

***Tacr3* Cas9-CKO Strategy**

Designer: Xueting Zhang

Design Date: 2019-8-5

Project Overview

Project Name

Tacr3

Project type

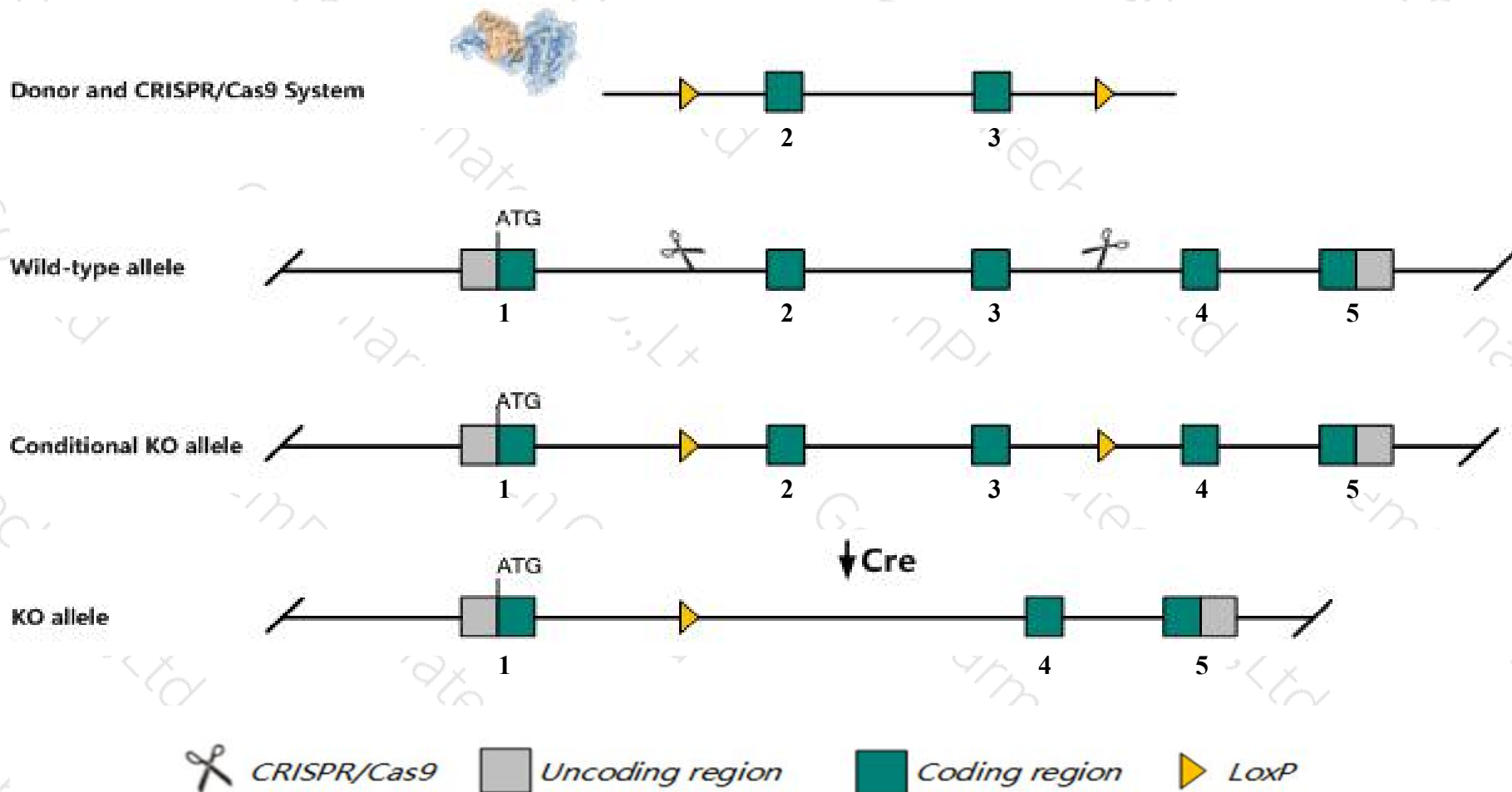
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tacr3* gene. The schematic diagram is as follows:



