

# *Car14* Cas9-KO Strategy

**Designer:**

**Daohua Xu**

**Reviewer:**

**Huimin Su**

**Design Date:**

**2020-2-14**

# Project Overview

**Project Name**

***Car14***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Car14* gene. The schematic diagram is as follows:



- The *Car14* gene has 4 transcripts. According to the structure of *Car14* gene, exon1-exon3 of *Car14-201* (ENSMUST00000036181.14) 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 *Car14* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele are viable and display normal growth, health and fertility.
- The *Car14* gene is located on the Chr3. 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)

## Car14 carbonic anhydrase 14 [Mus musculus (house mouse)]

Gene ID: 23831, updated on 31-Jan-2019

### Summary



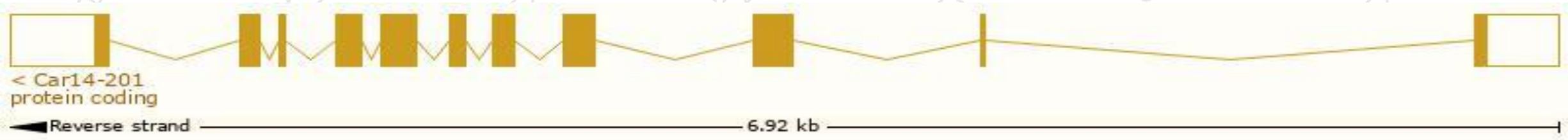
<b>Official Symbol</b>	Car14 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	carbonic anhydrase 14 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1344341</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000038526</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	AW536446, CA-XIV, Ca14
<b>Expression</b>	Biased expression in kidney adult (RPKM 55.3), heart adult (RPKM 42.4) and 12 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

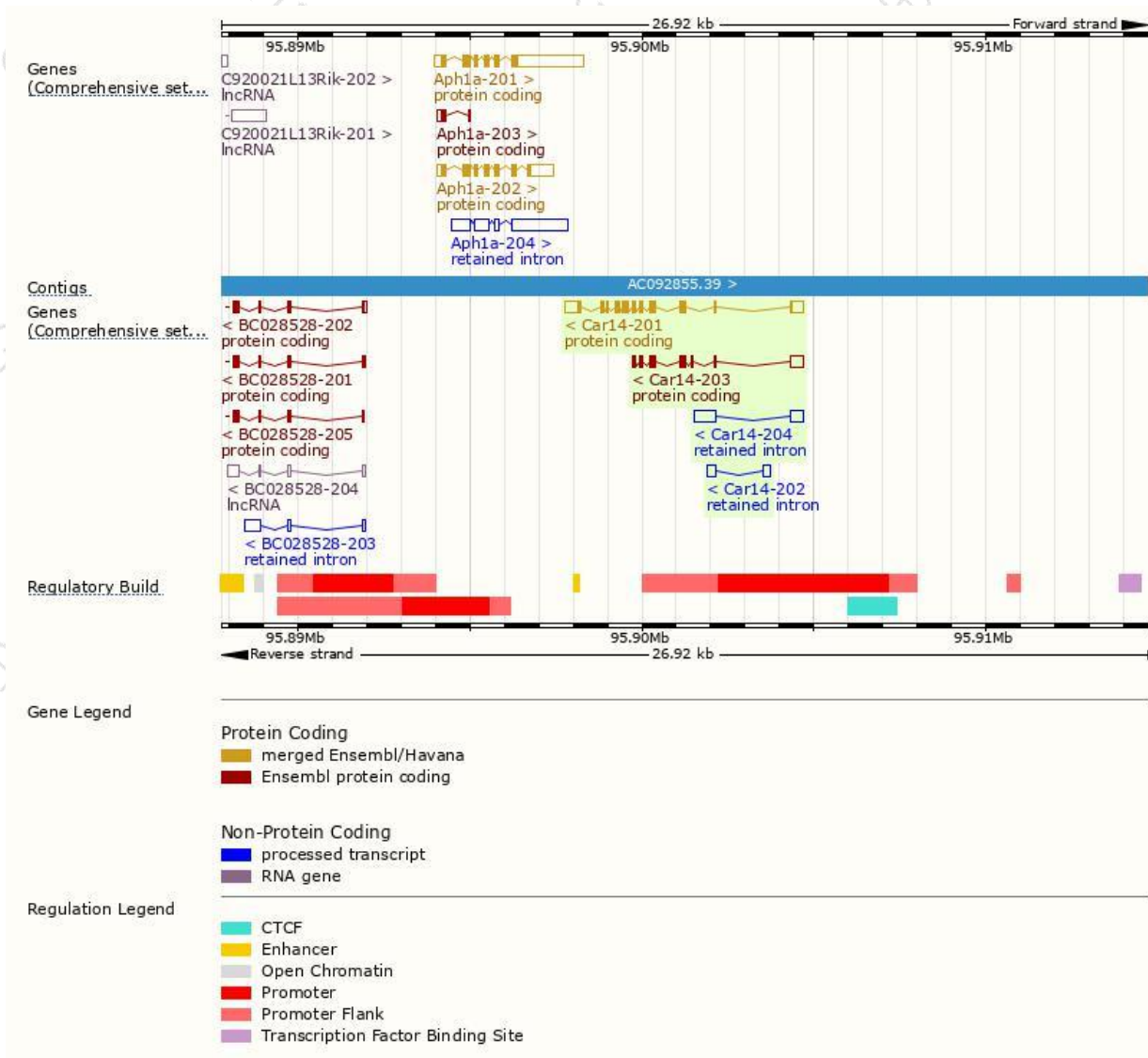
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Car14-201	<a href="#">ENSMUST00000036181.14</a>	1709	<a href="#">337aa</a>	Protein coding	<a href="#">CCDS17625</a>	<a href="#">Q9WVT6</a>	TSL:1 GENCODE basic APPRIS P1
Car14-203	<a href="#">ENSMUST00000147962.2</a>	895	<a href="#">171aa</a>	Protein coding	-	<a href="#">D3Z4J8</a>	CDS 3' incomplete TSL:3
Car14-204	<a href="#">ENSMUST00000149202.1</a>	984	No protein	Retained intron	-	-	TSL:1
Car14-202	<a href="#">ENSMUST00000126722.1</a>	452	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Car14-201* transcript,The transcription is shown below

