

# *Ncl* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Ncl*

**Project type**

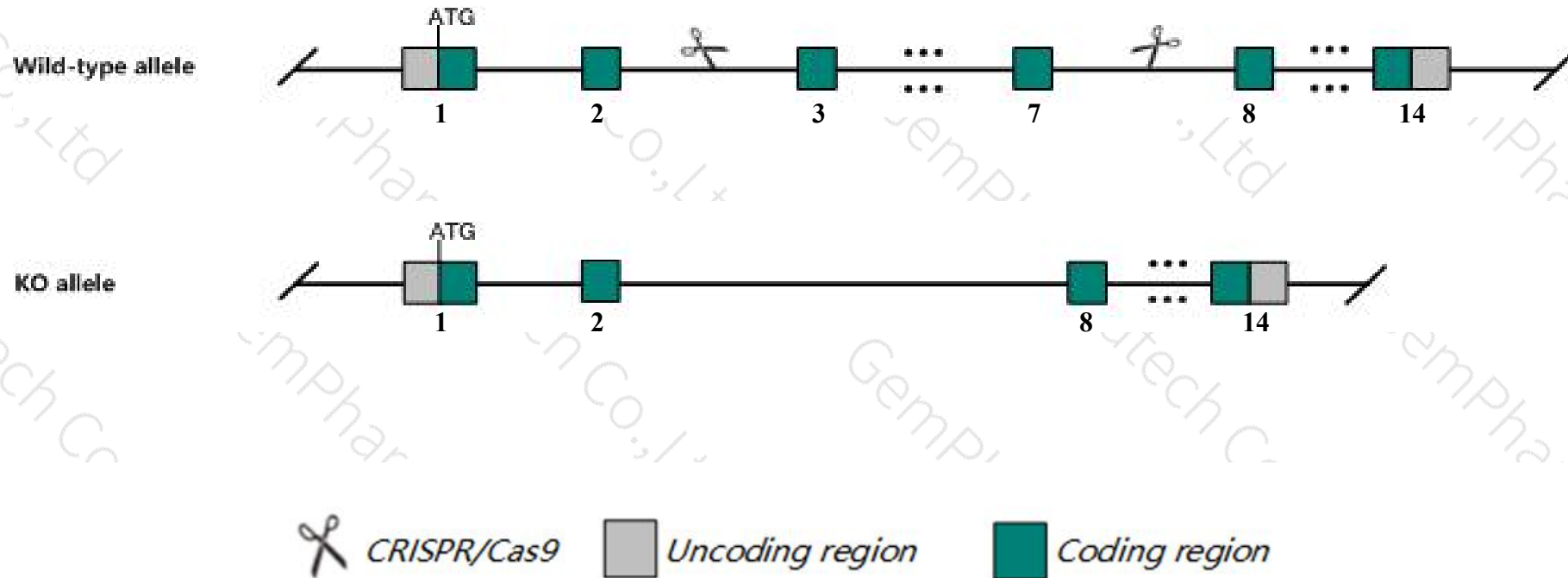
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

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



- The *Ncl* gene has 6 transcripts. According to the structure of *Ncl* gene, exon3-exon7 of *Ncl-201* (ENSMUST00000027438.7) transcript is recommended as the knockout region. The region contains 1036bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ncl* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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 knockout region is near to the N-terminal of *Snora* and *Mir3535* and *Gm24148* gene, this strategy may influence the regulatory function of the N-terminal of these genes.
- Transcript *Ncl*-204&205&206 may not be affected. And the effect on transcript *Ncl*-203 is unknown.
- The *Snord82* gene will be deleted together in this strategy.
- The *Ncl* gene is located on the Chr1. 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)

## Ncl nucleolin [ *Mus musculus* (house mouse) ]

Gene ID: 17975, updated on 10-Oct-2019

### Summary

Official Symbol	Ncl provided by <a href="#">MGI</a>
Official Full Name	nucleolin provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:97286</a>
See related	<a href="#">Ensembl:ENSMUSG00000026234</a>
Gene type	protein coding
RefSeq status	VALIDATED
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	C23; Nucl; D0Nds28; D1Nds28; B530004O11Rik
Expression	Biased expression in CNS E11.5 (RPKM 52.4), liver E14 (RPKM 41.1) and 11 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

### Genomic context

Location: 1 C5; 1 43.94 cM

See Ncl in [Genome Data Viewer](#)

