

Marchf2 Cas9-CKO Strategy

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Project Overview

Project Name

Marchf2

Project type

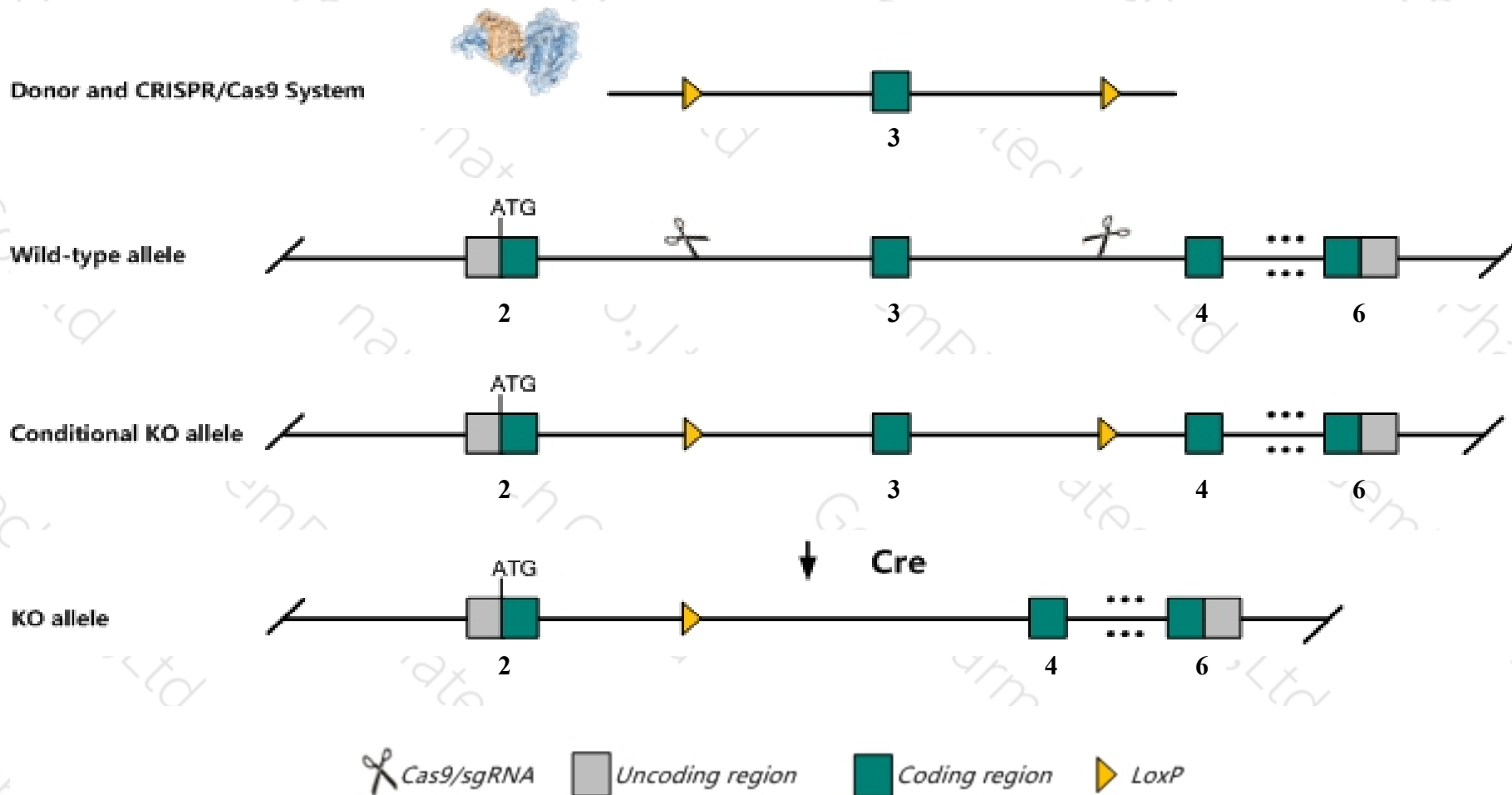
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Marchf2* gene. The schematic diagram is as follows:



