

# ***Rnf19a*** Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

***Rnf19a***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnfl9a* gene. The schematic diagram is as follows:



- The *Rnf19a* gene has 3 transcripts. According to the structure of *Rnf19a* gene, exon3-exon5 of *Rnf19a-201* (ENSMUST00000022890.9) transcript is recommended as the knockout region. The region contains 517bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rnf19a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a gene-trapped allele exhibit decreased adult neurogenesis and enhanced long-term potentiation in the hippocampal dentate gyrus region, hyperactivity in a familiar environment, and a specific deficit in contextual fear conditioning, but not in other types of learning and memory.
- The *Rnfl9a* gene is located on the Chr15. 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)

## Rnf19a ring finger protein 19A [Mus musculus (house mouse)]

Gene ID: 30945, updated on 19-Mar-2019

### Summary



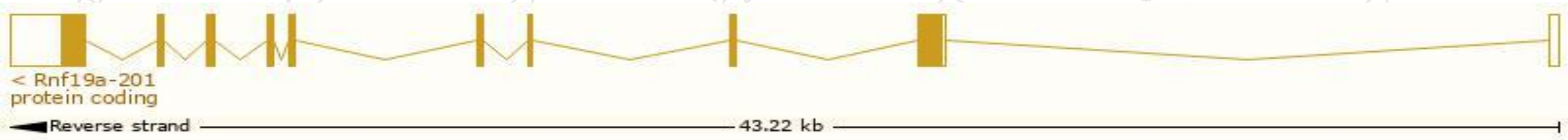
