *Myo9a-206* transcript,The transcription is shown below



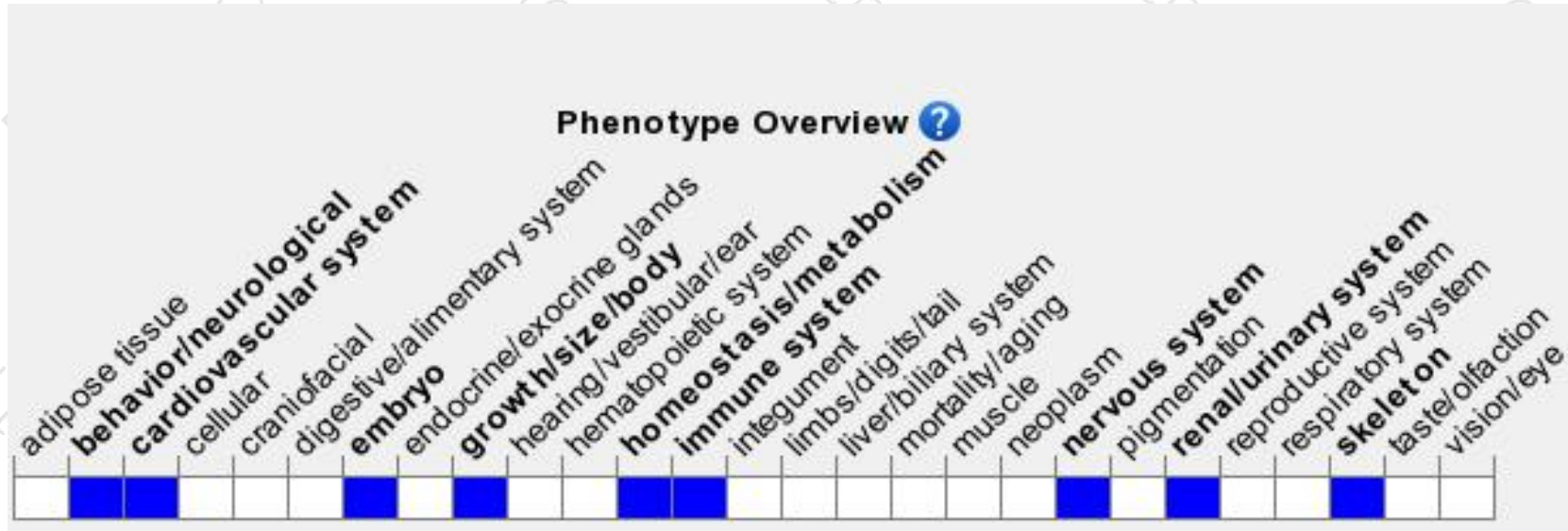
Genomic location distribution



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 KO leads to obstructive hydrocephaly caused by blockage of the third ventricle and the rostral aqueduct caused by developmental failures of their ependymal cells.

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

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