

Morc2a Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Morc2a

Project type

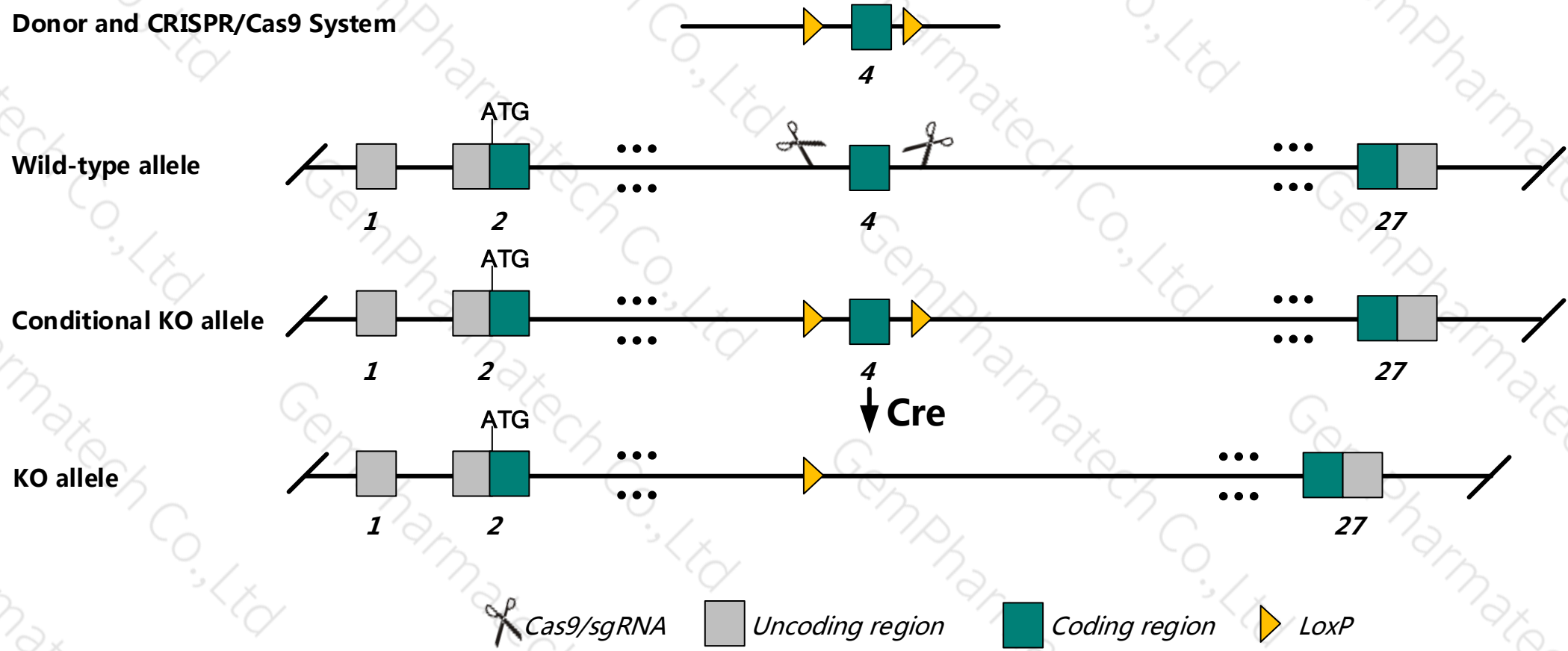
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Morc2a* gene. The schematic diagram is as follows:



- The *Morc2a* gene has 6 transcript. According to the structure of *Morc2a* gene, exon4 of *Morc2a*-201 (ENSMUST00000093389.8) transcript is recommended as the knockout region. The region contains 35bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Morc2a* 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 or cell types.

