

***Kars* Cas9-KO Strategy**

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Project Overview

Project Name

Kars

Project type

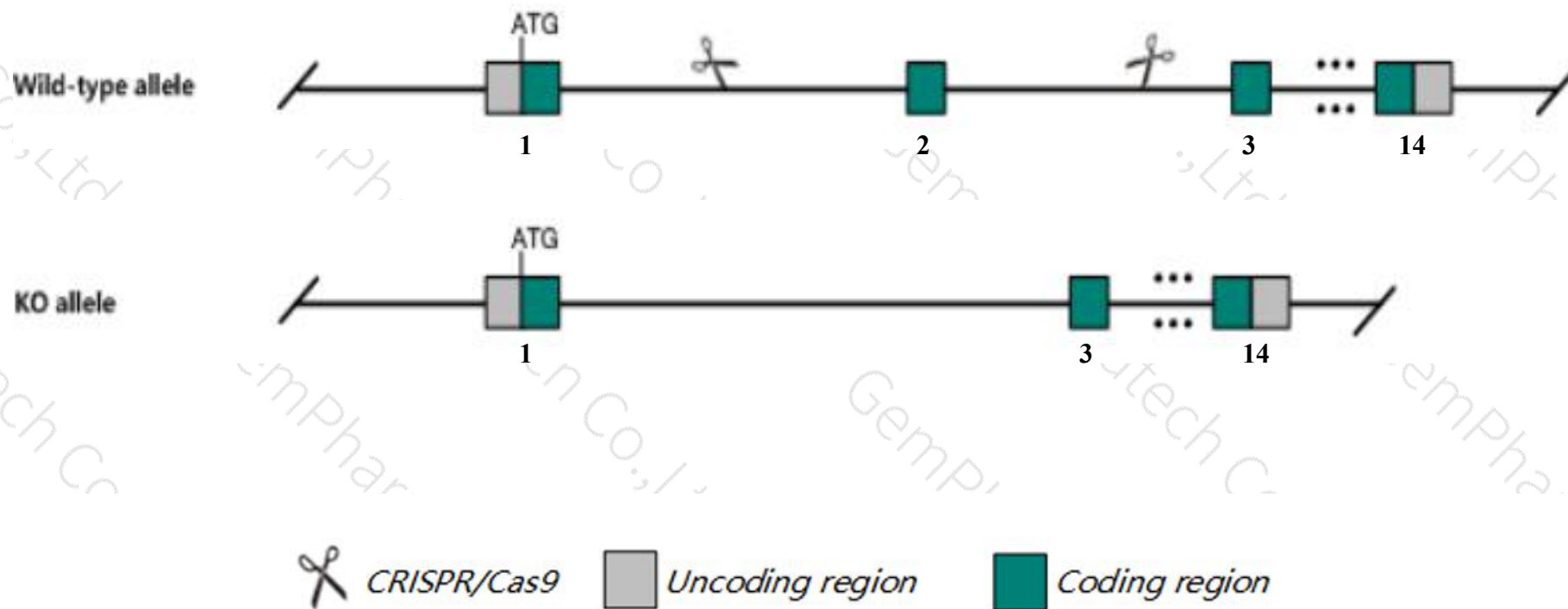
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Kars* gene has 6 transcripts. According to the structure of *Kars* gene, exon2 of *Kars-201*(ENSMUST00000034426.13) transcript is recommended as the knockout region. The region contains 157bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Kars* gene. The brief process is as follows: CRISPR/Cas9 system 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 *Kars* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Kars lysyl-tRNA synthetase [Mus musculus (house mouse)]

