

Ly9 Cas9-CKO Strategy

Designer:

Yang Zeng

Reviewer:

Huimin Su

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Project Overview

Project Name

Ly9

Project type

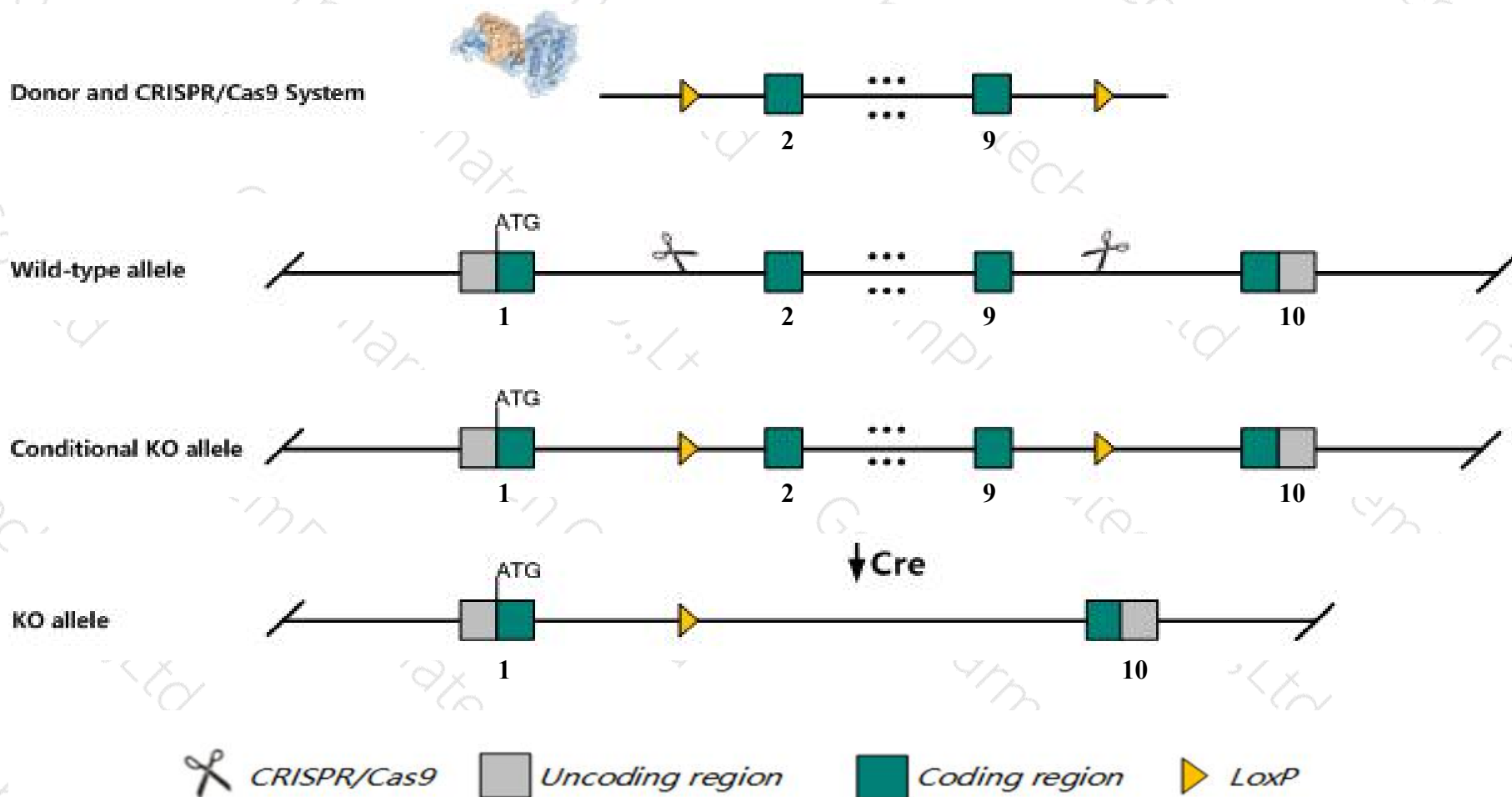
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ly9* gene. The schematic diagram is as follows:



- The *Ly9* gene has 5 transcripts. According to the structure of *Ly9* gene, exon2-exon9 of *Ly9-202* (ENSMUST00000068878.13) transcript is recommended as the knockout region. The region contains 1775bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ly9* 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, This locus controls an antigen on thymocytes, lymphocytes and bone marrow cells. The a allele determines Ly9.1 antigen in A/J, 129/Re, BALB/c and C3H/He; the b allele determines antigen Ly9.2 in the C57 family of strains, HTI/Go, MA/My, F/St and C58/Lw. Null mutants are viable, healthy and fertile.
- The *Ly9* gene is located on the Chr1. 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.

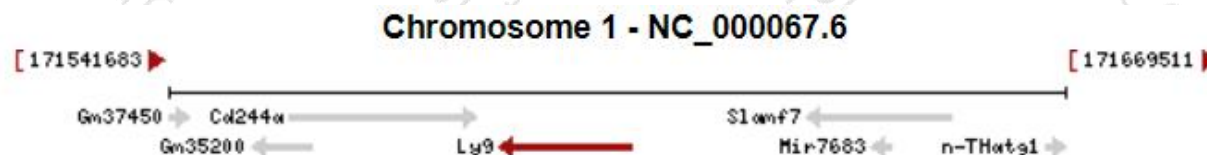
Gene information (NCBI)

Ly9 lymphocyte antigen 9 [*Mus musculus* (house mouse)]

Gene ID: 17085, updated on 12-Aug-2019

Summary

Official Symbol	Ly9 provided by MGI
Official Full Name	lymphocyte antigen 9 provided by MGI
Primary source	MGI:MGI:96885
See related	Ensembl:ENSMUSG000000004707
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	Ly-9; T100; CD229; Lgp100; SLAMF3; AI893573
Expression	Biased expression in spleen adult (RPKM 10.3), thymus adult (RPKM 8.8) and 8 other tissues See more
Orthologs	human all

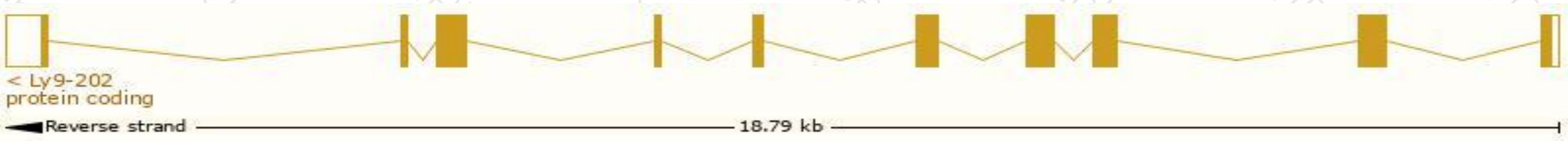


Transcript information (Ensembl)

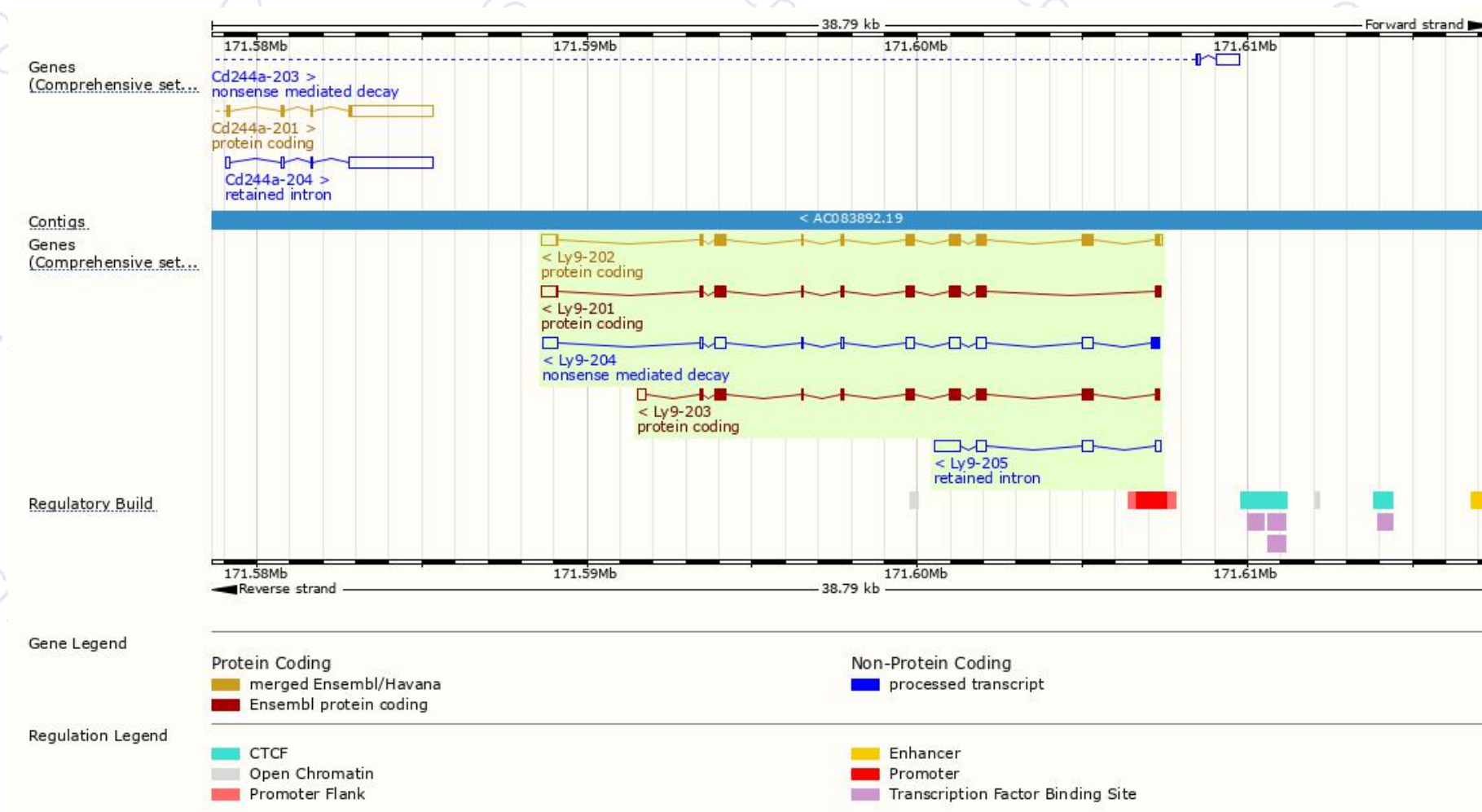
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ly9-202	ENSMUST00000068878.13	2488	654aa	Protein coding	CCDS35779	Q01965	TSL:1 GENCODE basic APPRIS P2
Ly9-201	ENSMUST00000004827.13	2098	544aa	Protein coding	CCDS69978	E9PX73	TSL:1 GENCODE basic
Ly9-203	ENSMUST00000111277.1	2155	636aa	Protein coding	-	E9PV93	TSL:1 GENCODE basic APPRIS ALT2
Ly9-204	ENSMUST00000143463.7	2480	59aa	Nonsense mediated decay	-	M0QWN5	TSL:1
Ly9-205	ENSMUST00000146596.1	1583	No protein	Retained intron	-	-	TSL:1

