

Opn3 Cas9-KO Strategy

Designer: Huan Wang

Reviewer: Huan Fan

Design Date: 2018-7-11

Project Overview

Project Name

Opn3

Project type

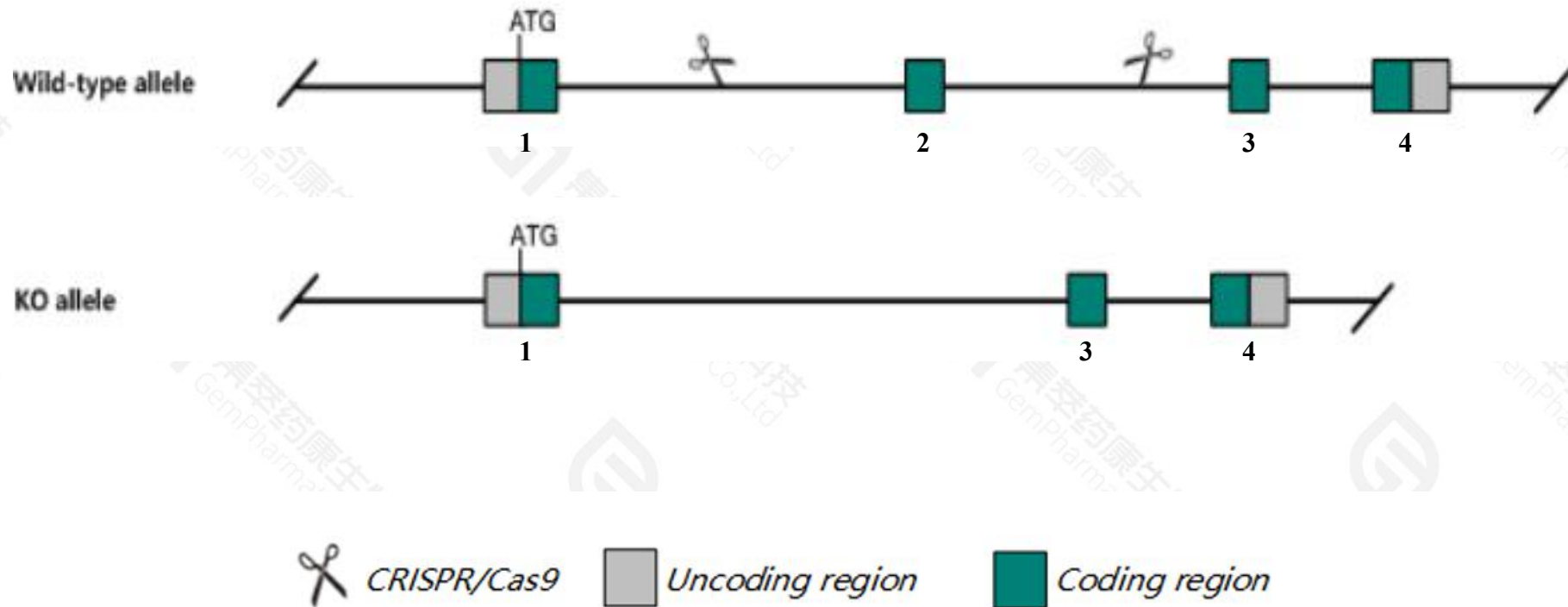
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Opn3* gene. The schematic diagram is as follows:



- The *Opn3* gene has 1 transcript. According to the structure of *Opn3* gene, exon2 of *Opn3-201*(ENSMUST00000027809.7) transcript is recommended as the knockout region. The region contains 320bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Opn3* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, mice exhibit normal photoentrainment.
- The *Opn3* 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)

Opn3 opsin 3 [Mus musculus (house mouse)]

Gene ID: 13603, updated on 13-Mar-2020

Summary



Official Symbol Opn3 provided by [MGI](#)

Official Full Name opsin 3 provided by [MGI](#)

Primary source [MGI:MGI:1338022](#)

See related [Ensembl:ENSMUSG00000026525](#)

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 ERO, Ecpn

Expression Broad expression in subcutaneous fat pad adult (RPKM 13.2), adrenal adult (RPKM 13.0) and 24 other tissues [See more](#)

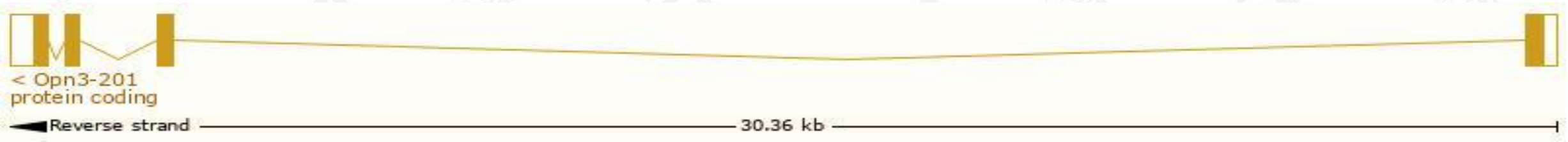
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

