Tshr Cas9-CKO Strategy

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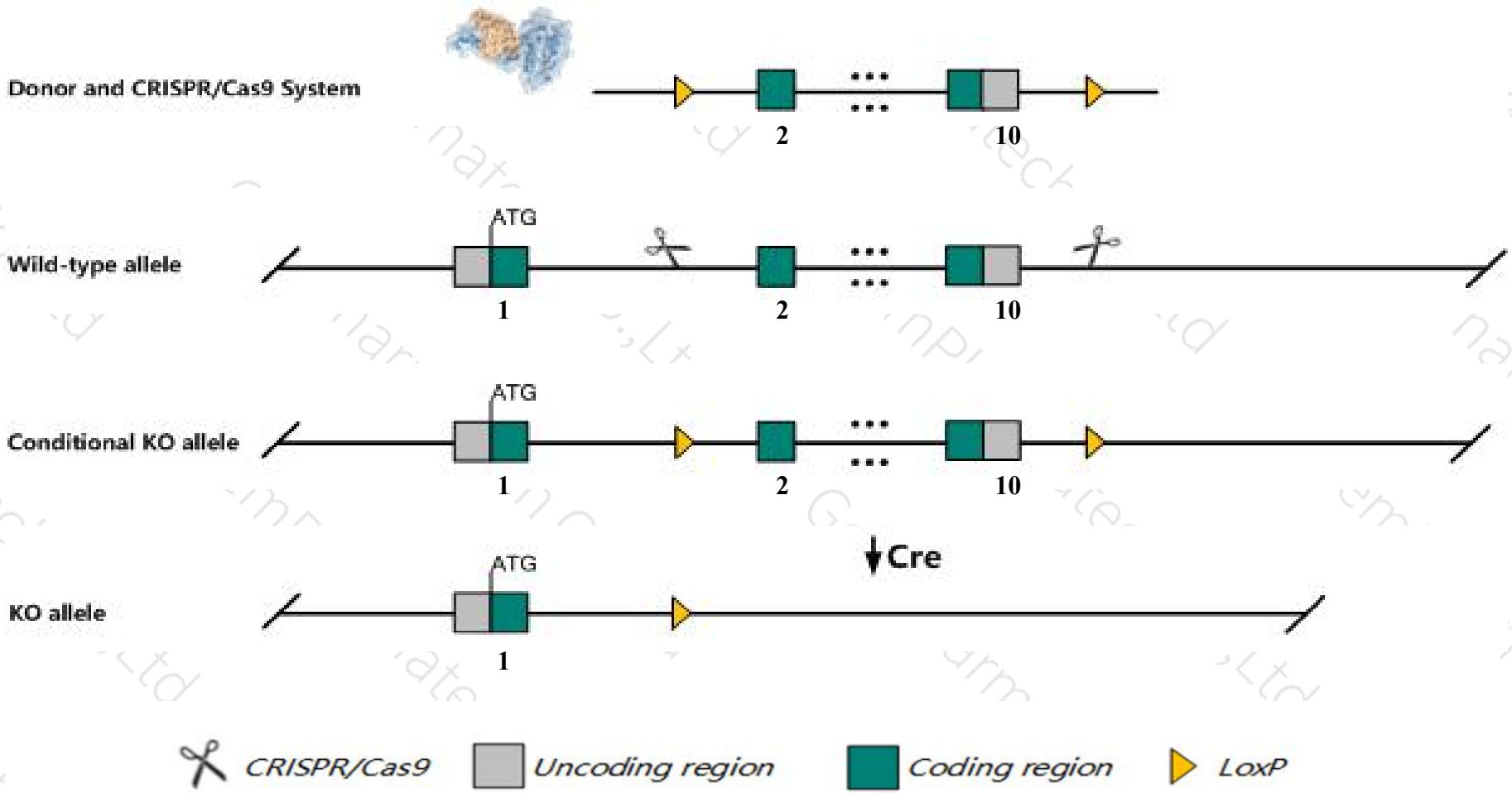
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Tshr* gene has 5 transcripts. According to the structure of *Tshr* gene, exon2-exon10 of *Tshr-202* (ENSMUST00000021346.13) transcript is recommended as the knockout region.The region contains 2125bp coding sequence. Knock out the region will result in disruption of protein function.

