

Olfr1428 Cas9-CKO Strategy

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Project Overview

Project Name

Olfr1428

Project type

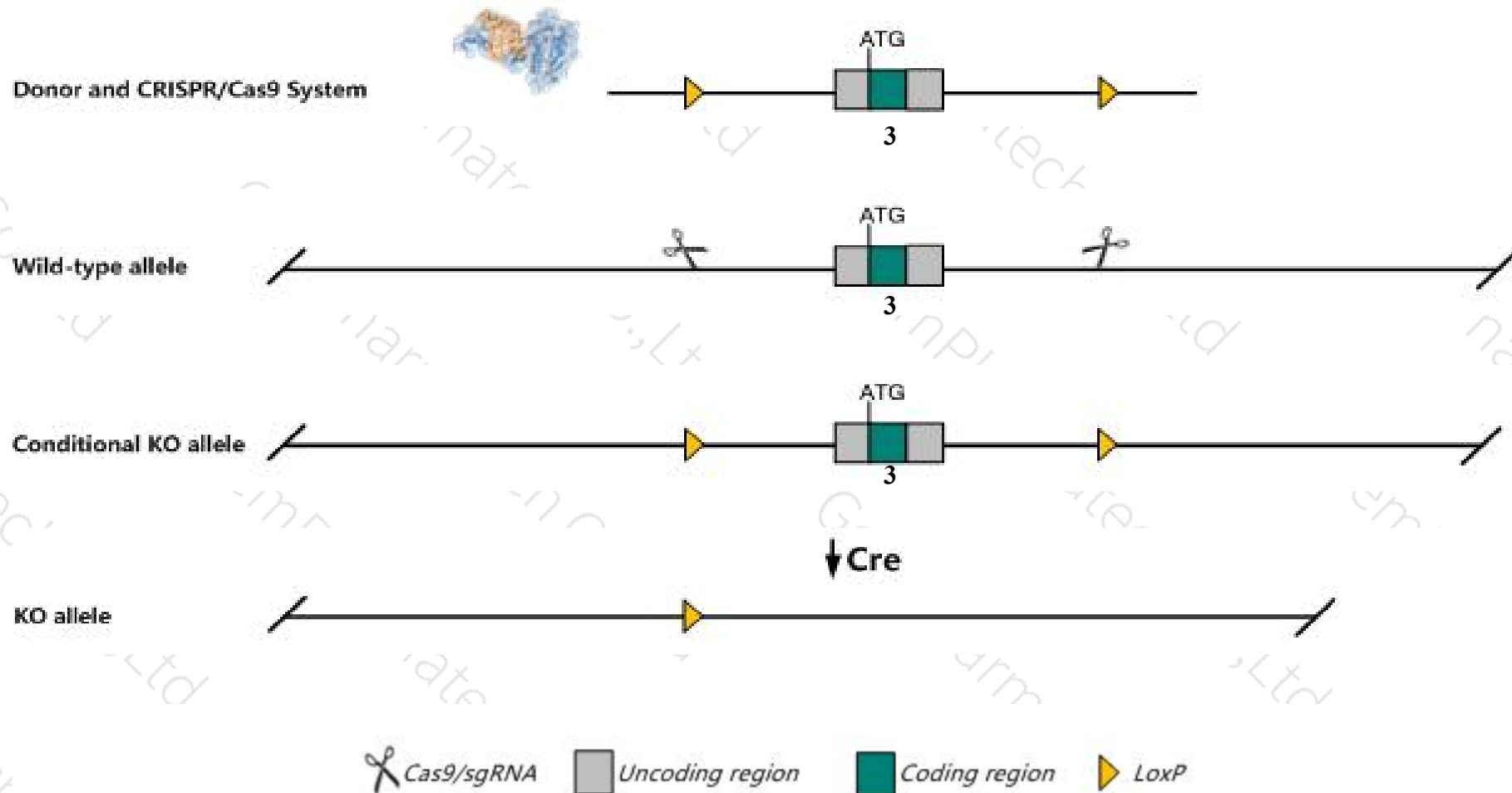
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Olfr1428* gene. The schematic diagram is as follows:



- The *Olfr1428* gene has 3 transcripts. According to the structure of *Olfr1428* gene, exon3 of *Olfr1428-203* (ENSMUST00000214103.1) 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 *Olfr1428* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor 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 flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- The floxed region is near to the N-terminal of *Olfr1427* gene, this strategy may influence the regulatory function of the N-terminal of *Olfr1427* gene.
- The *Olfr1428* gene is located on the Chr19. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Olfr1428 olfactory receptor 1428 [Mus musculus (house mouse)]

Gene ID: 258673, updated on 31-Jan-2019

Summary



Official Symbol Olfr1428 provided by [MGI](#)

Official Full Name olfactory receptor 1428 provided by [MGI](#)

Primary source [MGI:MGI:3031262](#)

See related [Ensembl:ENSMUSG000000067524](#)

Gene type protein coding

RefSeq status PROVISIONAL

Organism [Mus musculus](#)

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

Also known as MOR239-5

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]

Expression Low expression observed in reference dataset [See more](#)

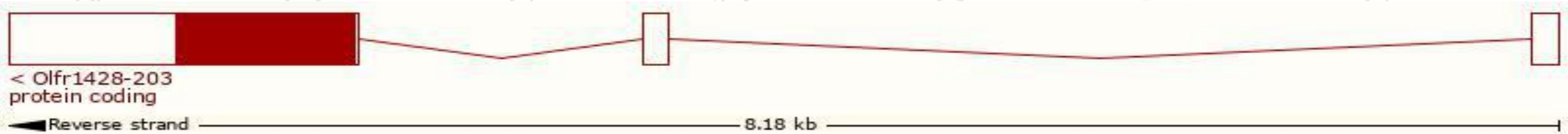
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