- The *Tacr3* gene has 1 transcript. According to the structure of *Tacr3* gene, exon2-exon3 of *Tacr3-201* (ENSMUST00000029822.5) transcript is recommended as the knockout region. The region contains 340bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tacr3* 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 increased body weight, cognitive deficits in tests associated with learning and memory and symptoms of hypogonadotropic hypogonadism.
- The *Tacr3* 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)

Tacr3 tachykinin receptor 3 [Mus musculus (house mouse)]

Gene ID: 21338, updated on 2-Apr-2019

Summary



Official Symbol	Tacr3 provided by MGI
Official Full Name	tachykinin receptor 3 provided by MGI
Primary source	MGI:MGI:892968
See related	Ensembl:ENSMUSG00000028172
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
Also known as	Nk3r, Nkr, Tac3r
Summary	This gene belongs to a family of genes that function as receptors for tachykinins. The receptors belonging to this family are characterized by interactions with G proteins and 7 hydrophobic transmembrane regions. This gene encodes the receptor for the tachykinin neurokinin 3, also referred to as neurokinin B. [provided by RefSeq, Mar 2010]
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Transcript information (Ensembl)

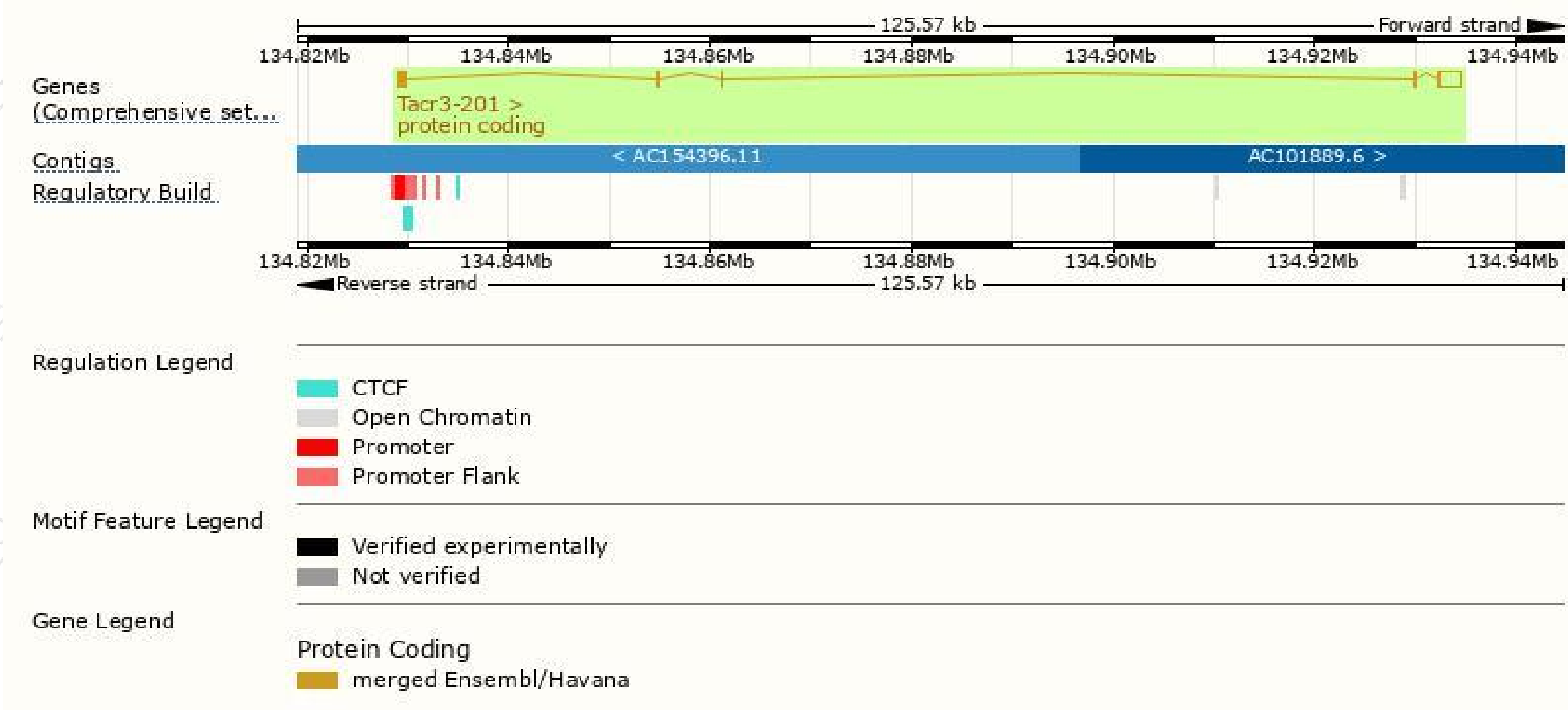
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tacr3-201	ENSMUST00000029822.5	3762	452aa	Protein coding	CCDS17852	P47937	TSL:1 GENCODE basic APPRIS P1

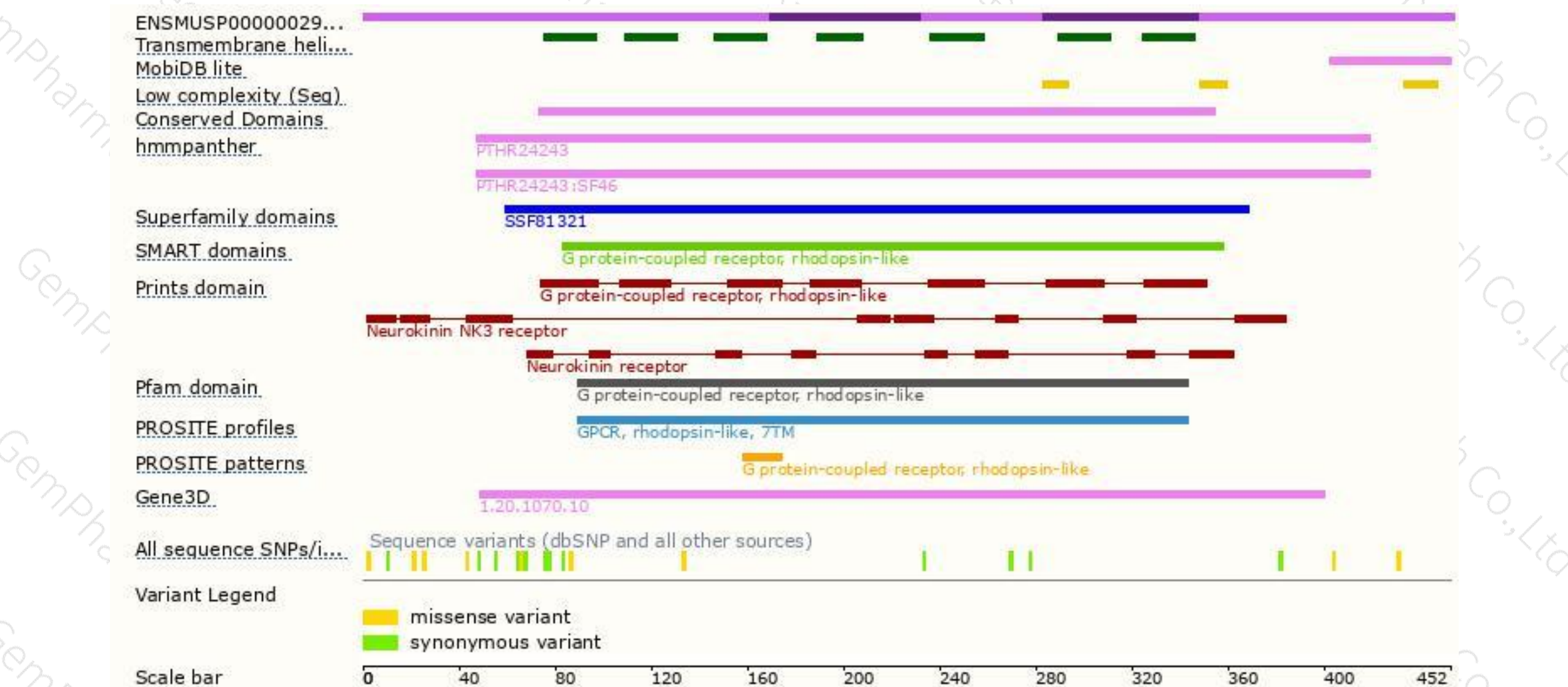
The strategy is based on the design of *Tacr3-201* transcript, The transcription is shown below



