Alcam Cas9-KO Strategy

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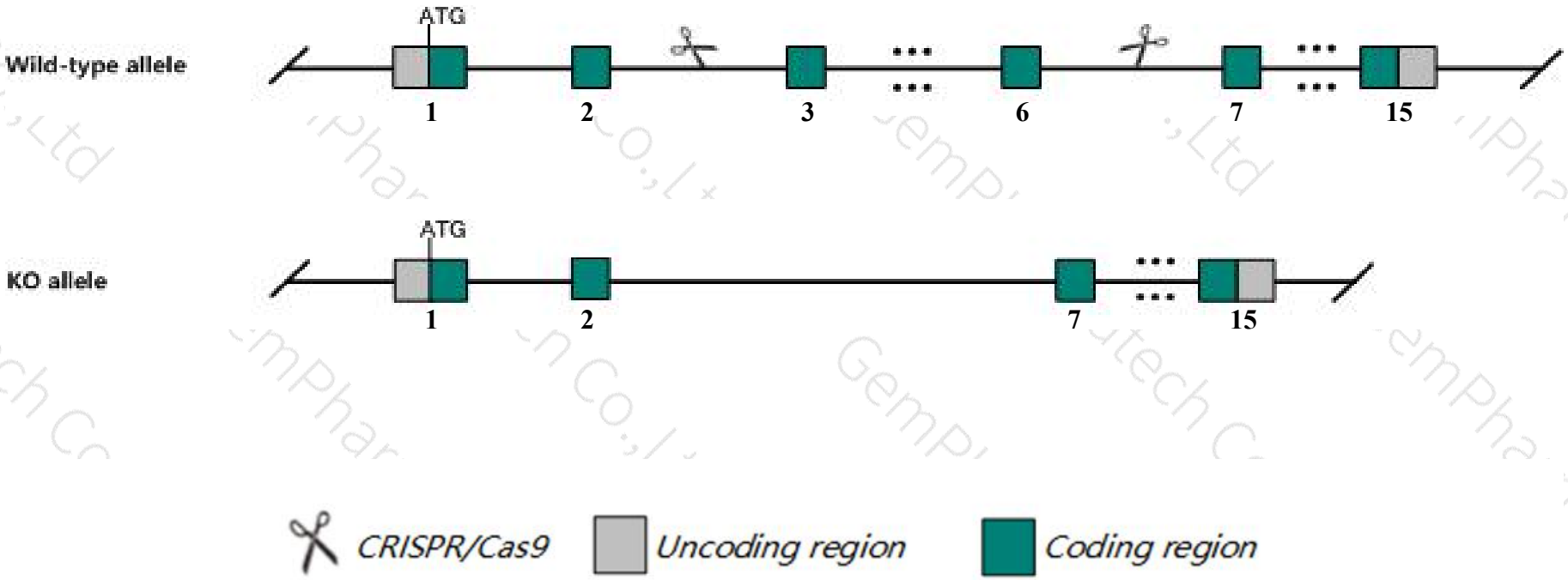
Project Overview

Project Name	***Alcam***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

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



Technical routes

➢ The *Alcam* gene has 7 transcripts. According to the structure of *Alcam* gene, exon3-exon6 of *Alcam-201* (ENSMUST00000023312.13) transcript is recommended as the knockout region.The region contains 556bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Alcam* gene. The brief process is as follows: CRISPR/Cas9 system v

Notice

- According to the existing MGI data,Homozygous null mice display abnormal motor neuron and retinal ganglion cell morphology and retinal dysplasia.

- The *Alcam* 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）

Alcam activated leukocyte cell adhesion molecule [*Mus musculus* (house mouse)]

Gene ID: 11658, updated on 12-Nov-2019

Summary

Official Symbol	Alcam provided by MGI
Official Full Name	activated leukocyte cell adhesion molecule provided by MGI
Primary source	MGI:MGI:1313266
See related	Ensembl:ENSMUSG00000022636
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	BEN; SC1; MuSC; CD166; AI853494; DM-GRASP
Expression	Broad expression in lung adult (RPKM 24.3), CNS E11.5 (RPKM 16.7) and 24 other tissues See more
Orthologs	human all

