Myo15 Cas9-CKO Strategy

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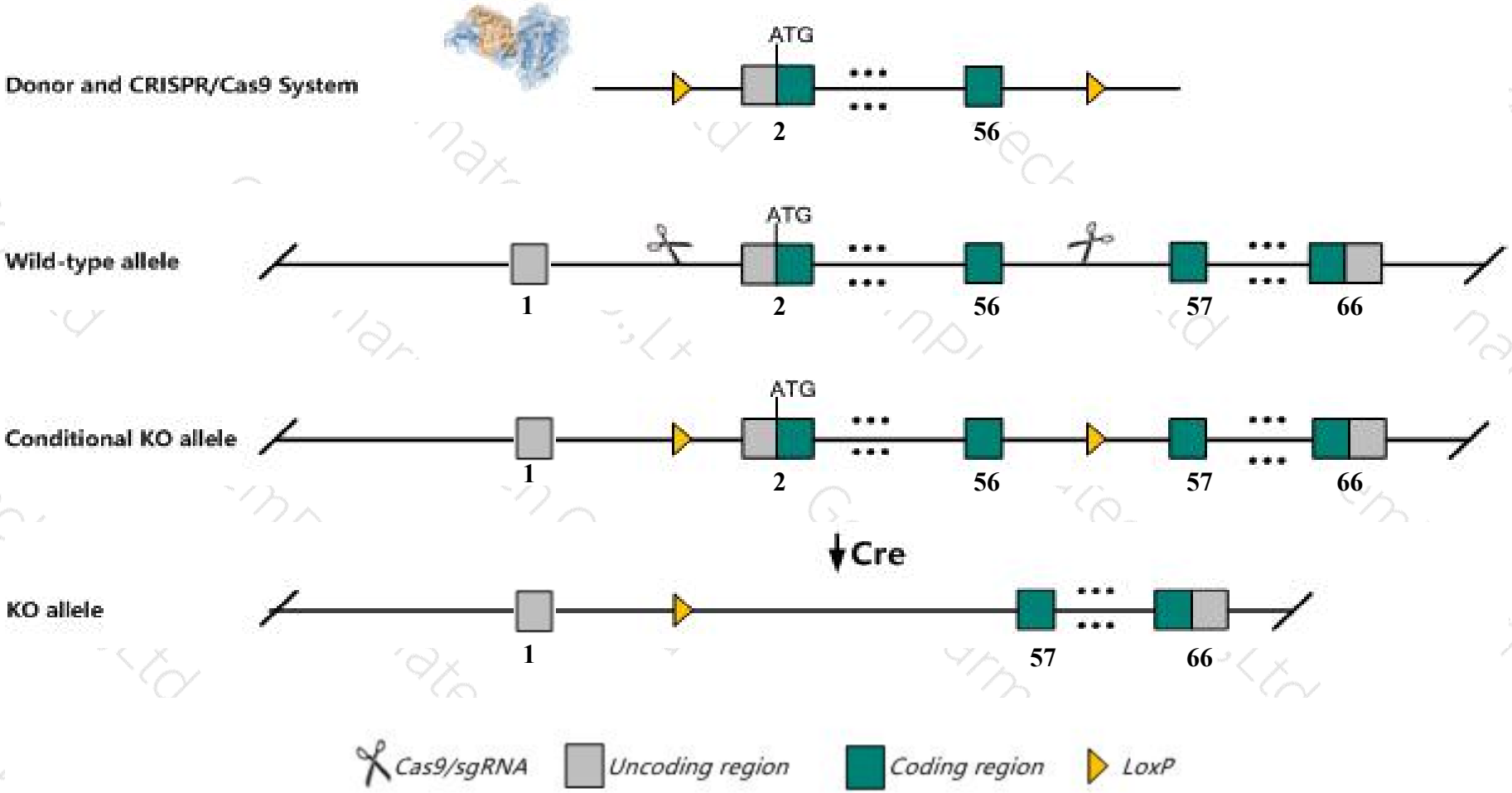
Project Overview

Project Name	***Myo15***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Myo15* gene. The schematic diagram is as follows:



Technical routes

- The *Myo15* gene has 6 transcripts. According to the structure of *Myo15* gene, exon2-exon56 of *Myo15-201* (ENSMUST00000071880.8) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Myo15* 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.

