# *Nostrin* Cas9-KO Strategy

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# Project Overview

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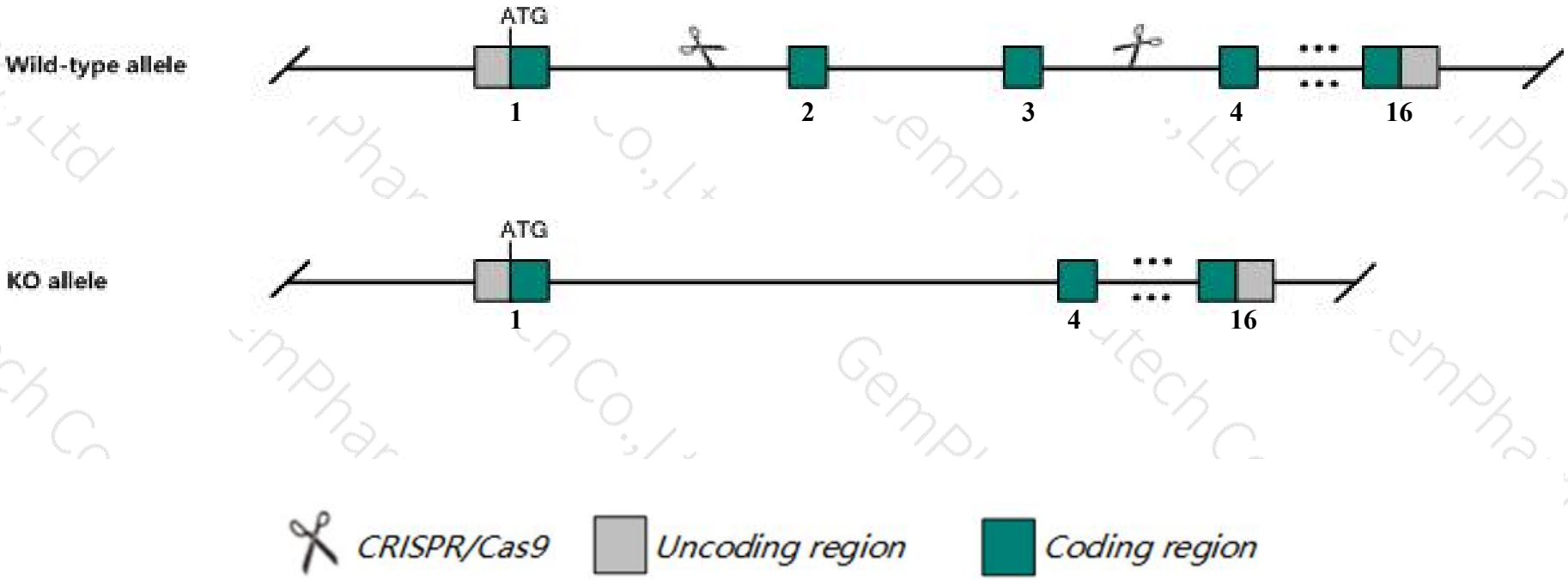
|---|---|
| **Project Name** | ***Nostrin*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# Knockout strategy

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



# Technical routes

➢ The *Nostrin* gene has 2 transcripts. According to the structure of *Nostrin* gene, exon2-exon3 of *Nostrin-201* (ENSMUST00000041865.7) transcript is recommended as the knockout region.The region contains 170bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Nostrin* gene. The brief process is as follows: CRISPR/Cas9 syster

# Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit impaired retinal vascular angiogenesis, endothelial cell proliferation, endothelial cell migration and induced neovascularization.
- Transcript *Nostrin*-202 may not be affected.
- The *Nostrin* 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）

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**Nostrin nitric oxide synthase trafficker [ *Mus musculus* (house mouse) ]**

