Morc1 Cas9-CKO Strategy

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Project Overview

Project Name	***Morc1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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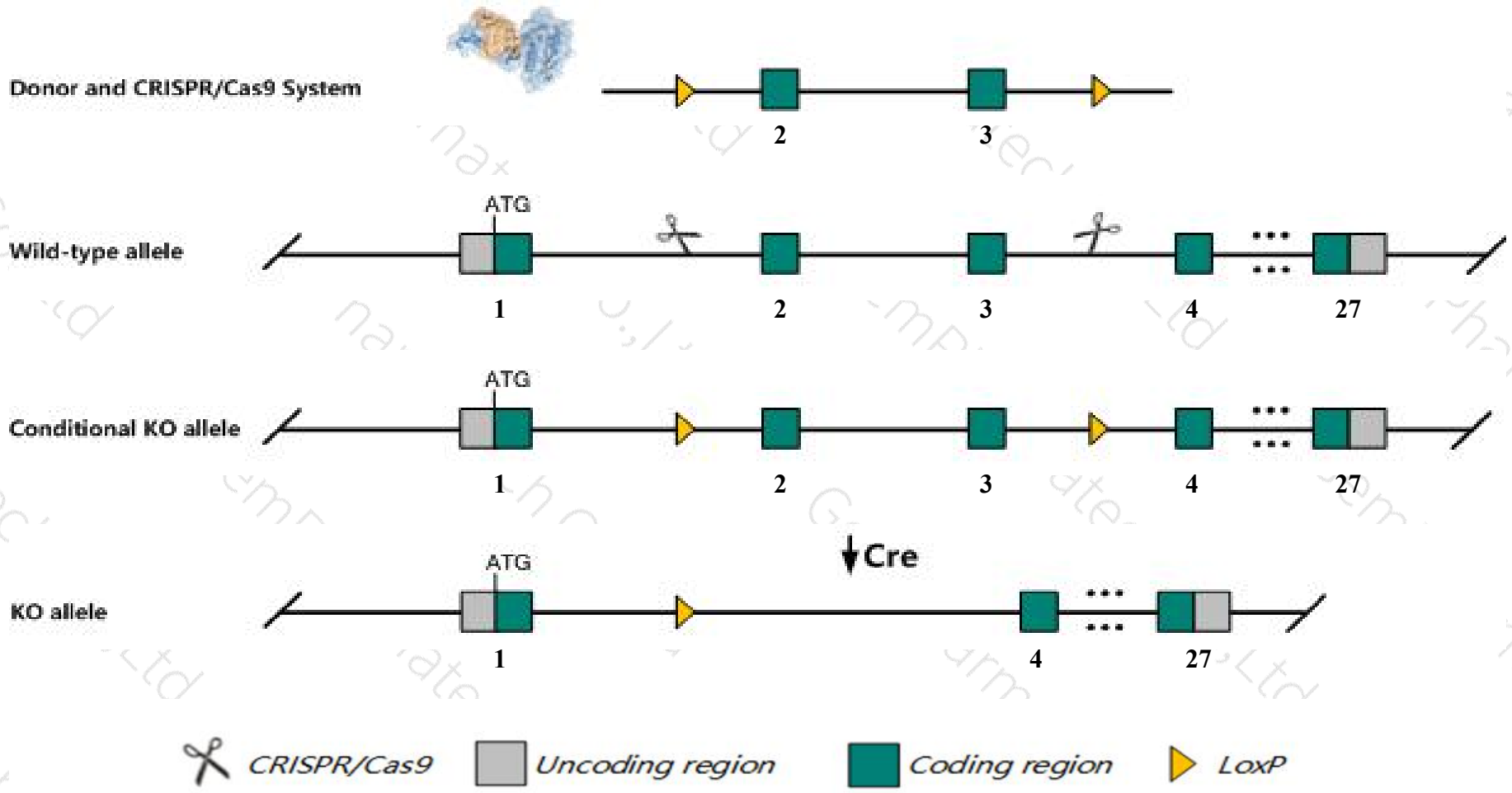
This model will use CRISPR/Cas9 technology to edit the *Morc1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Morc1* gene has 3 transcripts. According to the structure of *Morc1* gene, exon2-exon3 of *Morc1-201*(ENSMUST00000023330.7) transcript is recommended as the knockout region.The region contains 89bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Morc1* 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,inactivation of this locus results in small testes and male sterility, the latter owing to meiotic arrest. Mutant females exhibited histologically normal ovaries and were fertile.

