

Yars Cas9-CKO Strategy

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Design Date: 2019-9-11
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Project Overview

Project Name

Yars

Project type

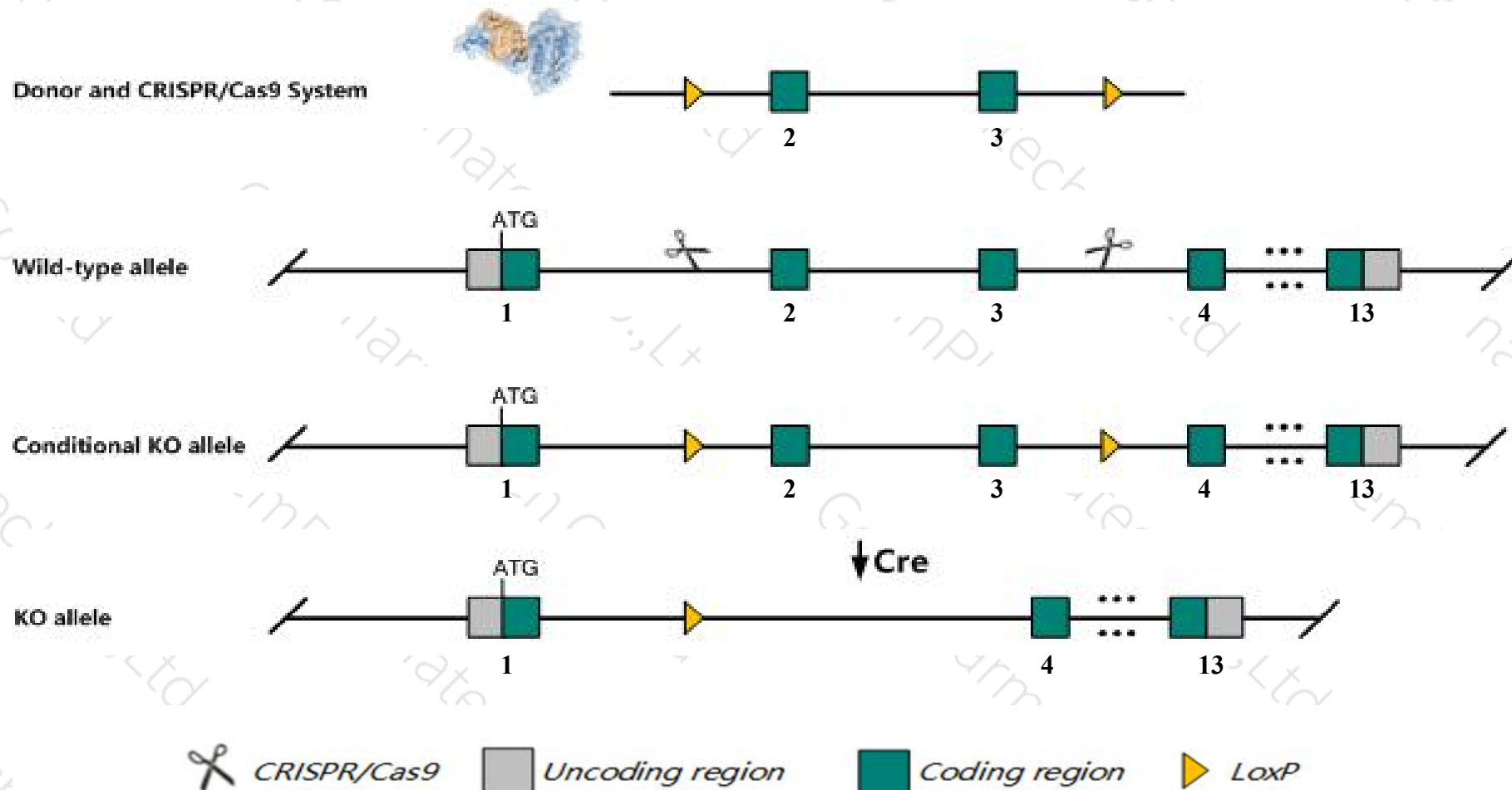
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Yars* gene has 8 transcripts. According to the structure of *Yars* gene, exon2-exon3 of *Yars-201* (ENSMUST00000106054.2) transcript is recommended as the knockout region. The region contains 323bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Yars* 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 *Yars* 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)

