

# *Pde7a* Cas9-CKO Strategy

**Designer:**

**JiaYu**

**Reviewer:**

**Xiaojing Li**

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# Project Overview

**Project Name**

*Pde7a*

**Project type**

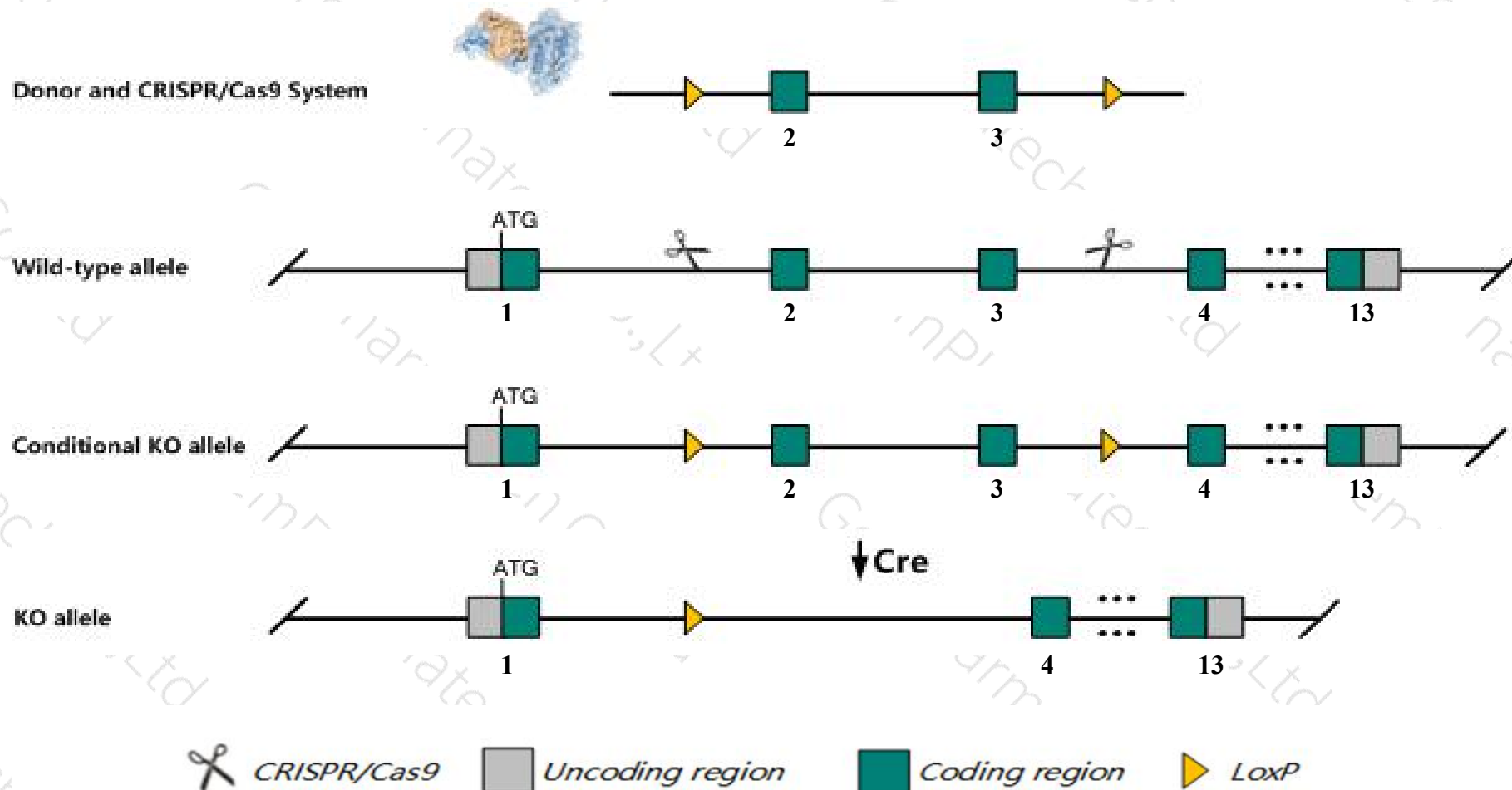
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pde7a* gene. The schematic diagram is as follows:



- The *Pde7a* gene has 10 transcripts. According to the structure of *Pde7a* gene, exon2-exon3 of *Pde7a*-202 (ENSMUST00000099195.9) transcript is recommended as the knockout region. The region contains 145bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pde7a* 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, Homozygous inactivation of this locus does not impair T cell function but affects the humoral immune response.
- The *Pde7a* gene is located on the Chr3. 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)

