Olfr1509 Cas9-KO Strategy

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Project Overview

Project Name	***Olfr1509***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Olfr1509* gene. The schematic diagram is as follows:

Technical routes

➢ The *Olfr1509* gene has 6 transcripts. According to the structure of *Olfr1509* gene, exon3 of *Olfr1509-206* (ENSMUST00000215030.1) 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 *Olfr1509* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

➢ The *Olfr1509* gene is located on the Chr14. 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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Olfr1509 olfactory receptor 1509 [*Mus musculus* (house mouse)]

Gene ID: 57271, updated on 28-Mar-2019

Summary

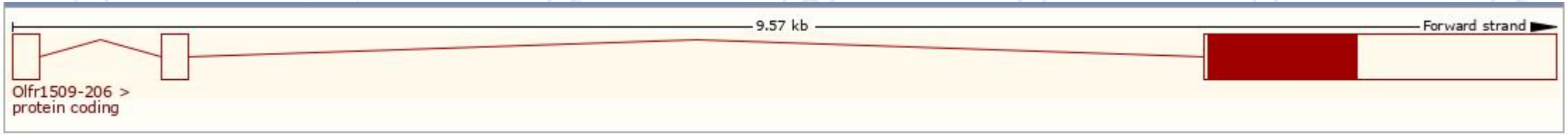
Official Symbol	Olfr1509 provided by MGI
Official Full Name	olfactory receptor 1509 provided by MGI
Primary source	MGI:MGI:3031343
See related	Ensembl:ENSMUSG00000035626
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Or83; Mor83; MOR244-3
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）

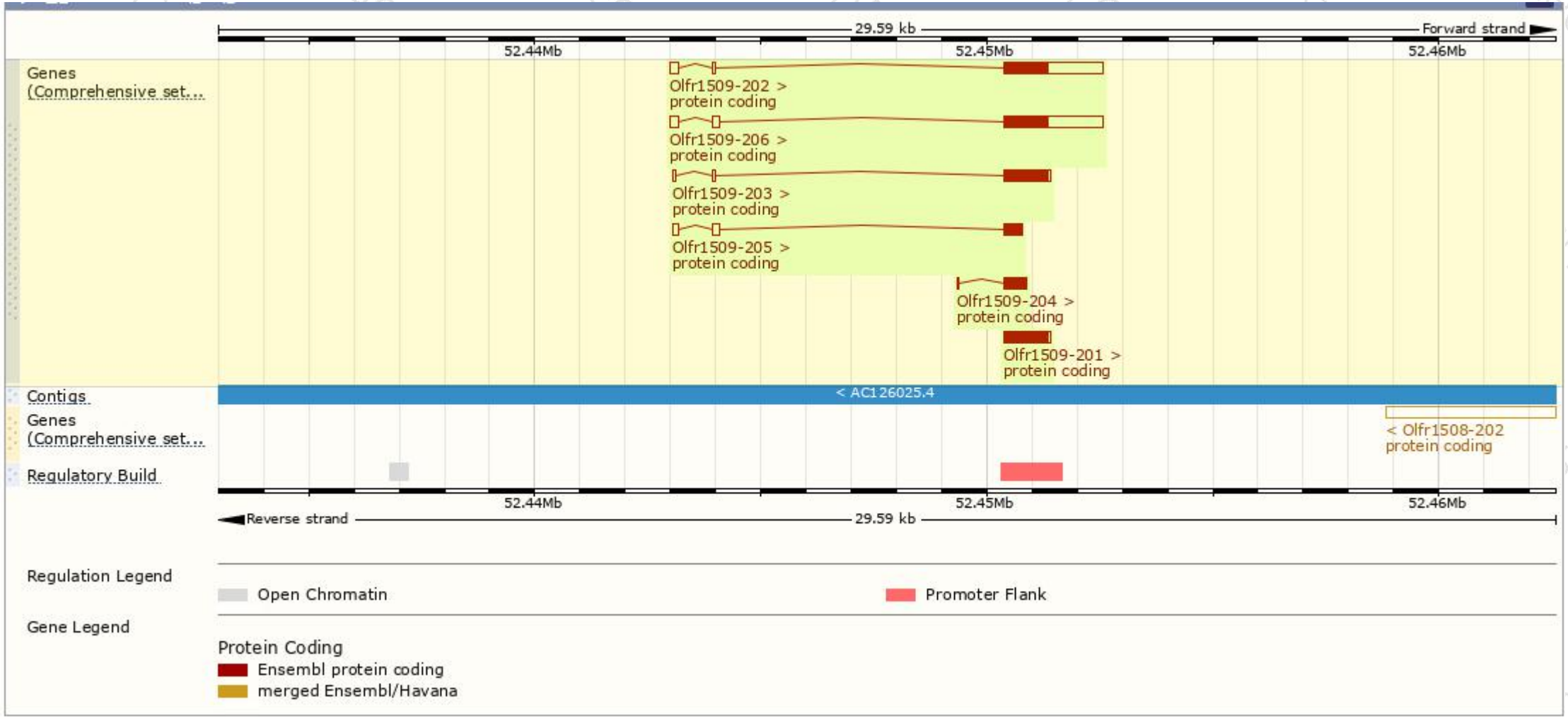
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID ▲	bp	Protein	Biotype	CCDS	UniProt	Flags
Olfr1509-201	ENSMUST00000045066.2	1010	308aa	Protein coding	CCDS27060	Q7TQQ0	TSL:NA GENCODE basic APPRIS P1
Olfr1509-202	ENSMUST00000205900.2	2444	308aa	Protein coding	CCDS27060	Q7TQQ0	TSL:3 GENCODE basic APPRIS P1
Olfr1509-203	ENSMUST00000206100.1	1161	308aa	Protein coding	CCDS27060	Q7TQQ0	TSL:3 GENCODE basic APPRIS P1
Olfr1509-204	ENSMUST00000206437.1	526	156aa	Protein coding	-	A0A0U1RQ73	CDS 3' incomplete TSL:3
Olfr1509-205	ENSMUST00000206718.1	697	125aa	Protein coding	-	A0A0U1RNG2	CDS 3' incomplete TSL:3
Olfr1509-206	ENSMUST00000215030.1	2525	308aa	Protein coding	CCDS27060	Q7TQQ0	TSL:5 GENCODE basic APPRIS P1

