

# *Car7* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Car7*

**Project type**

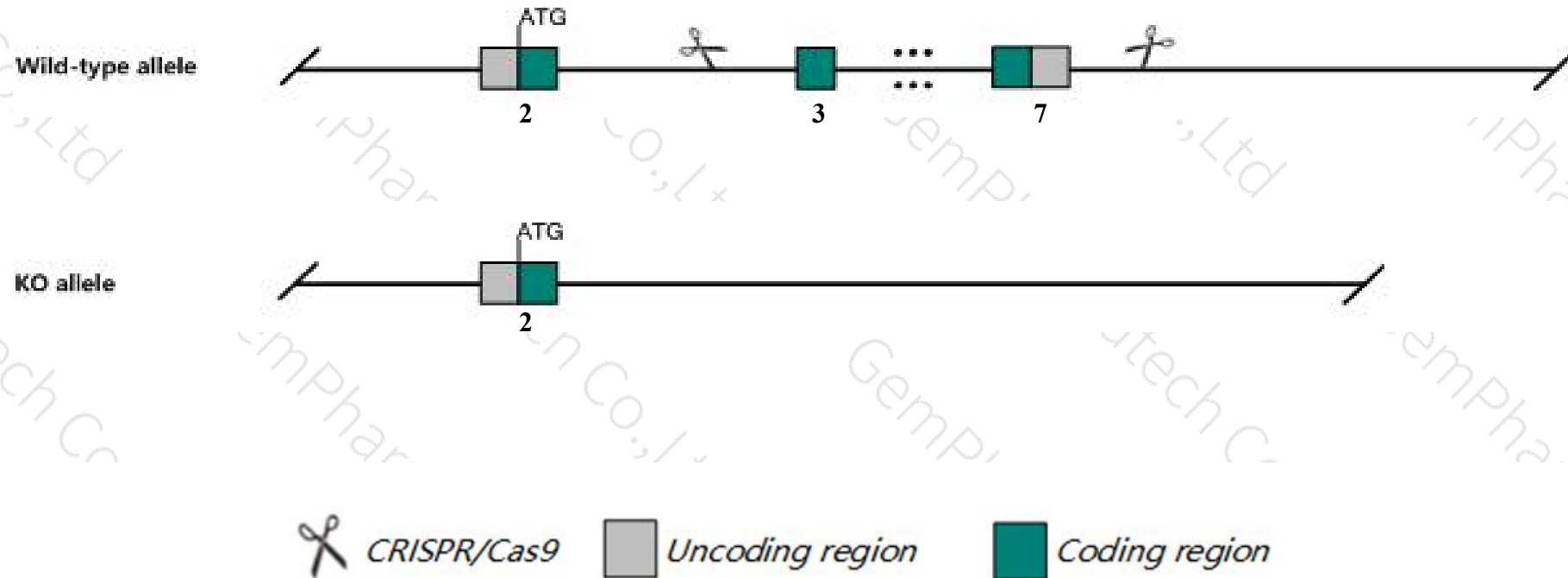
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Car7* gene. The schematic diagram is as follows:



- The *Car7* gene has 5 transcripts. According to the structure of *Car7* gene, exon3-exon7 of *Car7-202* (ENSMUST00000159416.7) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Car7* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit reduced and atypical experimental febrile seizures with the absence of electrographic seizures and abnormal GABA-mediated receptor currents.
- Transcript *Car7*-205 may not be affected.
- The *Car7* gene is located on the Chr8. 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)

## Car7 carbonic anhydrase 7 [ *Mus musculus* (house mouse) ]

Gene ID: 12354, updated on 12-Aug-2019

### Summary

- Official Symbol** Car7 provided by [MGI](#)
- Official Full Name** carbonic anhydrase 7 provided by [MGI](#)
- Primary source** [MGI:MGI:103100](#)
- See related** [Ensembl:ENSMUSG00000031883](#)
- 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** Ca7; AV343731
- Expression** Broad expression in cerebellum adult (RPKM 10.1), cortex adult (RPKM 7.5) and 19 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

