Farsa Cas9-CKO Strategy

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Project Overview

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

Conditional Knockout strategy

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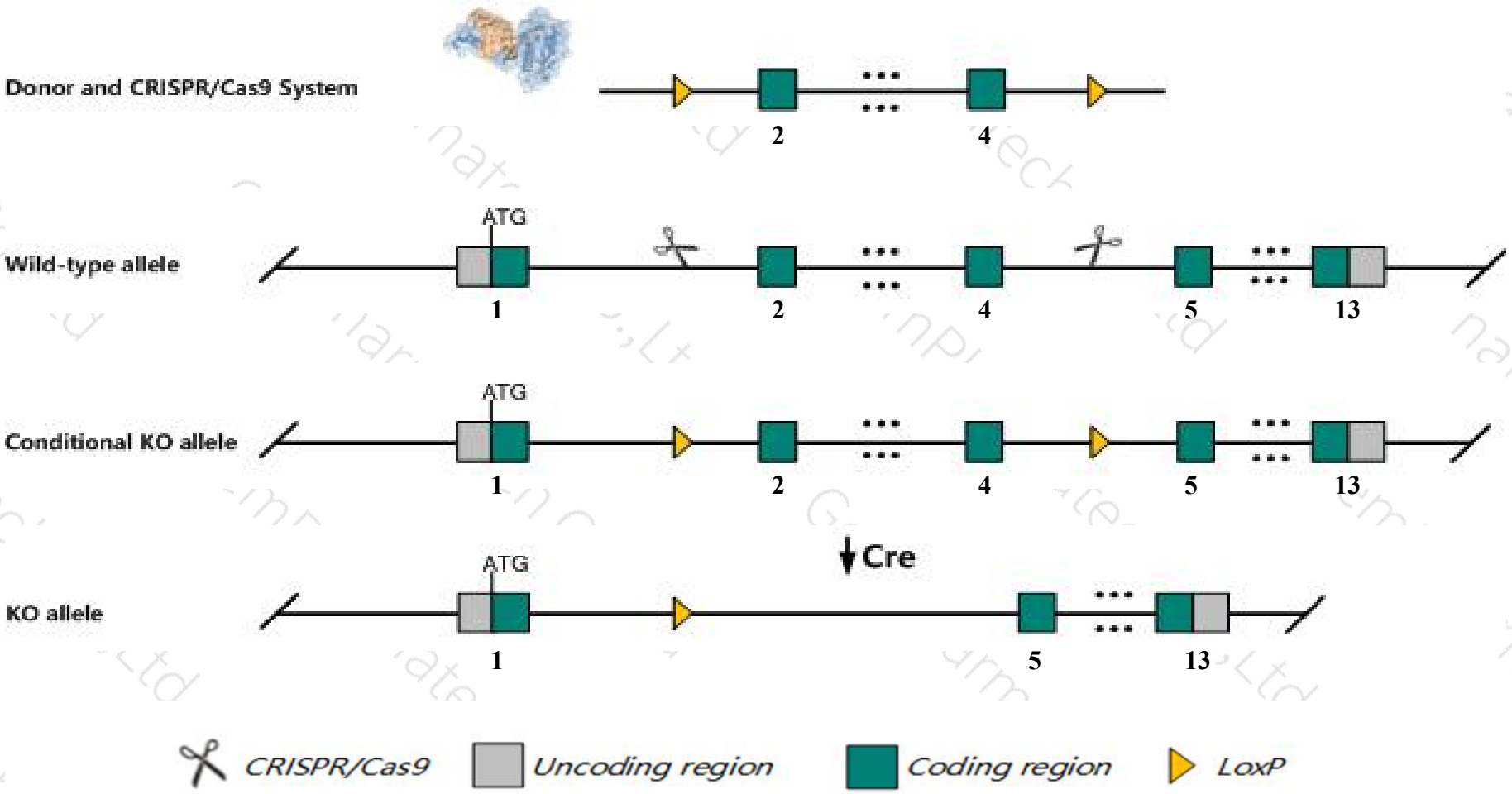
This model will use CRISPR/Cas9 technology to edit the *Farsa* gene. The schematic diagram is as follows:



Technical routes

The *Farsa* gene has 6 transcripts. According to the structure of *Farsa* gene, exon2-exon4 of *Farsa-201* (ENSMUST00000003906.12) transcript is recommended as the knockout region.The region contains 356bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Farsa* 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 *Farsa* gene is located on the Chr8. 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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Farsa phenylalanyl-tRNA synthetase, alpha subunit [Mus musculus (house mouse)]

Gene ID: 66590, updated on 7-Apr-2019

Summary

Official Symbol	Farsa provided by MGI
Official Full Name	phenylalanyl-tRNA synthetase, alpha subunit provided by MGI
Primary source	MGI:MGI:1913840
See related	Ensembl:ENSMUSG00000003808
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	0610012A19Rik, Farsla, pheRS
Expression	Ubiquitous expression in liver E14.5 (RPKM 34.6), whole brain E14.5 (RPKM 32.7) and 28 other tissues See more
Orthologs	human all

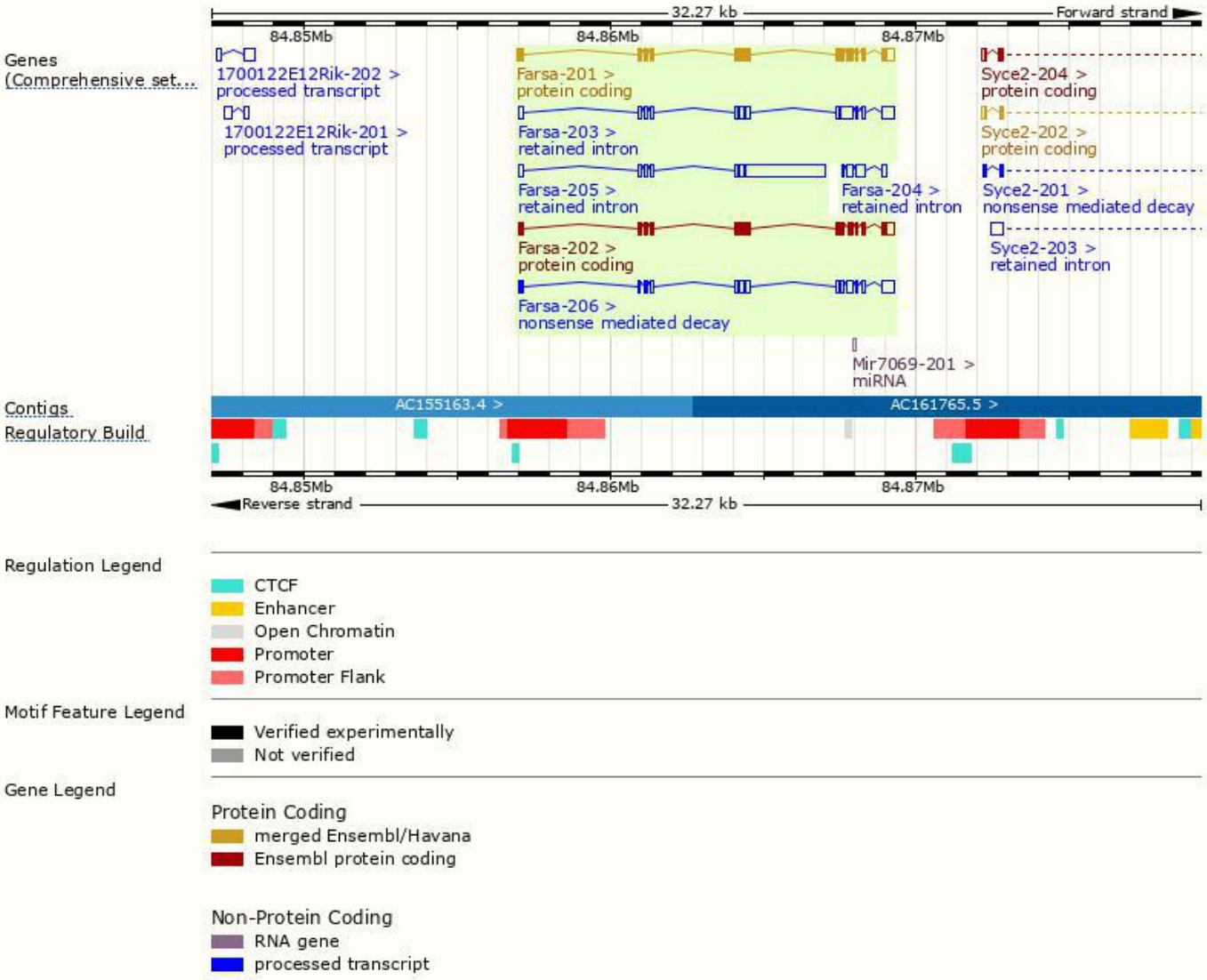
Transcript information Ensembl

The gene has 6 transcripts,all transcripts are shown below:

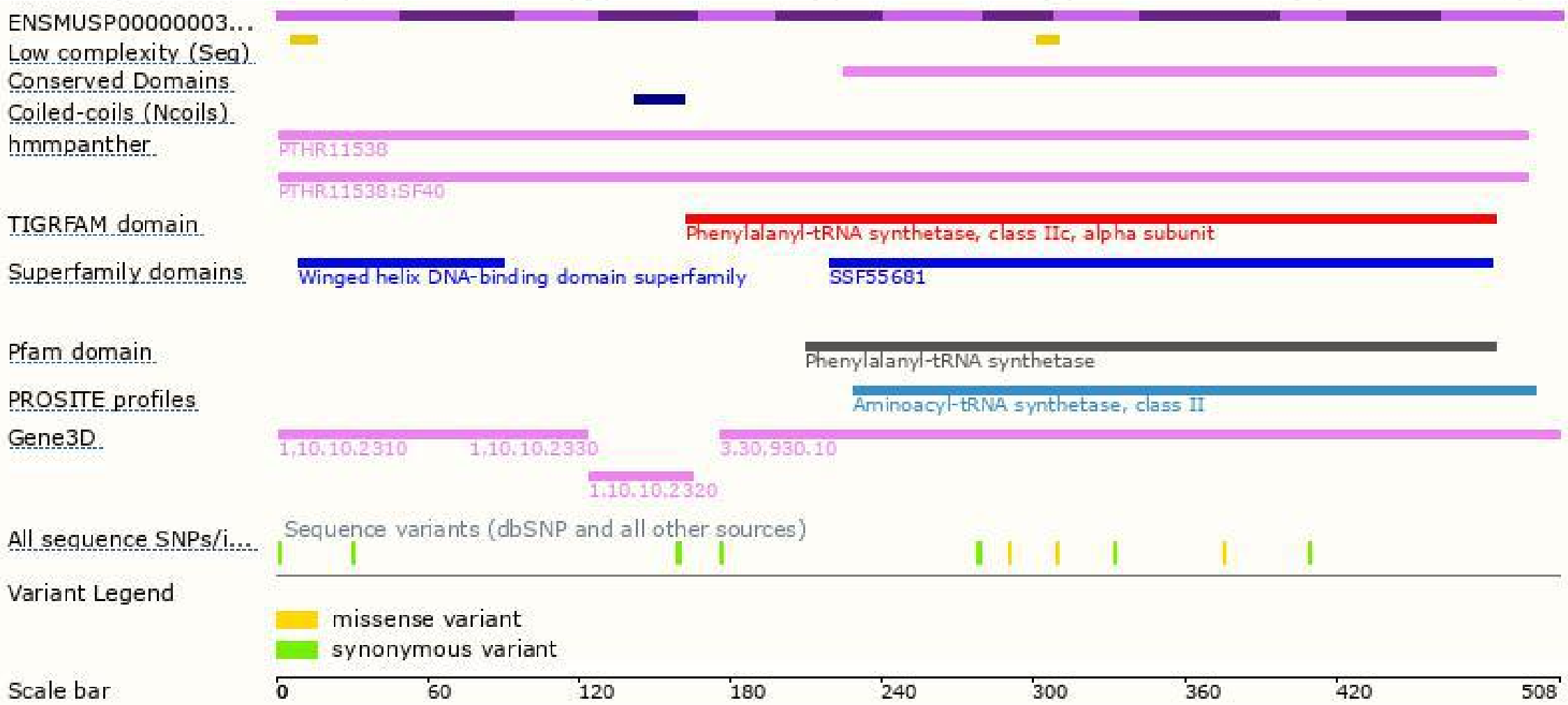
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Farsa-201	ENSMUST00000003906.12	1826	508aa	Protein coding	CCDS22480	Q8C0C7	TSL:1 GENCODE basic APPRIS P2
Farsa-202	ENSMUST00000109754.1	1795	507aa	Protein coding	-	E9PWY9	TSL:1 GENCODE basic APPRIS ALT1
Farsa-206	ENSMUST00000156970.7	1708	105aa	Nonsense mediated decay	-	D6RIJ2	TSL:1
Farsa-205	ENSMUST00000144404.7	3341	No protein	Retained intron	-	-	TSL:1
Farsa-203	ENSMUST00000129595.7	1920	No protein	Retained intron	-	-	TSL:2
Farsa-204	ENSMUST00000141480.1	730	No protein	Retained intron	-	-	TSL:3

