Cd3g Cas9-KO Strategy

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Project Overview

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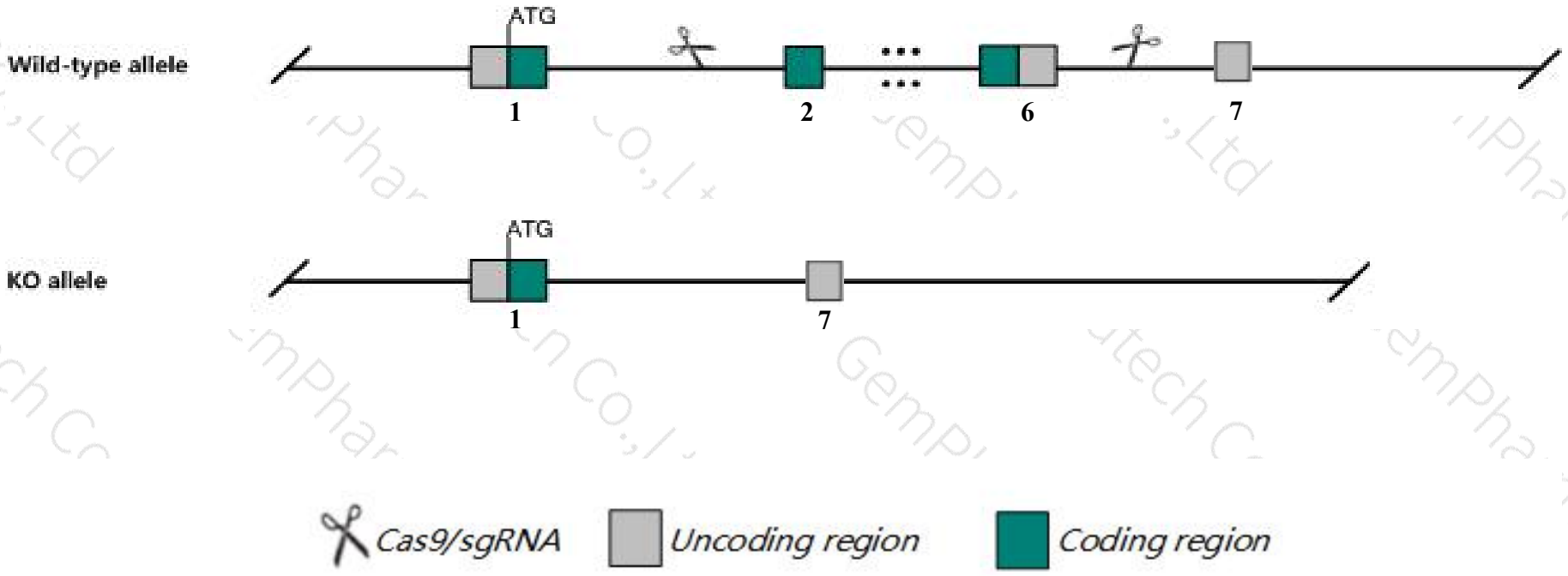
Project Name	***Cd3g***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd3g* gene. The schematic diagram is as follows:



Technical routes

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- The *Cd3g* gene has 3 transcripts. According to the structure of *Cd3g* gene, exon2-exon6 of *Cd3g-201* (ENSMUST00000002101.11) transcript is recommended as the knockout region.The region contains most of coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Cd3g* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit decreased thymocyte number and T cell response.

- The *Cd3g* gene is located on the Chr9. 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）

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Cd3g CD3 antigen, gamma polypeptide [*Mus musculus* (house mouse)]

Gene ID: 12502, updated on 12-Aug-2019

Summary

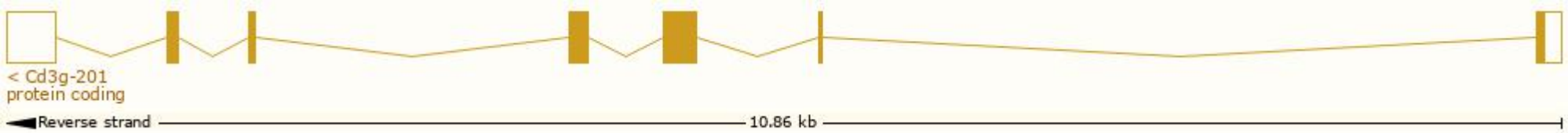
Official Symbol	Cd3g provided by MGI
Official Full Name	CD3 antigen, gamma polypeptide provided by MGI
Primary source	MGI:MGI:88333
See related	Ensembl:ENSMUSG00000002033
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	T3g; Ctg3; Ctg-3
Expression	Biased expression in thymus adult (RPKM 54.5), spleen adult (RPKM 5.5) and 2 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

