

Car1 Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Car1

Project type

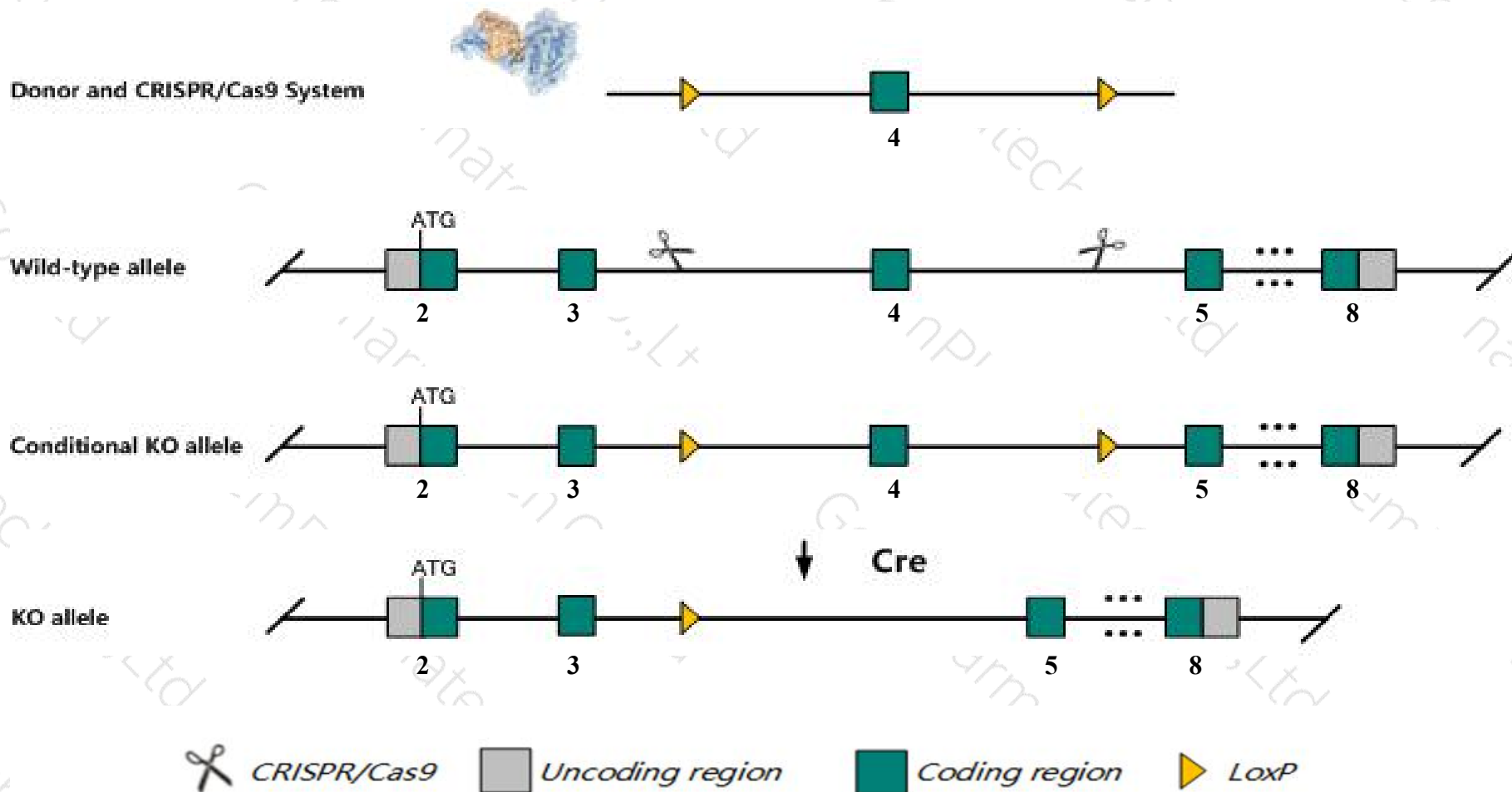
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Car1* gene. The schematic diagram is as follows:



Technical routes

- The *Car1* gene has 3 transcripts. According to the structure of *Car1* gene, exon4 of *Car1*-203 (ENSMUST00000181860.7) transcript is recommended as the knockout region. The region contains 119bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Car1* gene. The brief process is as follows: CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, This locus controls electrophoretic variation in red blood cells. The a allele determines a slow migrating form in C57BL/6, C3H/He and other strains; the b allele determines a fast form in IS/Cam, WB/Re, SM, M. m. castaneus and M. m. molossinus.
- The *Car1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Car1 carbonic anhydrase 1 [Mus musculus (house mouse)]

