Myo1d Cas9-KO Strategy

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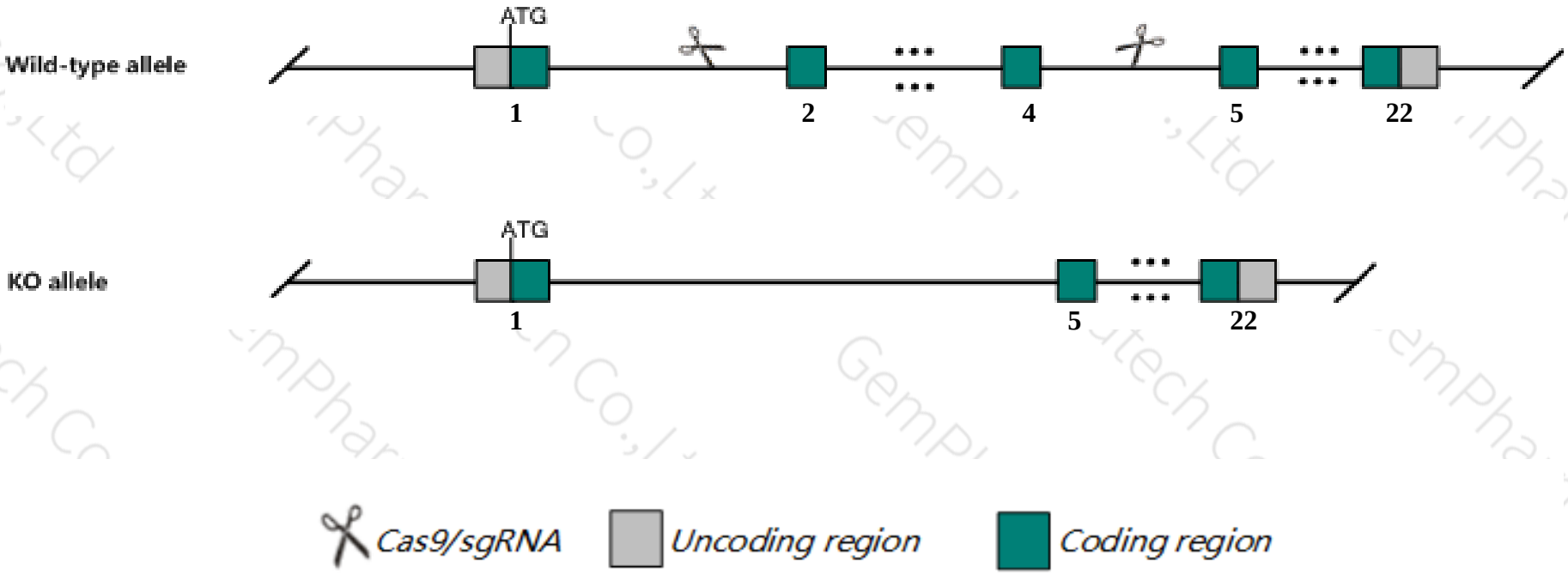
Project Overview

Project Name	***Myo1d***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Myo1d* gene. The schematic diagram is as follows:



Technical routes

➢ The *Myo1d* gene has 3 transcripts. According to the structure of *Myo1d* gene, exon2-exon4 of *Myo1d-201* (ENSMUST00000041065.13) transcript is recommended as the knockout region.The region contains 469bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Myo1d* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

➢ According to the existing MGI data,Mice homozygous for a hypomorphic of null allele exhibit increased susceptibility to DSS-induced colitis with increased weight loss and death.

