

Xcr1 Cas9-CKO Strategy

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Design Date: 2019-8-5

Project Overview

Project Name

Xcr1

Project type

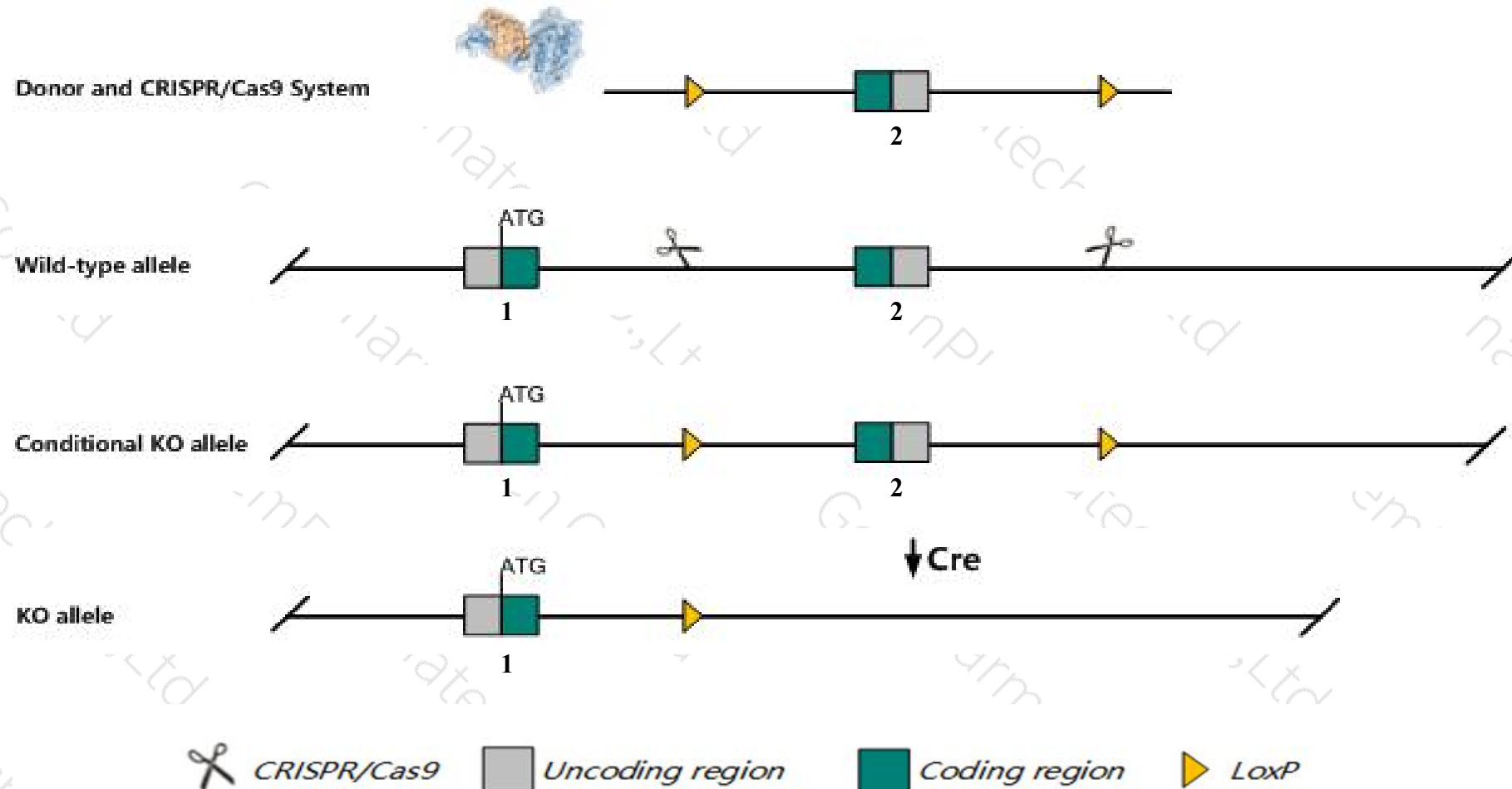
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Xcr1* gene. The schematic diagram is as follows:



Technical routes

- The *Xcr1* gene has 1 transcript. According to the structure of *Xcr1* gene, exon2 of *Xcr1-201* (ENSMUST00000182350.1) transcript is recommended as the knockout region. The region contains 1001bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Xcr1* 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 a targeted null mutation exhibit reduced CD8⁺ dendritic cell migration in response to XCL1.
- The floxed region is near to the N-terminal of *Fcγ1* gene, this strategy may influence the regulatory function of the N-terminal of *Fcγ1* gene.
- The *Xcr1* gene is located on the Chr9. 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)

Xcr1 chemokine (C motif) receptor 1 [Mus musculus (house mouse)]

Gene ID: 23832, updated on 19-Mar-2019

Summary



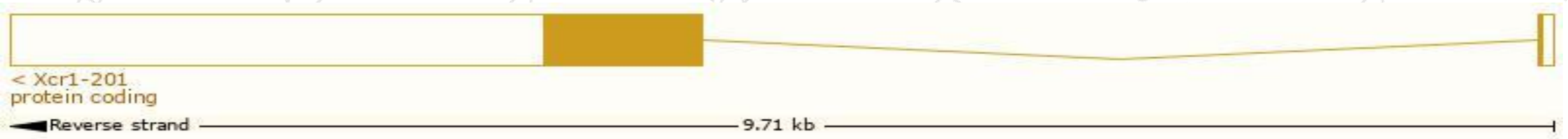
Official Symbol	Xcr1 provided by MGI
Official Full Name	chemokine (C motif) receptor 1 provided by MGI
Primary source	MGI:MGI:1346338
See related	Ensembl:ENSMUSG00000060509
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ccxcr1, Gpr5, mXcr1
Expression	Biased expression in thymus adult (RPKM 2.0), spleen adult (RPKM 1.7) and 11 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

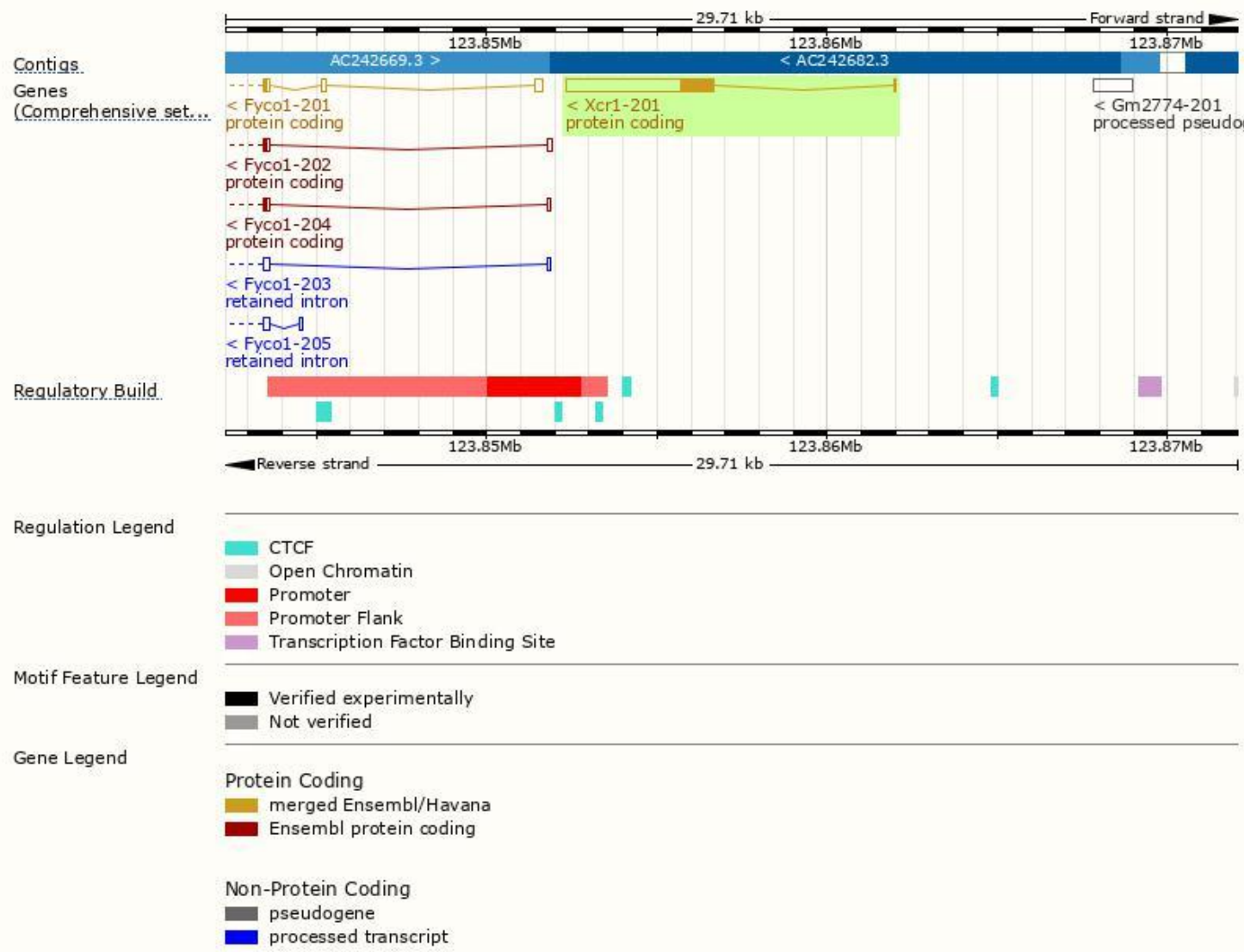
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Xcr1-201	ENSMUST00000182350.1	4453	338aa	Protein coding	CCDS23665	S4R1K3	TSL:1 GENCODE basic APPRIS P1

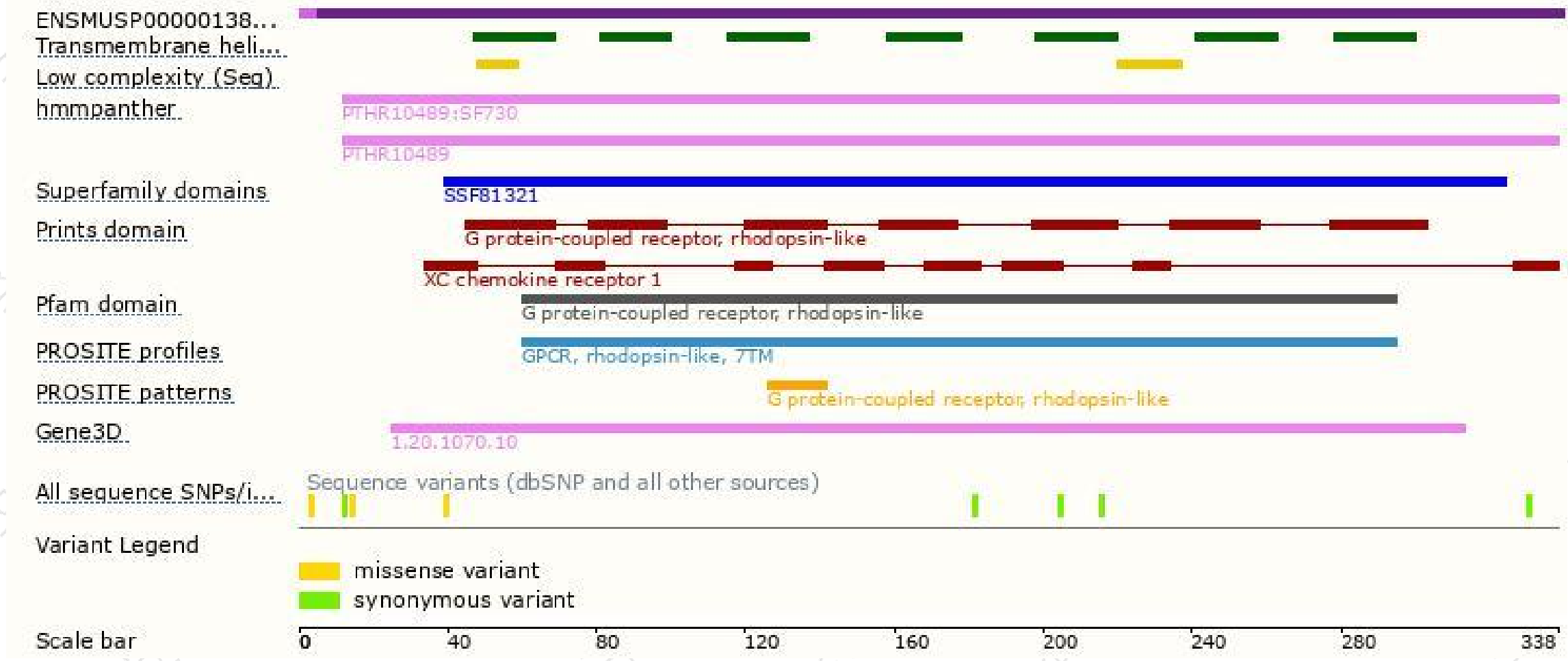
The strategy is based on the design of *Xcr1-201* transcript,The transcription is shown below