Notice

- According to the existing MGI data,Mutations in this gene result in profound deafness and neurological behavior.

- The *Myo15* gene is located on the Chr11. 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）

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Myo15 myosin XV [*Mus musculus* (house mouse)]

Gene ID: 17910, updated on 14-Aug-2019

Summary

Official Symbol	Myo15 provided by MGI
Official Full Name	myosin XV provided by MGI
Primary source	MGI:MGI:1261811
See related	Ensembl:ENSMUSG00000042678
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	sh2; sh-2; Myo15a
Expression	Biased expression in testis adult (RPKM 2.4), cerebellum adult (RPKM 0.5) and 4 other tissues See more
Orthologs	human all

Genomic context

Location: 11 B2; 11 37.81 cM

See Myo15 in Genome Data Viewer

Exon count: 67

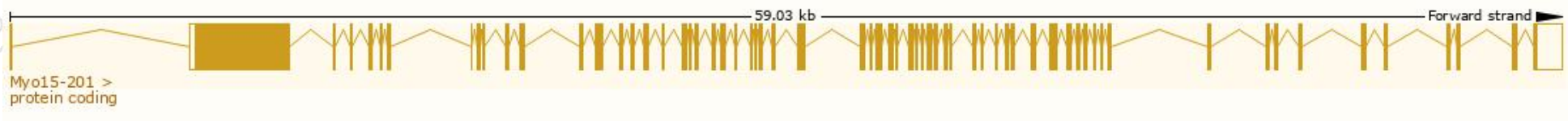
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	11	NC_000077.6 (60469339..60528369)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	11	NC_000077.5 (60282841..60341871)

Transcript information（Ensembl）

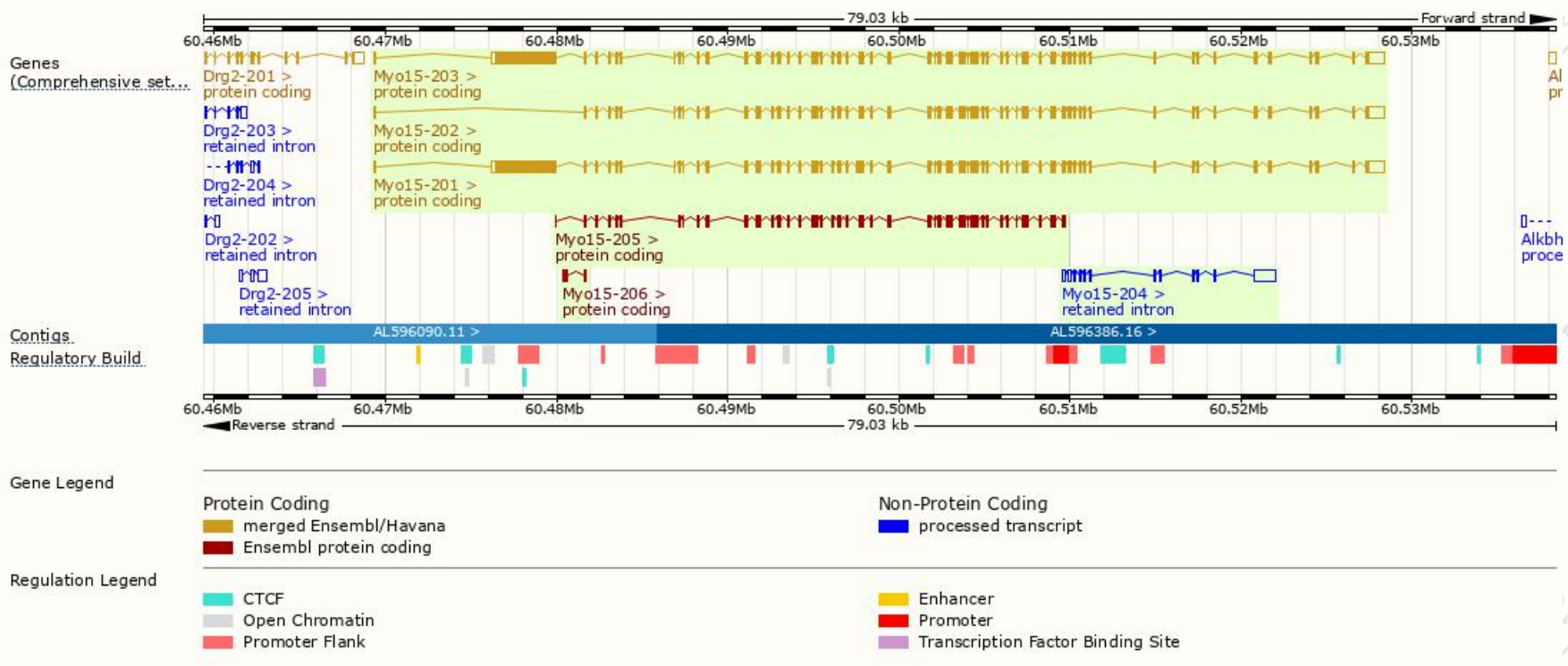
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Myo15-201	ENSMUST00000071880.8	11769	3511aa	Protein coding	CCDS24792	Q9QZZ4	TSL:5 GENCODE basic APPRIS P4
Myo15-203	ENSMUST00000094135.8	11715	3493aa	Protein coding	CCDS48811	Q9QZZ4	TSL:5 GENCODE basic APPRIS ALT2
Myo15-202	ENSMUST00000081823.11	7953	2306aa	Protein coding	CCDS24793	Q9QZZ4	TSL:5 GENCODE basic APPRIS ALT2
Myo15-205	ENSMUST00000126522.3	5351	1784aa	Protein coding	-	F6VXK7	CDS 5' and 3' incomplete TSL:1
Myo15-206	ENSMUST00000238401.1	360	77aa	Protein coding	-	-	CDS 3' incomplete
Myo15-204	ENSMUST00000122825.1	2285	No protein	Retained intron	-	-	TSL:1

