

# *Cd7* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Cd7*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd7* gene. The schematic diagram is as follows:



- The *Cd7* gene has 2 transcripts. According to the structure of *Cd7* gene, exon1 of *Cd7-201* (ENSMUST00000026159.5) 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 *Cd7* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, homozygous mutation of this gene results in a 60% increase of CD4+CD8+ thymocytes at 3 months of age.
- The KO region contains intron of the *Gm11775* gene. Knockout the region may affect the function of *Gm11775* gene.
- The *Cd7* 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)

## Cd7 CD7 antigen [ *Mus musculus* (house mouse) ]

Gene ID: 12516, updated on 12-Aug-2019

### Summary

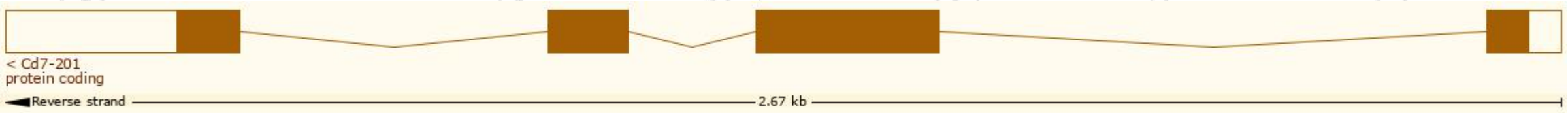
Official Symbol	Cd7 provided by <a href="#">MGI</a>
Official Full Name	CD7 antigen provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:88344</a>
See related	<a href="#">Ensembl:ENSMUSG00000025163</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in spleen adult (RPKM 29.9), duodenum adult (RPKM 18.7) and 7 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

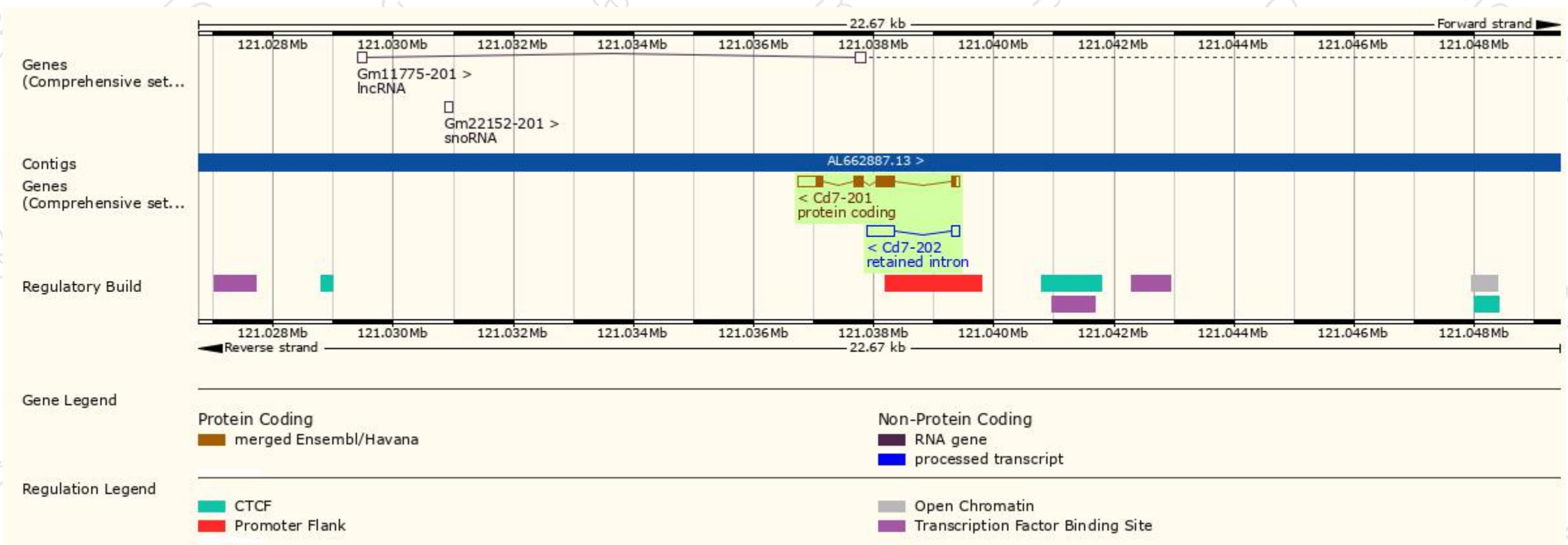
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd7-201	<a href="#">ENSMUST00000026159.5</a>	982	<a href="#">210aa</a>	Protein coding	<a href="#">CCDS25764</a>	<a href="#">P50283</a> <a href="#">Q3U4A8</a>	TSL:1 GENCODE basic APPRIS P1
Cd7-202	<a href="#">ENSMUST00000163465.1</a>	592	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Cd7-201* transcript, the transcription is shown below:



# Genomic location distribution

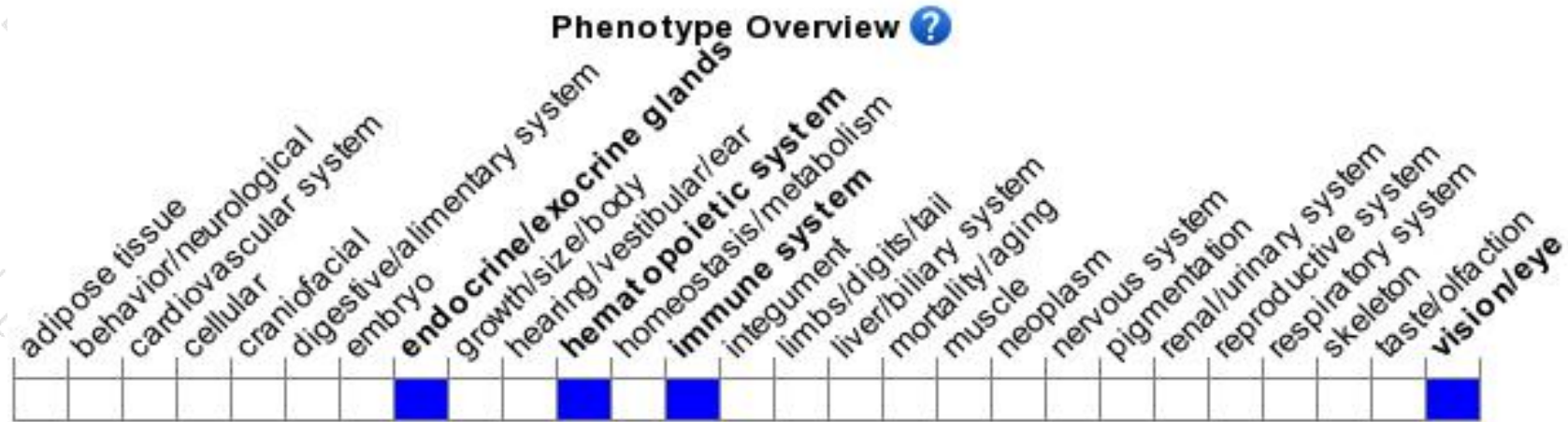




# Protein domain



# 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 mutation of this gene results in a 60% increase of CD4+CD8+ thymocytes at 3 months of age.

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

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