

IL21 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

IL21

Project type

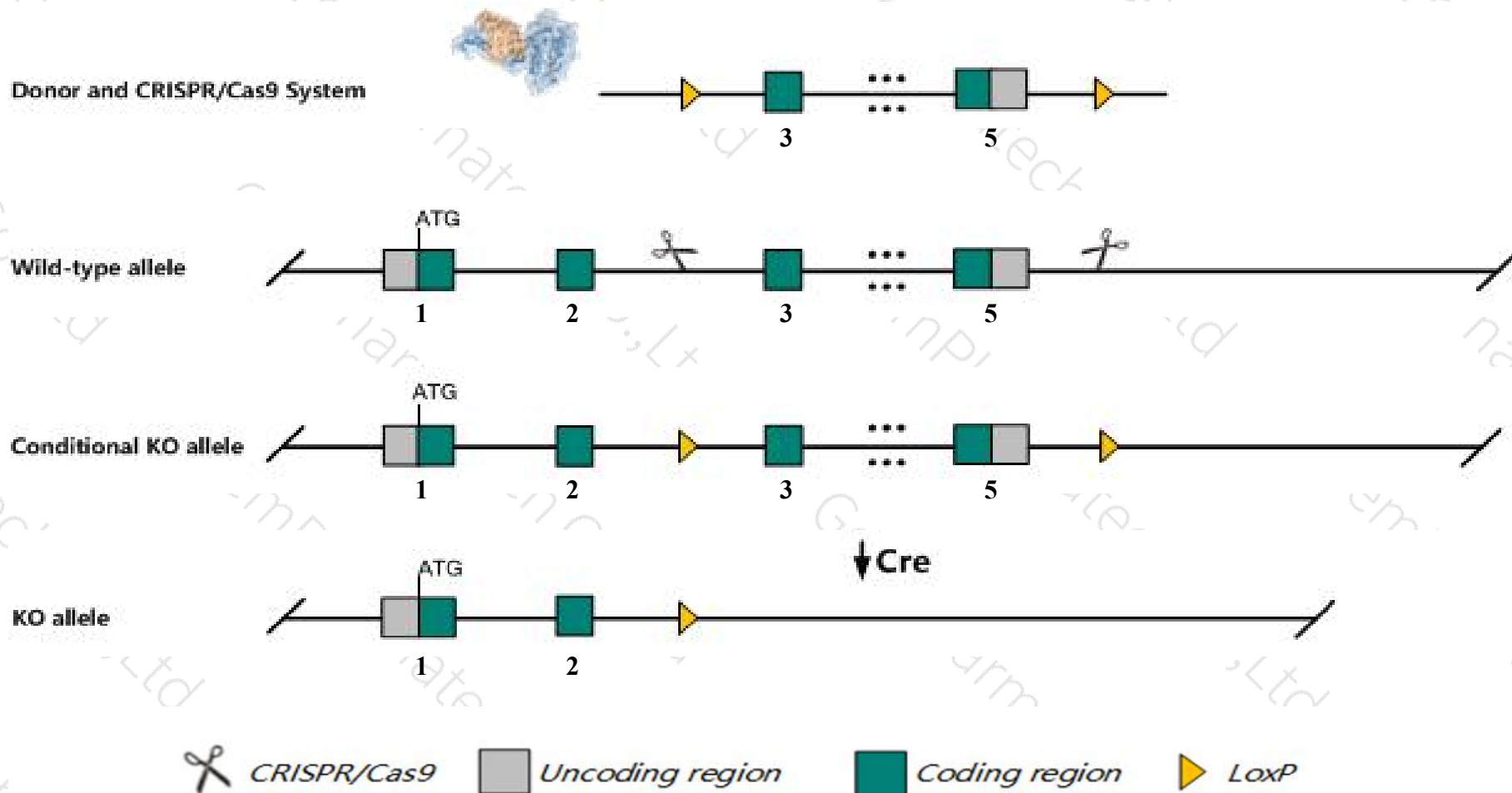
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il21* gene. The schematic diagram is as follows:



Technical routes

- The *Il21* gene has 3 transcripts. According to the structure of *Il21* gene, exon3-exon5 of *Il21-201* (ENSMUST00000029273.7) transcript is recommended as the knockout region. The region contains 258bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Il21* 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, Mice homozygous for disruptions in this gene develop normally and have a normal life span. One allele exhibits enhanced IgE isotype switch and IgE production after antigen immunization.
- The *Ii21* 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 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)

Il21 interleukin 21 [Mus musculus (house mouse)]

