

***Rab11a* Cas9-KO Strategy**

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Project Overview

Project Name

Rab11a

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rab11a* gene. The schematic diagram is as follows:



- The *Rab11a* gene has 9 transcripts. According to the structure of *Rab11a* gene, exon2 of *Rab11a-208* (ENSMUST00000172298.7) 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 *Rab11a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit decreased embryo size, a rudimentary egg cylinder, failure of primitive streak formation, absent primitive node and head folds, failure to gastrulate, and complete lethality prior to organogenesis.
- Transcript *Rab11a*-204,205,207 may not be affected.
- The *Rab11a* gene is located on the Chr9. 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)

Rab11a RAB11A, member RAS oncogene family [*Mus musculus* (house mouse)]

Gene ID: 53869, updated on 10-Dec-2019

Summary

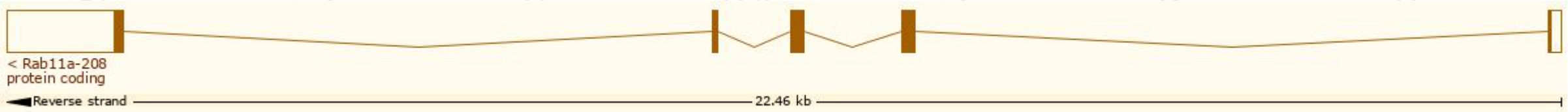
Official Symbol	Rab11a provided by MGI
Official Full Name	RAB11A, member RAS oncogene family provided by MGI
Primary source	MGI:MGI:1858202
See related	Ensembl:ENSMUSG000000004771
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Ubiquitous expression in CNS E18 (RPKM 50.9), bladder adult (RPKM 49.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