➢ The *Myo1d* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Myo1d myosin ID [Mus musculus (house mouse)]

Gene ID: 338367, updated on 23-Mar-2019

Summary

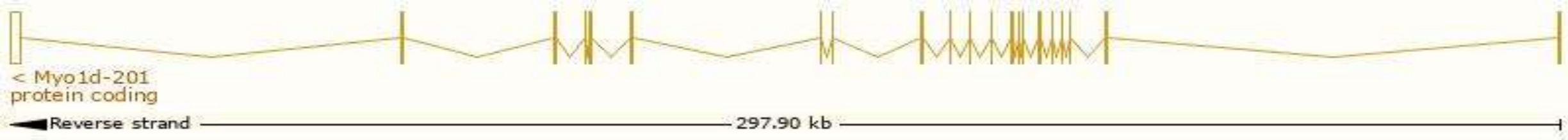
Official Symbol	Myo1d provided by MGI
Official Full Name	myosin ID provided byMGI
Primary source	MGI:MGI:107728
See related	Ensembl:ENSMUSG00000035441
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9930104H07Rik, AW544947, D11Ertd9e, myosin-1d
Expression	Broad expression in large intestine adult (RPKM 42.4), colon adult (RPKM 39.6) and 16 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

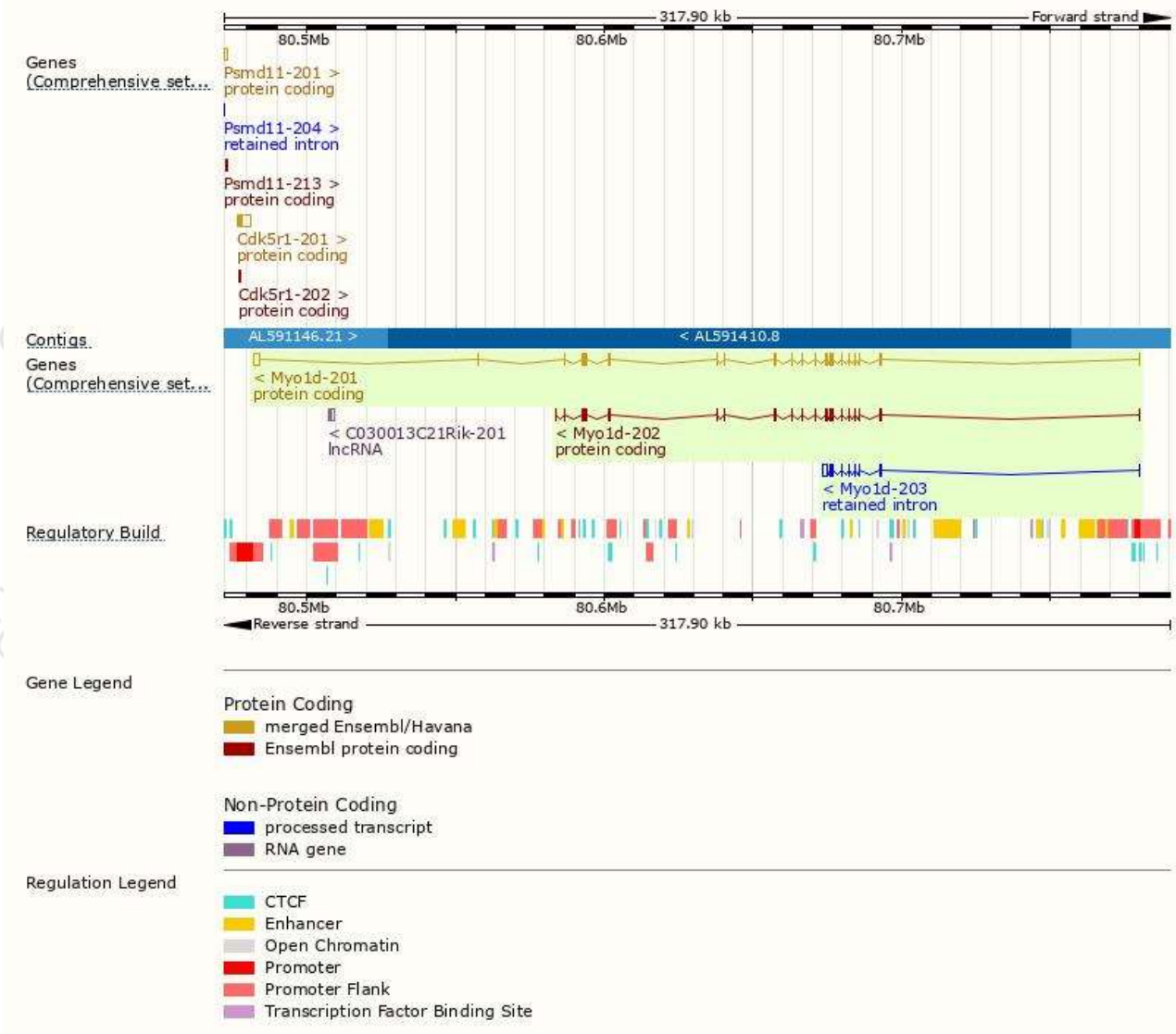
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Myo1d-201	ENSMUST00000041065.13	5354	1006aa	Protein coding	CCDS36242	Q5SYD0	TSL:5 GENCODE basic APPRIS P1
Myo1d-202	ENSMUST00000070997.5	3106	944aa	Protein coding	-	Q5SYD0	TSL:1 GENCODE basic
Myo1d-203	ENSMUST00000125944.1	2454	No protein	Retained intron	-	-	TSL:1