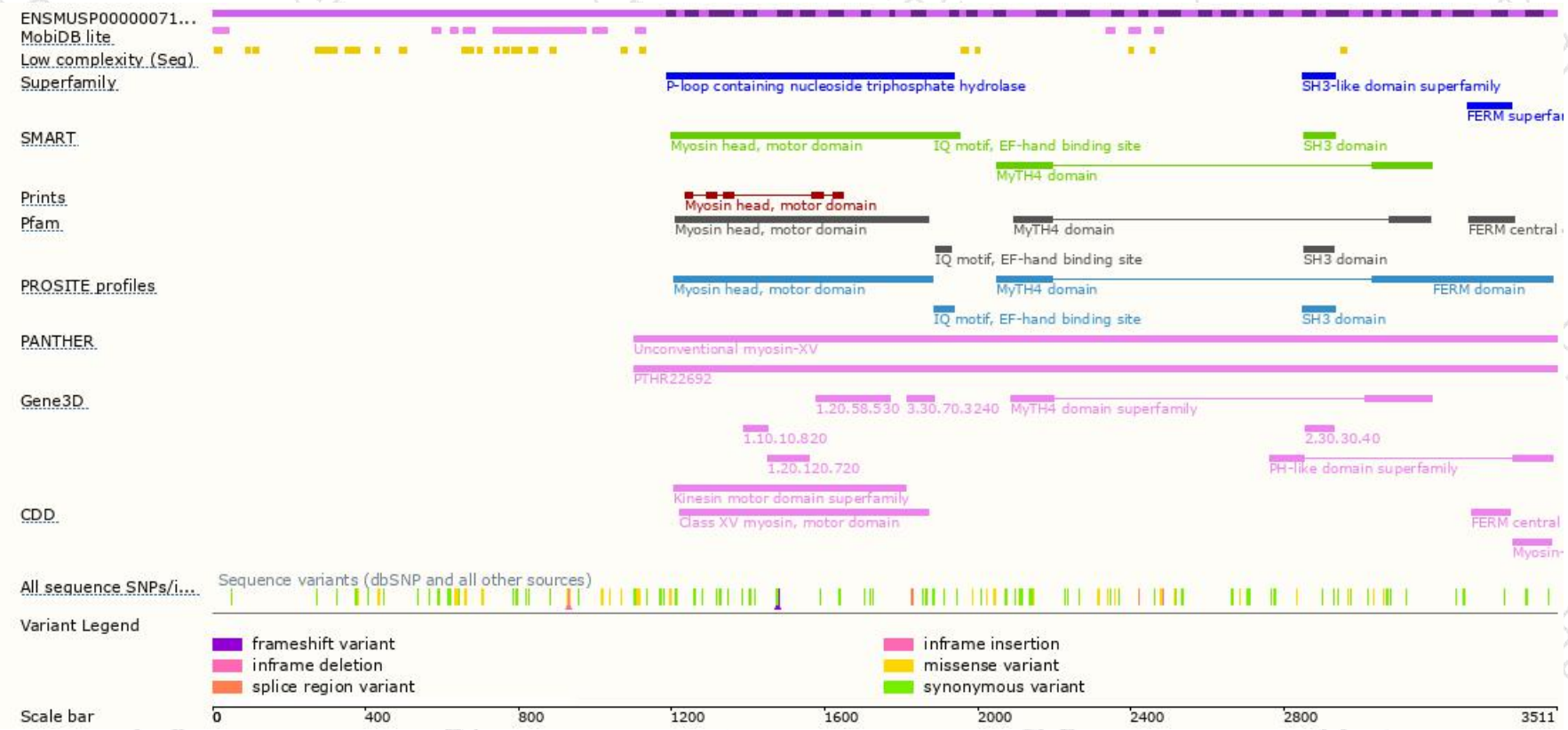
The strategy is based on the design of *Myo15-201* transcript,The transcription is shown below