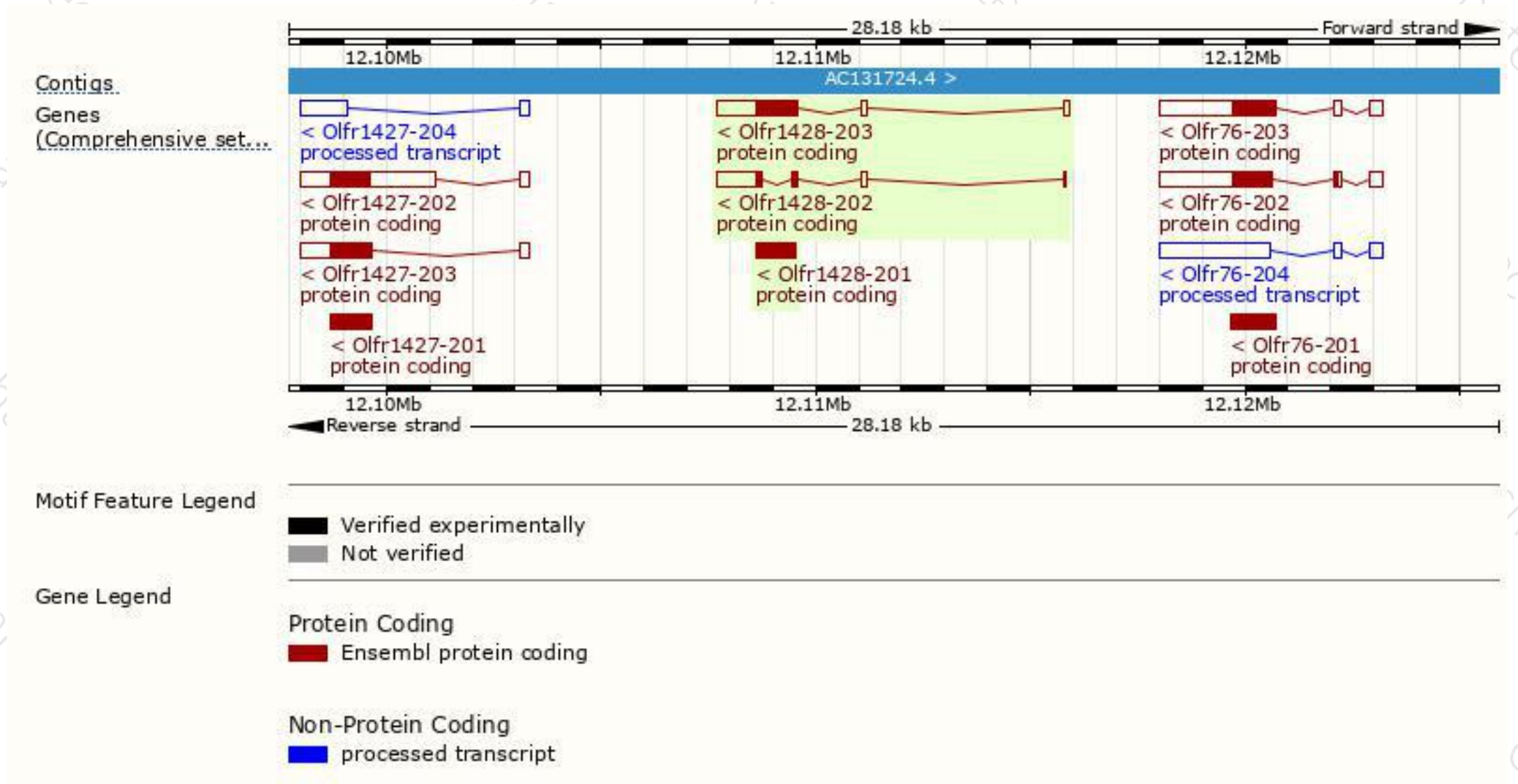
The gene has 3 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|--------------|--------------------------------------|------|-----------------------|----------------|---------------------------|----------------------------|--------------------------------|
| Olfr1428-203 | ENSMUST00000214103.1 | 2127 | 314aa | Protein coding | CCDS29622 | Q0VDY1 | TSL:5 GENCODE basic APPRIS P1 |
| Olfr1428-201 | ENSMUST00000087824.1 | 945 | 314aa | Protein coding | CCDS29622 | Q0VDY1 | TSL:NA GENCODE basic APPRIS P1 |
| Olfr1428-202 | ENSMUST00000208391.2 | 1368 | 88aa | Protein coding | - | A0A140LIZ3 | TSL:3 GENCODE basic |

The strategy is based on the design of *Olfr1428-203* transcript,The transcription is shown below



Genomic location distribution



Protein domain

ENSMUSP00000085...

Transmembrane heli...

Low complexity (Seg)

Conserved Domains

hmmpanther

PTHR26451:SF300

PTHR26451

Superfamily domains

SSF81321

Prints domain

G protein-coupled receptor, rhodopsin-like

Olfactory receptor

Pfam domain

Olfactory receptor

PROSITE profiles

GPCR, rhodopsin-like, 7TM

PROSITE patterns

G protein-coupled receptor, rhodopsin-like



Gene3D

1.20.1070.10

All sequence SNPs/i...

Sequence variants (dbSNP and all other sources)

Variant Legend

 missense variant
 synonymous variant

Scale bar

0 40 80 120 160 200 240 314

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

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