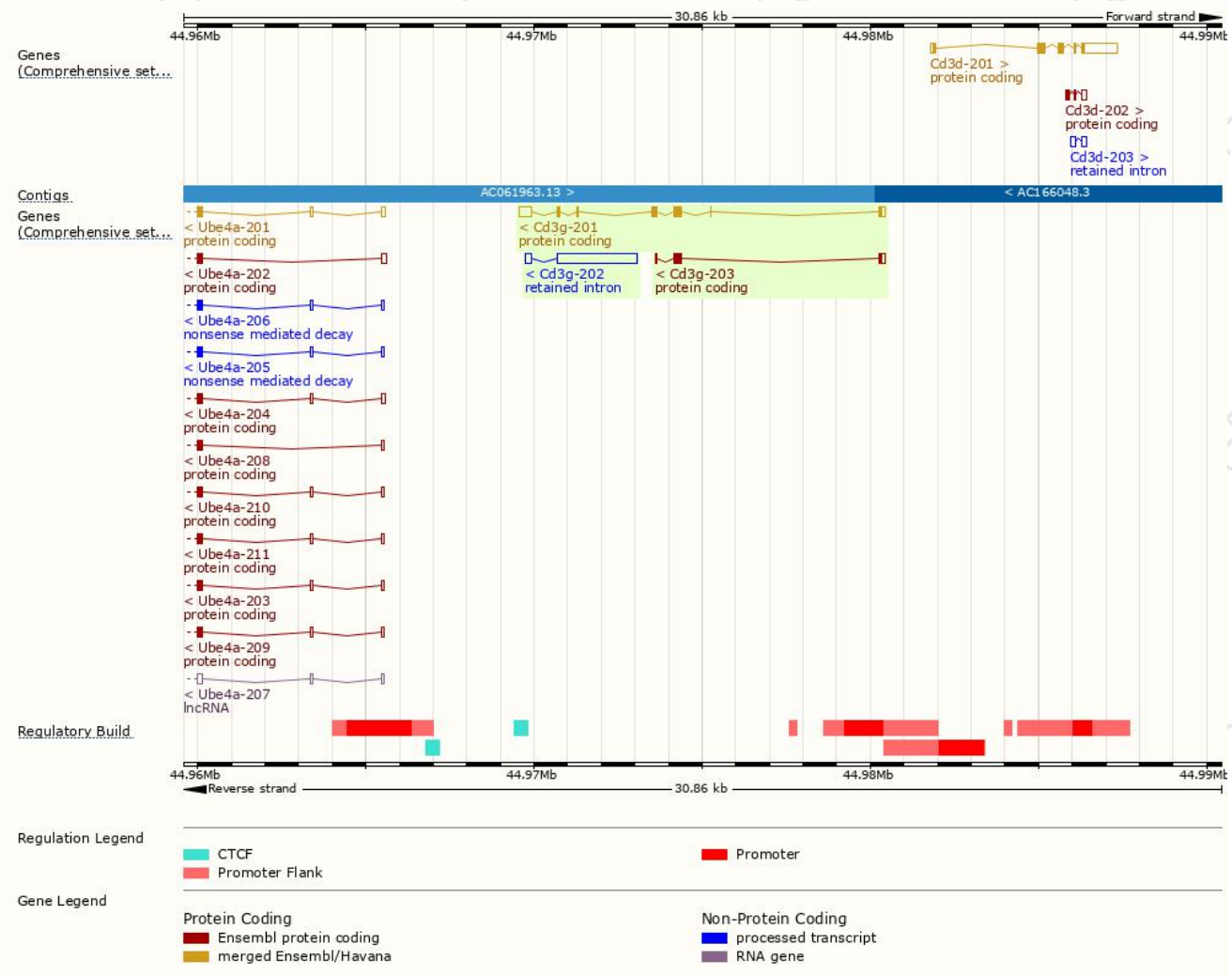
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd3g-201	ENSMUST00000002101.11	1023	182aa	Protein coding	CCDS23123	P11942 Q3U4Y3	TSL:1 GENCODE basic APPRIS P1
Cd3g-203	ENSMUST00000160886.1	412	100aa	Protein coding	-	E0CXP3	CDS 3' incomplete TSL:5
Cd3g-202	ENSMUST00000159019.2	2539	No protein	Retained intron	-	-	TSL:2