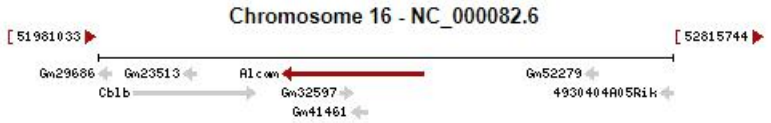
Genomic context

Location: 16; 16 B5

See Alcam in Genome Data Viewer

Exon count: 16

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	16	NC_000082.6 (52248996..52453081, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	16	NC_000082.5 (52249109..52453110, complement)

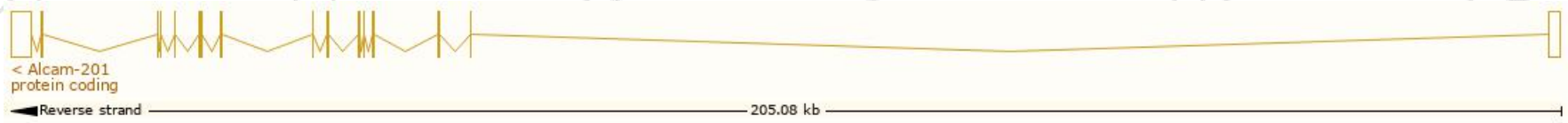


Transcript information（Ensembl）

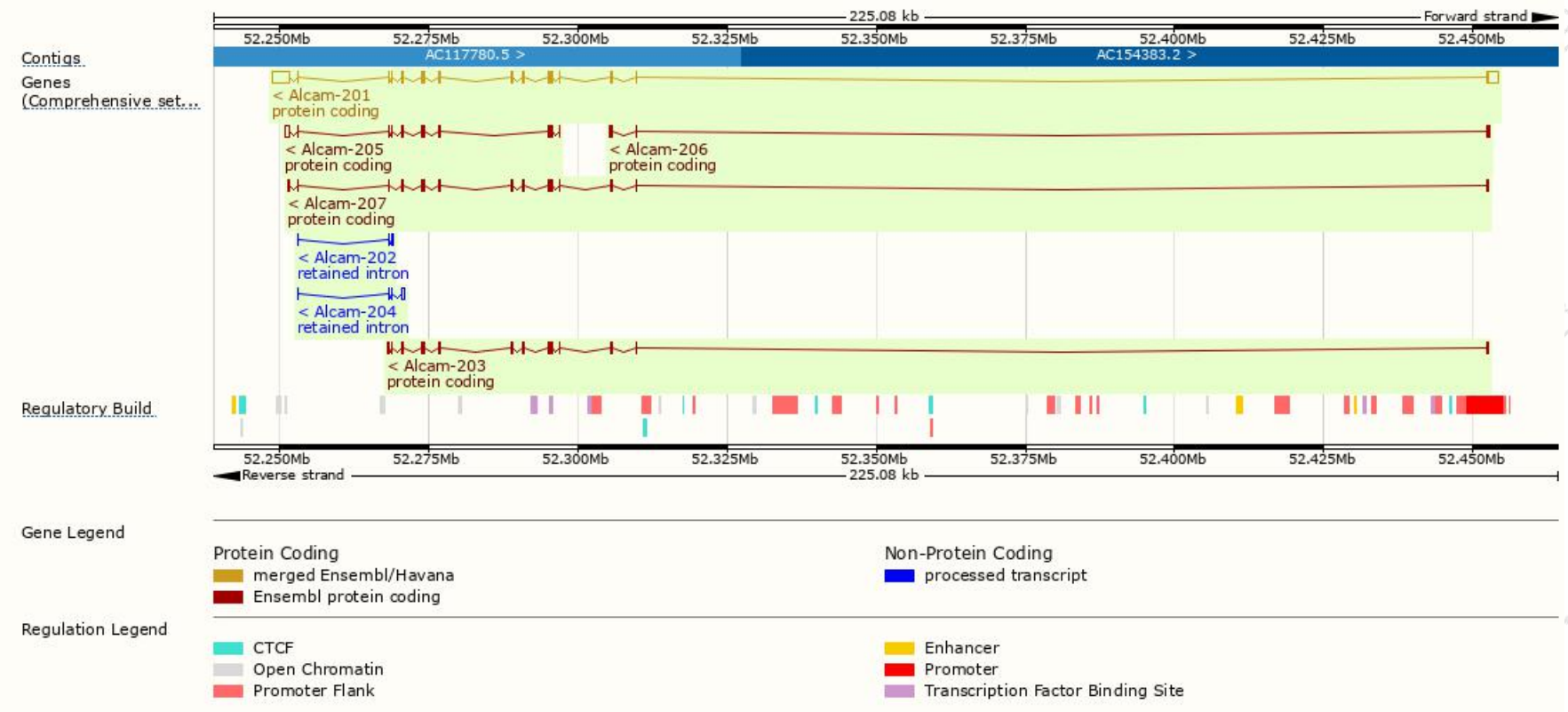
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Alcam-201	ENSMUST00000023312.13	6036	583aa	Protein coding	CCDS37356	Q54AJ5 Q61490	TSL:1 GENCODE basic APPRIS P3
Alcam-207	ENSMUST00000170035.7	1917	570aa	Protein coding	CCDS84242	E9Q3Q6	TSL:5 GENCODE basic APPRIS ALT1
Alcam-203	ENSMUST00000164728.7	1885	555aa	Protein coding	-	E9Q4G8	TSL:5 GENCODE basic
Alcam-205	ENSMUST00000167115.7	1621	345aa	Protein coding	-	F6QH25	CDS 5' incomplete TSL:5
Alcam-206	ENSMUST00000168071.1	878	133aa	Protein coding	-	Q5MPX5	TSL:1 GENCODE basic
Alcam-204	ENSMUST00000164888.1	642	No protein	Retained intron	-	-	TSL:3
Alcam-202	ENSMUST00000163788.7	439	No protein	Retained intron	-	-	TSL:5