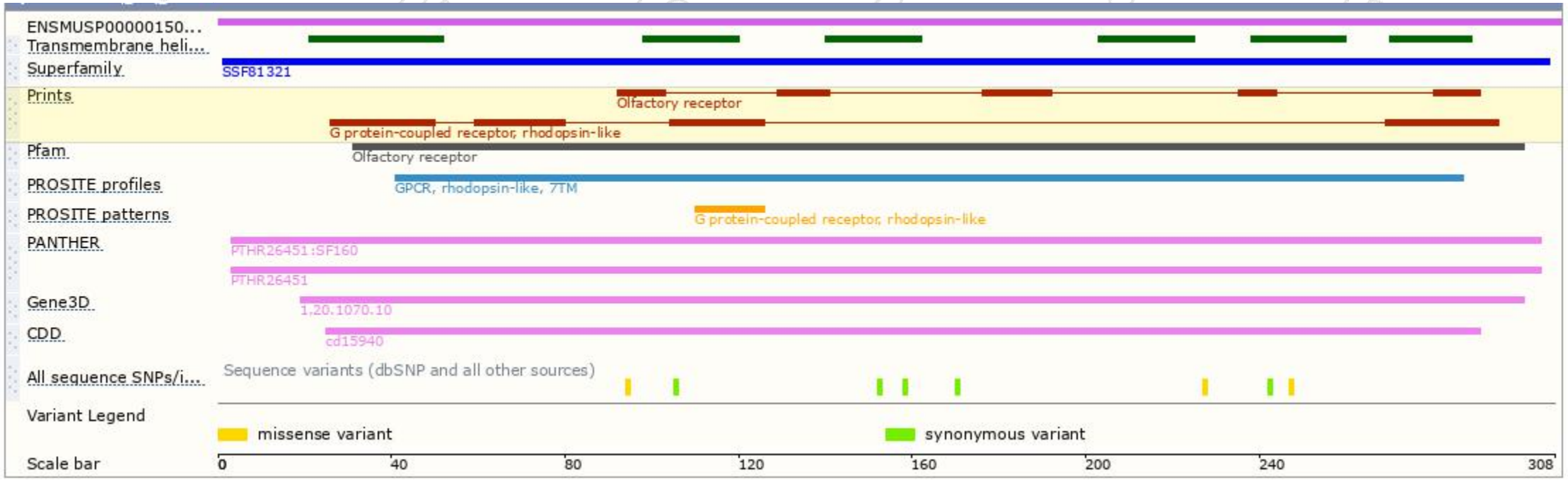
The strategy is based on the design of *Olfr1509-206* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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