

# *Itga2b* Cas9-CKO Strategy

**Designer:**

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**Design Date:**

**2019-8-4**

# Project Overview

**Project Name**

***Itga2b***

**Project type**

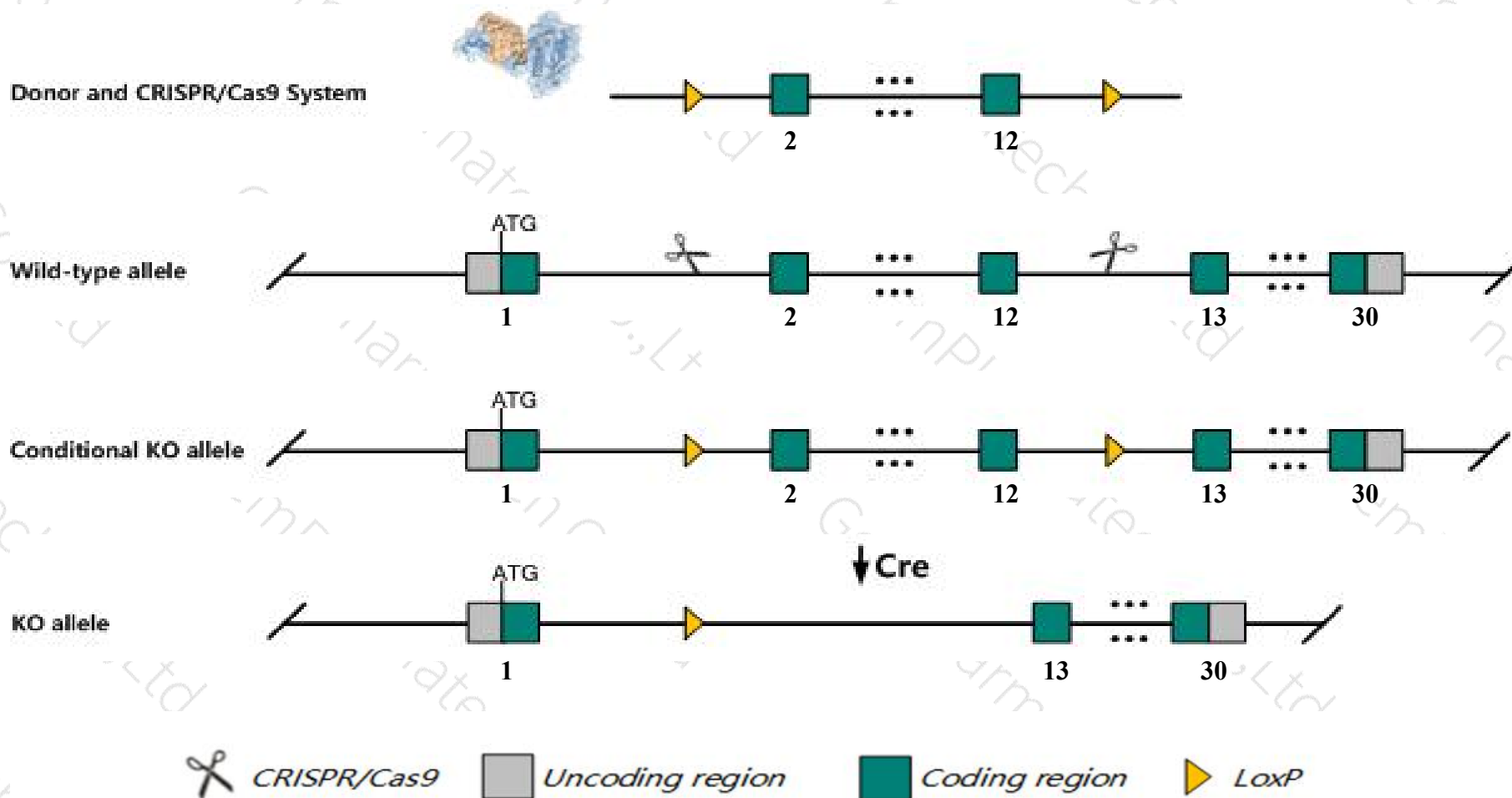
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Itga2b* gene. The schematic diagram is as follows:



- The *Itga2b* gene has 10 transcripts. According to the structure of *Itga2b* gene, exon2-exon12 of *Itga2b-201* (ENSMUST00000103086.3) transcript is recommended as the knockout region. The region contains 1019bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Itga2b* gene. The brief process is as follows: CRISPR/Cas9 system 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 and cell types.