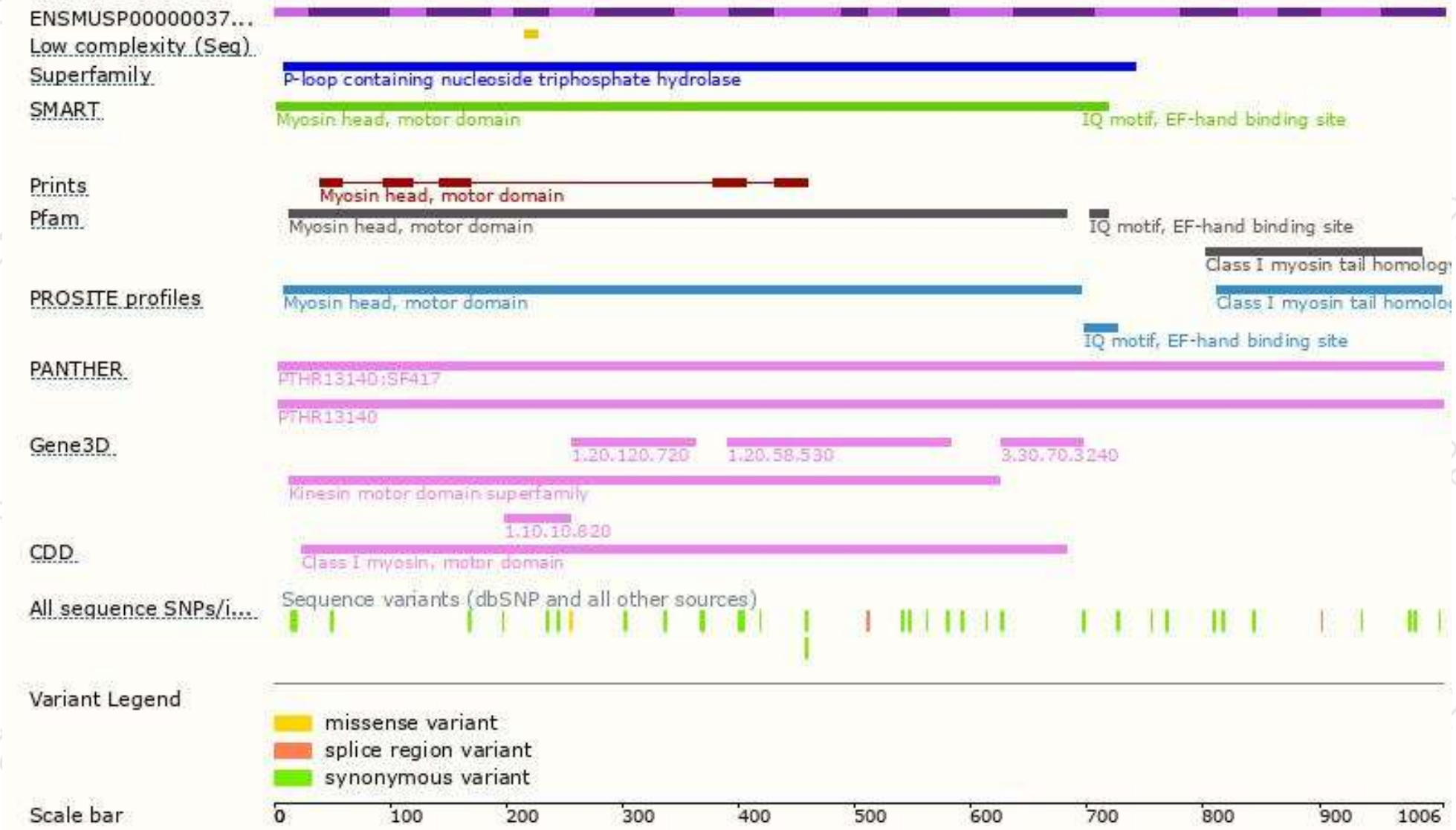
The strategy is based on the design of *Myo1d-201* transcript,The transcription is shown below



