

# *Cops2* Cas9-KO Strategy

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# Project Overview



**Project Name**

***Cops2***

**Project type**

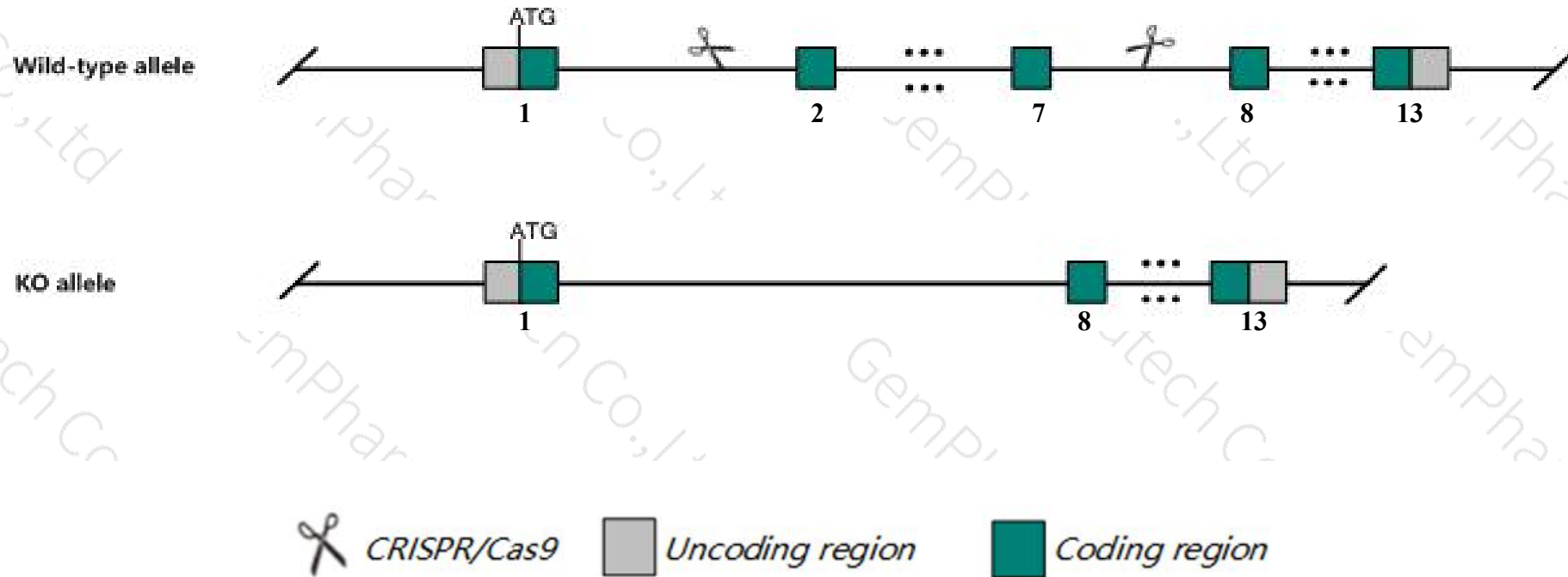
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cops2* gene. The schematic diagram is as follows:



- The *Cops2* gene has 5 transcripts. According to the structure of *Cops2* gene, exon2-exon7 of *Cops2-203* (ENSMUST00000110463.7) transcript is recommended as the knockout region. The region contains 682bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cops2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for disruptions in this gene die as embryos very soon after implantation.
- The *Cops2* gene is located on the Chr2. 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)

