

# *C8a* Cas9-CKO Strategy

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# Project Overview

**Project Name**

***C8a***

**Project type**

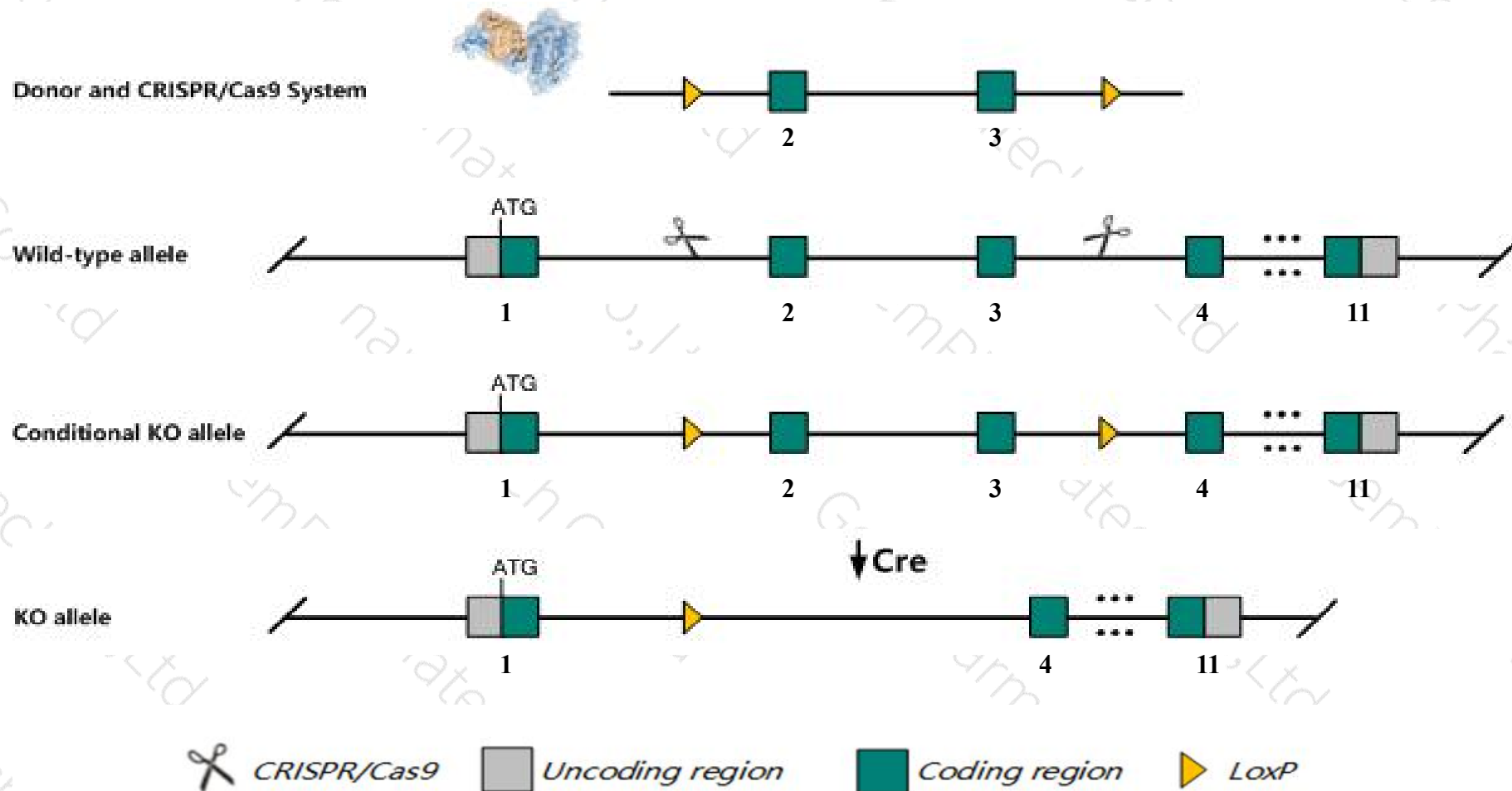
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *C8a* gene. The schematic diagram is as follows:



- The *C8a* gene has 4 transcripts. According to the structure of *C8a* gene, exon2-exon3 of *C8a-202* (ENSMUST00000064873.8) transcript is recommended as the knockout region. The region contains 239bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *C8a* 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.