Gene ID: 329416, updated on 10-Oct-2019

## Summary

| | |
|---|---|
| **Official Symbol** | Nostrin provided by MGI |
| **Official Full Name** | nitric oxide synthase trafficker provided by MGI |
| **Primary source** | MGI:MGI:3606242 |
| **See related** | Ensembl:ENSMUSG00000034738 |
| **Gene type** | protein coding |
| **RefSeq status** | VALIDATED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | Daip2; mDaIP2 |
| **Expression** | Biased expression in placenta adult (RPKM 11.0), large intestine adult (RPKM 4.4) and 11 other tissues See more |
| **Orthologs** | human all |

## Genomic context

**Location:** 2; 2 C2

See Nostrin in Genome Data Viewer

**Exon count:** 16

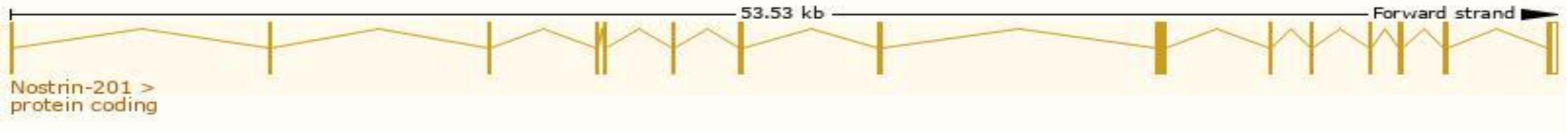
| Annotation release | Status | Assembly | Chr | Location |
|---|---|---|---|---|
| 108 | current | GRCm38.p6 (GCF_000001635.26) | 2 | NC_000068.7 (69135800..69189330) |
| Build 37.2 | previous assembly | MGSCv37 (GCF_000001635.18) | 2 | NC_000068.6 (68973857..69027387) |

# Transcript information（Ensembl）

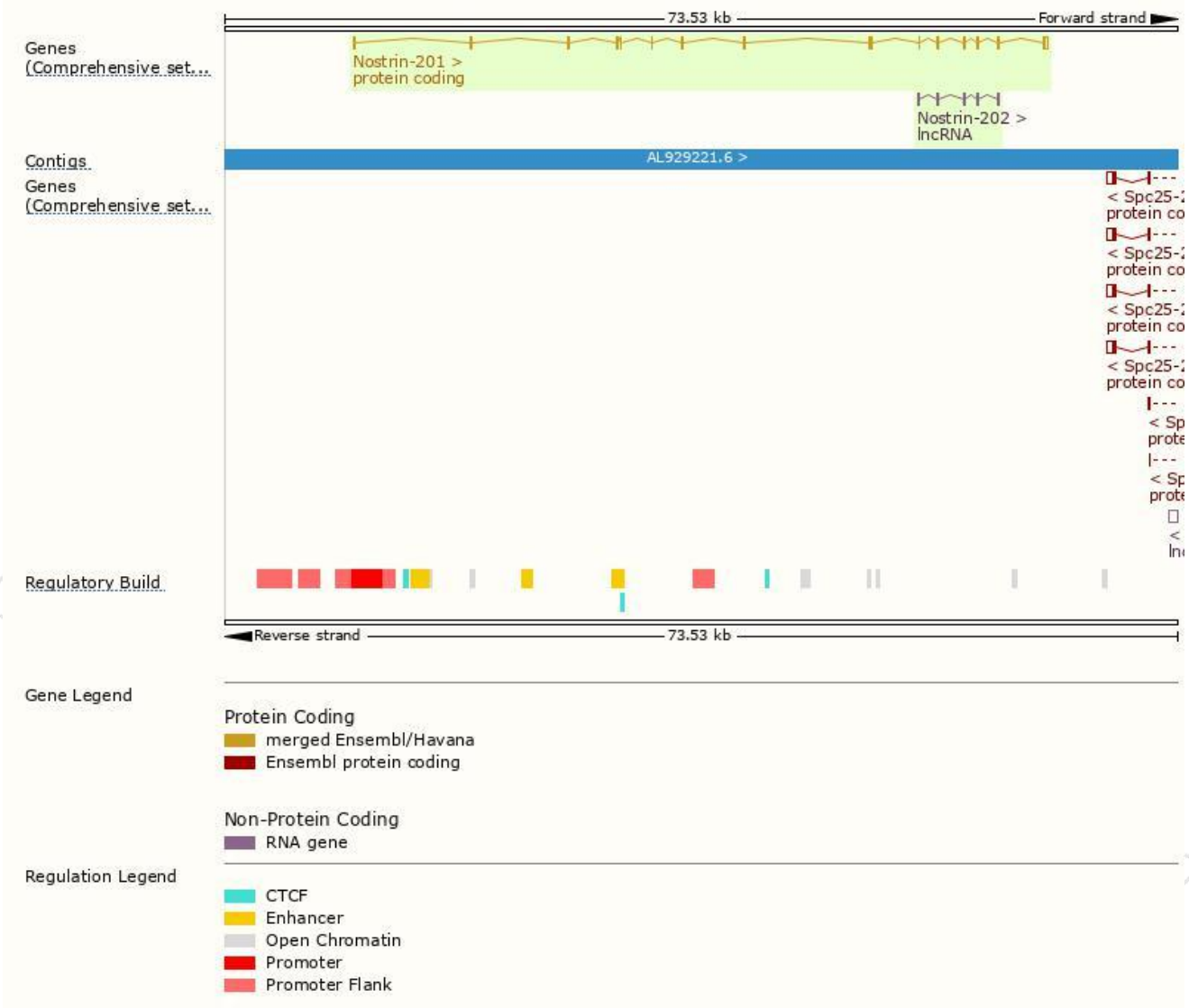
The gene has 2 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| **Nostrin-201** | ENSMUST00000041865.7 | 1808 | 506aa | Protein coding | CCDS16087 | Q6WKZ7 | TSL:1 GENCODE basic APPRIS P1 |
| **Nostrin-202** | ENSMUST00000141276.1 | 609 | No protein | lncRNA | - | - | TSL:3 |

