# *Gng4* Cas9-CKO Strategy

**Designer:** JiaYu

**Reviewer:** Xiaojing Li

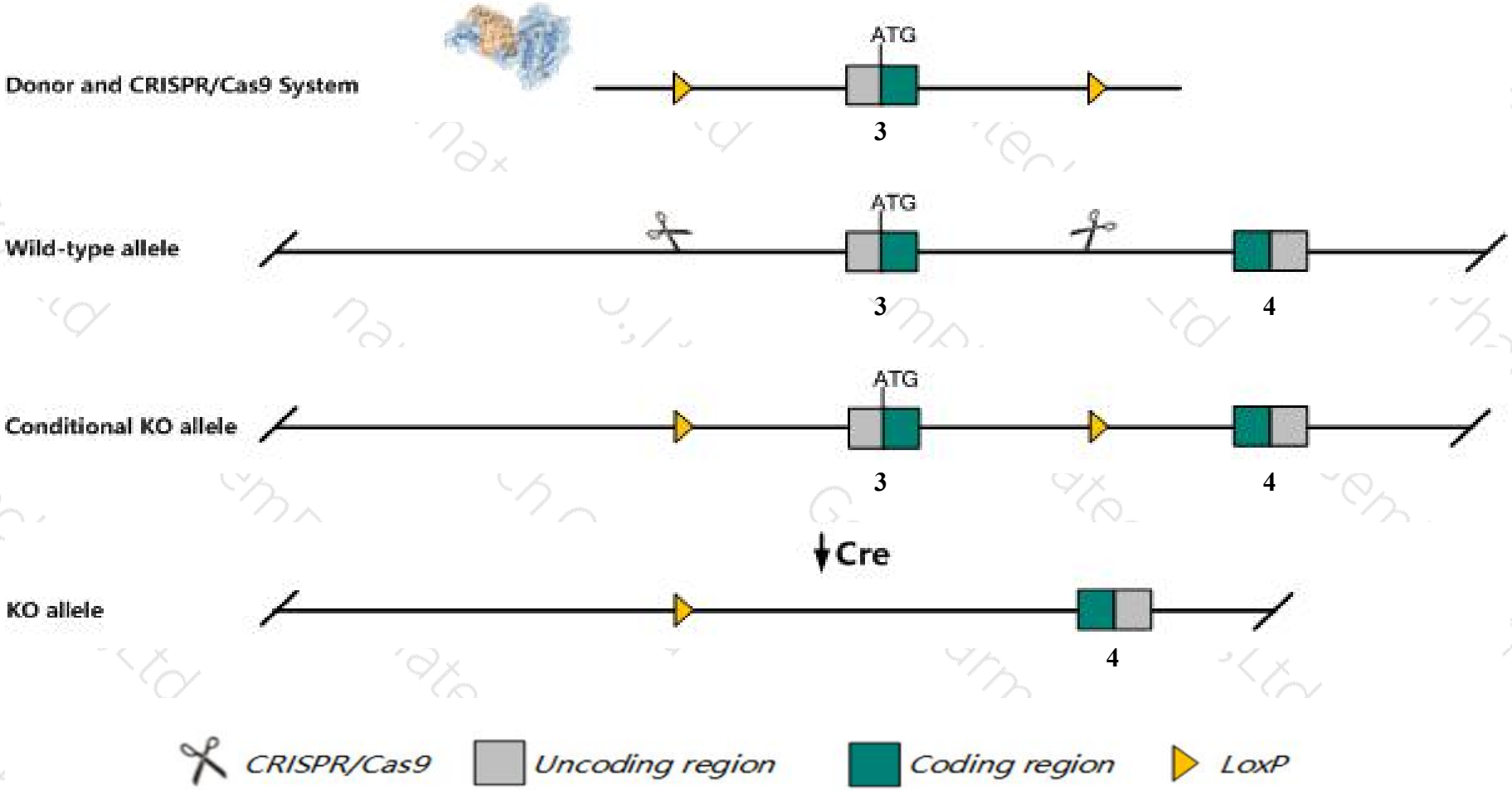
**Design Date:** 2020-3-5

# Project Overview

| | |
|---|---|
| **Project Name** | ***Gng4*** |
| **Project type** | **Cas9-CKO** |
| **Strain background** | **C57BL/6JGpt** |

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gng4* gene. The schematic diagram is as follows:



# Technical routes

- The *Gng4* gene has 3 transcripts. According to the structure of *Gng4* gene, exon3 of *Gng4-201* (ENSMUST00000021734.8) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gng4* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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.

