Fhod3 Cas9-CKO Strategy

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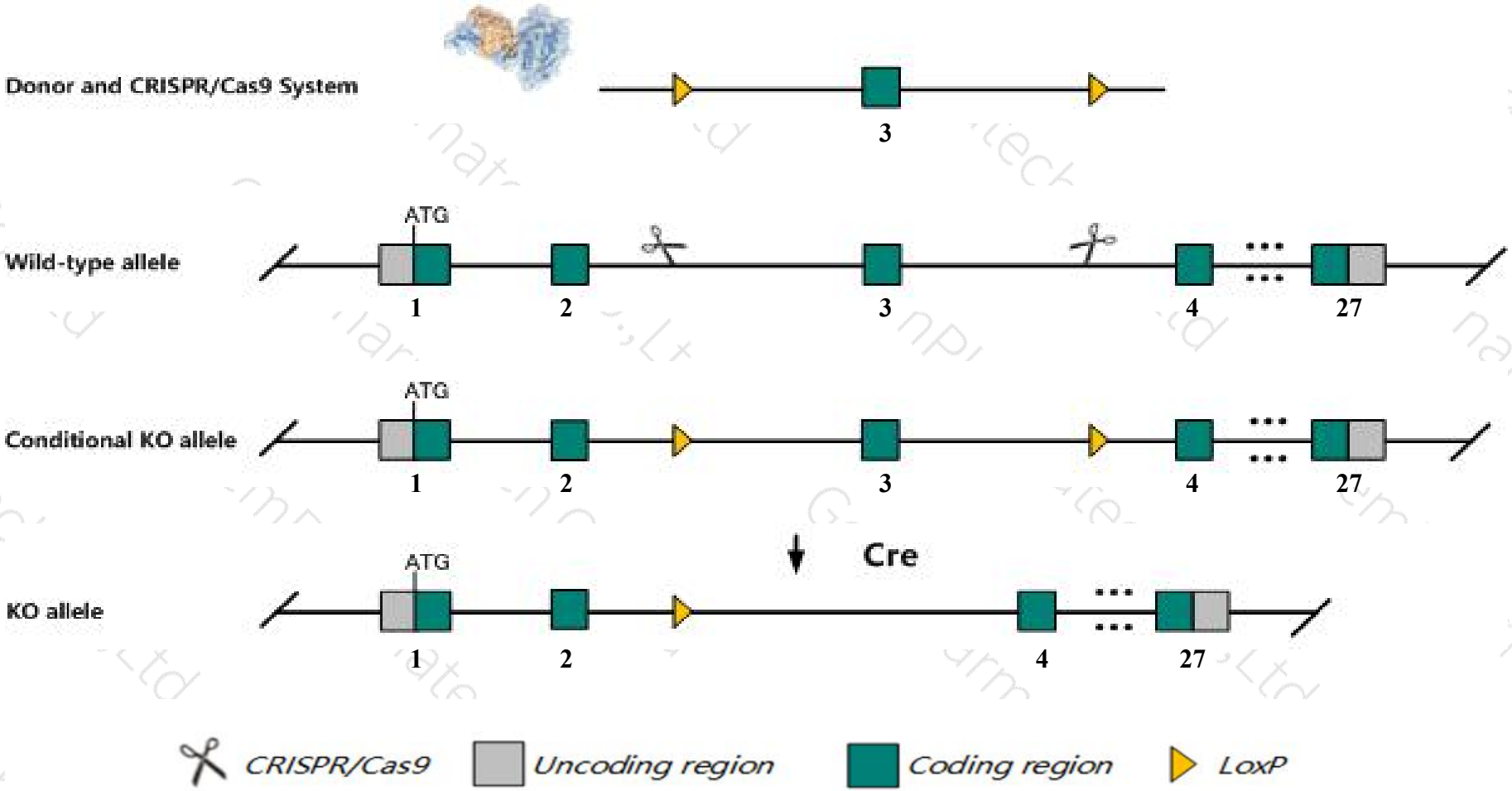
Project Overview

Project Name	***Fhod3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fhod3* gene. The schematic diagram is as follows:



Technical routes

- The *Fhod3* gene has 5 transcripts. According to the structure of *Fhod3* gene, exon3 of *Fhod3-201* (ENSMUST00000037097.8) transcript is recommended as the knockout region.The region contains 65bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Fhod3* 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,Mice homozygous for a knock-out reporter allele exhibit abnormal premyofibril maturation, impaired heart development, pericardial effusion and embryonic lethality.