Technical routes

- The *Marchf2* gene has 10 transcripts. According to the structure of *Marchf2* gene, exon3 of *March2-201*(ENSMUST00000066121.12) transcript is recommended as the knockout region. The region contains 196bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Marchf2* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Marchf2* gene is located on the Chr17. 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)

Marchf2 membrane associated ring-CH-type finger 2 [Mus musculus (house mouse)]

Gene ID: 224703, updated on 13-Mar-2020

Summary



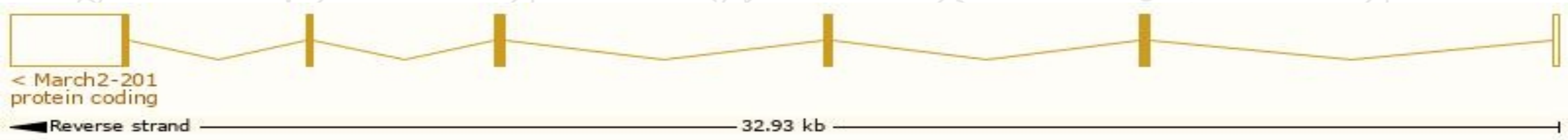
Official Symbol	Marchf2 provided by MGI
Official Full Name	membrane associated ring-CH-type finger 2 provided by MGI
Primary source	MGI:MGI:1925915
See related	Ensembl:ENSMUSG00000079557
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9530046H09Rik, MARCH-II, March2
Expression	Ubiquitous expression in liver E14.5 (RPKM 31.0), liver E14 (RPKM 27.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

