

Adam19 Cas9-CKO Strategy

Designer:

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Design Date:

2019-9-20

Project Overview

Project Name

Adam19

Project type

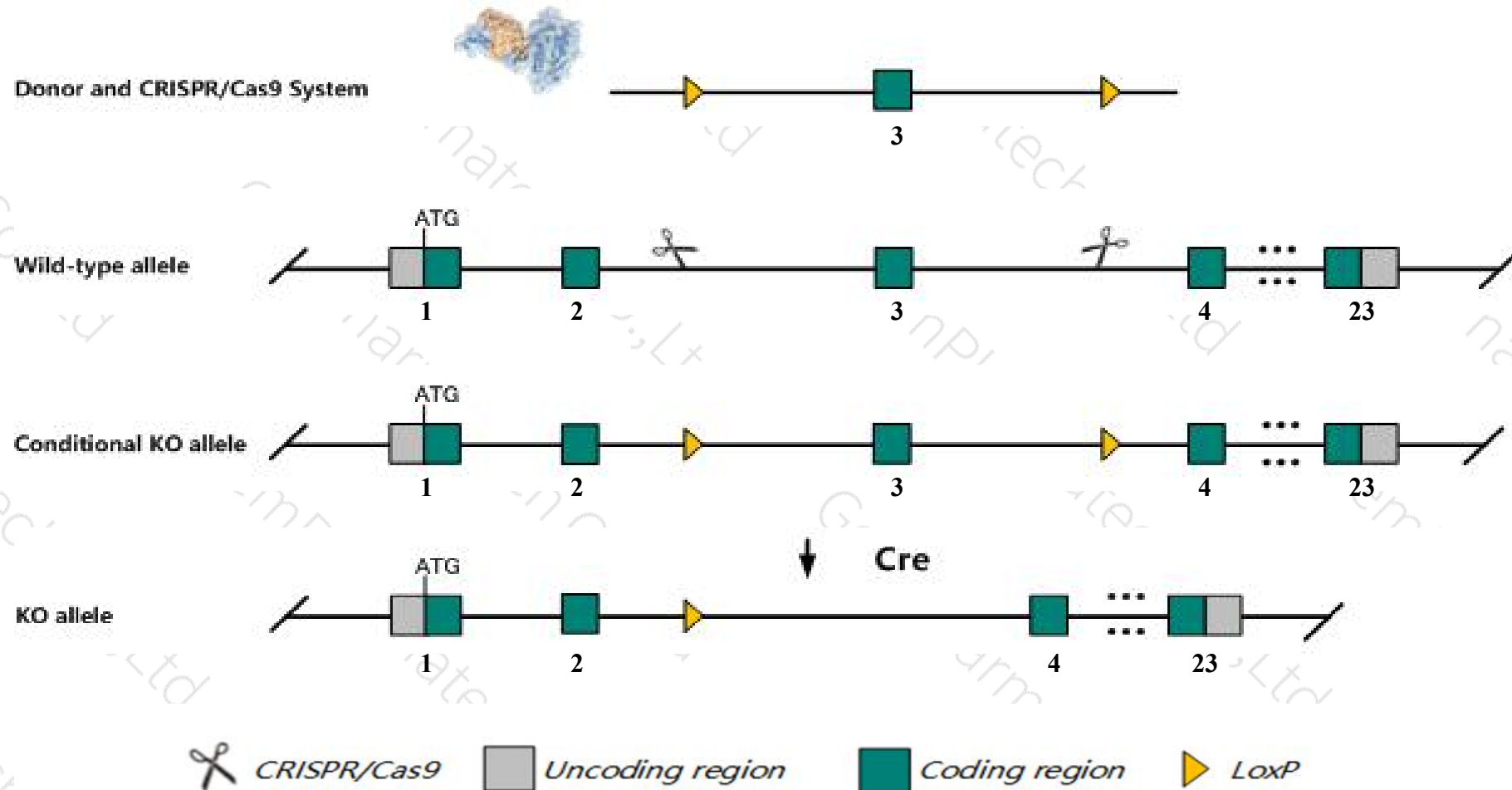
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adam19* gene. The schematic diagram is as follows:



Technical routes

- The *Adam19* gene has 4 transcripts. According to the structure of *Adam19* gene, exon3 of *Adam19-201* (ENSMUST00000011400.7) transcript is recommended as the knockout region. The region contains 71bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adam19* 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, Homozygous null mice exhibit cardiac developmental defects and die perinatally.
- The *Adam19* 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)

Adam19 a disintegrin and metallopeptidase domain 19 (meltrin beta) [Mus musculus (house mouse)]

Gene ID: 11492, updated on 31-Jan-2019

Summary



Official Symbol Adam19 provided by [MGI](#)

Official Full Name a disintegrin and metallopeptidase domain 19 (meltrin beta) provided by [MGI](#)

Primary source [MGI:MGI:105377](#)

See related [Ensembl:ENSMUSG00000011256](#)

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 AL024287, MADDAM, MTLNB, Mltb

Summary This gene encodes a cell surface glycoprotein and member of the ADAM (a disintegrin and metalloproteinase) family of endopeptidases. The encoded protein may play a role in the ectodomain shedding of neuregulin proteins. Homozygous knockout mice for this gene exhibit heart development defects and perinatal lethality. Alternative splicing results in multiple transcript variants, at least one of which encodes a preproprotein that undergoes proteolytic processing to generate a mature protein product. [provided by RefSeq, Aug 2015]

Expression Ubiquitous expression in lung adult (RPKM 11.0), limb E14.5 (RPKM 10.3) and 26 other tissues [See more](#)

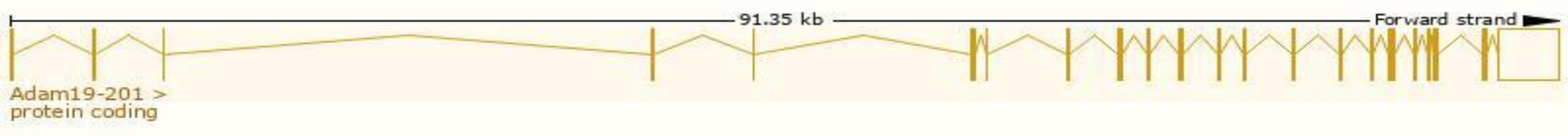
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

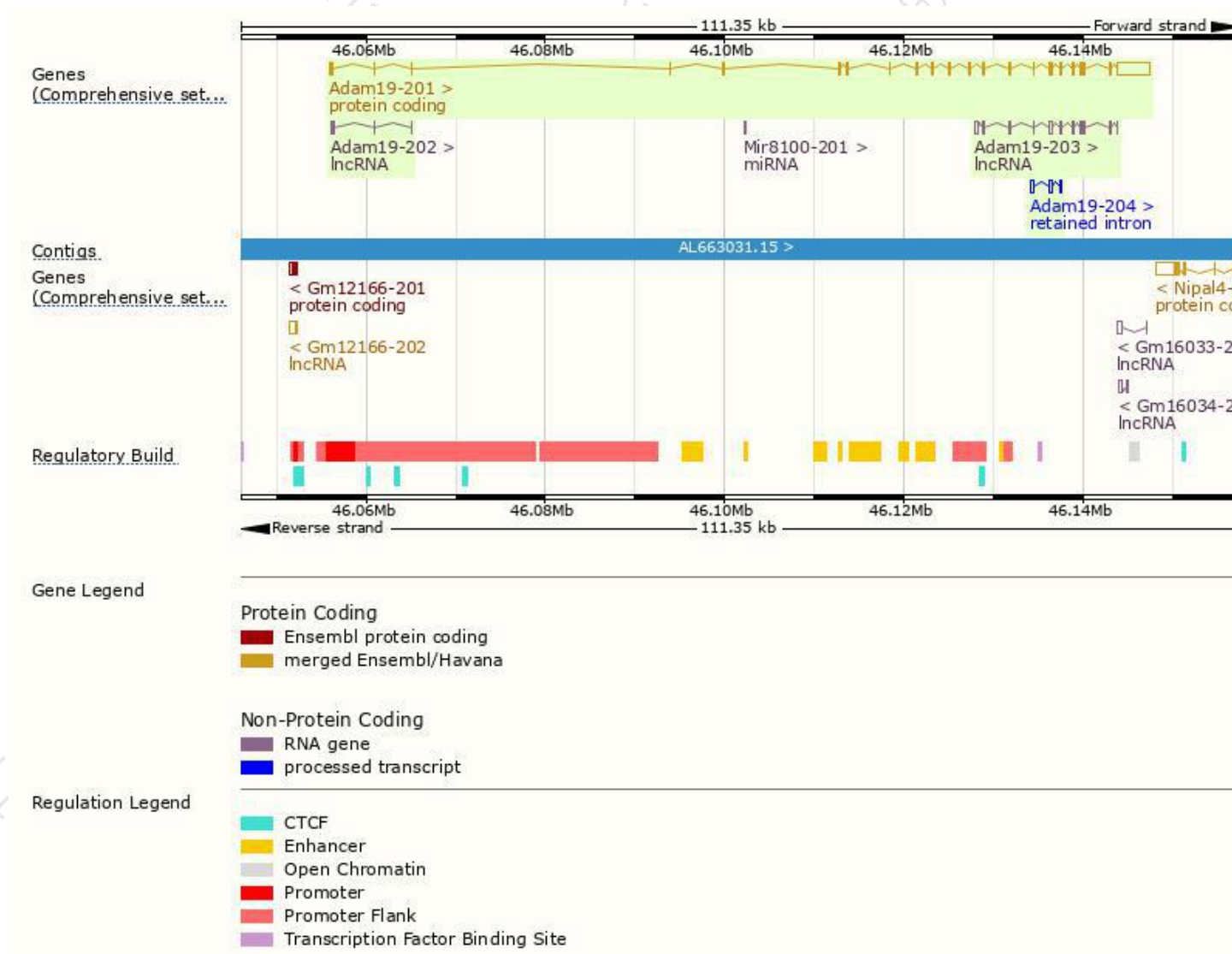
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adam19-201	ENSMUST00000011400.7	6383	920aa	Protein coding	CCDS24571	Q35674 Q3UHT3	TSL:1 GENCODE basic APPRIS P1
Adam19-204	ENSMUST00000153410.1	816	No protein	Retained intron	-	-	TSL:3
Adam19-203	ENSMUST00000151565.7	1747	No protein	lncRNA	-	-	TSL:1
Adam19-202	ENSMUST00000137014.1	453	No protein	lncRNA	-	-	TSL:2

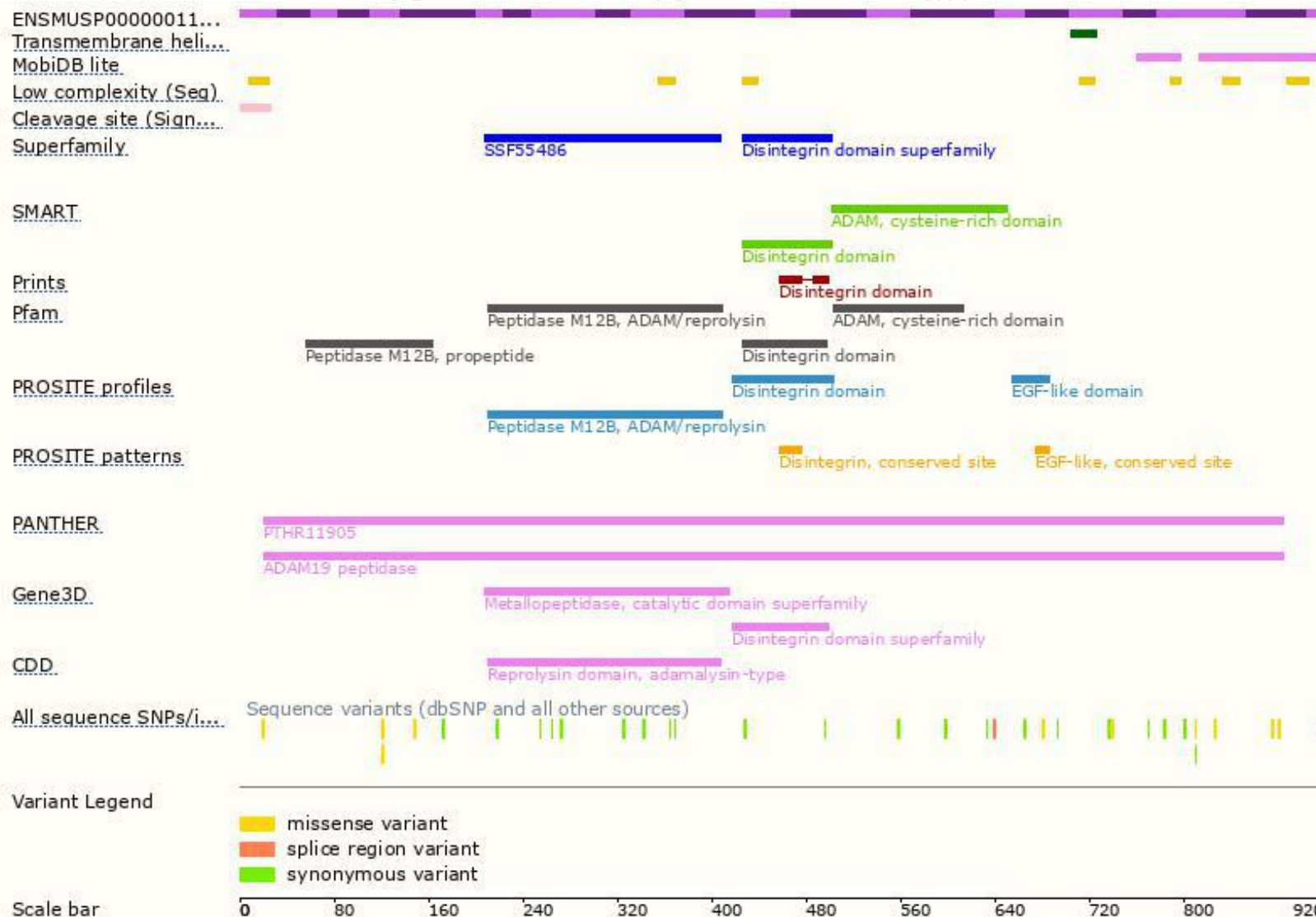
The strategy is based on the design of *Adam19-201* transcript,The transcription is shown below