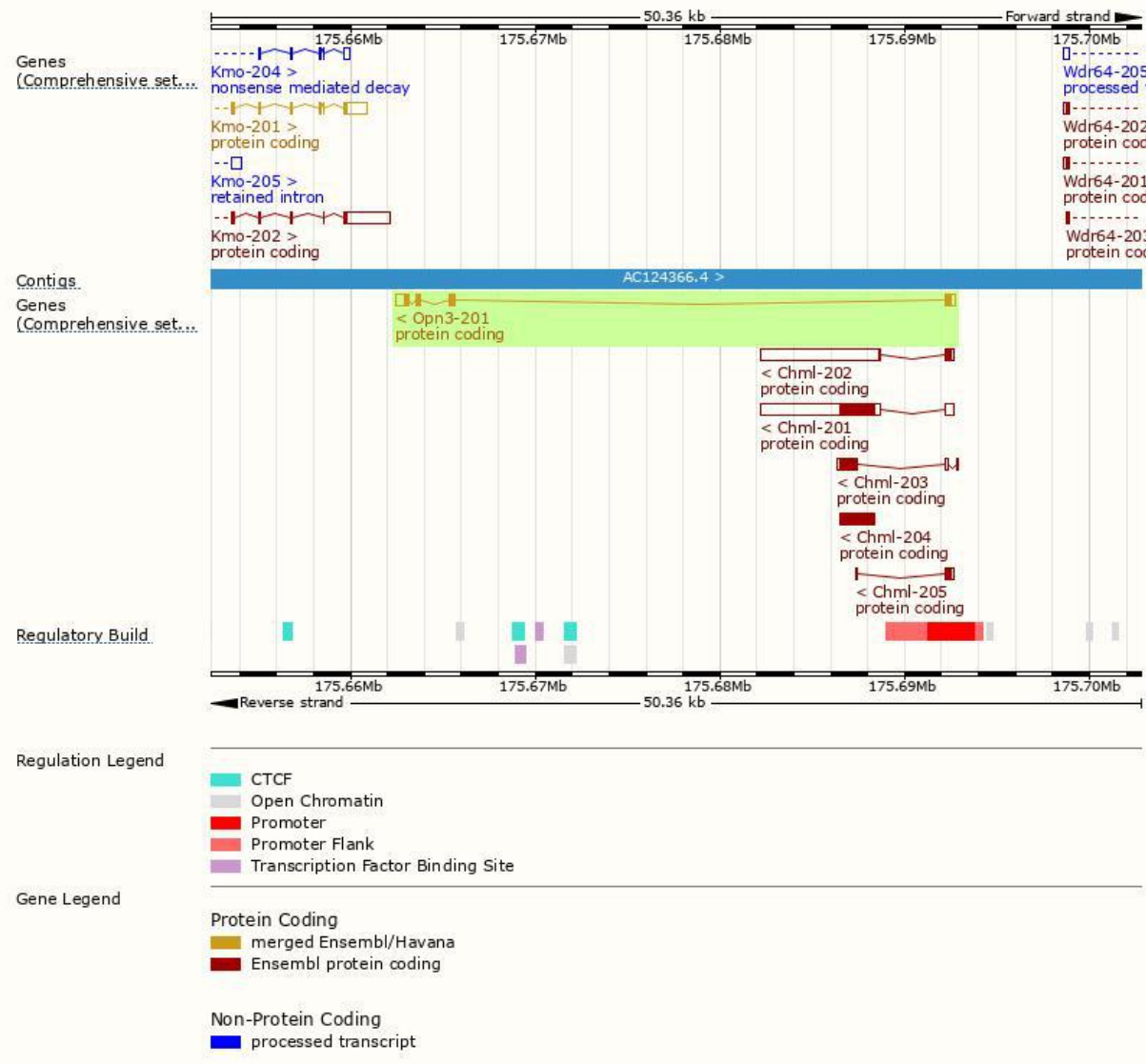
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Opn3-201	ENSMUST00000027809.7	1913	400aa	Protein coding	CCDS15549	Q9WUJ7	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1

