

# *Cnpy3* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Cnpy3*

**Project type**

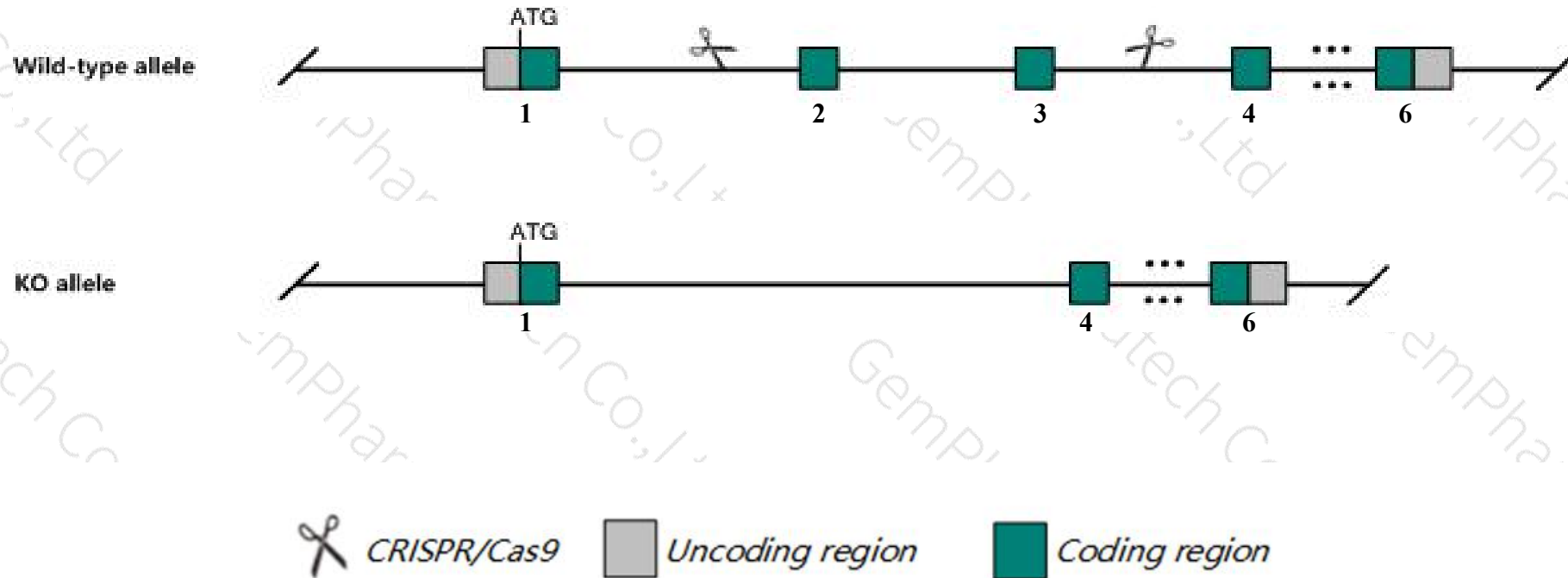
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cnpy3* gene. The schematic diagram is as follows:



- The *Cnpy3* gene has 5 transcripts. According to the structure of *Cnpy3* gene, exon2-exon3 of *Cnpy3-201* (ENSMUST00000059844.12) transcript is recommended as the knockout region. The region contains 221bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cnpy3* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null allele exhibit postnatal growth retardation, postnatal lethality and defects in immune responses mediated by Toll-like receptors.
- The knockout region is in the intron of transcript 203, and the effect of transcript 203 is unknown.
- Transcript 204 is unaffected.
- The knockout region is in the intron of lncRNA *Gm26904*, and the effect of *Gm26904* is unknown.
- The *Cnpy3* gene is located on the Chr17. 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)

