

# *Tnfrsf18* Cas9-KO Strategy

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# Project Overview



**Project Name**

***Tnfrsf18***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6J**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tnfrsf18* gene. The schematic diagram is as follows:



- The *Tnfrsf18* gene has 6 transcripts. According to the structure of *Tnfrsf18* gene, exon1-exon5 of *Tnfrsf18-202* (ENSMUST00000103173.9) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tnfrsf18* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Mice homozygous for a targeted mutation display dysregulation of T-cell receptor/CD3-driven T-cell activation and programmed cell death.
- The KO region contains the *Gm16008* and gene. Knockout the region may affect the function of *Gm16008* gene.
- The *Tnfrsf18* gene is located on the Chr4. 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)

## Tnfrsf18 tumor necrosis factor receptor superfamily, member 18 [Mus musculus (house mouse)]

Gene ID: 21936, updated on 31-Jan-2019

### Summary



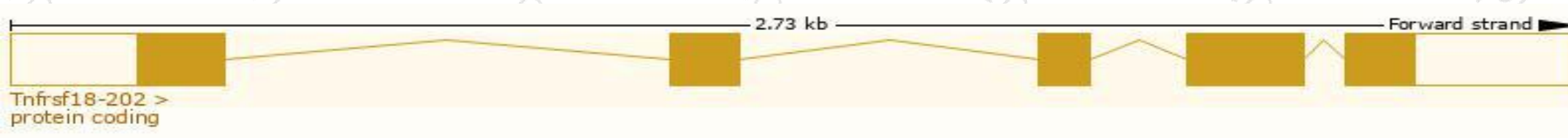
<b>Official Symbol</b>	Tnfrsf18 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	tumor necrosis factor receptor superfamily, member 18 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:894675</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000041954</a>
<b>Gene type</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>Also known as</b>	AITR, Gitr
<b>Expression</b>	Ubiquitous expression in thymus adult (RPKM 23.3), mammary gland adult (RPKM 14.4) and 25 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

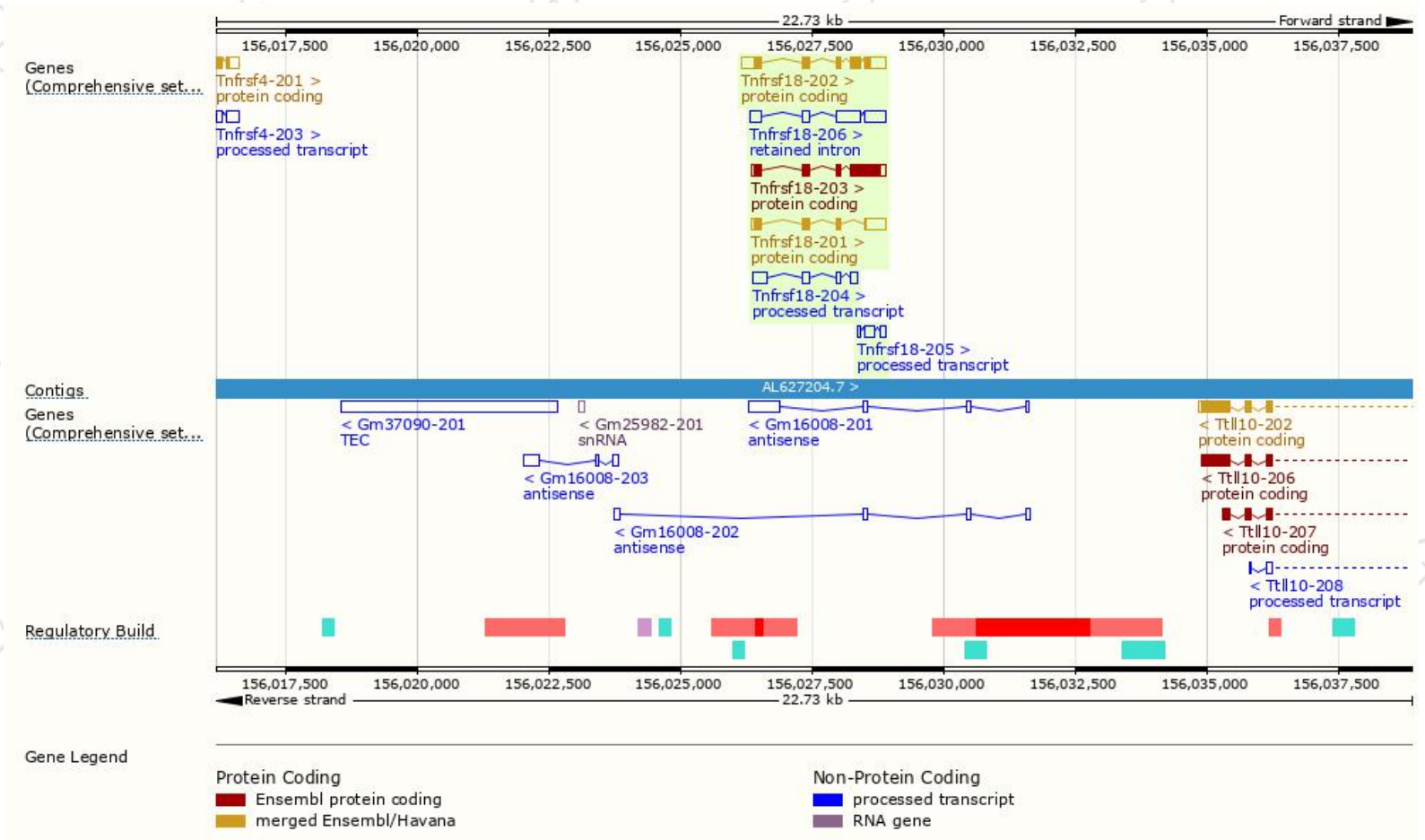
The gene has 6 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tnfrsf18-202	<a href="#">ENSMUST00000103173.9</a>	1189	<a href="#">228aa</a>	Protein coding	<a href="#">CCDS19056</a>	<a href="#">O35714 Q540M6</a>	TSL:1 GENCODE basic APPRIS P2
Tnfrsf18-201	<a href="#">ENSMUST00000040274.12</a>	804	<a href="#">132aa</a>	Protein coding	<a href="#">CCDS19057</a>	<a href="#">O35714</a>	TSL:1 GENCODE basic
Tnfrsf18-203	<a href="#">ENSMUST00000122001.2</a>	1078	<a href="#">314aa</a>	Protein coding	-	<a href="#">B1ASL6</a>	TSL:1 GENCODE basic APPRIS ALT2
Tnfrsf18-204	<a href="#">ENSMUST00000124339.1</a>	615	No protein	Processed transcript	-	-	TSL:3
Tnfrsf18-205	<a href="#">ENSMUST00000125100.1</a>	328	No protein	Processed transcript	-	-	TSL:5
Tnfrsf18-206	<a href="#">ENSMUST00000141260.7</a>	1188	No protein	Retained intron	-	-	TSL:5

The strategy is based on the design of *Tnfrsf18-202* transcript, The transcription is shown below



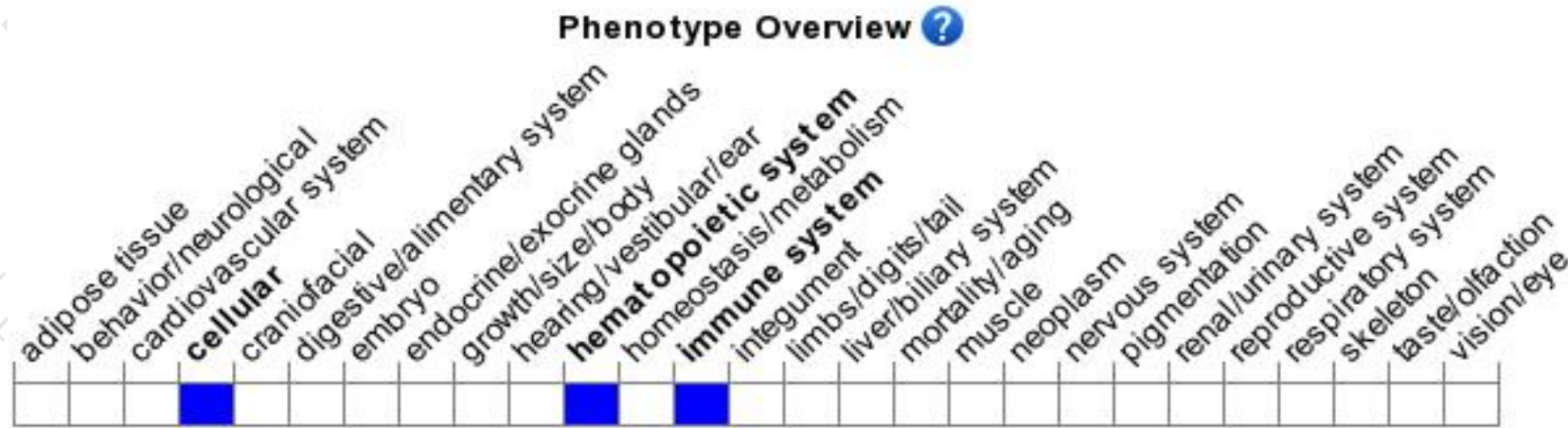
# Genomic location distribution



# 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, Mice homozygous for a targeted mutation display dysregulation of T-cell receptor/CD3-driven T-cell activation and programmed cell death.

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

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