

Adams2 Cas9-KO Strategy

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Project Overview

Project Name

Adamts2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamts2* gene. The schematic diagram is as follows:



- The *Adamts2* gene has 4 transcripts. According to the structure of *Adamts2* gene, exon3 of *Adamts2-201*(ENSMUST00000040523.8) transcript is recommended as the knockout region. The region contains 160bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adamts2* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, homozygous mutation of this gene results in a short snout, male infertility, and thin skin that is torn by scratching or handling.
- The *Adamts2* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Adamts2 a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 2 [*Mus musculus* (house mouse)]

Gene ID: 216725, updated on 26-Jun-2020

Summary



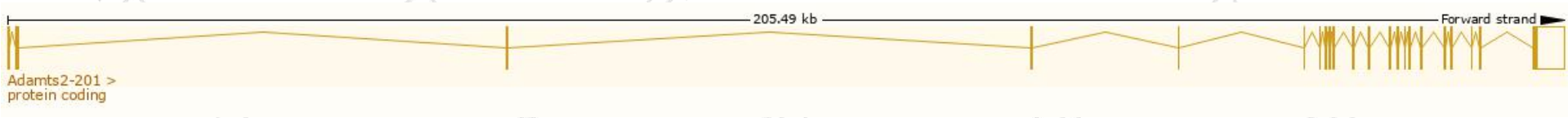
Official Symbol	Adamts2 provided by MGI
Official Full Name	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 2 provided by MGI
Primary source	MGI:MGI:1347356
See related	Ensembl:ENSMUSG00000036545
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	pNPI; PCINP; PC I-NP; ADAM-TS2; ADAMTS-2; ADAM-TS 2
Summary	This gene encodes a member of the ADAMTS (a disintegrin and metalloproteinase with thrombospondin repeats) family of proteinases that is involved in the proteolytic processing of procollagens. The encoded protein precursor is proteolytically processed to generate a mature, zinc-dependent enzyme. Mice lacking the encoded protein develop abnormal lungs, fragile skin and male sterility. [provided by RefSeq, Aug 2015]
Expression	Biased expression in ovary adult (RPKM 48.4), subcutaneous fat pad adult (RPKM 22.7) and 10 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

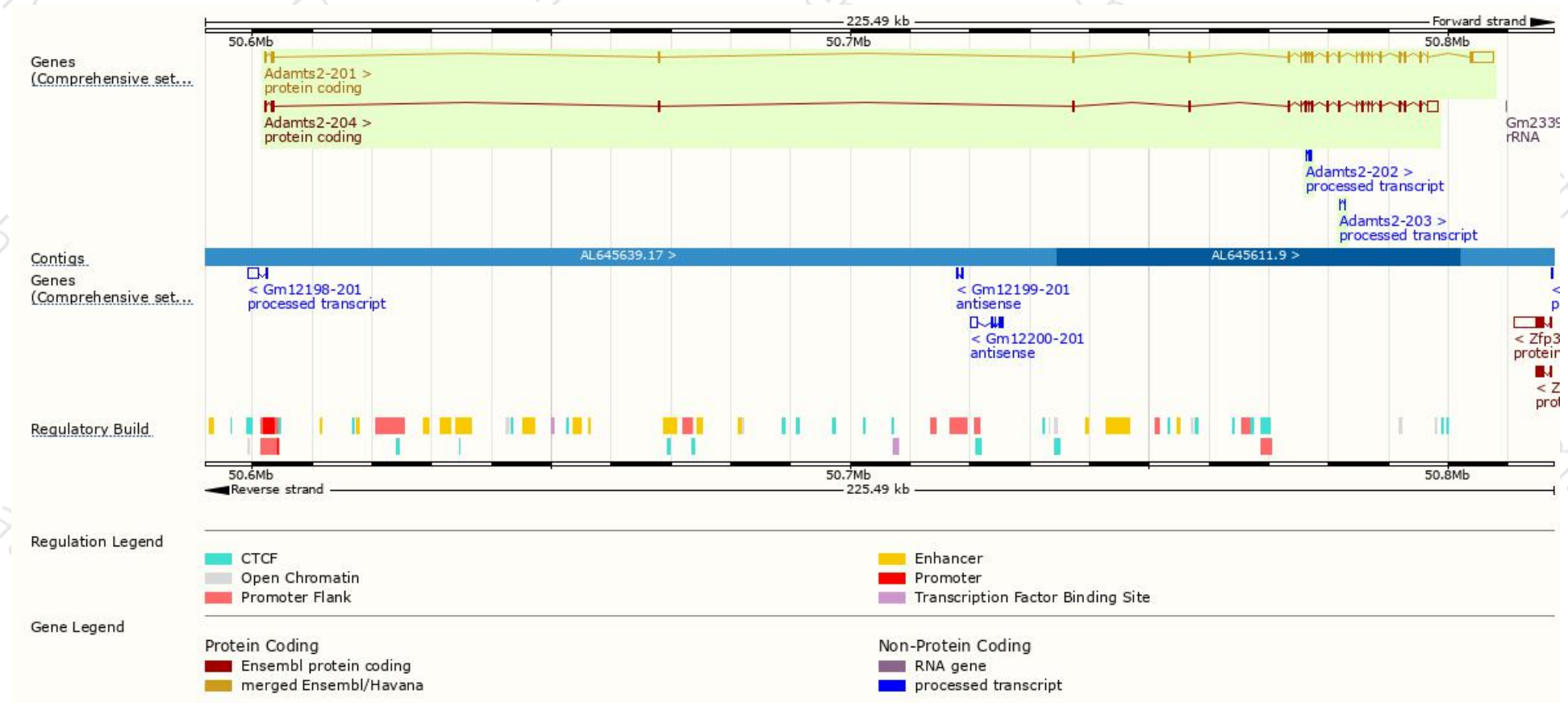
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adamts2-204	ENSMUST00000142118.2	5079	1095aa	Protein coding	-	A0A5F8MPY1	TSL:1 GENCODE basic APPRIS ALT2
Adamts2-201	ENSMUST00000040523.8	7266	1213aa	Protein coding	CCDS24636	Q8C9W3	TSL:1 GENCODE basic APPRIS P2
Adamts2-202	ENSMUST00000125988.1	368	No protein	Processed transcript	-	-	TSL:5
Adamts2-203	ENSMUST00000127534.1	212	No protein	Processed transcript	-	-	TSL:5