- The flox region is about 4.8 kb away from the 5th end of the *Gm26393-201* gene, and insertion of the 5-terminal loxp may affect the regulation of the 5-terminal end of the gene.
- The non-coding transcripts 203, 204, 205 are unaffected.
- The *Morc2a* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Morc2a microrchidia 2A [*Mus musculus* (house mouse)]

Gene ID: 74522, updated on 15-Apr-2019

Summary

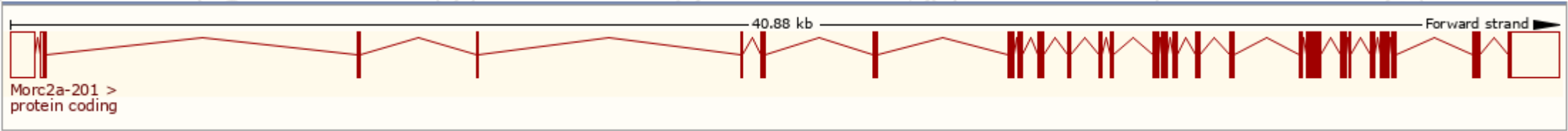
Official Symbol	Morc2a provided by MGI
Official Full Name	microrchidia 2A provided by MGI
Primary source	MGI:MGI:1921772
See related	Ensembl:ENSMUSG00000034543
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Zcwcc1; 8430403M08Rik
Expression	Ubiquitous expression in CNS E11.5 (RPKM 13.7), CNS E14 (RPKM 13.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

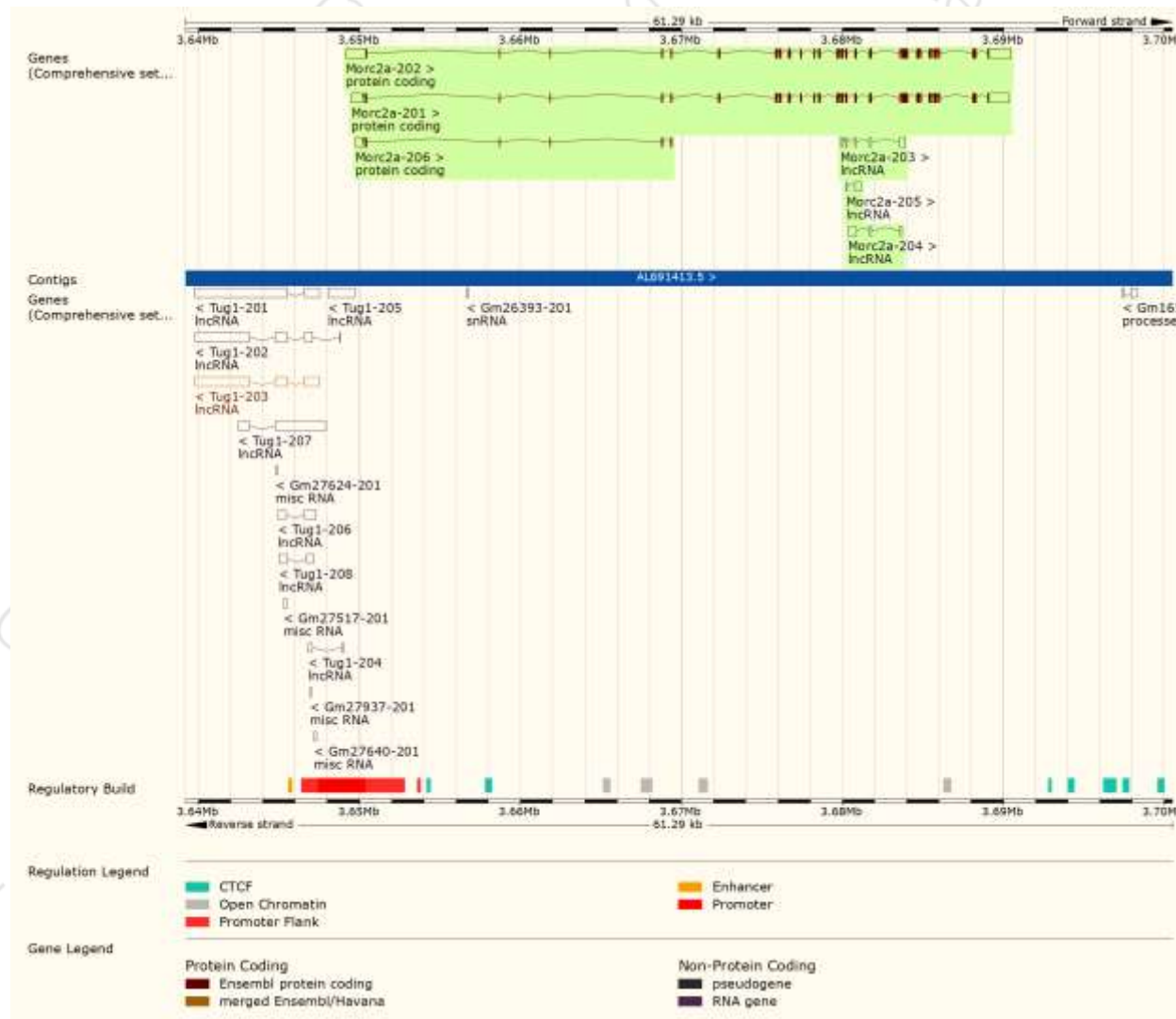
The gene has 6 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Morc2a-202	ENSMUST00000096441.4	5656	1030aa	Protein coding	CCDS48741	Q69ZX6	TSL:5 Gencode basic APPRIS P1
Morc2a-201	ENSMUST00000093389.8	5085	1030aa	Protein coding	CCDS48741	Q69ZX6	TSL:1 Gencode basic APPRIS P1
Morc2a-206	ENSMUST00000140242.7	768	102aa	Protein coding	-	Q5QNQ8	CDS 3' incomplete TSL:3
Morc2a-203	ENSMUST00000126035.7	859	No protein	lncRNA	-	-	TSL:3
Morc2a-204	ENSMUST00000128666.1	805	No protein	lncRNA	-	-	TSL:3
Morc2a-205	ENSMUST00000131517.1	406	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Morc2a*-201 transcript, The transcription is shown below



