

Cd81 Cas9-CKO Strategy

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Project Overview

Project Name

Cd81

Project type

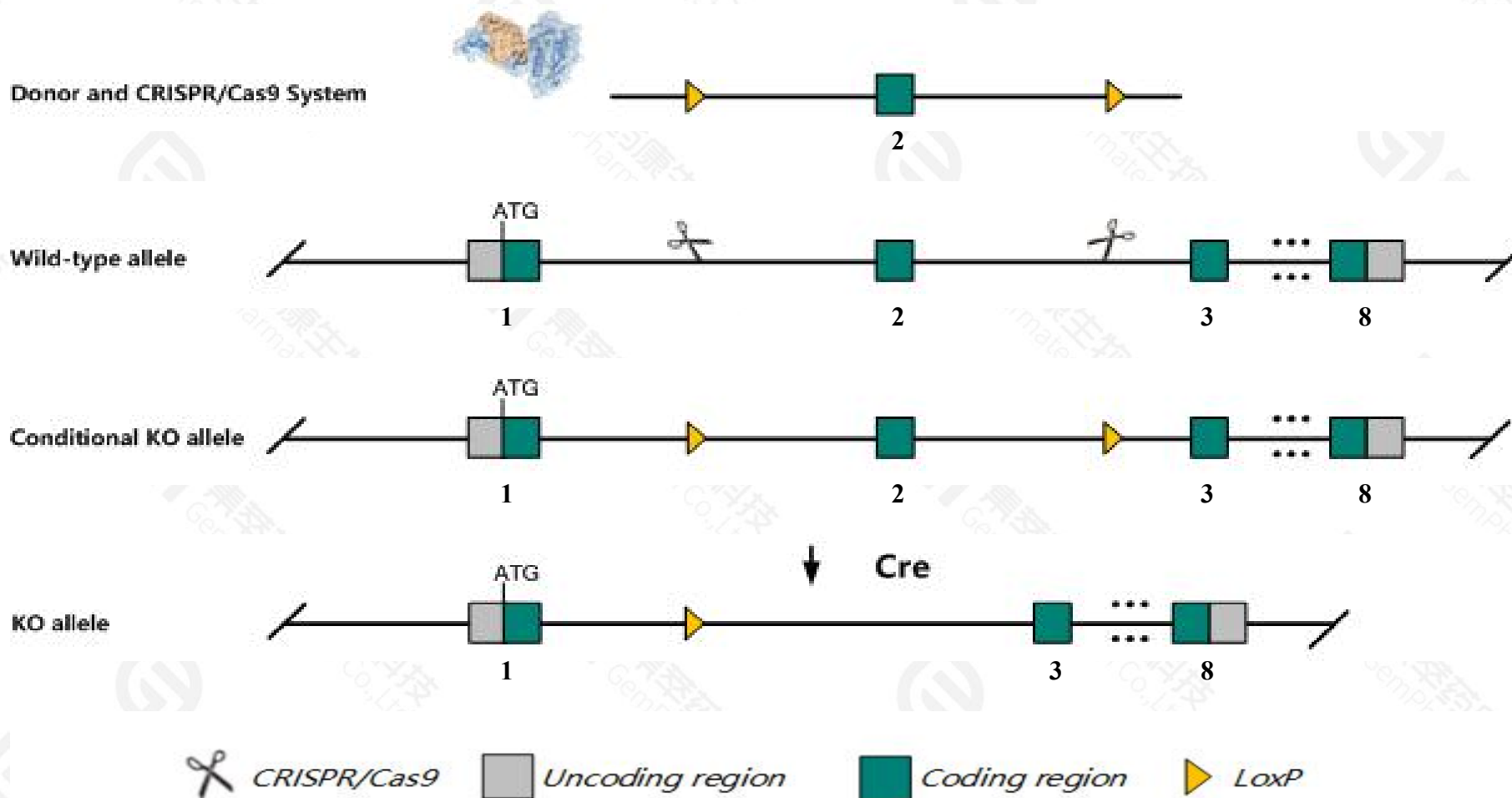
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd81* gene. The schematic diagram is as follows:



- The *Cd81* gene has 6 transcripts. According to the structure of *Cd81* gene, exon2 of *Cd81-201*(ENSMUST00000037941.10) transcript is recommended as the knockout region. The region contains 115bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cd81* 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, homozygotes for targeted null mutations exhibit altered antibody responses to specific antigens, reductions in peritoneal B-1 cell numbers and IL4 production, increased plasma IgA and IgM levels, and enlarged brains with more astrocytes and microglia.
- The effect of transcript 203,204,205,206 is unknown.
- The *Cd81* gene is located on the Chr7. 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)

Cd81 CD81 antigen [Mus musculus (house mouse)]

Gene ID: 12520, updated on 17-Nov-2020

Summary



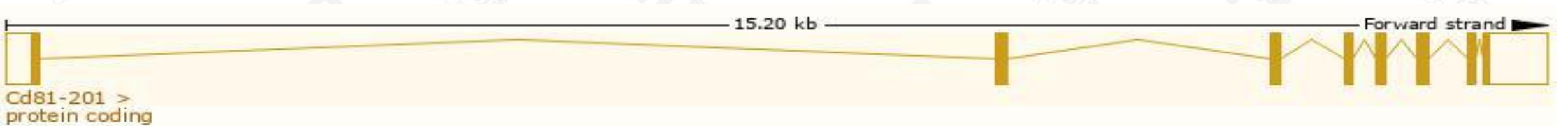
Official Symbol	Cd81 provided by MGI
Official Full Name	CD81 antigen provided by MGI
Primary source	MGI:MGI:1096398
See related	Ensembl:ENSMUSG00000037706
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ta, Tap, Tapa-1, Tapa1, Tsp, Tspan28
Expression	Ubiquitous expression in adrenal adult (RPKM 806.6), ovary adult (RPKM 391.5) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

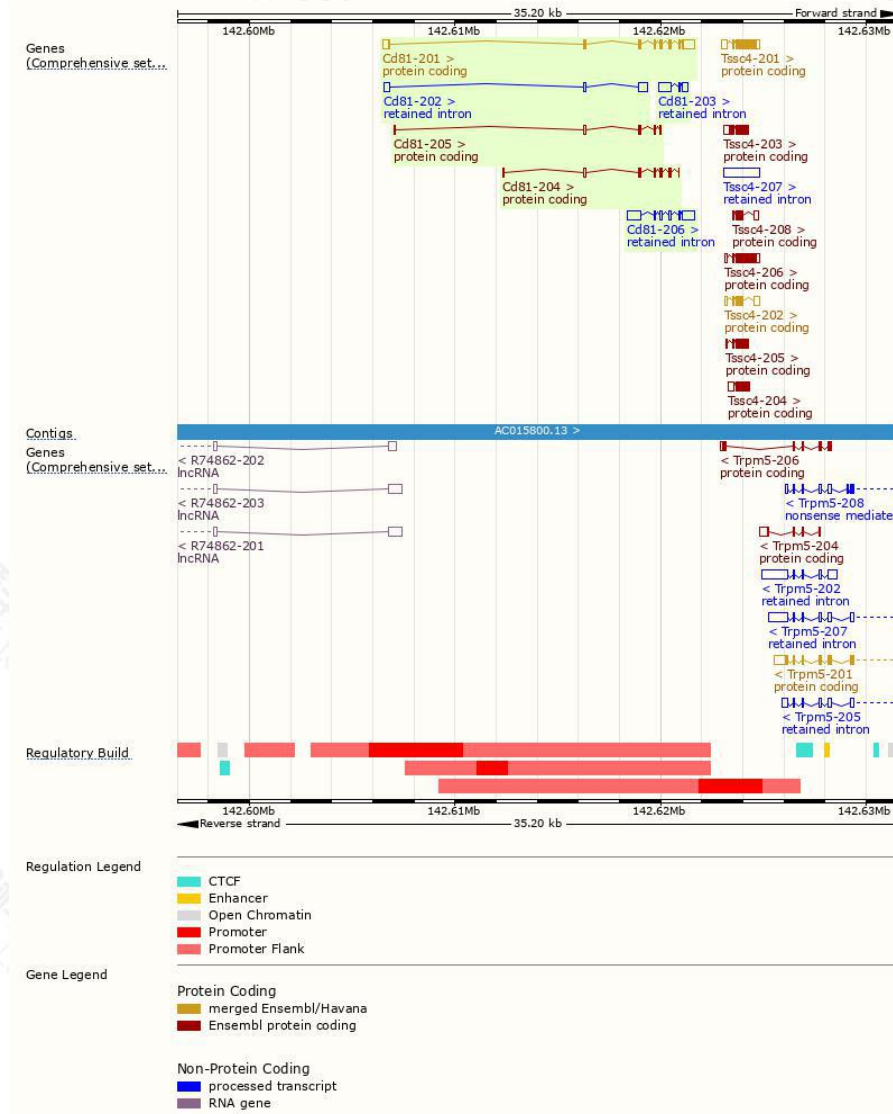
The gene has 6 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd81-201	ENSMUST00000037941.10	1533	236aa	Protein coding	CCDS22038		TSL:1 , GENCODE basic , APPRIS P1 ,
Cd81-204	ENSMUST00000141954.2	586	121aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Cd81-205	ENSMUST00000207448.2	425	68aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Cd81-206	ENSMUST00000208278.2	1607	No protein	Retained intron	-		TSL:2 ,
Cd81-203	ENSMUST00000132303.2	943	No protein	Retained intron	-		TSL:1 ,
Cd81-202	ENSMUST00000128762.9	793	No protein	Retained intron	-		TSL:2 ,