<b>Official Symbol</b>	Rnf19a provided by <a href="#">MGI</a>
<b>Official Full Name</b>	ring finger protein 19A provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1353623</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000022280</a>
<b>Gene type</b>	protein coding
<b>RefSeq 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>	AA032313, Dorfin, Rnf19, UIP117, Ubce7ip2, XYbp
<b>Expression</b>	Broad expression in testis adult (RPKM 56.1), liver E18 (RPKM 11.4) and 20 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

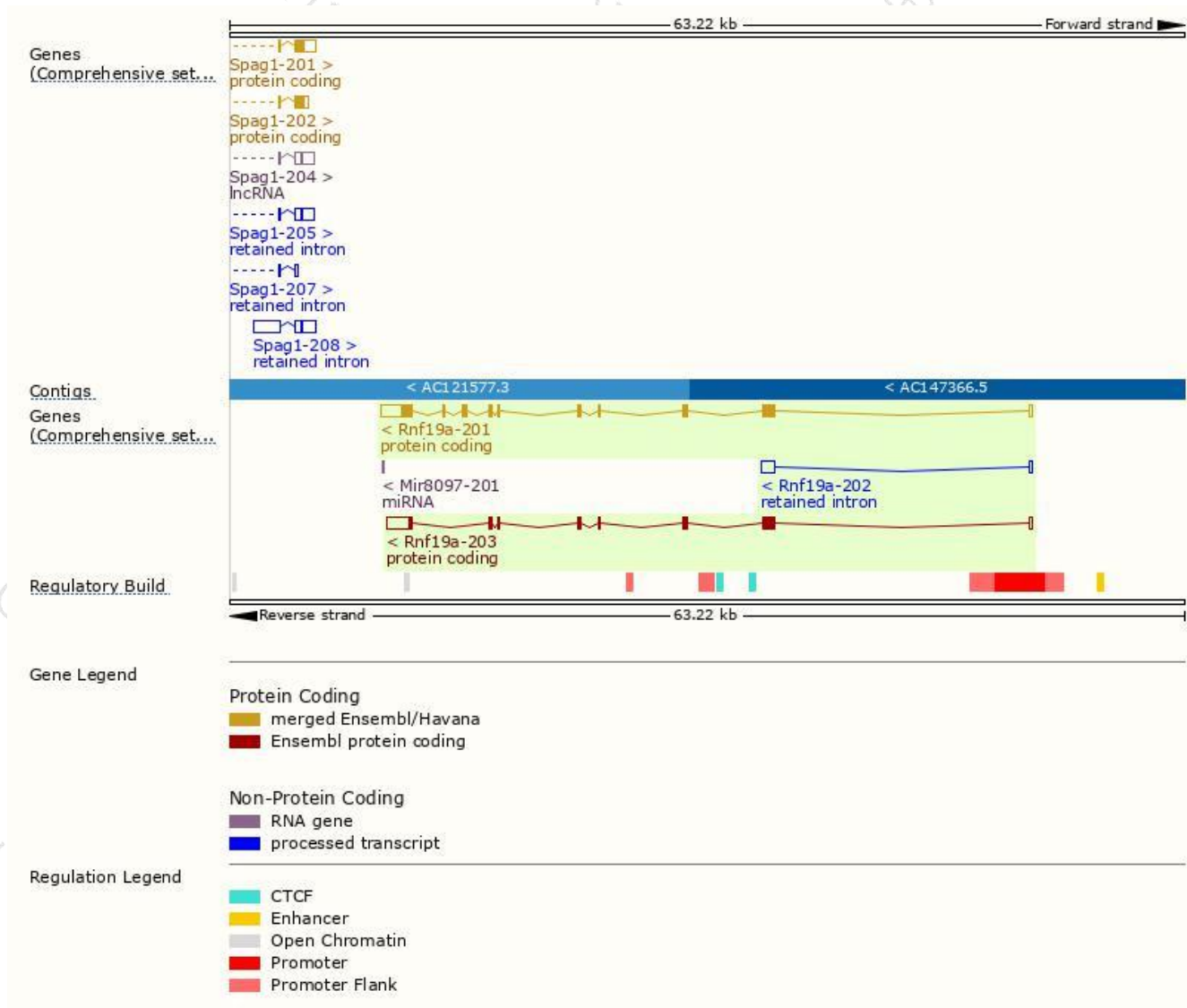
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf19a-201	<a href="#">ENSMUST00000022890.9</a>	4277	<a href="#">840aa</a>	Protein coding	<a href="#">CCDS27427</a>	<a href="#">P50636</a>	TSL:1 GENCODE basic APPRIS P1
Rnf19a-203	<a href="#">ENSMUST00000228358.1</a>	3452	<a href="#">558aa</a>	Protein coding	-	<a href="#">A0A2I3BRK4</a>	GENCODE basic
Rnf19a-202	<a href="#">ENSMUST00000227735.1</a>	1136	No protein	Retained intron	-	-	

