

Olfr2 Cas9-KO Strategy

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Design Date: 2019-8-5

Project Overview

Project Name

Olfr2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Olfcr2* gene. The schematic diagram is as follows:



- The *Olfr2* gene has 7 transcripts. According to the structure of *Olfr2* gene, exon2 of *Olfr2-201* (ENSMUST00000094109.2) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Olfr2* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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.

- The *Olfr2* gene is located on the Chr7. 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)

Olfr2 olfactory receptor 2 [Mus musculus (house mouse)]

Gene ID: 18317, updated on 31-Jan-2019

Summary



Official Symbol Olfr2 provided by [MGI](#)

Official Full Name olfactory receptor 2 provided by [MGI](#)

Primary source [MGI:MGI:97432](#)

See related [Ensembl:ENSMUSG00000070417](#)

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 I7, MOR103-15, Olfr41

Summary Olfactory receptors interact with odorant molecules in the nose, to initiate a neuronal response that triggers the perception of a smell. The olfactory receptor proteins are members of a large family of G-protein-coupled receptors (GPCR) arising from single coding-exon genes. Olfactory receptors share a 7-transmembrane domain structure with many neurotransmitter and hormone receptors and are responsible for the recognition and G protein-mediated transduction of odorant signals. The olfactory receptor gene family is the largest in the genome. The nomenclature assigned to the olfactory receptor genes and proteins for this organism is independent of other organisms. [provided by RefSeq, Jul 2008]

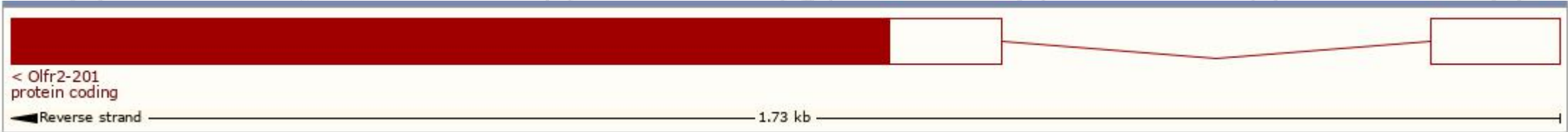
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

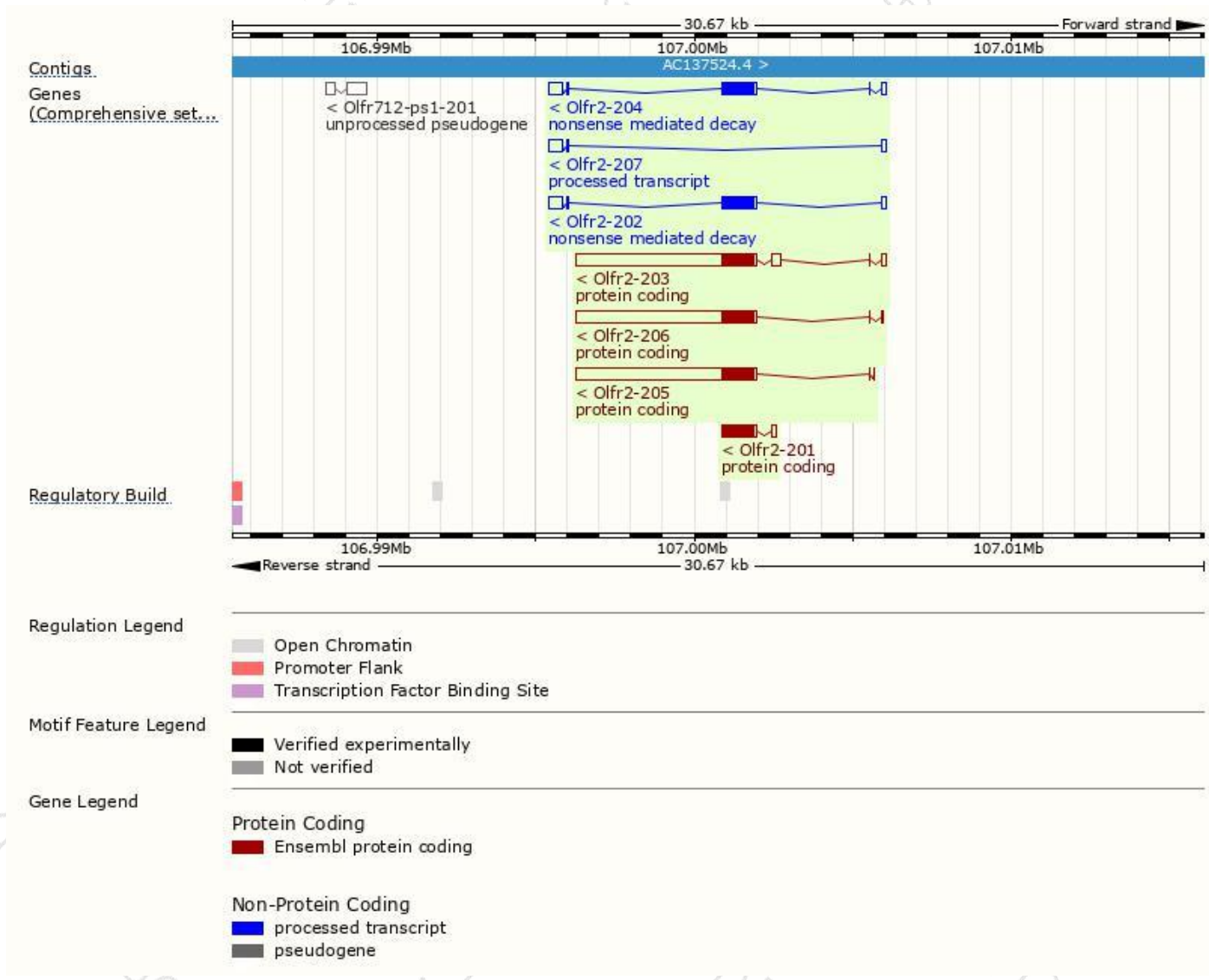
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Olfr2-203	ENSMUST00000208147.2	6178	327aa	Protein coding	CCDS21683	Q9QWU6	TSL:5 GENCODE basic APPRIS P1
Olfr2-206	ENSMUST00000216375.1	5828	327aa	Protein coding	CCDS21683	Q9QWU6	TSL:3 GENCODE basic APPRIS P1
Olfr2-205	ENSMUST00000214105.1	5798	327aa	Protein coding	CCDS21683	Q9QWU6	TSL:5 GENCODE basic APPRIS P1
Olfr2-201	ENSMUST00000094109.2	1250	327aa	Protein coding	CCDS21683	Q9QWU6	TSL:1 GENCODE basic APPRIS P1
Olfr2-204	ENSMUST00000211432.2	1812	327aa	Nonsense mediated decay	-	Q9QWU6	TSL:5
Olfr2-202	ENSMUST00000207280.3	1744	327aa	Nonsense mediated decay	-	Q9QWU6	TSL:5
Olfr2-207	ENSMUST00000217764.1	637	No protein	Processed transcript	-	-	TSL:5