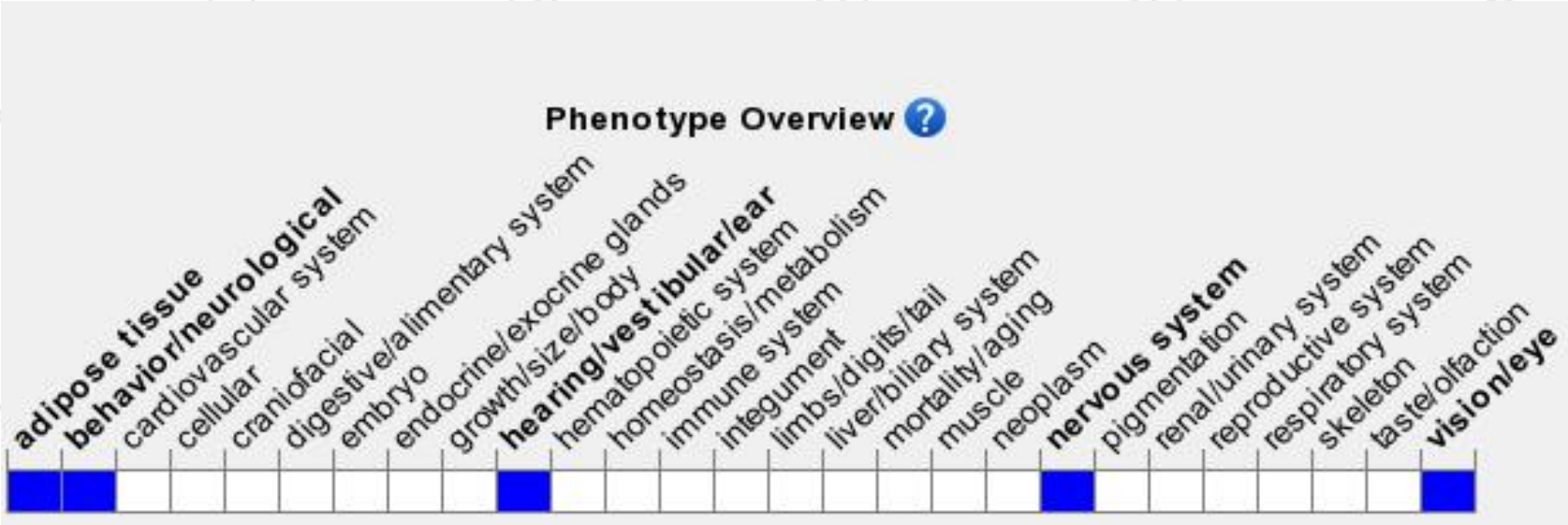
Genomic location distribution



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,Mutations in this gene result in profound deafness and neurological behavior.

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

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