

Elk4 Cas9-KO Strategy

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Project Overview

Project Name

Elk4

Project type

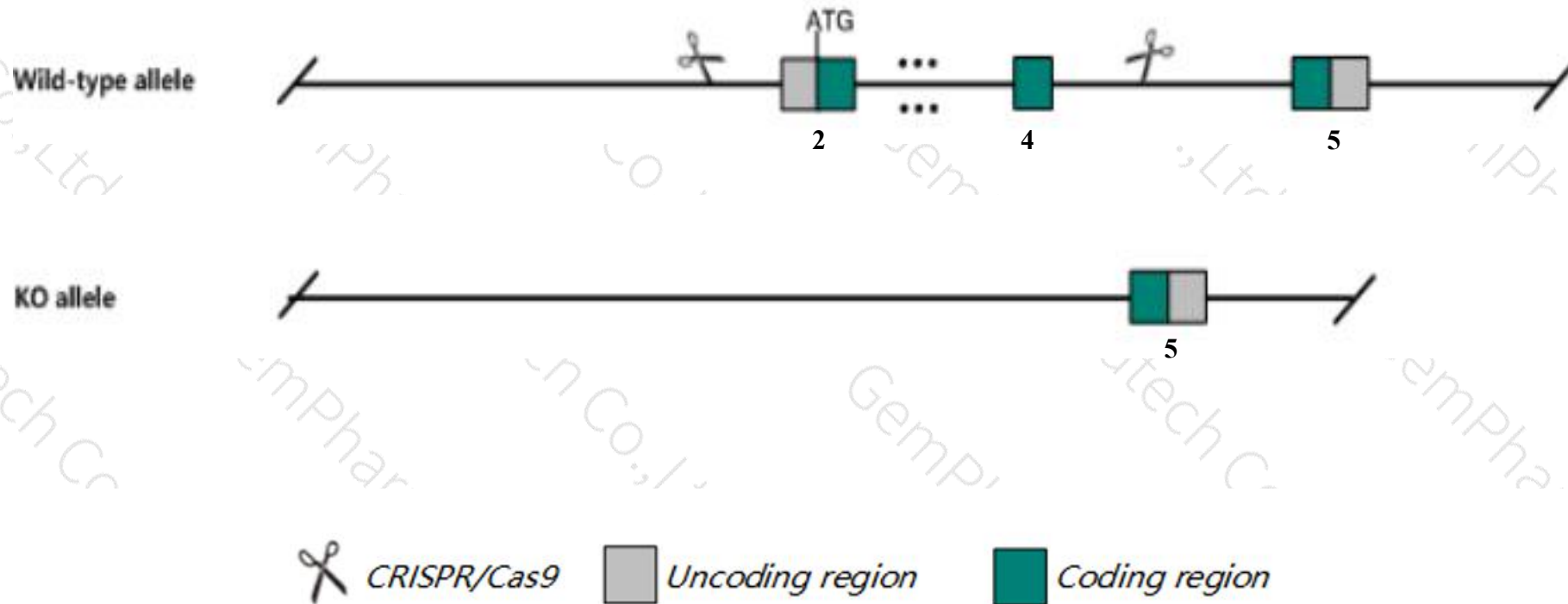
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Elk4* gene. The schematic diagram is as follows:



- The *Elk4* gene has 7 transcripts. According to the structure of *Elk4* gene, exon2-exon4 of *Elk4*-202(ENSMUST00000086556.11) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Elk4* 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.