## Cnpy3 canopy FGF signaling regulator 3 [ *Mus musculus* (house mouse) ]

Gene ID: 72029, updated on 14-Aug-2019

### Summary

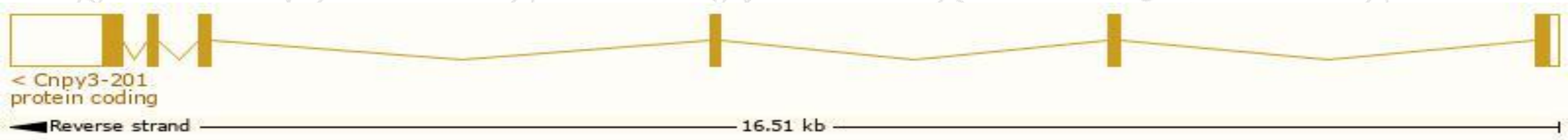
Official Symbol	Cnpy3 provided by MGI
Official Full Name	canopy FGF signaling regulator 3 provided by MGI
Primary source	MGI:MGI:1919279
See related	Ensembl:ENSMUSG00000023973
Gene type	protein coding
RefSeq status	REVIEWED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CAG4A; ERDA5; Tnrc5; PRAT4A; AI413153; 1600025D17Rik; 2410050O22Rik
Summary	This gene encodes a member of the canopy family of proteins. The encoded protein may play a role in the maturation of toll-like receptors. Homozygous knockout mice for this gene show reduced cell surface expression of toll-like receptors and an impaired immune response including reduced production of cytokines in a mouse model of sepsis. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Apr 2015]
Expression	Ubiquitous expression in spleen adult (RPKM 22.5), adrenal adult (RPKM 22.5) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

