

Plxna4 Cas9-KO Strategy

Designer:

Yang Zeng

Reviewer:

Jia Yu

Design Date:

2020-2-10

Project Overview

Project Name

Plxna4

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Plxna4* gene. The schematic diagram is as follows:



- The *Plxna4* gene has 2 transcripts. According to the structure of *Plxna4* gene, exon5 of *Plxna4-201* (ENSMUST00000115096.3) transcript is recommended as the knockout region. The region contains 101bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Plxna4* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous null mice exhibit defective trajectory and projection of peripheral sensory axons and sympathetic ganglion axons and the formation of the anterior commissure and the barrels.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- The *Plxna4* gene is located on the Chr6. 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)

Plxna4 plexin A4 [*Mus musculus* (house mouse)]

Gene ID: 243743, updated on 17-Sep-2019

Summary

Official Symbol Plxna4 provided by MGI

Official Full Name plexin A4 provided by MGI

Primary source [MGI:MGI:2179061](#)

See related [Ensembl:ENSMUSG00000029765](#)

Gene type protein coding

RefSeq status VALIDATED

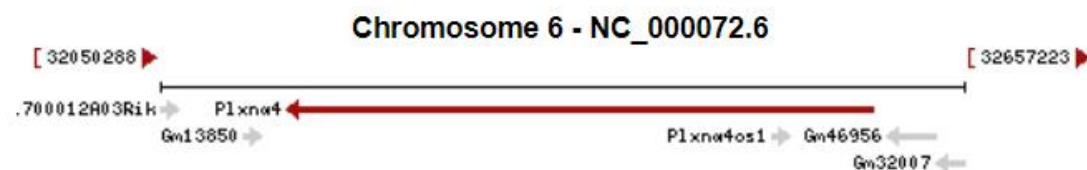
Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as Plxa4; mKIAA1550; 9330117B14

Expression Broad expression in CNS E18 (RPKM 7.4), CNS E14 (RPKM 6.4) and 16 other tissues [See more](#)

Orthologs [human](#) [all](#)

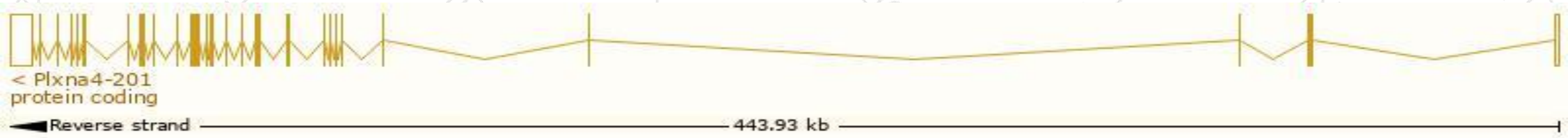


Transcript information (Ensembl)

