

Cd79b Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Cd79b

Project type

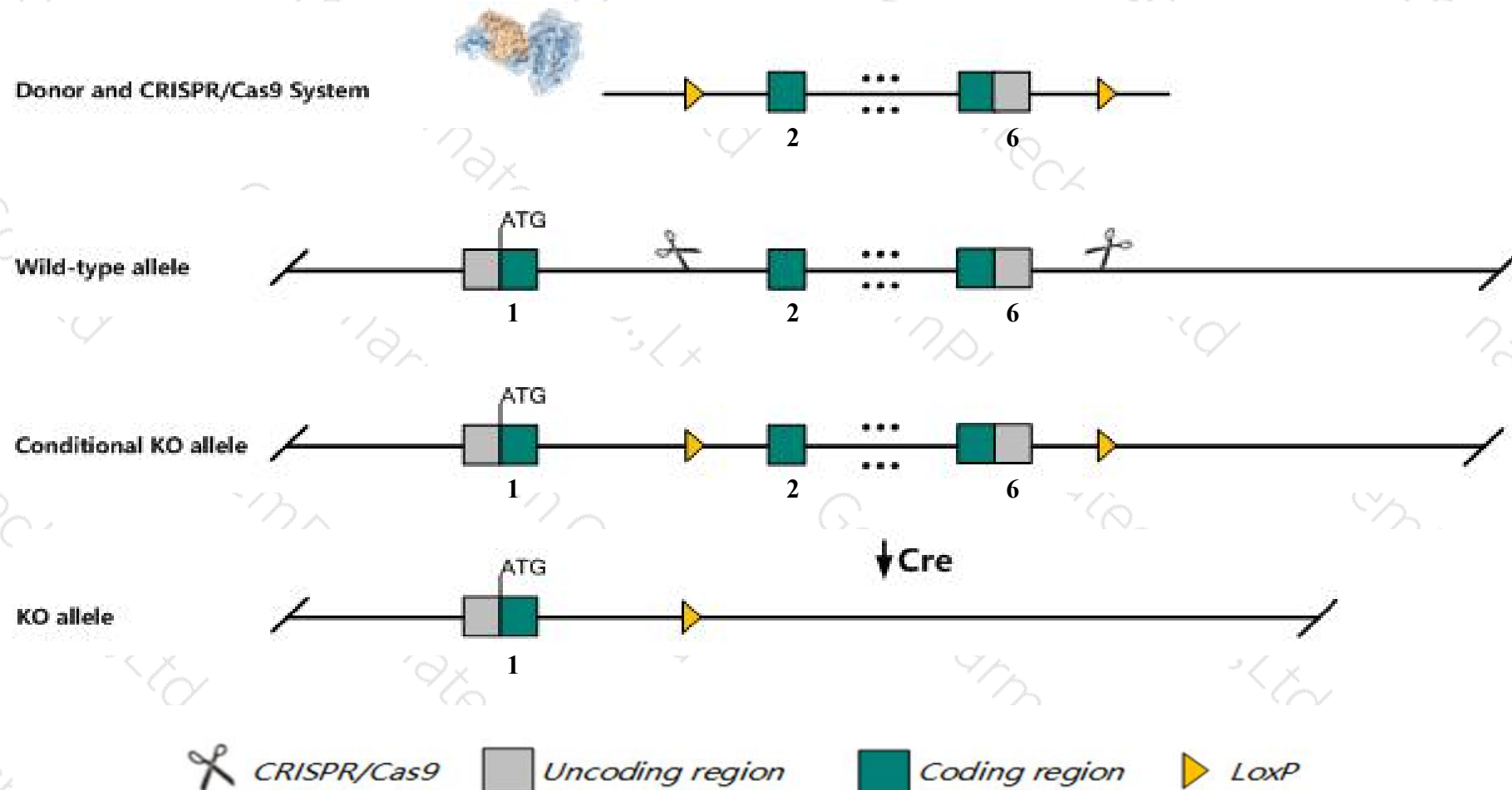
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd79b* gene. The schematic diagram is as follows:



Technical routes

- The *Cd79b* gene has 2 transcripts. According to the structure of *Cd79b* gene, exon2-exon6 of *Cd79b-202* (ENSMUST00000167143.1) transcript is recommended as the knockout region. The region contains most of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cd79b* 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, Homozygotes for targeted null mutations exhibit arrested development of B cells at the pro-B cell stage due to diminished signaling of the B cell receptor.
- The *Cd79b* gene is located on the Chr11. 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)

Cd79b CD79B antigen [*Mus musculus* (house mouse)]