### Genomic context

**Location:** 8; 8 D3 See Car7 in [Genome Data Viewer](#)

**Exon count:** 13

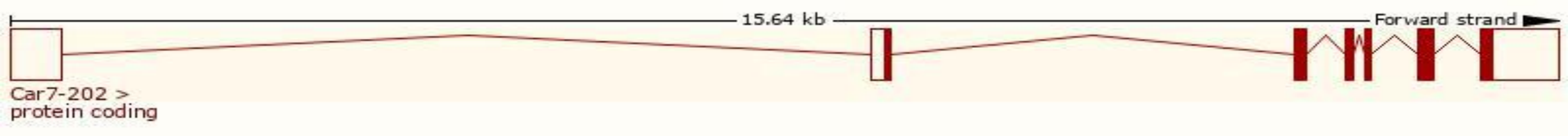
Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCm38.p6 ( <a href="#">GCF_000001635.26</a> )	8	NC_000074.6 (104534694..104550347)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	8	NC_000074.5 (107064707..107074243)

# Transcript information (Ensembl)

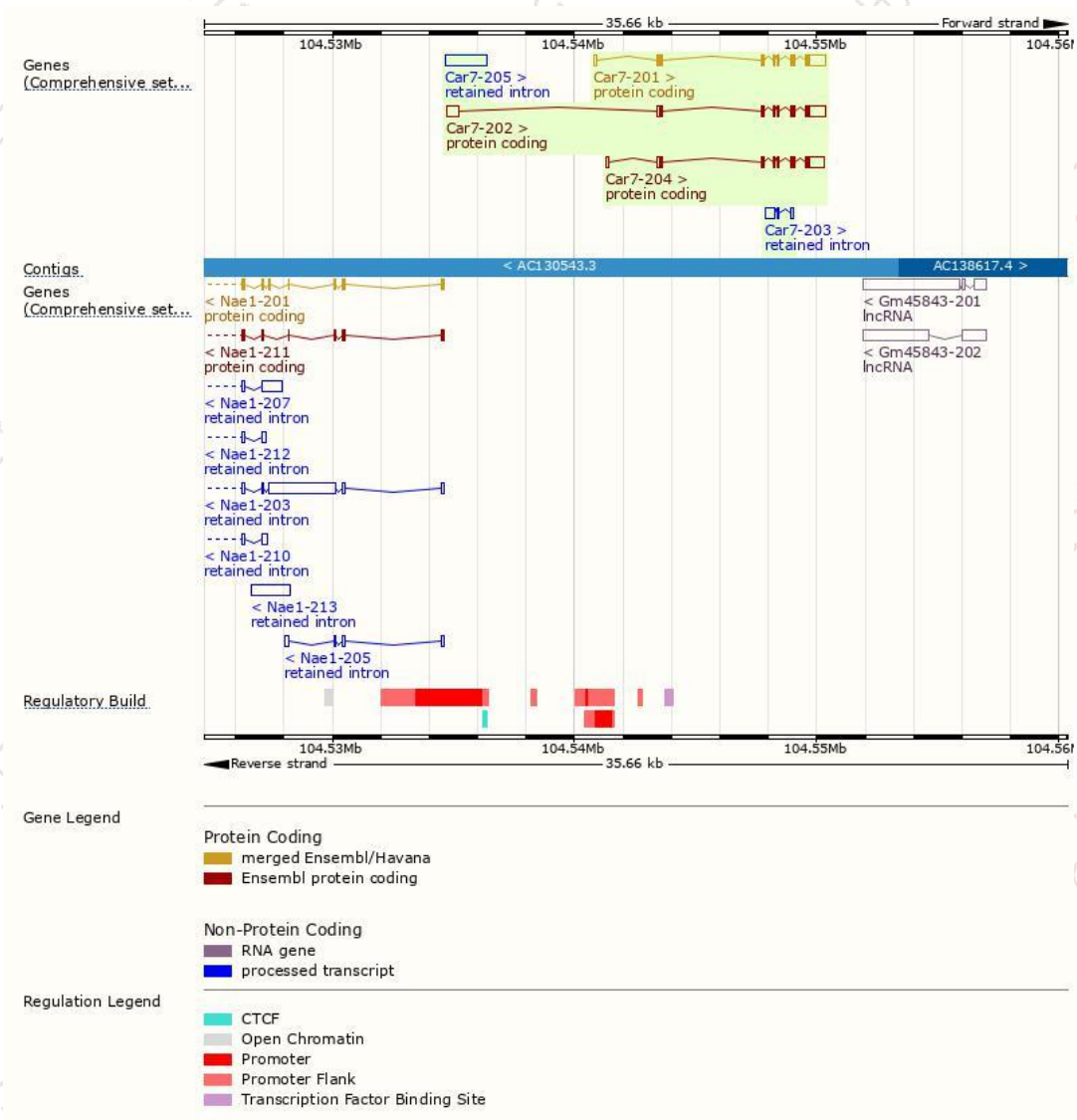
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Car7-202	<a href="#">ENSMUST00000159416.7</a>	1943	<a href="#">208aa</a>	Protein coding	<a href="#">CCDS80920</a>	<a href="#">G3XA26</a>	TSL:1 GENCODE basic
Car7-201	<a href="#">ENSMUST00000056051.10</a>	1538	<a href="#">264aa</a>	Protein coding	<a href="#">CCDS22581</a>	<a href="#">Q9ERQ8</a>	TSL:1 GENCODE basic APPRIS P1
Car7-204	<a href="#">ENSMUST00000162761.1</a>	1505	<a href="#">208aa</a>	Protein coding	<a href="#">CCDS80920</a>	<a href="#">G3XA26</a>	TSL:1
Car7-205	<a href="#">ENSMUST00000212942.1</a>	1702	No protein	Retained intron	-	-	TSL:NA
Car7-203	<a href="#">ENSMUST00000162399.1</a>	592	No protein	Retained intron	-	-	TSL:3