- According to the existing MGI data, mutation of this locus impairs thymocyte positive selection and results in reduced numbers of single-positive thymocytes and peripheral T cells.
- The *Elk4* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Elk4 ELK4, member of ETS oncogene family [Mus musculus (house mouse)]

Gene ID: 13714, updated on 13-Mar-2020

Summary

Official Symbol Elk4 provided by [MGI](#)

Official Full Name ELK4, member of ETS oncogene family provided by [MGI](#)

Primary source [MGI:MGI:102853](#)

See related [Ensembl:ENSMUSG00000026436](#)

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 2310011G17Rik, A130026I01Rik, BB162516, SAP-1, Sap1

Expression Ubiquitous expression in thymus adult (RPKM 13.6), spleen adult (RPKM 6.7) and 27 other tissues [See more](#)

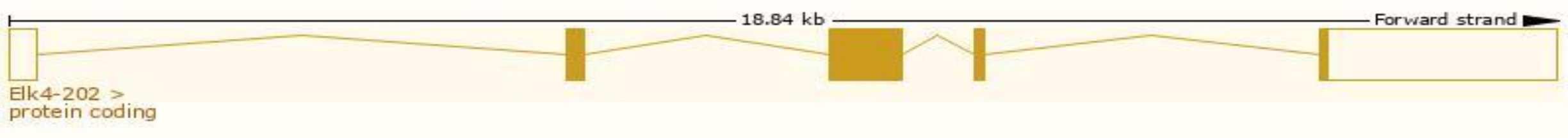
Orthologs [human](#) [all](#)

Transcript information（Ensembl）

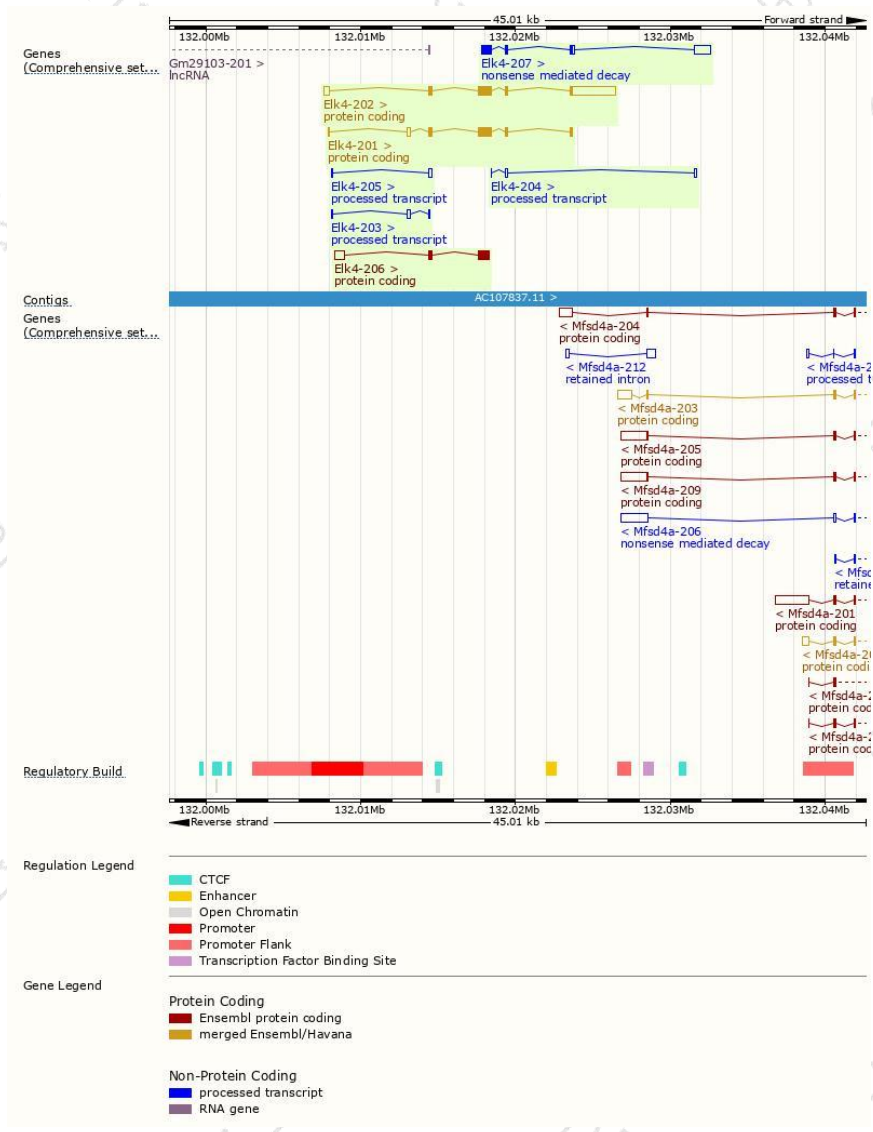
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Elk4-202	ENSMUST00000086556.11	4433	430aa	Protein coding	CCDS35704	P41158	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Elk4-201	ENSMUST00000027696.9	1586	430aa	Protein coding	CCDS35704	P41158	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Elk4-206	ENSMUST00000146432.1	1556	306aa	Protein coding	-	A0A1B0GXH8	CDS 3' incomplete TSL:1
Elk4-207	ENSMUST00000147218.1	2107	290aa	Nonsense mediated decay	-	F6ZC11	CDS 5' incomplete TSL:2
Elk4-203	ENSMUST00000124579.1	362	No protein	Processed transcript	-	-	TSL:3
Elk4-205	ENSMUST00000146188.1	305	No protein	Processed transcript	-	-	TSL:3
Elk4-204	ENSMUST00000131159.2	268	No protein	Processed transcript	-	-	TSL:5

