

Ikbkg Cas9-CKO Strategy

Designer:

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Design Date:

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Project Overview

Project Name

Ikbkg

Project type

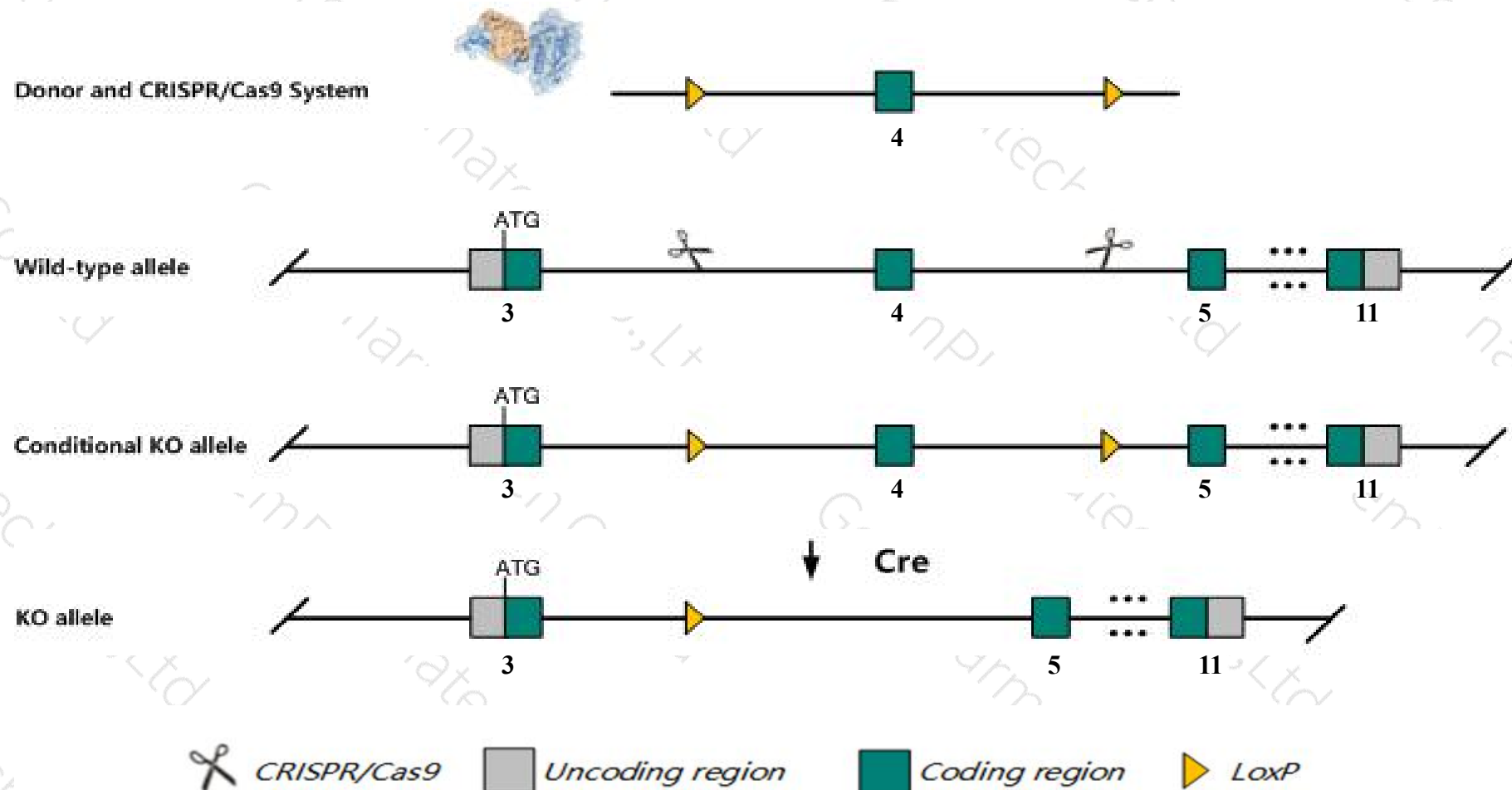
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Ikbkg* gene has 18 transcripts. According to the structure of *Ikbkg* gene, exon4 of *Ikbkg*-207 (ENSMUST00000114133.8) transcript is recommended as the knockout region. The region contains 212bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ikbkg* 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.

