

Ntmt1 Cas9-KO Strategy

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Project Overview

Project Name

Ntmt1

Project type

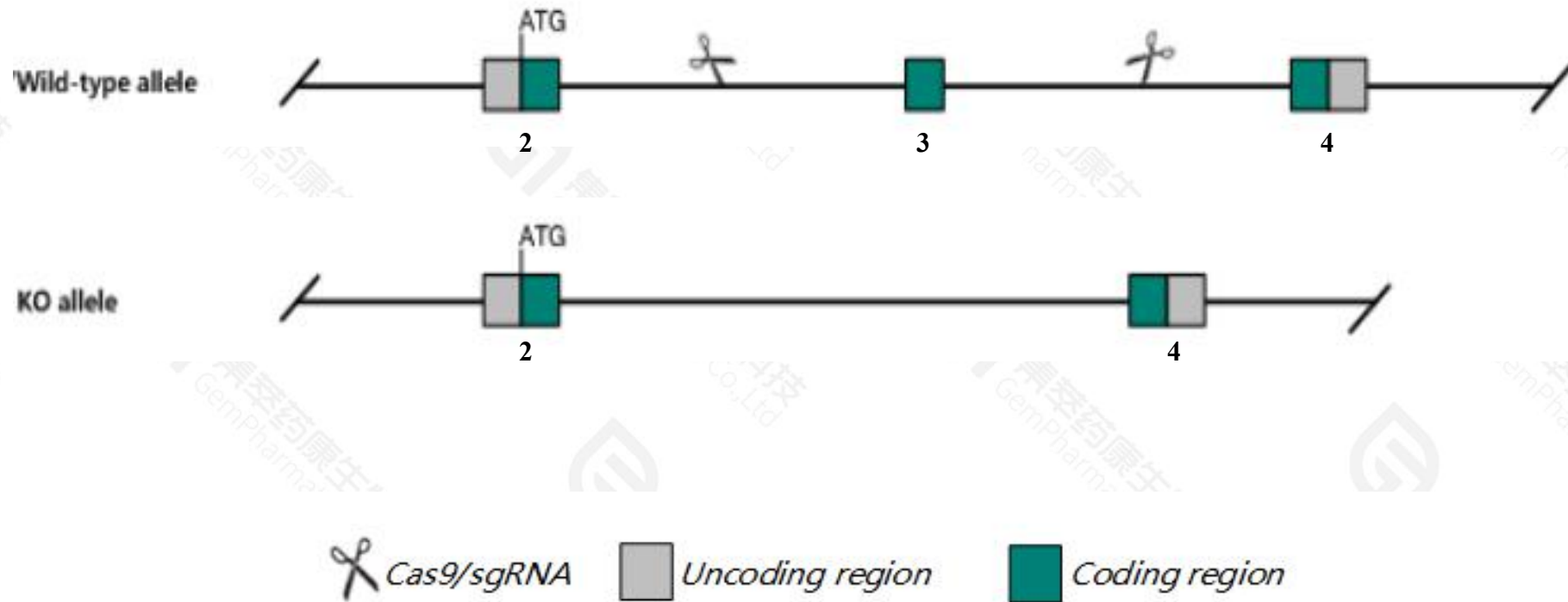
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ntmt1* gene. The schematic diagram is as follows:



- The *Ntmt1* gene has 9 transcripts. According to the structure of *Ntmt1* gene, exon3 of *Ntmt1*-201(ENSMUST00000041830.10) transcript is recommended as the knockout region. The region contains 253bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ntmt1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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, mice homozygous for a knock-out allele exhibit preweaning lethality and premature death associated with premature aging, decreased body size and weight, skin thinning, liver degeneration, increased sensitivity to oxidative stress and female infertility.
- The *Ntmt1* gene is located on the Chr2. 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.

Ntmt1 N-terminal Xaa-Pro-Lys N-methyltransferase 1 [Mus musculus (house mouse)]

Gene ID: 66617, updated on 17-Dec-2020

Summary



Official Symbol Ntmt1 provided by [MGI](#)

Official Full Name N-terminal Xaa-Pro-Lys N-methyltransferase 1 provided by [MGI](#)

Primary source [MGI:MGI:1913867](#)

See related [Ensembl:ENSMUSG00000026857](#)

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 2610205E22Rik, AL033331, AL033332, Mettl1, Mettl11a, NTM1A

Expression Ubiquitous expression in ovary adult (RPKM 27.0), adrenal adult (RPKM 21.3) and 28 other tissues [See more](#)

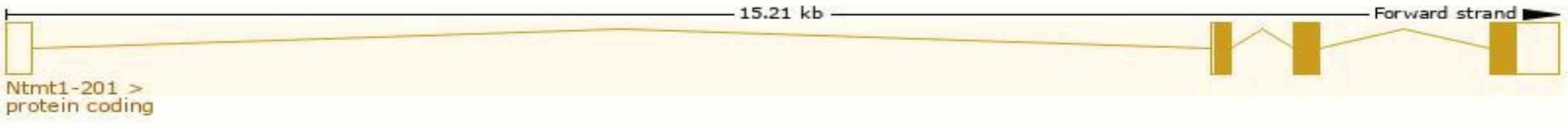
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