- According to the existing MGI data, Homozygotes for targeted null mutations exhibit a bleeding disorder, lack platelet binding to fibrinogen, absence of fibrinogen in platelet alpha granules, and increased numbers of hematopoietic progenitors in yolk sac, fetal liver, and bone marrow.
- The *Itga2b* gene is located on the Chr11. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

# Gene information (NCBI)

## Itga2b integrin alpha 2b [Mus musculus (house mouse)]

Gene ID: 16399, updated on 9-Apr-2019

### Summary



<b>Official Symbol</b>	Itga2b provided by <a href="#">MGI</a>
<b>Official Full Name</b>	integrin alpha 2b provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:96601</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000034664</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>	AI172977, CD41, CD41B, GpIIb, alphaIIb
<b>Expression</b>	Broad expression in spleen adult (RPKM 19.1), liver E14.5 (RPKM 14.7) and 16 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

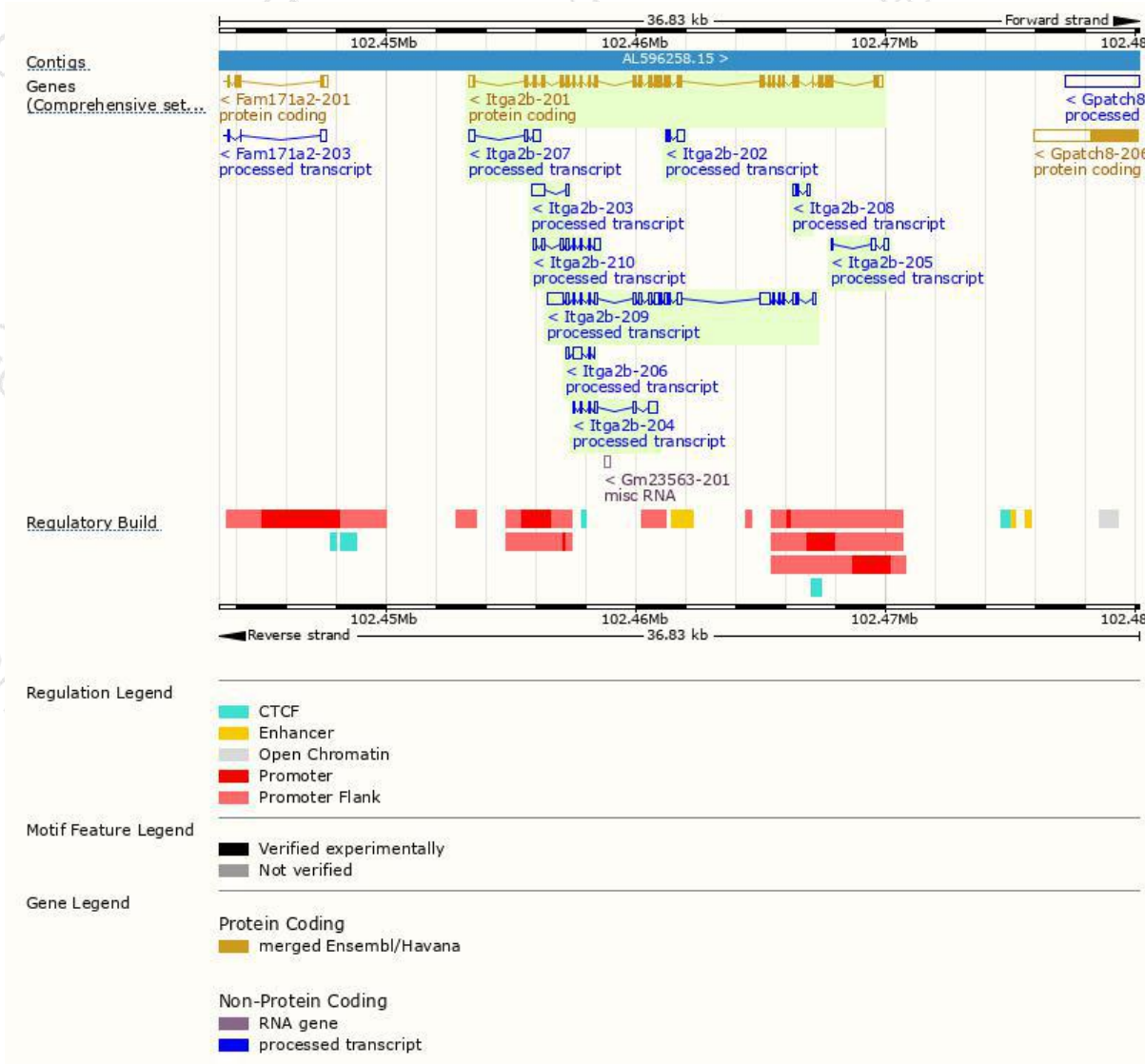
The gene has 10 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
<b>Itga2b-201</b>	<a href="#">ENSMUST00000103086.3</a>	3437	<a href="#">1033aa</a>	Protein coding	<a href="#">CCDS25500</a>	<a href="#">Q9QUM0</a>	TSL:1 GENCODE basic APPRIS P1
<b>Itga2b-209</b>	<a href="#">ENSMUST00000149519.7</a>	2880	No protein	Processed transcript	-	-	TSL:2
<b>Itga2b-210</b>	<a href="#">ENSMUST00000151625.7</a>	968	No protein	Processed transcript	-	-	TSL:5
<b>Itga2b-204</b>	<a href="#">ENSMUST00000130433.1</a>	772	No protein	Processed transcript	-	-	TSL:5
<b>Itga2b-203</b>	<a href="#">ENSMUST00000128752.1</a>	672	No protein	Processed transcript	-	-	TSL:5
<b>Itga2b-207</b>	<a href="#">ENSMUST00000134735.1</a>	623	No protein	Processed transcript	-	-	TSL:2
<b>Itga2b-206</b>	<a href="#">ENSMUST00000131247.7</a>	620	No protein	Processed transcript	-	-	TSL:3
<b>Itga2b-205</b>	<a href="#">ENSMUST00000130757.1</a>	427	No protein	Processed transcript	-	-	TSL:3
<b>Itga2b-202</b>	<a href="#">ENSMUST00000124767.1</a>	369	No protein	Processed transcript	-	-	TSL:3
<b>Itga2b-208</b>	<a href="#">ENSMUST00000145925.1</a>	268	No protein	Processed transcript	-	-	TSL:5

