

# *Araf* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Araf*

**Project type**

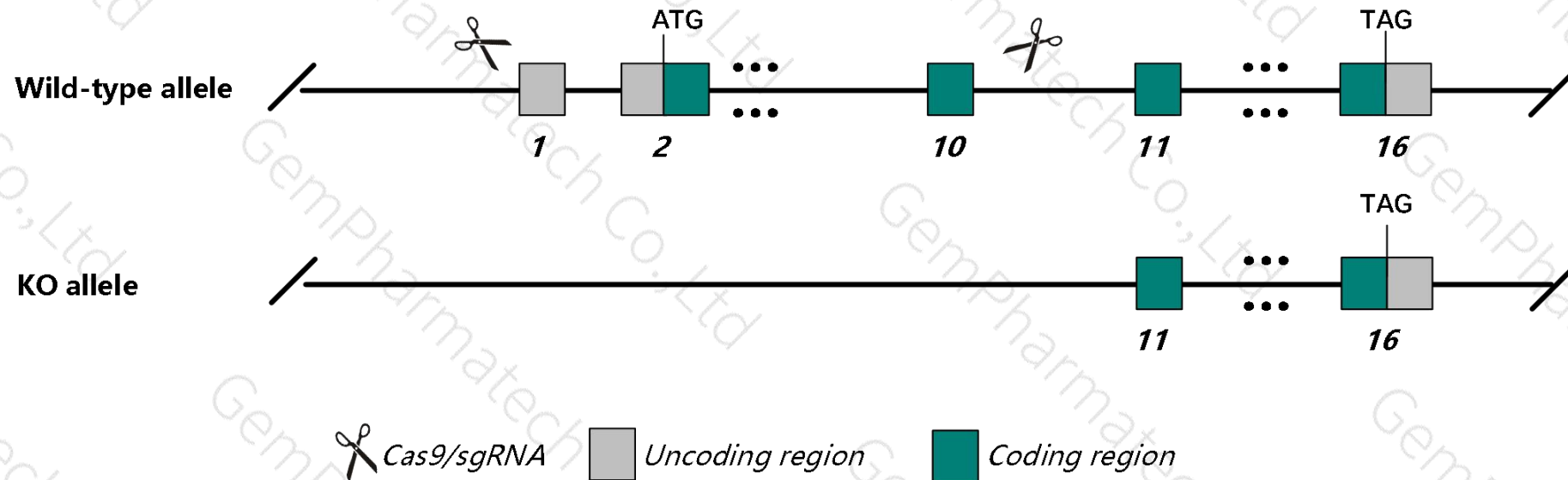
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



# Technical routes

- The *Araf* gene has 10 transcripts. According to the structure of *Araf* gene, exon1-exon10 of *Araf*-201 (ENSMUST00000001155.10) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Araf* gene. The brief process is as follows: CRISPR/Cas9 system trans

- According to the existing MGI data, Homozygous females or hemizygous males for a null targeted mutation show variable genetic background effects, from preweaning death, wasting, tremors, distended colon and small thymus to normal survival and breeding with mild neurological defects.
- Transcript *Araf-206* protein coding may not be affected.
- The *Araf* gene is located on the ChrX. 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.



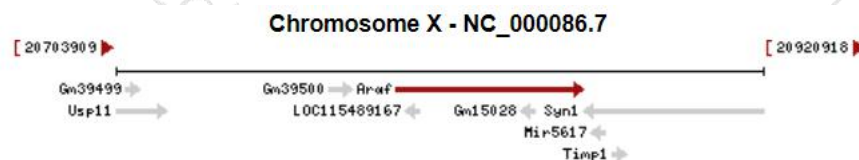
# Gene information (NCBI)

## Araf Araf proto-oncogene, serine/threonine kinase [ *Mus musculus* (house mouse) ]

Gene ID: 11836, updated on 10-Oct-2019

### Summary

**Official Symbol** Araf provided by [MGI](#)  
**Official Full Name** Araf proto-oncogene, serine/threonine kinase provided by [MGI](#)  
**Primary source** [MGI:MGI:88065](#)  
**See related** [Ensembl:ENSMUSG000000001127](#)  
**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** A-Raf; Araf1; AW495444; 1200013E08Rik  
**Expression** Ubiquitous expression in genital fat pad adult (RPKM 50.6), adrenal adult (RPKM 43.4) and 28 other tissues [See more](#)  
**Orthologs** [human](#) [all](#)