## Pde7a phosphodiesterase 7A [Mus musculus (house mouse)]

Gene ID: 18583, updated on 31-Jan-2019

### Summary



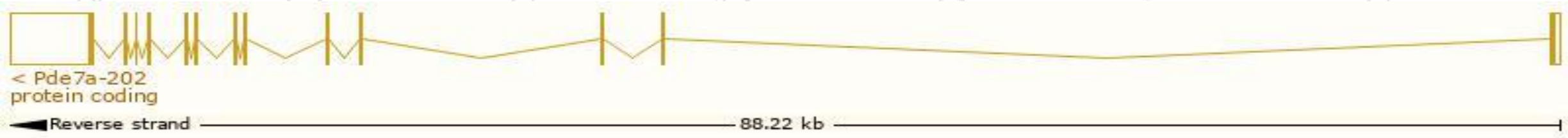
<b>Official Symbol</b>	Pde7a provided by <a href="#">MGI</a>
<b>Official Full Name</b>	phosphodiesterase 7A provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1202402</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000069094</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	AU015378, AW047537
<b>Expression</b>	Broad expression in CNS E11.5 (RPKM 11.8), whole brain E14.5 (RPKM 10.9) and 24 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

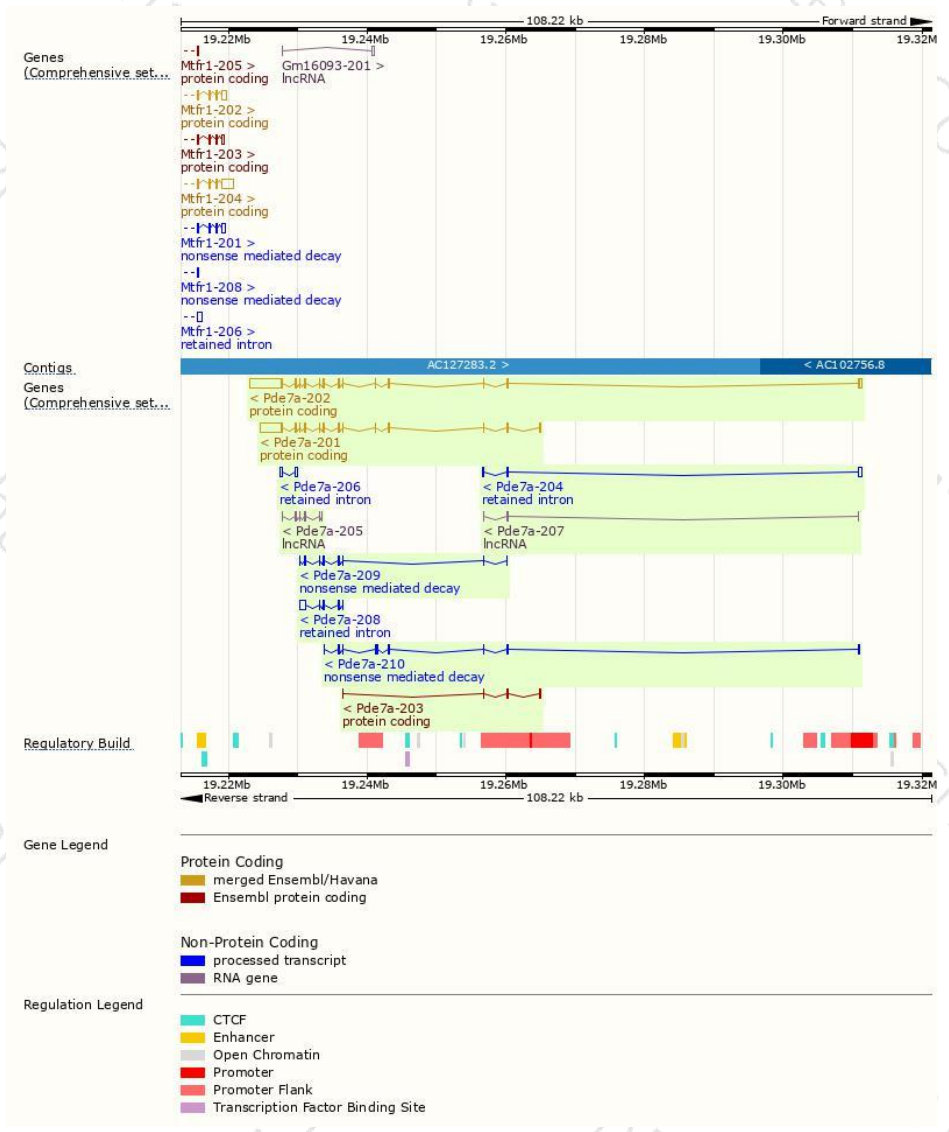
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pde7a-202	<a href="#">ENSMUST00000099195.9</a>	6298	<a href="#">482aa</a>	Protein coding	<a href="#">CCDS50871</a>	<a href="#">P70453 Q3U3Y7</a>	TSL:1 GENCODE basic APPRIS ALT 1
Pde7a-201	<a href="#">ENSMUST00000091314.10</a>	4454	<a href="#">456aa</a>	Protein coding	<a href="#">CCDS38398</a>	<a href="#">P70453</a>	TSL:1 GENCODE basic APPRIS P3
Pde7a-203	<a href="#">ENSMUST00000121951.1</a>	382	<a href="#">68aa</a>	Protein coding	-	<a href="#">D3Z6W6</a>	TSL:3 GENCODE basic
Pde7a-210	<a href="#">ENSMUST00000156652.7</a>	927	<a href="#">176aa</a>	Nonsense mediated decay	-	<a href="#">D6RIM5</a>	TSL:5
Pde7a-209	<a href="#">ENSMUST00000149081.7</a>	724	<a href="#">31aa</a>	Nonsense mediated decay	-	<a href="#">F6VJY9</a>	CDS 5' incomplete TSL:5
Pde7a-208	<a href="#">ENSMUST00000148590.7</a>	1120	No protein	Retained intron	-	-	TSL:5
Pde7a-206	<a href="#">ENSMUST00000141621.1</a>	798	No protein	Retained intron	-	-	TSL:2
Pde7a-204	<a href="#">ENSMUST00000129060.7</a>	670	No protein	Retained intron	-	-	TSL:3
Pde7a-205	<a href="#">ENSMUST00000139426.7</a>	605	No protein	lncRNA	-	-	TSL:3
Pde7a-207	<a href="#">ENSMUST00000143120.1</a>	245	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Pde7a-202* transcript,The transcription is shown below