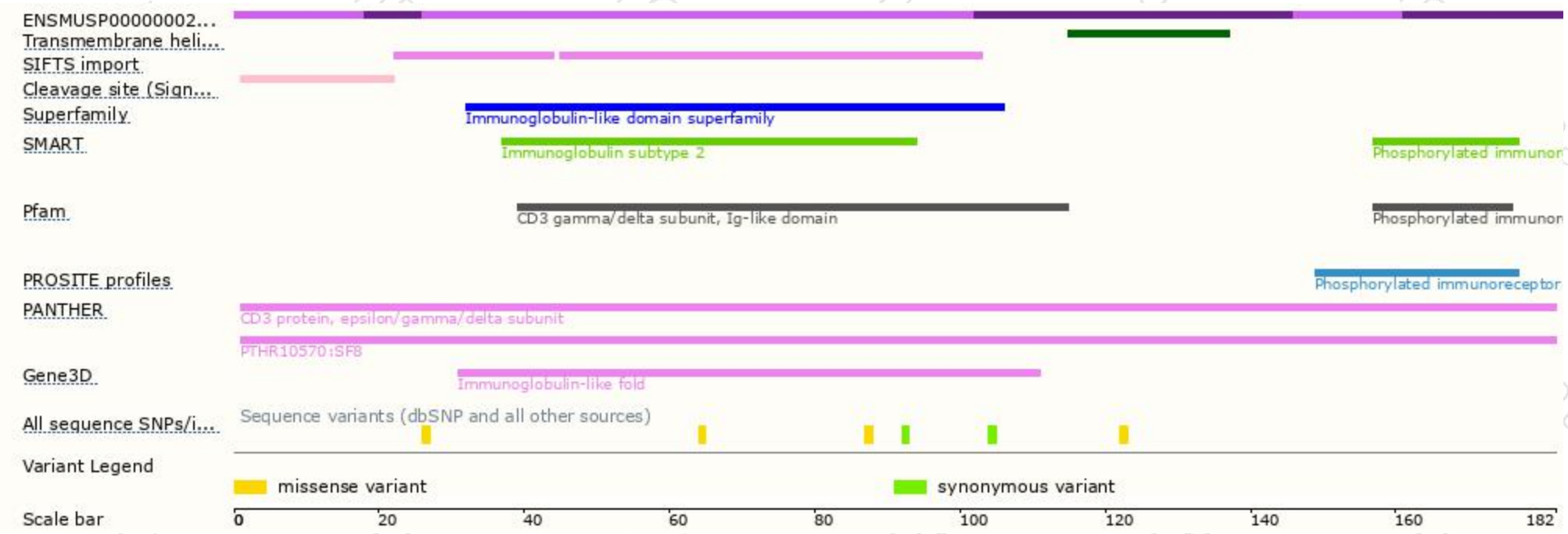
The strategy is based on the design of *Cd3g-201* transcript,The transcription is shown below



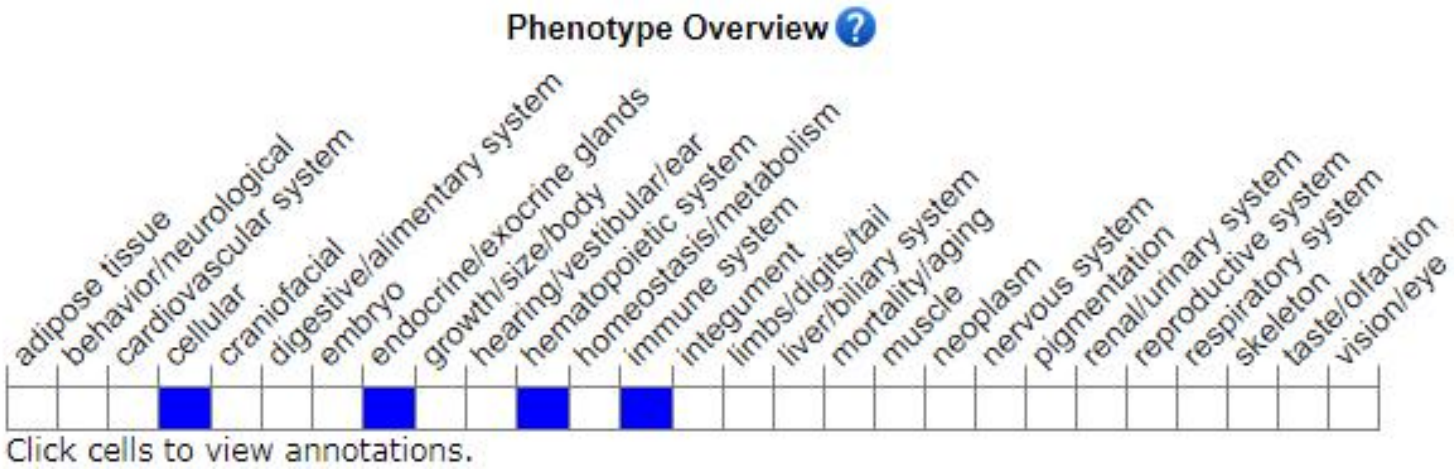
Genomic location distribution



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,Mice homozygous for a knock-out allele exhibit decreased thymocyte number and T cell response.

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