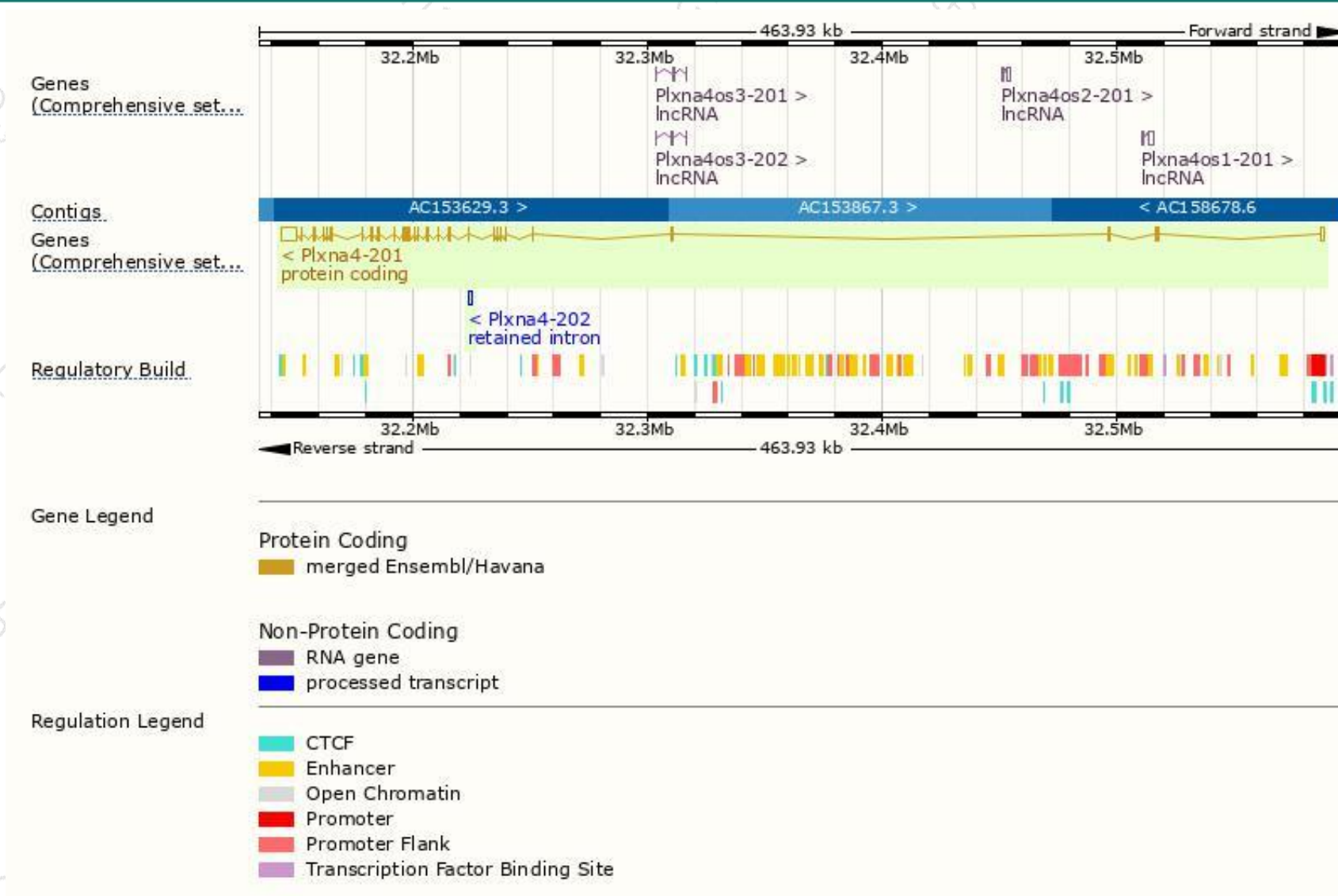
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Plxna4-201	ENSMUST00000115096.3	12877	1893aa	ENSMUSP00000110748.2	Protein coding	CCDS19985	Q80UG2	TSL:1 Gencode basic APPRIS P1
Plxna4-202	ENSMUST00000200732.1	1427	No protein	-	Retained intron	-	-	TSL:NA

The strategy is based on the design of *Plxna4-201* transcript,The transcription is shown below



Genomic location distribution

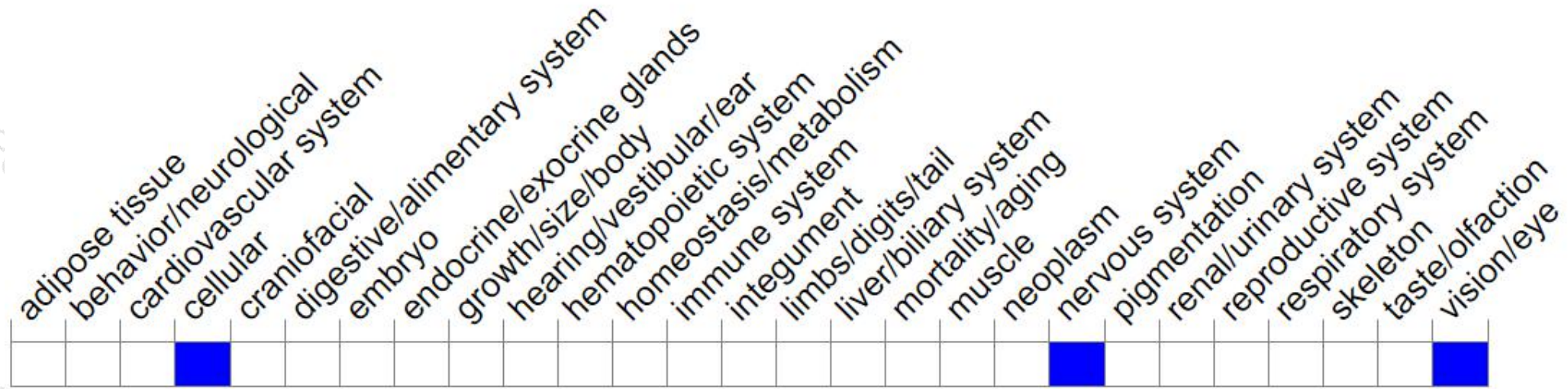


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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, Homozygous null mice exhibit defective trajectory and projection of peripheral sensory axons and sympathetic ganglion axons and the formation of the anterior commissure and the barrels.

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

Tel: 400-9660890

