

Dars2 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview



Project Name

Dars2

Project type

Cas9-CKO

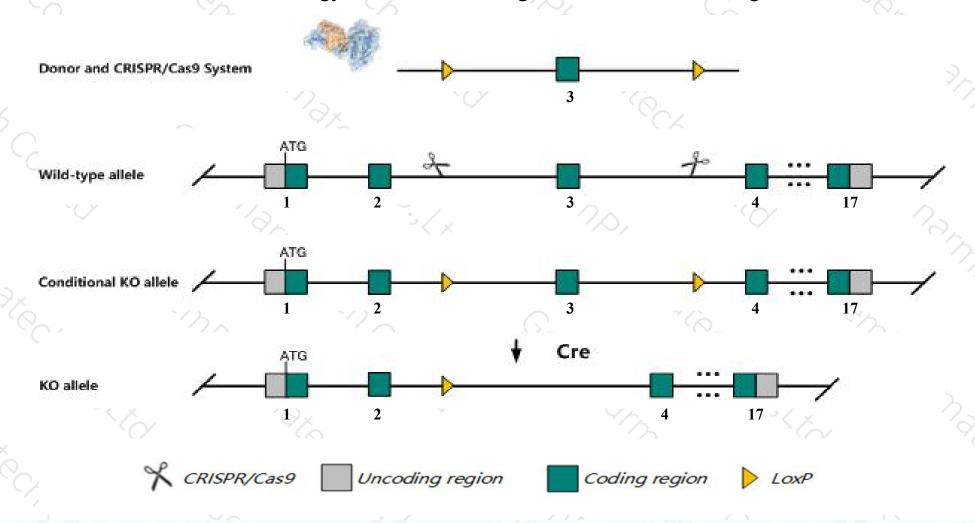
Strain background

C57BL/6JGpt

Conditional Knockout strategy



This model will use CRISPR/Cas9 technology to edit the *Dars2* gene. The schematic diagram is as follows:



Technical routes



- ➤ The *Dars2* gene has 7 transcripts. According to the structure of *Dars2* gene, exon3 of *Dars2-201* (ENSMUST00000035430.3) transcript is recommended as the knockout region. The region contains 67bp coding sequence. Knock out the region will result in disruption of protein function.
- ➤ In this project we use CRISPR/Cas9 technology to modify *Dars2* 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 *Dars2* gene is located on the Chr1. 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)



Dars2 aspartyl-tRNA synthetase 2 (mitochondrial) [Mus musculus (house mouse)]

Gene ID: 226539, updated on 31-Jan-2019

Summary

☆ ?

Official Symbol Dars2 provided by MGI

Official Full Name aspartyl-tRNA synthetase 2 (mitochondrial) provided byMGI

Primary source MGI:MGI:2442510

See related Ensembl:ENSMUSG00000026709

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 5830468K18Rik, aspRS

Expression Ubiquitous expression in liver E14 (RPKM 5.9), CNS E11.5 (RPKM 5.9) and 28 other tissuesSee more

Orthologs <u>human</u> all

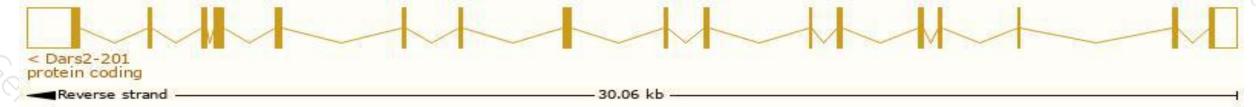
Transcript information (Ensembl)



The gene has 7 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dars2-201	ENSMUST00000035430.3	3619	<u>653aa</u>	Protein coding	CCDS15413	Q8BIP0	TSL:1 GENCODE basic APPRIS P1
Dars2-207	ENSMUST00000162654.7	4015	No protein	Retained intron		-	TSL:2
Dars2-204	ENSMUST00000160759.7	2838	No protein	Retained intron	ų.	0.20	TSL:1
Dars2-203	ENSMUST00000160591.7	2126	No protein	Retained intron	-	7027	TSL:1
Dars2-206	ENSMUST00000162398.1	662	No protein	Retained intron	ā	127	TSL:3
Dars2-205	ENSMUST00000161748.7	1102	No protein	IncRNA	-	-	TSL:1
Dars2-202	ENSMUST00000159922.2	437	No protein	IncRNA	2	020	TSL:5

The strategy is based on the design of *Dars2-201* transcript, The transcription is shown below



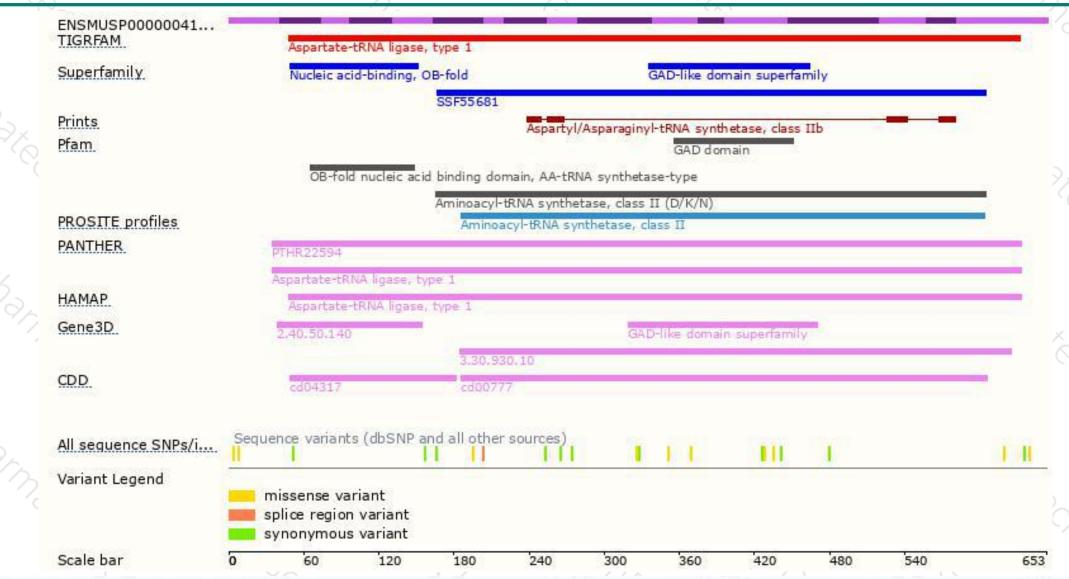
Genomic location distribution





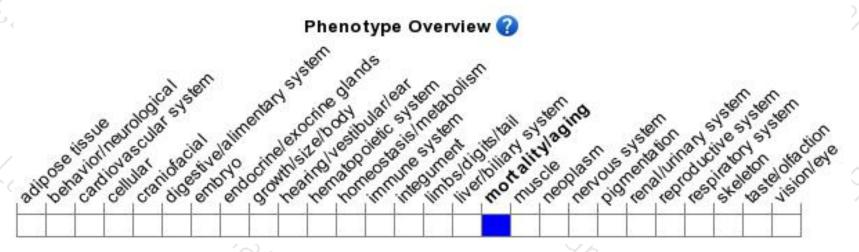
Protein domain





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. Tel: 400-9660890