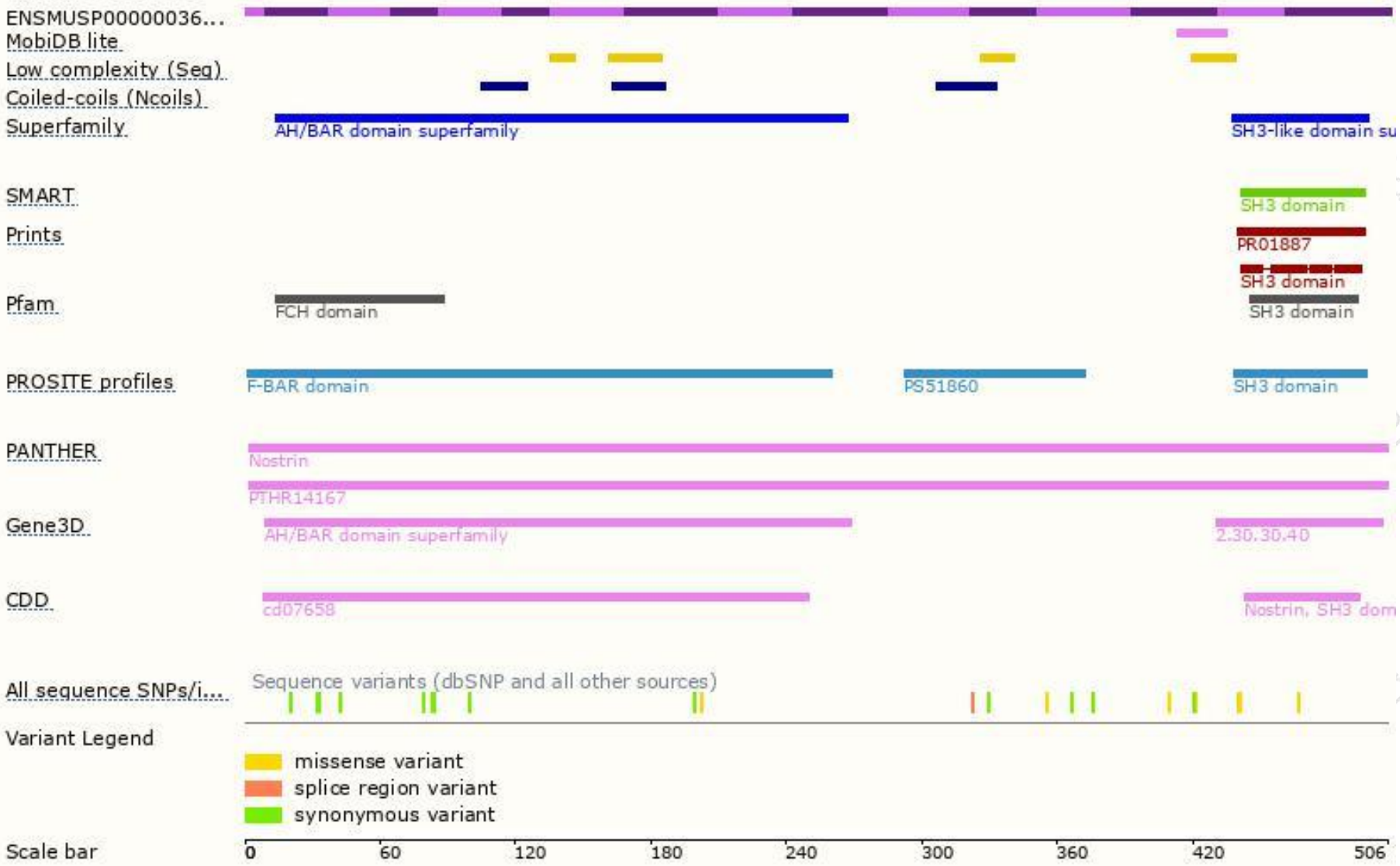
The strategy is based on the design of *Nostrin-201* transcript,The transcription is shown below