- The *Fhod3* gene is located on the Chr18. 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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Fhod3 formin homology 2 domain containing 3 [Mus musculus (house mouse)]

Gene ID: 225288, updated on 31-Jan-2019

Summary

Official Symbol	Fhod3 provided by MGI
Official Full Name	formin homology 2 domain containing 3 provided by MGI
Primary source	MGI:MGI:1925847
See related	Ensembl:ENSMUSG00000034295
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	A930009H06Rik, FHOS2, mKIAA1695
Expression	Biased expression in heart adult (RPKM 21.5), bladder adult (RPKM 13.4) and 11 other tissues See more
Orthologs	human all

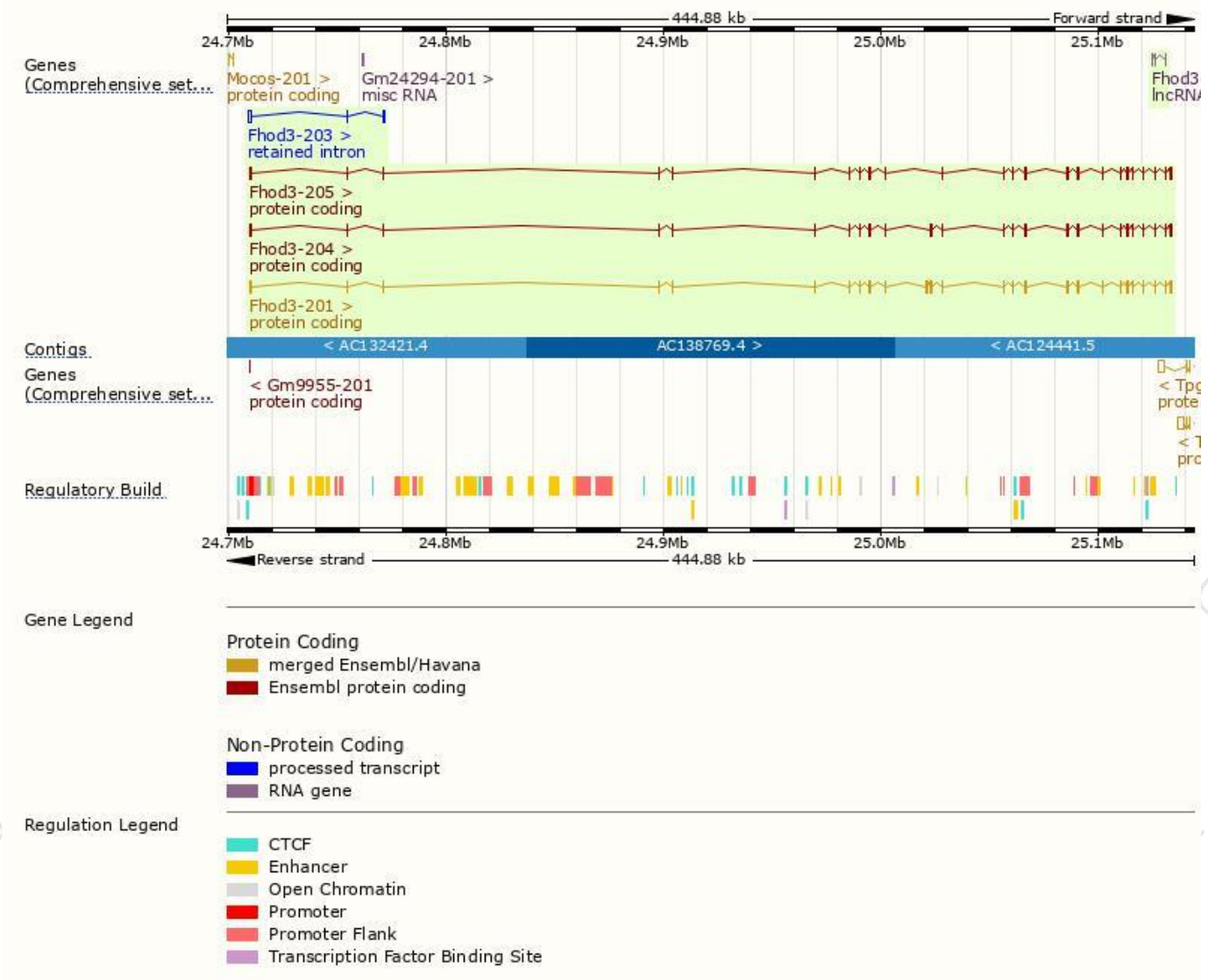
Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

