

Il12rb1 Cas9-KO Strategy

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Project Overview

Project Name

Il12rb1

Project type

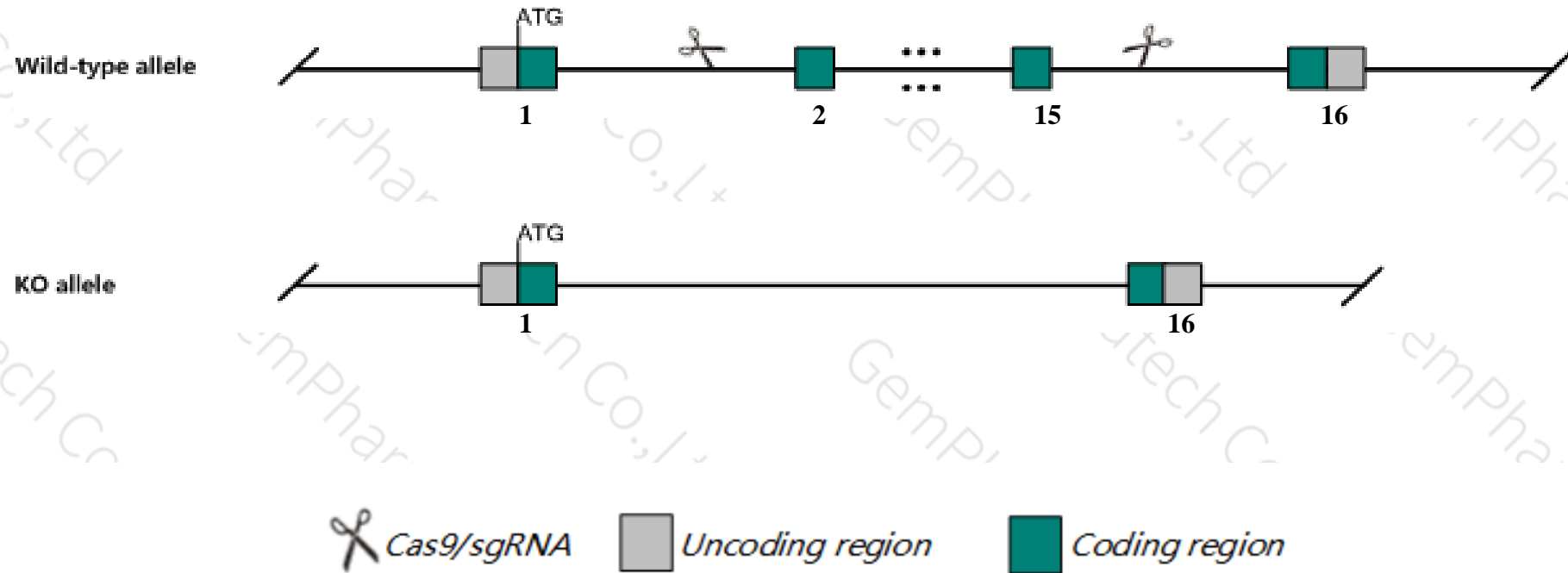
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il12rb1* gene. The schematic diagram is as follows:



- The *Il12rb1* gene has 6 transcripts. According to the structure of *Il12rb1* gene, exon2-exon15 of *Il12rb1*-201 (ENSMUST00000000808.7) transcript is recommended as the knockout region. The region contains 1793bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Il12rb1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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, Mice homozygous for a knock-out allele exhibit decreased serum IFN-gamma levels in response to recombinant IL-12 or LPS treatment, and failure of ConA-activated splenocytes to proliferate or secrete IFN-gamma in response to IL-12.
- The *Il12rb1* 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)

Il12rb1 interleukin 12 receptor, beta 1 [Mus musculus (house mouse)]

