

Tbxas1 Cas9-KO Strategy

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Project Overview

Project Name

Tbxas1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tbxas1* gene. The schematic diagram is as follows:



- The *Tbxas1* gene has 7 transcripts. According to the structure of *Tbxas1* gene, exon2 of *Tbxas1-201* (ENSMUST00000003017.12) transcript is recommended as the knockout region. The region contains 94bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tbxas1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous null mice display increased bleeding time and decreased platelet response to arachidonic acid.
- Part of *Gm42962* intron3-4 will be knockout.
- The *Tbxas1* gene is located on the Chr6. 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)

Tbxas1 thromboxane A synthase 1, platelet [*Mus musculus* (house mouse)]

Gene ID: 21391, updated on 12-Aug-2019

Summary

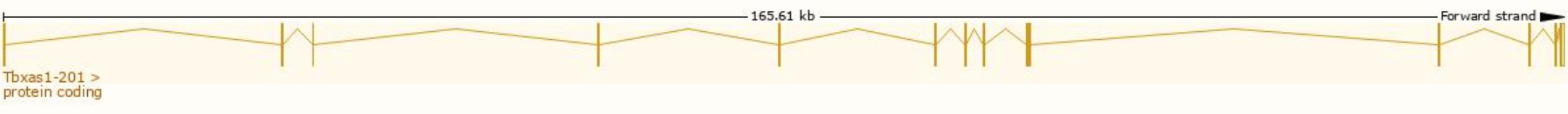
Official Symbol	Tbxas1 provided by MGI
Official Full Name	thromboxane A synthase 1, platelet provided by MGI
Primary source	MGI:MGI:98497
See related	Ensembl:ENSMUSG00000029925
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	TS; TXS; CYP5; THAS; TXAS; CYP5A1
Expression	Broad expression in kidney adult (RPKM 4.2), spleen adult (RPKM 3.2) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

