

Pecam1 Cas9-KO Strategy

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Project Overview



Project Name

Pecam1

Project type

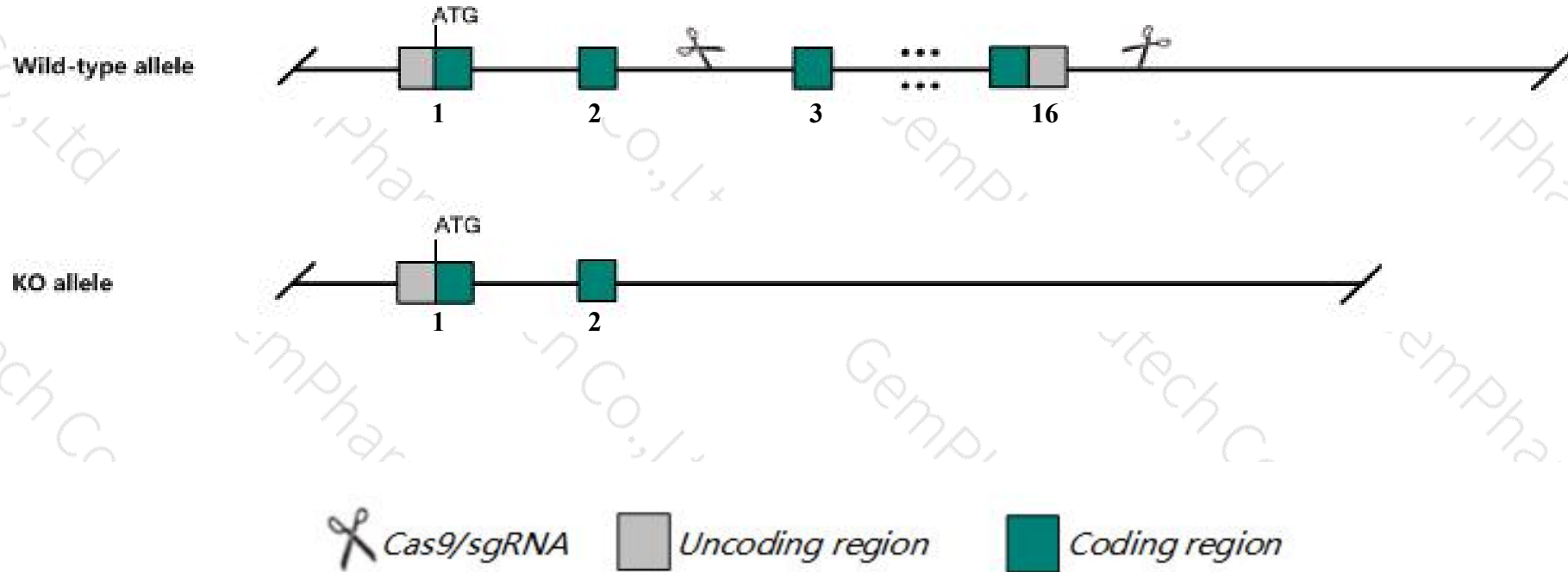
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pecam1* gene. The schematic diagram is as follows:



- The *Pecam1* gene has 8 transcripts. According to the structure of *Pecam1* gene, exon3-exon16 of *Pecam1-204* (ENSMUST00000106796.8) transcript is recommended as the knockout region. The region contains 2123bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pecam1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Mice homozygous for a knock-out allele show increased susceptibility to collagen-induced arthritis, impaired lung alveolarization, and enhanced susceptibility to endotoxic shock. Mice homozygous for a gene-trapped allele show altered vasodilation and nitric oxide homeostasis.
- The *Pecam1* gene is located on the Chr11. 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)

Pecam1 platelet/endothelial cell adhesion molecule 1 [Mus musculus (house mouse)]

Gene ID: 18613, updated on 9-Apr-2019

Summary



Official Symbol	Pecam1 provided by MGI
Official Full Name	platelet/endothelial cell adhesion molecule 1 provided by MGI
Primary source	MGI:MGI:97537
See related	Ensembl:ENSMUSG00000020717
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	C85791, Cd31, PECAM-1, Pecam
Expression	Broad expression in lung adult (RPKM 94.3), subcutaneous fat pad adult (RPKM 41.1) and 17 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