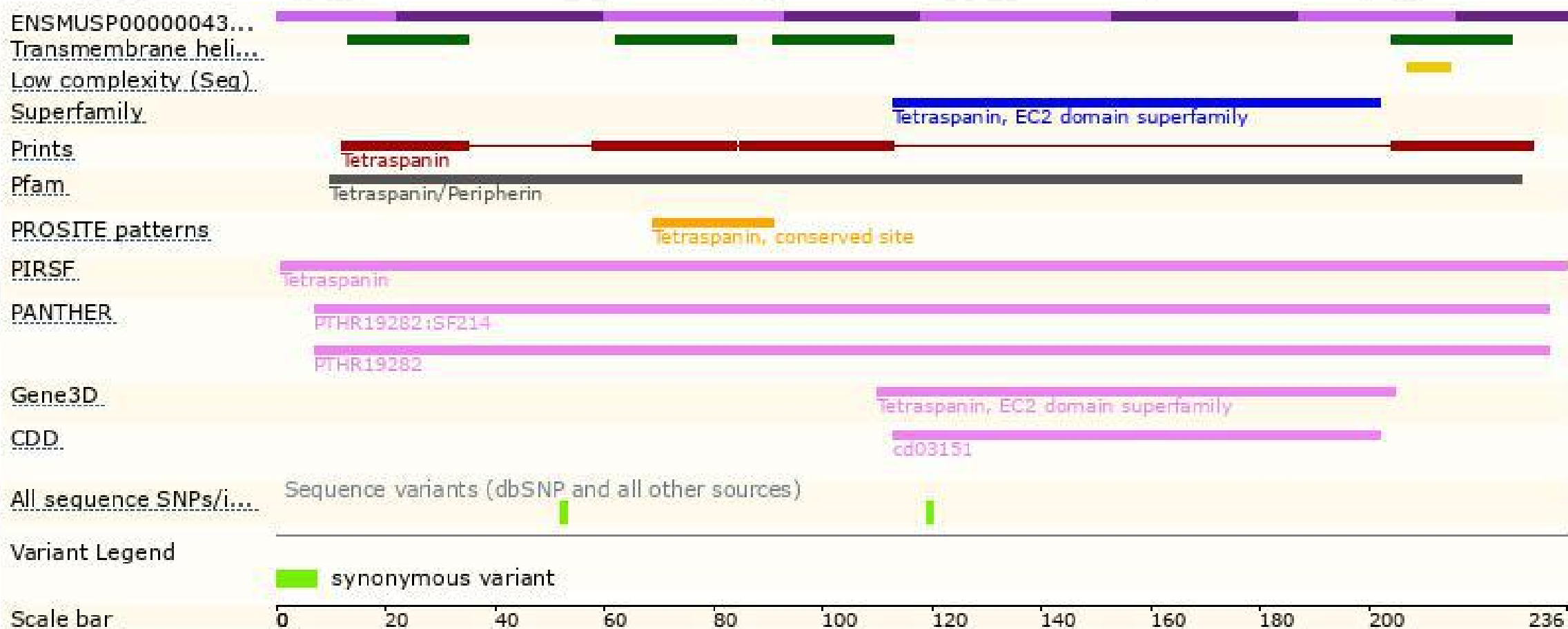
The strategy is based on the design of *Cd81-201* transcript, the transcription is shown below:



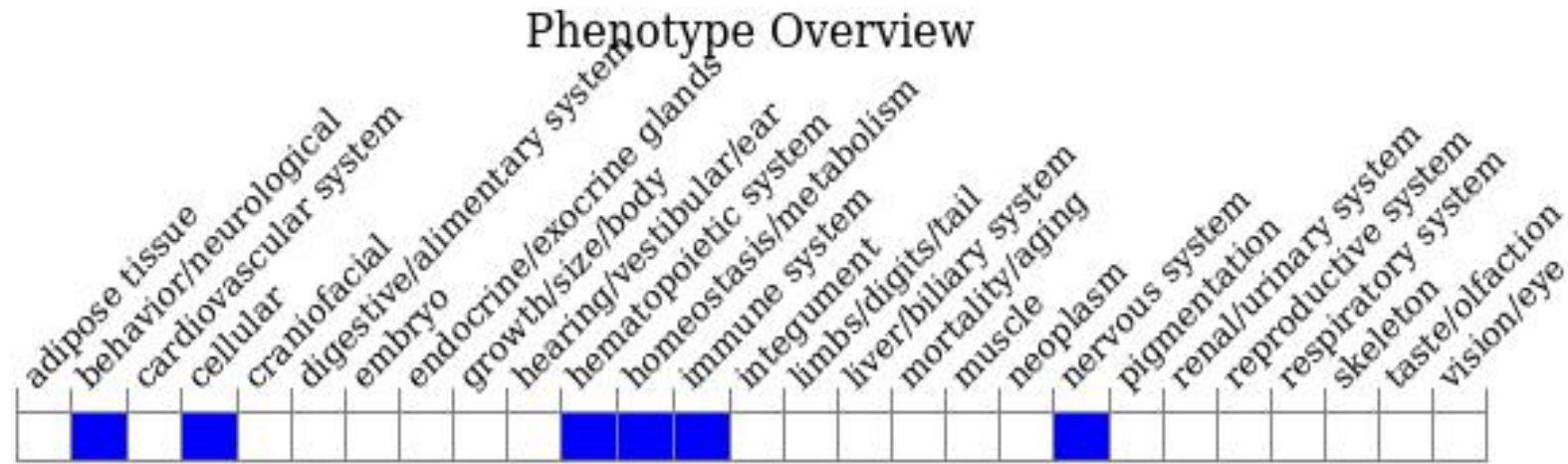
Genomic location distribution



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, homozygotes for targeted null mutations exhibit altered antibody responses to specific antigens, reductions in peritoneal B-1 cell numbers and IL4 production, increased plasma IgA and IgM levels, and enlarged brains with more astrocytes and microglia.

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

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