Yars tyrosyl-tRNA synthetase [Mus musculus (house mouse)]

Gene ID: 107271, updated on 20-Mar-2019

Summary



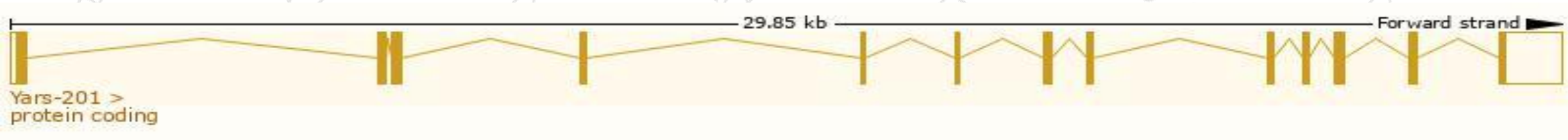
Official Symbol	Yars provided by MGI
Official Full Name	tyrosyl-tRNA synthetase provided by MGI
Primary source	MGI:MGI:2147627
See related	Ensembl:ENSMUSG00000028811
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AL024047, AU018965
Expression	Ubiquitous expression in CNS E11.5 (RPKM 20.4), cerebellum adult (RPKM 19.8) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

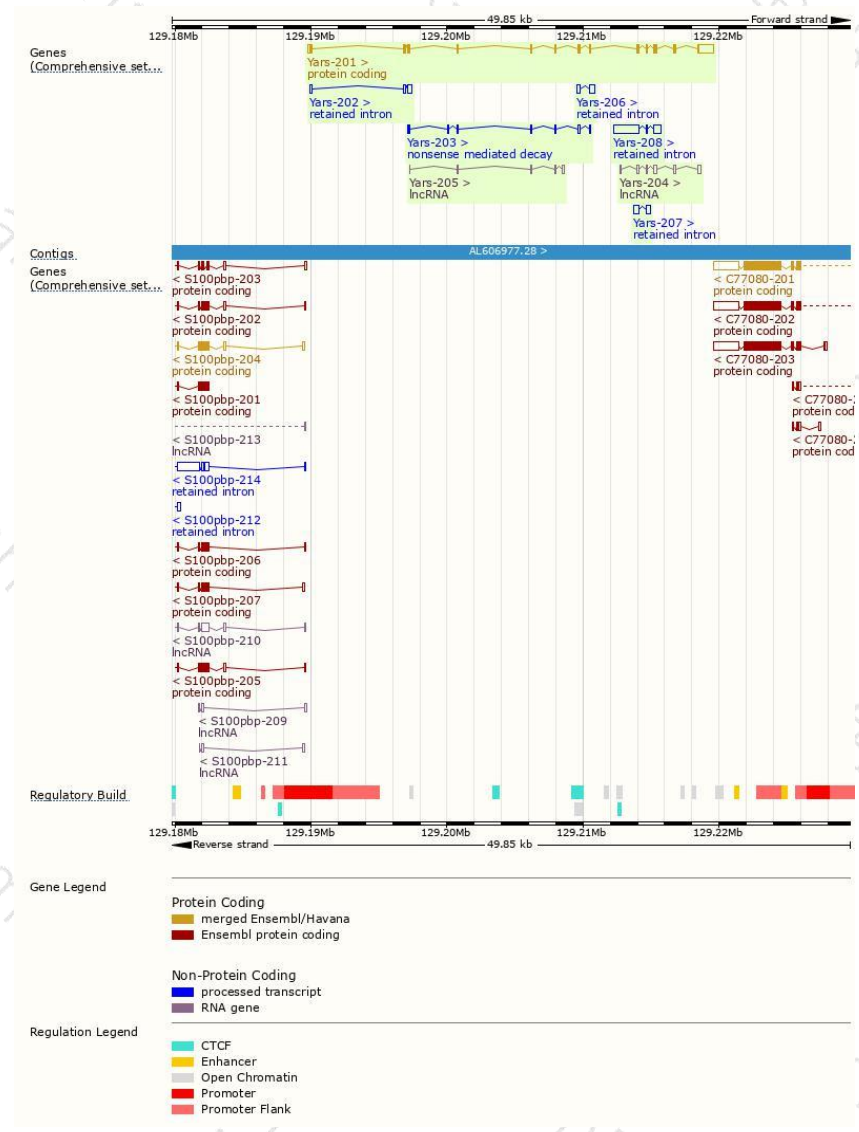
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Yars-201	ENSMUST00000106054.2	2909	564aa	Protein coding	CCDS18685	A2A7S7	TSL:1 GENCODE basic APPRIS P1
Yars-203	ENSMUST00000133992.7	834	129aa	Nonsense mediated decay	-	F6VXZ2	CDS 5' incomplete TSL:5
Yars-208	ENSMUST00000148619.7	2440	No protein	Retained intron	-	-	TSL:1
Yars-202	ENSMUST00000128287.1	647	No protein	Retained intron	-	-	TSL:2
Yars-206	ENSMUST00000146106.1	610	No protein	Retained intron	-	-	TSL:3
Yars-207	ENSMUST00000147248.1	600	No protein	Retained intron	-	-	TSL:2
Yars-204	ENSMUST00000137591.1	921	No protein	lncRNA	-	-	TSL:3
Yars-205	ENSMUST00000140708.1	527	No protein	lncRNA	-	-	TSL:2

