

Nt5e Cas9-KO Strategy

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Project Overview



Project Name

Nt5e

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nt5e* gene. The schematic diagram is as follows:



- The *Nt5e* gene has 4 transcripts. According to the structure of *Nt5e* gene, exon2 of *Nt5e-201* (ENSMUST00000034992.7) transcript is recommended as the knockout region. The region contains 223bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nt5e* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Homozygous null mice for one allele are viable and fertile with increased circulating alkaline phosphatase and impaired tubuloglomerular feedback regulation. Homozygous null mice for a second allele display increased vascular permeability especially under hypoxic conditions.
- Transcript *Nt5e-202&204* may not be affected.
- The *Nt5e* gene is located on the Chr9. 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)

Nt5e 5' nucleotidase, ecto [Mus musculus (house mouse)]

Gene ID: 23959, updated on 9-Apr-2019

Summary



Official Symbol Nt5e provided by [MGI](#)

Official Full Name 5' nucleotidase, ecto provided by [MGI](#)

Primary source [MGI:MGI:99782](#)

See related [Ensembl:ENSMUSG00000032420](#)

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 2210401F01Rik, 5'-NT, AI447961, CD73, NT, Nt5, eNT

Summary This gene encodes a membrane-bound nucleotidase that hydrolyzes extracellular nucleoside monophosphates. The encoded preproprotein undergoes proteolytic processing to generate to a functional, homodimeric enzyme that preferentially uses adenosine monophosphate as a substrate to generate free adenosine. Mice lacking the encoded protein exhibit a significantly reduced fall in stop flow pressure and superficial nephron glomerular filtration rate in response to a saturating increase of tubular perfusion flow. [provided by RefSeq, Sep 2016]

Expression Broad expression in bladder adult (RPKM 18.6), lung adult (RPKM 11.8) and 21 other tissues [See more](#)

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

Transcript information (Ensembl)

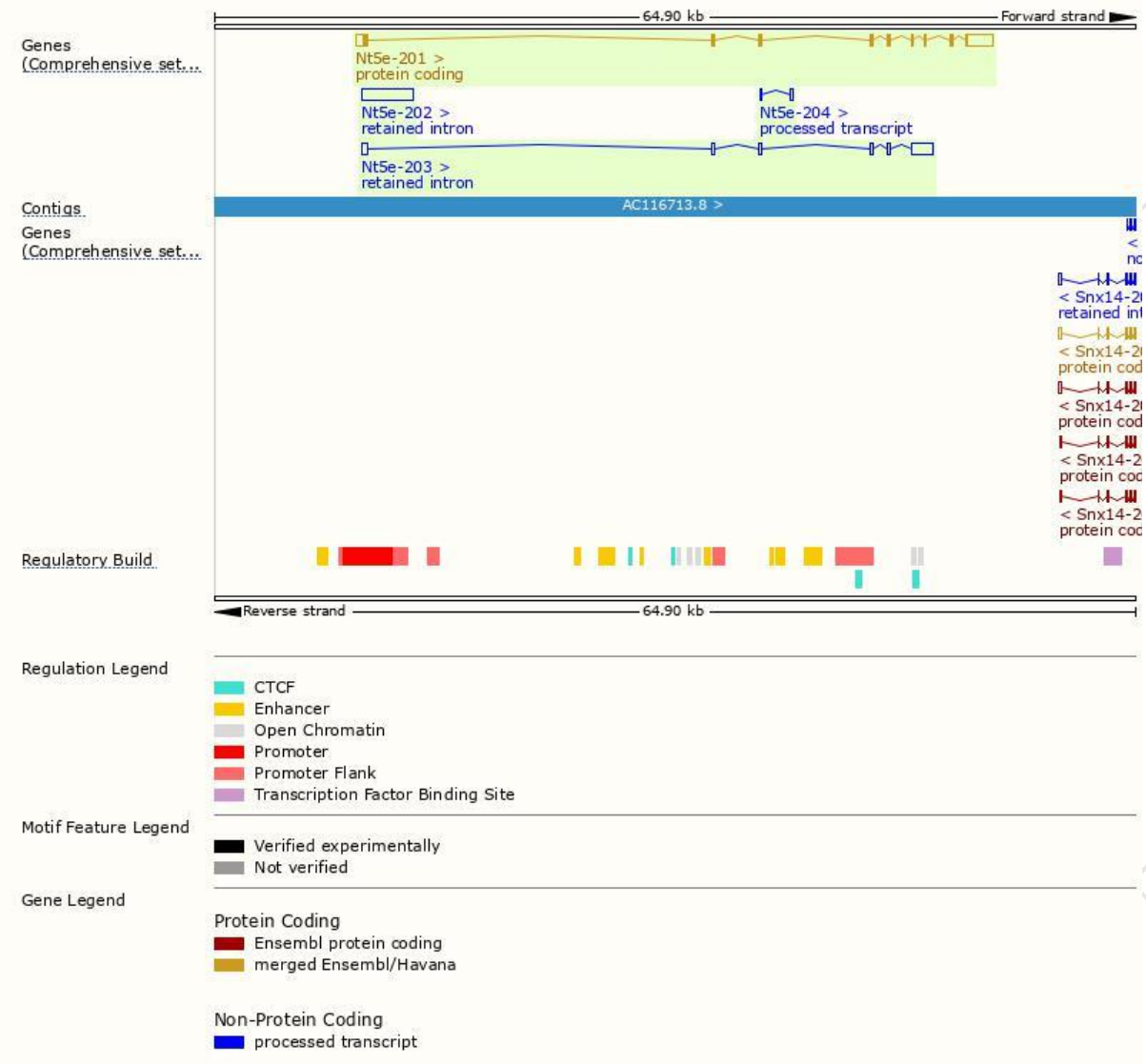
The gene has 4 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nt5e-201	ENSMUST00000034992.7	3995	576aa	Protein coding	CCDS23386	Q0VEE0 Q61503	TSL:1 GENCODE basic APPRIS P1
Nt5e-204	ENSMUST00000217134.1	280	No protein	Processed transcript	-	-	TSL:3
Nt5e-202	ENSMUST00000186789.1	3602	No protein	Retained intron	-	-	TSL:NA
Nt5e-203	ENSMUST00000187166.1	2646	No protein	Retained intron	-	-	TSL:1