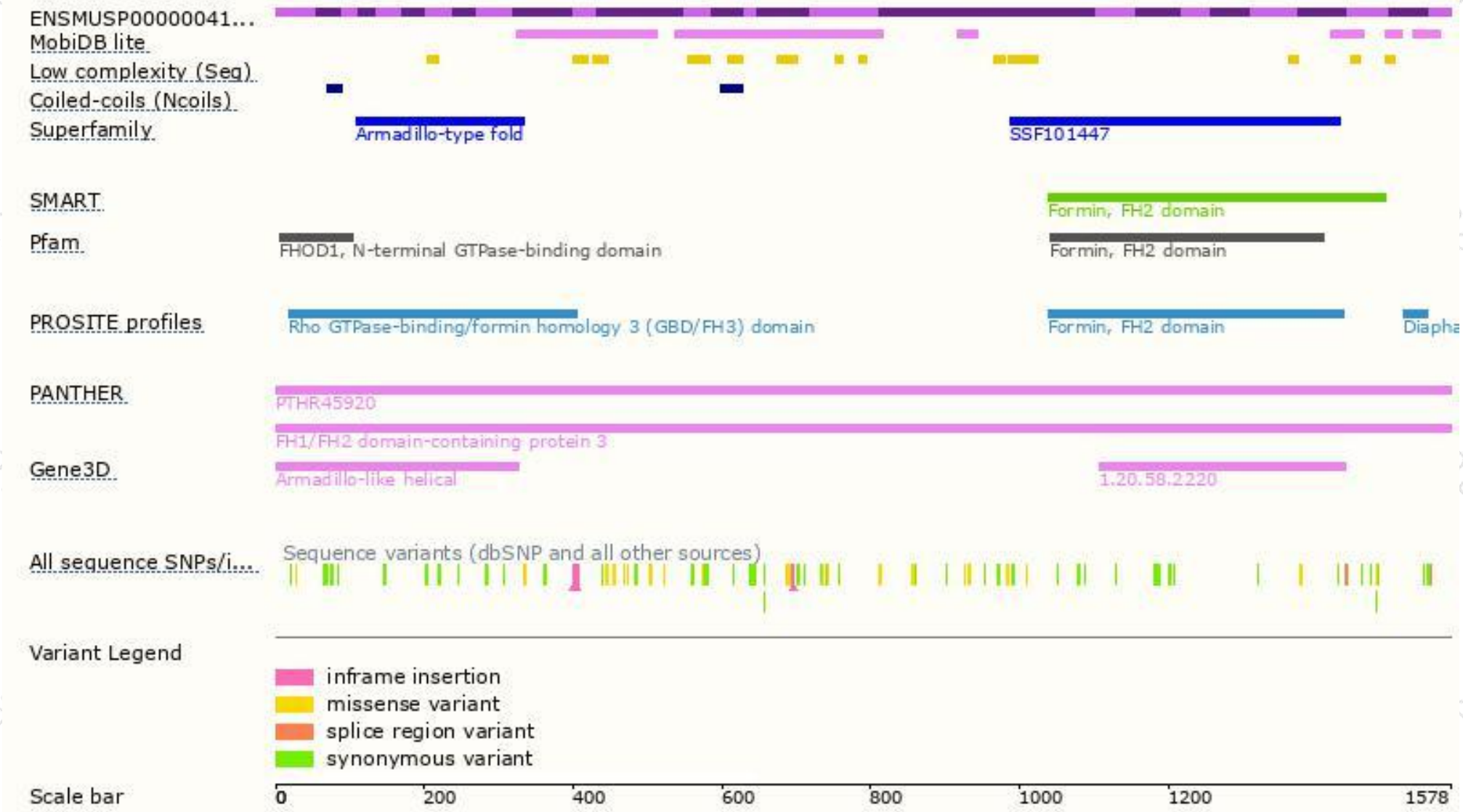
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fhod3-201	ENSMUST00000037097.8	5409	1578aa	Protein coding	CCDS29104	Q76LL6	TSL:1 GENCODE basic APPRIS P2
Fhod3-204	ENSMUST00000234526.1	5313	1546aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Fhod3-205	ENSMUST00000234834.1	4956	1427aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Fhod3-203	ENSMUST00000234462.1	2312	No protein	Retained intron	-	-	
Fhod3-202	ENSMUST00000234199.1	368	No protein	lncRNA	-	-	