Gene ID: 12346, updated on 31-Jan-2019

Summary



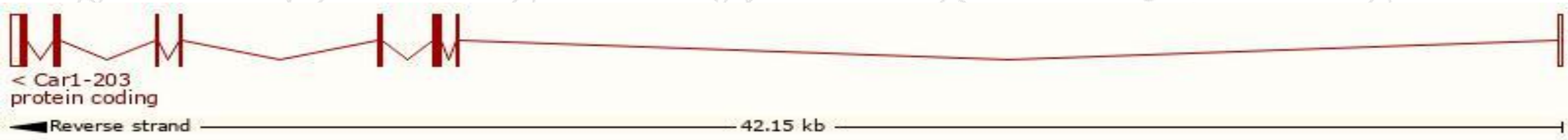
Official Symbol	Car1 provided by MGI
Official Full Name	carbonic anhydrase 1 provided by MGI
Primary source	MGI:MGI:88268
See related	Ensembl:ENSMUSG00000027556
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW555628, Ca1, Car-1
Expression	Restricted expression toward colon adult (RPKM 847.4) See more
Orthologs	human all

Transcript information (Ensembl)

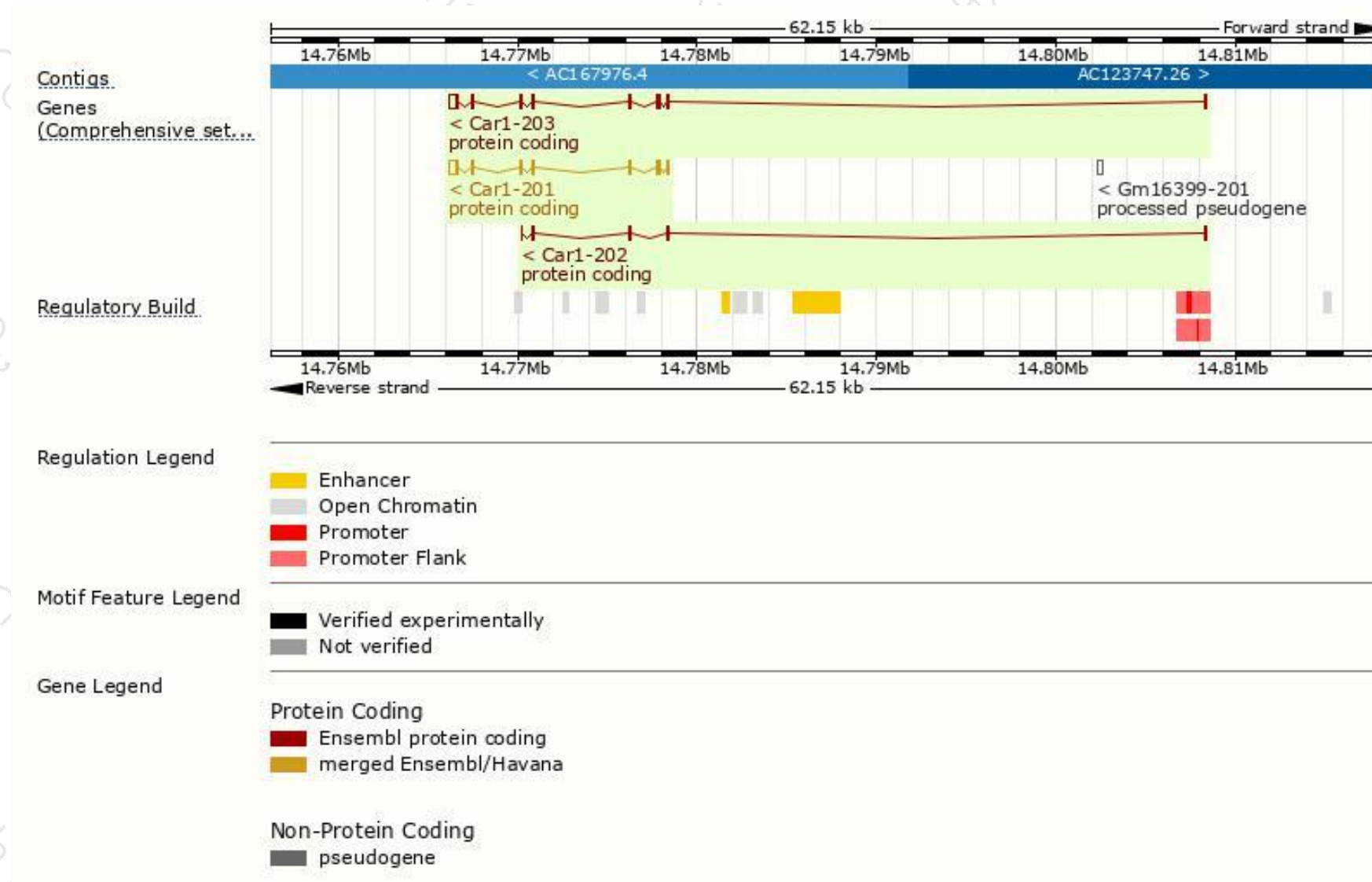
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Car1-203	ENSMUST00000181860.7	1194	261aa	Protein coding	CCDS17248	P13634	TSL:1 GENCODE basic APPRIS P1
Car1-201	ENSMUST00000094365.10	1180	261aa	Protein coding	CCDS17248	P13634	TSL:1 GENCODE basic APPRIS P1
Car1-202	ENSMUST00000144327.2	367	92aa	Protein coding	-	D3YYQ4	CDS 3' incomplete TSL:3