The strategy is based on the design of *Adamts2-201* transcript,the transcription is shown below:



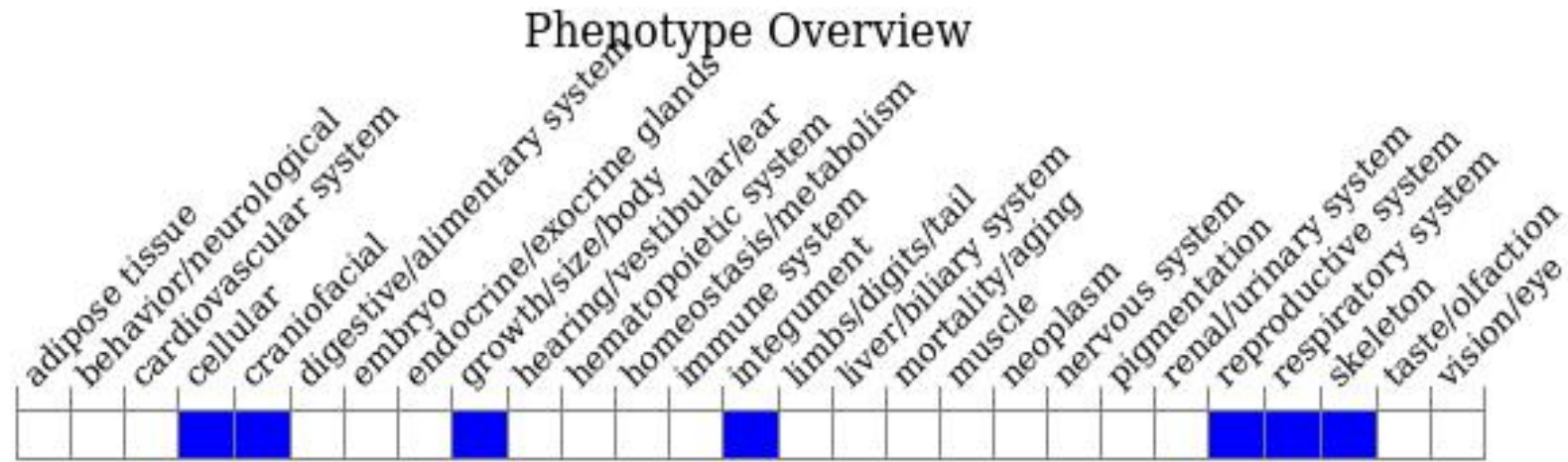
Genomic location distribution



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 mutation of this gene results in a short snout, male infertility, and thin skin that is torn by scratching or handling.

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

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