

Cd27 Cas9-CKO Strategy

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Design Date: 2019-5-30

Project Overview

Project Name

Cd27

Project type

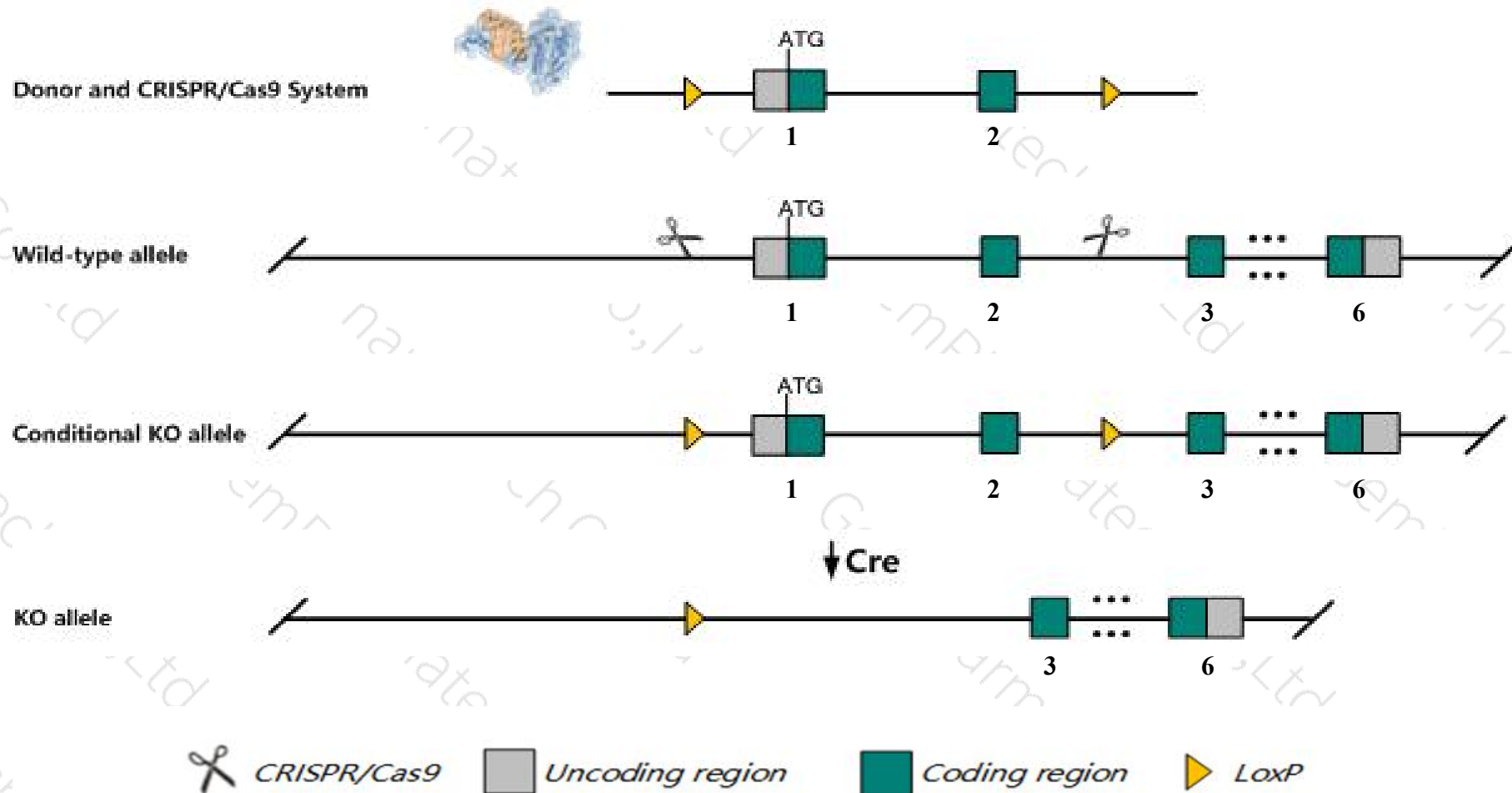
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd27* gene. The schematic diagram is as follows:



- The *Cd27* gene has 6 transcripts. According to the structure of *Cd27* gene, exon1-exon2 of *Cd27-201* (ENSMUST00000032486.12) 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 *Cd27* 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, mice homozygous for disruptions in this gene have a normal phenotype. however, t-cell development immune responses are abnormal.
- The KO region contains functional region of the Cd27 gene. Knockout the region may affect the function of Vamp1, E130112N.
- The *Cd27* gene is located on the Chr6. 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)

Cd27 CD27 antigen [Mus musculus (house mouse)]

Gene ID: 21940, updated on 13-Mar-2020

Summary



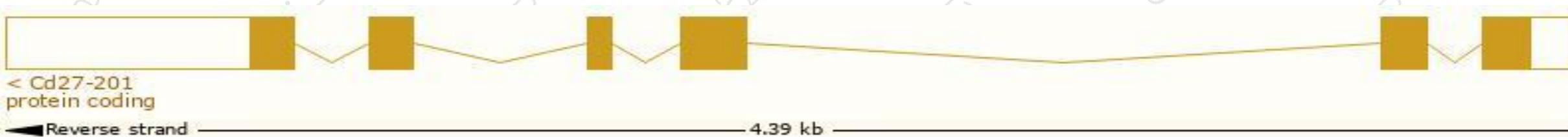
Official Symbol	Cd27 provided by MGI
Official Full Name	CD27 antigen provided by MGI
Primary source	MGI:MGI:88326
See related	Ensembl:ENSMUSG00000030336
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	S152, Tnfrsf7, Tp55
Expression	Biased expression in thymus adult (RPKM 190.8), spleen adult (RPKM 23.5) and 1 other tissue See more
Orthologs	human all

Transcript information (Ensembl)

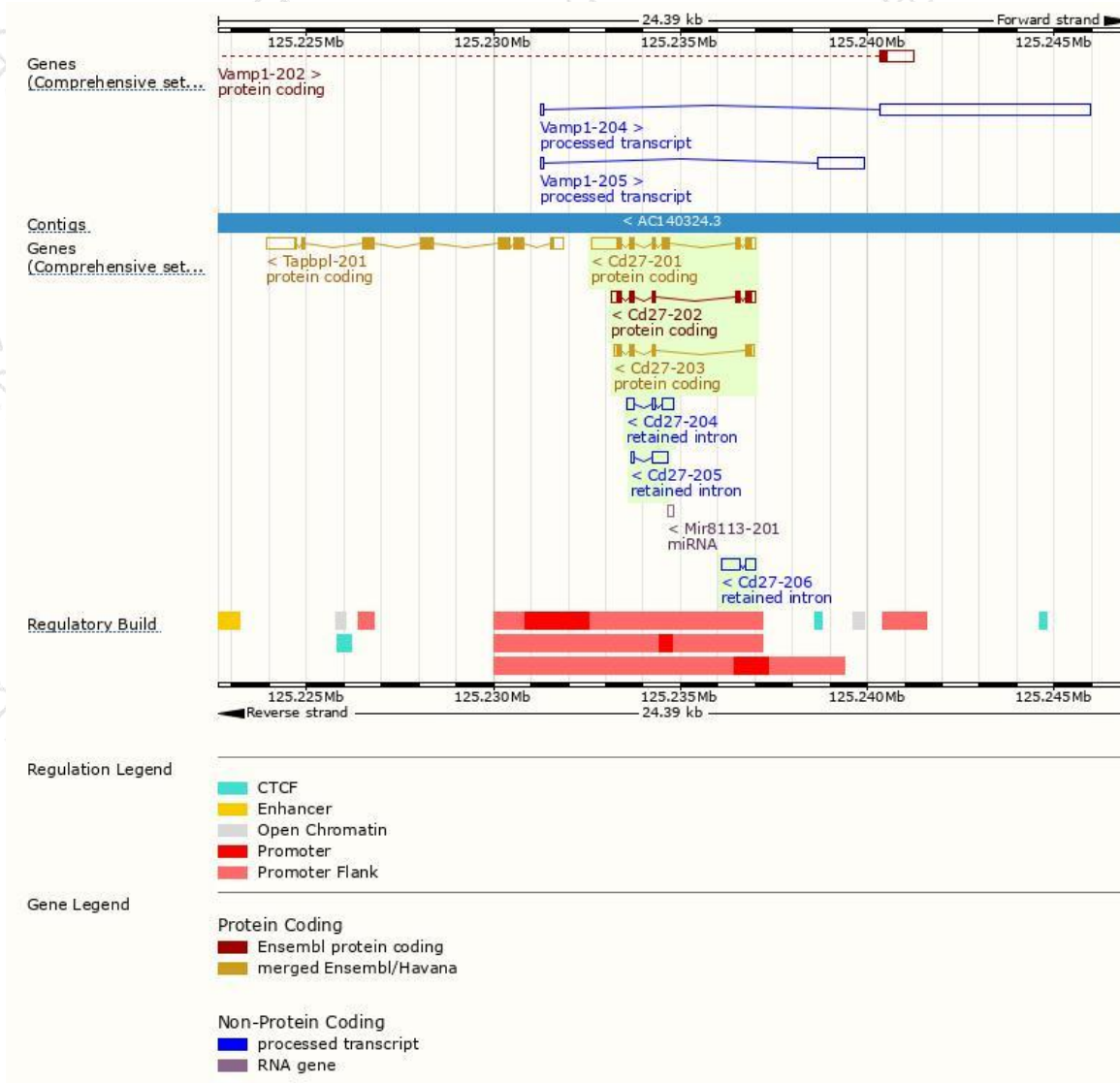
The gene has 6 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd27-201	ENSMUST00000032486.12	1559	250aa	Protein coding	CCDS39639	P41272 Q3U4X0	TSL:1 GENCODE basic APPRIS P1
Cd27-202	ENSMUST00000112281.7	832	190aa	Protein coding	CCDS71839	D3Z7W5	TSL:3 GENCODE basic
Cd27-203	ENSMUST00000112282.2	588	146aa	Protein coding	CCDS39638	B7ZW87	TSL:1 GENCODE basic
Cd27-206	ENSMUST00000152650.1	744	No protein	Retained intron	-	-	TSL:1
Cd27-204	ENSMUST00000135205.1	569	No protein	Retained intron	-	-	TSL:3
Cd27-205	ENSMUST00000151527.1	491	No protein	Retained intron	-	-	TSL:3