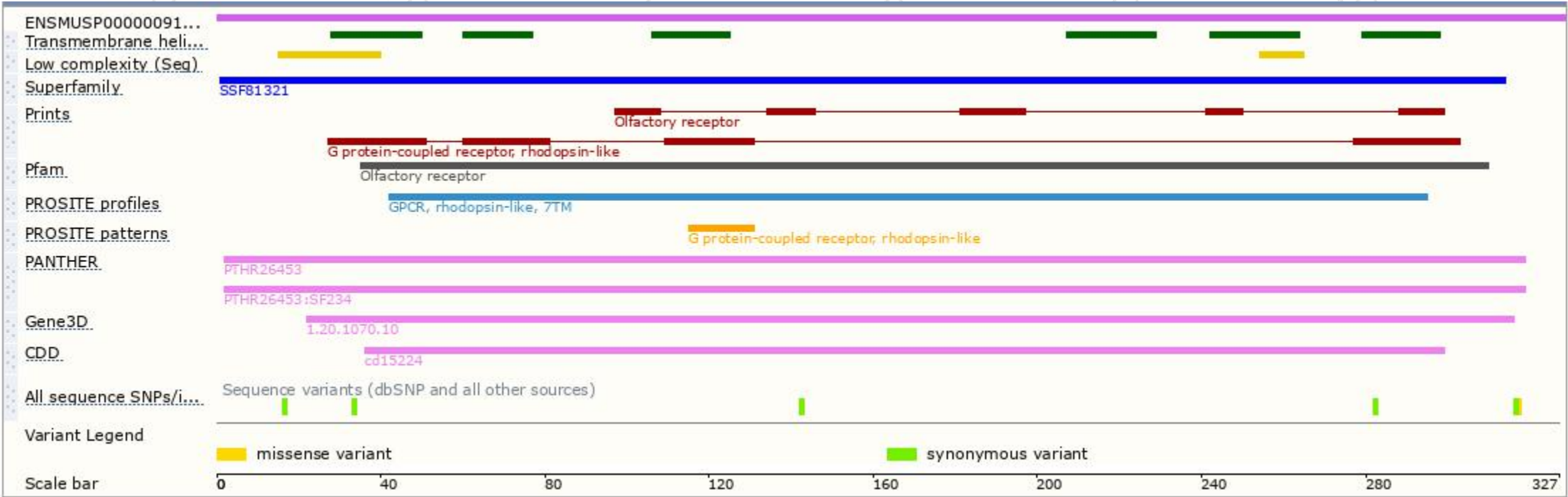
The strategy is based on the design of *Olfr2-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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