Exon count: 15

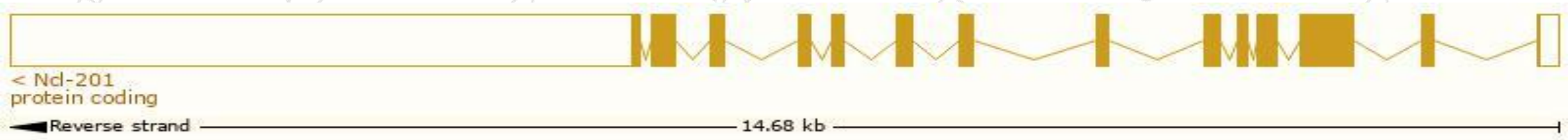
Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCm38.p6 ( <a href="#">GCF_000001635.26</a> )	1	NC_000067.6 (86344719..86359455, complement)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	1	NC_000067.5 (88241294..88256030, complement)

# Transcript information (Ensembl)

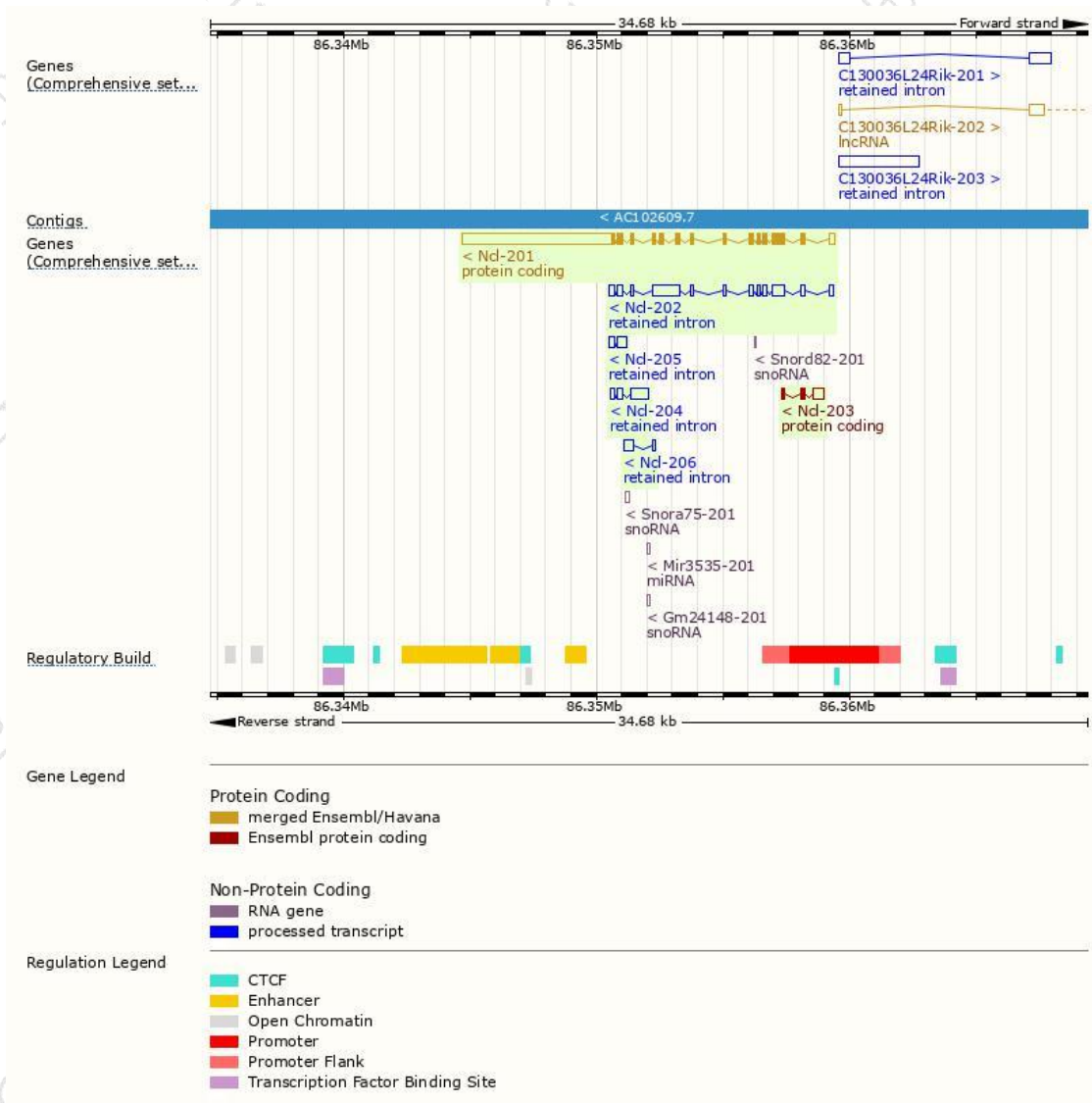
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ncl-201	<a href="#">ENSMUST00000027438.7</a>	8202	<a href="#">707aa</a>	Protein coding	<a href="#">CCDS35646</a>	<a href="#">P09405</a>	TSL:1 GENCODE basic APPRIS P1
Ncl-203	<a href="#">ENSMUST00000185785.1</a>	661	<a href="#">76aa</a>	Protein coding	-	<a href="#">A0A087WRM5</a>	CDS 3' incomplete TSL:2
Ncl-202	<a href="#">ENSMUST00000185676.6</a>	3072	No protein	Retained intron	-	-	TSL:1
Ncl-204	<a href="#">ENSMUST00000186050.1</a>	1054	No protein	Retained intron	-	-	TSL:2
Ncl-205	<a href="#">ENSMUST00000188682.1</a>	601	No protein	Retained intron	-	-	TSL:2
Ncl-206	<a href="#">ENSMUST00000189504.1</a>	502	No protein	Retained intron	-	-	TSL:2

