

# ***Trem1*** Cas9-KO Strategy

**Designer:**

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**Design Date:**

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# Project Overview

**Project Name**

***Trem1***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trem1* gene. The schematic diagram is as follows:



- The *Trem1* gene has 2 transcripts. According to the structure of *Trem1* gene, exon2-exon3 of *Trem1-201* (ENSMUST00000048782.6) transcript is recommended as the knockout region. The region contains 541bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Trem1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a reporter allele exhibit decreased susceptibility to DEN induced tumors and liver damage. Mice homozygous for a knock-out allele of Trem1 and Trem3 exhibit increased susceptibility to *P. aeruginosa* infection with reduced neutrophil transepithelial migration.
- The KO region contains functional region of the *AC241601.2* gene. Knockout the region may affect the function of *AC241601.2* gene.
- The *Trem1* gene is located on the Chr17. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## Trem1 triggering receptor expressed on myeloid cells 1 [Mus musculus (house mouse)]

Gene ID: 58217, updated on 9-Apr-2019

### Summary



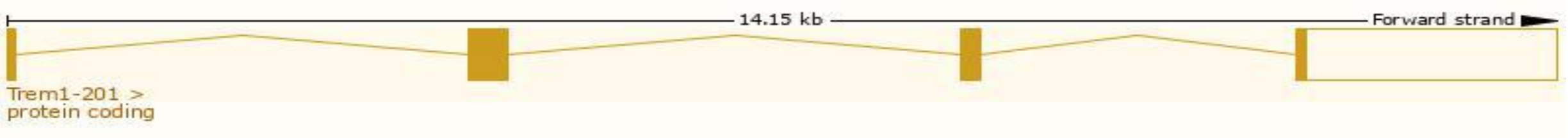
<b>Official Symbol</b>	Trem1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	triggering receptor expressed on myeloid cells 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1930005</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000042265</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Expression</b>	Biased expression in testis adult (RPKM 1.2), liver E18 (RPKM 1.1) and 5 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