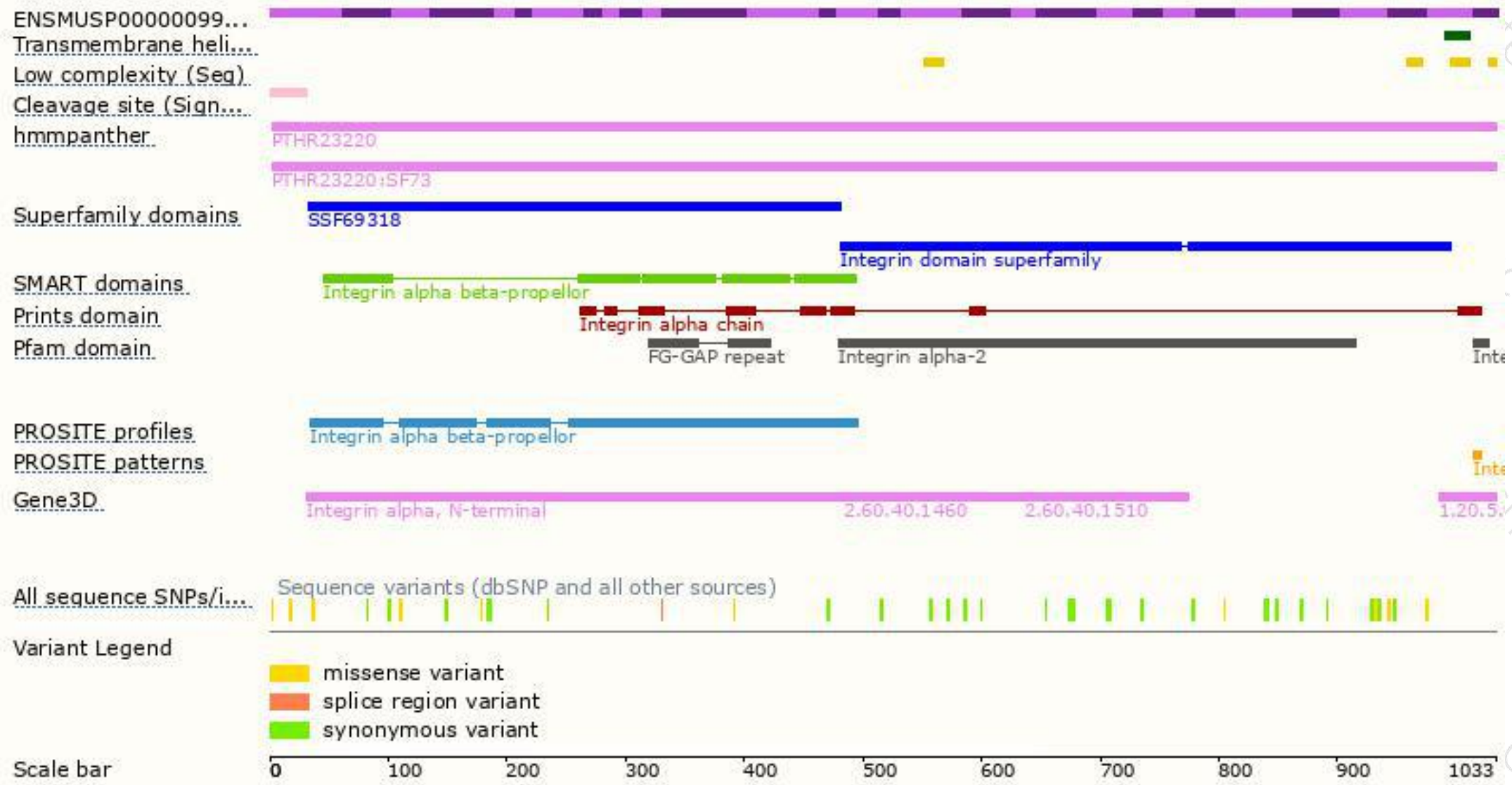
The strategy is based on the design of *Itga2b-201* transcript, The transcription is shown below



