

# *Npsr1* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Npsr1*

**Project type**

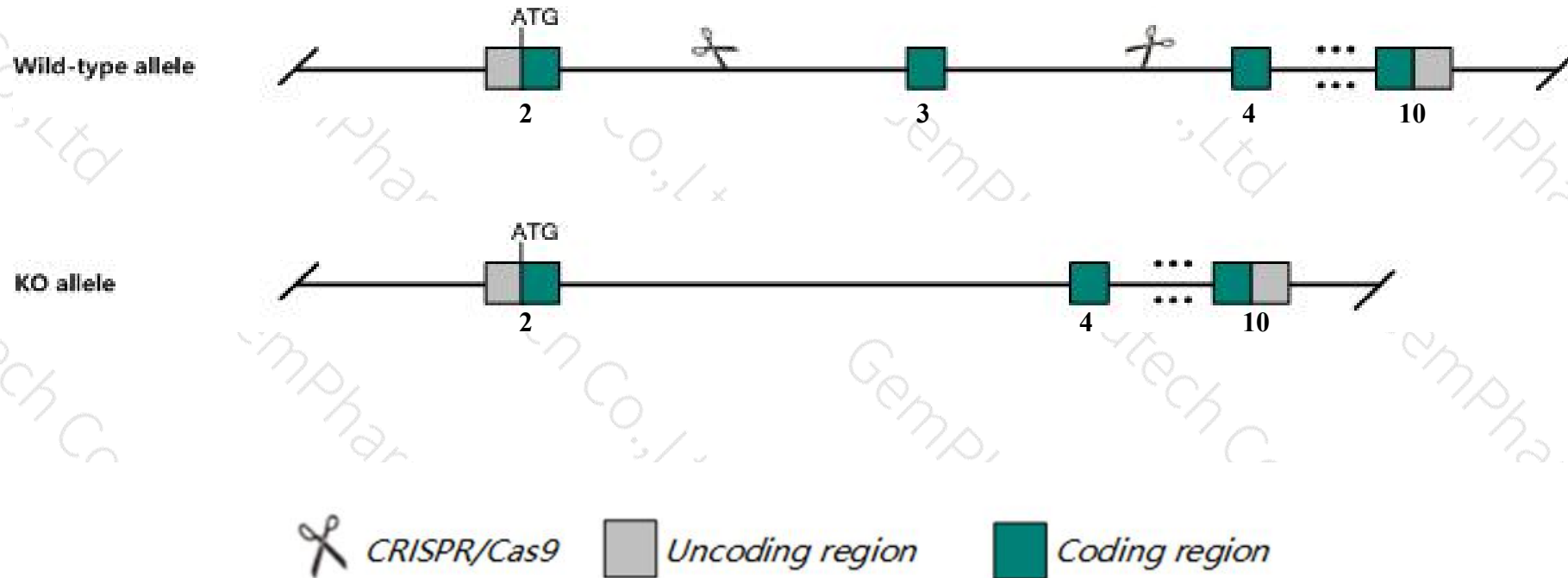
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Npsr1* gene. The schematic diagram is as follows:



- The *Npsr1* gene has 4 transcripts. According to the structure of *Npsr1* gene, exon3 of *Npsr1-201* (ENSMUST00000059650.10) transcript is recommended as the knockout region. The region contains 133bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Npsr1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit decreased airway resistance when treated with high concentrations of U-46619.
- The *Npsr1* gene is located on the Chr9. 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.
- Does not damage 204 transcripts.
- 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)

## Npsr1 neuropeptide S receptor 1 [Mus musculus (house mouse)]

Gene ID: 319239, updated on 31-Jan-2019

### Summary



<b>Official Symbol</b>	Npsr1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	neuropeptide S receptor 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2441738</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000043659</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>	9330128H10Rik, GPRA, Gpr154, MVTR, PGR14, VRR1
<b>Expression</b>	Low expression observed in reference dataset <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

