Lars Cas9-CKO Strategy

Designer: Xiaojing Li
Design Date: 2019-9-11
Reviewer: JiaYu

Project Overview

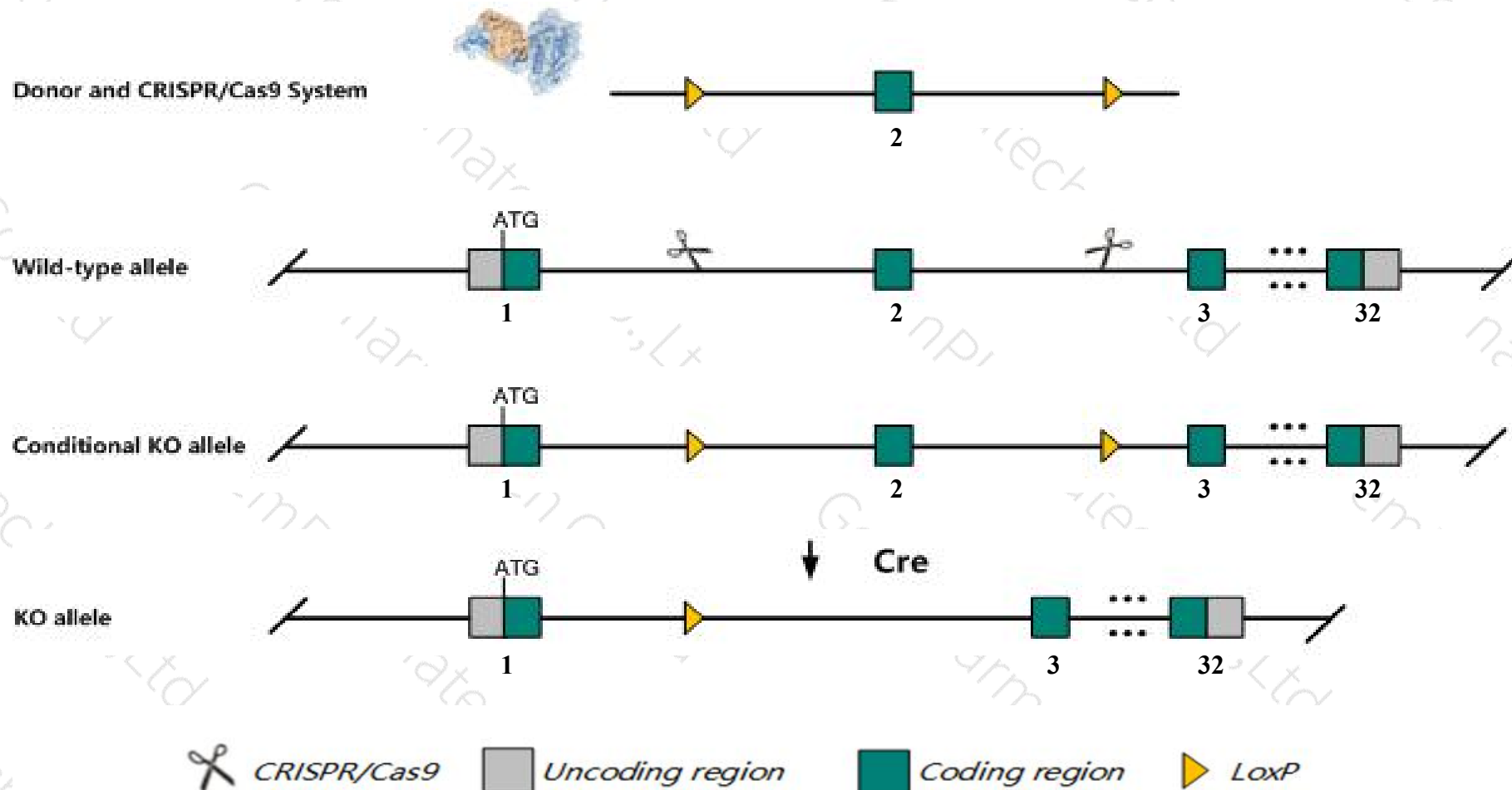|	
Project Name	*Lars*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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