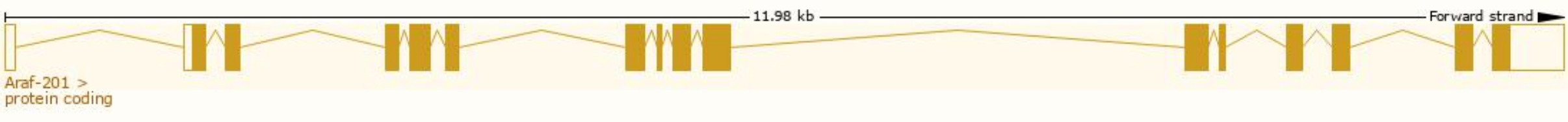


# Transcript information (Ensembl)

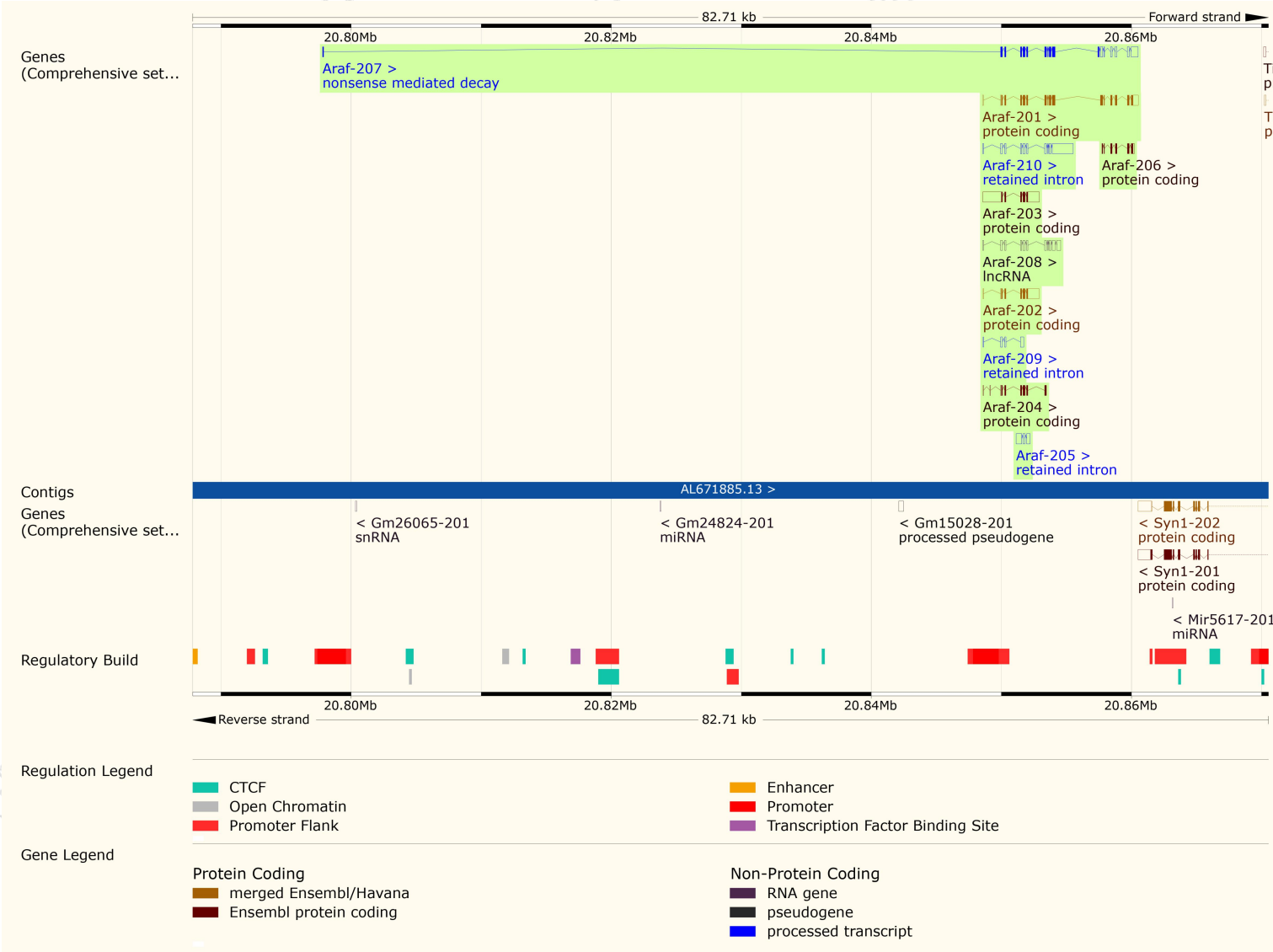
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Araf-203	<a href="#">ENSMUST00000122312.7</a>	2854	<a href="#">186aa</a>	<a href="#">ENSMUSP00000112521.1</a>	Protein coding	<a href="#">CCDS53016</a>	<a href="#">Q8CAD1</a>	TSL:1 GENCODE basic
Araf-201	<a href="#">ENSMUST000000001155.10</a>	2358	<a href="#">604aa</a>	<a href="#">ENSMUSP000000001155.4</a>	Protein coding	<a href="#">CCDS40886</a>	<a href="#">P04627</a>	TSL:1 GENCODE basic APPRIS P1
Araf-202	<a href="#">ENSMUST00000120356.7</a>	1520	<a href="#">186aa</a>	<a href="#">ENSMUSP00000112513.1</a>	Protein coding	<a href="#">CCDS53016</a>	<a href="#">Q8CAD1</a>	TSL:1 GENCODE basic
Araf-204	<a href="#">ENSMUST00000122850.1</a>	826	<a href="#">230aa</a>	<a href="#">ENSMUSP00000114846.1</a>	Protein coding	-	<a href="#">B1AUN8</a>	CDS 3' incomplete TSL:5
Araf-206	<a href="#">ENSMUST00000128250.2</a>	705	<a href="#">203aa</a>	<a href="#">ENSMUSP00000119544.2</a>	Protein coding	-	<a href="#">B1AUP0</a>	CDS 5' incomplete TSL:3
Araf-207	<a href="#">ENSMUST00000136451.7</a>	2439	<a href="#">419aa</a>	<a href="#">ENSMUSP00000115793.1</a>	Nonsense mediated decay	-	<a href="#">E9Q0P8</a>	TSL:1
Araf-210	<a href="#">ENSMUST00000152955.7</a>	2581	No protein	-	Retained intron	-	-	TSL:2
Araf-205	<a href="#">ENSMUST00000123219.1</a>	879	No protein	-	Retained intron	-	-	TSL:2
Araf-209	<a href="#">ENSMUST00000150190.1</a>	550	No protein	-	Retained intron	-	-	TSL:2
Araf-208	<a href="#">ENSMUST00000148032.7</a>	1474	No protein	-	lncRNA	-	-	TSL:1