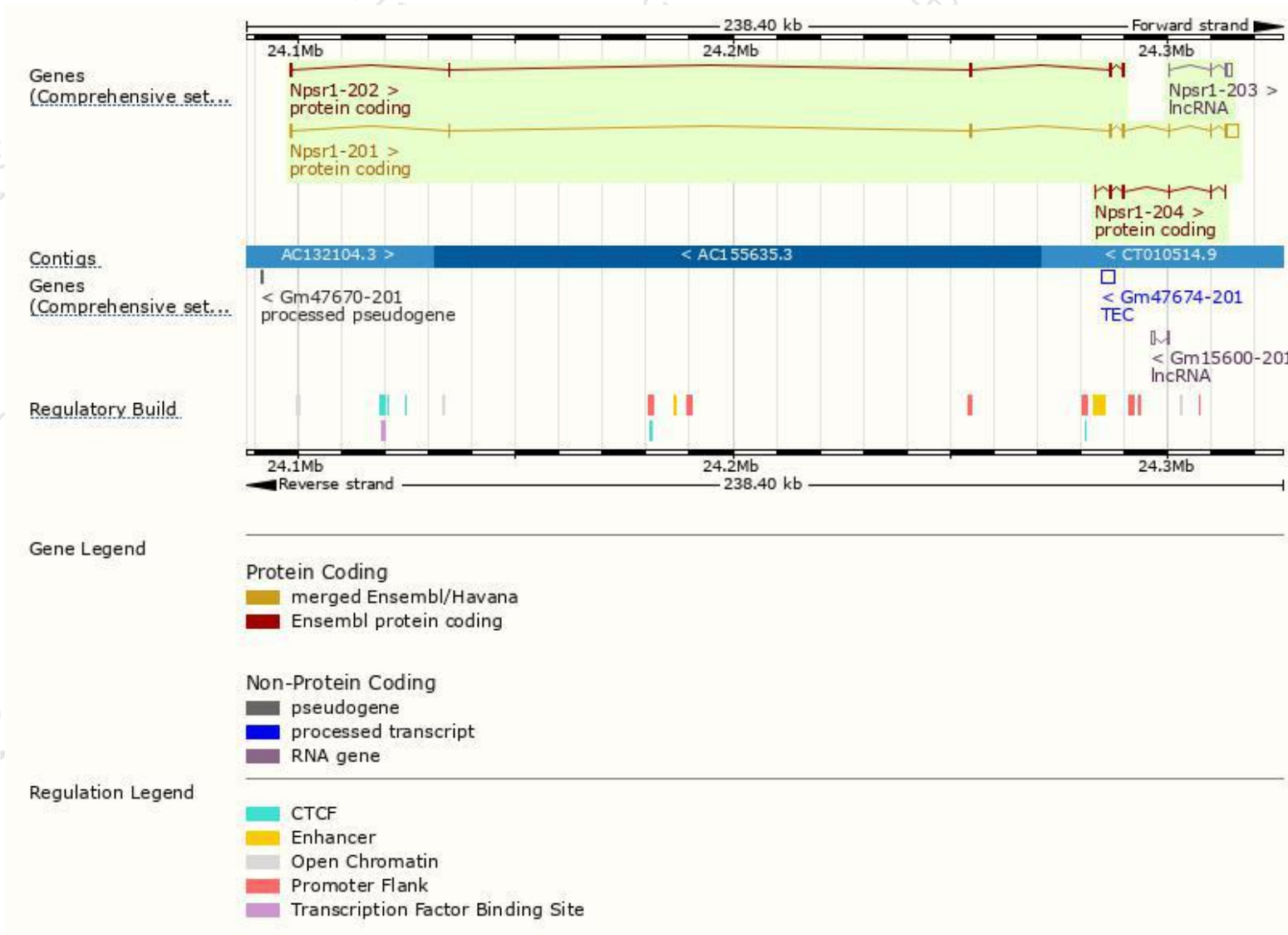
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Npsr1-201	<a href="#">ENSMUST00000059650.10</a>	3791	<a href="#">371aa</a>	Protein coding	<a href="#">CCDS22930</a>	<a href="#">A1KXK3 Q8BZP8</a>	TSL:1 GENCODE basic APPRIS P1
Npsr1-204	<a href="#">ENSMUST00000154644.1</a>	699	<a href="#">185aa</a>	Protein coding	-	<a href="#">A6X922</a>	CDS 3' incomplete TSL:3
Npsr1-202	<a href="#">ENSMUST00000133787.7</a>	649	<a href="#">190aa</a>	Protein coding	-	<a href="#">B1B1A4</a>	CDS 3' incomplete TSL:5
Npsr1-203	<a href="#">ENSMUST00000154337.1</a>	1559	No protein	lncRNA	-	-	TSL:1

The strategy is based on the design of *Npsr1-201* transcript,The transcription is shown below



# Genomic location distribution

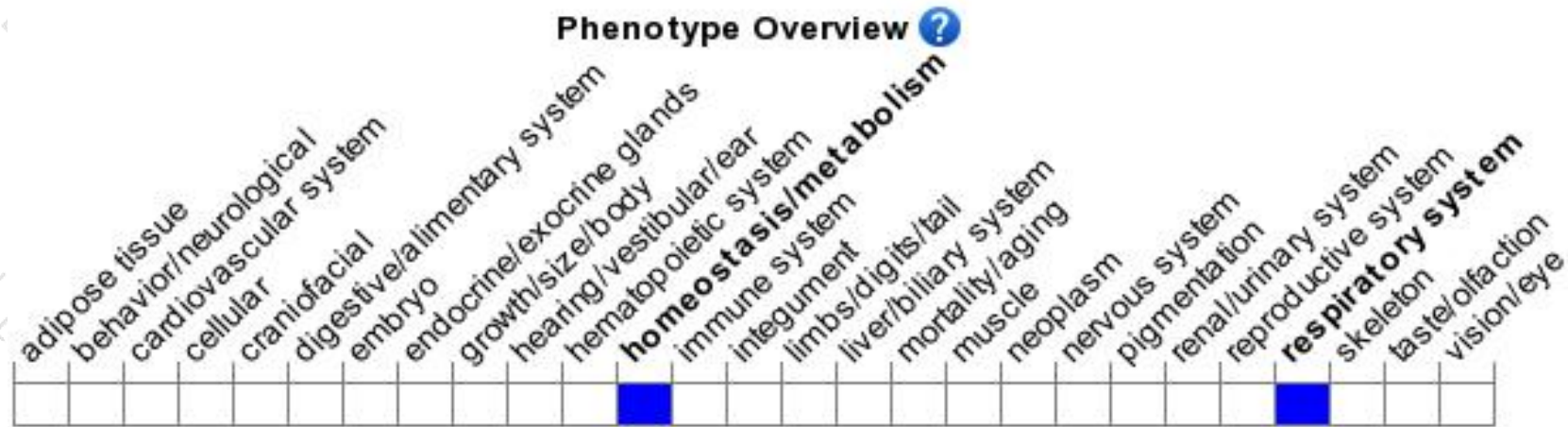




# Protein domain



# 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 decreased airway resistance when treated with high concentrations of U-46619.

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

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