

# ***Adams5 Cas9-KO Strategy***

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**Reviewer:**

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# Project Overview

**Project Name**

*Adamts5*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamts5* gene. The schematic diagram is as follows:



- The *Adamts5* gene has 1 transcript. According to the structure of *Adamts5* gene, exon2 of *Adamts5-201* (ENSMUST00000023611.6) transcript is recommended as the knockout region. The region contains 133bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adamts5* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for one null allele exhibit a significant reduction in cartilage degradation after induction of osteoarthritis whereas those homozygous for another show no affect.
- The *Adamts5* gene is located on the Chr16. 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)

**Adamts5** a disintegrin-like and metalloproteinase (reprolysin type) with thrombospondin type 1 motif, 5 (aggrecanase-2) [ *Mus musculus* (house mouse) ]

Gene ID: 23794, updated on 26-Nov-2019

## Summary

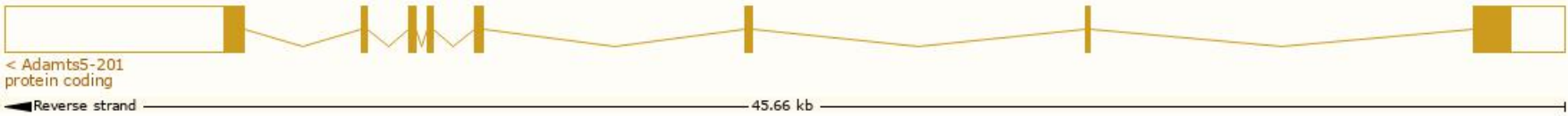
Official Symbol	Adamts5 provided by MGI
Official Full Name	a disintegrin-like and metalloproteinase (reprolysin type) with thrombospondin type 1 motif, 5 (aggrecanase-2) provided by MGI
Primary source	MGI:MGI:1346321
See related	Ensembl:ENSMUSG00000022894
Gene type	protein coding
RefSeq status	REVIEWED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ADMP-2; ASMP-2; ADAMTS1; ADAM-TS5; ADAMTS11; AI481094; 9530092O11Rik
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, zinc-dependent aggrecanase enzyme. Mice lacking the encoded protein are protected from surgery-induced osteoarthritis and antigen-induced arthritis. [provided by RefSeq, May 2016]
Expression	Biased expression in subcutaneous fat pad adult (RPKM 15.5), genital fat pad adult (RPKM 13.8) and 10 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

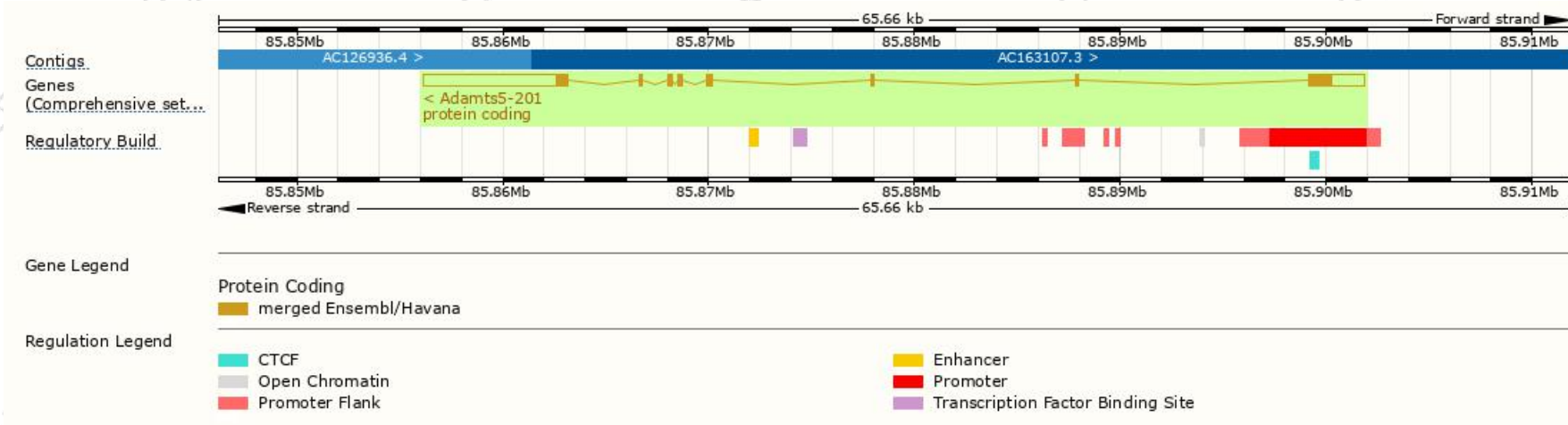
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adamts5-201	<a href="#">ENSMUST00000023611.6</a>	10791	<a href="#">930aa</a>	Protein coding	<a href="#">CCDS28288</a>	<a href="#">Q9R001</a>	TSL:1 Gencode basic APPRIS P1

The strategy is based on the design of *Adamts5-201* transcript, The transcription is shown below

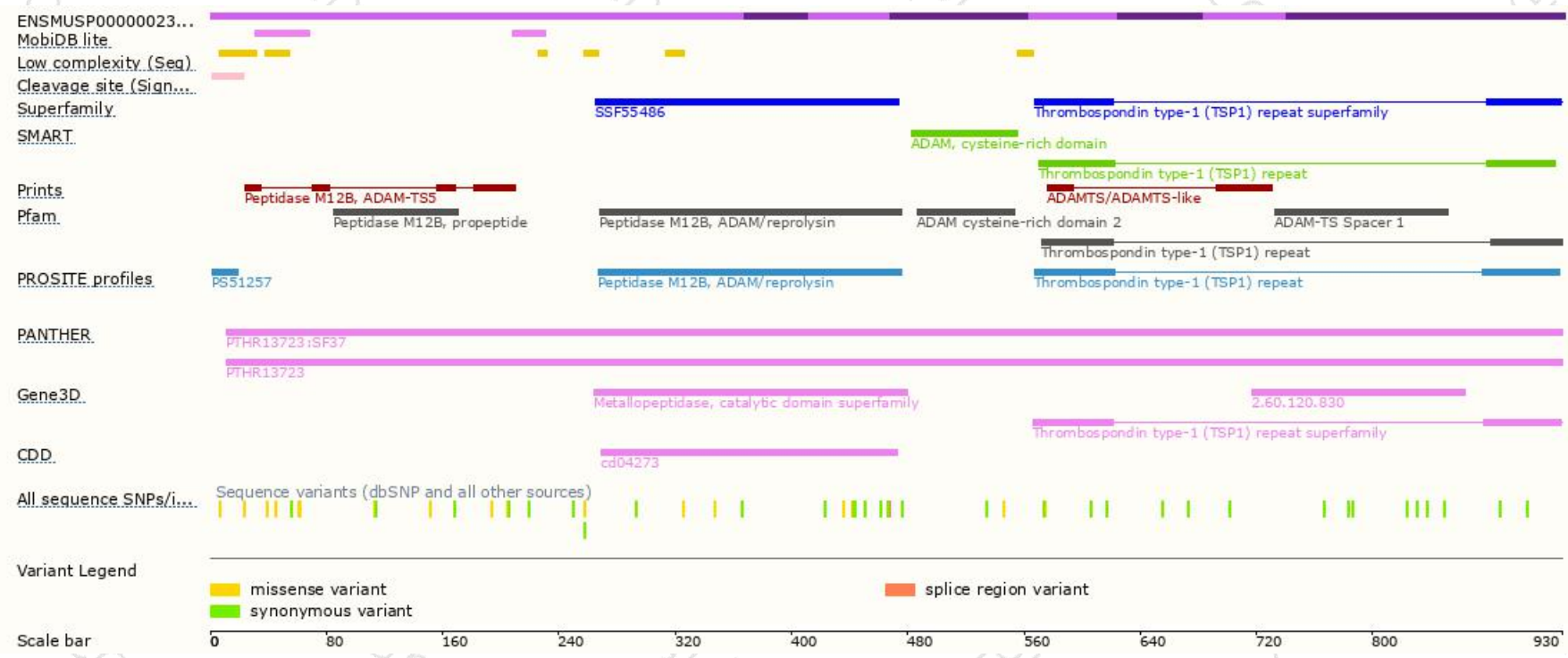


# Genomic location distribution

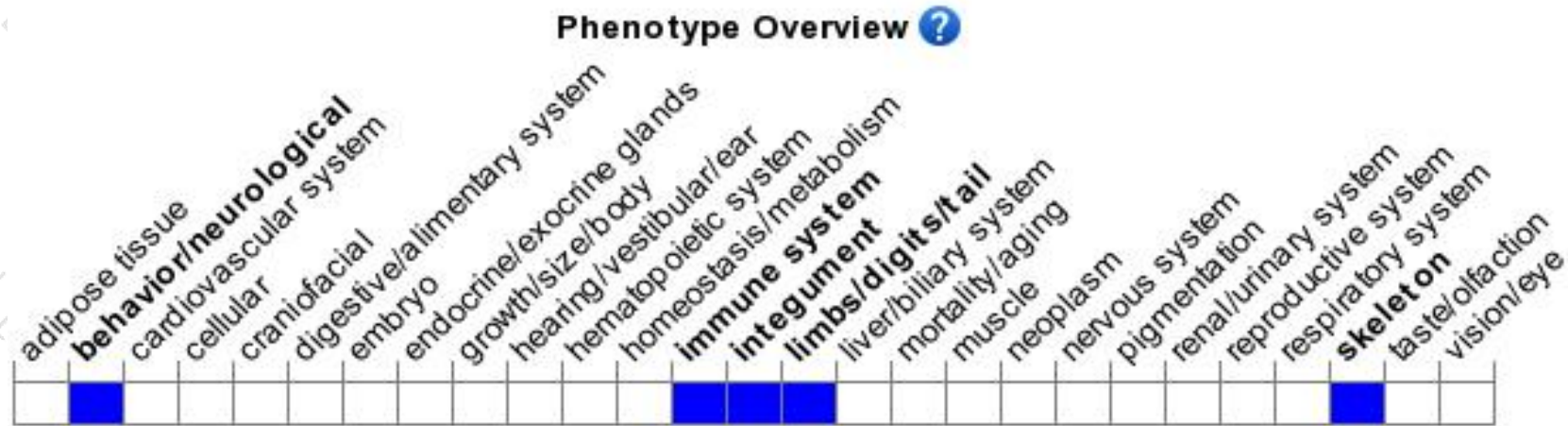




# Protein domain



# 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 one null allele exhibit a significant reduction in cartilage degradation after induction of osteoarthritis whereas those homozygous for another show no affect.

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

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