

***Rab40c* Cas9-CKO Strategy**

Designer: Rui Xiong

Reviewer: Longyun Hu

Design Date: 2021-6-7

Project Overview

Project Name

Rab40c

Project type

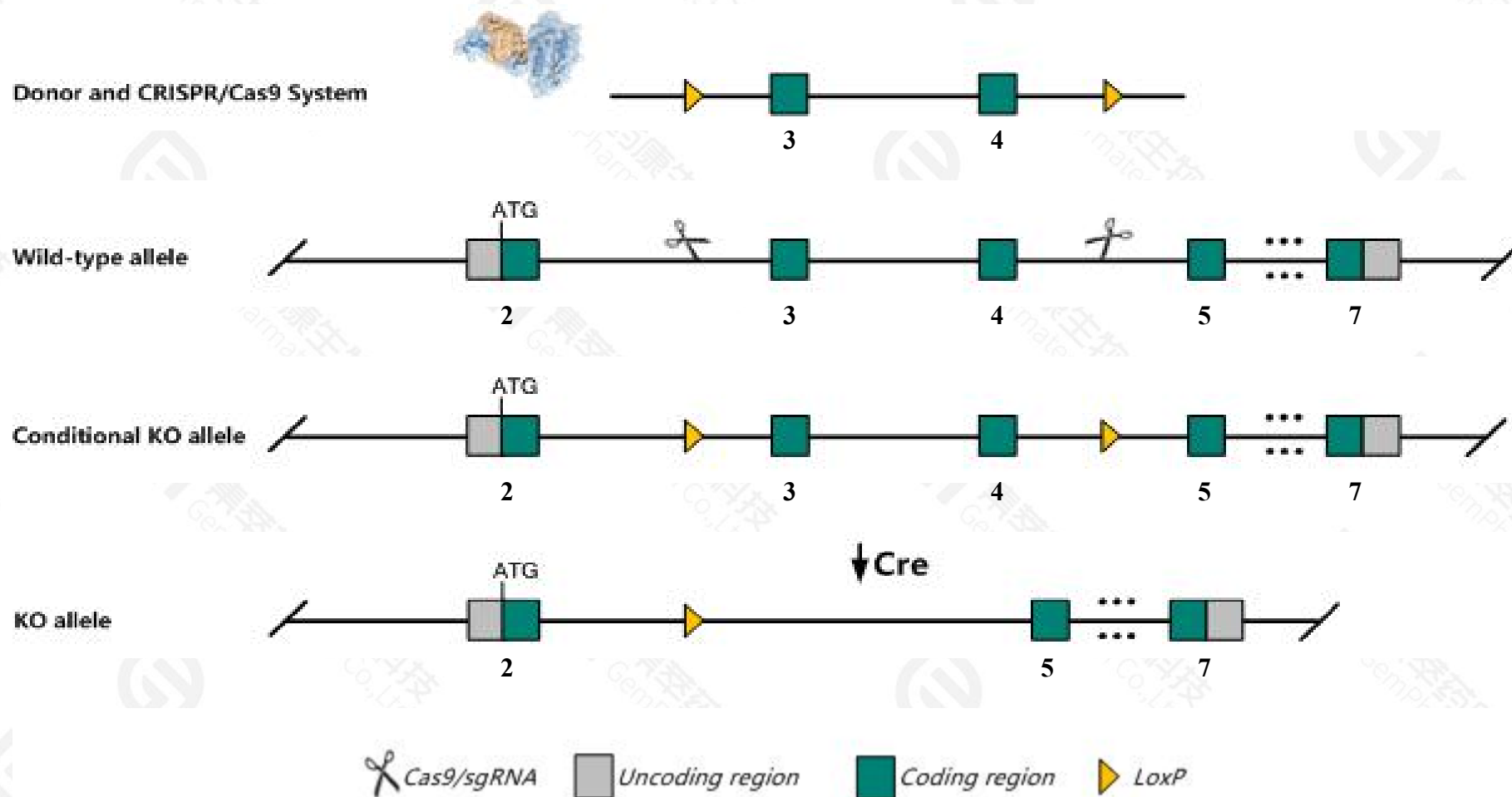
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rab40c* gene. The schematic diagram is as follows:



- The *Rab40c* gene has 9 transcripts. According to the structure of *Rab40c* gene, exon3-exon4 of *Rab40c-201*(ENSMUST00000026826.14) transcript is recommended as the knockout region. The region contains 122bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rab40c* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor 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 *Rab40c* 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)

Rab40c Rab40C, member RAS oncogene family [Mus musculus (house mouse)]

Gene ID: 224624, updated on 25-Sep-2020

Summary



Official Symbol Rab40c provided by [MGI](#)

Official Full Name Rab40C, member RAS oncogene family provided by [MGI](#)

Primary source [MGI:MGI:2183454](#)

See related [Ensembl:ENSMUSG00000025730](#)

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 R, RAR3

Expression Ubiquitous expression in adrenal adult (RPKM 24.2), ovary adult (RPKM 23.3) and 28 other tissues [See more](#)

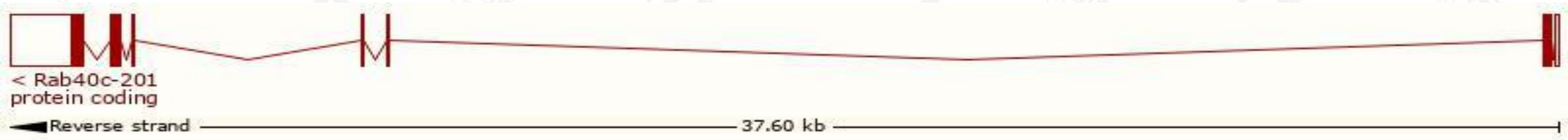
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

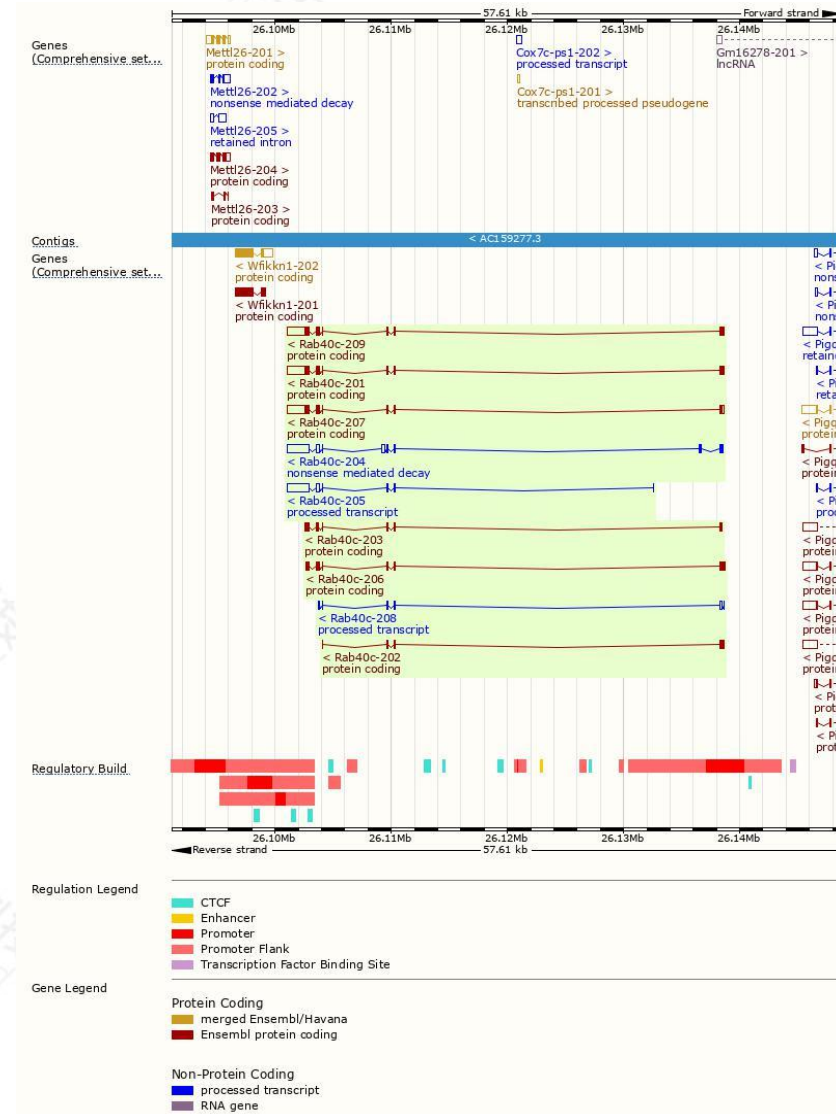
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rab40c-207	ENSMUST00000167626.8	2506	281aa	Protein coding	CCDS28537		TSL:1 , GENCODE basic , APPRIS P1 ,
Rab40c-201	ENSMUST00000026826.14	2466	281aa	Protein coding	CCDS28537		TSL:1 , GENCODE basic , APPRIS P1 ,
Rab40c-209	ENSMUST00000179998.8	2456	281aa	Protein coding	CCDS28537		TSL:5 , GENCODE basic , APPRIS P1 ,
Rab40c-206	ENSMUST00000167018.8	954	278aa	Protein coding	-		CDS 3' incomplete , TSL:1 ,
Rab40c-203	ENSMUST00000164982.8	789	262aa	Protein coding	-		TSL:5 , GENCODE basic ,
Rab40c-202	ENSMUST00000164738.2	451	111aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Rab40c-204	ENSMUST00000166146.8	2900	56aa	Nonsense mediated decay	-		TSL:1 ,
Rab40c-205	ENSMUST00000166619.8	2238	No protein	Processed transcript	-		TSL:1 ,
Rab40c-208	ENSMUST00000172168.2	373	No protein	Processed transcript	-		TSL:2 ,