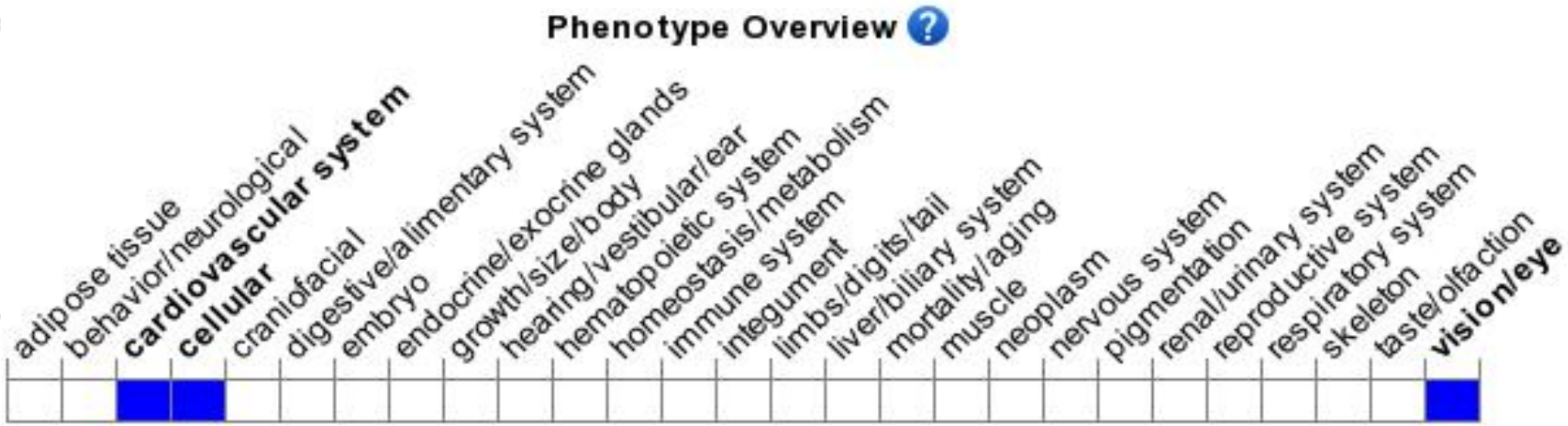
# Genomic location distribution



# 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 impaired retinal vascular angiogenesis, endothelial cell proliferation, endothelial cell migration and induced neovascularization.

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

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