Technical routes

➤ The *Lars* gene has 10 transcripts. According to the structure of *Lars* gene, exon2 of *Lars-201* (ENSMUST00000097590.4) transcript is recommended as the knockout region.The region contains Ens 125bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Lars* 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 *Lars* gene is located on the Chr18. 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）

Lars leucyl-tRNA synthetase [Mus musculus (house mouse)]

Gene ID: 107045, updated on 31-Jan-2019

▲Summary

|	
Official Symbol	Lars provided by MGI
Official Full Name	leucyl-tRNA synthetase provided by MGI
Primary source	MGI:MGI:1913808
See related	Ensembl:ENSMUSG00000024493
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	2310045K21Rik, 3110009L02Rik, AW536573, leuRS
Expression	Ubiquitous expression in CNS E11.5 (RPKM 11.9), placenta adult (RPKM 10.2) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lars-201	ENSMUST00000097590.4	3980	1178aa	Protein coding	CCDS37796	Q7TSZ3 Q8BMJ2	TSL:1 GENCODE basic APPRIS P1
Lars-204	ENSMUST00000236102.1	451	99aa	Protein coding	-	-	CDS 3' incomplete
Lars-209	ENSMUST00000237587.1	1759	213aa	Nonsense mediated decay	-	-	CDS 5' incomplete
Lars-202	ENSMUST00000235432.1	1672	102aa	Nonsense mediated decay	-	-	
Lars-203	ENSMUST00000235845.1	470	54aa	Nonsense mediated decay	-	-	CDS 5' incomplete
Lars-205	ENSMUST00000236226.1	1300	No protein	Retained intron	-	-	
Lars-210	ENSMUST00000237882.1	1071	No protein	Retained intron	-	-	
Lars-208	ENSMUST00000237520.1	452	No protein	Retained intron	-	-	
Lars-207	ENSMUST00000236826.1	412	No protein	Retained intron	-	-	
Lars-206	ENSMUST00000236304.1	322	No protein	lncRNA	-	-	