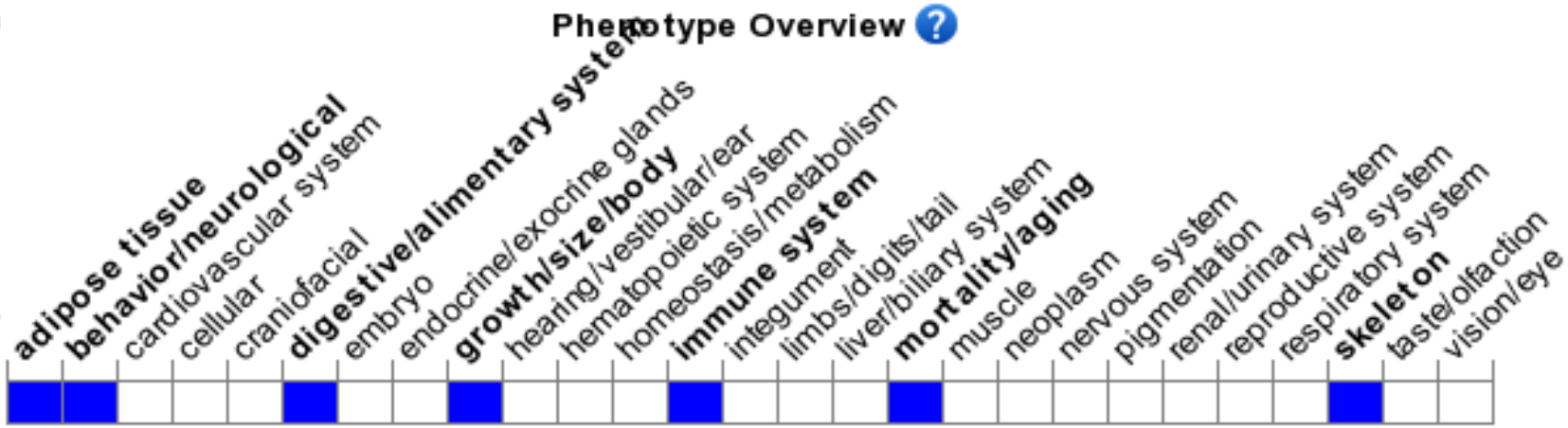
Genomic location distribution



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/).

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

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