

# *Rxfp4* Cas9-CKO Strategy

Designer: Yanhua Shen

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# Project Overview

**Project Name**

*Rxfp4*

**Project type**

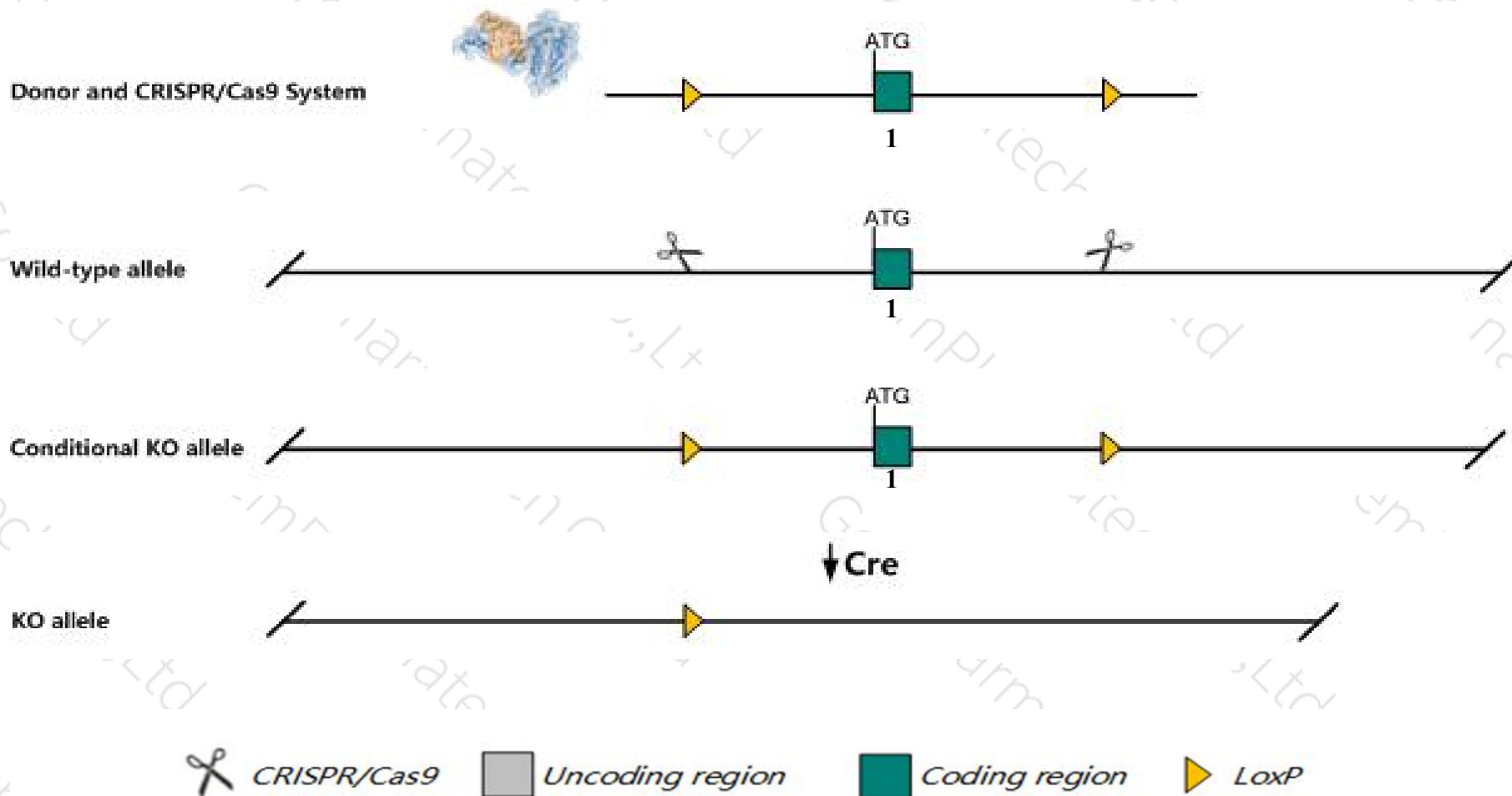
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rxfp4* gene. The schematic diagram is as follows:



- The *Rxfp4* gene has 1 transcript. According to the structure of *Rxfp4* gene, exon1 of *Rxfp4-201* (ENSMUST00000063119.4) 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 *Rxfp4* 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit reduced refeeding responses after fasting, altered food preference, and reduced fat content.
- The *Rxfp4* gene is located on the Chr3. 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)