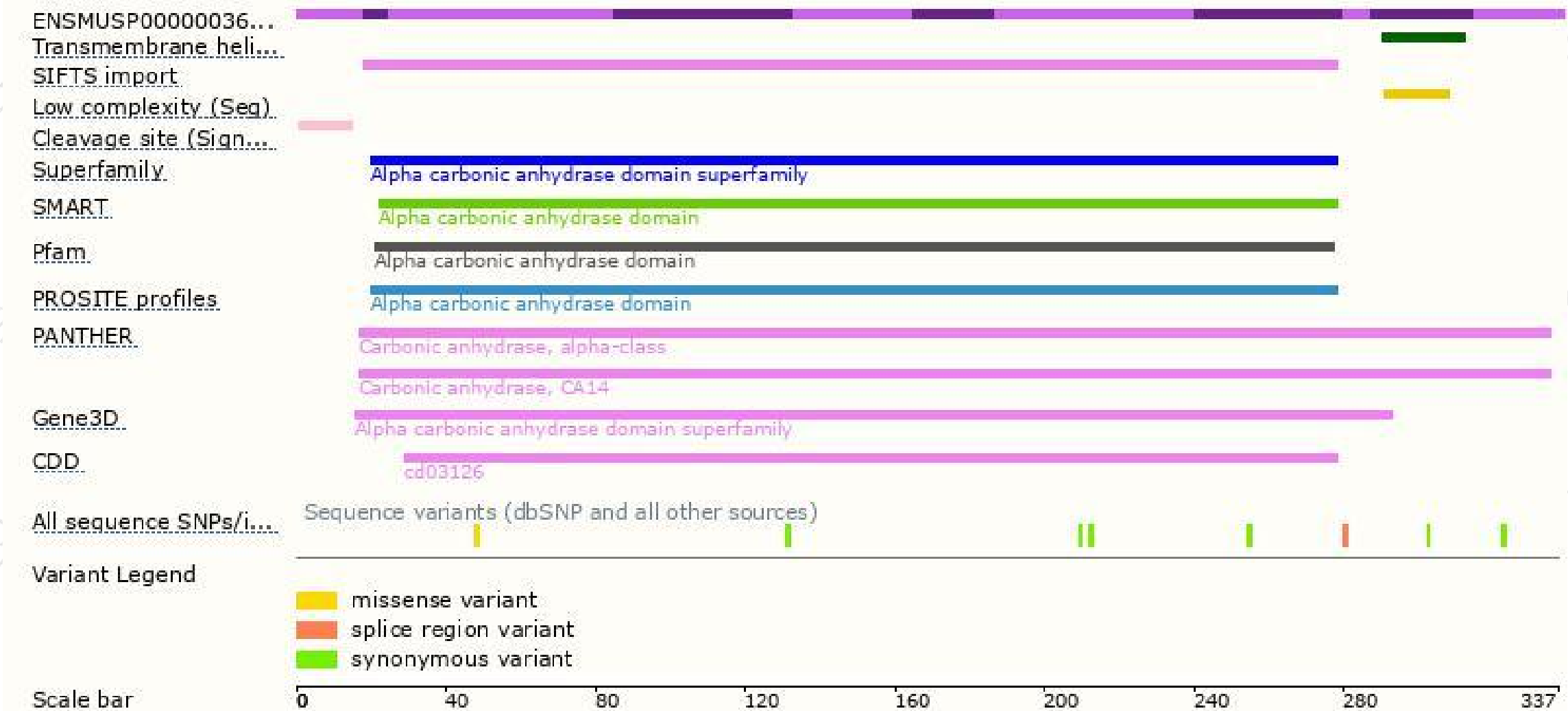


# Genomic location distribution





# Protein domain



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

Tel: 400-9660890