# Notice

- The *C8a* gene is located on the Chr4. 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.
- Transcript *C8a*-204 may not be affected.
- 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)

## C8a complement component 8, alpha polypeptide [Mus musculus (house mouse)]

Gene ID: 230558, updated on 13-Mar-2020

### Summary



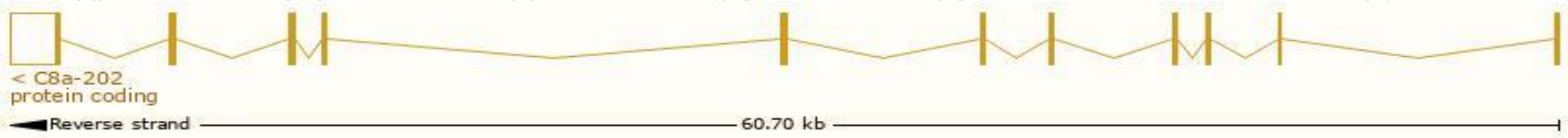
<b>Official Symbol</b>	C8a provided by <a href="#">MGI</a>
<b>Official Full Name</b>	complement component 8, alpha polypeptide provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2668347</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000035031</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	REVIEWED
<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>Summary</b>	This gene encodes the alpha subunit of complement component C8 that participates in the assembly of the complement membrane attack complex. The encoded preproprotein undergoes proteolytic processing to generate the alpha subunit, which associates with the beta and gamma subunits to form a trimeric complement component, C8. Alternative splicing results in multiple transcript variants encoding different isoforms that may undergo similar proteolytic processing. This gene is located adjacent to the gene encoding the beta subunit. [provided by RefSeq, Oct 2015]
<b>Expression</b>	Biased expression in liver adult (RPKM 25.6), liver E18 (RPKM 22.4) and 3 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

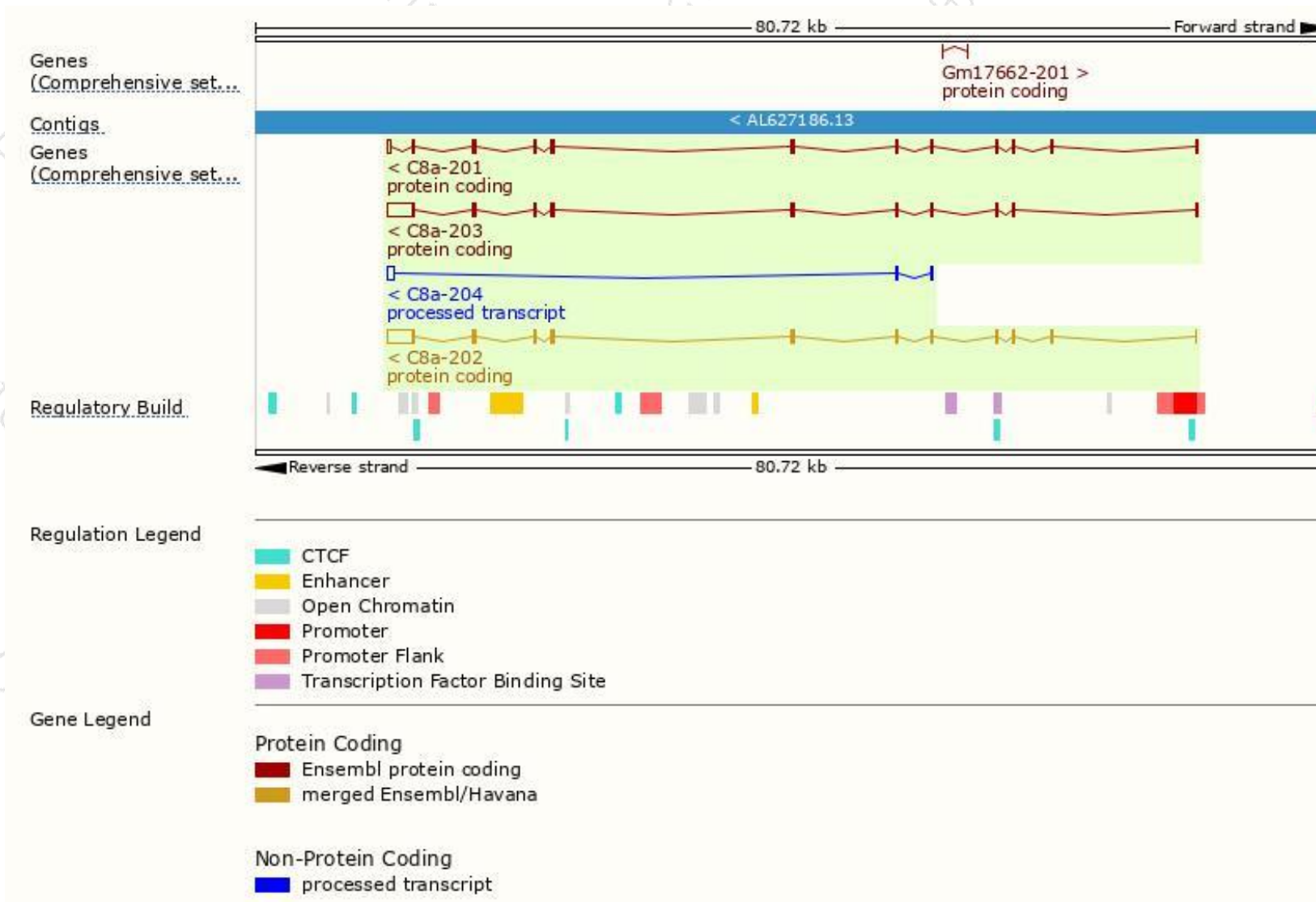
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
C8a-202	<a href="#">ENSMUST00000064873.8</a>	3617	<a href="#">587aa</a>	Protein coding	<a href="#">CCDS18415</a>	<a href="#">Q8K182</a>	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P3
C8a-203	<a href="#">ENSMUST00000106808.9</a>	3539	<a href="#">543aa</a>	Protein coding	<a href="#">CCDS71433</a>	<a href="#">A2A998</a>	TSL:2 GENCODE basic
C8a-201	<a href="#">ENSMUST00000048947.14</a>	1993	<a href="#">580aa</a>	Protein coding	<a href="#">CCDS84763</a>	<a href="#">A2A997</a>	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS ALT2
C8a-204	<a href="#">ENSMUST00000152146.1</a>	749	No protein	Processed transcript	-	-	TSL:5

