

Oprd1 Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Oprd1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Oprd1* gene. The schematic diagram is as follows:



- The *Oprd1* gene has 1 transcript. According to the structure of *Oprd1* gene, exon2 of *Oprd1-201* (ENSMUST00000056336.1) transcript is recommended as the knockout region. The region contains 350bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Oprd1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for one knock-out allele do not develop analgesic tolerance to morphine while mice homozygous for a different knock-out allele exhibit hyperactivity, increased anxiety, and decreased coping response.
- The *Oprd1* gene is located on the Chr4. 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)

Oprd1 opioid receptor, delta 1 [Mus musculus (house mouse)]

Gene ID: 18386, updated on 31-Jan-2019

Summary



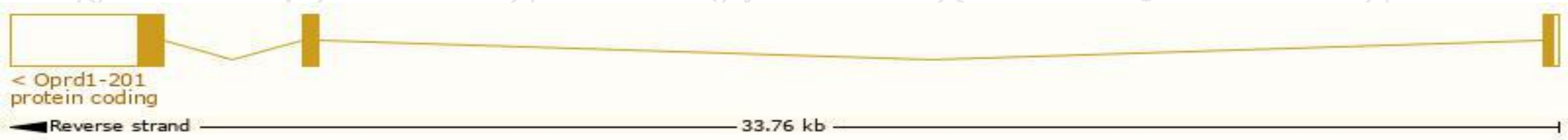
Official Symbol	Oprd1 provided by MGI
Official Full Name	opioid receptor, delta 1 provided by MGI
Primary source	MGI:MGI:97438
See related	Ensembl:ENSMUSG00000050511
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	DOR, DOR-1, Nbor, mDOR
Expression	Biased expression in frontal lobe adult (RPKM 3.5), cortex adult (RPKM 2.6) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

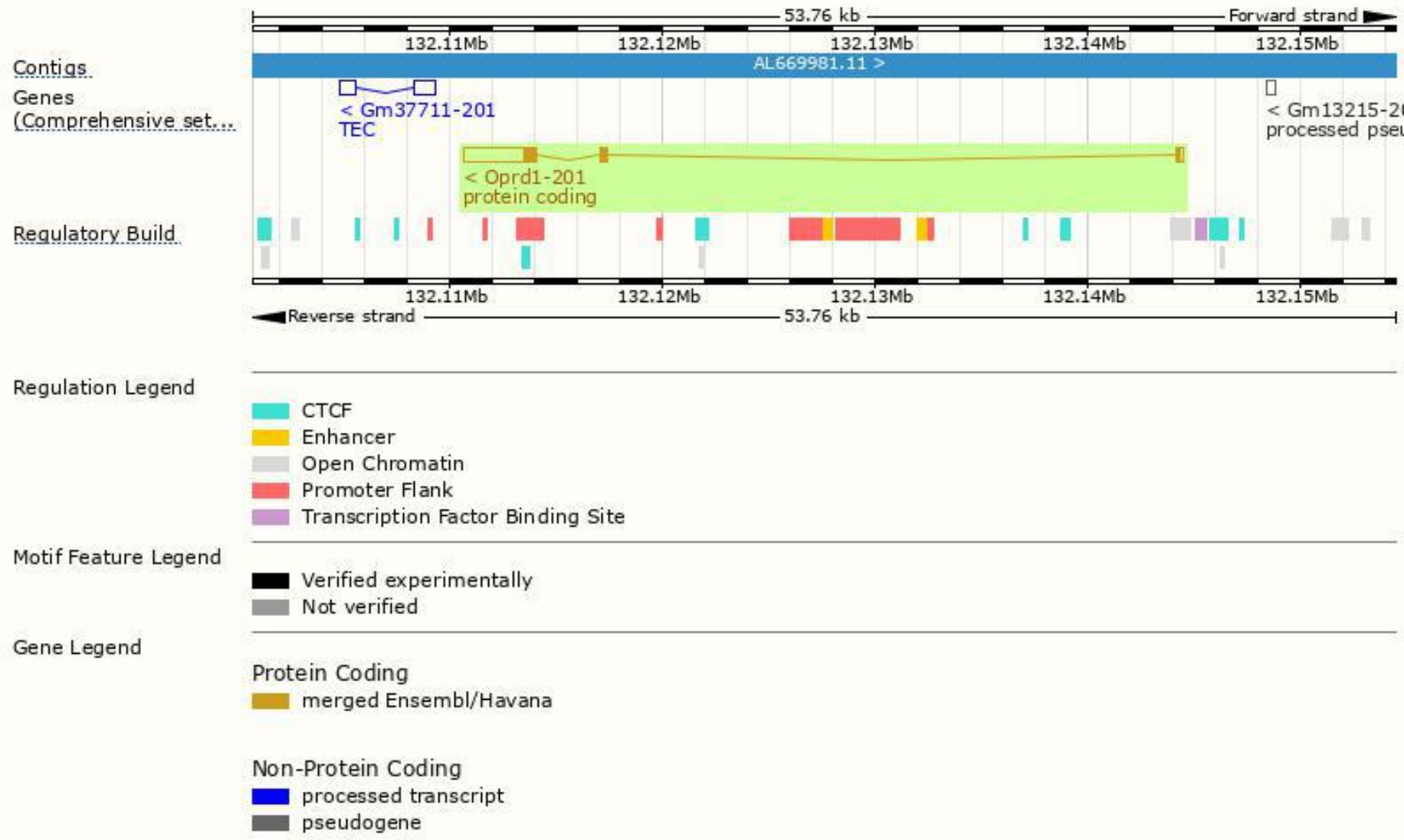
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Oprd1-201	ENSMUST00000056336.1	4021	372aa	Protein coding	CCDS18718	A2AD37 P32300	TSL:1 GENCODE basic APPRIS P1