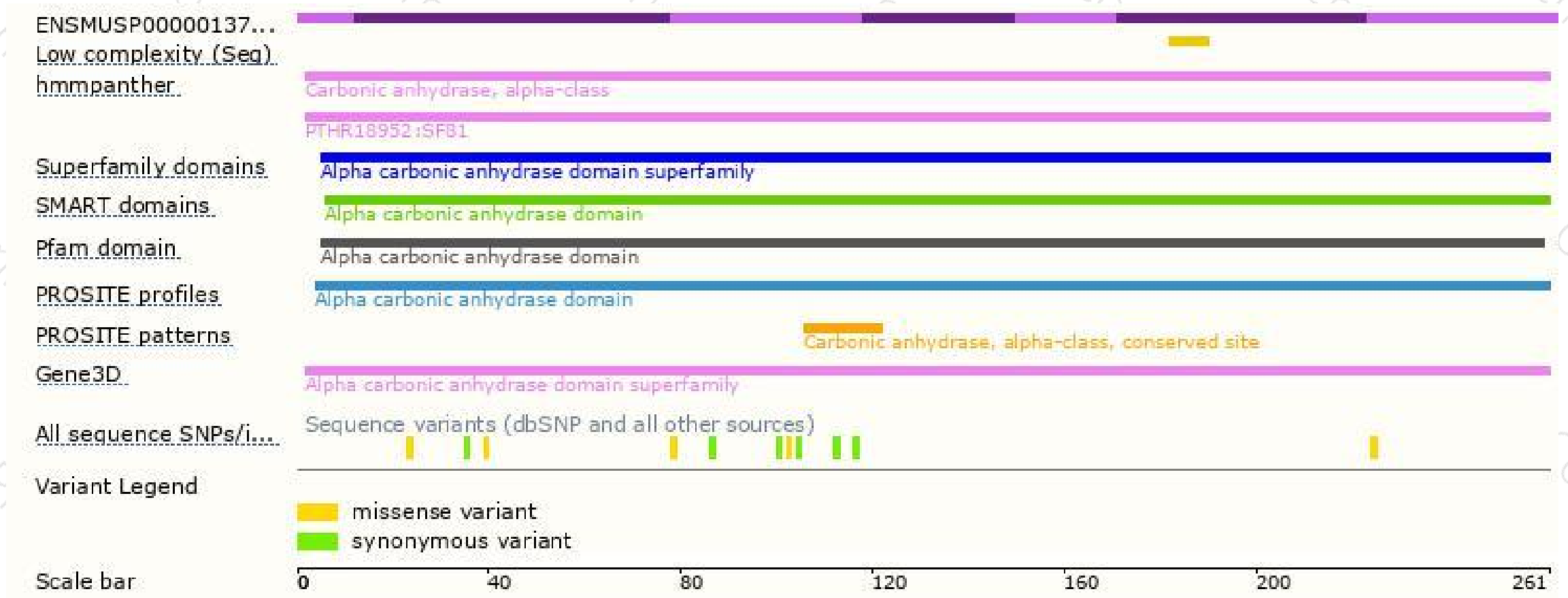
The strategy is based on the design of *Car1-203* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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