

Nfkb1 Cas9-KO Strategy

Designer: Xiaojing Li

Project Overview

Project Name

Nfkb1

Project type

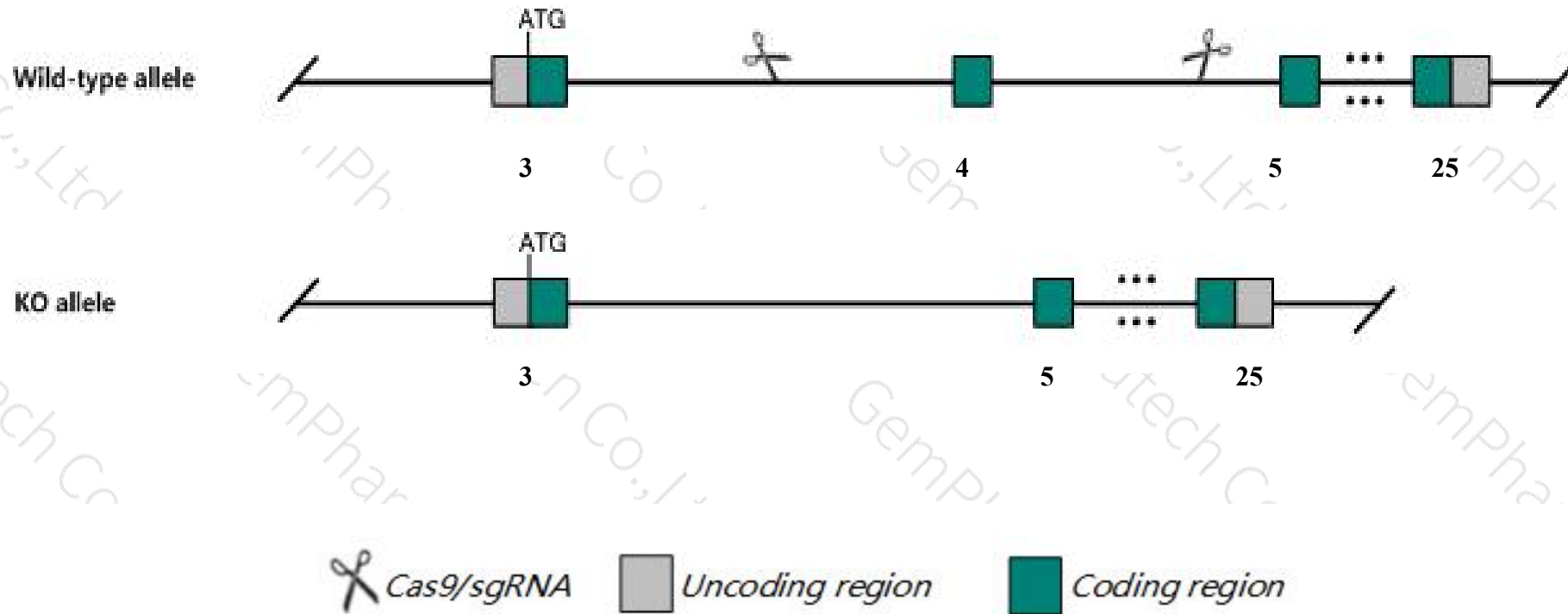
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nfkb1* gene. The schematic diagram is as follows:



- The *Nfkb1* gene has 10 transcripts. According to the structure of *Nfkb1* gene, exon4 of *Nfkb1-201* (ENSMUST00000029812.13) transcript is recommended as the knockout region. The region contains 79 bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nfkb1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Homozygous null mice have a decreased survivor rate, abnormal T cell development and decreased number of peripheral T cells, abnormal humoral responses with decreased immunoglobulin class switching, exhibit mild organ inflammation, and are susceptible to both bacterial infections and hearing loss.
- The *Nfkb1* gene is located on the Chr3. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Nfkb1 nuclear factor of kappa light polypeptide gene enhancer in B cells 1, p105 [Mus musculus (house mouse)]