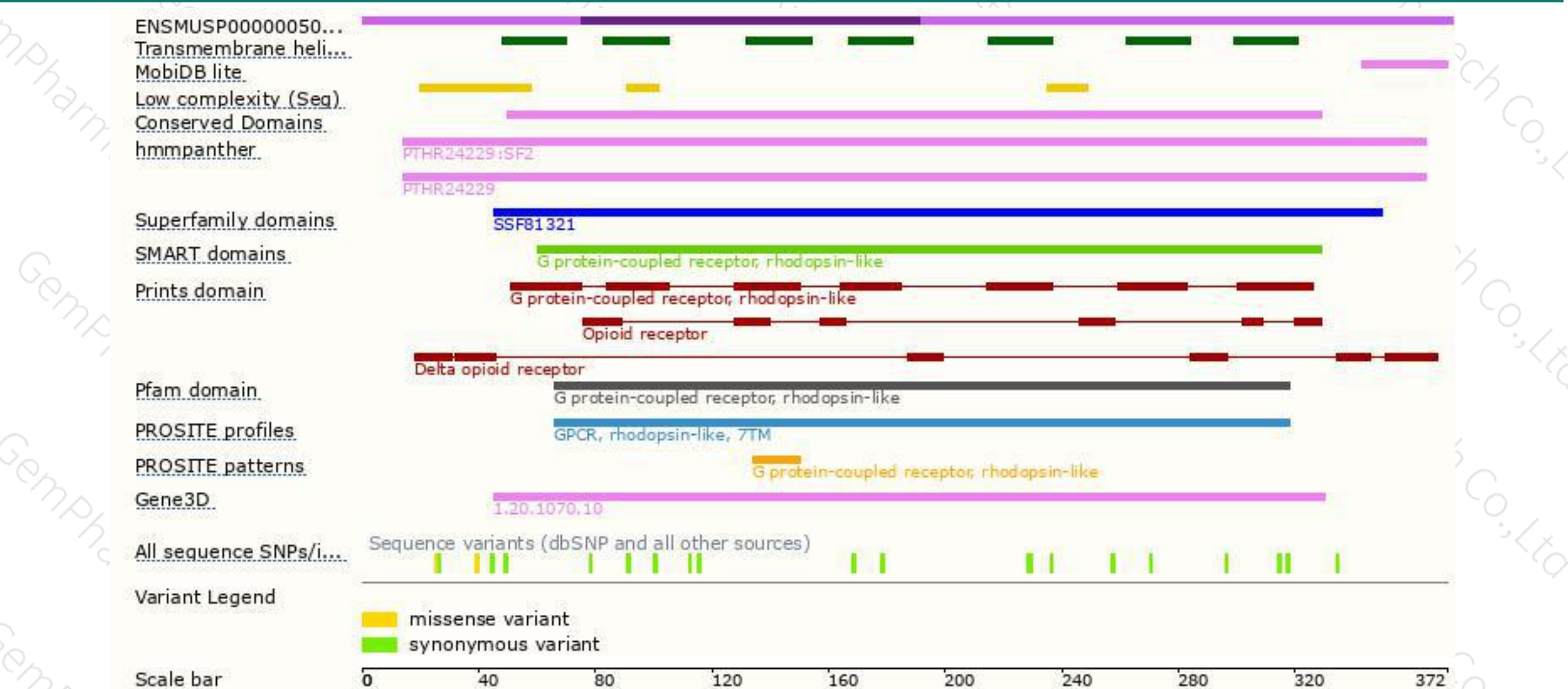
The strategy is based on the design of *Oprd1-201* transcript, The transcription is shown below