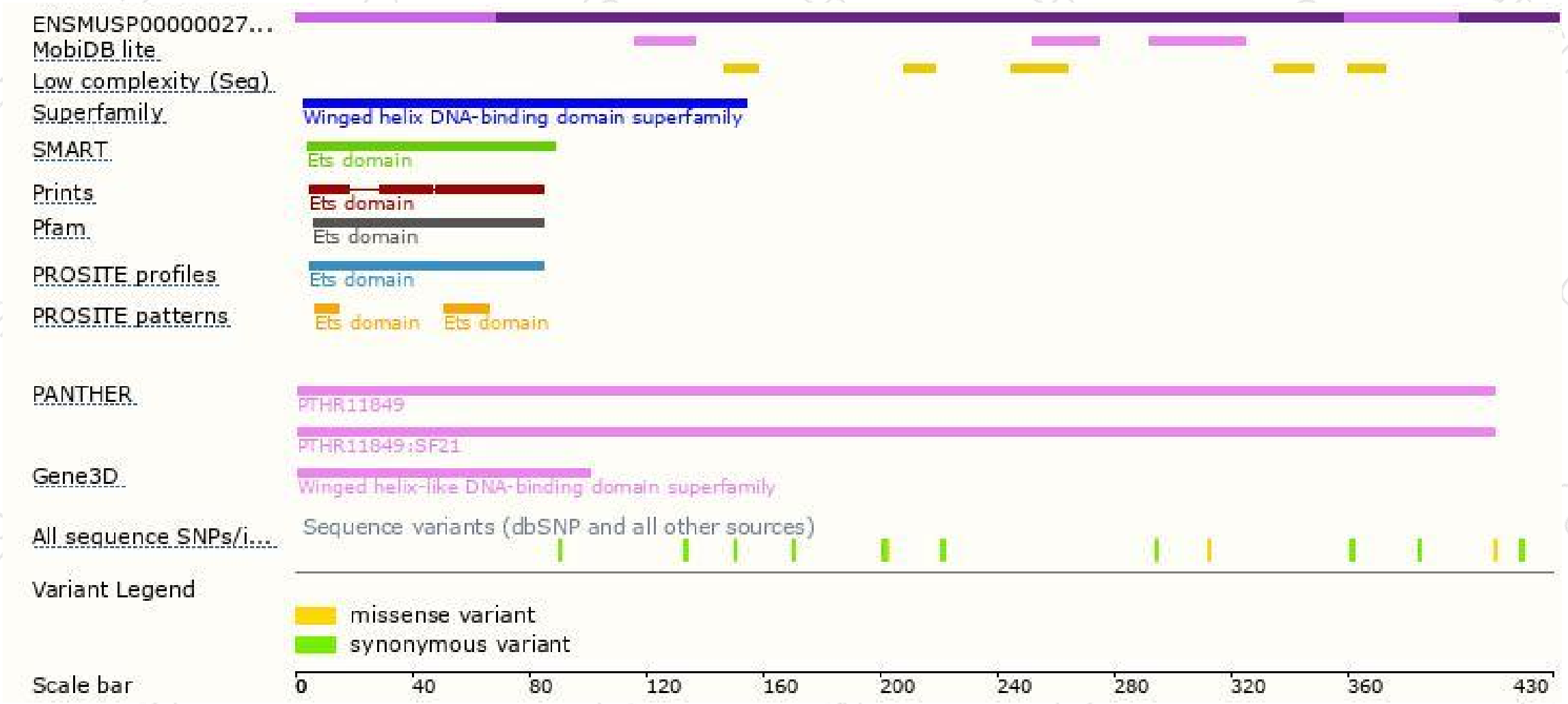
The strategy is based on the design of *Elk4-202* transcript,the transcription is shown below:



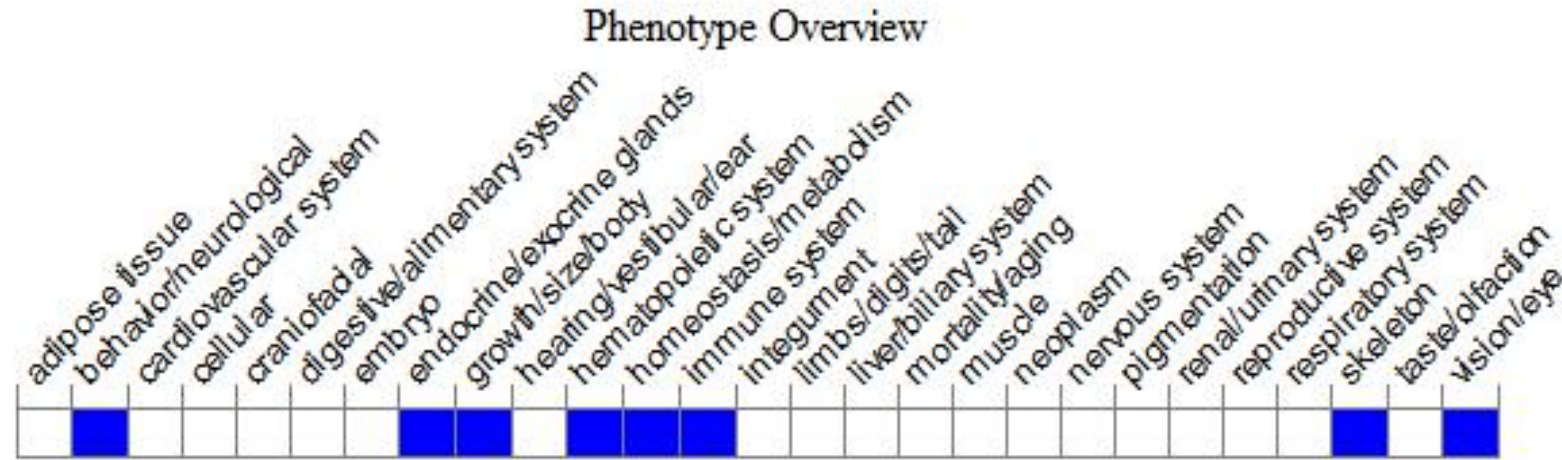
Genomic location distribution



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/>).

According to the existing MGI data, mutation of this locus impairs thymocyte positive selection and results in reduced numbers of single-positive thymocytes and peripheral T cells.

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

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