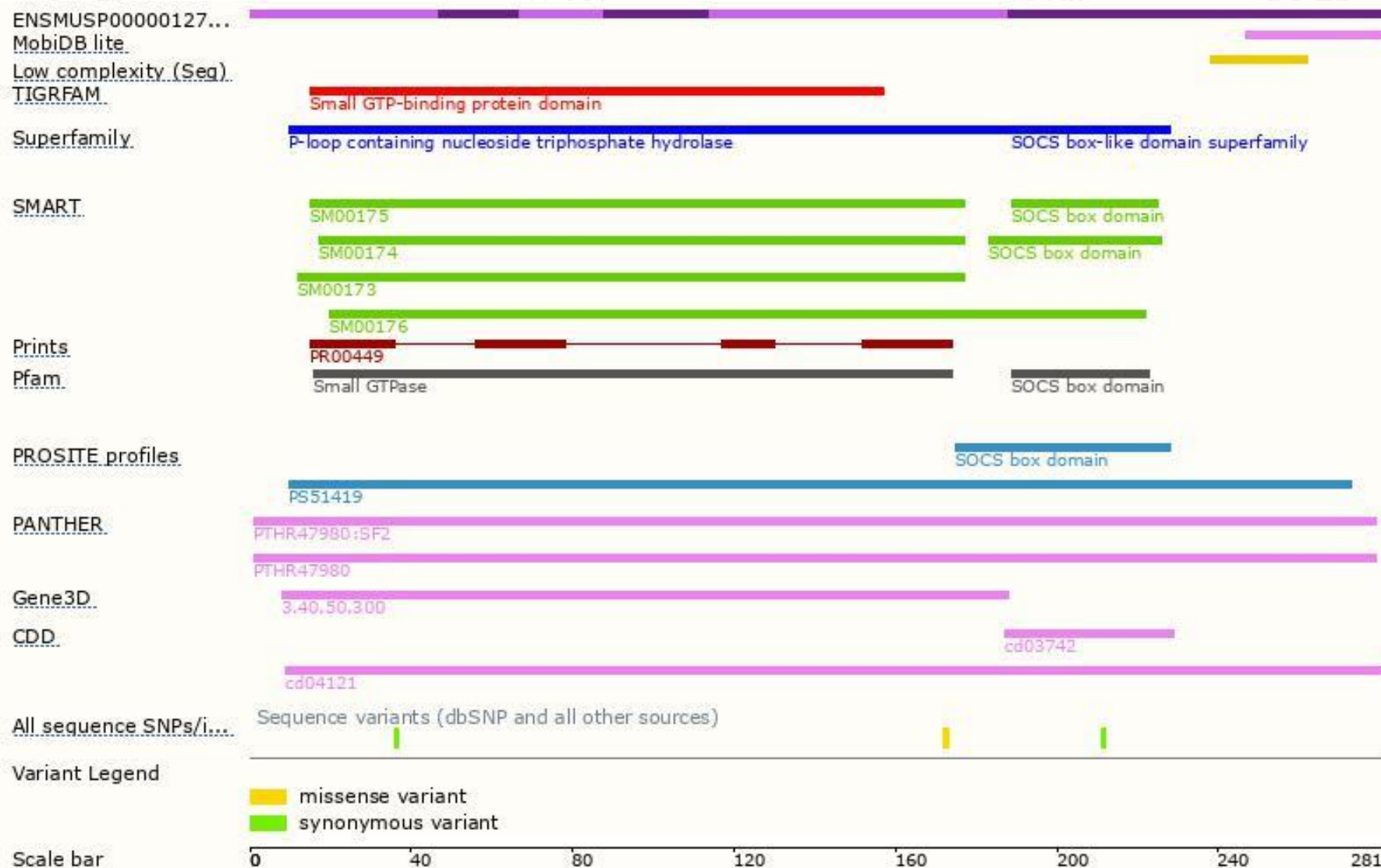
The strategy is based on the design of *Rab40c-201* transcript,the transcription is shown below:



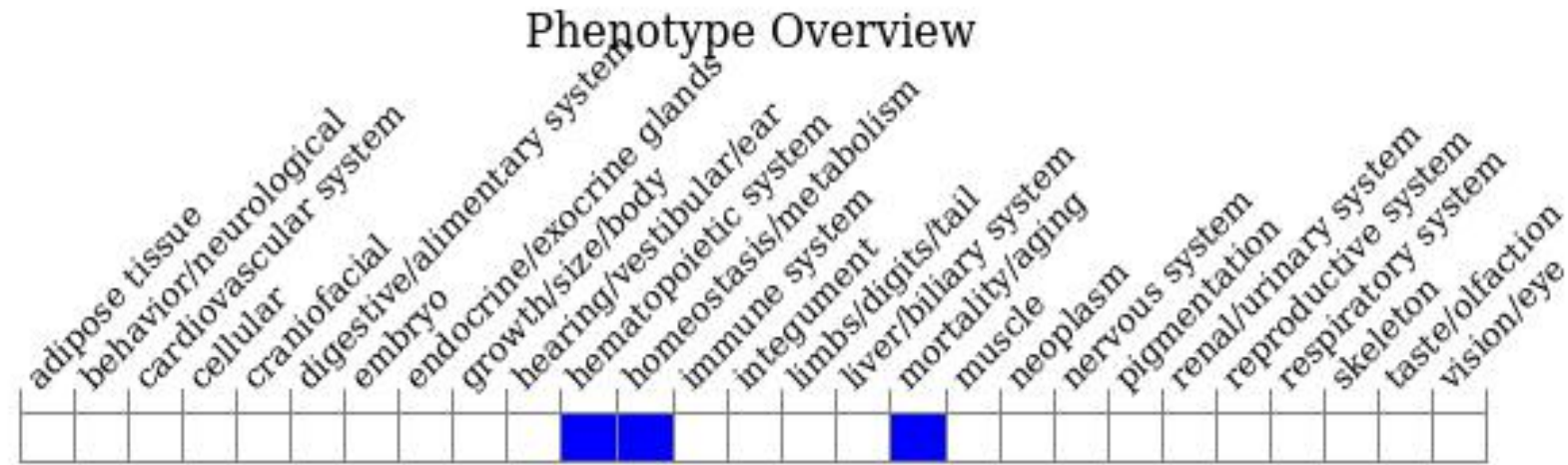
Genomic location distribution



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.

Tel: 025-5864 1534