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

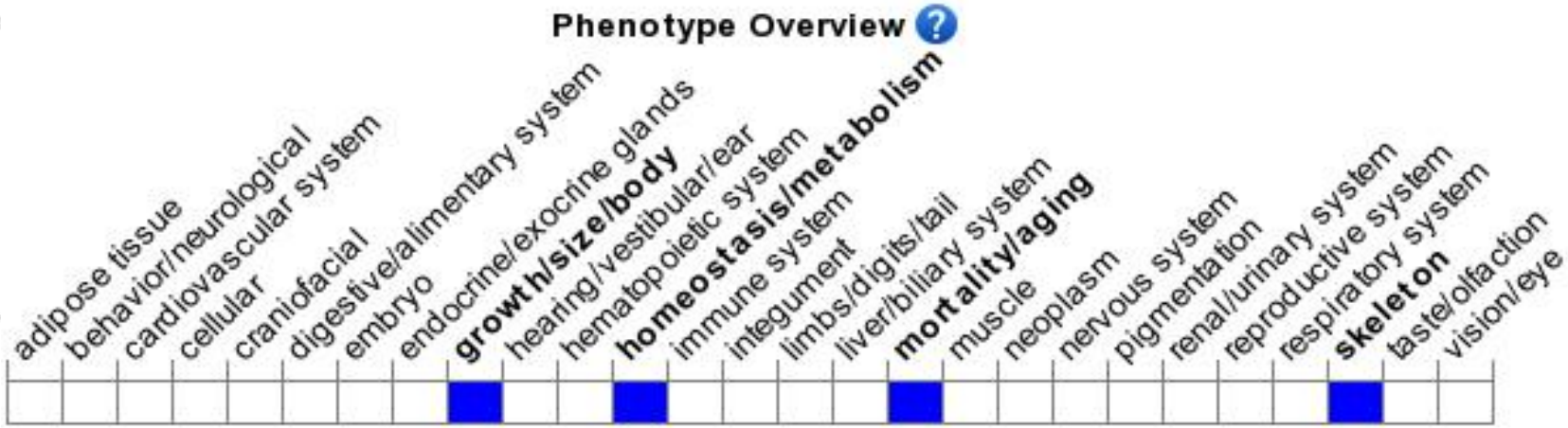
Genomic location distribution



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/).

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

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