# Genomic location distribution





# Protein domain

ENSMUSP000000096...

[Low complexity \(Seq\)](#)

[Superfamily](#)

[SMART](#)

[Prints](#)

[Pfam](#)

[PROSITE profiles](#)

[PROSITE patterns](#)

[PANTHER](#)

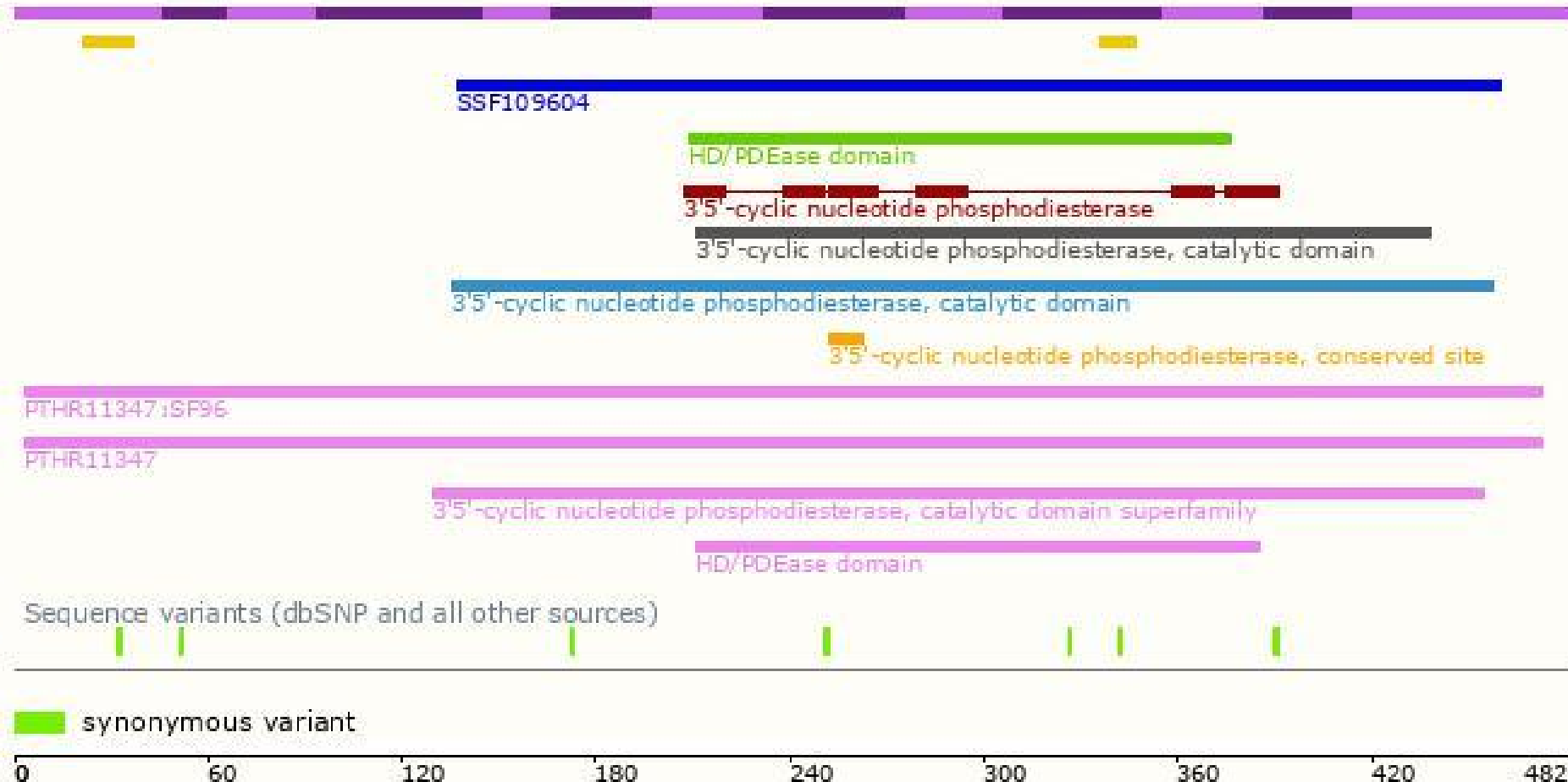
[Gene3D](#)

