Adamts9 Cas9-CKO Strategy

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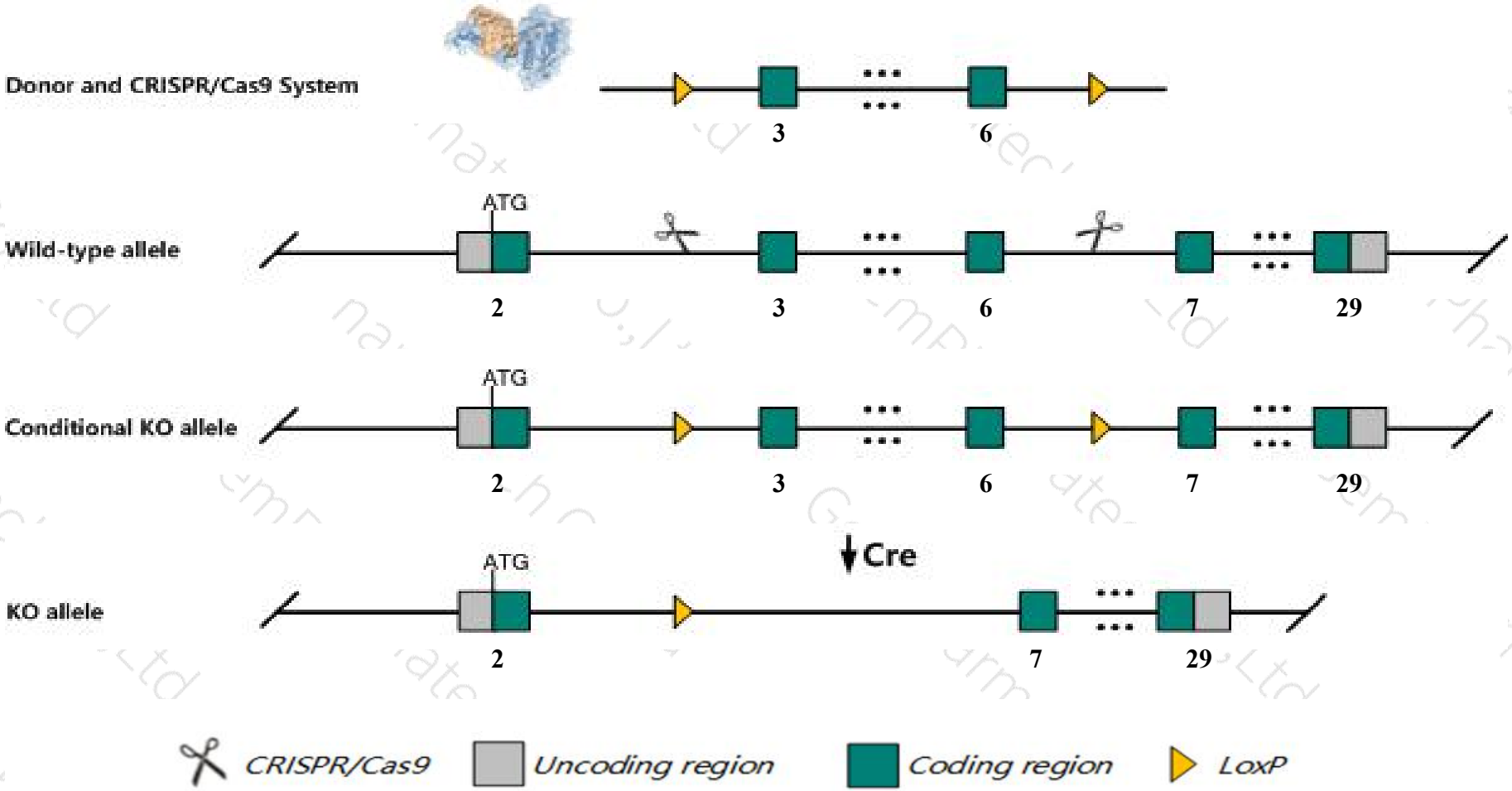
Project Overview

Project Name	***Adamts9***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adamts9* gene. The schematic diagram is as follows:



Technical routes

➢ The *Adamts9* gene has 6 transcripts. According to the structure of *Adamts9* gene, exon3-exon6 of *Adamts9-205*(ENSMUST00000167391.1) transcript is recommended as the knockout region.The region contains 533bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Adamts9* 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.