➢ The *Morc1* gene is located on the Chr16. 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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Morc1 microrchidia 1 [Mus musculus (house mouse)]

Gene ID: 17450, updated on 13-Mar-2020

Summary

Official Symbol	Morc1 provided by MGI
Official Full Name	microrchidia 1 provided byMGI
Primary source	MGI:MGI:1316740
See related	Ensembl:ENSMUSG00000022652
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Morc
Expression	Low expression observed in reference datasetSee 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
Morc1-201	ENSMUST00000023330.7	3045	950aa	Protein coding	CCDS37351	Q9WVL5	TSL:1 GENCODE basic APPRIS P1
Morc1-203	ENSMUST00000232256.1	925	No protein	Processed transcript	-	-	
Morc1-202	ENSMUST00000232195.1	4012	No protein	Retained intron	-	-	

The strategy is based on the design of *Morc1-201* transcript,the transcription is shown below:

Genomic location distribution

Regulation Legend

- CTCF
- Enhancer
- Open Chromatin
- Promoter Flank
- Transcription Factor Binding Site

Gene Legend

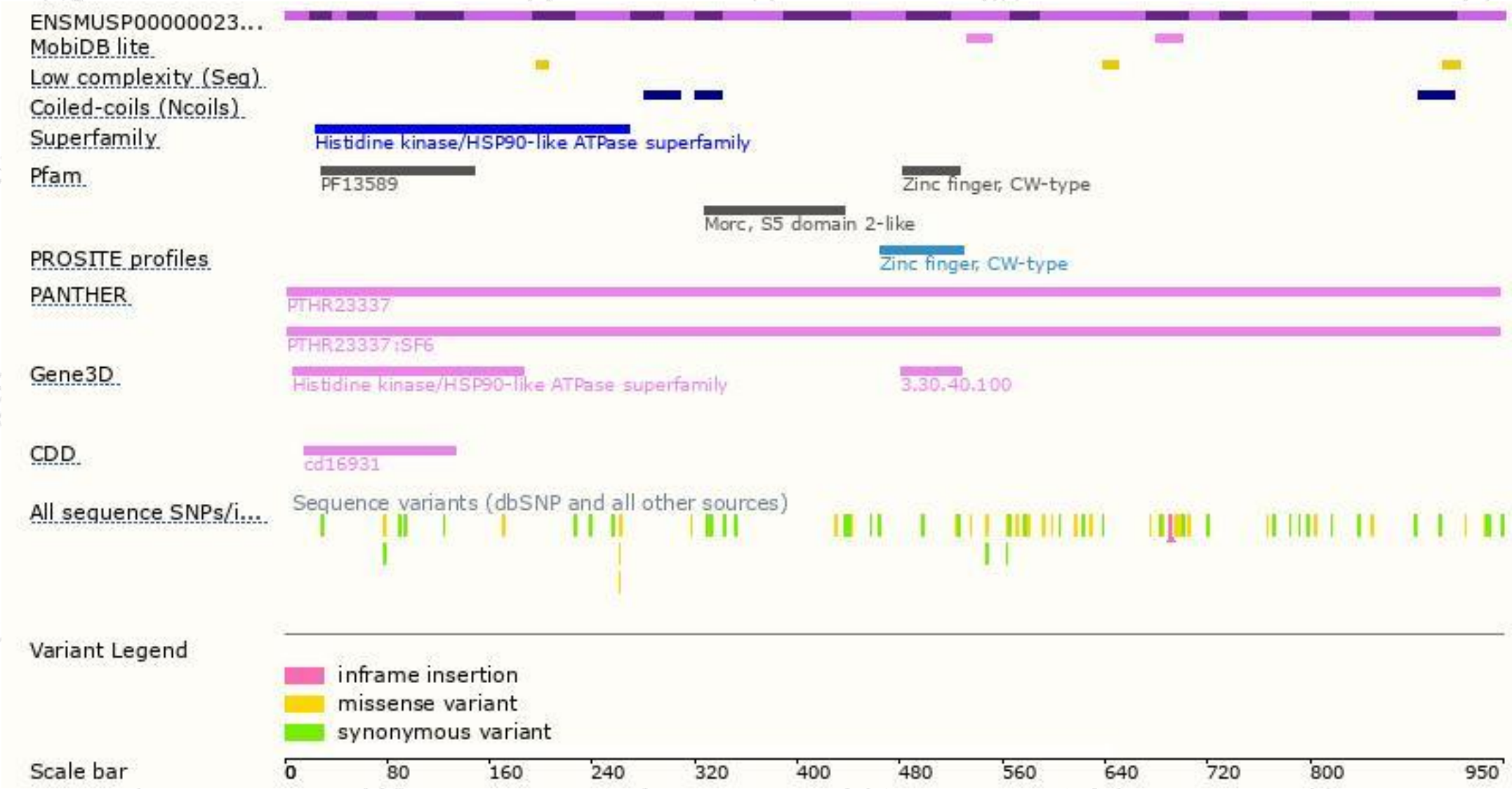
Protein Coding

- merged Ensembl/Havana

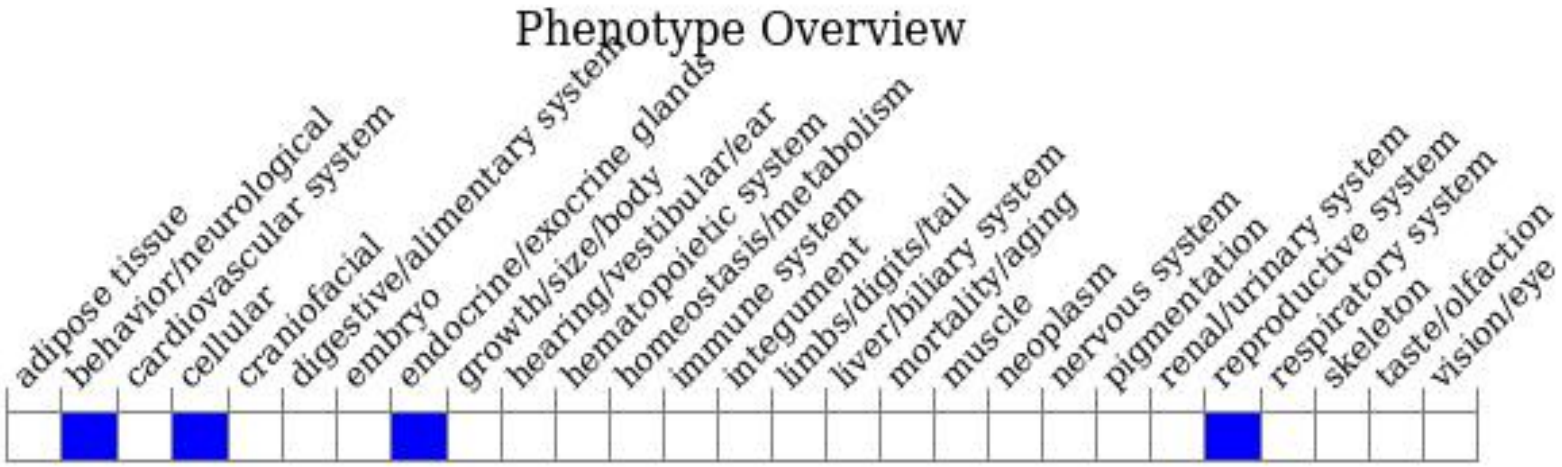
Non-Protein Coding

- processed transcript

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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