

Icam1 Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Icam1

Project type

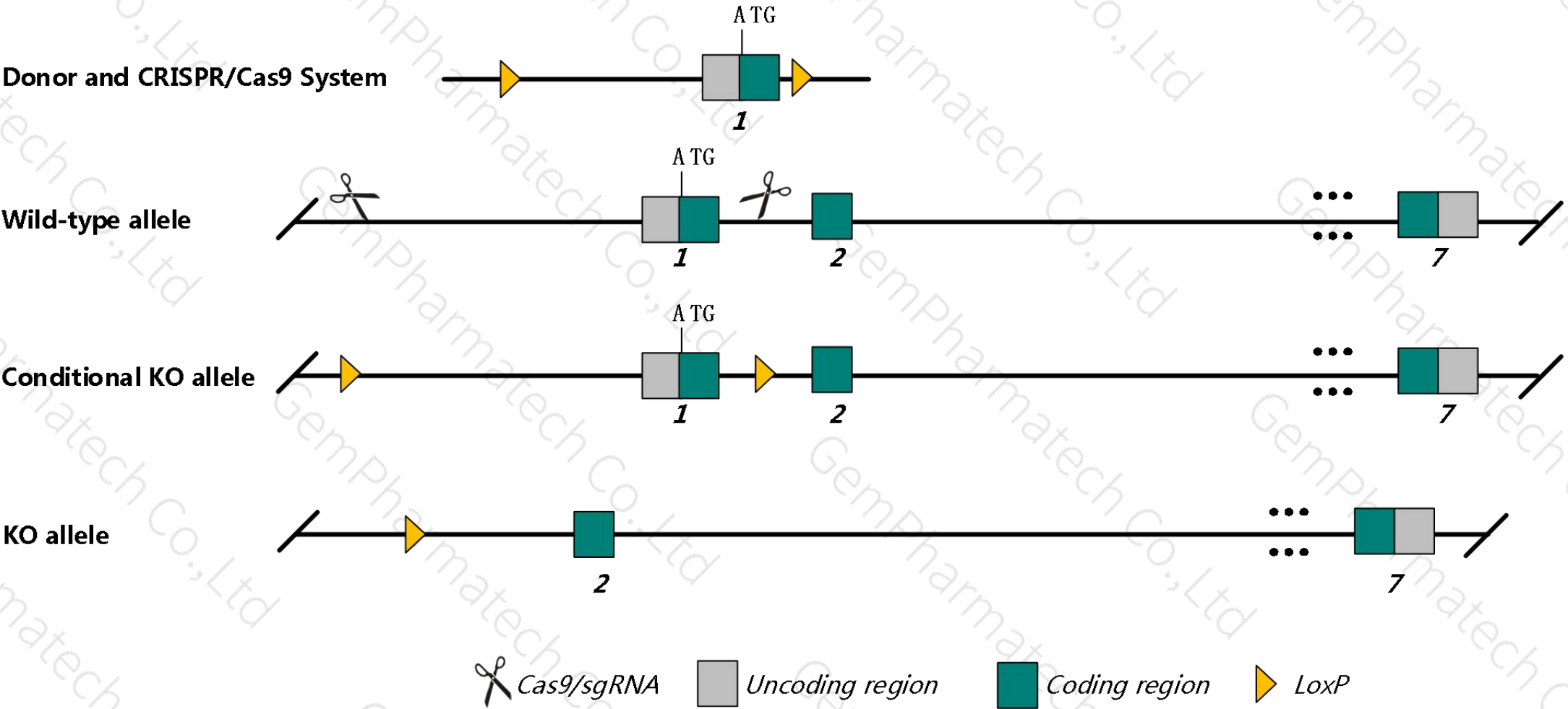
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Icam1* gene. The schematic diagram is as follows:



- The *Icam1* gene has 2 transcripts. According to the structure of *Icam1* gene, the predicted promoter region and exon1 of *Icam1*-201 (ENSMUST00000086399.5) transcript is recommended as the knockout region. The region contains the predicted promoter sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Icam1* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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 or cell types.

- According to the existing MGI data: Homozygous mutation of this gene results in impaired inflammatory and immune responses.
- The *Icam1* 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 the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Icam1 intercellular adhesion molecule 1 [*Mus musculus* (house mouse)]

Gene ID: 15894, updated on 8-Dec-2018

Summary



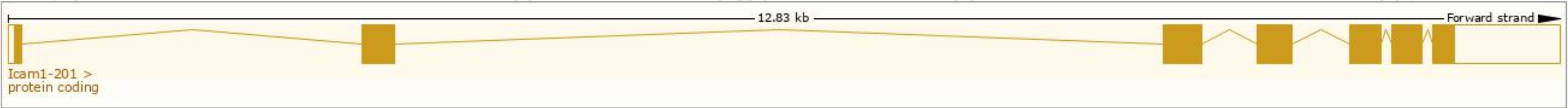
Official Symbol	Icam1 provided by MGI
Official Full Name	intercellular adhesion molecule 1 provided by MGI
Primary source	MGI:MGI:96392
See related	Ensembl:ENSMUSG000000037405
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CD54; Ly-47; Icam-1; MALA-2
Summary	This gene encodes an integral membrane protein that binds leukocyte adhesion protein LFA-1. It participates in the innate immune response. [provided by RefSeq, Aug 2016]
Expression	Biased expression in lung adult (RPKM 157.0), spleen adult (RPKM 29.7) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

