

# *Agpat3* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Agpat3*

**Project type**

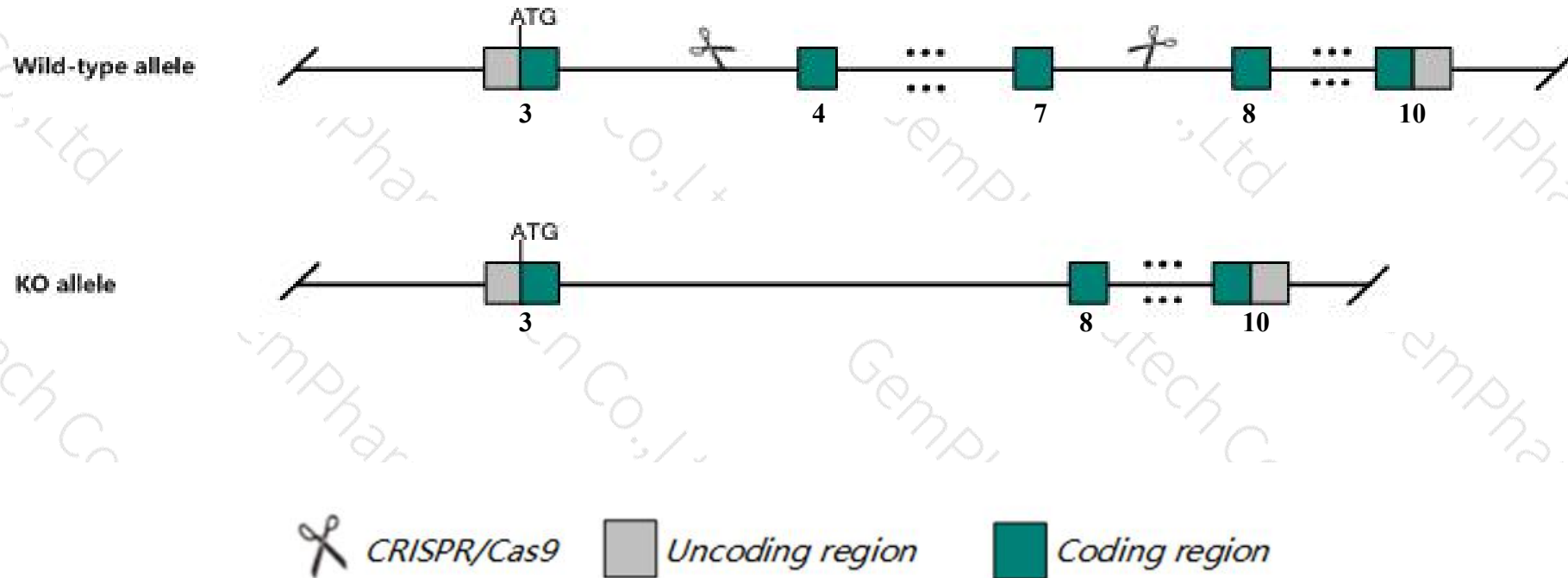
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Agpat3* gene. The schematic diagram is as follows:



- The *Agpat3* gene has 13 transcripts. According to the structure of *Agpat3* gene, exon4-exon7 of *Agpat3-201* (ENSMUST00000001240.11) transcript is recommended as the knockout region. The region contains 589bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Agpat3* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit male infertility with oligozoospermia, teratozoospermia.
- *Agpat3-206* and *Agpat3-206* transcripts are incomplete, so the effect on them are unknown.
- The *Agpat3* gene is located on the Chr10. 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.