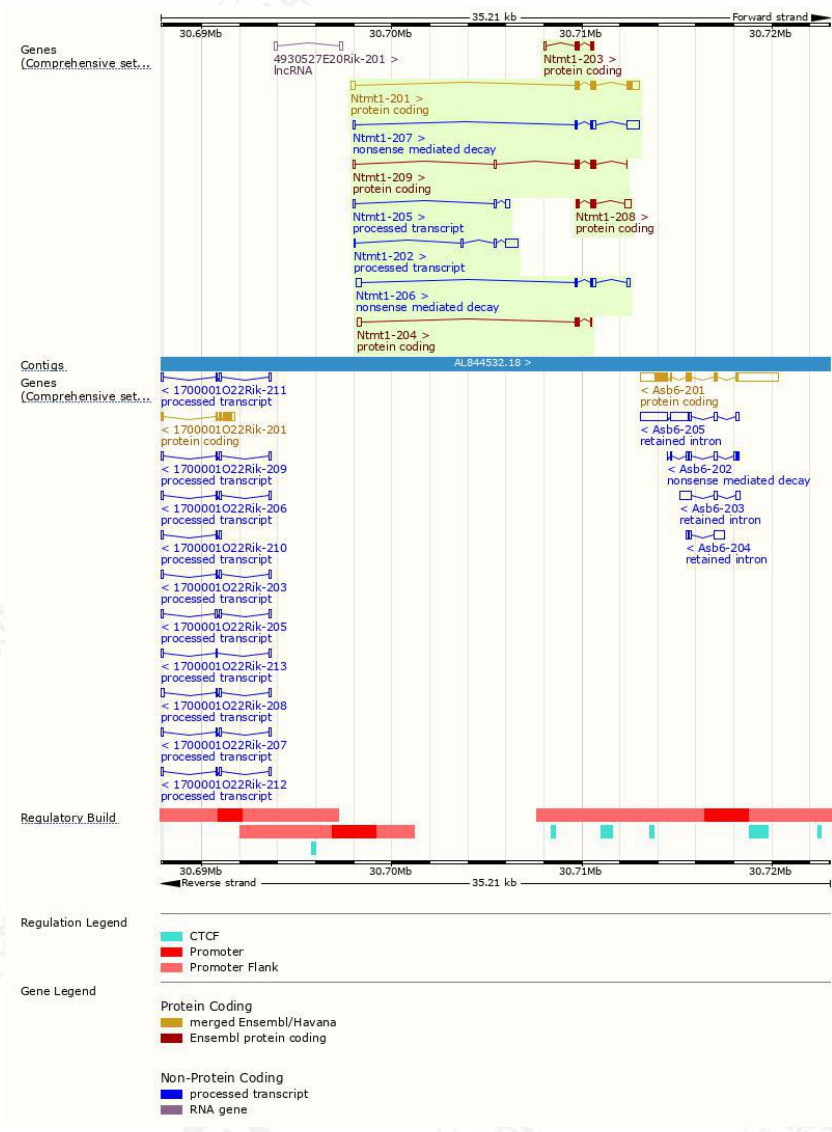
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ntmnt1-201	ENSMUST00000041830.10	1387	223aa	Protein coding	CCDS15886		TSL:1 , GENCODE basic , APPRIS P1 ,
Ntmnt1-209	ENSMUST00000152374.8	763	146aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Ntmnt1-208	ENSMUST00000143970.3	715	144aa	Protein coding	-		CDS 5' incomplete , TSL:3 ,
Ntmnt1-203	ENSMUST00000127566.3	558	118aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Ntmnt1-204	ENSMUST00000128303.7	453	78aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Ntmnt1-207	ENSMUST00000138889.8	1192	70aa	Nonsense mediated decay	-		TSL:1 ,
Ntmnt1-206	ENSMUST00000129712.3	837	70aa	Nonsense mediated decay	-		TSL:3 ,
Ntmnt1-202	ENSMUST00000126037.2	981	No protein	Processed transcript	-		TSL:1 ,
Ntmnt1-205	ENSMUST00000128509.8	445	No protein	Processed transcript	-		TSL:2 ,