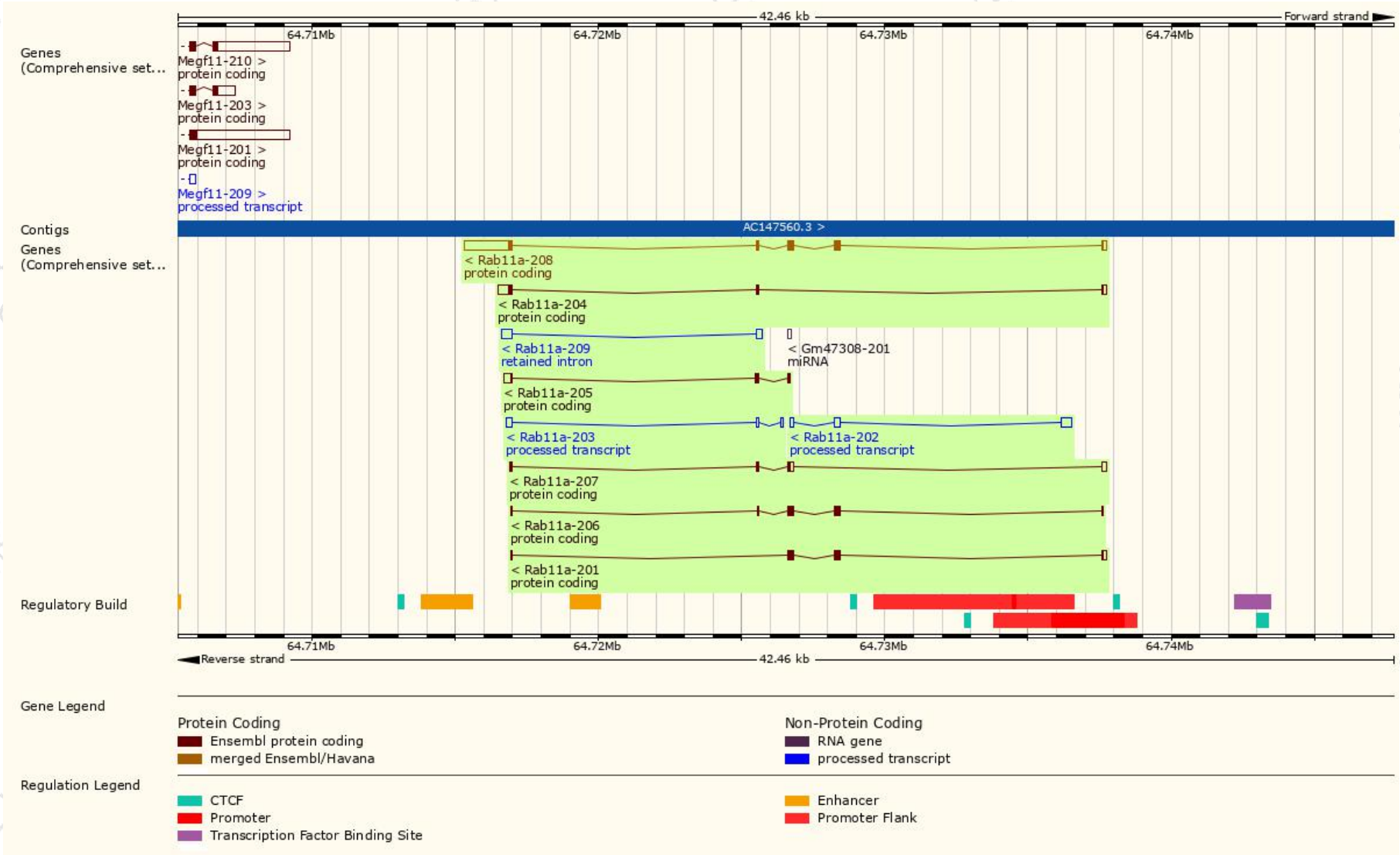
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rab11a-209	ENSMUST00000172444.1	603	No protein	Retained intron	-	-	TSL:1
Rab11a-208	ENSMUST00000172298.7	2336	216aa	Protein coding	CCDS23282	P62492 Q0PD45	TSL:1 GENCODE basic APPRIS P1
Rab11a-204	ENSMUST00000167569.7	726	86aa	Protein coding	-	E9Q6B3	TSL:3 GENCODE basic
Rab11a-201	ENSMUST00000004892.6	595	155aa	Protein coding	-	F8WGS1	CDS 3' incomplete TSL:5
Rab11a-207	ENSMUST00000171100.1	508	80aa	Protein coding	-	E9PZB2	CDS 3' incomplete TSL:2
Rab11a-205	ENSMUST00000168366.1	500	87aa	Protein coding	-	F6R2Z5	CDS 5' incomplete TSL:3
Rab11a-206	ENSMUST00000169058.7	462	153aa	Protein coding	-	E9Q3P9	TSL:5 GENCODE basic
Rab11a-202	ENSMUST00000165083.1	695	No protein	Processed transcript	-	-	TSL:5
Rab11a-203	ENSMUST00000166857.1	397	No protein	Processed transcript	-	-	TSL:3