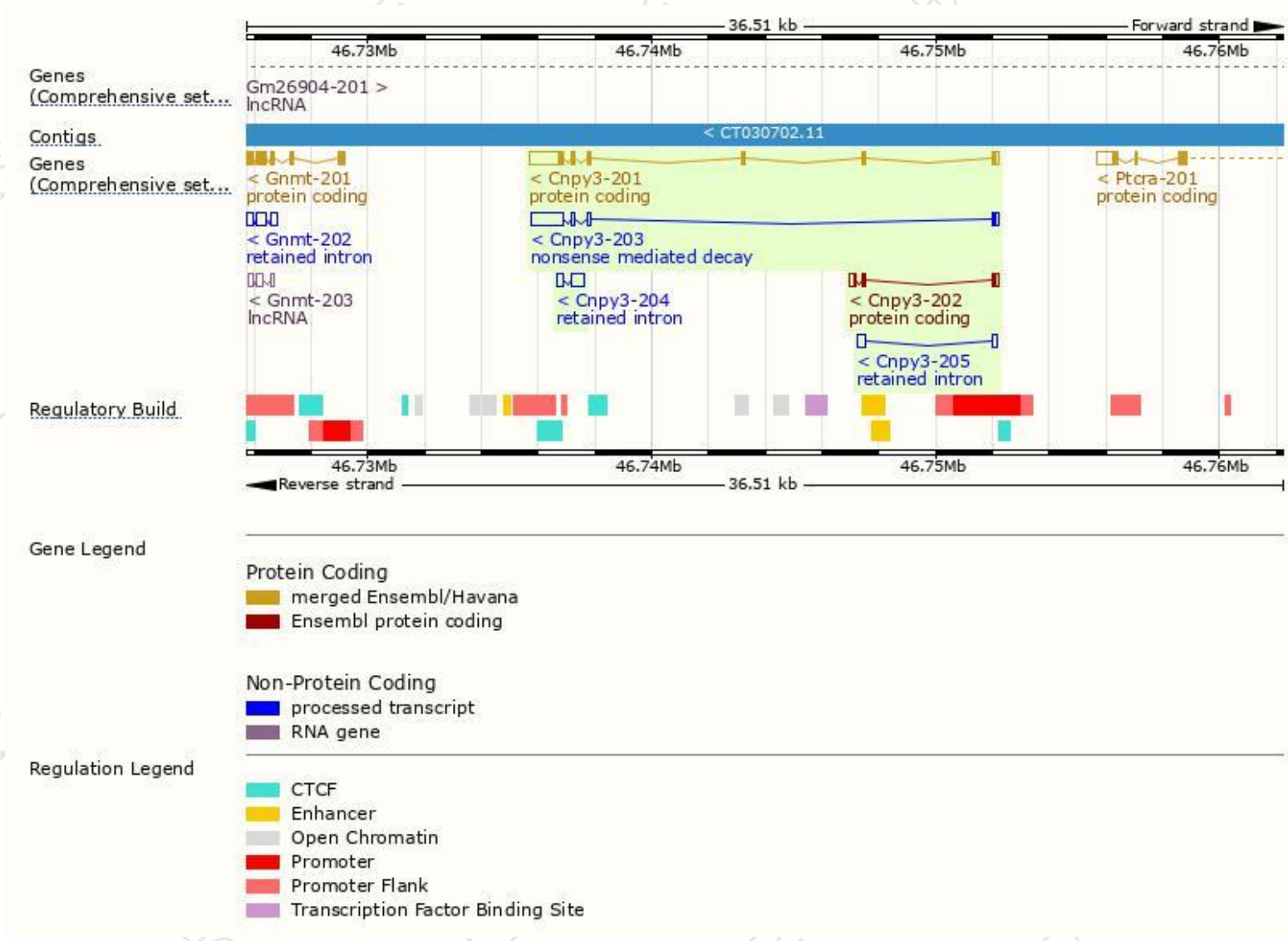
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cnpy3-201	<a href="#">ENSMUST00000059844.12</a>	1908	<a href="#">276aa</a>	Protein coding	<a href="#">CCDS28839</a>	<a href="#">Q9DAU1</a>	TSL:1 GENCODE basic APPRIS P1
Cnpy3-202	<a href="#">ENSMUST00000121671.1</a>	561	<a href="#">118aa</a>	Protein coding	-	<a href="#">B0V2V1</a>	TSL:2 GENCODE basic
Cnpy3-203	<a href="#">ENSMUST00000129200.1</a>	1619	<a href="#">56aa</a>	Nonsense mediated decay	-	<a href="#">D6RI28</a>	TSL:1
Cnpy3-204	<a href="#">ENSMUST00000145877.1</a>	709	No protein	Retained intron	-	-	TSL:1
Cnpy3-205	<a href="#">ENSMUST00000148656.1</a>	531	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Cnpy3-201* transcript,The transcription is shown below