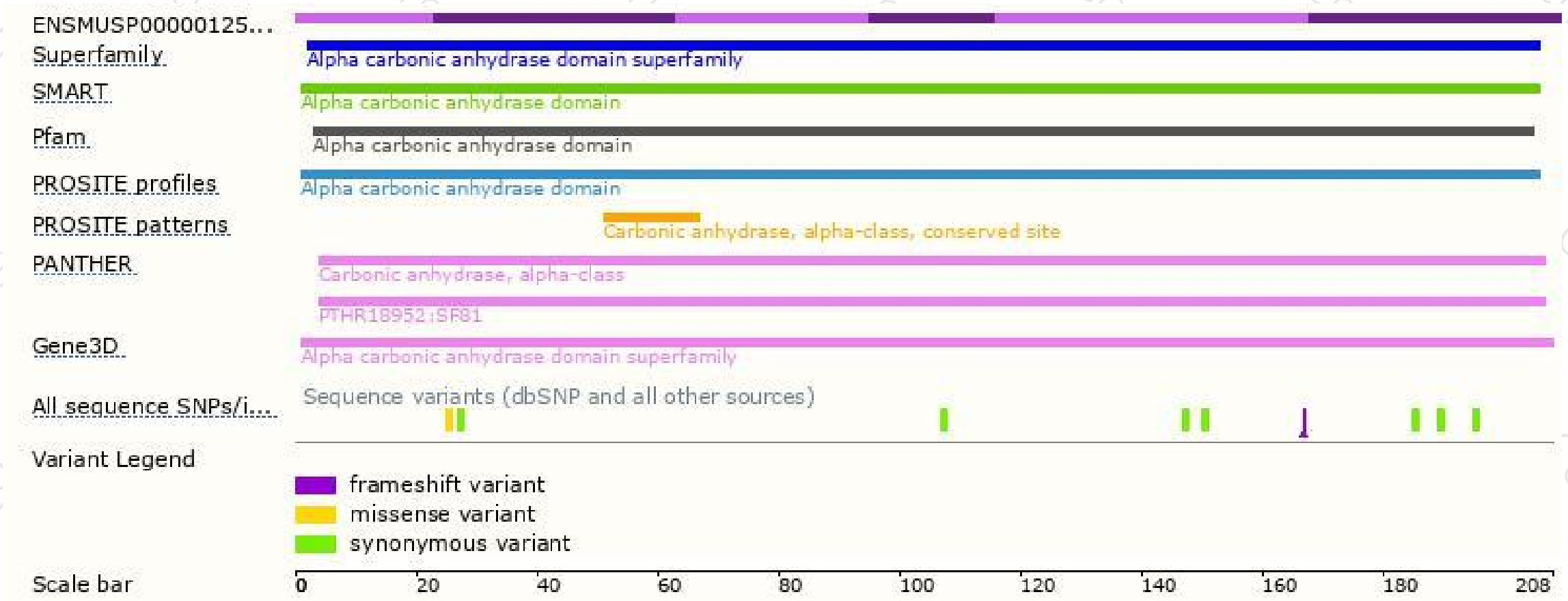
The strategy is based on the design of *Car7-202* transcript,The transcription is shown below