Gene ID: 16161, updated on 31-Jan-2019

Summary



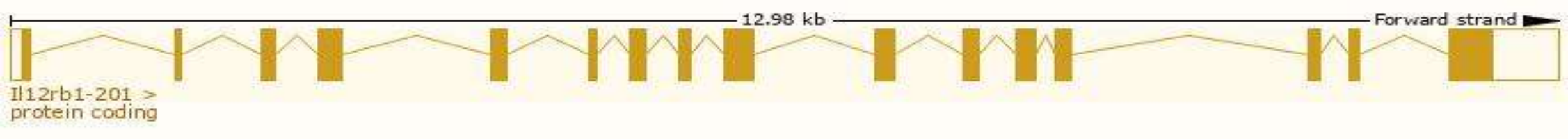
Official Symbol	Il12rb1 provided by MGI
Official Full Name	interleukin 12 receptor, beta 1 provided by MGI
Primary source	MGI:MGI:104579
See related	Ensembl:ENSMUSG00000000791
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CD212, IL-12R[b]
Expression	Biased expression in thymus adult (RPKM 9.3), spleen adult (RPKM 1.7) and 4 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

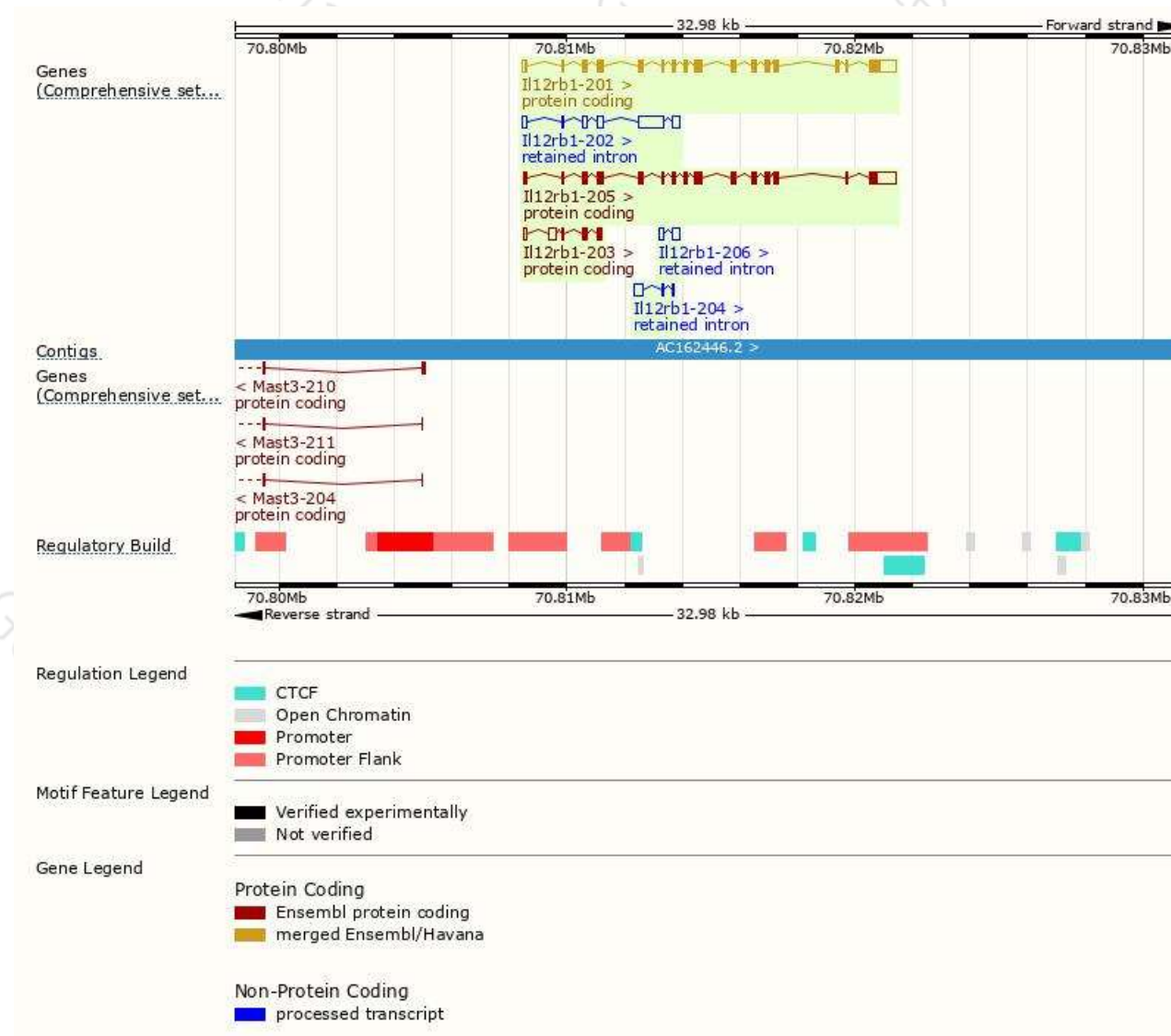
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
II12rb1-201	ENSMUST00000000808.7	2873	738aa	Protein coding	CCDS22382	Q60837	TSL:1 GENCODE basic APPRIS P2
II12rb1-205	ENSMUST00000212657.1	2741	668aa	Protein coding	-	A0A1D5RL98	TSL:5 GENCODE basic APPRIS ALT2
II12rb1-203	ENSMUST00000212146.1	729	114aa	Protein coding	-	A0A1D5RLC9	CDS 3' incomplete TSL:3
II12rb1-202	ENSMUST00000211936.1	1704	No protein	Retained intron	-	-	TSL:2
II12rb1-206	ENSMUST00000212826.1	427	No protein	Retained intron	-	-	TSL:3
II12rb1-204	ENSMUST00000212251.1	389	No protein	Retained intron	-	-	TSL:2