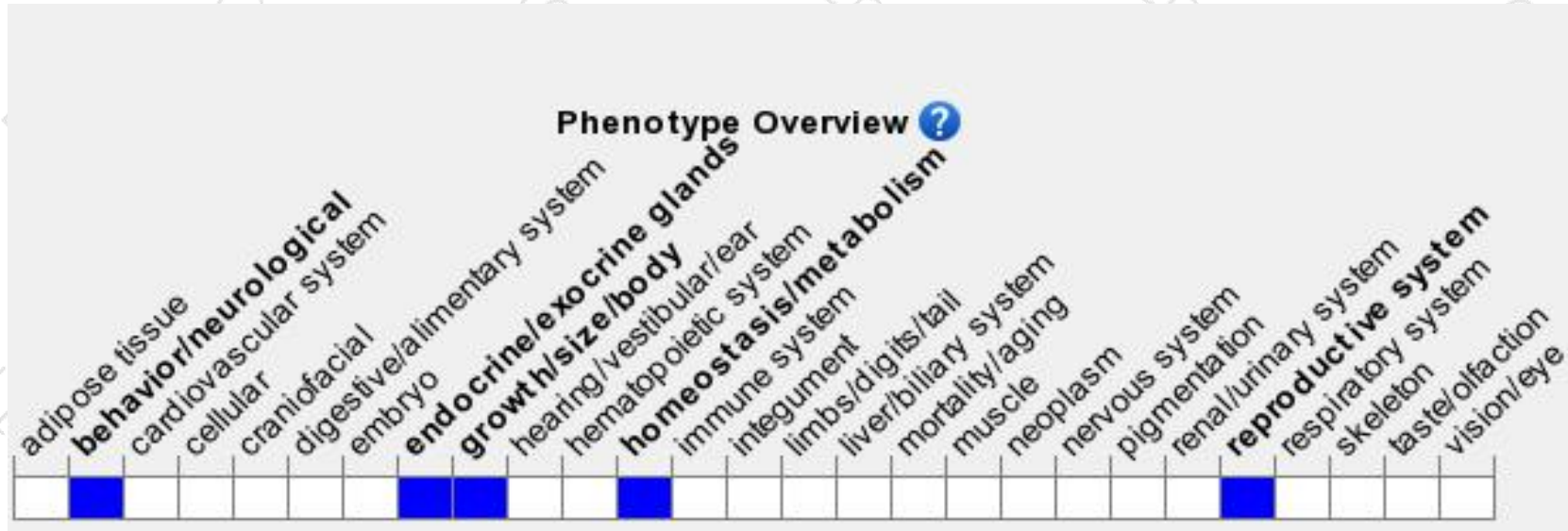
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

Mice homozygous for a knock-out allele exhibit increased body weight, cognitive deficits in tests associated with learning and memory and symptoms of hypogonadotropic hypogonadism.

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

Tel: 400-9660890

