

Arhgap31 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Arhgap31

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap31* gene. The schematic diagram is as follows:



- The *Arhgap31* gene has 3 transcripts. According to the structure of *Arhgap31* gene, exon2-exon3 of *Arhgap31-201* (ENSMUST00000023487.4) transcript is recommended as the knockout region. The region contains 248bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arhgap31* gene. The brief process is as follows: CRISPR/Cas9 system

- The *Arhgap31* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Arhgap31 Rho GTPase activating protein 31 [*Mus musculus* (house mouse)]

Gene ID: 12549, updated on 27-Aug-2019

Summary

Official Symbol Arhgap31 provided by [MGI](#)
Official Full Name Rho GTPase activating protein 31 provided by [MGI](#)
Primary source [MGI:MGI:1333857](#)
See related [Ensembl:ENSMUSG00000022799](#)
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 Cdgap; AU041750; 5830477L08Rik; D330026I07Rik
Expression Broad expression in lung adult (RPKM 18.2), ovary adult (RPKM 10.6) and 20 other tissues [See more](#)
Orthologs [human](#) [all](#)

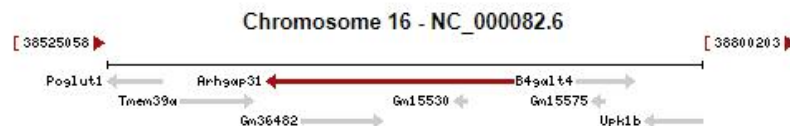
Genomic context

Location: 16; 16 B4

See Arhgap31 in [Genome Data Viewer](#)

Exon count: 12

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	16	NC_000082.6 (38598343..38713035, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	16	NC_000082.5 (38598456..38713148, complement)

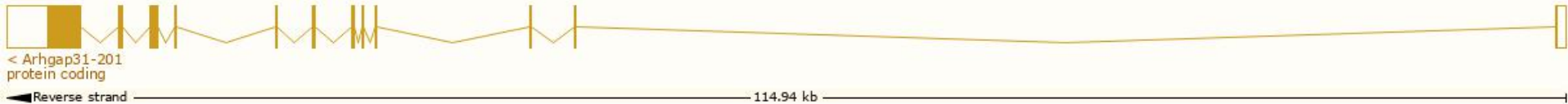


Transcript information (Ensembl)

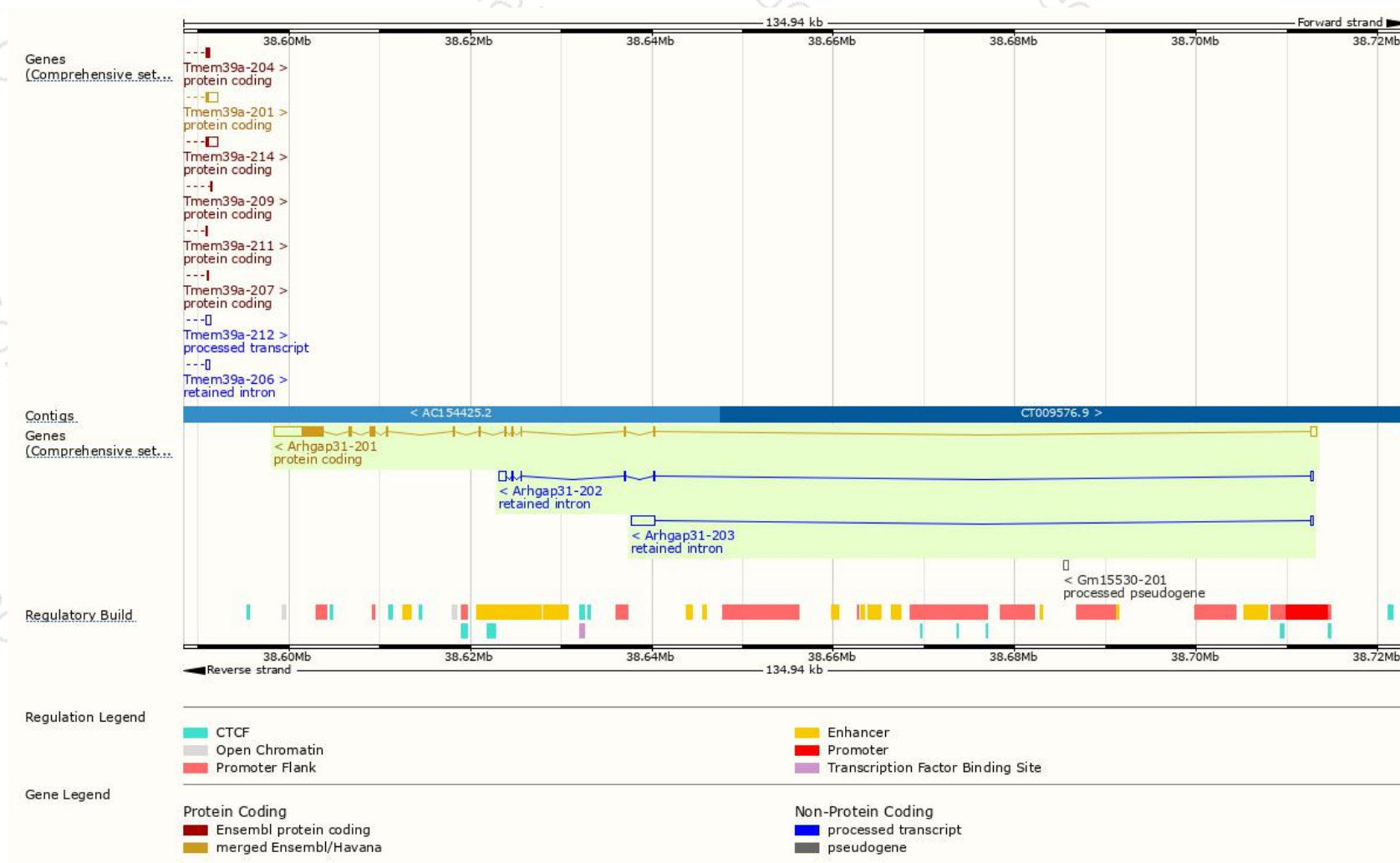
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap31-201	ENSMUST00000023487.4	7964	1425aa	Protein coding	CCDS28172	A6X8Z5 B2RSI0	TSL:1 GENCODE basic APPRIS P1
Arhgap31-203	ENSMUST00000132697.1	2956	No protein	Retained intron	-	-	TSL:1
Arhgap31-202	ENSMUST00000124866.1	1557	No protein	Retained intron	-	-	TSL:1