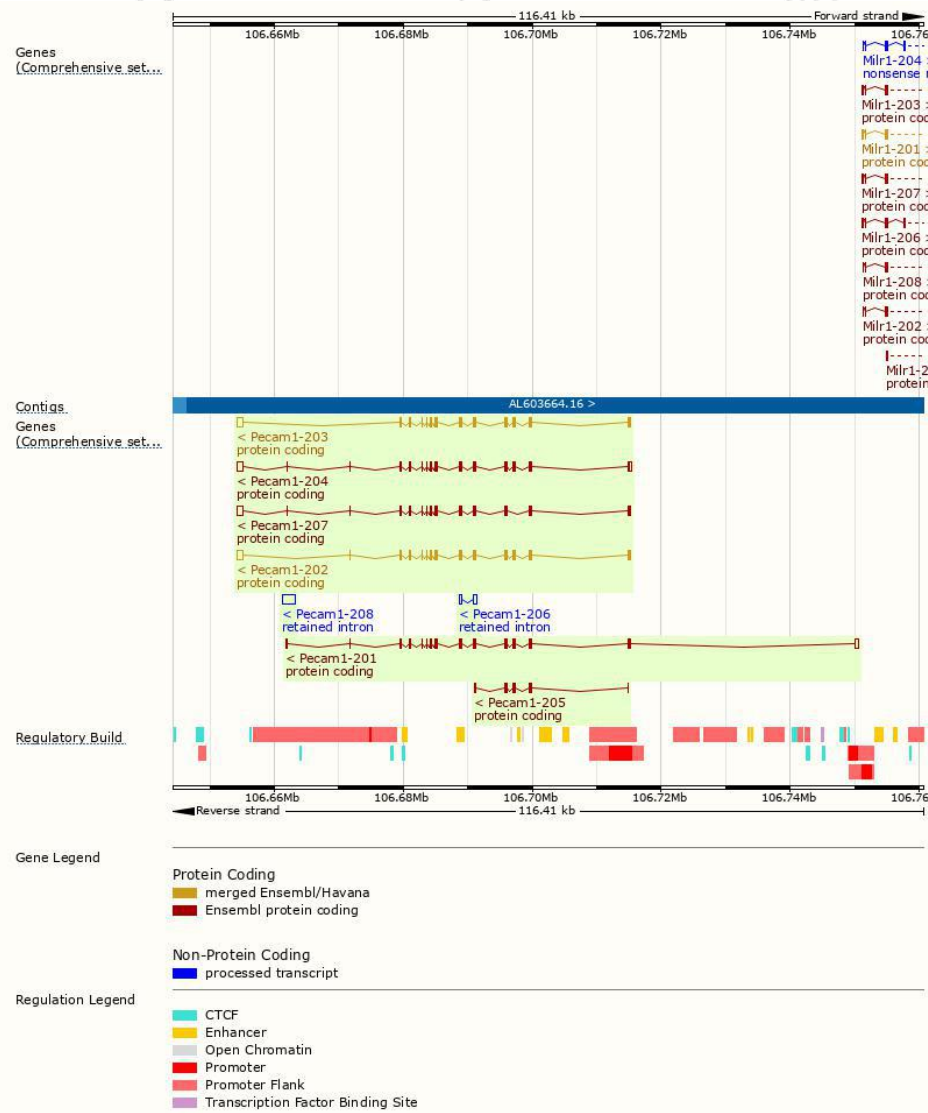
The gene has 8 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pecam1-204	ENSMUST00000106796.8	3441	727aa	Protein coding	CCDS79069	Q08481	TSL:1 GENCODE basic APPRIS ALT2
Pecam1-202	ENSMUST00000080853.10	3283	716aa	Protein coding	CCDS25559	Q08481	TSL:1 GENCODE basic APPRIS P3
Pecam1-203	ENSMUST00000103069.9	3233	697aa	Protein coding	CCDS25558	Q08481	TSL:1 GENCODE basic
Pecam1-207	ENSMUST00000183610.7	3006	626aa	Protein coding	CCDS79068	Q08481	TSL:1 GENCODE basic
Pecam1-201	ENSMUST00000068021.8	2977	732aa	Protein coding	-	B1ARB3	TSL:2 GENCODE basic APPRIS ALT2
Pecam1-205	ENSMUST00000124958.2	1020	317aa	Protein coding	-	B1ARA9	CDS 3' incomplete TSL:5
Pecam1-208	ENSMUST00000184424.1	2142	No protein	Retained intron	-	-	TSL:NA
Pecam1-206	ENSMUST00000135481.1	681	No protein	Retained intron	-	-	TSL:2