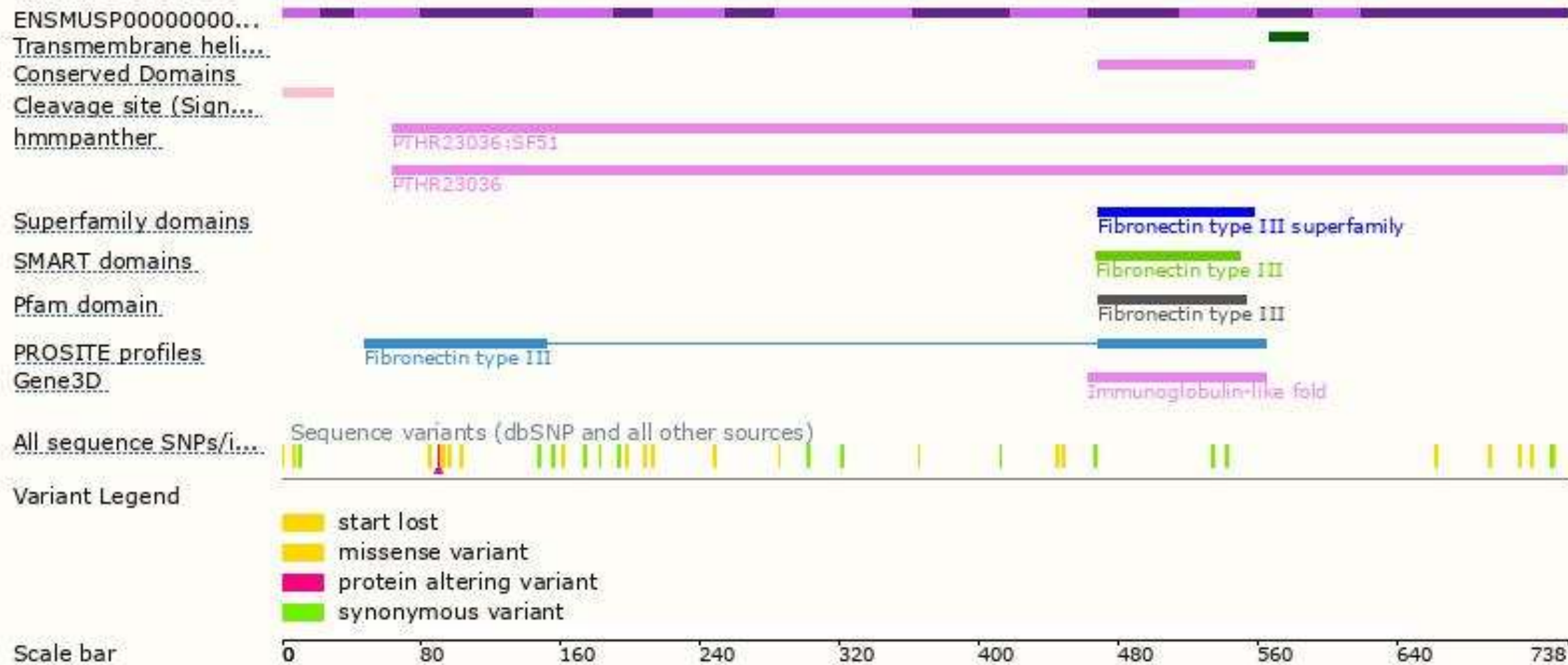
The strategy is based on the design of *Il12rb1-201* transcript,The transcription is shown below