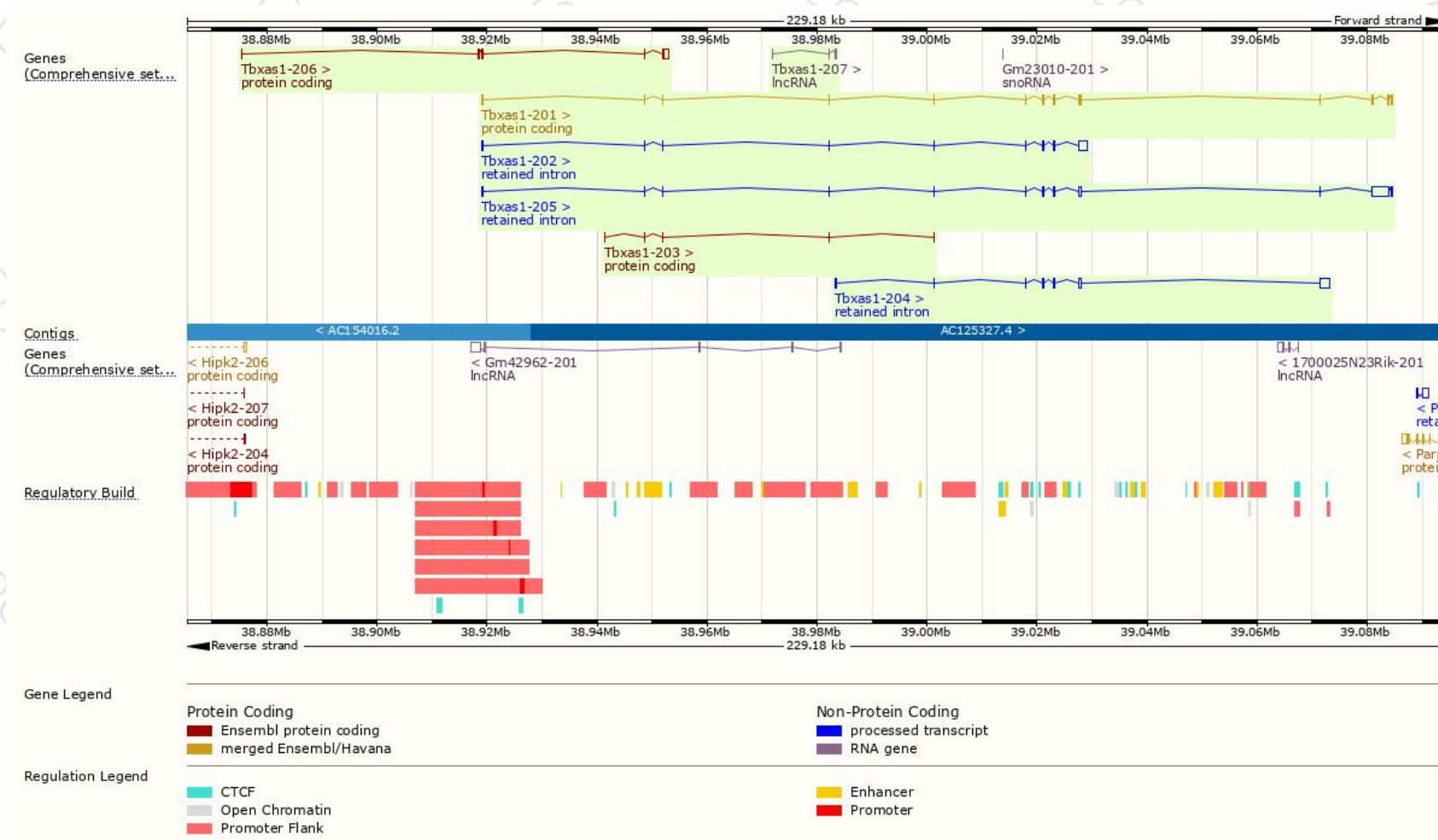
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tbxas1-201	ENSMUST00000003017.12	1990	533aa	Protein coding	CCDS20018	P36423	TSL:1 GENCODE basic APPRIS P1
Tbxas1-206	ENSMUST00000162521.7	1427	124aa	Protein coding	-	Q3TRY5	TSL:1 GENCODE basic
Tbxas1-203	ENSMUST00000160963.1	403	134aa	Protein coding	-	F6SG79	CDS 5' and 3' incomplete TSL:3
Tbxas1-205	ENSMUST00000161781.7	4562	No protein	Retained intron	-	-	TSL:1
Tbxas1-204	ENSMUST00000161360.1	2901	No protein	Retained intron	-	-	TSL:1
Tbxas1-202	ENSMUST00000159226.7	2481	No protein	Retained intron	-	-	TSL:1
Tbxas1-207	ENSMUST00000162656.1	410	No protein	lncRNA	-	-	TSL:3