## Rxfp4 relaxin family peptide receptor 4 [Mus musculus (house mouse)]

Gene ID: 242093, updated on 31-Jan-2019

### Summary

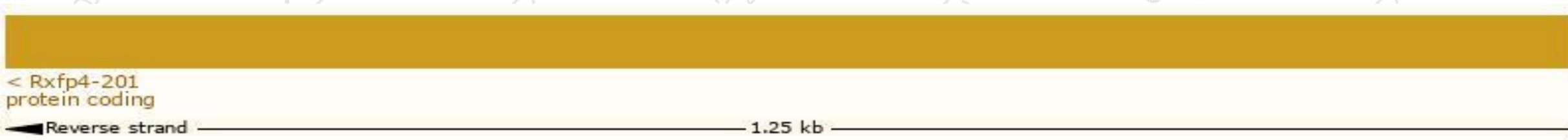
<b>Official Symbol</b>	Rxfp4 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	relaxin family peptide receptor 4 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2182926</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000049741</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	PROVISIONAL
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	GPCR142, Gpr100, Rln3r2, SALPR
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

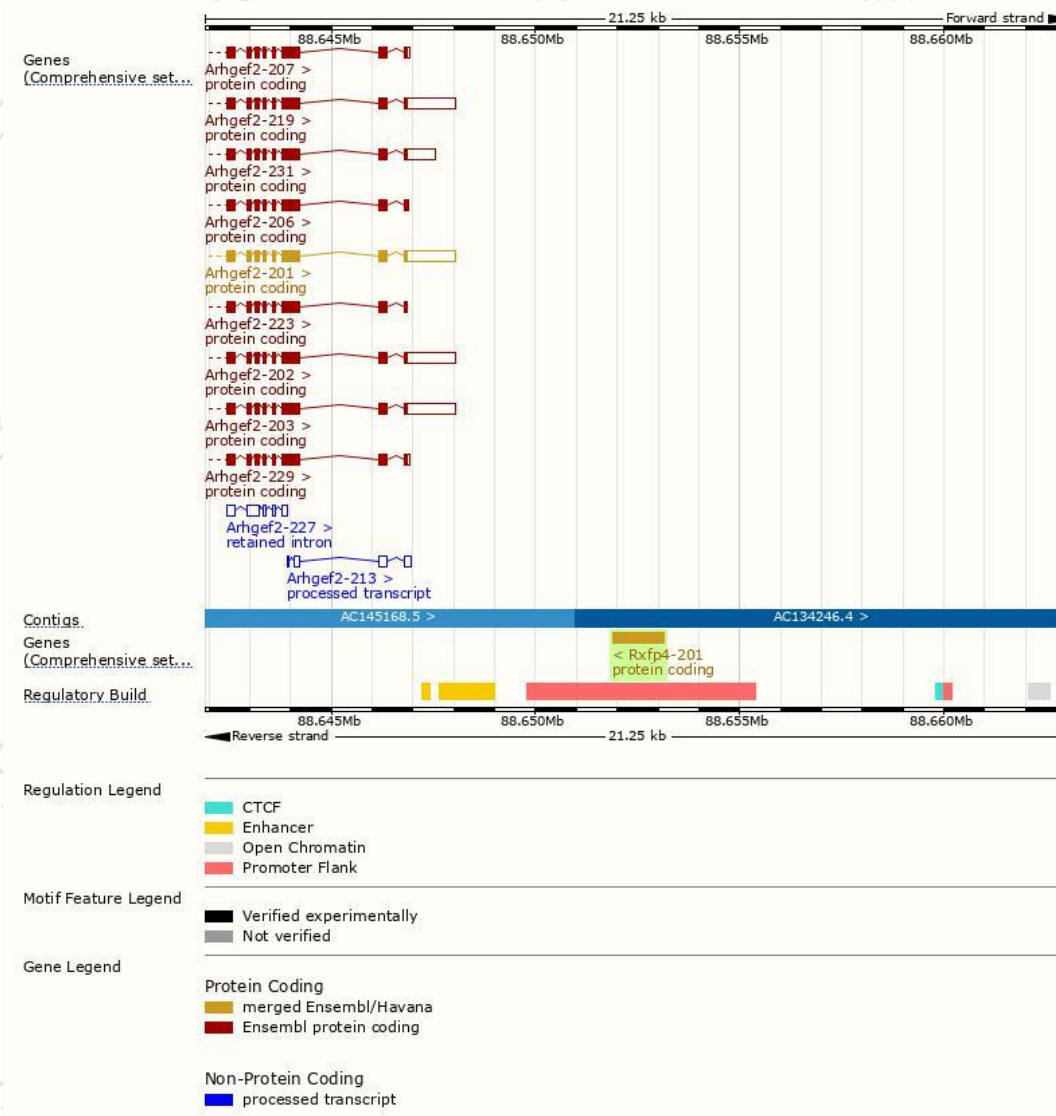
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
<b>Rxfp4-201</b>	<a href="#">ENSMUST00000063119.4</a>	1245	<a href="#">414aa</a>	Protein coding	<a href="#">CCDS17482</a>	<a href="#">Q5Y985 Q7TQP4</a>	TSL:NA GENCODE basic APPRIS P1