- According to the existing MGI data, Males hemizygous for targeted null mutations exhibit embryonic lethality by embryonic day 13.5 from apoptotic liver damage. Heterozygous females show patchy skin lesions with granulocyte infiltration, growth retardation, and shortened lifespan.
- Transcript *Ikbkg-209* may not be affected.
- The *Ikbkg* gene is located on the ChrX. 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)

Ikbkg inhibitor of kappaB kinase gamma [Mus musculus (house mouse)]

Gene ID: 16151, updated on 12-Mar-2019

Summary



Official Symbol	Ikbkg provided by MGI
Official Full Name	inhibitor of kappaB kinase gamma provided by MGI
Primary source	MGI:MGI:1338074
See related	Ensembl:ENSMUSG000000004221
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	1110037D23Rik, AI848108, AI851264, AW124339, IKK[g], NEMO
Expression	Ubiquitous expression in liver E18 (RPKM 3.8), bladder adult (RPKM 3.7) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

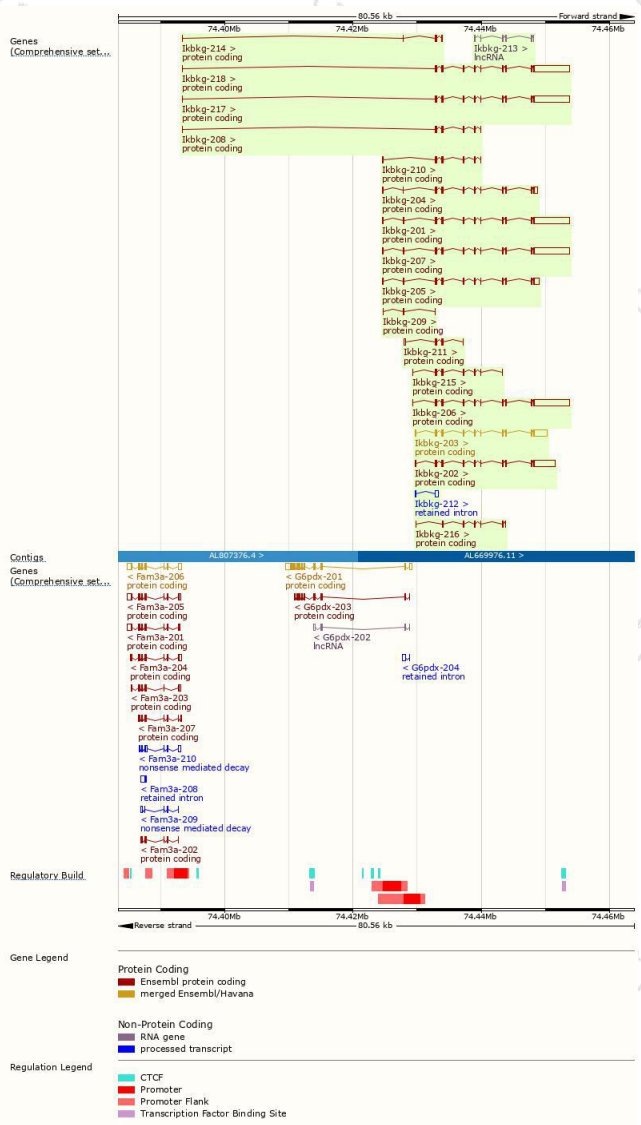
The gene has 18 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ikbkg-207	ENSMUST00000114133.8	6994	412aa	Protein coding	CCDS41023	Q88522	TSL:1 GENCODE basic APPRIS ALT2
Ikbkg-201	ENSMUST0000004330.9	6918	430aa	Protein coding	CCDS53108	Q7TSS3	TSL:1 GENCODE basic APPRIS ALT2
Ikbkg-217	ENSMUST00000164101.7	6788	412aa	Protein coding	CCDS41023	Q88522	TSL:5 GENCODE basic APPRIS ALT2
Ikbkg-218	ENSMUST00000180230.7	6785	411aa	Protein coding	CCDS30233	Q8VC91	TSL:5 GENCODE basic APPRIS P3
Ikbkg-206	ENSMUST00000114130.8	6736	424aa	Protein coding	CCDS53109	E9Q2Y3	TSL:5 GENCODE basic APPRIS ALT2
Ikbkg-202	ENSMUST00000064407.9	4530	411aa	Protein coding	CCDS30233	Q8VC91	TSL:1 GENCODE basic APPRIS P3
Ikbkg-203	ENSMUST00000114127.7	3332	412aa	Protein coding	CCDS41023	Q88522	TSL:1 GENCODE basic APPRIS ALT2
Ikbkg-205	ENSMUST00000114129.8	2222	411aa	Protein coding	CCDS30233	Q8VC91	TSL:1 GENCODE basic APPRIS P3
Ikbkg-204	ENSMUST00000114128.7	1867	412aa	Protein coding	CCDS41023	Q88522	TSL:2 GENCODE basic APPRIS ALT2
Ikbkg-210	ENSMUST00000135165.7	944	249aa	Protein coding	-	A3KG41	CDS 3' incomplete TSL:5
Ikbkg-215	ENSMUST00000149525.7	872	265aa	Protein coding	-	A3KG38	CDS 3' incomplete TSL:1
Ikbkg-208	ENSMUST00000130802.7	779	228aa	Protein coding	-	A3KG40	CDS 3' incomplete TSL:5
Ikbkg-211	ENSMUST00000138564.7	727	141aa	Protein coding	-	A3KG37	CDS 3' incomplete TSL:5
Ikbkg-216	ENSMUST00000156707.2	718	190aa	Protein coding	-	A3KG44	CDS 3' incomplete TSL:3
Ikbkg-214	ENSMUST00000144947.7	622	126aa	Protein coding	-	A3KG39	CDS 3' incomplete TSL:2
Ikbkg-209	ENSMUST00000132749.1	278	16aa	Protein coding	-	D3YYY3	CDS 3' incomplete TSL:5
Ikbkg-212	ENSMUST00000139036.1	651	No protein	Retained intron	-	-	TSL:2
Ikbkg-213	ENSMUST00000143784.1	611	No protein	lncRNA	-	-	TSL:2