[CDD](#)

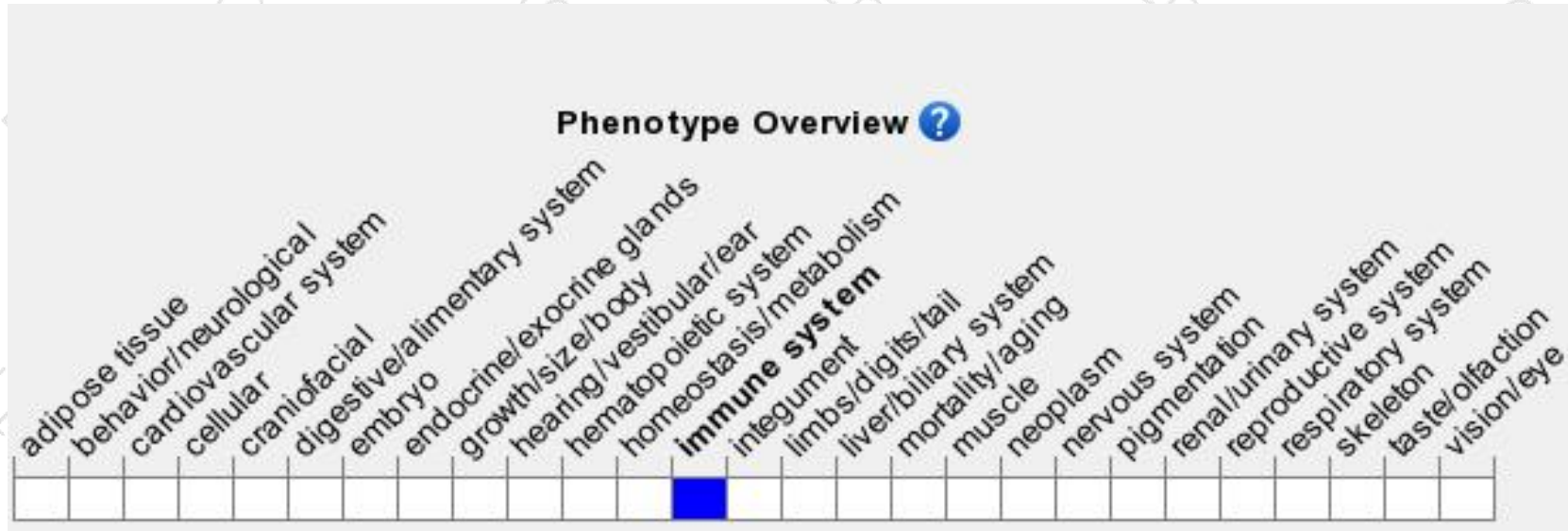
[All sequence SNPs/i...](#)

[Variant Legend](#)

[Scale bar](#)



# 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 inactivation of this locus does not impair T cell function but affects the humoral immune response.

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

Tel: 400-9660890