The strategy is based on the design of *Rxfp4-201* transcript, The transcription is shown below



# Genomic location distribution





# Protein domain

ENSMUSP00000058...

Transmembrane heli...

Low complexity (Seq)

hmmpanther

PTHR24230:SF32

PTHR24230

Superfamily domains

SSF81321

Prints domain

G protein-coupled receptor, rhodopsin-like

Angiotensin II receptor family

Pfam domain

G protein-coupled receptor, rhodopsin-like

PROSITE profiles

GPCR, rhodopsin-like, 7TM

Gene3D

1.20.1070.10

All sequence SNPs/i...

Sequence variants (dbSNP and all other sources)

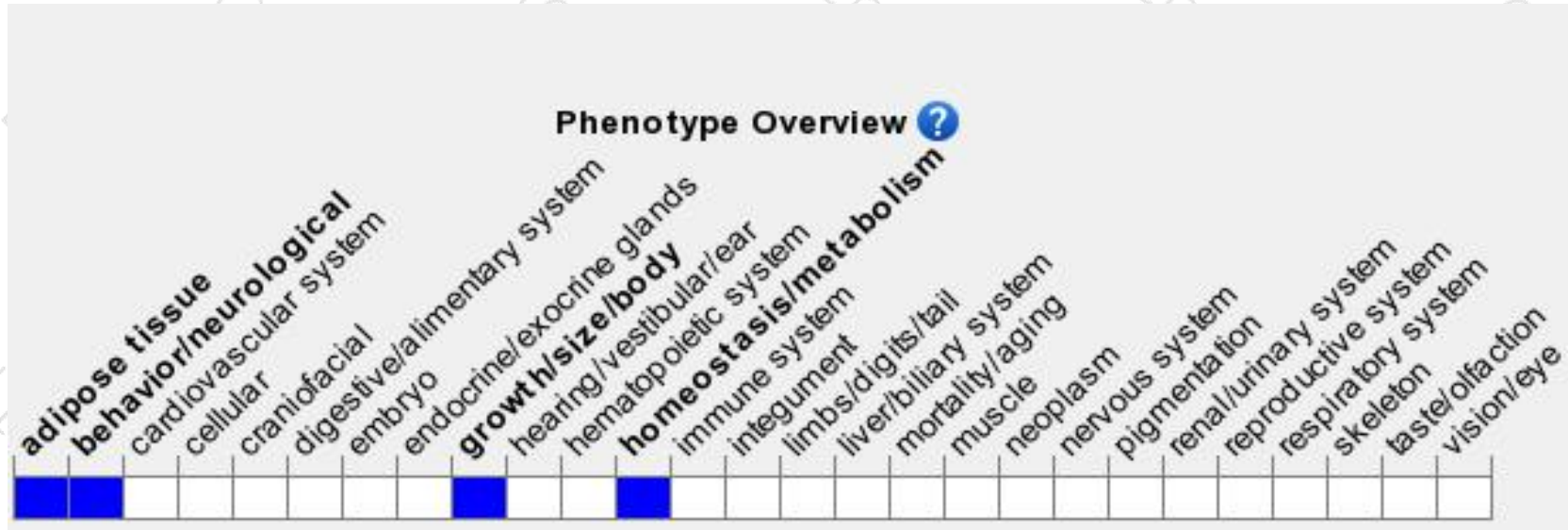
Variant Legend

- stop gained
- missense variant
- synonymous variant

Scale bar

0 40 80 120 160 200 240 280 320 360 414

# 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 a knock-out allele exhibit reduced refeeding responses after fasting, altered food preference, and reduced fat content.

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

Tel: 400-9660890