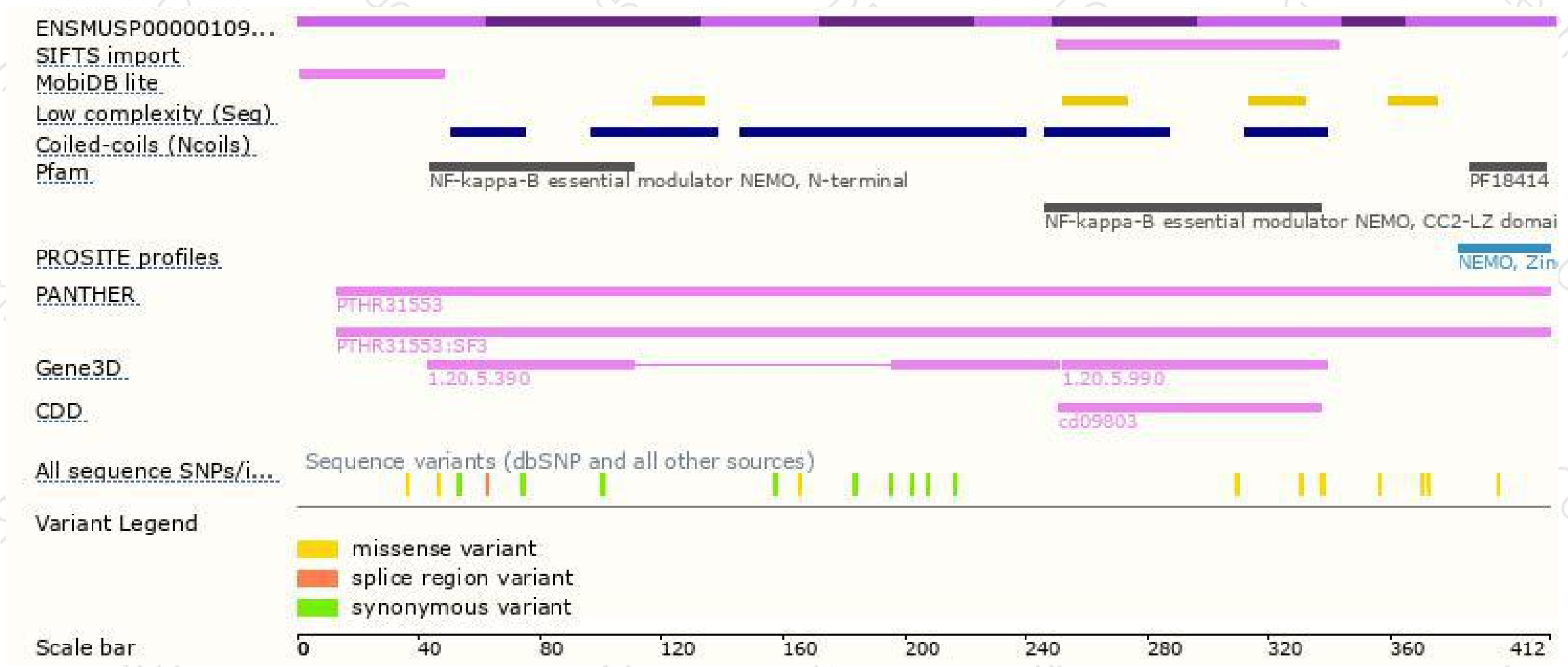
The strategy is based on the design of *Ikbkg-207* transcript,The transcription is shown below



