

Rab1a Cas9-KO Strategy

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Project Overview



Project Name

Rab1a

Project type

Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rab1a* gene. The schematic diagram is as follows:



- The *Rab1a* gene has 6 transcripts. According to the structure of *Rab1a* gene, exon2 of *Rab1a-206* (ENSMUST00000163483.1) transcript is recommended as the knockout region. The region contains 73bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rab1a* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- The *Rab1a* 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Rab1a RAB1A, member RAS oncogene family [Mus musculus (house mouse)]

Gene ID: 19324, updated on 7-Apr-2019

Summary



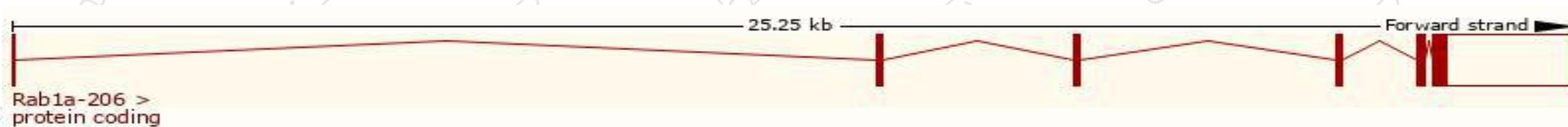
Official Symbol	Rab1a provided by MGI
Official Full Name	RAB1A, member RAS oncogene family provided by MGI
Primary source	MGI:MGI:97842
See related	Ensembl:ENSMUSG00000020149
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gtbp, Rab-1, Rab1, Ypt1, mKIAA3012
Expression	Ubiquitous expression in placenta adult (RPKM 75.8), liver E18 (RPKM 58.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

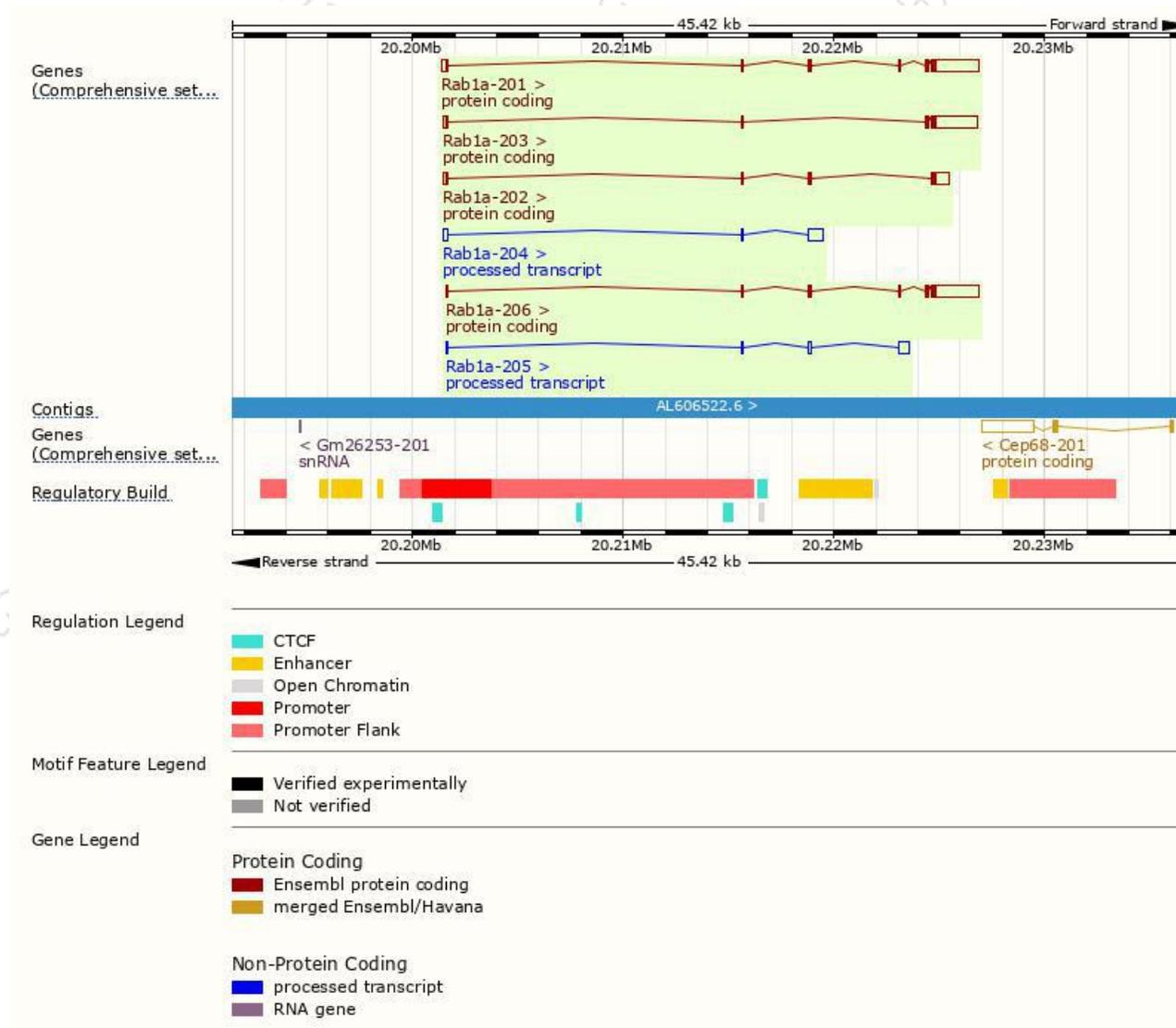
The gene has 6 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rab1a-206	ENSMUST00000163483.1	2657	205aa	Protein coding	CCDS36115	P62821 Q0PD67	TSL:1 GENCODE basic APPRIS P2
Rab1a-201	ENSMUST00000020358.11	2827	202aa	Protein coding	-	Q5SW88	TSL:1 GENCODE basic APPRIS ALT 1
Rab1a-203	ENSMUST00000109602.7	2626	138aa	Protein coding	-	Q5SW87	TSL:5 GENCODE basic
Rab1a-202	ENSMUST00000109601.7	1200	126aa	Protein coding	-	Q5SW86	TSL:5 GENCODE basic
Rab1a-204	ENSMUST00000132285.7	962	No protein	Processed transcript	-	-	TSL:1
Rab1a-205	ENSMUST00000152728.1	702	No protein	Processed transcript	-	-	TSL:2