Gene ID: 18033, updated on 2-Apr-2019

Summary



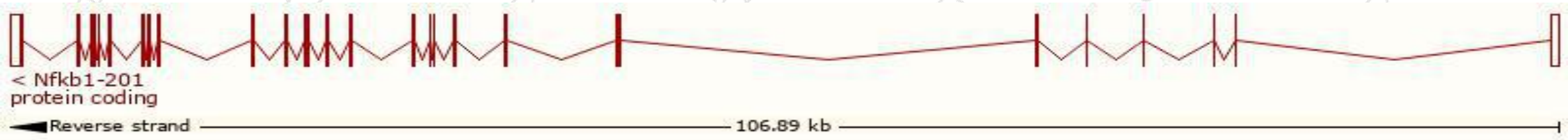
Official Symbol	Nfkb1 provided by MGI
Official Full Name	nuclear factor of kappa light polypeptide gene enhancer in B cells 1, p105 provided by MGI
Primary source	MGI:MGI:97312
See related	Ensembl:ENSMUSG00000028163
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	NF-KB1, NF-kappaB, NF-kappaB1, p105, p50, p50/p105
Expression	Ubiquitous expression in spleen adult (RPKM 34.6), lung adult (RPKM 23.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

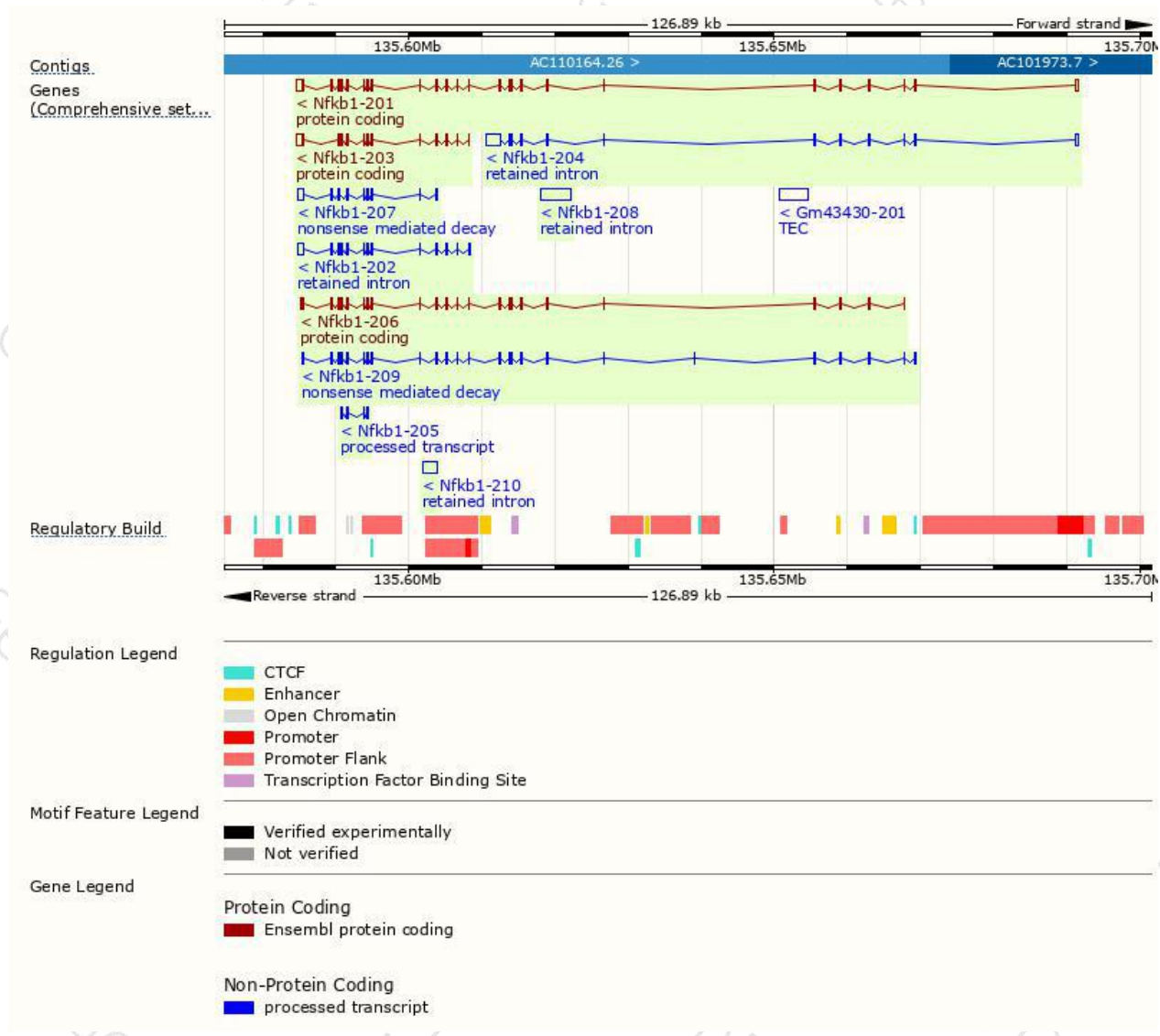
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nfkb1-201	ENSMUST00000029812.13	4117	971aa	Protein coding	CCDS17858	P25799	TSL:1 GENCODE basic APPRIS P1
Nfkb1-206	ENSMUST00000164430.6	3007	971aa	Protein coding	CCDS17858	P25799	TSL:1 GENCODE basic APPRIS P1
Nfkb1-203	ENSMUST00000132668.7	2354	534aa	Protein coding	-	F6Z9G5	CDS 5' incomplete TSL:5
Nfkb1-209	ENSMUST00000196469.4	3084	128aa	Nonsense mediated decay	-	A0A0G2JGK6	TSL:1
Nfkb1-207	ENSMUST00000184550.7	1924	270aa	Nonsense mediated decay	-	V9GX90	CDS 5' incomplete TSL:1
Nfkb1-205	ENSMUST00000150007.1	528	No protein	Processed transcript	-	-	TSL:2
Nfkb1-208	ENSMUST00000196246.1	4149	No protein	Retained intron	-	-	TSL:NA
Nfkb1-204	ENSMUST00000138602.2	3383	No protein	Retained intron	-	-	TSL:1
Nfkb1-202	ENSMUST00000129428.7	2520	No protein	Retained intron	-	-	TSL:1
Nfkb1-210	ENSMUST00000199588.1	2001	No protein	Retained intron	-	-	TSL:NA