Gene ID: 85305, updated on 13-Mar-2020

Summary



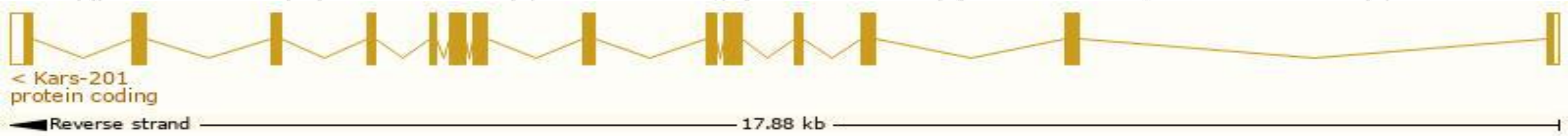
Official Symbol	Kars provided by MGI
Official Full Name	lysyl-tRNA synthetase provided by MGI
Primary source	MGI:MGI:1934754
See related	Ensembl:ENSMUSG00000031948
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA589550, AL024334, AL033315, AL033367, D8Ertd698e, D8Wsu108e, Kars1, LysRS, mKIAA0070
Expression	Ubiquitous expression in CNS E11.5 (RPKM 43.4), placenta adult (RPKM 35.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

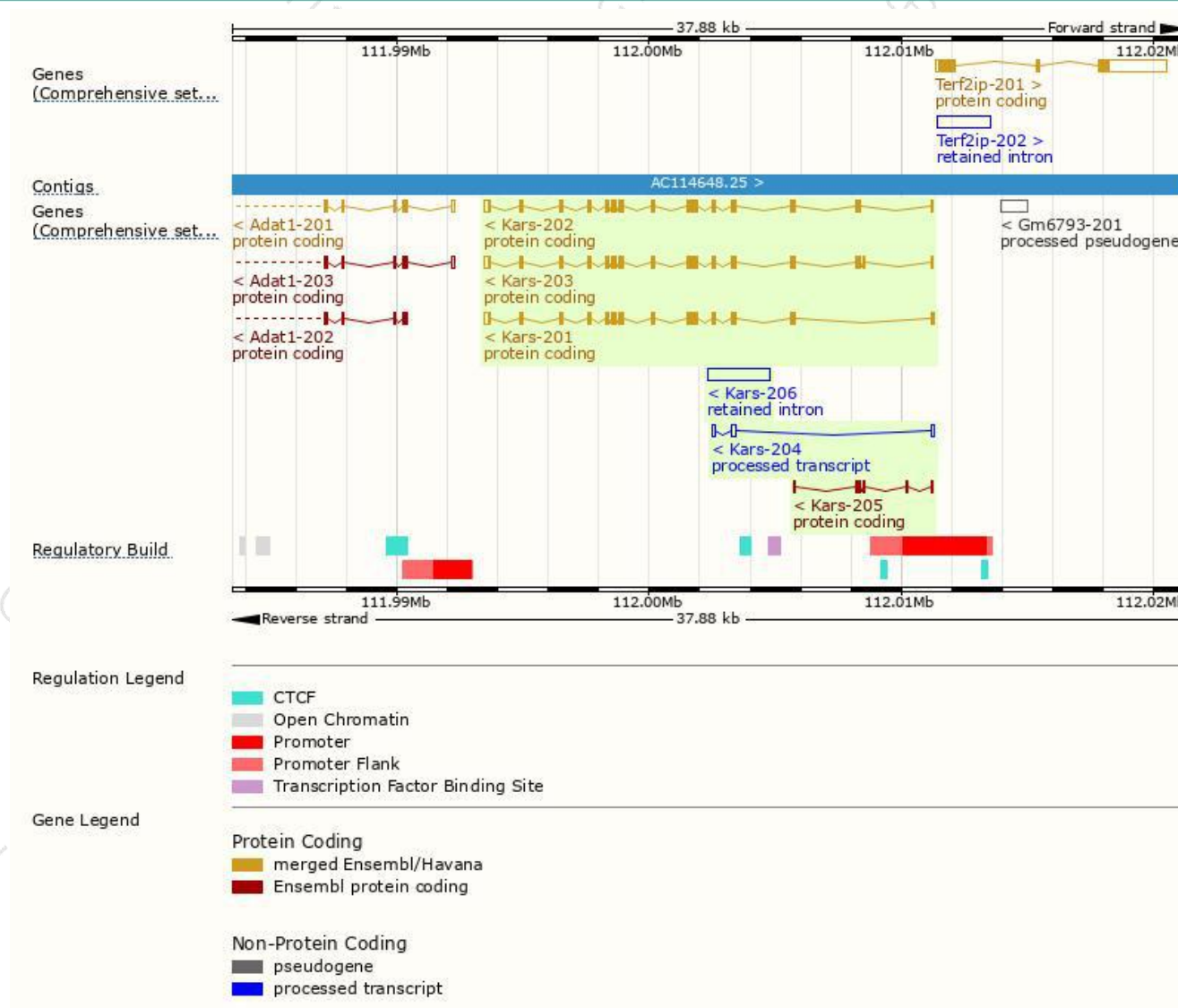
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kars-203	ENSMUST00000164470.2	2189	624aa	Protein coding	CCDS52677	Q8R2P8	TSL:1 GENCODE basic APPRIS ALT2
Kars-202	ENSMUST00000093120.12	2131	624aa	Protein coding	CCDS52677	Q8R2P8	TSL:1 GENCODE basic APPRIS ALT2
Kars-201	ENSMUST00000034426.13	2008	595aa	Protein coding	CCDS40481	Q3TIV6 Q99MN1	TSL:1 GENCODE basic APPRIS P3
Kars-205	ENSMUST00000211990.1	407	63aa	Protein coding	-	A0A1D5RMI3	CDS 3' incomplete TSL:3
Kars-204	ENSMUST00000211978.1	349	No protein	Processed transcript	-	-	TSL:3
Kars-206	ENSMUST00000212693.1	2419	No protein	Retained intron	-	-	TSL:NA