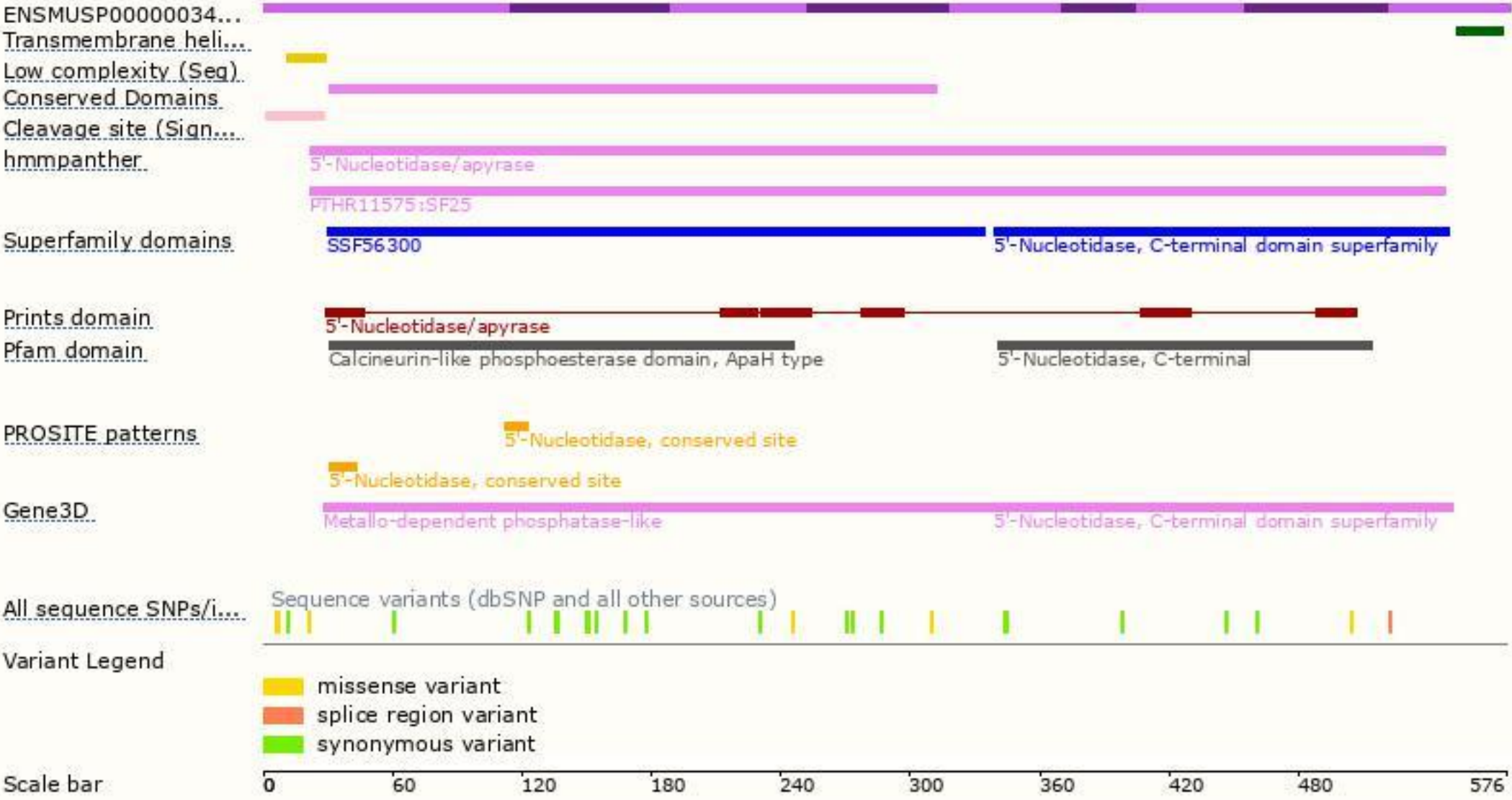
The strategy is based on the design of *Nt5e-201* transcript, The transcription is shown below