The strategy is based on the design of *Rnf19a-201* transcript,The transcription is shown below

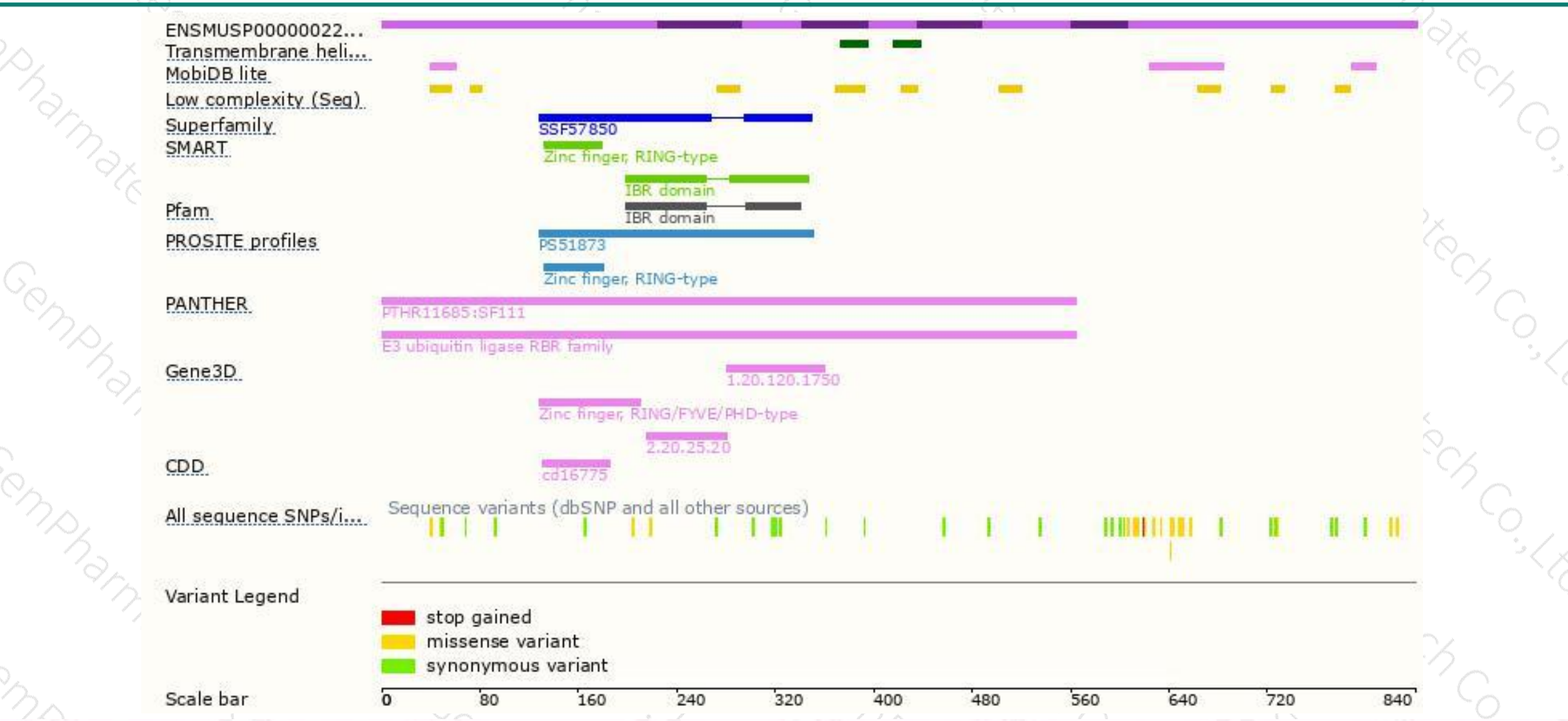


# Genomic location distribution

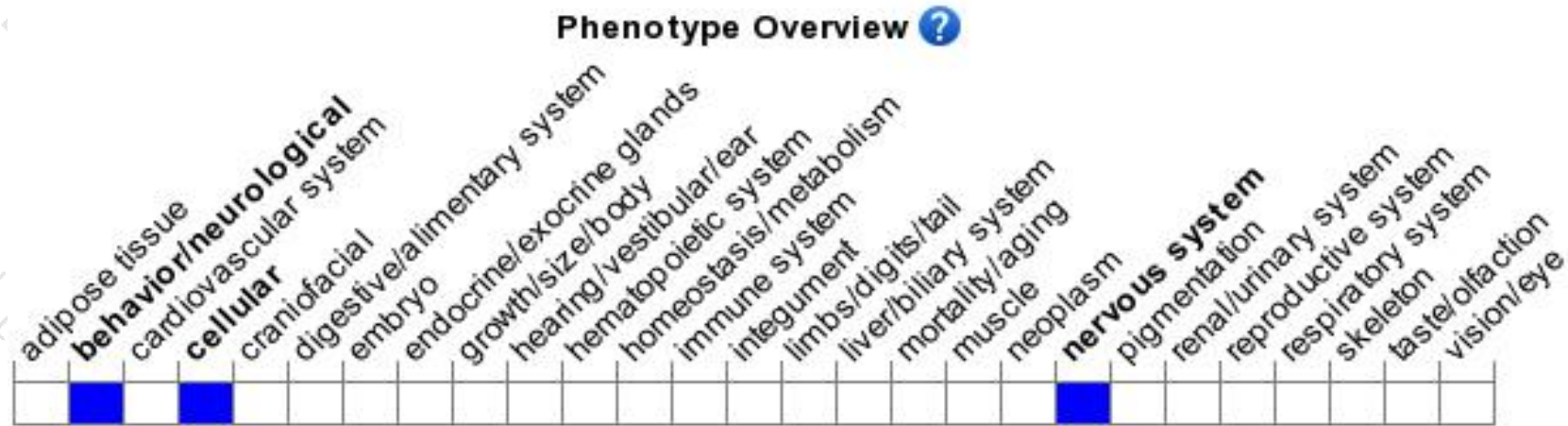




# Protein domain



# 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 gene-trapped allele exhibit decreased adult neurogenesis and enhanced long-term potentiation in the hippocampal dentate gyrus region, hyperactivity in a familiar environment, and a specific deficit in contextual fear conditioning, but not in other types of learning and memory.

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

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