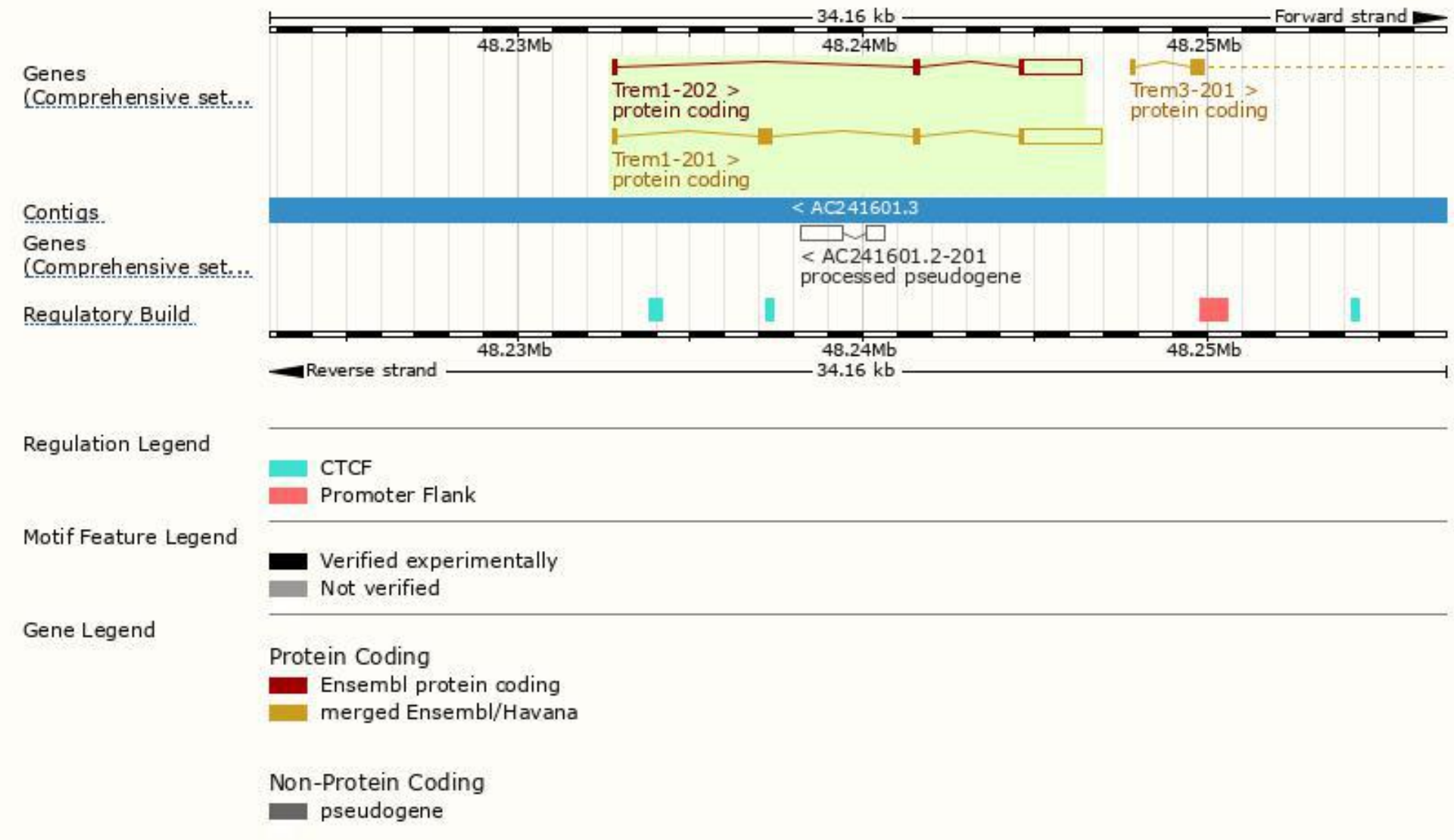
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trem1-201	<a href="#">ENSMUST00000048782.6</a>	2993	<a href="#">230aa</a>	Protein coding	<a href="#">CCDS28860</a>	<a href="#">Q9JKE2</a>	TSL:1 GENCODE basic APPRIS P1
Trem1-202	<a href="#">ENSMUST00000113251.9</a>	2077	<a href="#">111aa</a>	Protein coding	<a href="#">CCDS84319</a>	<a href="#">Q14DT9</a>	TSL:1 GENCODE basic

The strategy is based on the design of *Trem1-201* transcript,The transcription is shown below