# Notice

➢ The *Gng4* gene is located on the Chr13. 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）

集萃药康 GemPharmatech

## Gng4 guanine nucleotide binding protein (G protein), gamma 4 [Mus musculus (house mouse)]

Gene ID: 14706, updated on 31-Jan-2019

### Summary

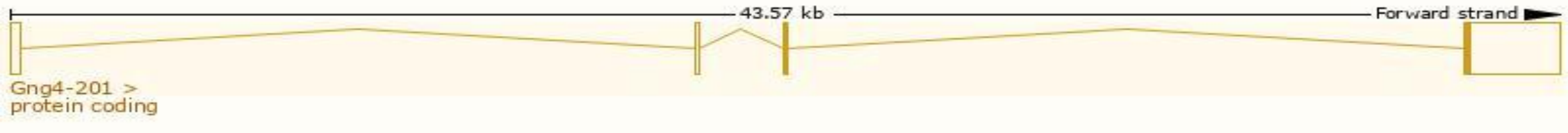
| | |
|---|---|
| **Official Symbol** | Gng4 provided by MGI |
| **Official Full Name** | guanine nucleotide binding protein (G protein), gamma 4 provided by MGI |
| **Primary source** | MGI:MGI:102703 |
| **See related** | Ensembl:ENSMUSG00000021303 |
| **Gene type** | protein coding |
| **RefSeq status** | REVIEWED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Summary** | This gene encodes the gamma subunit of the heterotrimeric G-proteins that are comprised of alpha, beta and gamma subunits. Upon activation by G protein-coupled receptors, the beta-gamma heterodimer dissociates from the alpha subunit to activate downstream signaling events. Alternate splicing results in multiple transcript variants. [provided by RefSeq, Dec 2014] |
| **Expression** | Biased expression in frontal lobe adult (RPKM 69.2), CNS E18 (RPKM 22.4) and 3 other tissues See more |
| **Orthologs** | human all |

# Transcript information（Ensembl）

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

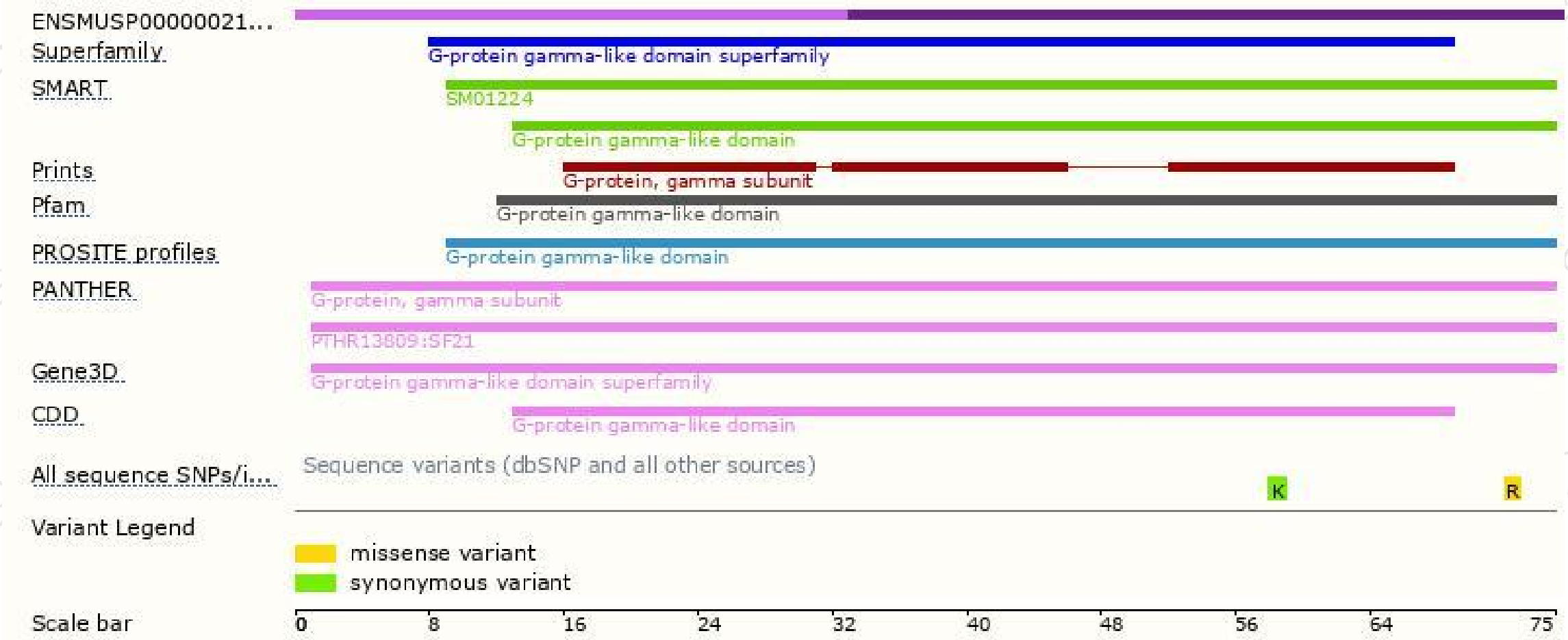
| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| Gng4-201 | ENSMUST00000021734.8 | 3179 | 75aa | Protein coding | CCDS36598 | P50153 | TSL:1 GENCODE basic APPRIS P1 |
| Gng4-203 | ENSMUST00000220727.1 | 324 | No protein | lncRNA | - | - | TSL:3 |
| Gng4-202 | ENSMUST00000138783.7 | 206 | No protein | lncRNA | - | - | TSL:3 |

The strategy is based on the design of *Gng4-201* transcript,The transcription is shown below



# Genomic location distribution

# Protein domain



集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd