Tas1r1 Cas9-CKO Strategy

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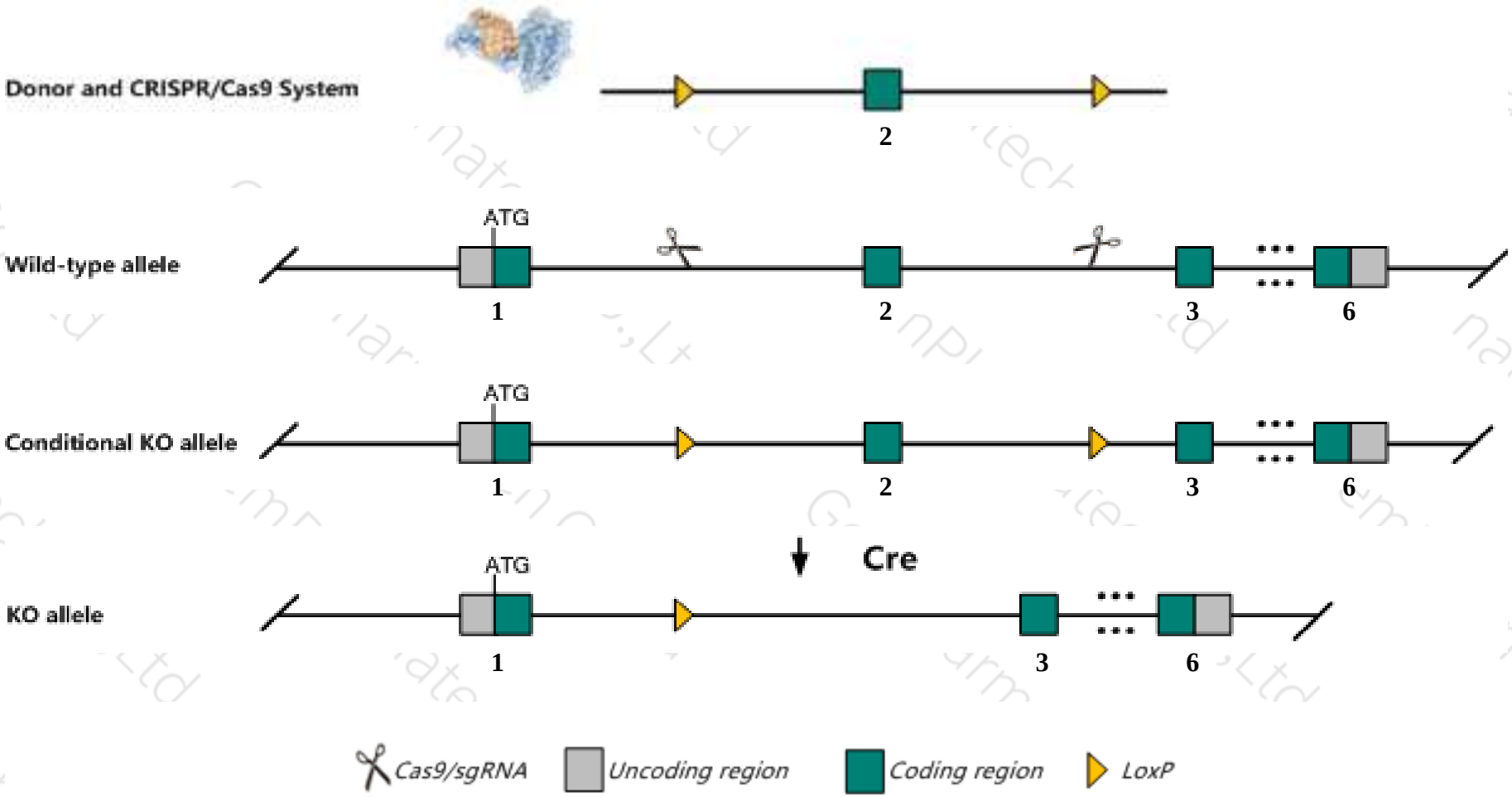
Project Overview

Project Name	***Tas1r1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tas1r1* gene. The schematic diagram is as follows:



Technical routes

- The *Tas1r1* gene has 1 transcript. According to the structure of *Tas1r1* gene, exon2 of *Tas1r1-201* (ENSMUST00000030792.1) transcript is recommended as the knockout region.The region contains 307bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Tas1r1* 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.

Notice

➢ According to the existing MGI data,Homozygous mutant mice show diminished behavioral and nervous responses to umami tastants. Response to sweet tastants is unimpaired.

➢ The *Tas1r1* gene is located on the Chr4. 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）

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Tas1r1 taste receptor, type 1, member 1 [Mus musculus (house mouse)]

Gene ID: 110326, updated on 31-Jan-2019

Summary

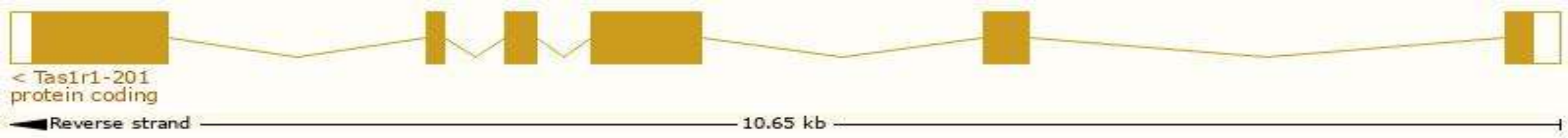
Official Symbol	Tas1r1 provided by MGI
Official Full Name	taste receptor, type 1, member 1 provided by MGI
Primary source	MGI:MGI:1927505
See related	Ensembl:ENSMUSG00000028950
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gpr70, T1r1, TR1
Expression	Biased expression in testis adult (RPKM 16.2), genital fat pad adult (RPKM 1.6) and 2 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

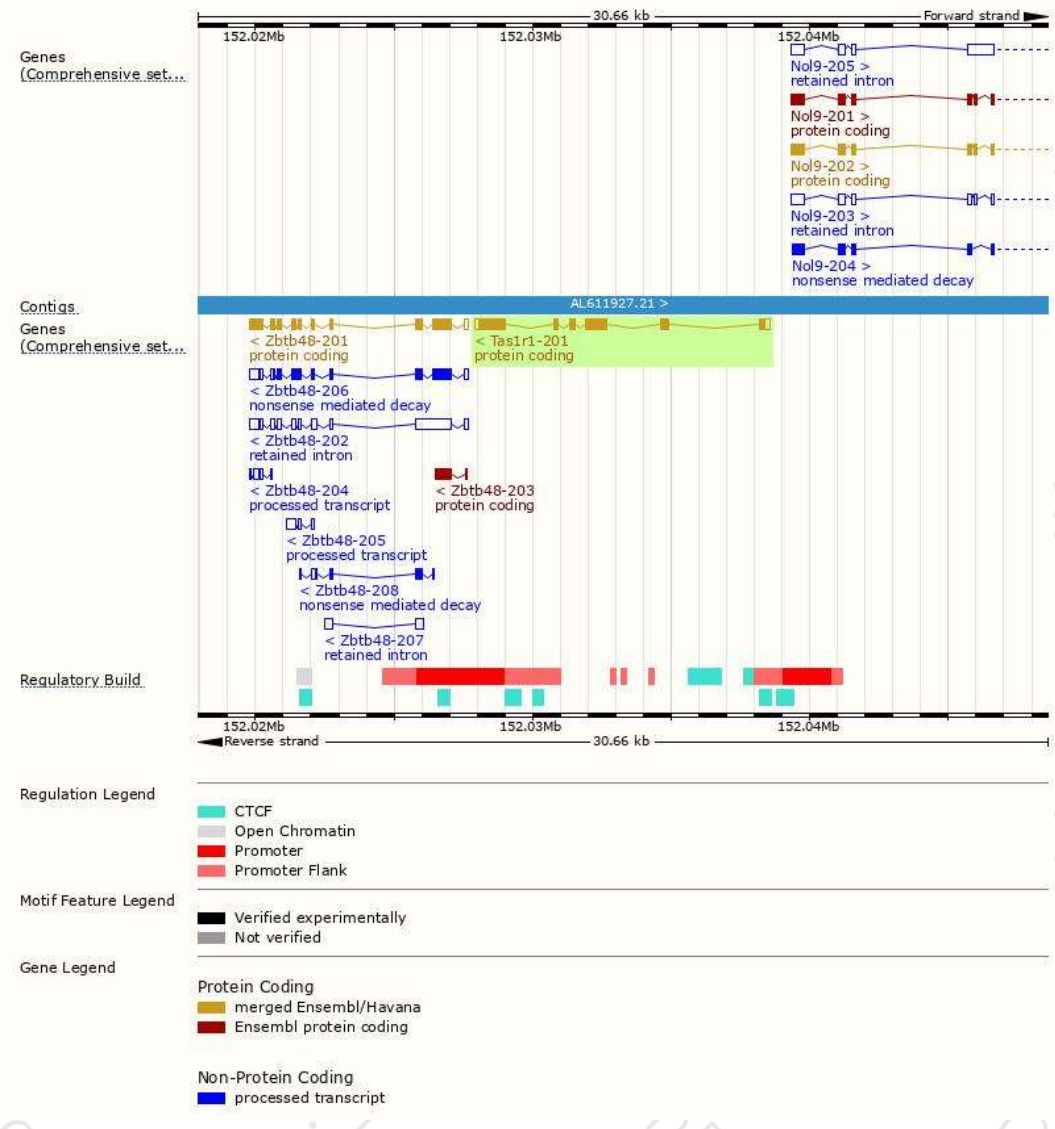
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tas1r1-201	ENSMUST00000030792.1	2863	842aa	Protein coding	CCDS18985	Q3U5H1	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Tas1r1-201* transcript,The transcription is shown below