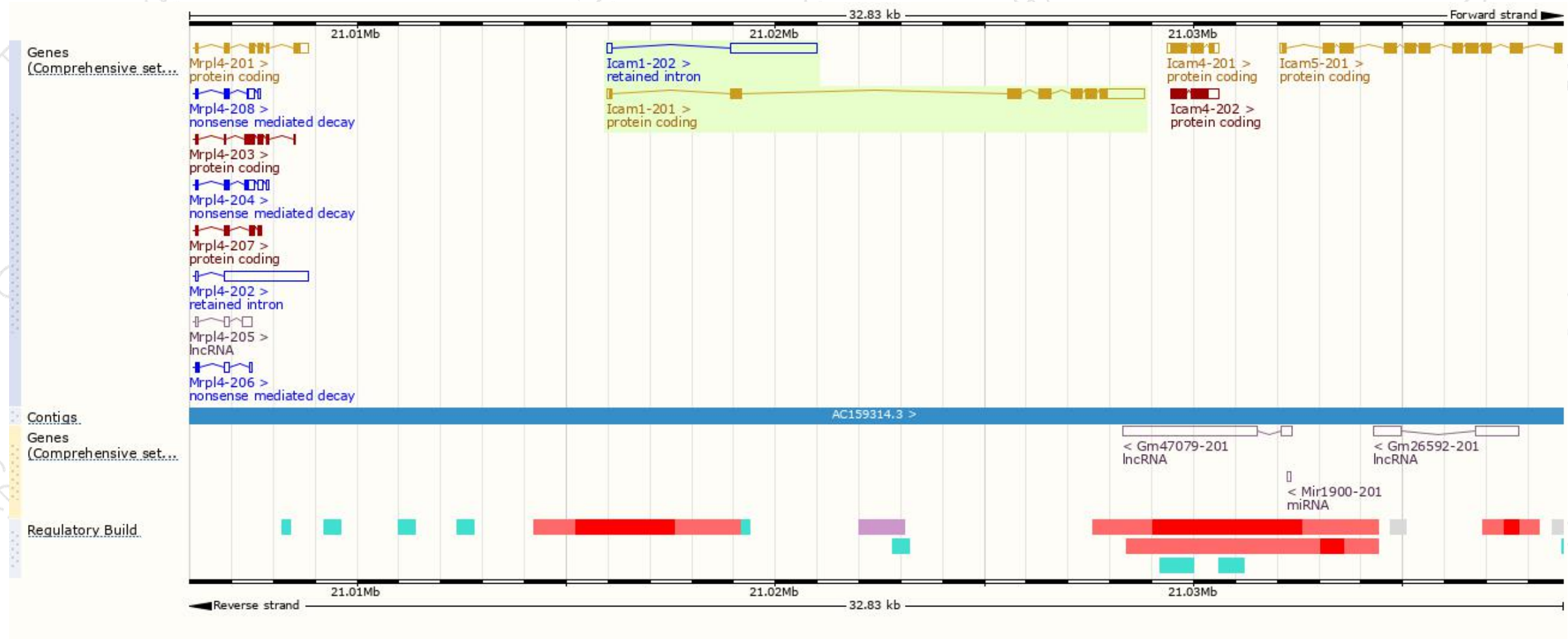
The gene has 2 transcripts, and all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Icam1-201	ENSMUST00000086399.5	2535	537aa	Protein coding	CCDS22889	P13597 Q3U8M7	TSL:1 GENCODE basic APPRIS P1
Icam1-202	ENSMUST00000215003.1	2203	No protein	Retained intron	-	-	TSL:2