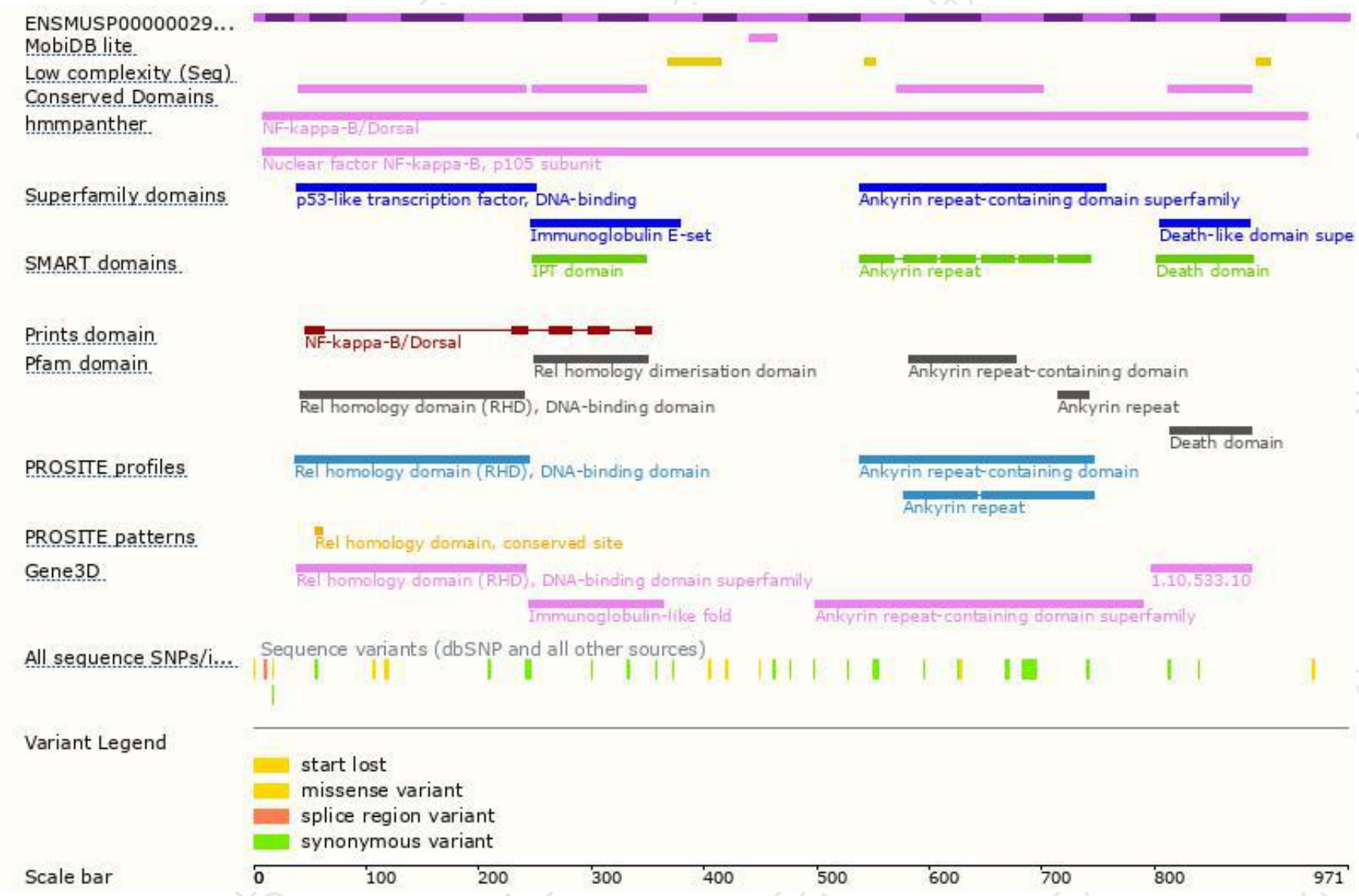
The strategy is based on the design of *Nfkb1-201* transcript,The transcription is shown below