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

< Lars-201
protein coding

◄ Reverse strand ———————————————————— 59.90 kb ————————————————————
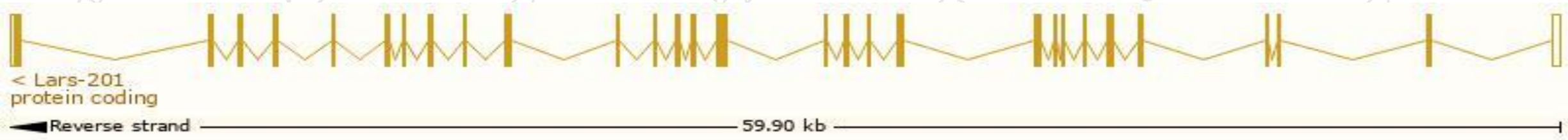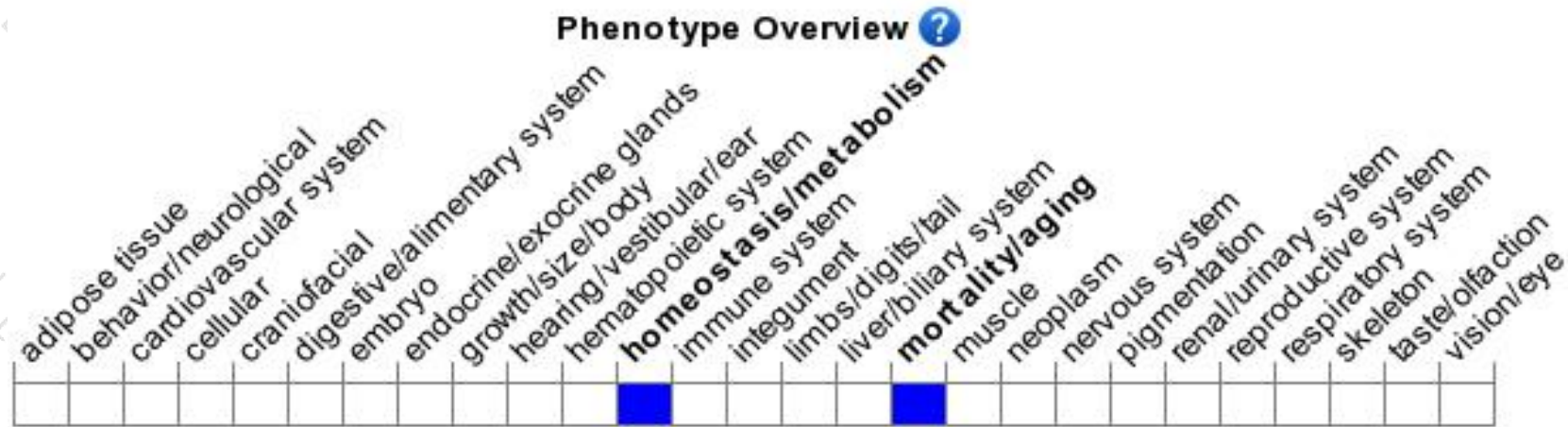
Genomic location distribution