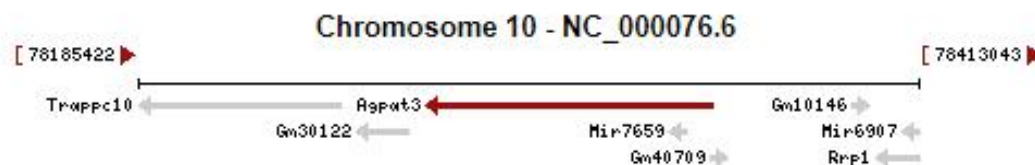
# Gene information (NCBI)

## Agpat3 1-acylglycerol-3-phosphate O-acyltransferase 3 [ *Mus musculus* (house mouse) ]

Gene ID: 28169, updated on 10-Oct-2019

### Summary

Official Symbol	Agpat3 provided by <a href="#">MGI</a>
Official Full Name	1-acylglycerol-3-phosphate O-acyltransferase 3 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1336186</a>
See related	<a href="#">Ensembl:ENSMUSG00000001211</a>
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ipaat3; AW061257; AW493985; D10Jhu12e
Expression	Ubiquitous expression in testis adult (RPKM 65.3), adrenal adult (RPKM 53.5) and 26 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

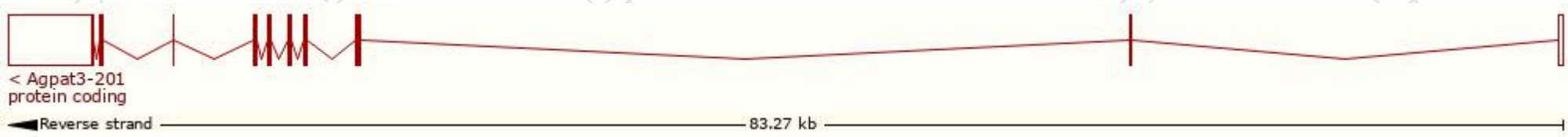


# Transcript information (Ensembl)

The gene has 13 transcripts,all transcripts are shown below:

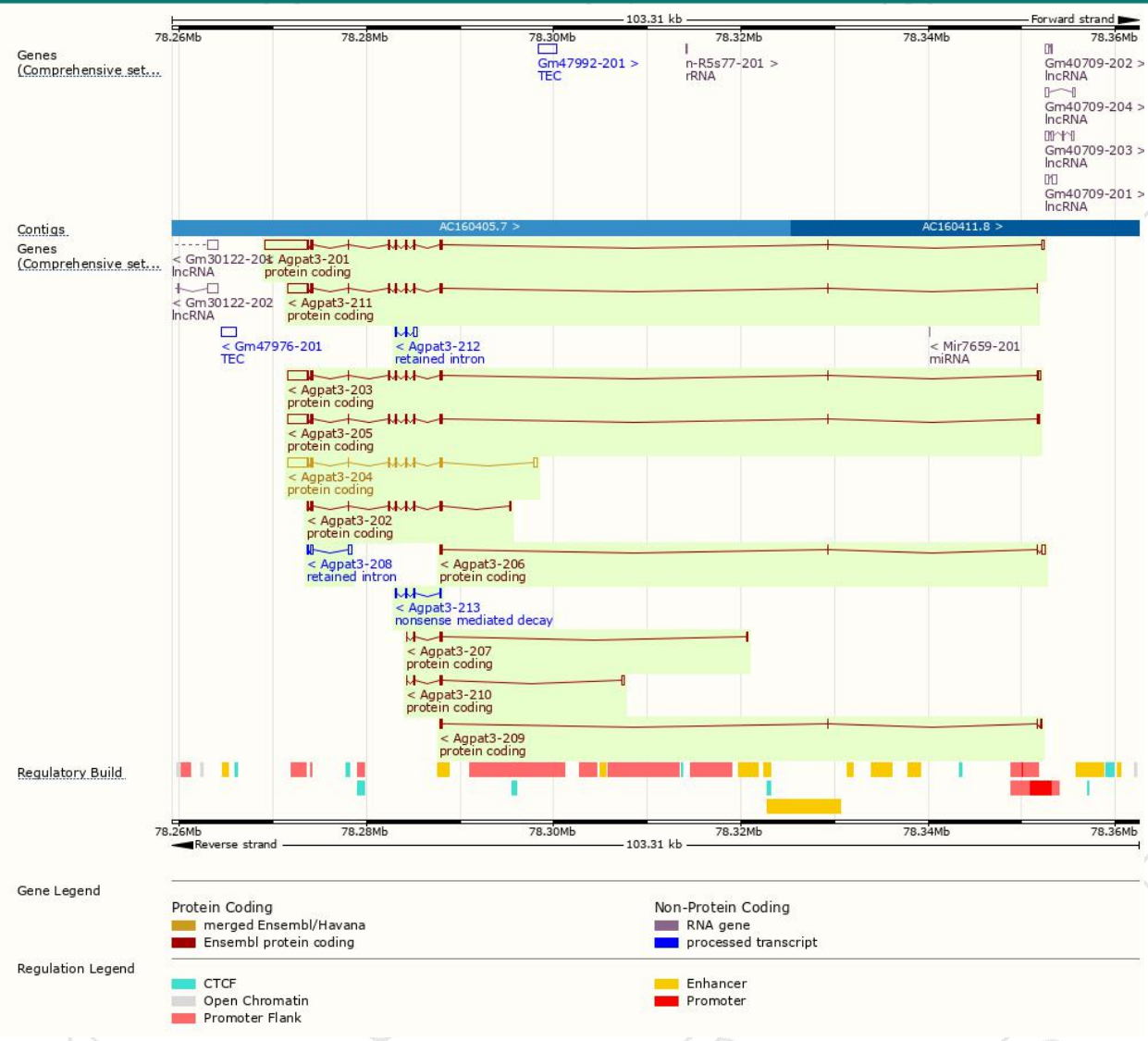
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Agpat3-201	<a href="#">ENSMUST00000001240.11</a>	5980	<a href="#">376aa</a>	Protein coding	<a href="#">CCDS23963</a>	<a href="#">Q9D517</a>	TSL:1 GENCODE basic APPRIS P1
Agpat3-203	<a href="#">ENSMUST00000105388.7</a>	3681	<a href="#">376aa</a>	Protein coding	<a href="#">CCDS23963</a>	<a href="#">Q9D517</a>	TSL:5 GENCODE basic APPRIS P1
Agpat3-204	<a href="#">ENSMUST00000105389.7</a>	3678	<a href="#">376aa</a>	Protein coding	<a href="#">CCDS23963</a>	<a href="#">Q9D517</a>	TSL:1 GENCODE basic APPRIS P1
Agpat3-205	<a href="#">ENSMUST00000105390.7</a>	3513	<a href="#">376aa</a>	Protein coding	<a href="#">CCDS23963</a>	<a href="#">Q9D517</a>	TSL:5 GENCODE basic APPRIS P1
Agpat3-211	<a href="#">ENSMUST00000166360.7</a>	3439	<a href="#">376aa</a>	Protein coding	<a href="#">CCDS23963</a>	<a href="#">Q9D517</a>	TSL:1 GENCODE basic APPRIS P1
Agpat3-202	<a href="#">ENSMUST00000105387.7</a>	1316	<a href="#">376aa</a>	Protein coding	<a href="#">CCDS23963</a>	<a href="#">Q9D517</a>	TSL:1 GENCODE basic APPRIS P1
Agpat3-210	<a href="#">ENSMUST00000150828.1</a>	709	<a href="#">128aa</a>	Protein coding	-	<a href="#">D3YUW0</a>	CDS 3' incomplete TSL:3
Agpat3-206	<a href="#">ENSMUST00000138035.7</a>	642	<a href="#">56aa</a>	Protein coding	-	<a href="#">D3YTN7</a>	CDS 3' incomplete TSL:2
Agpat3-207	<a href="#">ENSMUST00000139282.7</a>	513	<a href="#">144aa</a>	Protein coding	-	<a href="#">D3Z1M6</a>	CDS 3' incomplete TSL:3
Agpat3-209	<a href="#">ENSMUST00000146899.1</a>	413	<a href="#">53aa</a>	Protein coding	-	<a href="#">D3YV65</a>	CDS 3' incomplete TSL:3
Agpat3-213	<a href="#">ENSMUST00000219932.1</a>	580	<a href="#">119aa</a>	Nonsense mediated decay	-	<a href="#">A0A1W2P764</a>	CDS 5' incomplete TSL:3
Agpat3-208	<a href="#">ENSMUST00000146296.1</a>	788	No protein	Retained intron	-	-	TSL:2
Agpat3-212	<a href="#">ENSMUST00000219907.1</a>	699	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Agpat3-201* transcript,The transcription is shown below