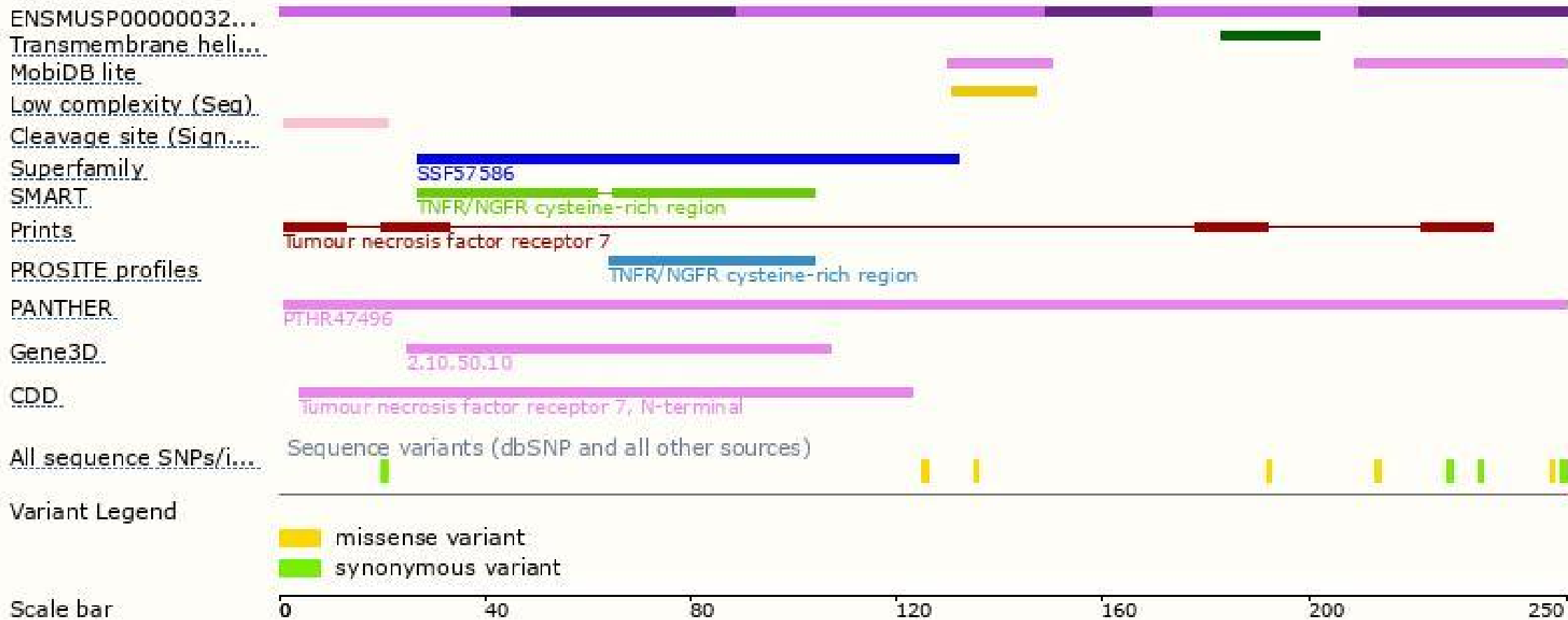
The strategy is based on the design of *Cd27-201* transcript, the transcription is shown below:



Genomic location distribution

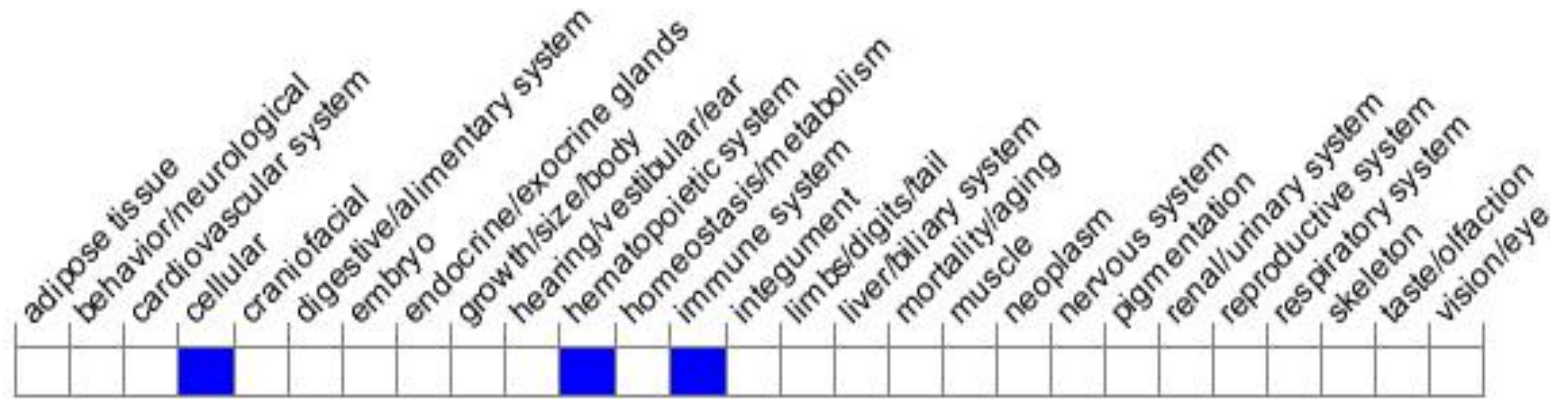


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview



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 disruptions in this gene have a normal phenotype. However, T-cell development immune responses are abnormal.

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

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