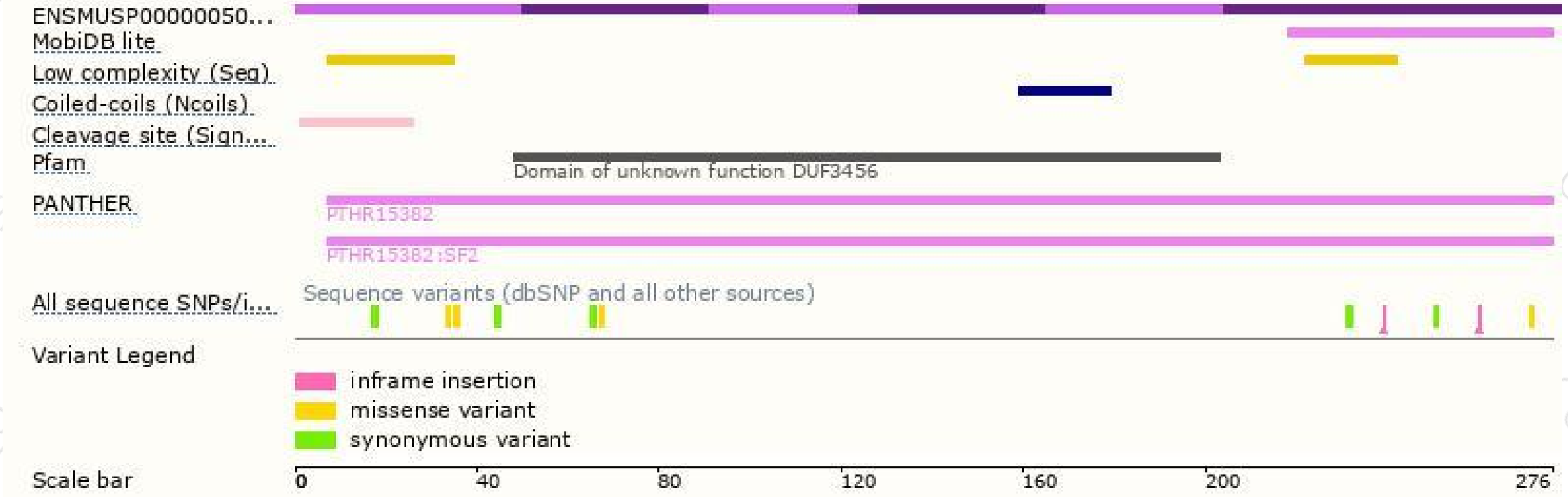


# Genomic location distribution

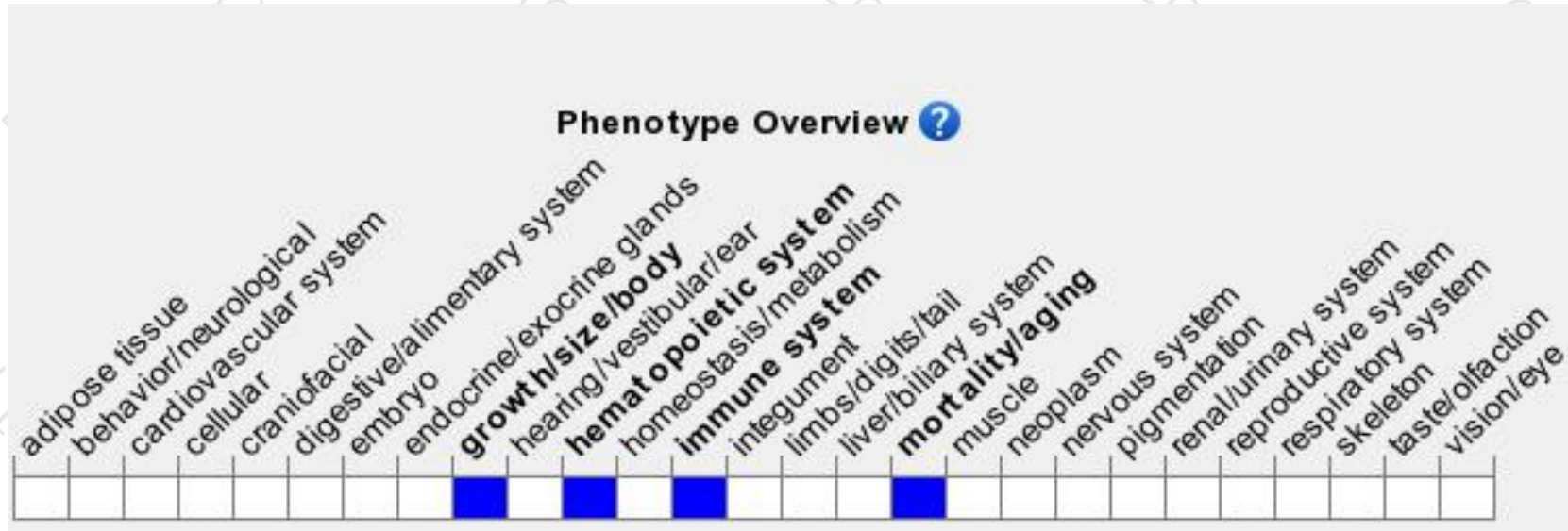




# Protein domain



# 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 null allele exhibit postnatal growth retardation, postnatal lethality and defects in immune responses mediated by Toll-like receptors.

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

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