

Prf1 Cas9-KO Strategy

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Project Overview

Project Name

Prf1

Project type

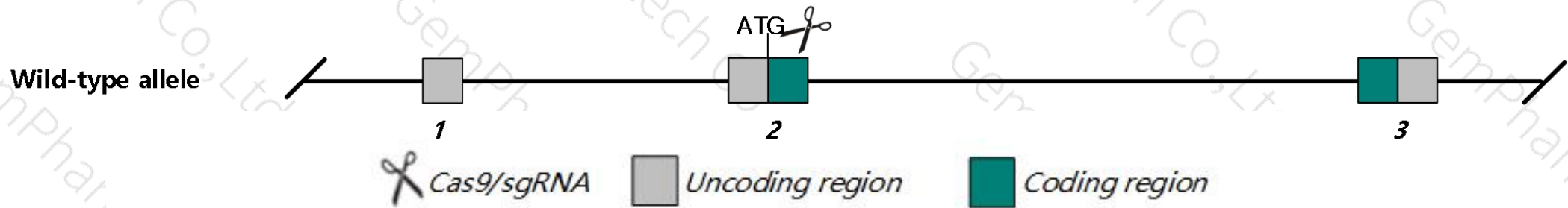
Cas9-KO

Strain background

NOD/ShiLtJ

Knockout strategy

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



- The *Prfl* gene has 1 transcript. According to the structure of *Prfl* gene, exon2 part of the coding area of MGP_NODShiLtJ_T0025171.1 transcript is recommended as the knockout region. The region contains 161bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prfl* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of NOD/ShiLtJ 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 NOD/ShiLtJ mice.

- According to the existing MGI data, Homozygous null mice exhibit increased susceptibility to viral infection and defective cytotoxic T cell cytolysis and NK cell cytolysis.
- The *Prfl* gene is located on the Chr10. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Prf1 perforin 1 (pore forming protein) [*Mus musculus* (house mouse)]

Gene ID: 18646, updated on 18-Jun-2019

Summary

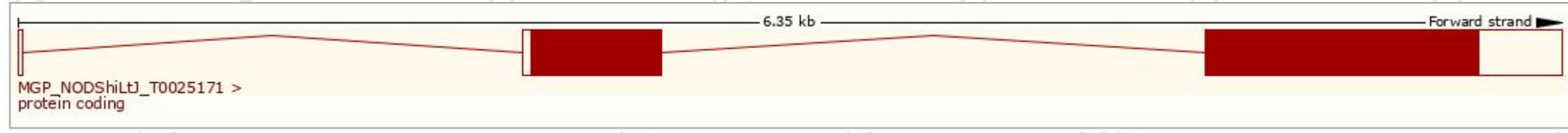
Official Symbol	Prf1 provided by MGI
Official Full Name	perforin 1 (pore forming protein) provided by MGI
Primary source	MGI:MGI:97551
See related	Ensembl:ENSMUSG00000037202
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Pfn; Pfp; Prf-1
Expression	Biased expression in spleen adult (RPKM 7.1), mammary gland adult (RPKM 3.1) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

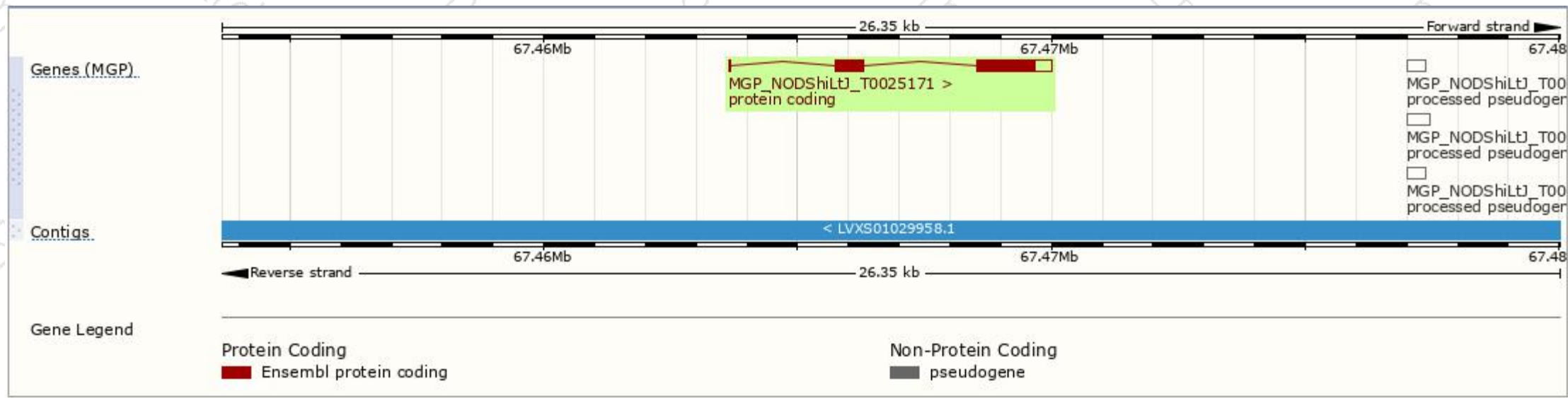
The gene has 1 transcript,the transcript is shown below:

Show/hide columns (1 hidden) Filter							
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
-	MGP_NODShiLtJ_T0025171.1	2054	554aa	Protein coding	CCDS23875	A2RSY7 P10820	-

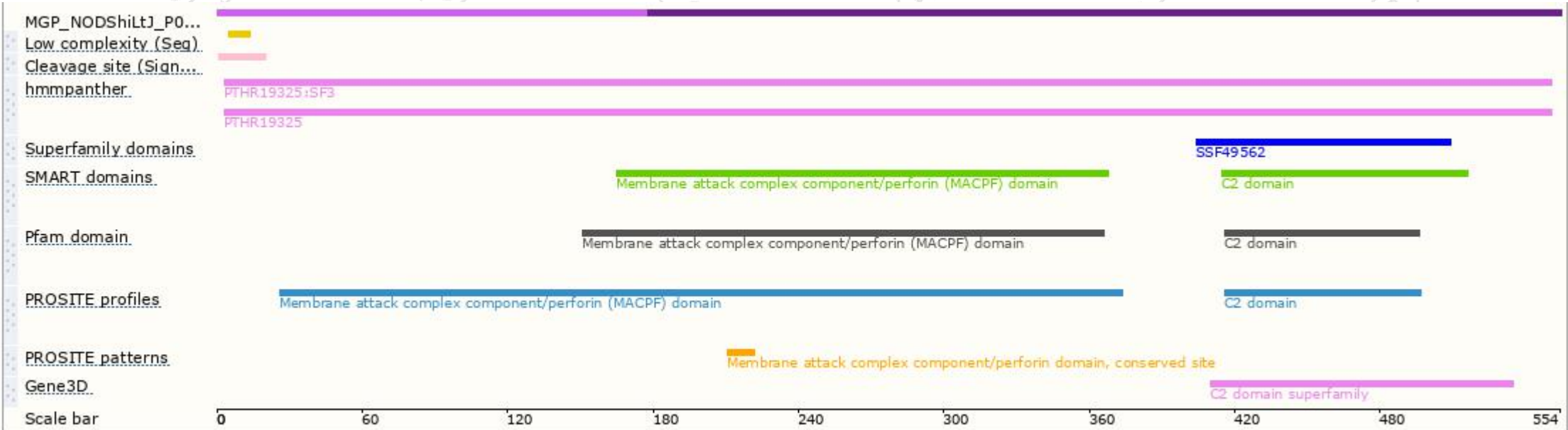
The strategy is based on the design of *MGP_NODShiLtJ_T0025171.1* transcript,The transcription is shown below



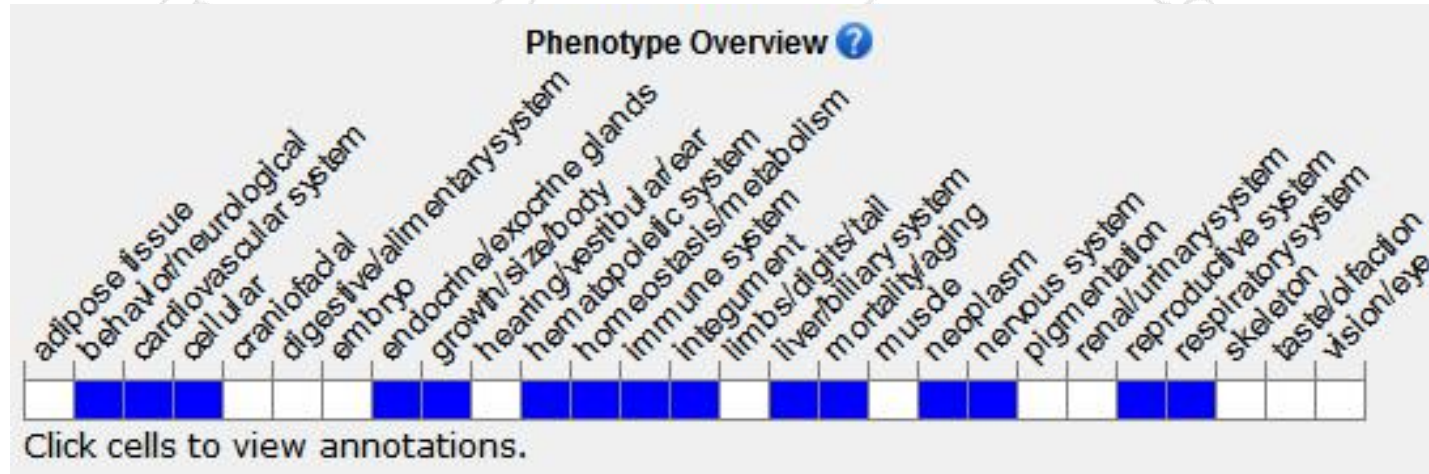
Genomic location distribution



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, Homozygous null mice exhibit increased susceptibility to viral infection and defective cytotoxic T cell cytolysis and NK cell cytolysis.

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

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