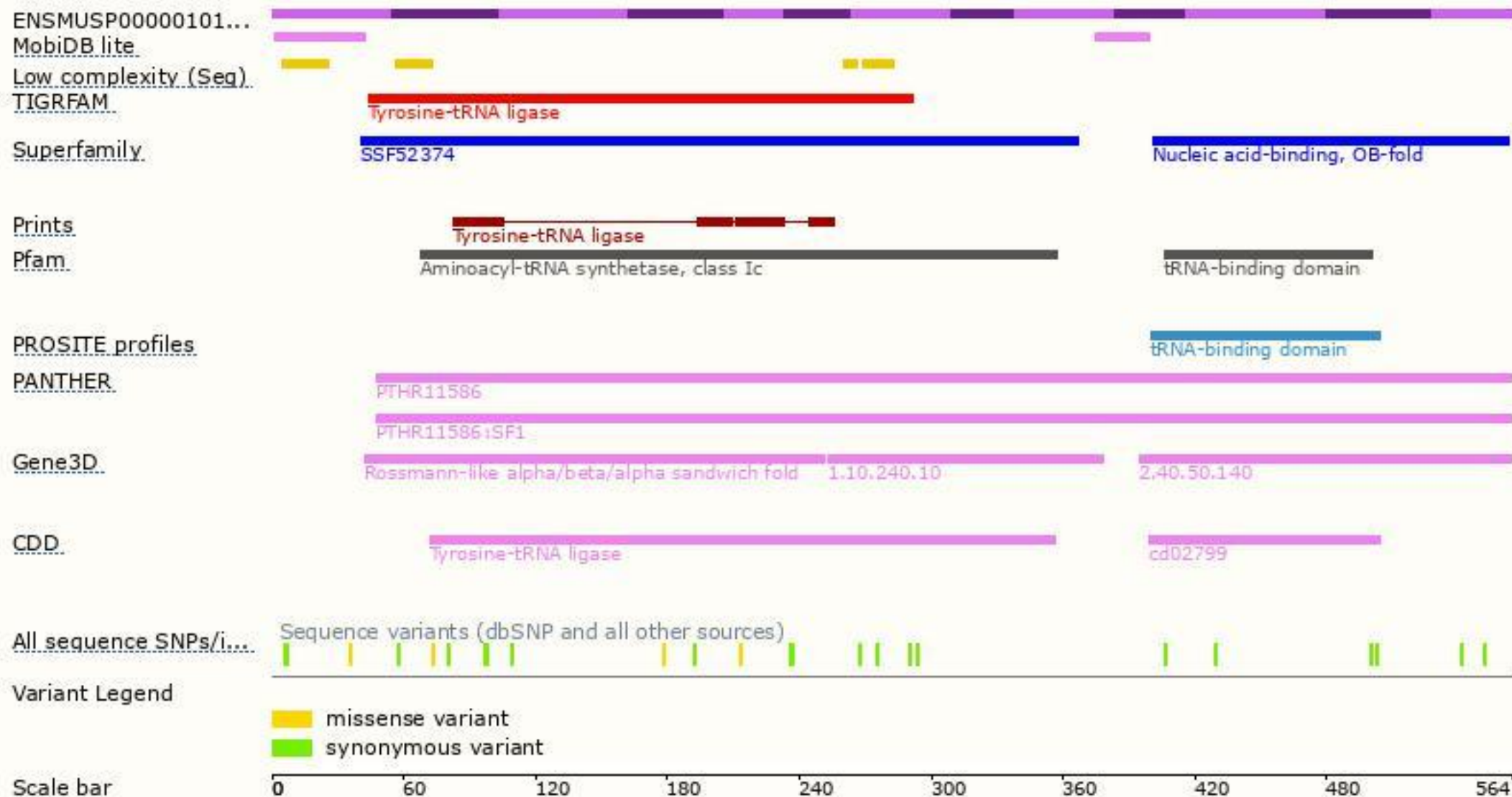
The strategy is based on the design of *Yars-201* transcript,The transcription is shown below