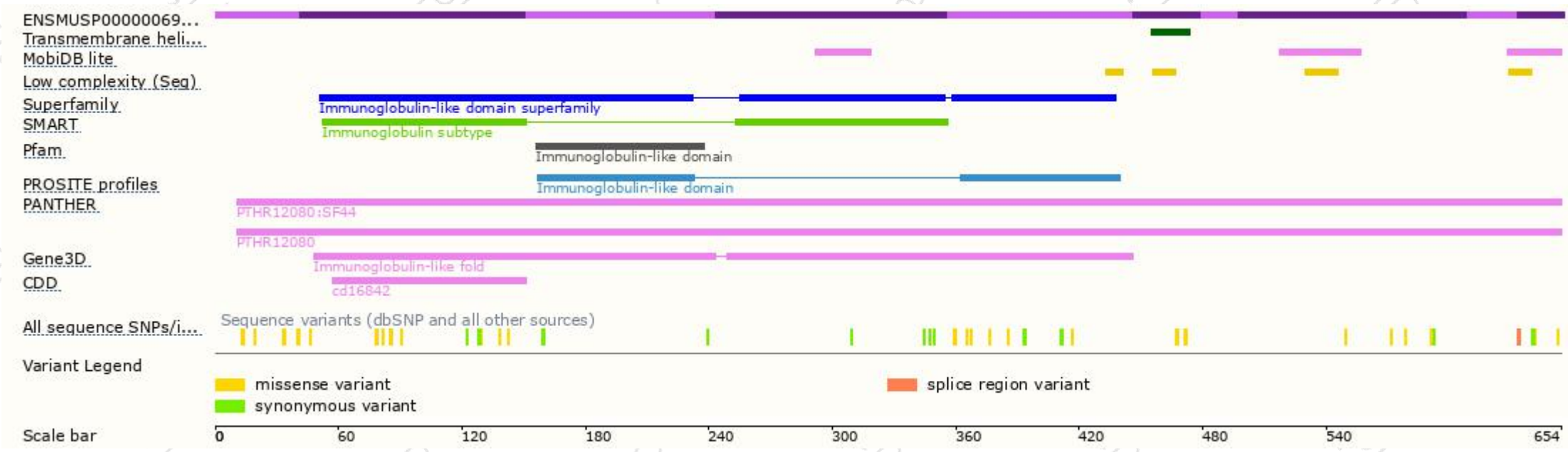
The strategy is based on the design of *Ly9-202* transcript,The transcription is shown below



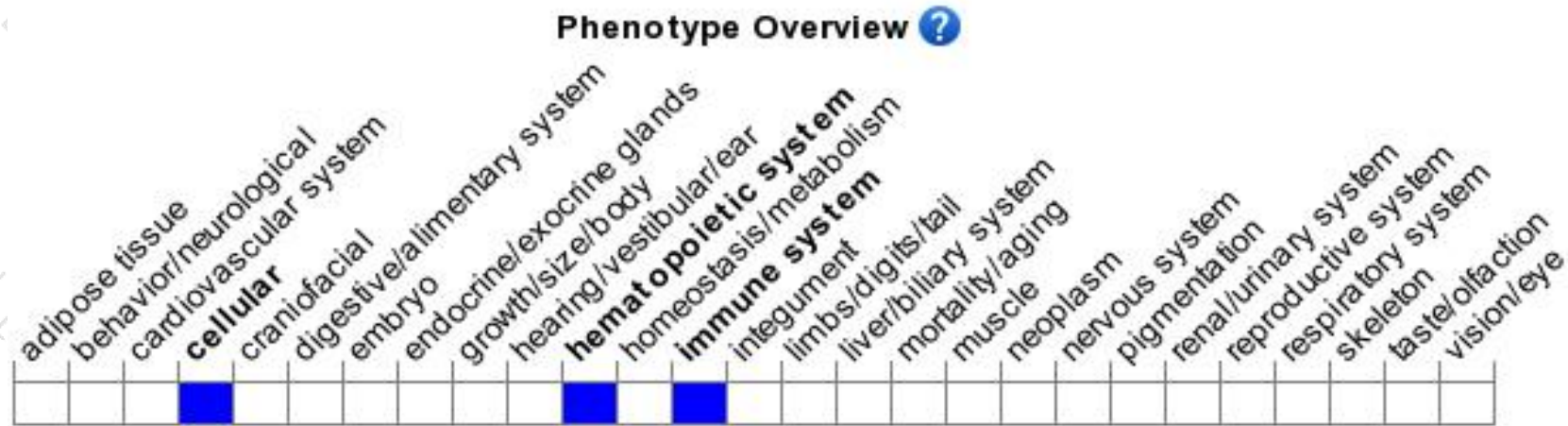
Genomic location distribution



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, This locus controls an antigen on thymocytes, lymphocytes and bone marrow cells. The a allele determines Ly9.1 antigen in A/J, 129/Re, BALB/c and C3H/He; the b allele determines antigen Ly9.2 in the C57 family of strains, HTI/Go, MA/My, F/St and C58/Lw. Null mutants are viable, healthy and fertile.

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

Tel: 400-9660890