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



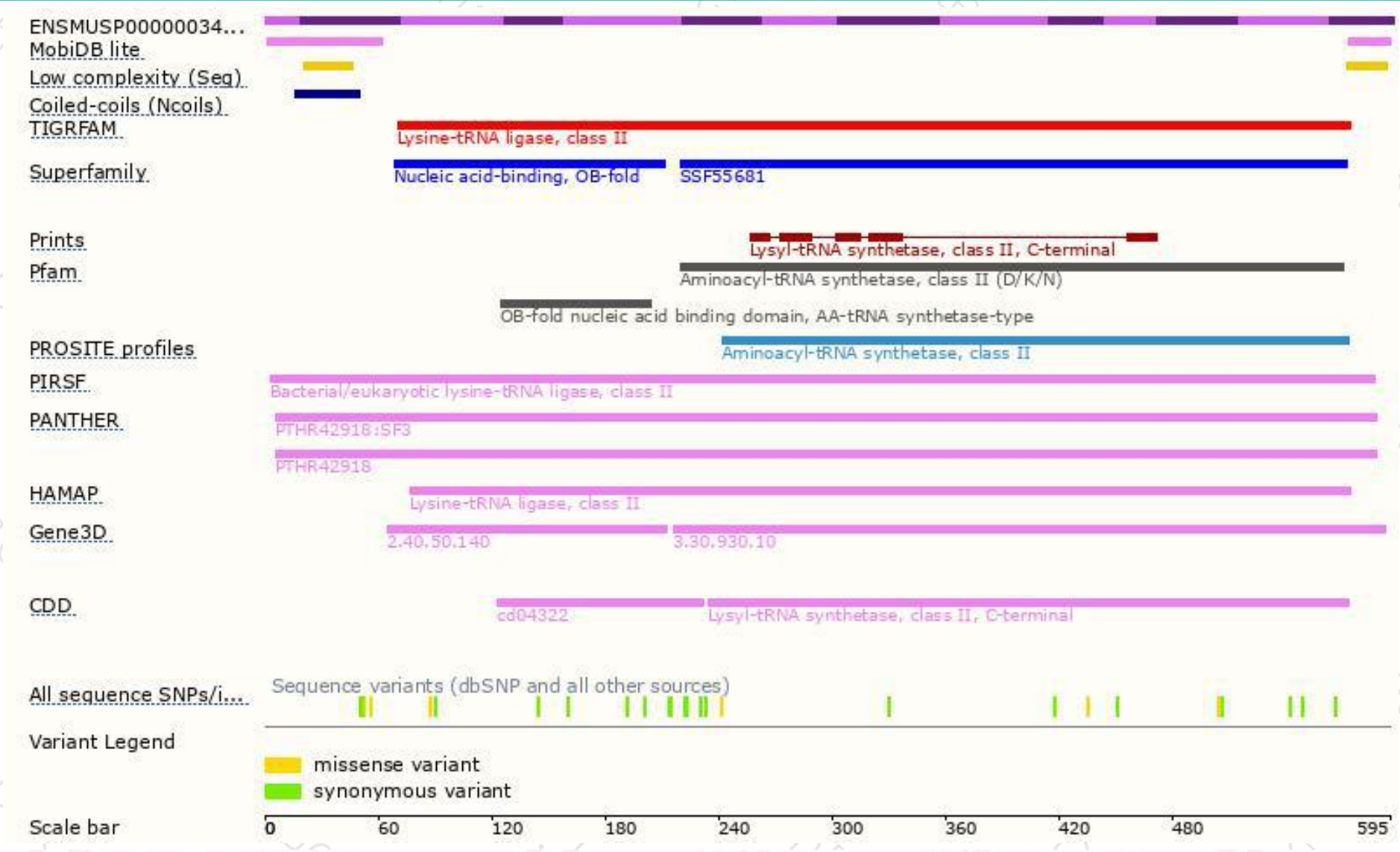
Genomic location distribution



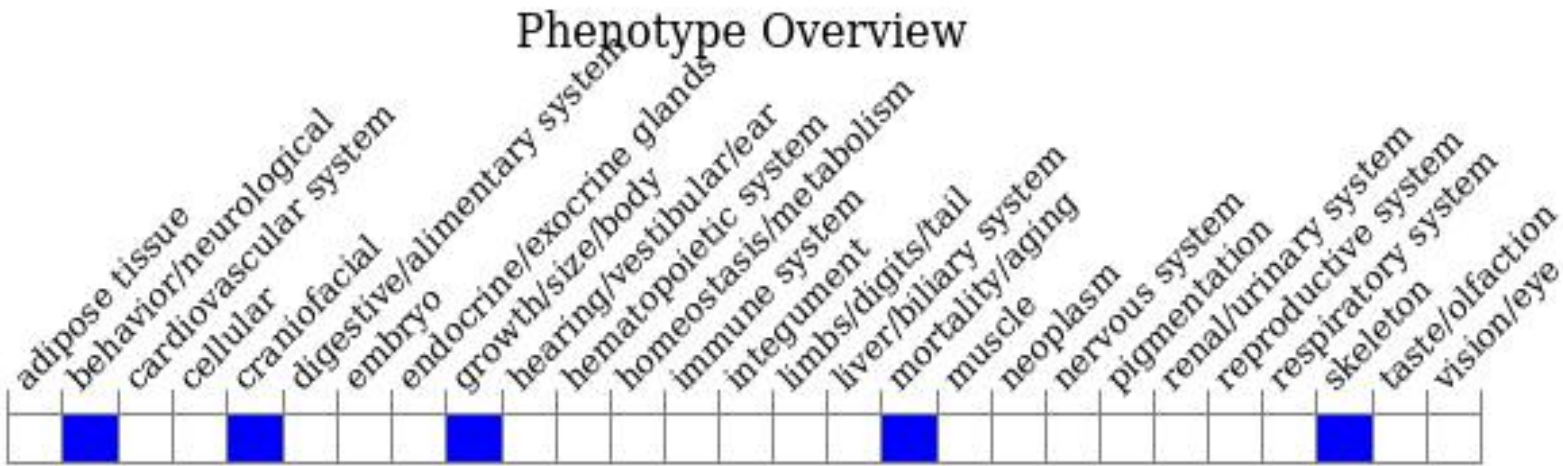
Protein domain



集萃药康
GemPharmatech



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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