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

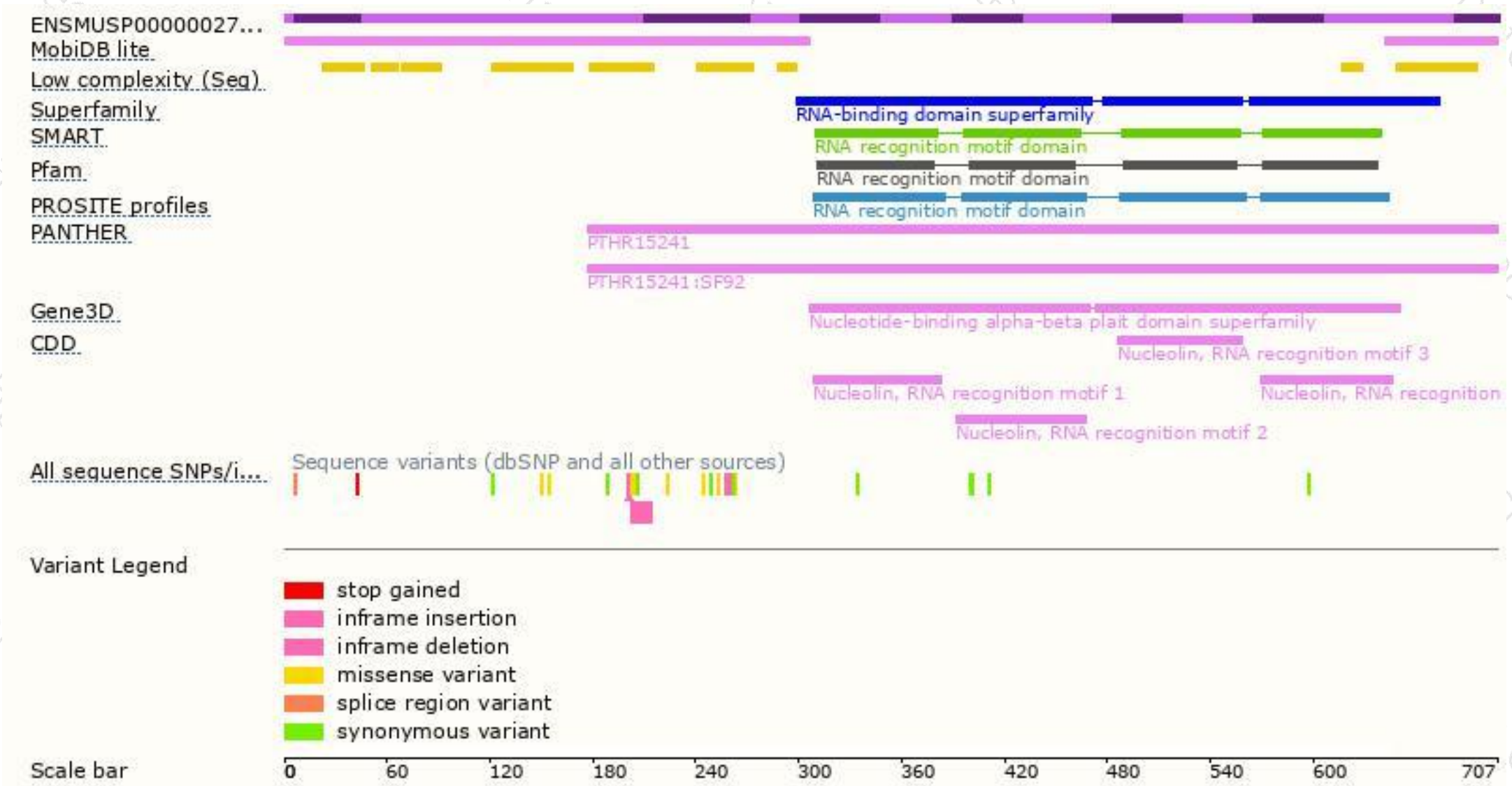


# Genomic location distribution





# Protein domain



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

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