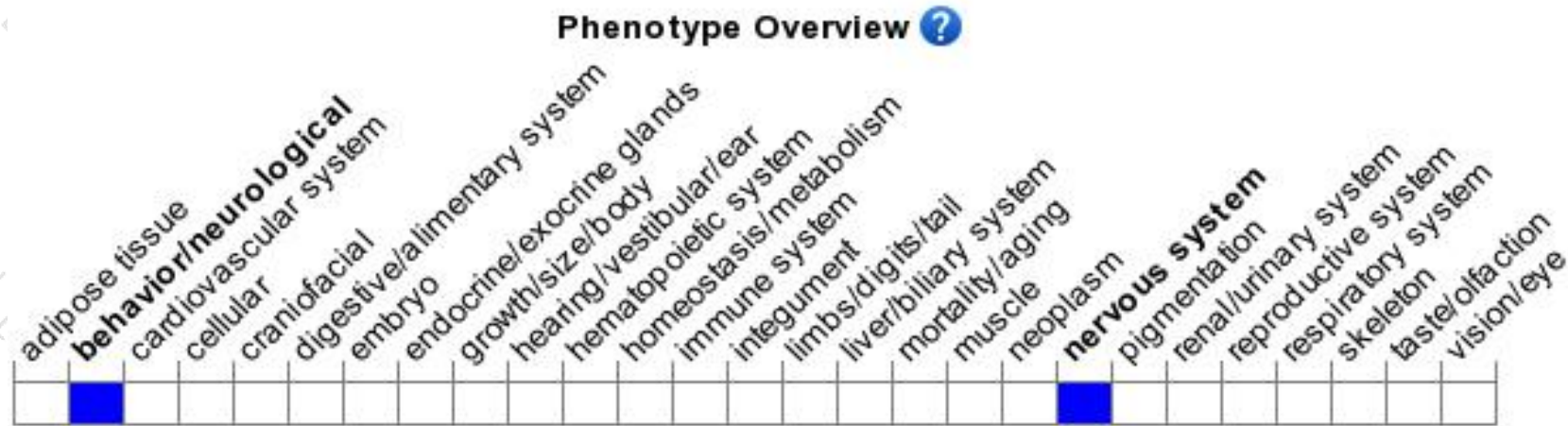
# Genomic location distribution



# 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 reduced and atypical experimental febrile seizures with the absence of electrographic seizures and abnormal GABA-mediated receptor currents.

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

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