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

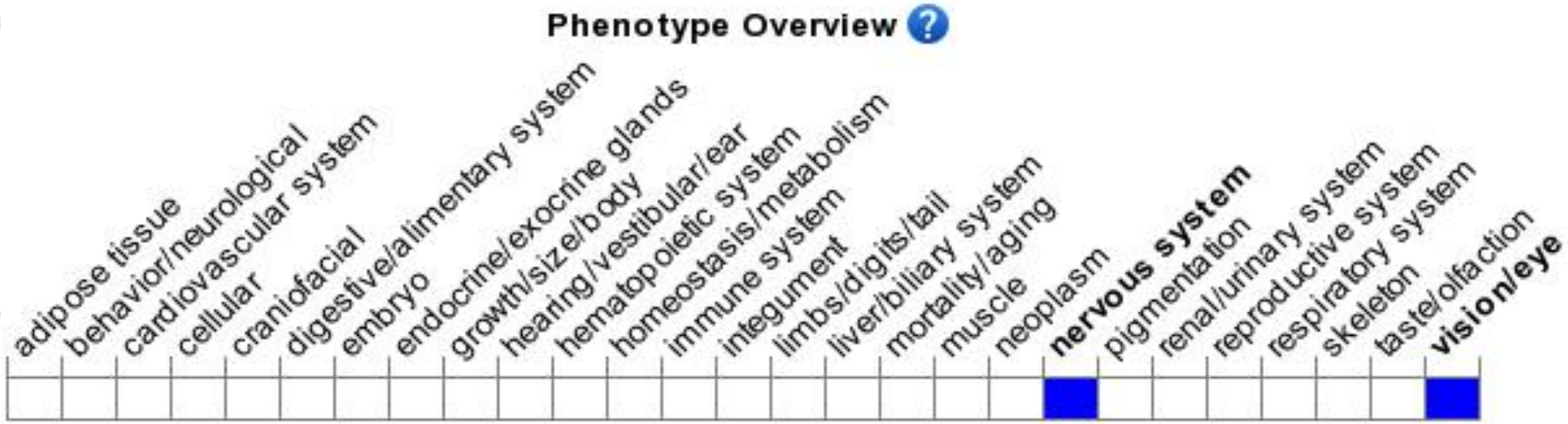


Genomic location distribution



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/).

According to the existing MGI data,Homozygous null mice display abnormal motor neuron and retinal ganglion cell morphology and retinal dysplasia.

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

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