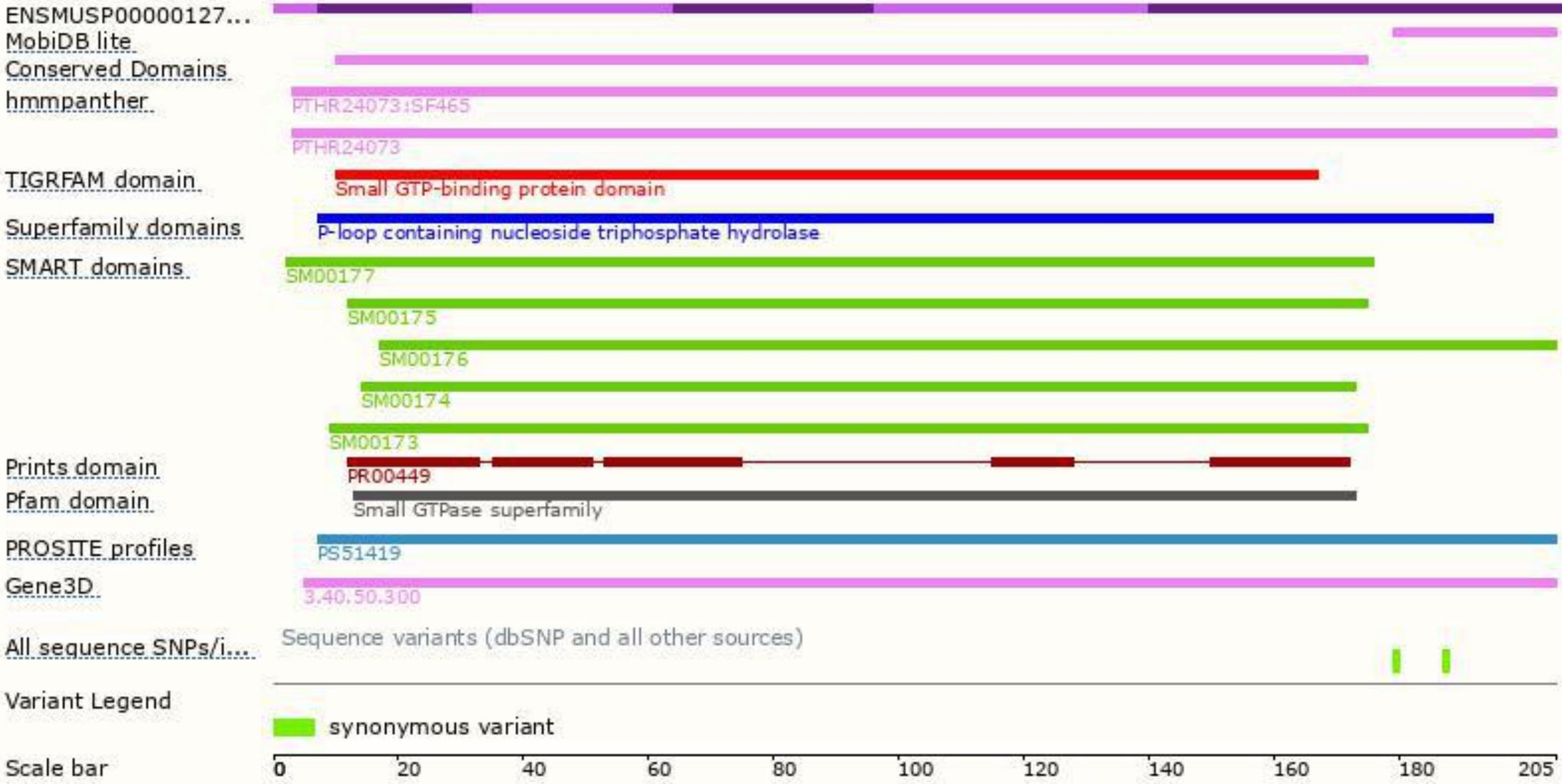
The strategy is based on the design of *Rab1a-206* transcript, The transcription is shown below