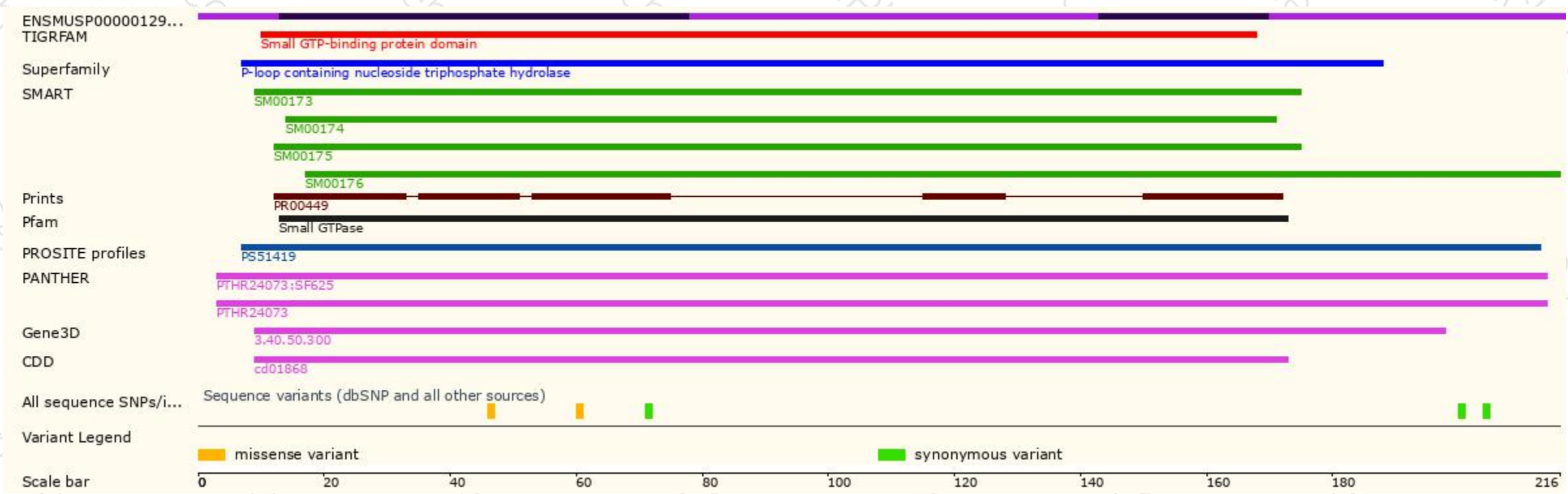
The strategy is based on the design of *Rab11a-208* transcript, the transcription is shown below:



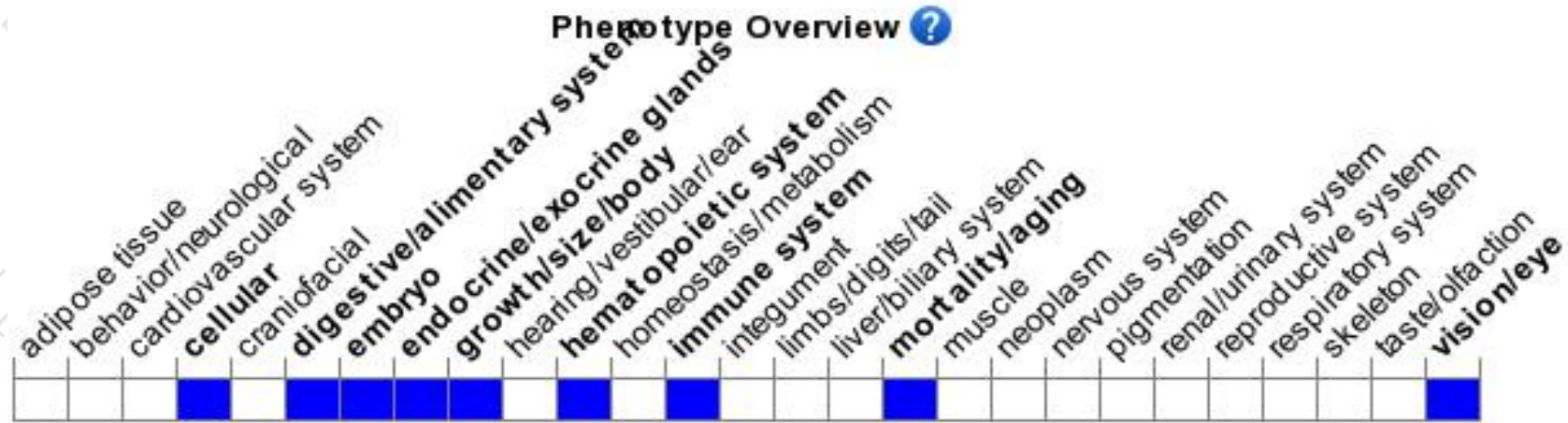
Genomic location distribution



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/>).

According to the existing MGI data, mice homozygous for a knock-out allele exhibit decreased embryo size, a rudimentary egg cylinder, failure of primitive streak formation, absent primitive node and head folds, failure to gastrulate, and complete lethality prior to organogenesis.

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

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