The strategy is based on the design of *Fhod3-201* transcript,The transcription is shown below

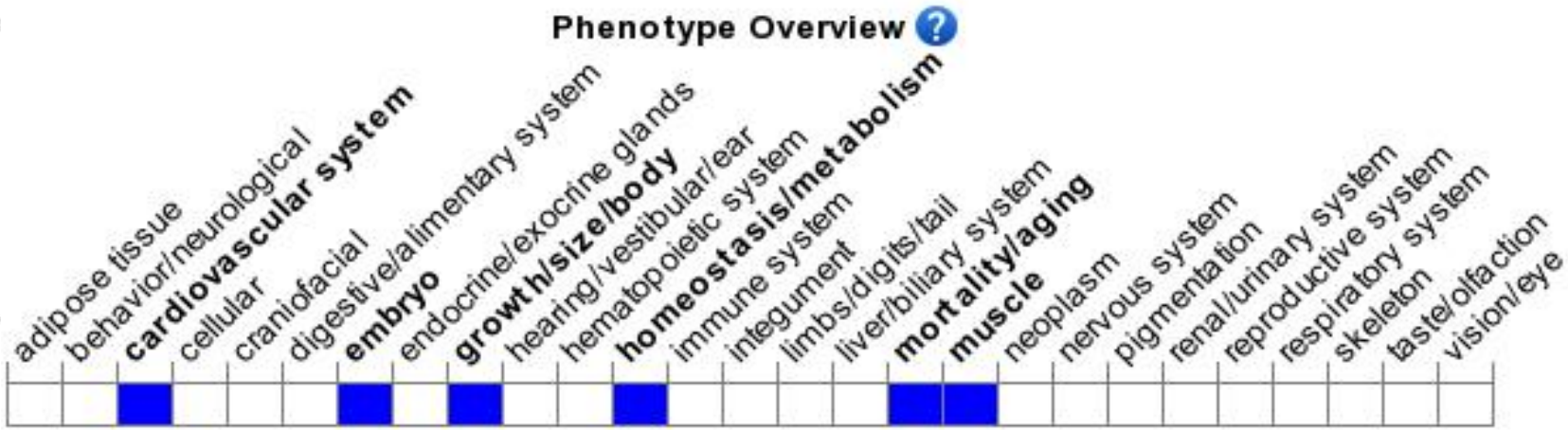
Genomic location distribution



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 knock-out reporter allele exhibit abnormal premyofibril maturation, impaired heart development, pericardial effusion and embryonic lethality.

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

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