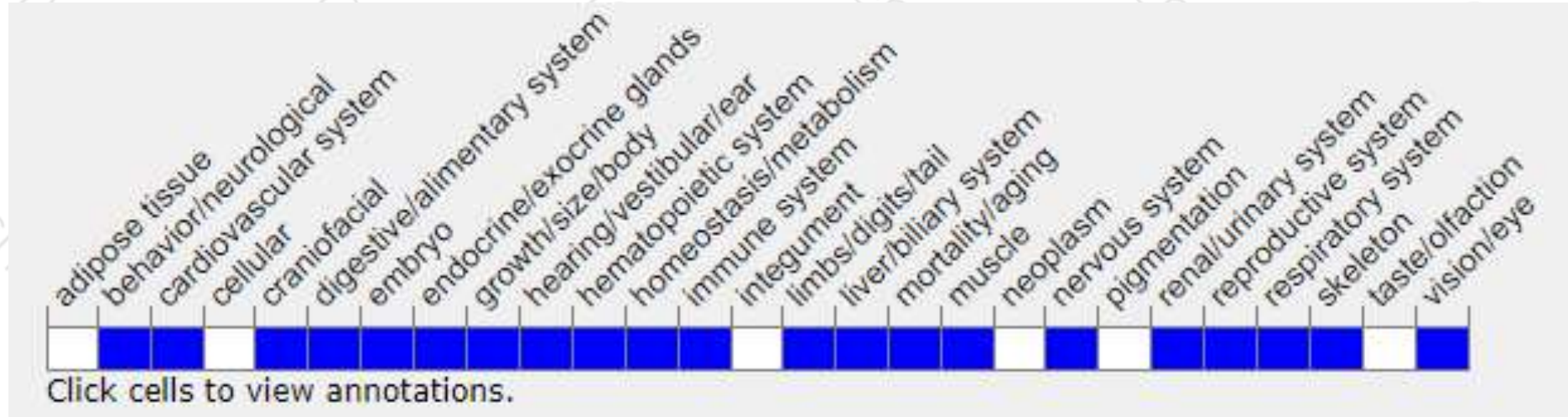
Genomic location distribution



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/>) .

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