Gene ID: 15985, updated on 11-Sep-2019

Summary

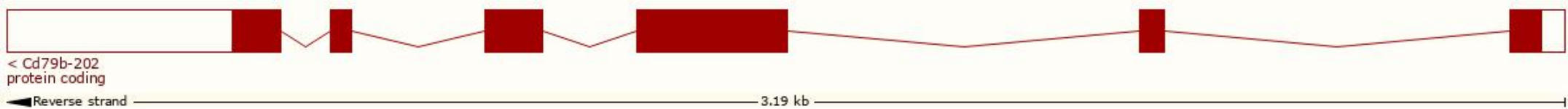
Official Symbol	Cd79b provided by MGI
Official Full Name	CD79B antigen provided by MGI
Primary source	MGI:MGI:96431
See related	Ensembl:ENSMUSG00000040592
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	B29; Igb; Igbeta; Ig-beta
Summary	The B lymphocyte antigen receptor is a multimeric complex that includes the antigen-specific component, surface immunoglobulin (Ig). Surface Ig non-covalently associates with two other proteins, Ig-alpha and Ig-beta, which are necessary for expression and function of the B-cell antigen receptor. This gene encodes the Ig-beta protein of the B-cell antigen component. Alternatively spliced transcript variants encoding different isoforms have been described. [provided by RefSeq, Sep 2015]
Expression	Biased expression in spleen adult (RPKM 246.8), mammary gland adult (RPKM 54.7) and 2 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

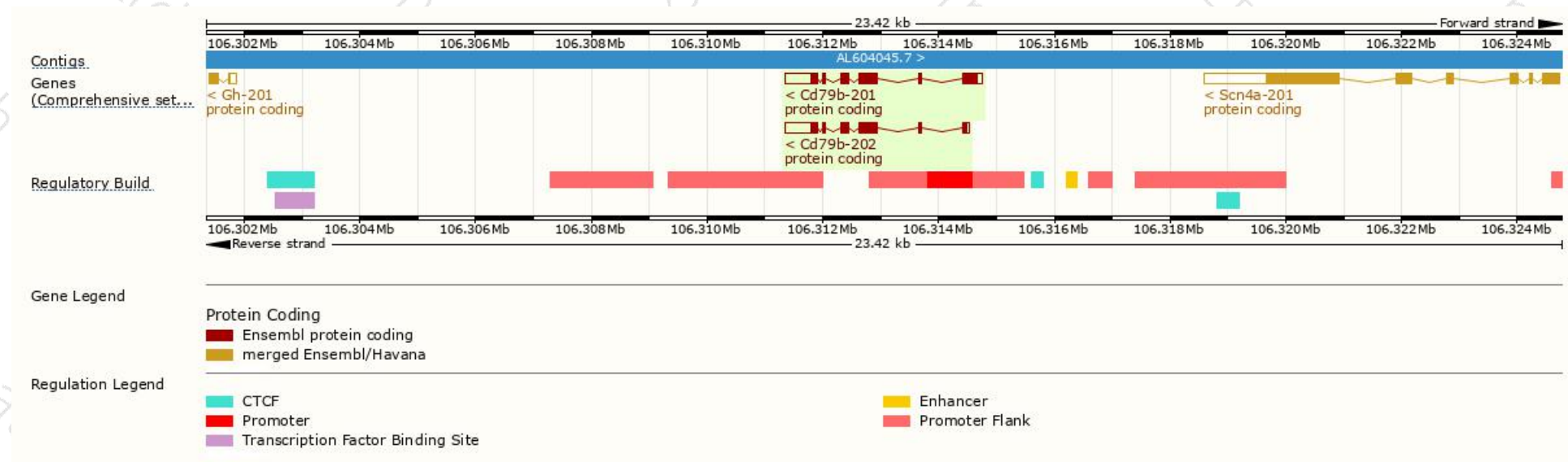
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd79b-202	ENSMUST00000167143.1	1195	228aa	Protein coding	CCDS48960	P15530	TSL:1 GENCODE basic APPRIS P2
Cd79b-201	ENSMUST00000044228.10	1431	288aa	Protein coding	-	B1ARJ9	TSL:1 GENCODE basic APPRIS ALT2