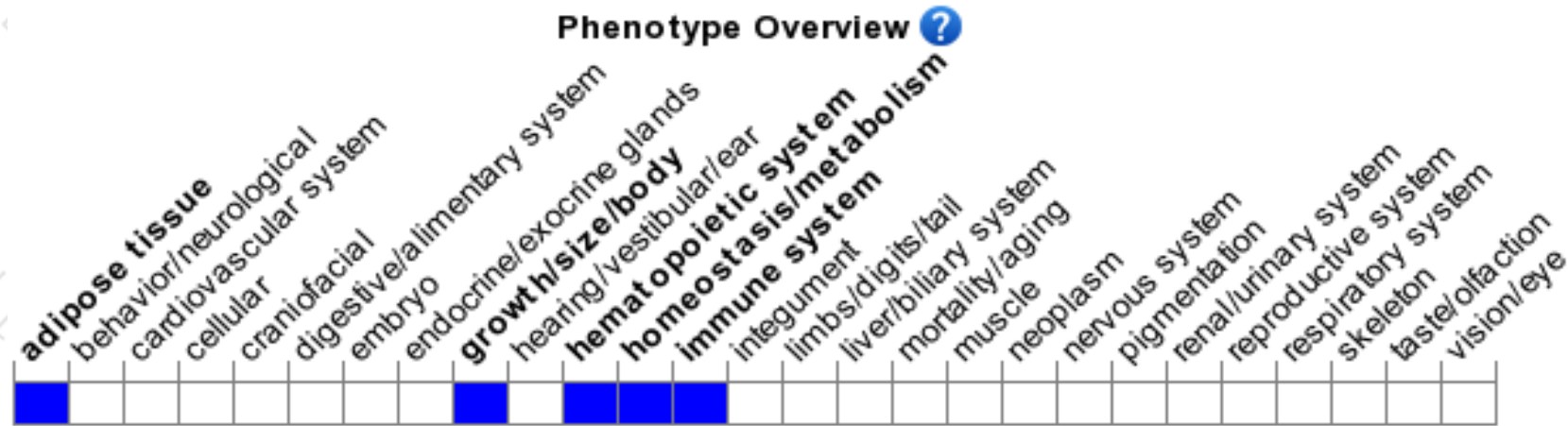
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit decreased serum IFN-gamma levels in response to recombinant IL-12 or LPS treatment, and failure of ConA-activated splenocytes to proliferate or secrete IFN-gamma in response to IL-12.

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

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