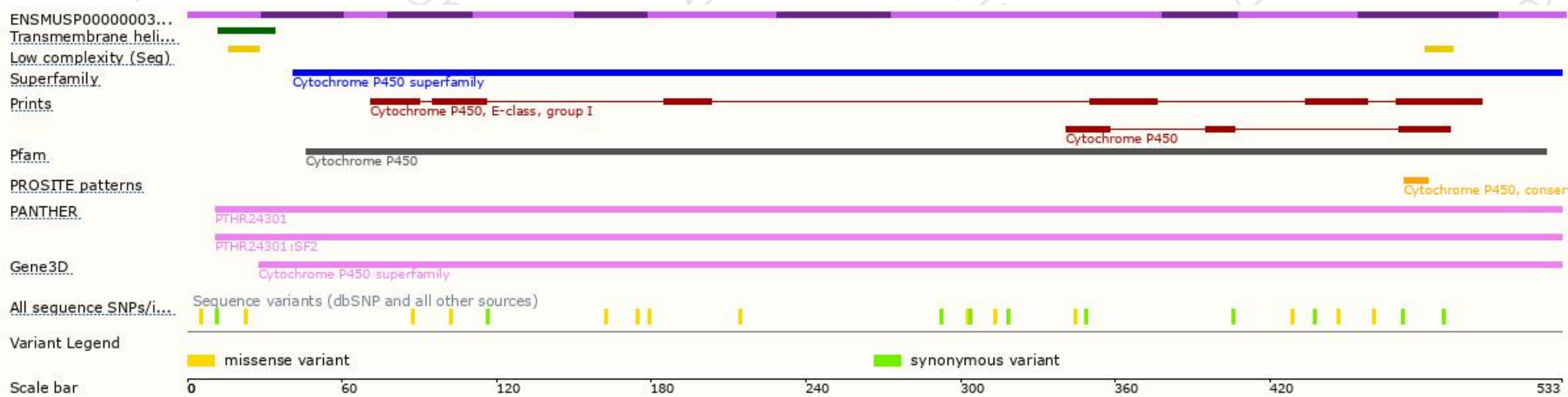
The strategy is based on the design of *Tbxas1-201* transcript,The transcription is shown below



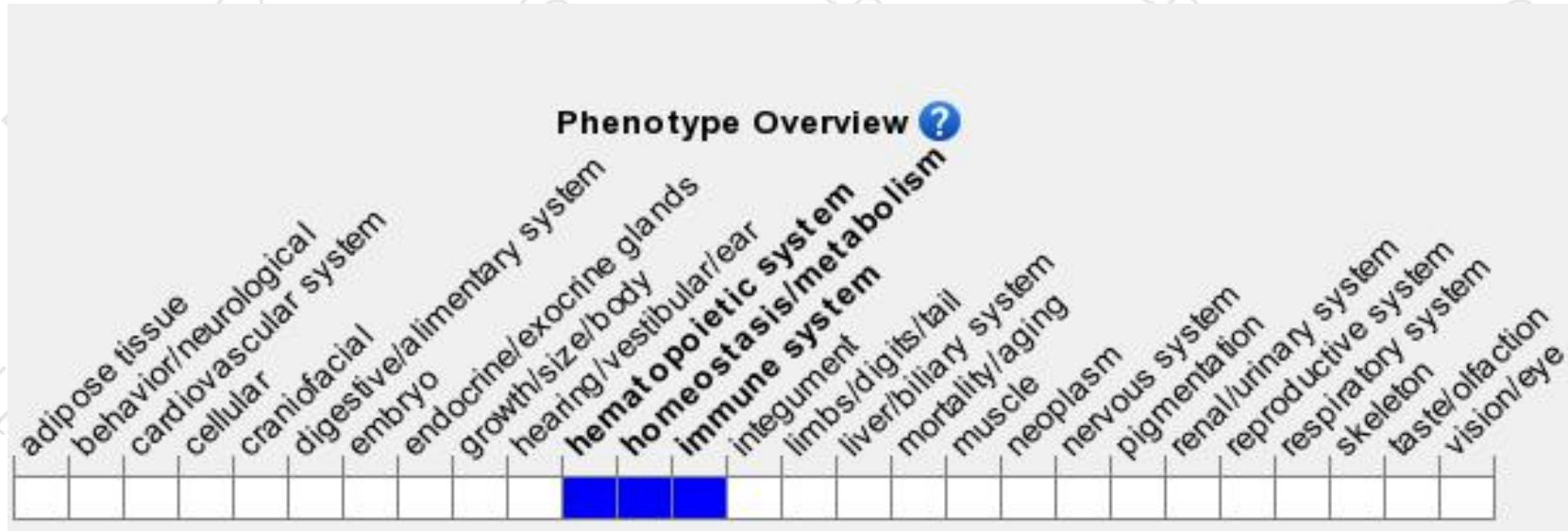
Genomic location distribution



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, Homozygous null mice display increased bleeding time and decreased platelet response to arachidonic acid.

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

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