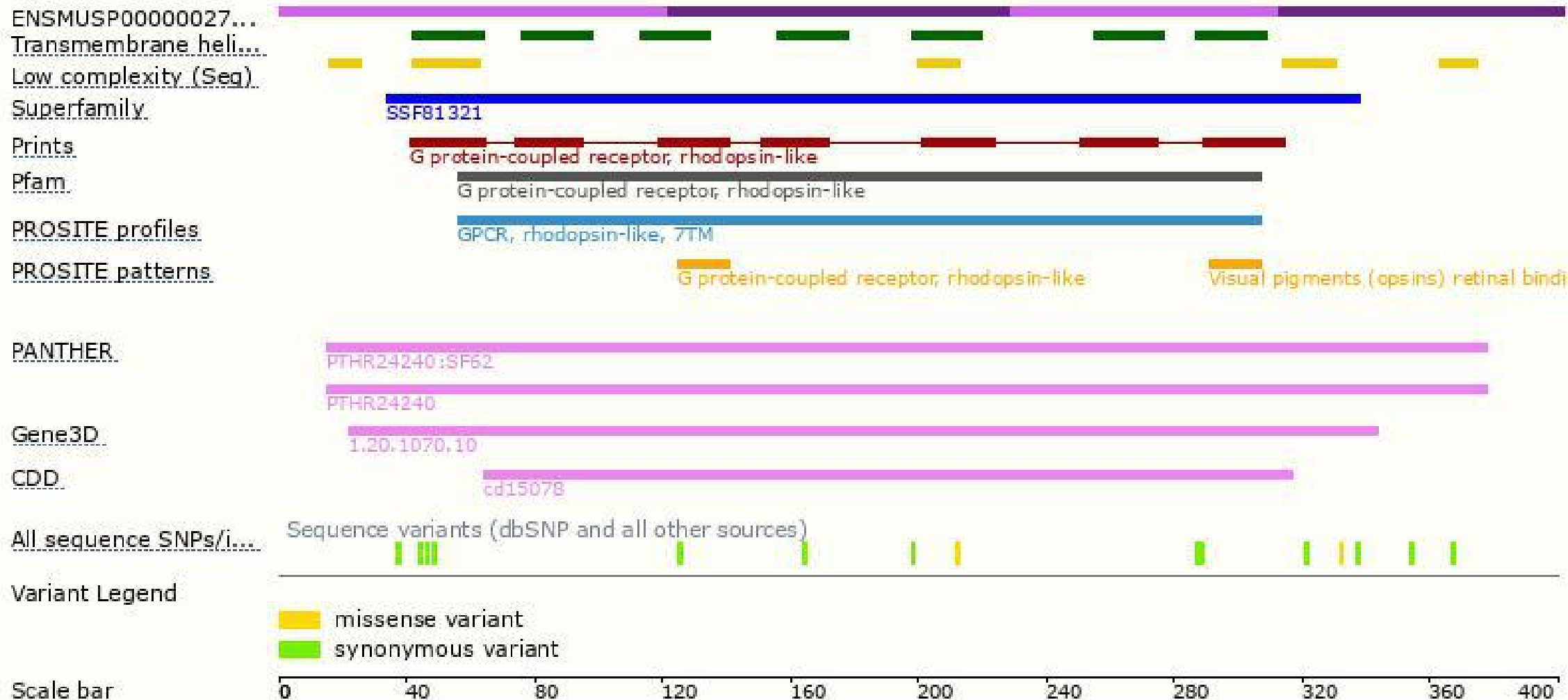
The strategy is based on the design of *Opn3-201* transcript,the transcription is shown below:



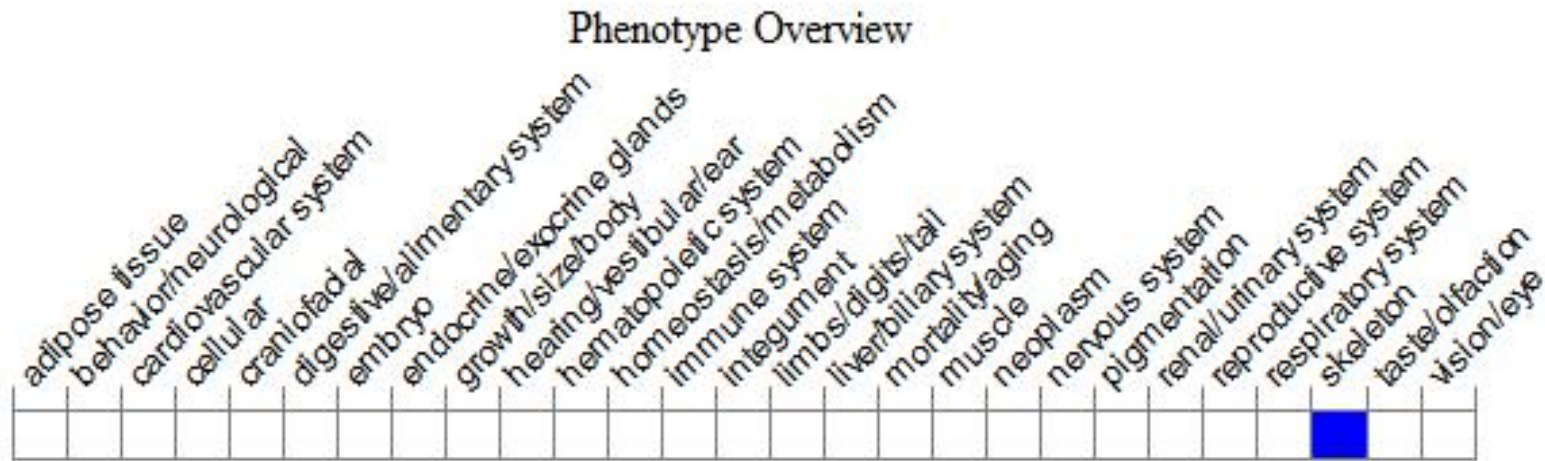
Genomic location distribution



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 exhibit normal photoentrainment.

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