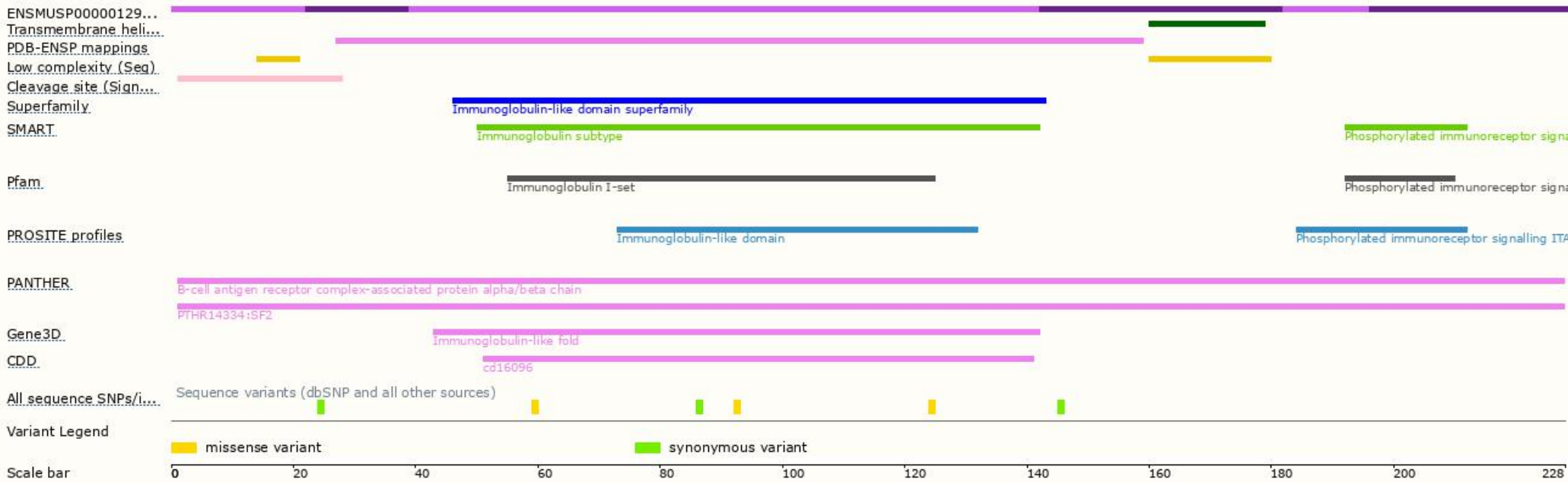
The strategy is based on the design of *Cd79b-202* transcript,The transcription is shown below



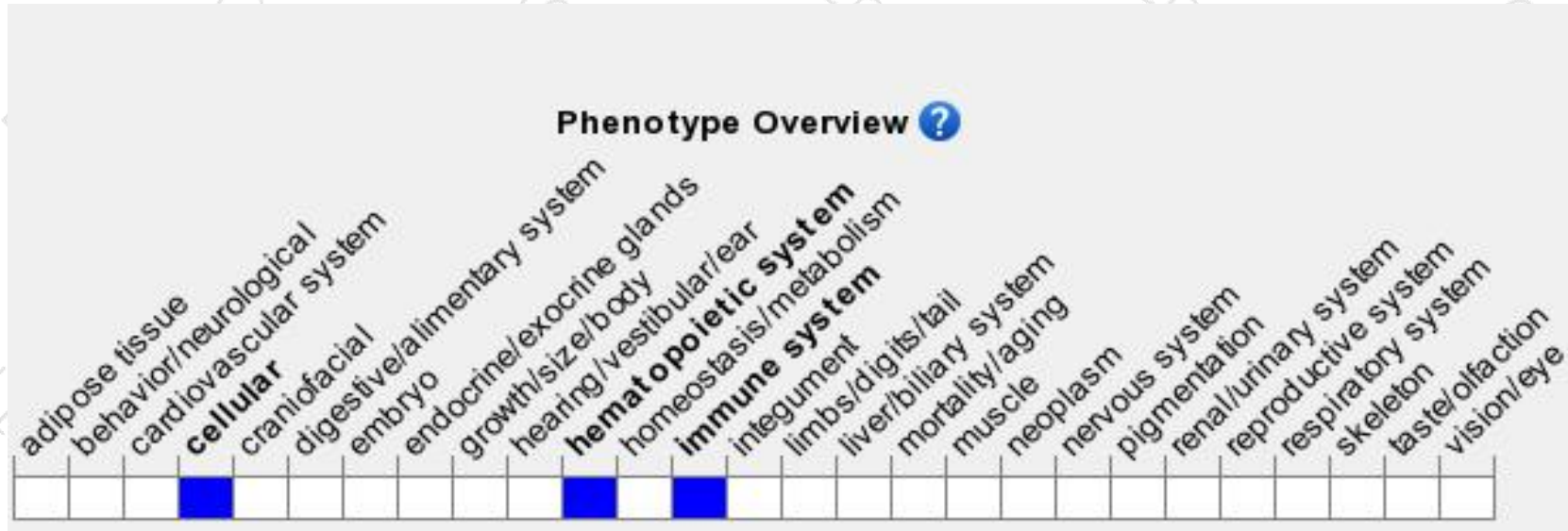
Genomic location distribution



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, Homozygotes for targeted null mutations exhibit arrested development of B cells at the pro-B cell stage due to diminished signaling of the B cell receptor.

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

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