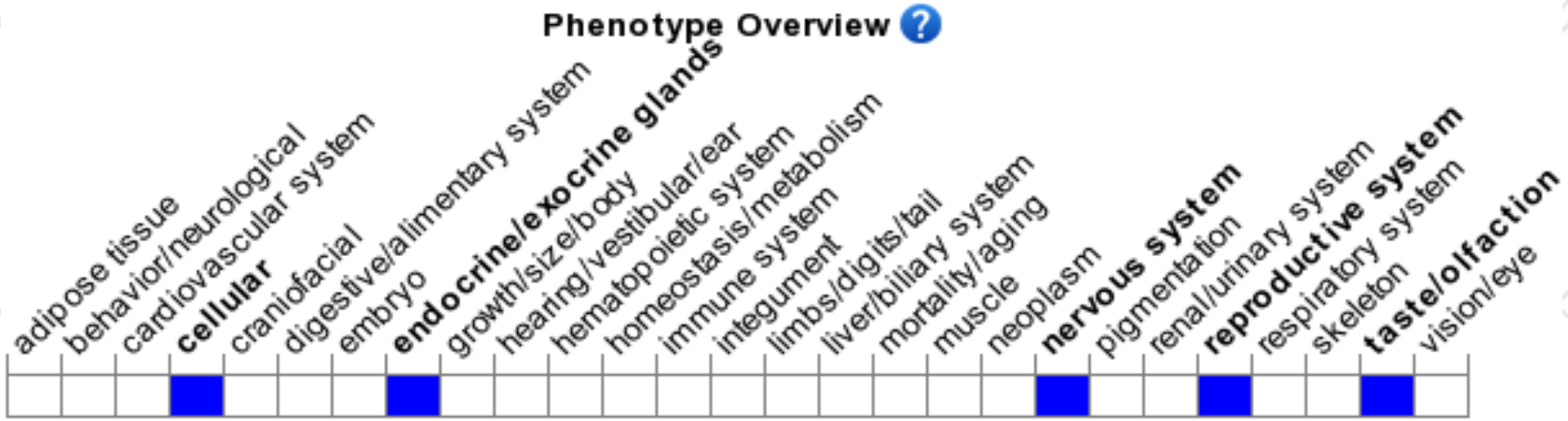


Genomic location distribution



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/).

According to the existing MGI data,Homozygous mutant mice show diminished behavioral and nervous responses to umami tastants. Response to sweet tastants is unimpaired.

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

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