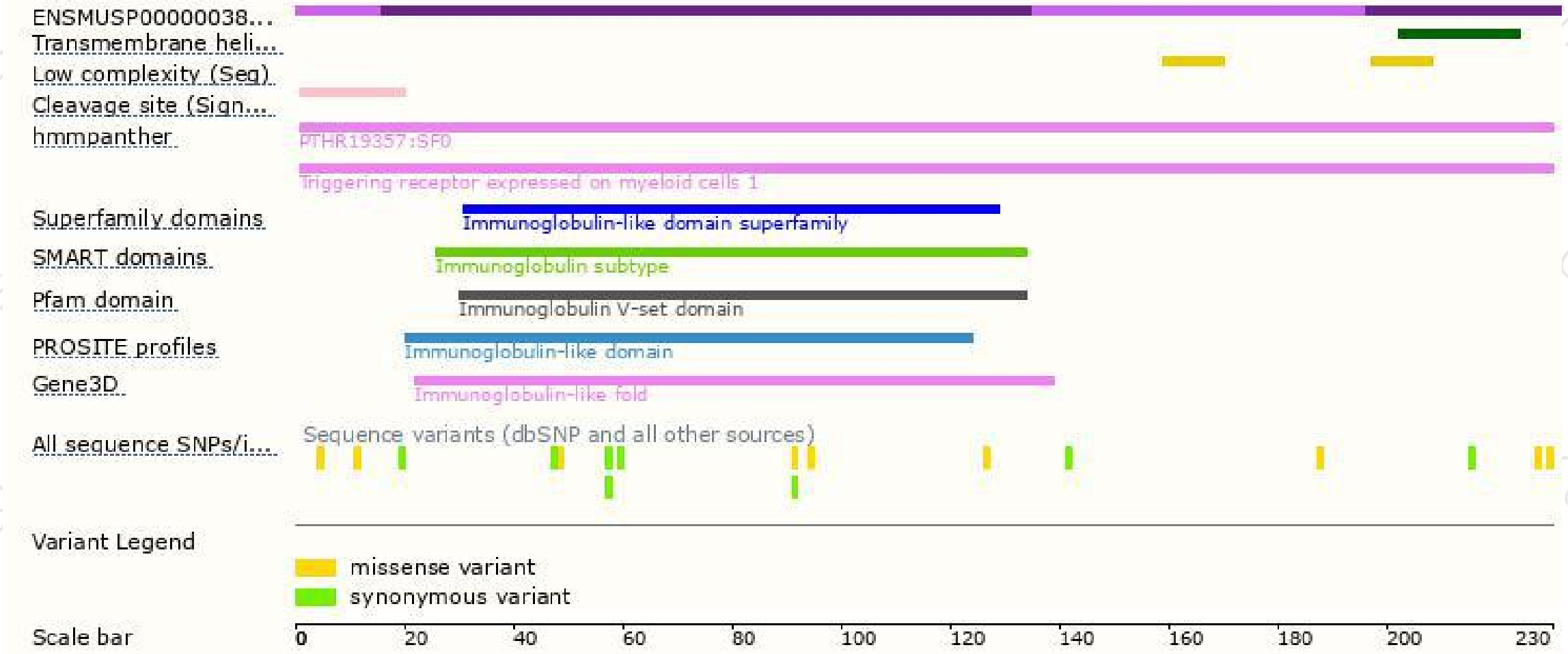


# Genomic location distribution

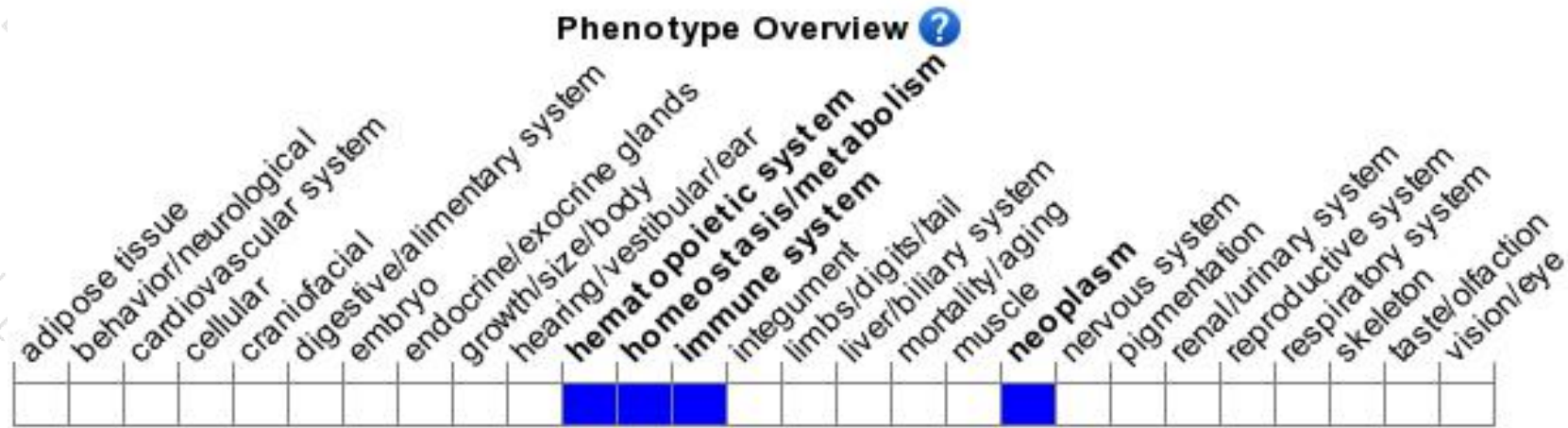




# Protein domain



# 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 reporter allele exhibit decreased susceptibility to DEN induced tumors and liver damage. Mice homozygous for a knock-out allele of Trem1 and Trem3 exhibit increased susceptibility to *P. aeruginosa* infection with reduced neutrophil transepithelial migration.

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

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