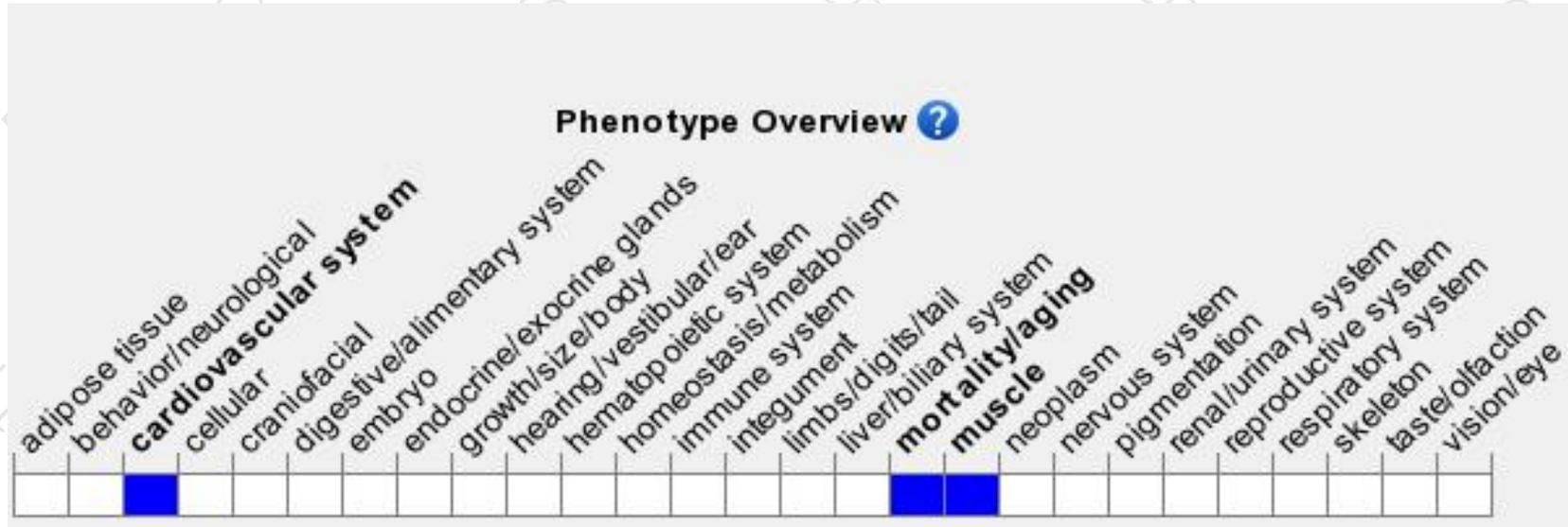
Genomic location distribution



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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