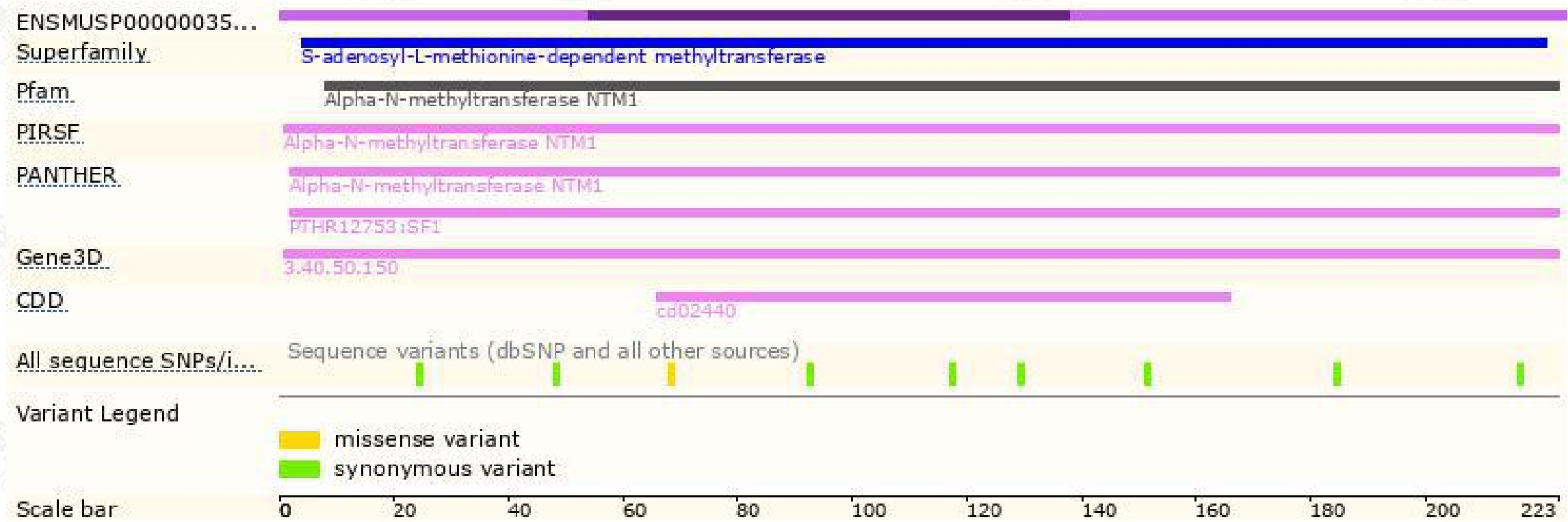
The strategy is based on the design of *Ntmnt1-201* transcript,the transcription is shown below:



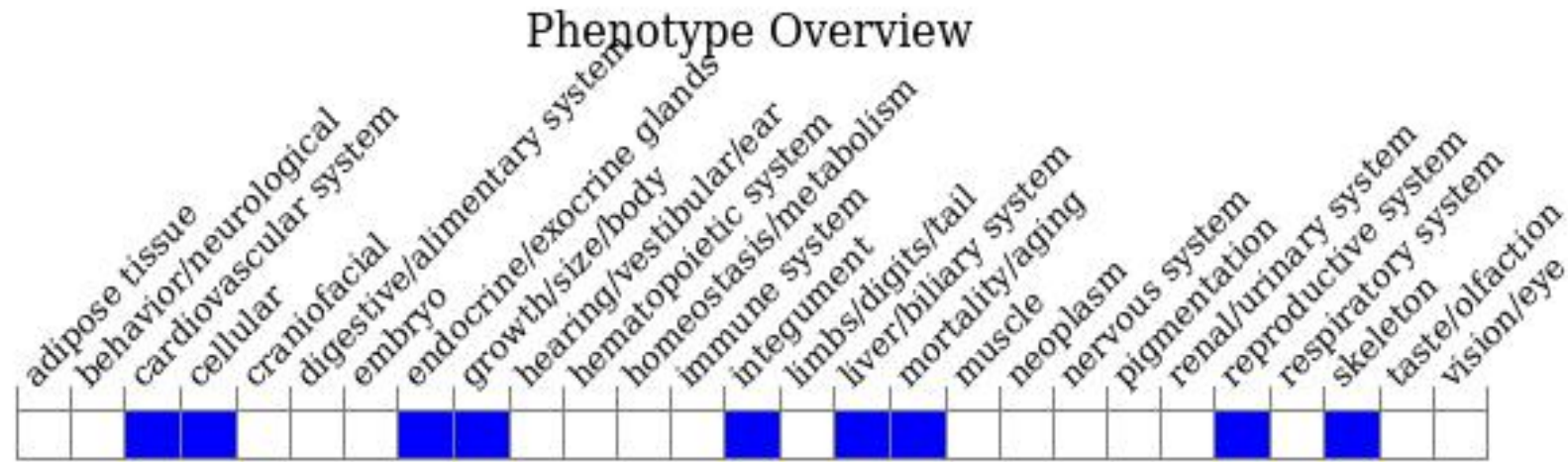
Genomic location distribution



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 preweaning lethality and premature death associated with premature aging, decreased body size and weight, skin thinning, liver degeneration, increased sensitivity to oxidative stress and female infertility.

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

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