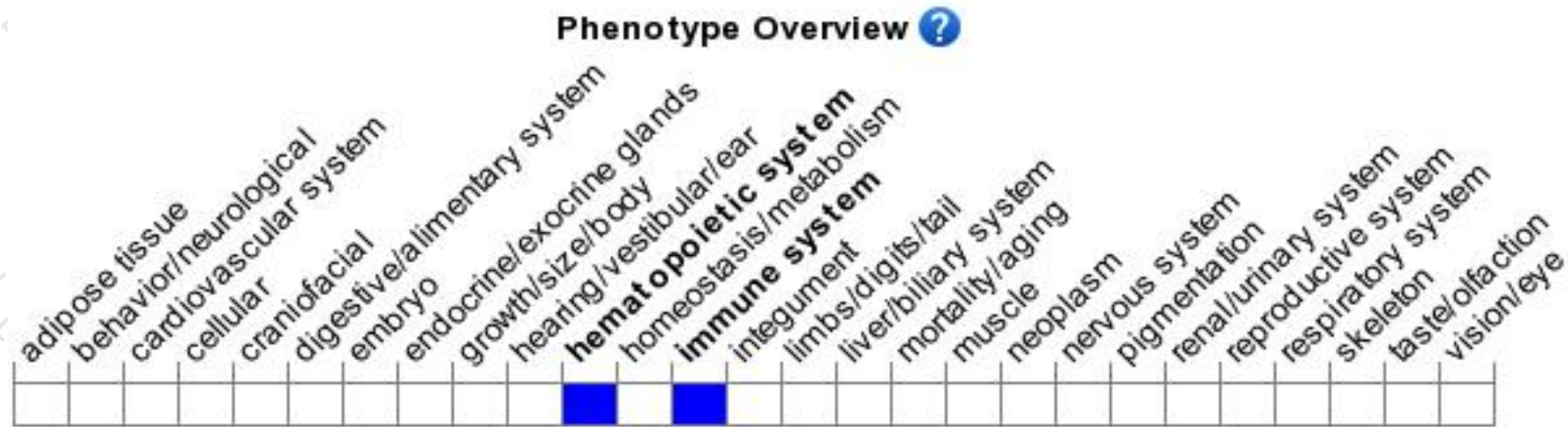
Genomic location distribution



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 targeted null mutation exhibit reduced CD8⁺ dendritic cell migration in response to XCL1.

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

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