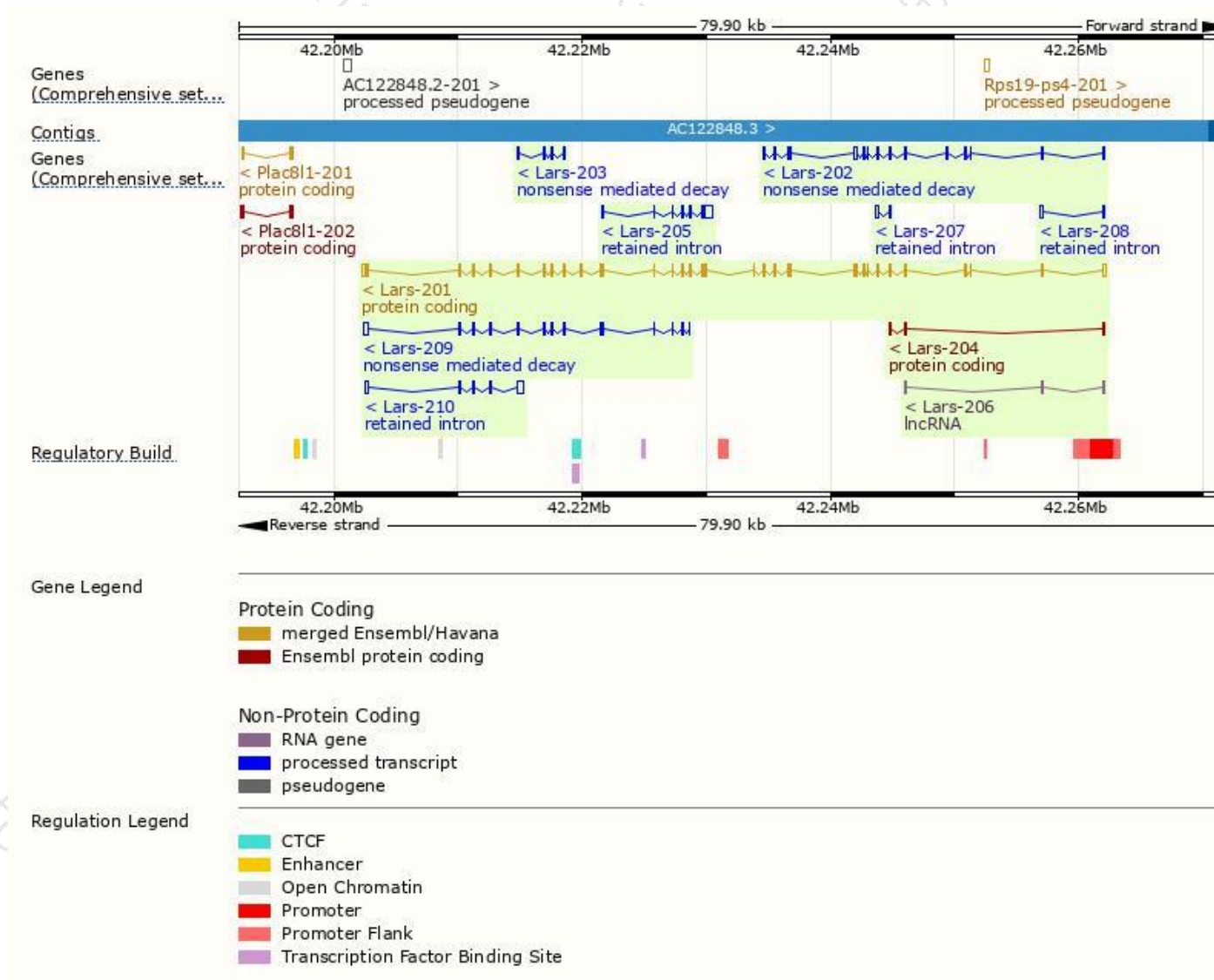
Protein domain
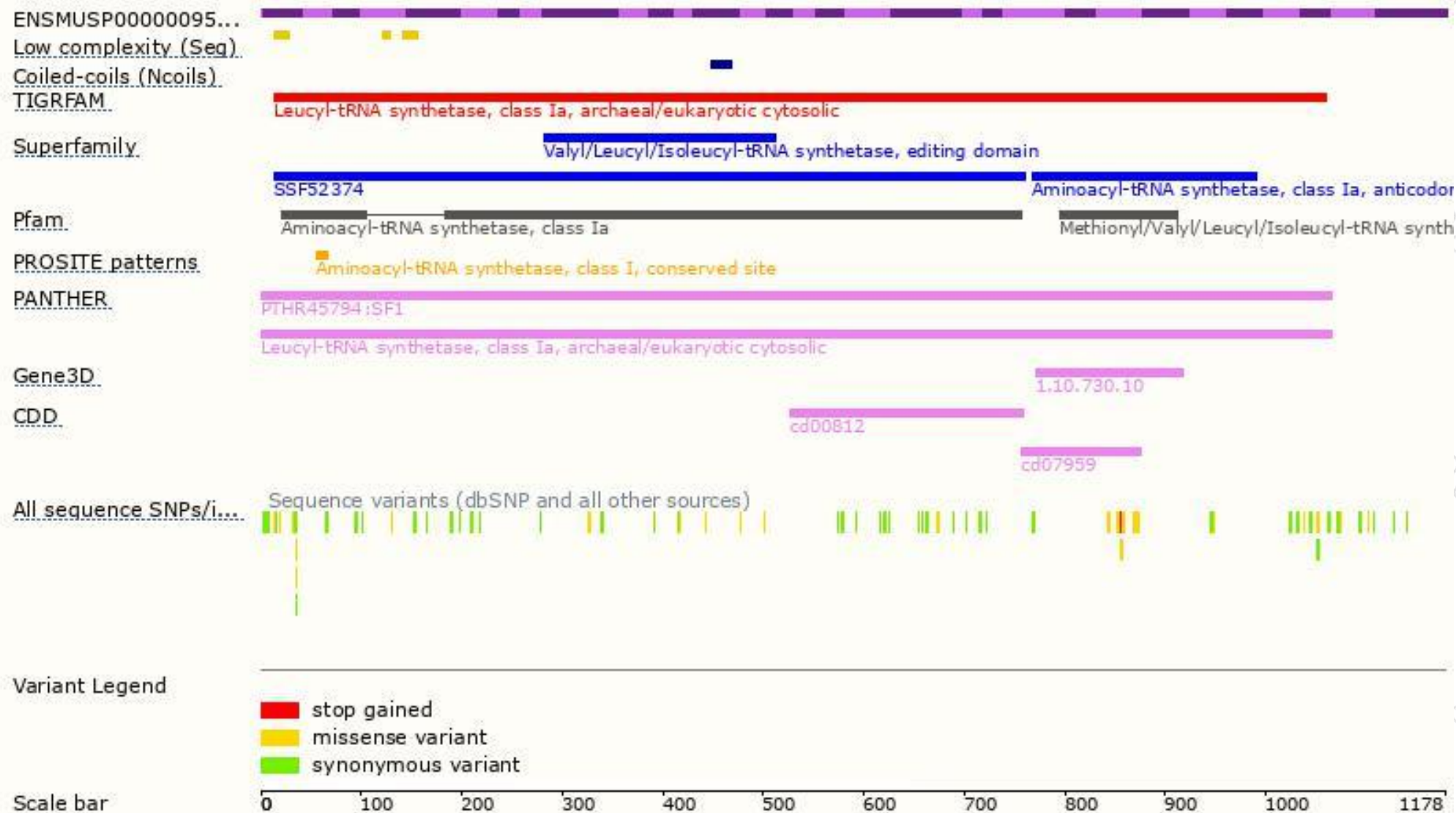
Mouse phenotype description(MGI)

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

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd