

Adams12 Cas9-KO Strategy

Designer: Xueting Zhang

Reviewer: Yanhua Shen

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Project Overview

Project Name

Adamts12

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamts12* gene. The schematic diagram is as follows:



- The *Adamts12* gene has 3 transcripts. According to the structure of *Adamts12* gene, exon2 of *Adamts12-201* (ENSMUST00000061318.8) transcript is recommended as the knockout region. The region contains 368bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adamts12* gene. The brief process is as follows: CRISPR/Cas9 sys

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit increased tumor vascularization, tumor invasion, and angiogenesis.
- The *Adamts12* gene is located on the Chr15. 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)

Adams12 a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 12 [*Mus musculus* (house mouse)]

Gene ID: 239337, updated on 30-Nov-2019

Summary

Official Symbol

Adams12 provided by MGI

Official Full Name

a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 12 provided by MGI

Primary source

[MGI:MG1:2146046](#)

See related

[Ensembl:ENSMUSG00000047497](#)

Gene type

protein coding

RefSeq status

REVIEWED

Organism

[Mus musculus](#)

Lineage

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as

AI605170; ADAMTS-12

Summary

This gene encodes a member of "a disintegrin and metalloproteinase with thrombospondin motifs" (ADAMTS) family of multi-domain matrix-associated metalloendopeptidases that have diverse roles in tissue morphogenesis and pathophysiological remodeling, in inflammation and in vascular biology. The encoded preproprotein undergoes proteolytic processing to generate an active protease. Mice lacking the encoded protein exhibit increased angiogenic response and tumor invasion in different models of angiogenesis and, severe inflammation and delayed recovery when subjected to experimental conditions that induce colitis, endotoxic sepsis and pancreatitis. [provided by RefSeq, Jul 2016]

Expression

Biased expression in mammary gland adult (RPKM 5.1), subcutaneous fat pad adult (RPKM 4.1) and 12 other tissues [See more](#)

Orthologs

[human](#) [all](#)

Genomic context

Location:

15; 15A1

Exon count:

24

See Adams12 in [Genome Data Viewer](#)

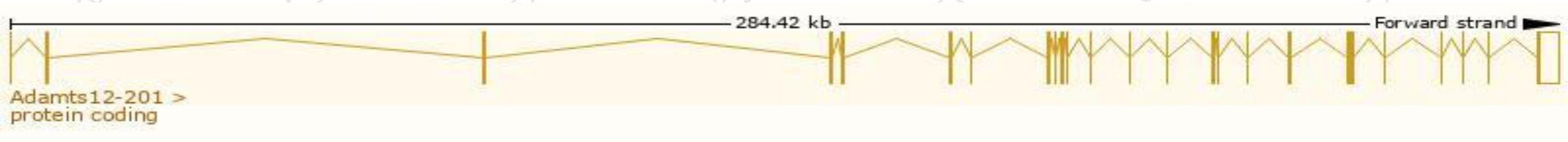
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (11064773..11349232)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (10994545..11276622)

Transcript information (Ensembl)

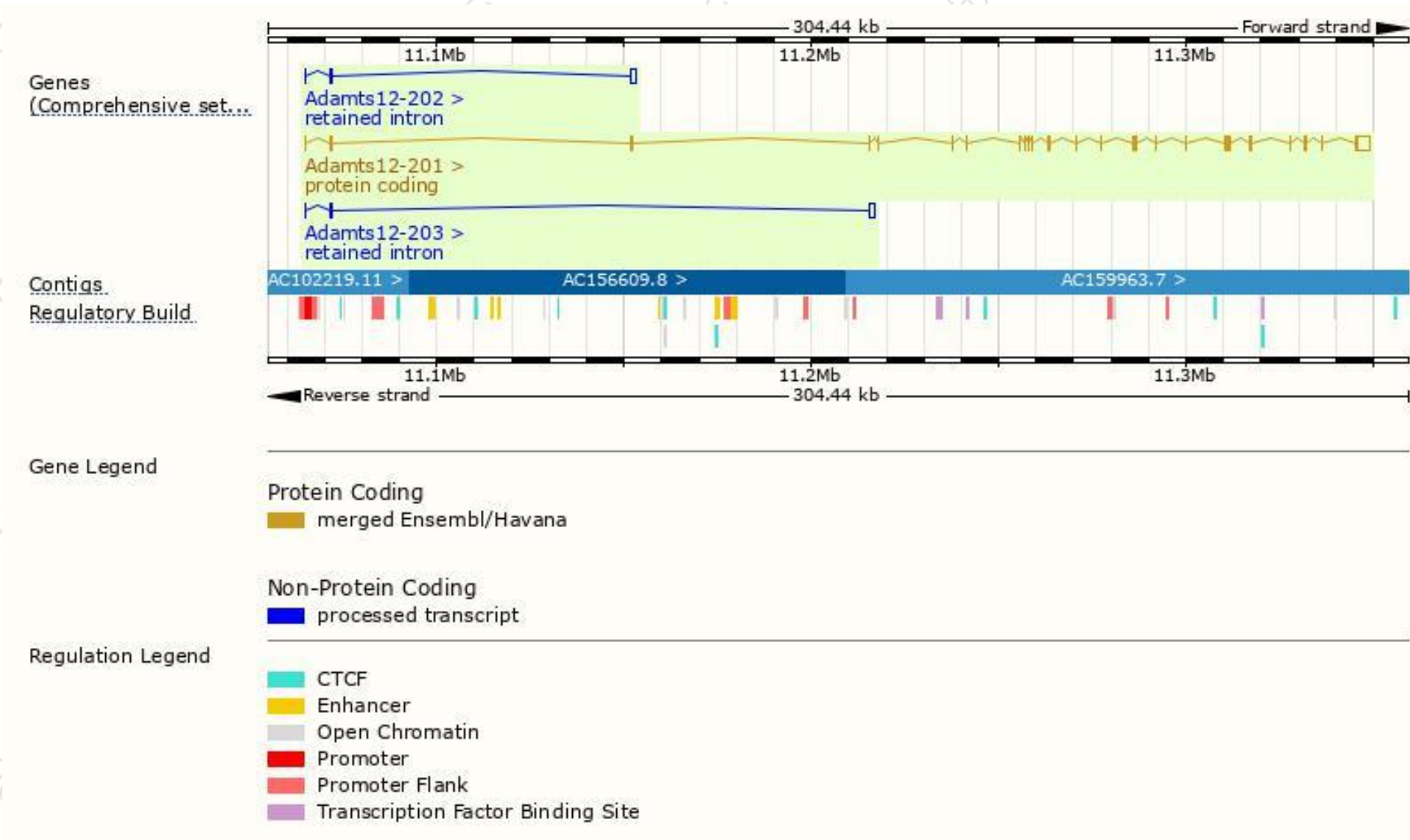
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adamts12-201	ENSMUST00000061318.8	8579	1600aa	Protein coding	CCDS27384	Q811B3	TSL:1 GENCODE basic APPRIS P1
Adamts12-203	ENSMUST00000228940.1	2289	No protein	Retained intron	-	-	
Adamts12-202	ENSMUST00000227189.1	1826	No protein	Retained intron	-	-	

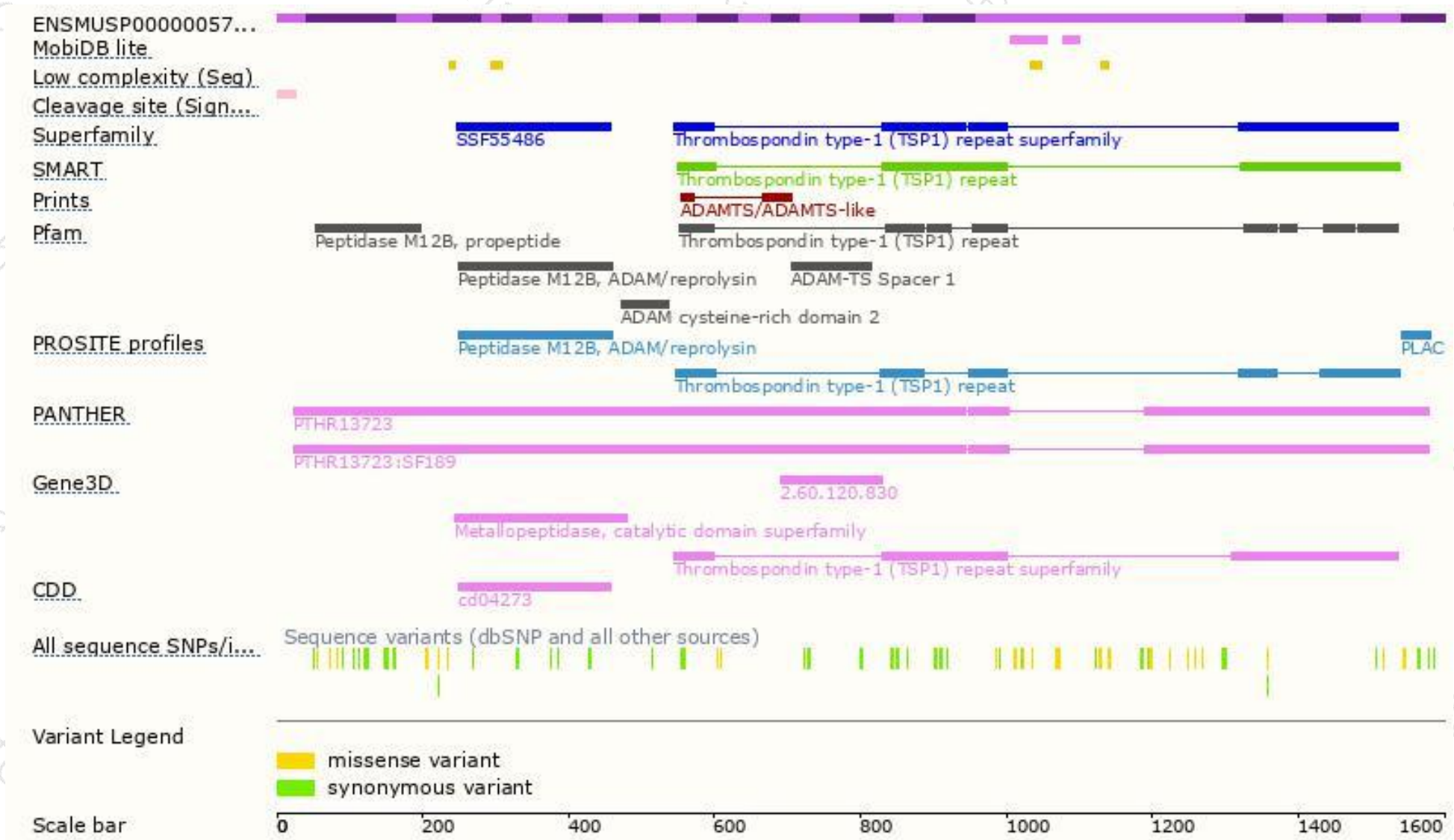
The strategy is based on the design of *Adamts12-201* transcript,The transcription is shown below



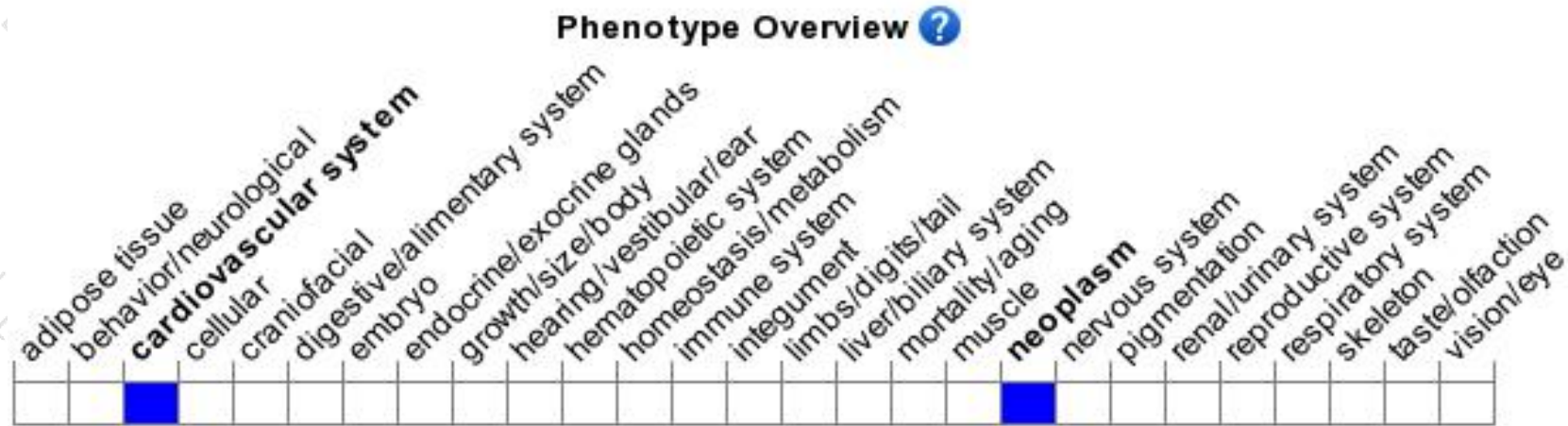
Genomic location distribution



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 knock-out allele exhibit increased tumor vascularization, tumor invasion, and angiogenesis.

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

Tel: 400-9660890