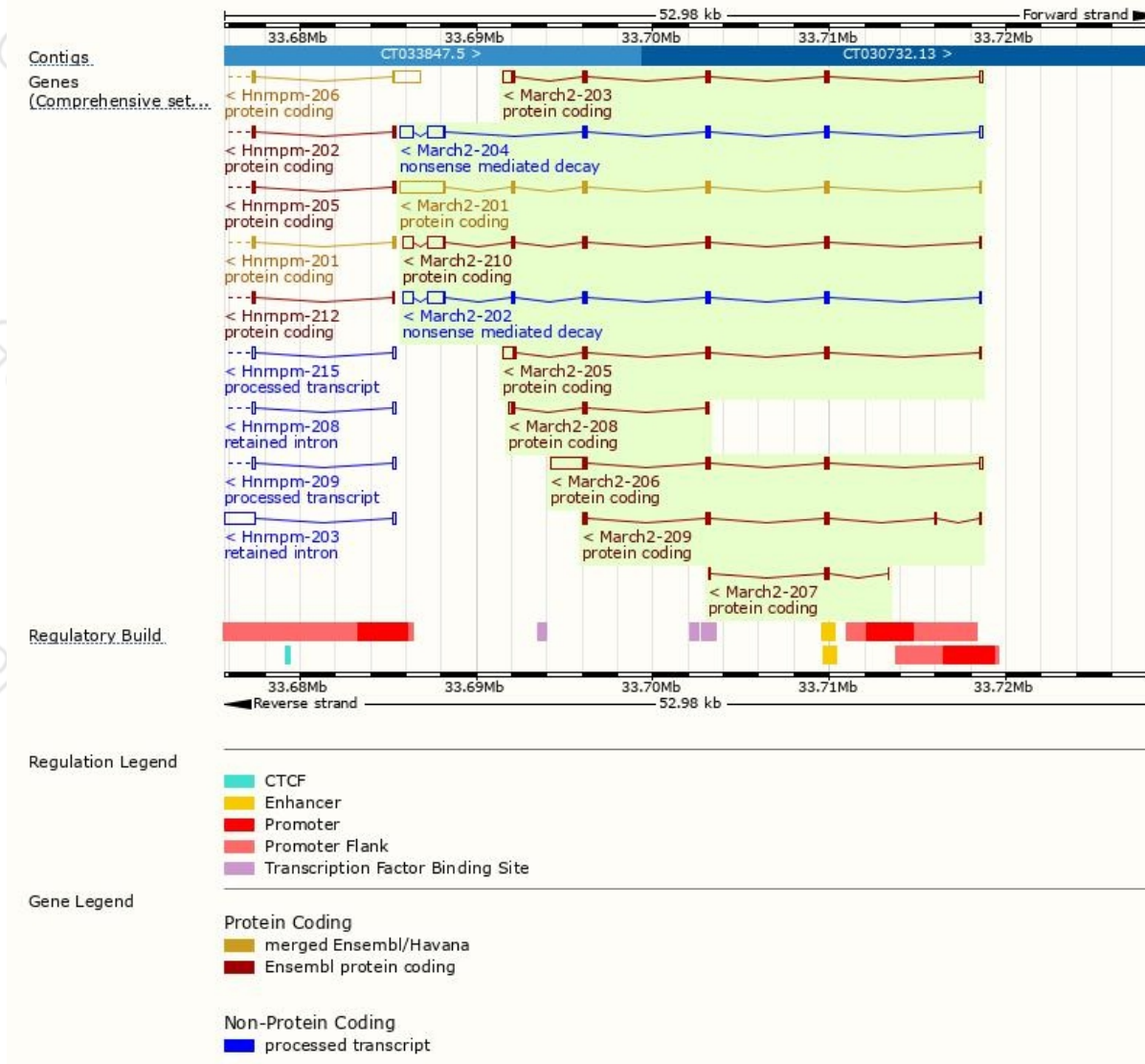
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
March2-201	ENSMUST00000066121.12	3400	287aa	Protein coding	CCDS28627	Q8CA25	TSL:1 GENCODE basic
March2-210	ENSMUST00000186022.6	2470	287aa	Protein coding	CCDS28627	Q8CA25	TSL:1 GENCODE basic
March2-203	ENSMUST00000172767.8	1398	246aa	Protein coding	CCDS57064	Q99M02	TSL:1 GENCODE basic APPRIS P1
March2-206	ENSMUST00000173329.7	2566	197aa	Protein coding	-	G3UXU1	TSL:2 GENCODE basic
March2-205	ENSMUST00000173015.7	1418	232aa	Protein coding	-	G3UXS1	TSL:3 GENCODE basic
March2-209	ENSMUST00000174040.1	811	217aa	Protein coding	-	G3UZC4	CDS 3' incomplete TSL:2
March2-208	ENSMUST00000173454.1	690	177aa	Protein coding	-	G3UY44	CDS 5' incomplete TSL:3
March2-207	ENSMUST00000173392.1	356	82aa	Protein coding	-	G3UYX1	CDS 3' incomplete TSL:3
March2-204	ENSMUST00000172934.7	2481	242aa	Nonsense mediated decay	-	G3UYC2	TSL:1
March2-202	ENSMUST00000167611.7	2470	287aa	Nonsense mediated decay	-	Q8CA25	TSL:1

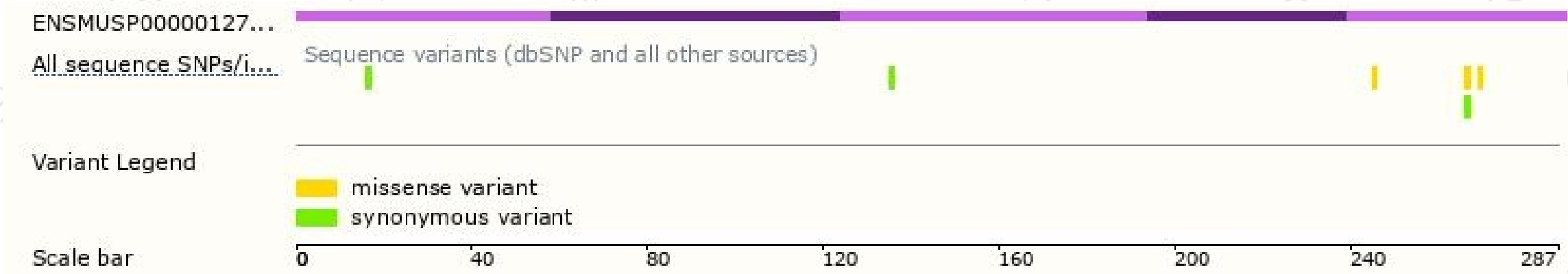
The strategy is based on the design of *March2-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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