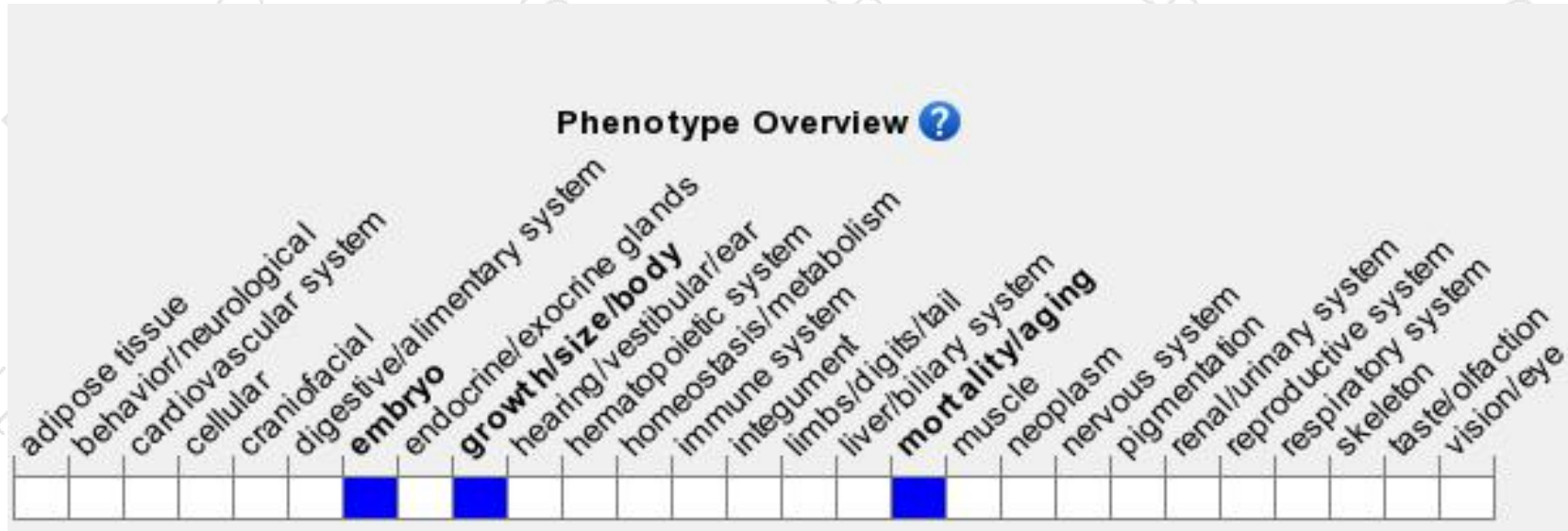
Genomic location distribution



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/>).

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

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