The strategy is based on the design of C8a-202 transcript,The transcription is shown below

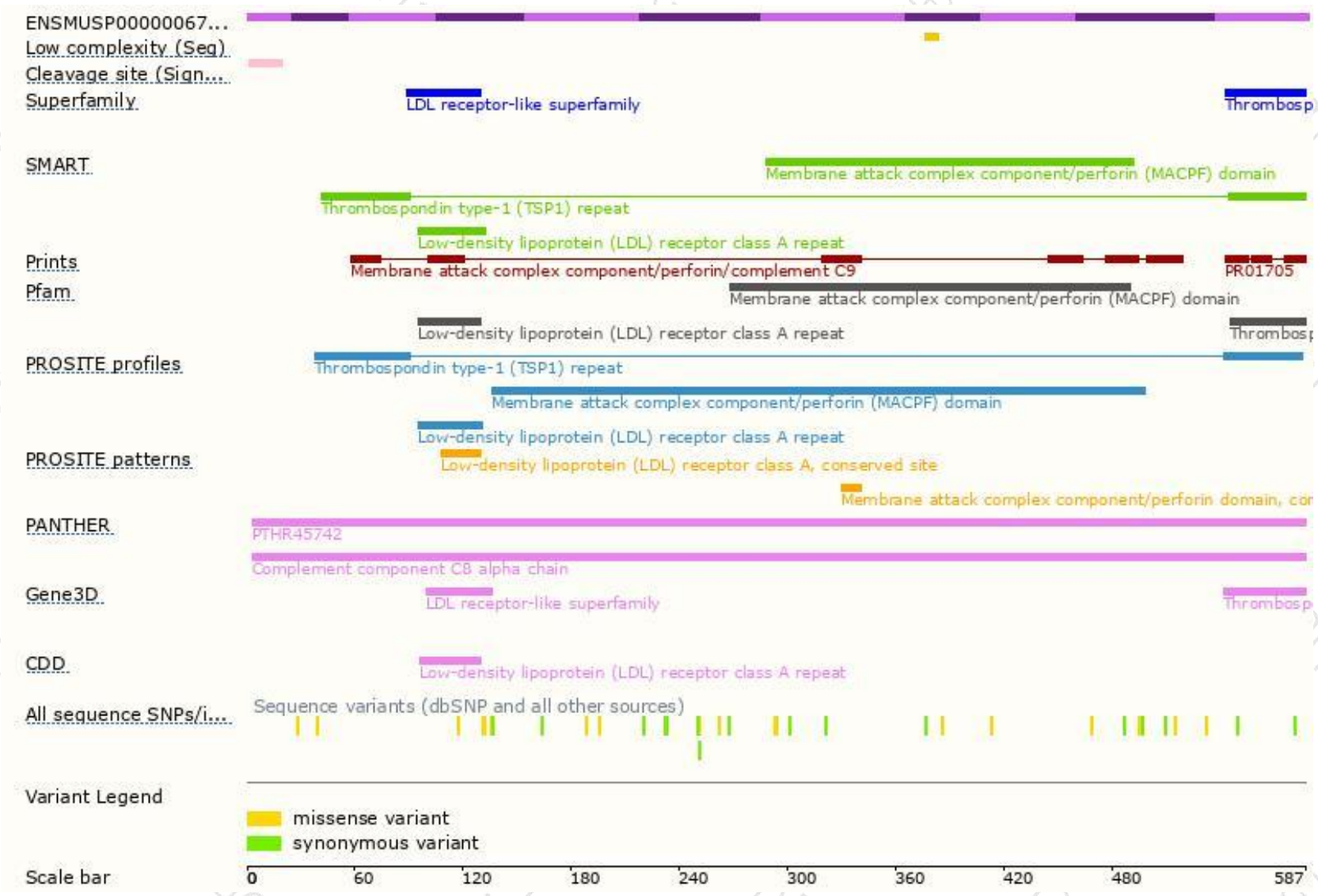


# Genomic location distribution





# Protein domain



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

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