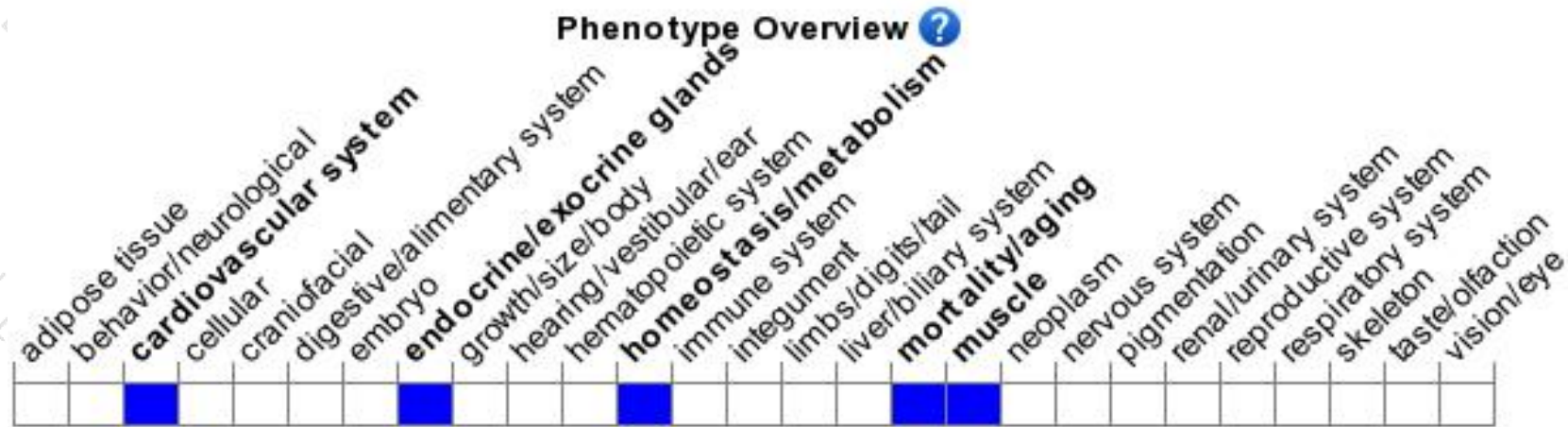
Genomic location distribution



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 null mice exhibit cardiac developmental defects and die perinatally.

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

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