Gene ID: 60505, updated on 12-Mar-2019

Summary



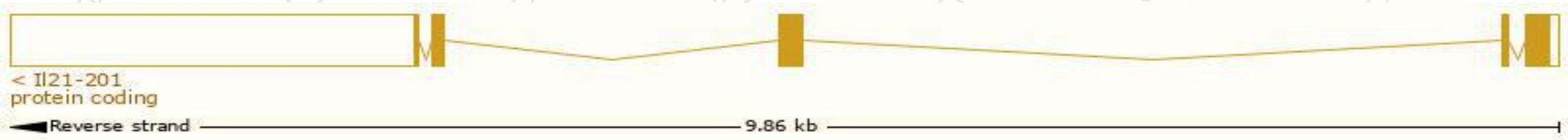
Official Symbol	Il21 provided by MGI
Official Full Name	interleukin 21 provided by MGI
Primary source	MGI:MGI:1890474
See related	Ensembl:ENSMUSG00000027718
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IL-21
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Transcript information (Ensembl)

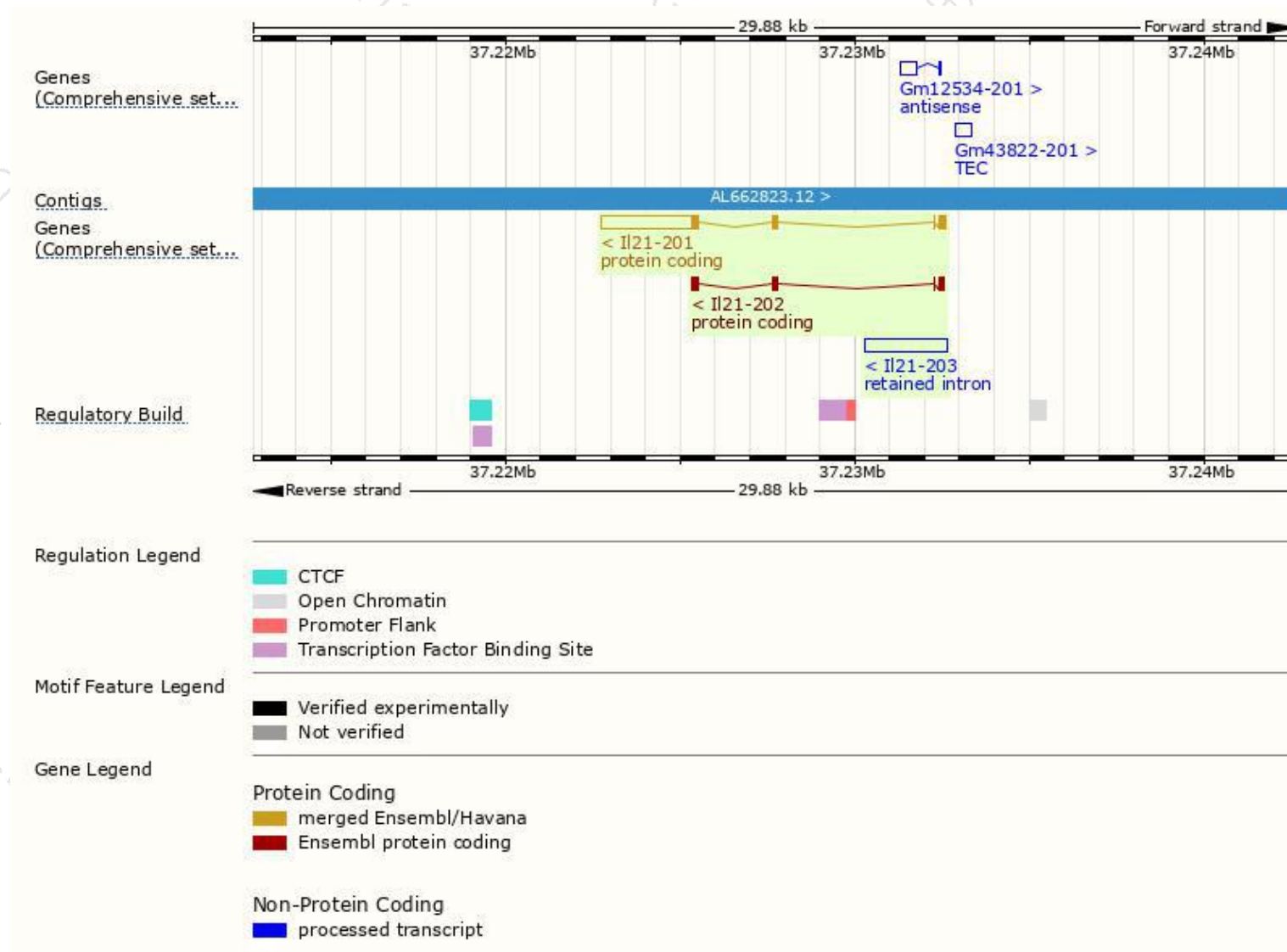
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
II21-201	ENSMUST00000029273.7	3072	146aa	Protein coding	CCDS17317	Q5SUE2 Q9ES17	TSL:1 GENCODE basic APPRIS P3
II21-202	ENSMUST00000161015.1	529	162aa	Protein coding	CCDS71236	E9PX58	TSL:1 GENCODE basic APPRIS ALT2
II21-203	ENSMUST00000196943.1	2335	No protein	Retained intron	-	-	TSL:NA