## Cops2 COP9 signalosome subunit 2 [Mus musculus (house mouse)]

Gene ID: 12848, updated on 31-Jan-2019

### Summary



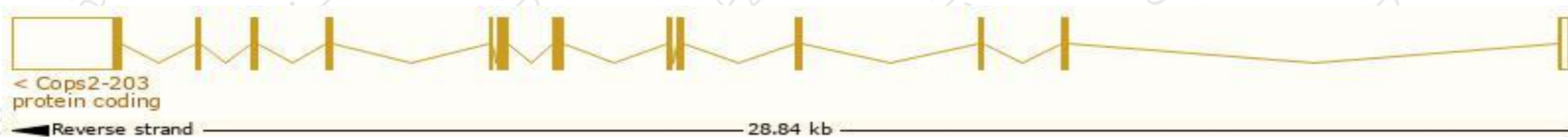
|                           |   |
|---------------------------|---|
| <b>Official Symbol</b>    | Cops2 provided by <a href="#">MGI</a>   |
| <b>Official Full Name</b> | COP9 signalosome subunit 2 provided by <a href="#">MGI</a>  |
| <b>Primary source</b>     | <a href="#">MGI:MGI:1330276</a>   |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG00000027206</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>      | AI315723, C85265, Csn2, Sgn2, TRIP-15, Trip15   |
| <b>Expression</b>         | Broad expression in placenta adult (RPKM 25.1), CNS E11.5 (RPKM 23.9) and 21 other tissues <a href="#">See more</a>   |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>   |

# Transcript information (Ensembl)

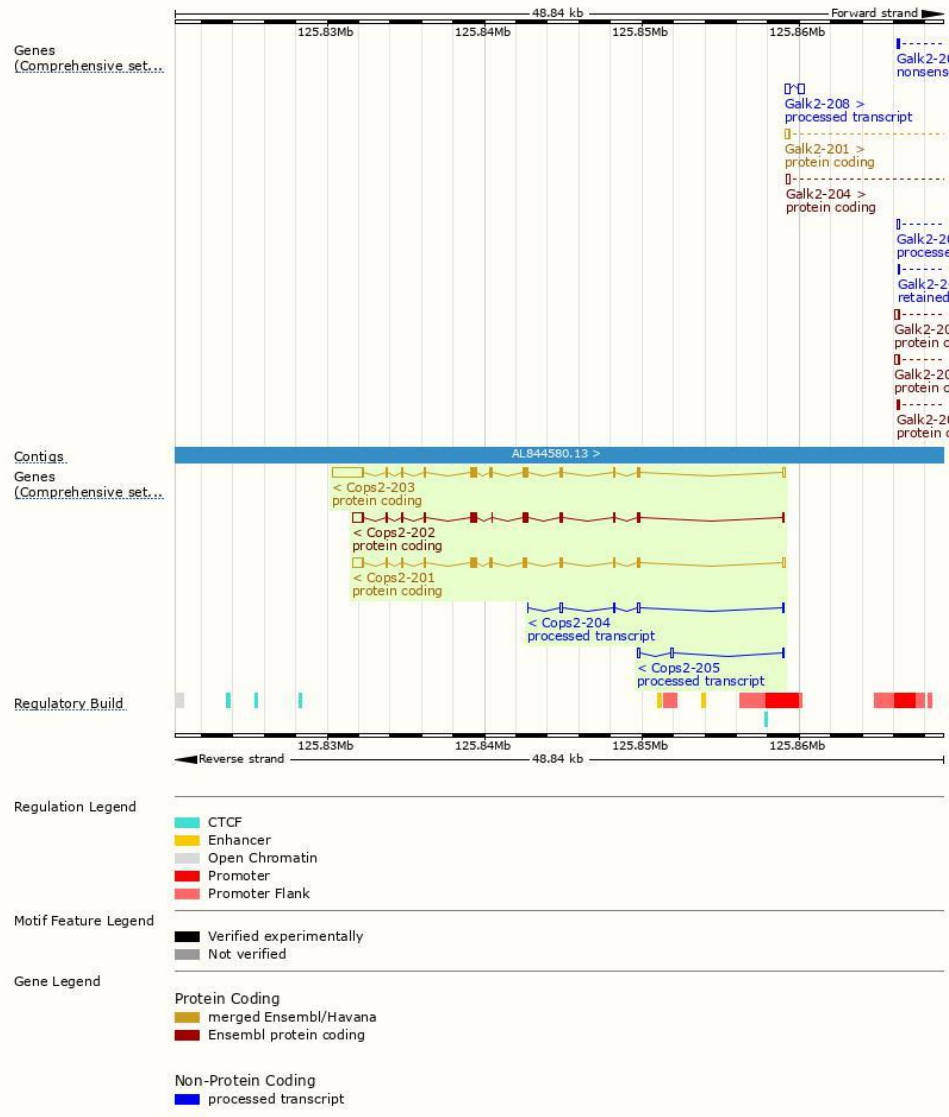
The gene has 5 transcripts, all transcripts are shown below:

| Name      | Transcript ID                        | bp   | Protein               | Biotype              | CCDS                      | UniProt                       | Flags                            |
|-----------|--------------------------------------|------|-----------------------|----------------------|---------------------------|-------------------------------|----------------------------------|
| Cops2-203 | <a href="#">ENSMUST00000110463.7</a> | 3392 | <a href="#">450aa</a> | Protein coding       | <a href="#">CCDS71133</a> | <a href="#">P61202 Q3V3N6</a> | TSL:1 GENCODE basic APPRIS ALT 1 |
| Cops2-201 | <a href="#">ENSMUST00000028635.5</a> | 2073 | <a href="#">443aa</a> | Protein coding       | <a href="#">CCDS16679</a> | <a href="#">P61202</a>        | TSL:1 GENCODE basic APPRIS P3    |
| Cops2-202 | <a href="#">ENSMUST00000110462.7</a> | 1853 | <a href="#">402aa</a> | Protein coding       | -                         | <a href="#">A2AQE4</a>        | TSL:5 GENCODE basic              |
| Cops2-204 | <a href="#">ENSMUST00000139343.1</a> | 417  | No protein            | Processed transcript | -                         | -                             | TSL:5                            |
| Cops2-205 | <a href="#">ENSMUST00000152683.1</a> | 355  | No protein            | Processed transcript | -                         | -                             | TSL:3                            |

The strategy is based on the design of *Cops2-203* transcript, The transcription is shown below



# Genomic location distribution

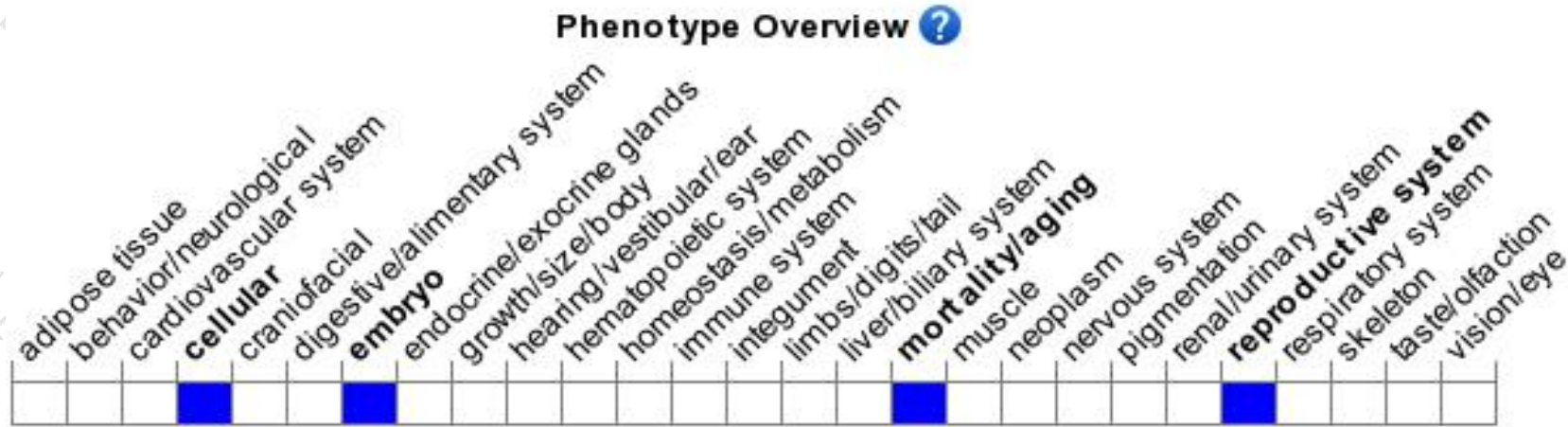




# Protein domain



# 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 disruptions in this gene die as embryos very soon after implantation.

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

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