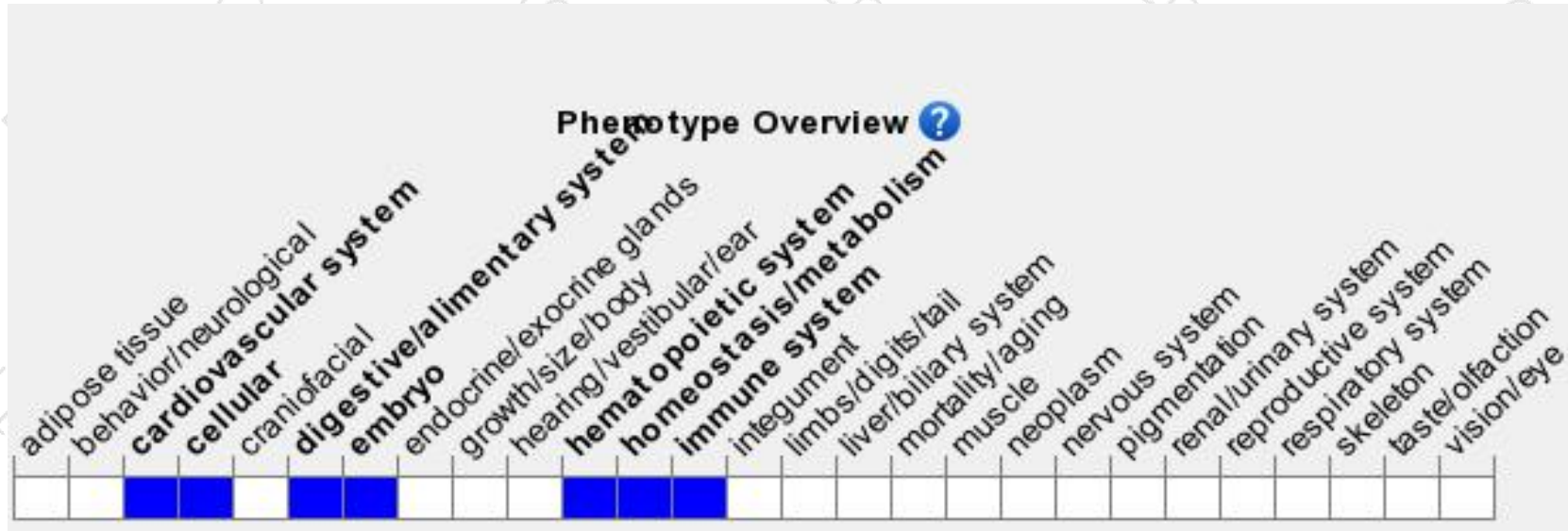
# Genomic location distribution



# 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, Homozygotes for targeted null mutations exhibit a bleeding disorder, lack platelet binding to fibrinogen, absence of fibrinogen in platelet alpha granules, and increased numbers of hematopoietic progenitors in yolk sac, fetal liver, and bone marrow.

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

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