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



# Genomic location distribution



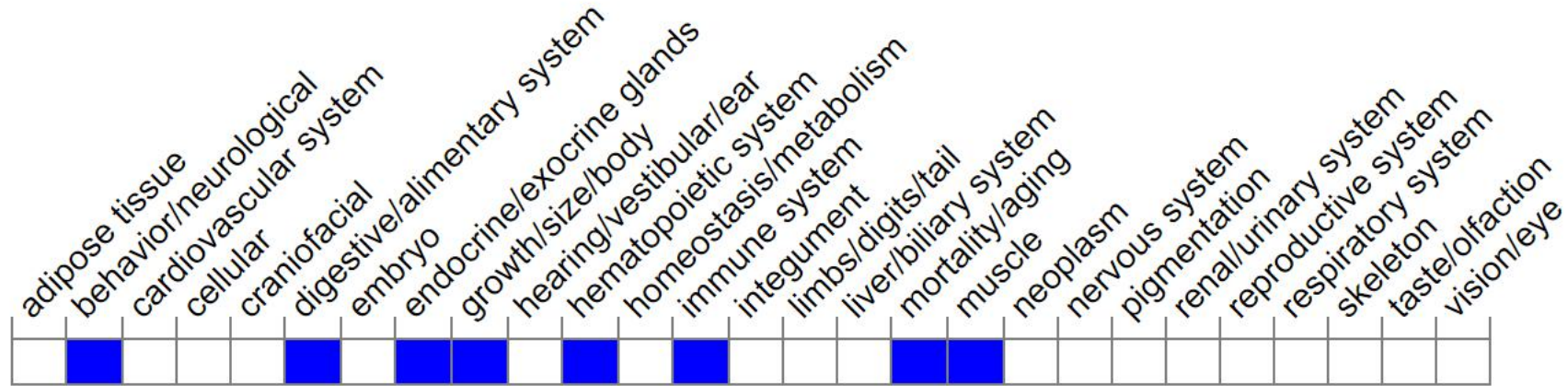


# Protein domain



# Mouse phenotype description(MGI)

## Phenotype Overview ?



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, Homozygous females or hemizygous males for a null targeted mutation show variable genetic background effects, from preweaning death, wasting, tremors, distended colon and small thymus to normal survival and breeding with mild neurological defects.

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

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