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

- According to the existing MGI data,Mutations in this gene exhibit profound hypothyroidism, developmental and growth retardation, impaired hearing with cochlear defects, and infertility. One mutation results in high postweaning mortality.

- The *Tshr* gene is located on the Chr12. 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

Tshr thyroid stimulating hormone receptor [Mus musculus (house mouse)]

Gene ID: 22095, updated on 5-Mar-2019

Summary

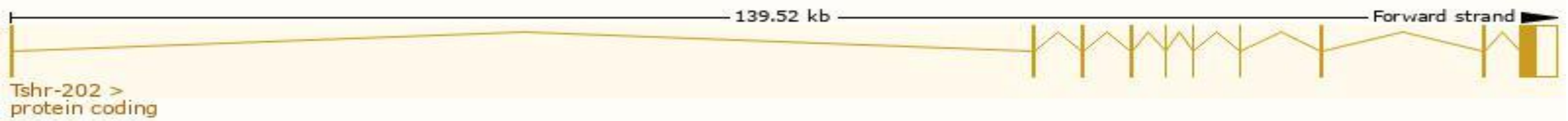
Official Symbol	Tshr provided by MGI
Official Full Name	thyroid stimulating hormone receptor provided by MGI
Primary source	MGI:MGI:98849
See related	Ensembl:ENSMUSG00000020963
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI481368, hypothroid, hyt, pet
Expression	Biased expression in subcutaneous fat pad adult (RPKM 19.7), genital fat pad adult (RPKM 11.8) and 3 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

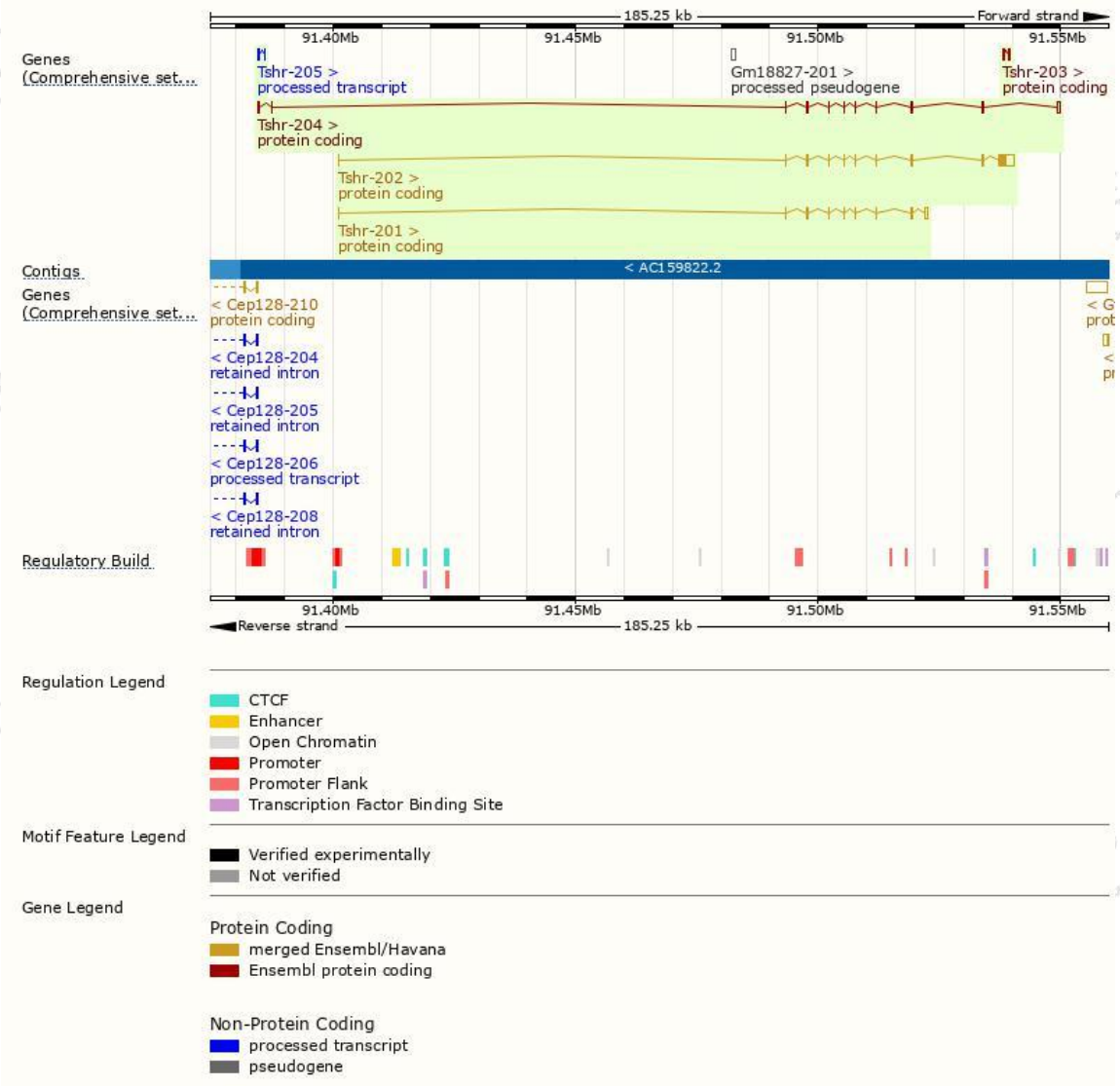
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tshr-202	ENSMUST00000021346.13	4311	764aa	Protein coding	CCDS26088	P47750	TSL:1 GENCODE basic APPRIS P1
Tshr-201	ENSMUST00000021343.7	1339	245aa	Protein coding	CCDS49135	Q78U67	TSL:1 GENCODE basic
Tshr-204	ENSMUST00000221216.1	1638	207aa	Protein coding	-	A0A1Y7VLF3	TSL:5 GENCODE basic
Tshr-203	ENSMUST00000186437.1	636	127aa	Protein coding	-	A0A087WP53	CDS 5' incomplete TSL:3
Tshr-205	ENSMUST00000222686.1	545	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Tshr-202* transcript,The transcription is shown below