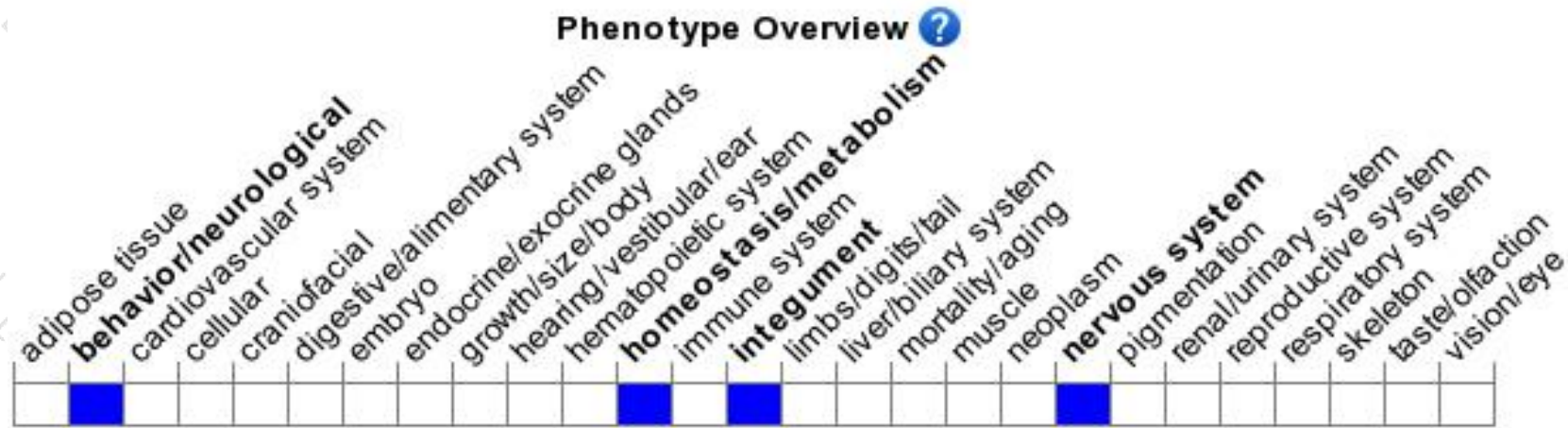
Genomic location distribution



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 one knock-out allele do not develop analgesic tolerance to morphine while mice homozygous for a different knock-out allele exhibit hyperactivity, increased anxiety, and decreased coping response.

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

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