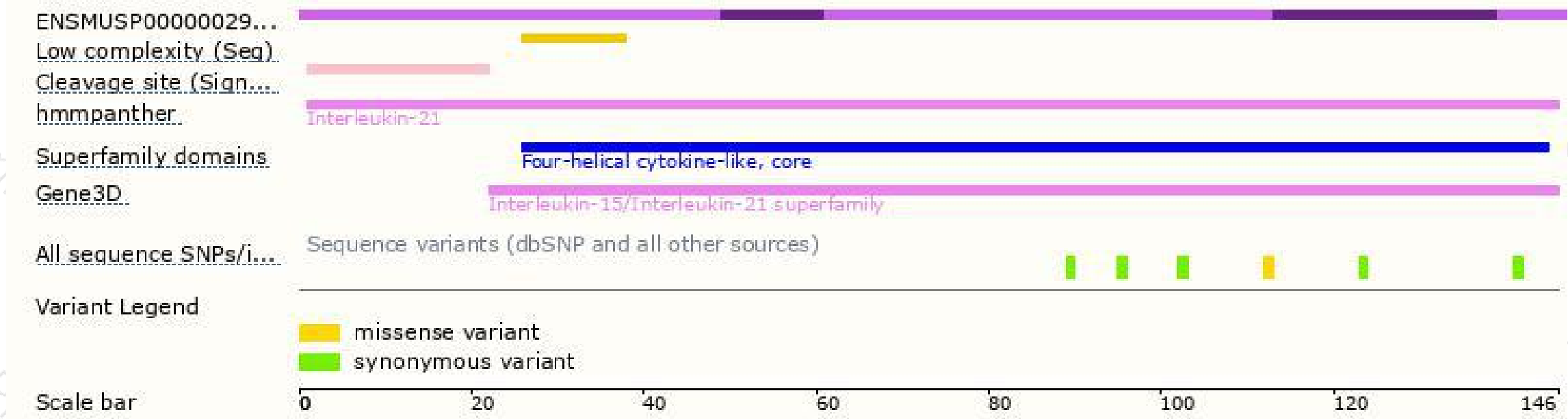
The strategy is based on the design of *II21-201* transcript,The transcription is shown below



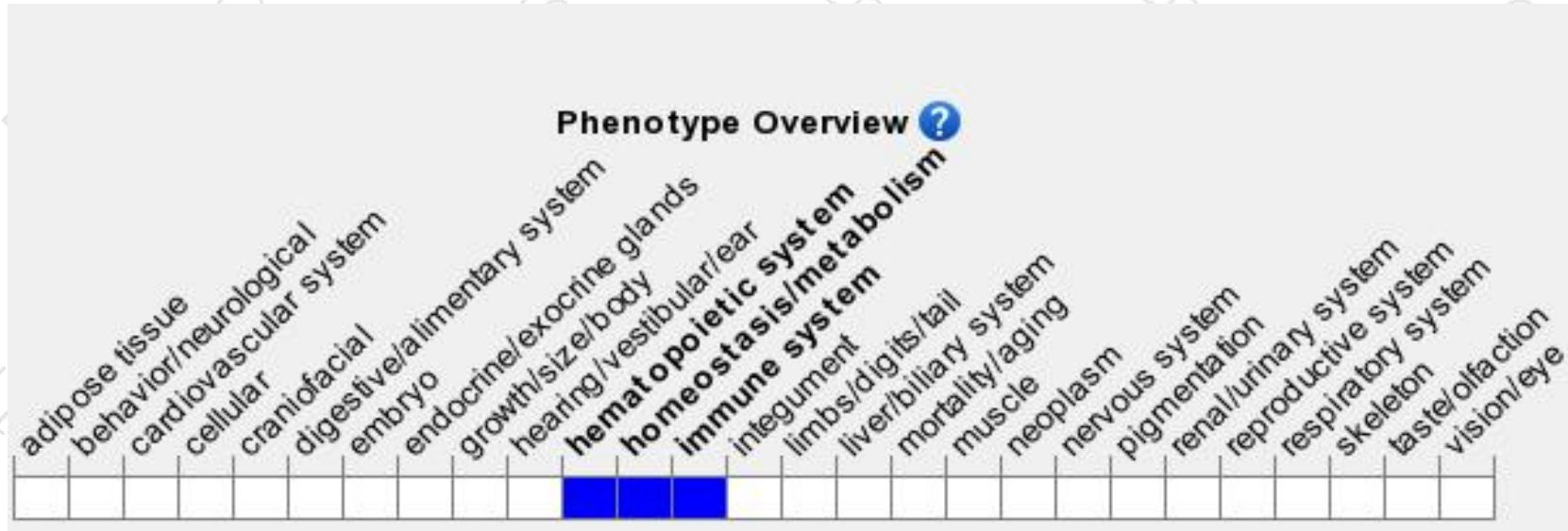
Genomic location distribution



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 disruptions in this gene develop normally and have a normal life span. One allele exhibits enhanced IgE isotype switch and IgE production after antigen immunization.

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

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