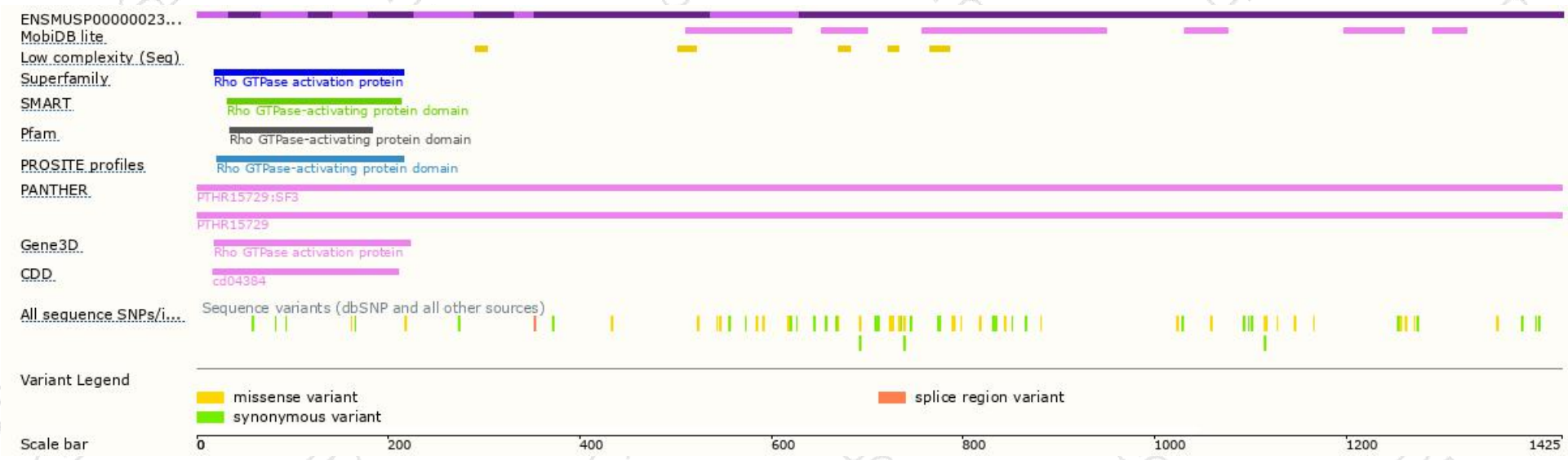
The strategy is based on the design of *Arhgap31-201* transcript,The transcription is shown below



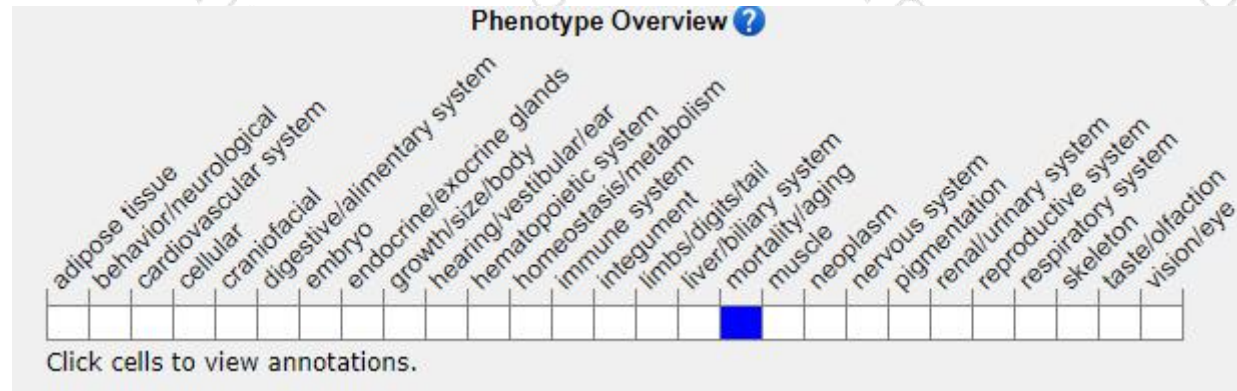
Genomic location distribution



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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