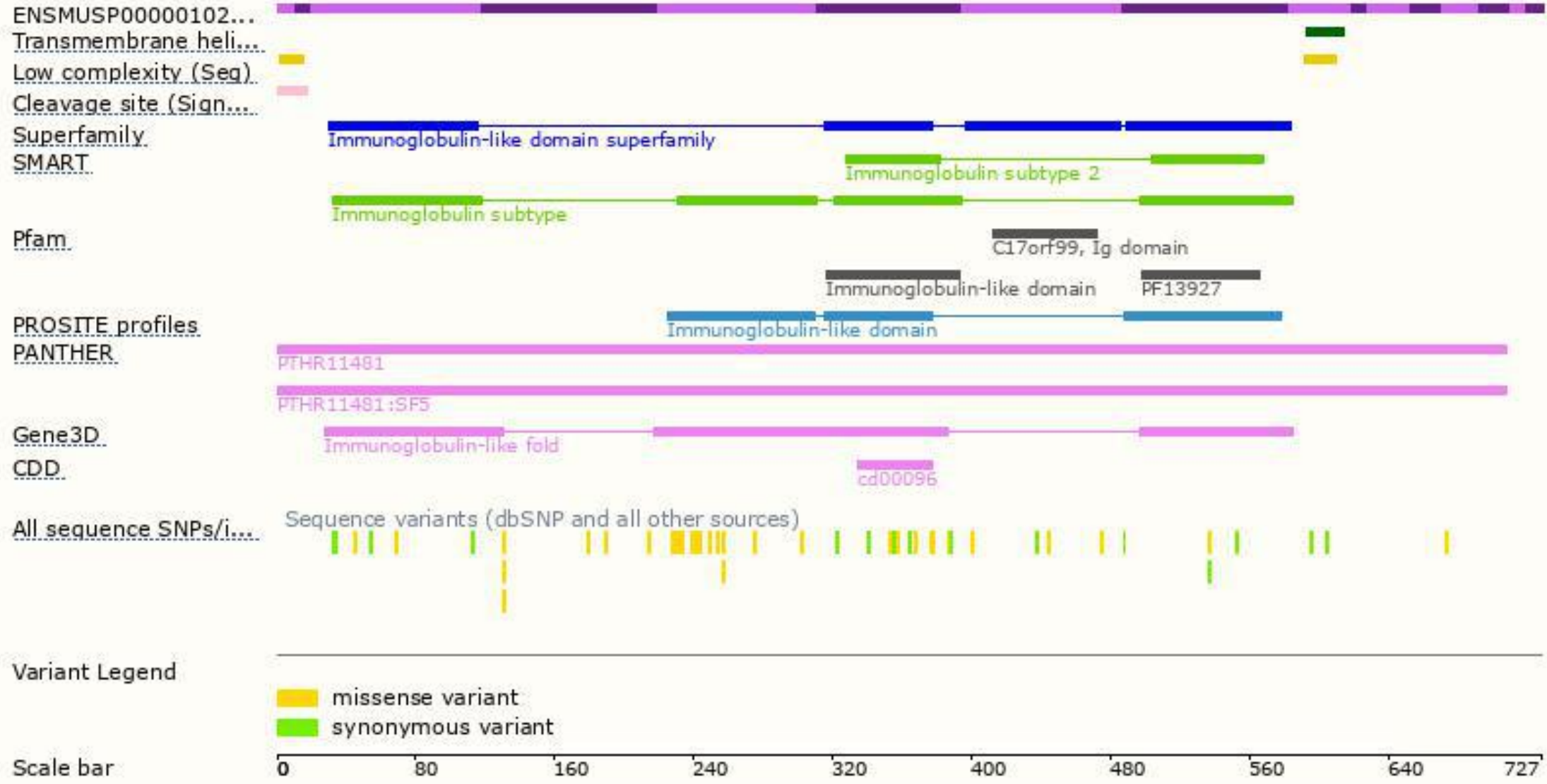
The strategy is based on the design of *Pecam1-204* transcript, The transcription is shown below



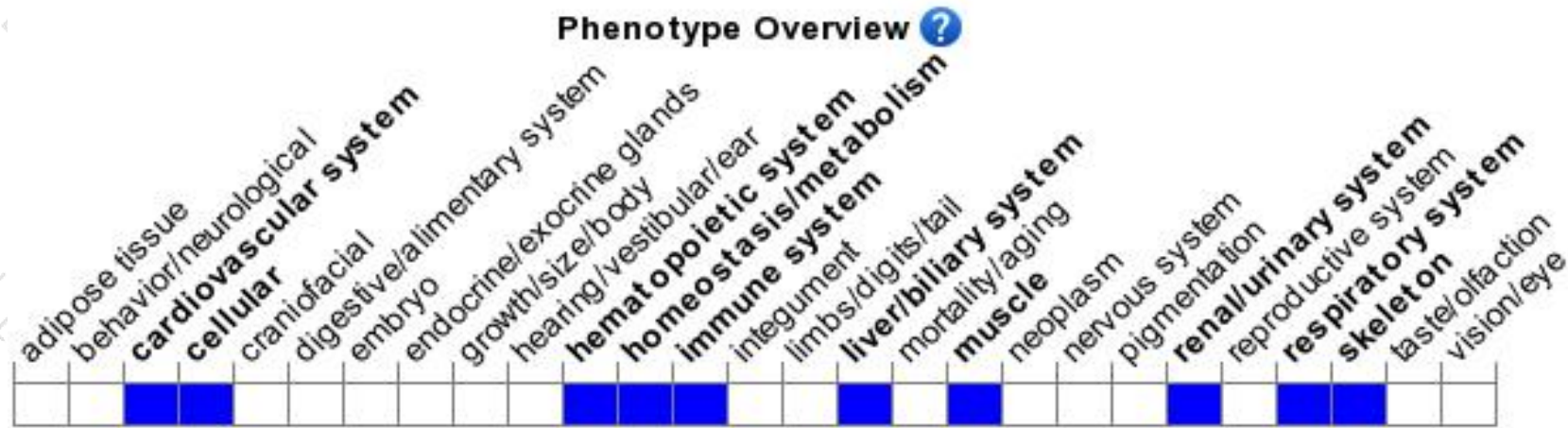
Genomic location distribution



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/>).

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

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