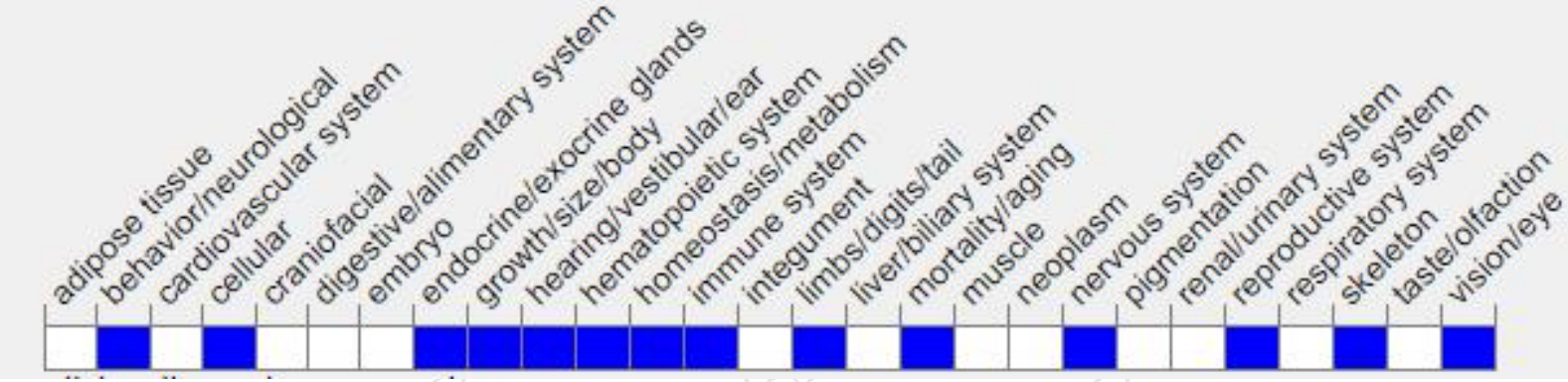


Genomic location distribution



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/).

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

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