

# *Tbxa2r* Cas9-KO Strategy

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# Project Overview

**Project Name**

***Tbxa2r***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tbxa2r* gene. The schematic diagram is as follows:



- The *Tbxa2r* gene has 2 transcripts. According to the structure of *Tbxa2r* gene, exon3 of *Tbxa2r*-202 (ENSMUST00000220312.1) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tbxa2r* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygotes for a null allele show prolonged bleeding, and altered platelet aggregation and vascular responses to TXA2, arachidonic acid and injury. Homozygotes for another null allele show splenomegaly, reduced DC-T cell adhesion, enhanced contact hypersensitivity, and cervical lymphadenopathy.
- The knockout region is near to the C-terminal of *Gm37955* gene, this strategy may influence the regulatory function of the C-terminal of *Gipc3* gene.
- The *Tbxa2r* 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 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)

## Tbxa2r thromboxane A2 receptor [Mus musculus (house mouse)]

Gene ID: 21390, updated on 31-Jan-2019

### Summary



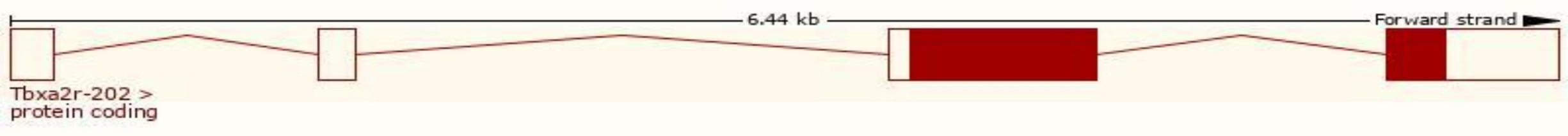
<b>Official Symbol</b>	Tbxa2r provided by <a href="#">MGI</a>
<b>Official Full Name</b>	thromboxane A2 receptor provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:98496</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000034881</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	REVIEWED
<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>	TP, TXA2-R
<b>Summary</b>	This gene encodes a multi-pass membrane protein that functions as a G-protein coupled receptor. The encoded protein binds thromboxane A2, resulting in the aggregation of platelets and constriction of blood vessels. Alternative splicing results in multiple transcript variants for this gene. [provided by RefSeq, Mar 2013]
<b>Expression</b>	Biased expression in thymus adult (RPKM 81.0), adrenal adult (RPKM 54.7) and 8 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

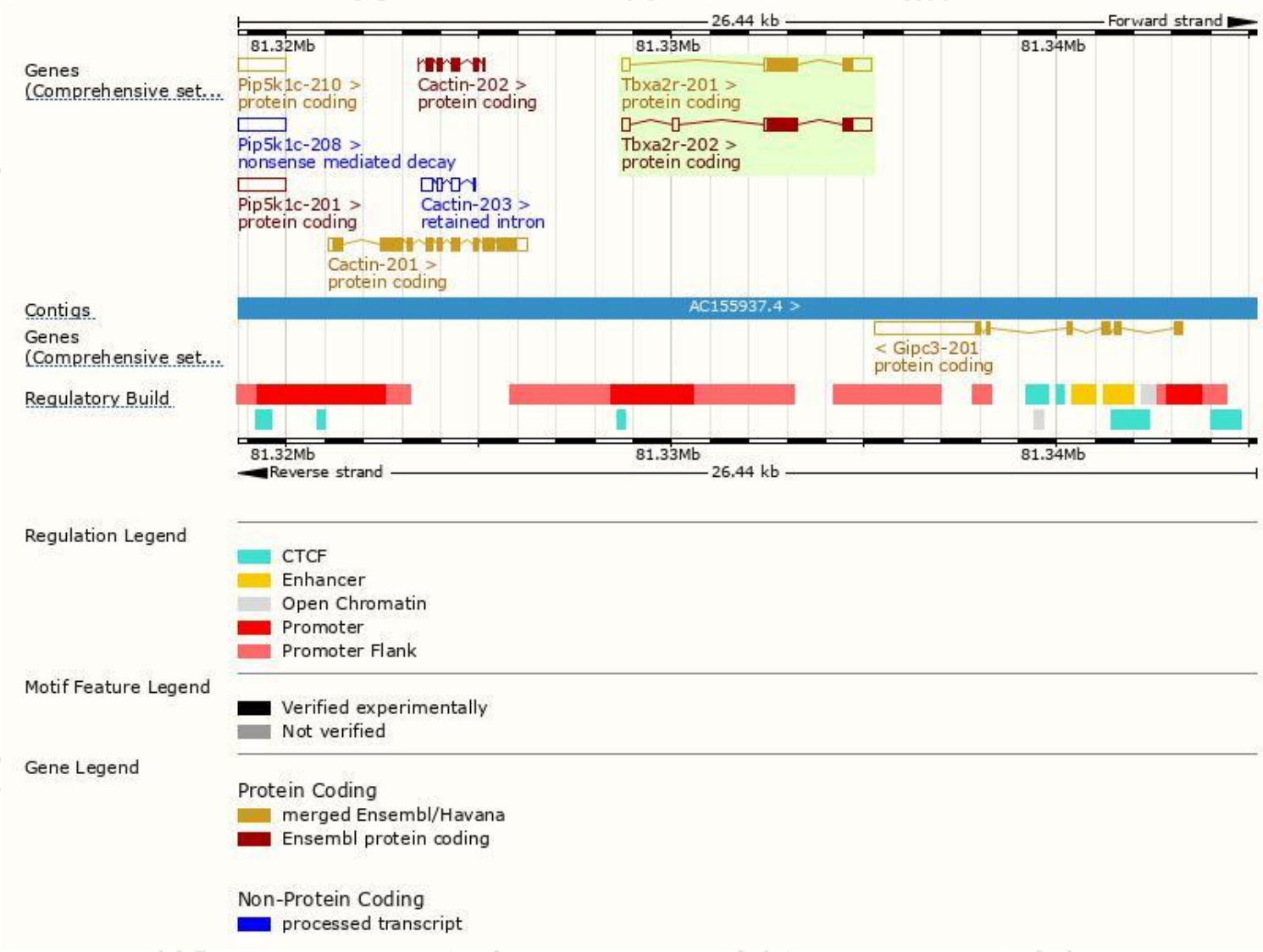
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tbxa2r-202	<a href="#">ENSMUST00000220312.1</a>	1919	<a href="#">341aa</a>	Protein coding	<a href="#">CCDS24053</a>	<a href="#">P30987 Q5FW61</a>	TSL:1 GENCODE basic APPRIS P1
Tbxa2r-201	<a href="#">ENSMUST00000105325.3</a>	1765	<a href="#">341aa</a>	Protein coding	<a href="#">CCDS24053</a>	<a href="#">P30987 Q5FW61</a>	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Tbxa2r-202* transcript,The transcription is shown below

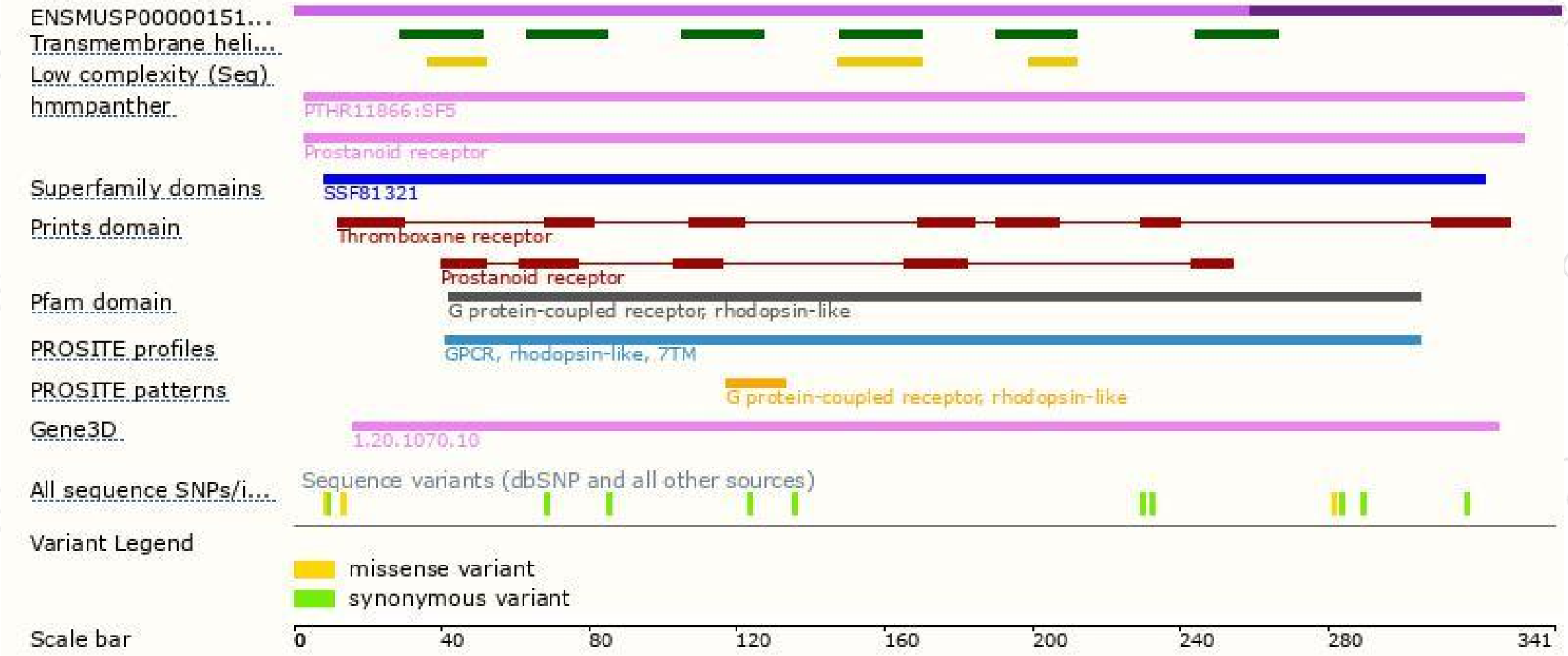


# Genomic location distribution

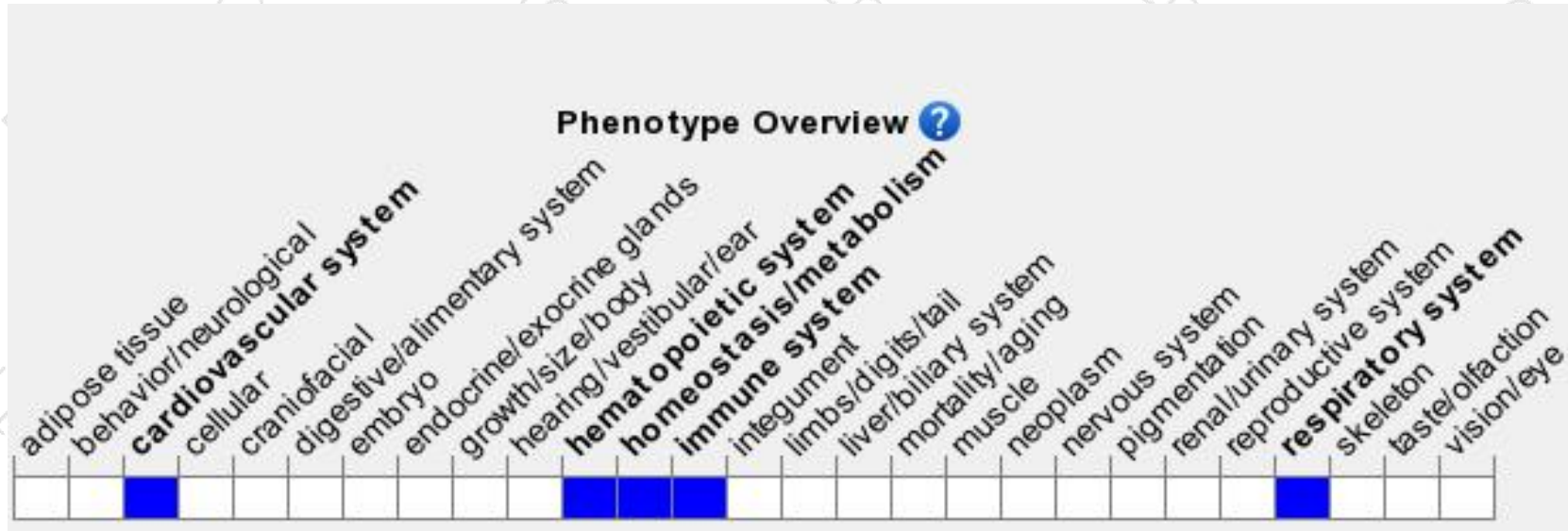




# Protein domain



# 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, Homozygotes for a null allele show prolonged bleeding, and altered platelet aggregation and vascular responses to TXA<sub>2</sub>, arachidonic acid and injury. Homozygotes for another null allele show splenomegaly, reduced DC-T cell adhesion, enhanced contact hypersensitivity, and cervical lymphadenopathy.

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

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