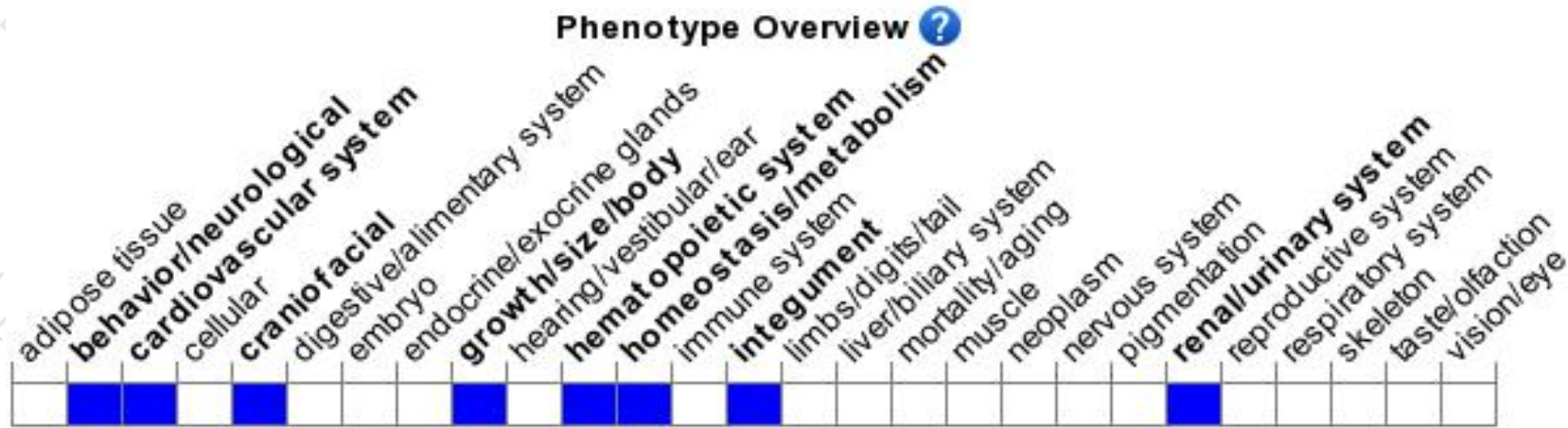
Genomic location distribution



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 for one allele are viable and fertile with increased circulating alkaline phosphatase and impaired tubuloglomerular feedback regulation. Homozygous null mice for a second allele display increased vascular permeability especially under hypoxic conditions.

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

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