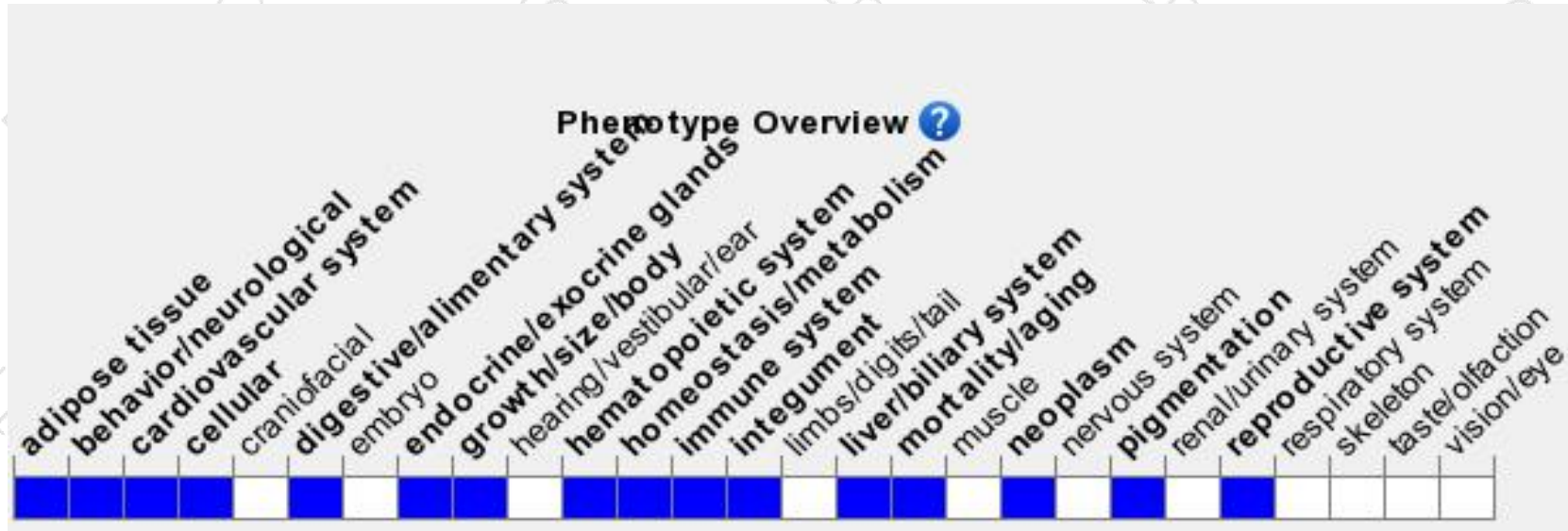
Genomic location distribution



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, Males hemizygous for targeted null mutations exhibit embryonic lethality by embryonic day 13.5 from apoptotic liver damage. Heterozygous females show patchy skin lesions with granulocyte infiltration, growth retardation, and shortened lifespan.

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

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