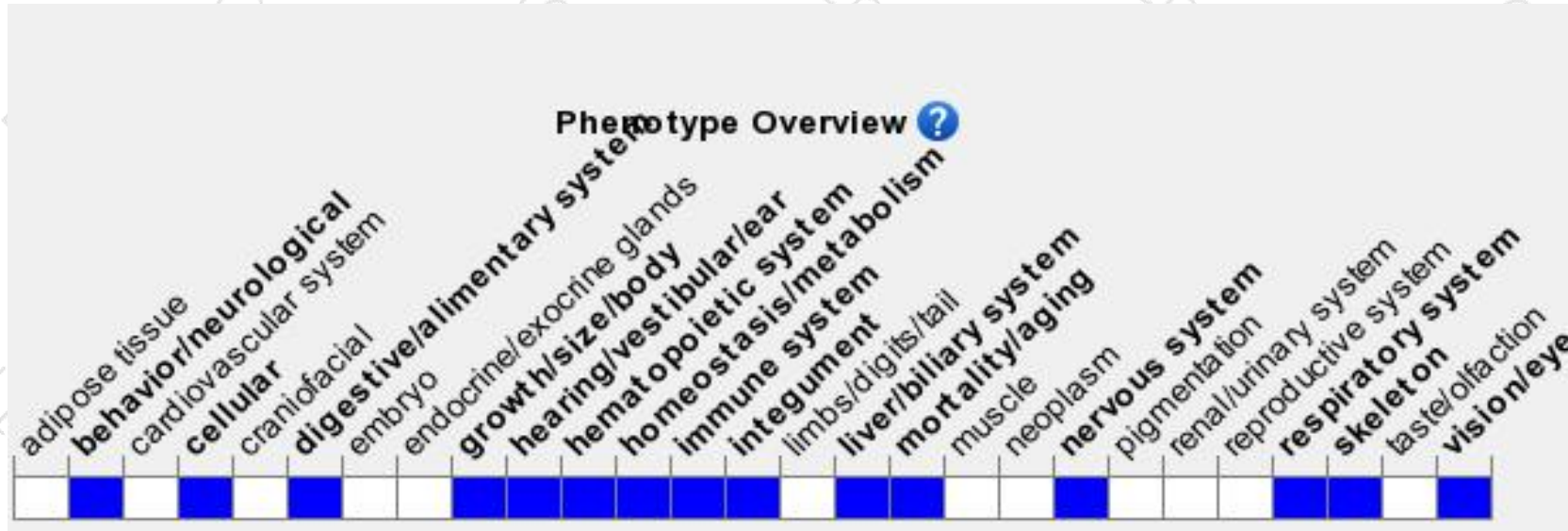
Genomic location distribution



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/>).

According to the existing MGI data, Homozygous null mice have a decreased survivor rate, abnormal T cell development and decreased number of peripheral T cells, abnormal humoral responses with decreased immunoglobulin class switching, exhibit mild organ inflammation, and are susceptible to both bacterial infections and hearing loss.

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

Tel: 025-5864 1534