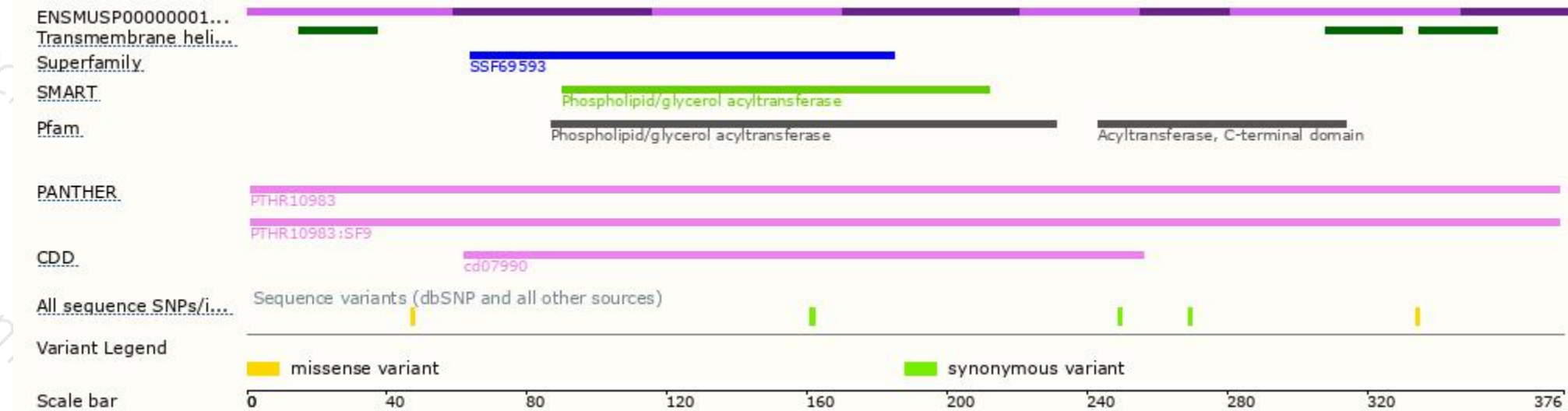


# Genomic location distribution

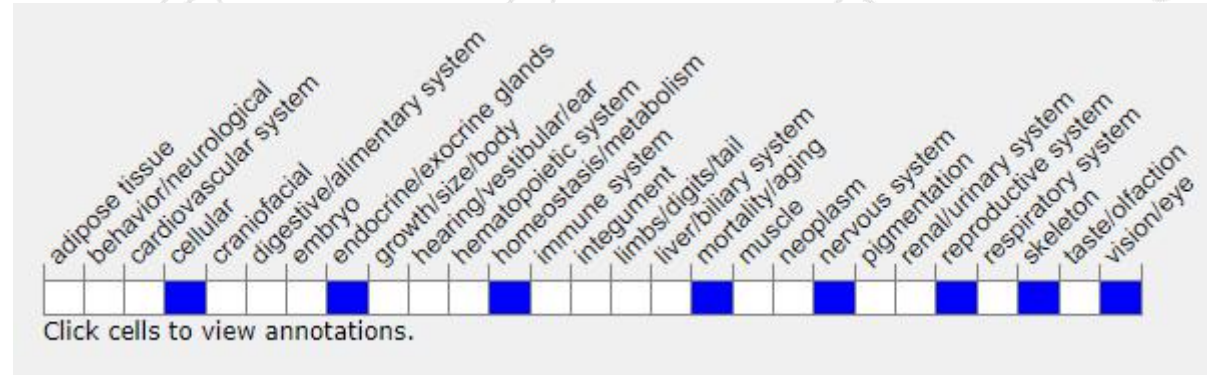




# Protein domain



# 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 male infertility with oligozoospermia, teratozoospermia.

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

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