Notice

➢ According to the existing MGI data,homozygous null mice display embryonic lethality before somite formation. Mice heterozygous for a knock-out or ENU-induced allele exhibit a ring of epidermal hypopigmentation in the tail.

➢ The *Adamts9* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Adamts9 a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 9 [*Mus musculus* (house mouse)]

Gene ID: 101401, updated on 25-Sep-2020

Summary

Official Symbol	Adamts9 provided by MGI
Official Full Name	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 9 provided by MGI
Primary source	MGI:MGI:1916320
See related	Ensembl:ENSMUSG00000030022
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	UND; UND3; UND4; Gsfun; Mhdaun; Gsfund3; AW743315; Mhdaund3; Mhdaund4; 1810011L16Rik; 8430403M15Rik; E030027K14Rik
Expression	Broad expression in limb E14.5 (RPKM 5.9), subcutaneous fat pad adult (RPKM 3.5) and 22 other tissues See more
Orthologs	human all

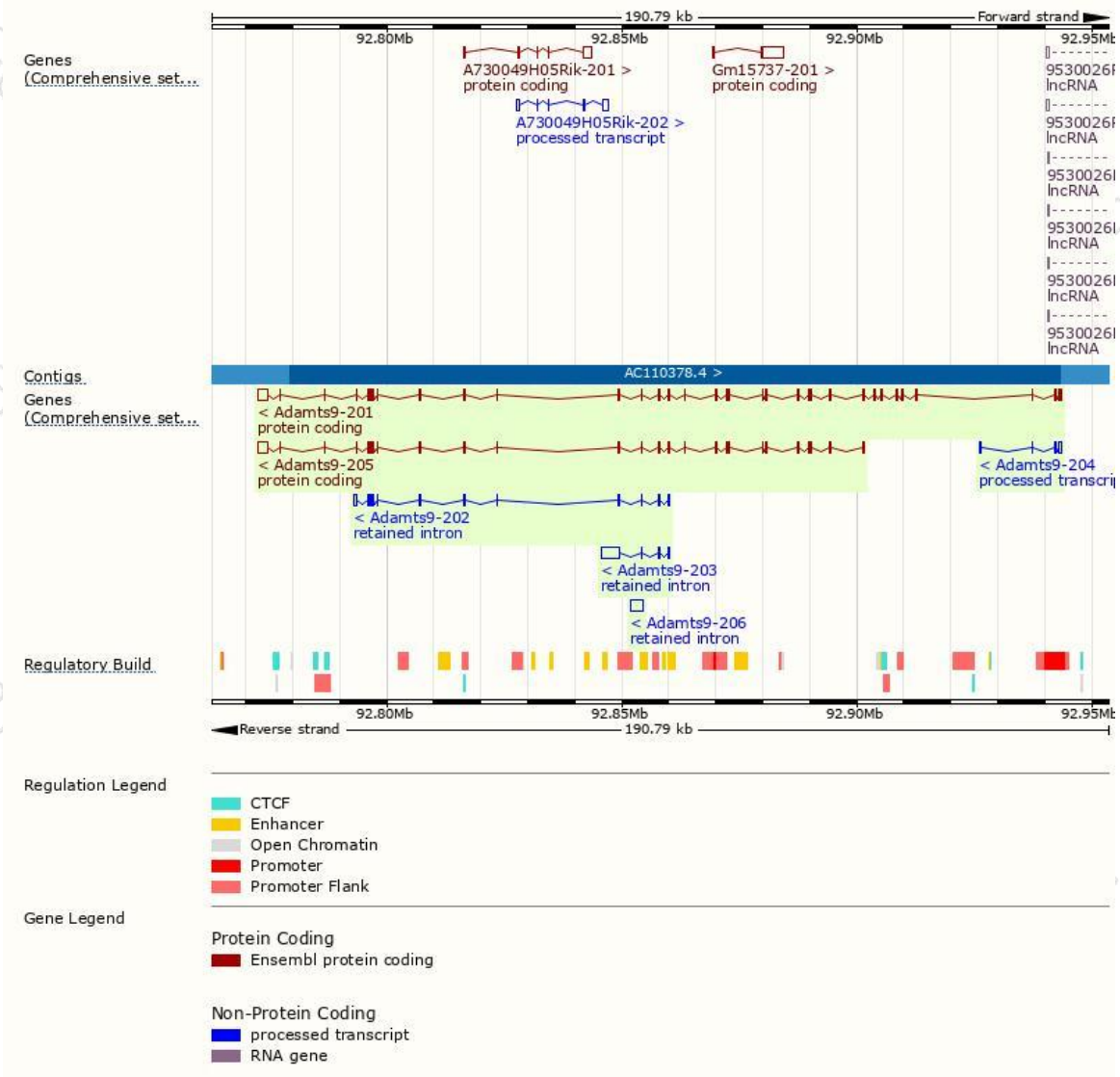
Transcript information（Ensembl）

The gene has 6 transcripts,all transcripts are shown below:

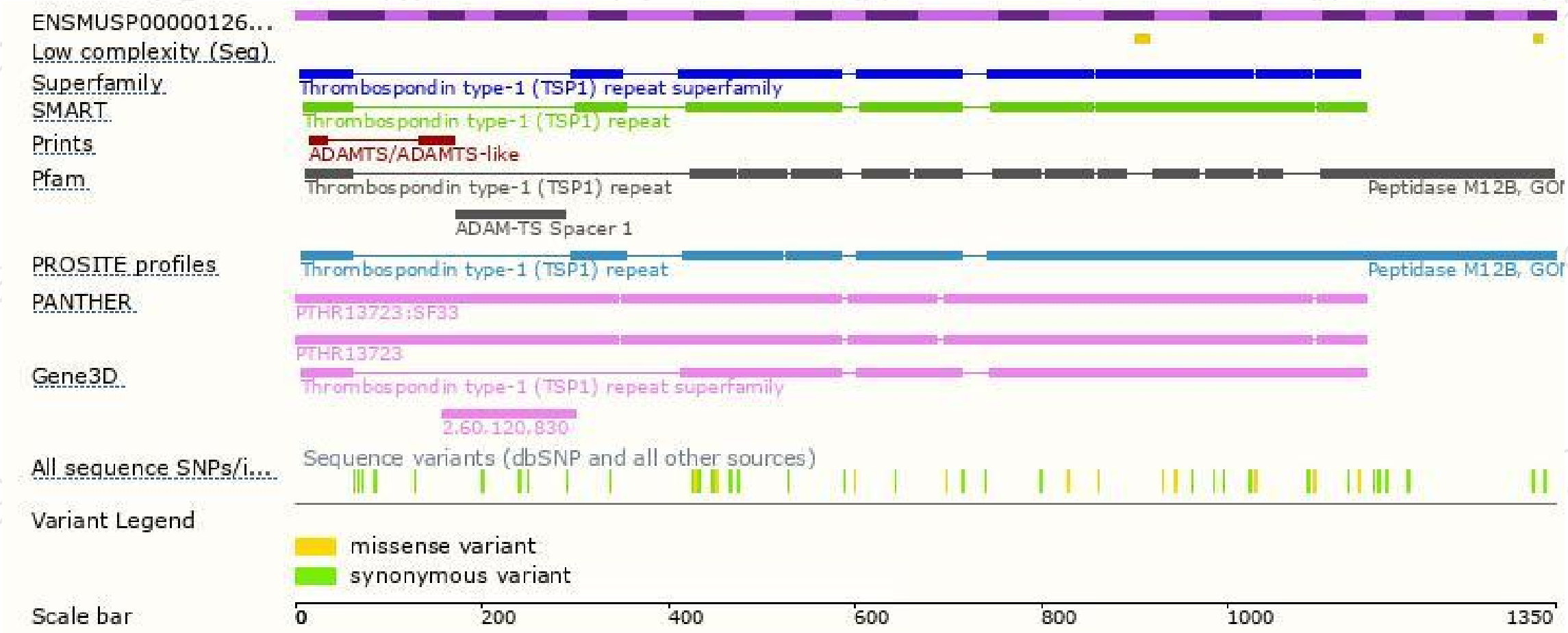
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adamts9-205	ENSMUST00000167391.1	6033	1350aa	Protein coding	CCDS51855	E9PYV8	TSL:5 GENCODE basic
Adamts9-201	ENSMUST00000113438.7	8016	1931aa	Protein coding	-	E9PUN6	TSL:5 GENCODE basic APPRIS P1
Adamts9-204	ENSMUST00000136751.1	1356	No protein	Processed transcript	-	-	TSL:1
Adamts9-203	ENSMUST00000130314.1	4519	No protein	Retained intron	-	-	TSL:1
Adamts9-206	ENSMUST00000203690.1	2683	No protein	Retained intron	-	-	TSL:NA
Adamts9-202	ENSMUST00000125490.7	2541	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Adamts9-205* transcript,the transcription is shown below:

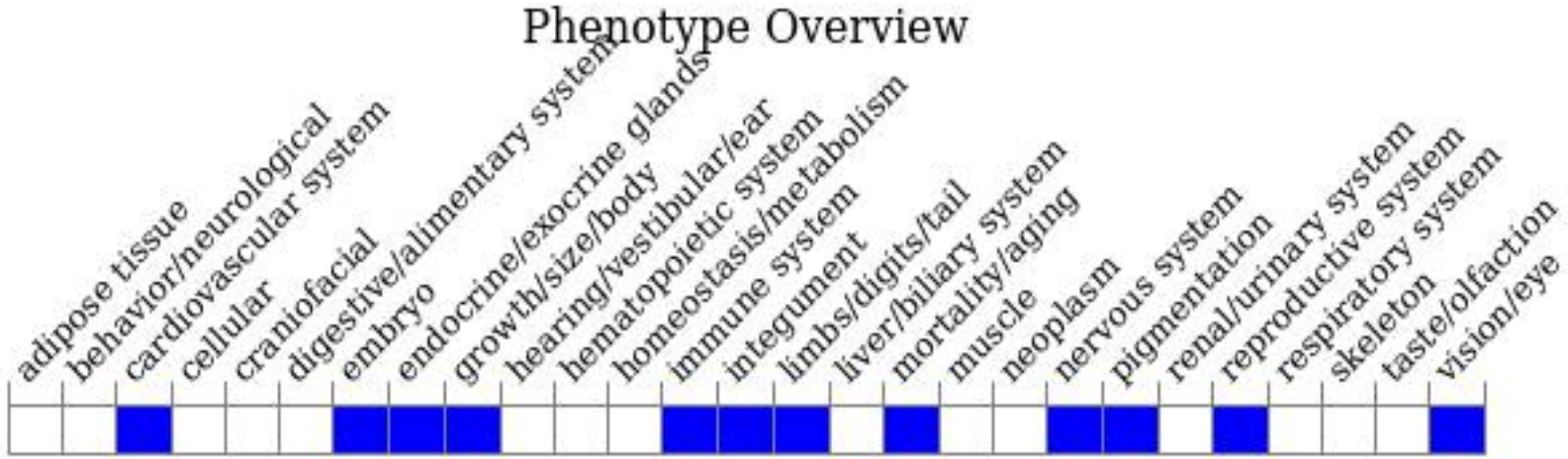
Genomic location distribution



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/).

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

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