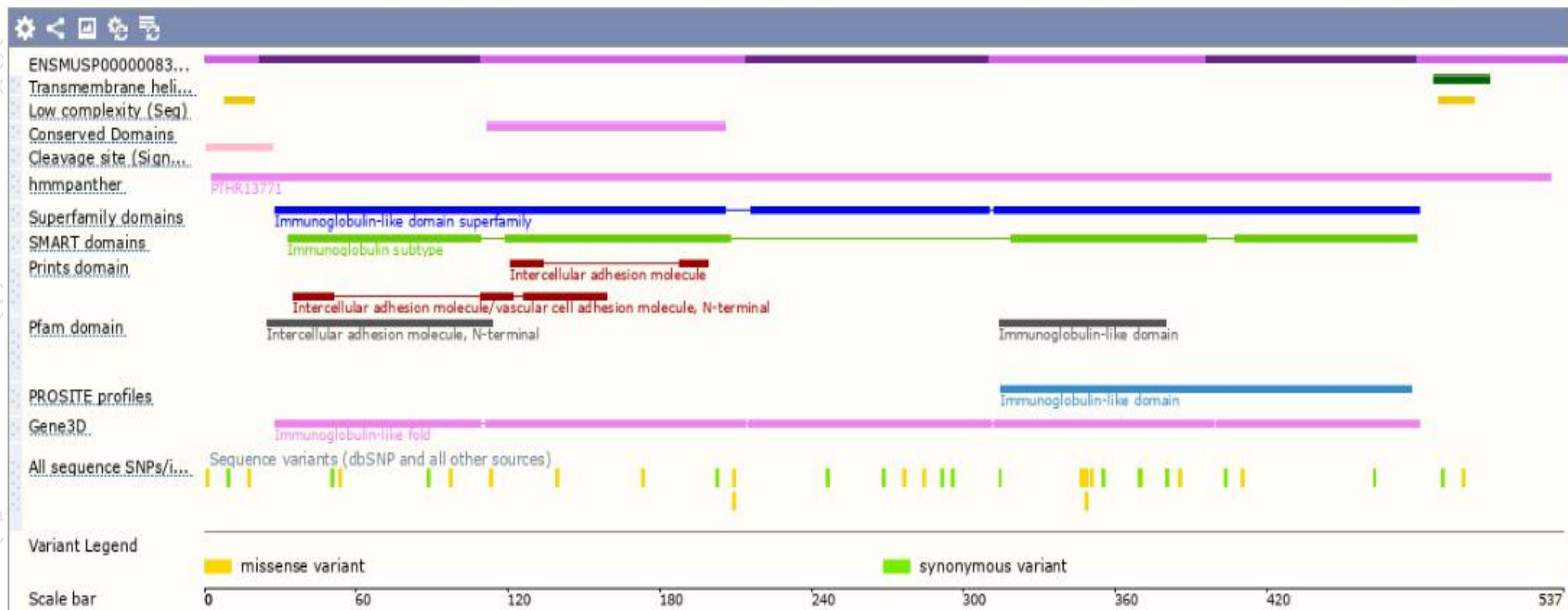
The strategy is based on the design of *Icam1*-201 transcript, The transcription is shown below



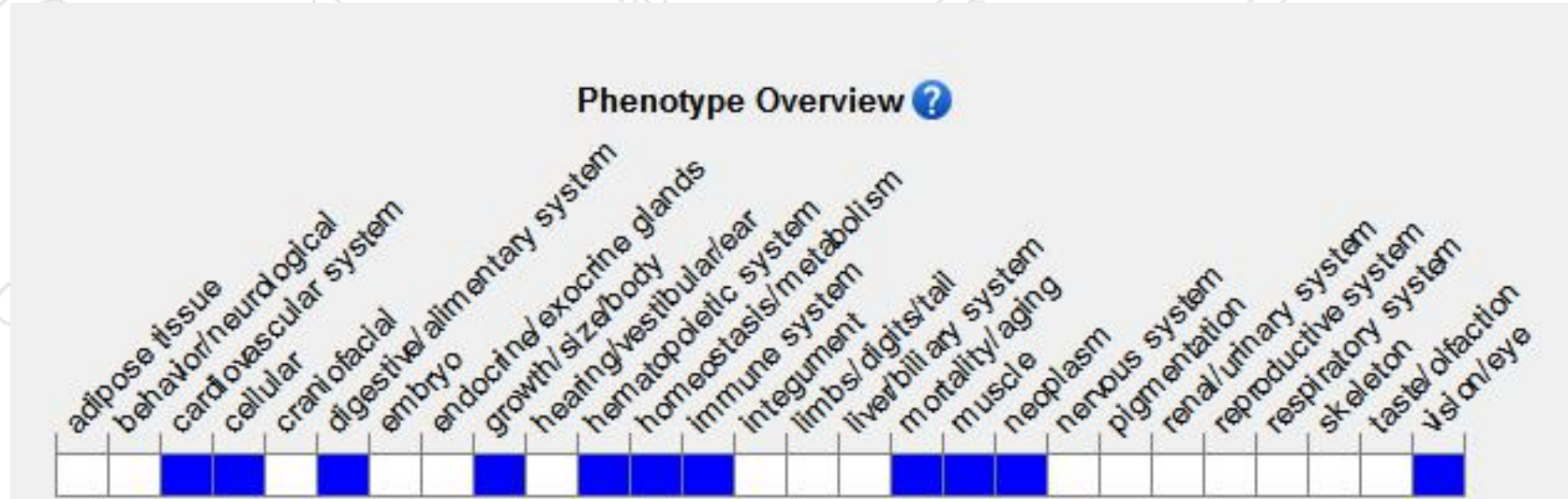
Genomic location distribution



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/>) .

Homozygous mutation of this gene results in impaired inflammatory and immune responses.

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