

Nbn Cas9-KO Strategy

Designer:

Huimin Su

Reviewer:

Ruirui Zhang

Design Date:

2019/10/11

Project Overview

Project Name

Nbn

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Nbn* gene has 2 transcripts. According to the structure of *Nbn* gene, exon2-exon5 of *Nbn-201* (ENSMUST00000029879.14) transcript is recommended as the knockout region. The region contains 547bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nbn* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Homozygous targeted mutations exhibit phenotypes ranging from impaired extraembryonic tissue growth and early embryonic death to growth retardation, lymphoid defects, lymphoma susceptibility, and failure of oogenesis. Null heterozygotes are cancer prone.
- The *Nbn* gene is located on the Chr4. 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)

Nbn nibrin [*Mus musculus* (house mouse)]

Gene ID: 27354, updated on 11-Sep-2019

Summary

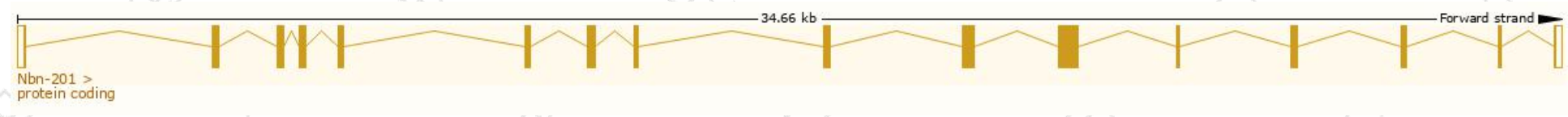
Official Symbol	Nbn provided by MGI
Official Full Name	nibrin provided by MGI
Primary source	MGI:MGI:1351625
See related	Ensembl:ENSMUSG00000028224
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Nbs1
Expression	Ubiquitous expression in bladder adult (RPKM 7.5), CNS E11.5 (RPKM 7.0) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nbn-201	ENSMUST00000029879.14	2533	751aa	Protein coding	CCDS17986	Q9R207	TSL:1 GENCODE basic APPRIS P1
Nbn-202	ENSMUST00000149069.1	1752	548aa	Protein coding	-	A2AMG5	CDS 3' incomplete TSL:1

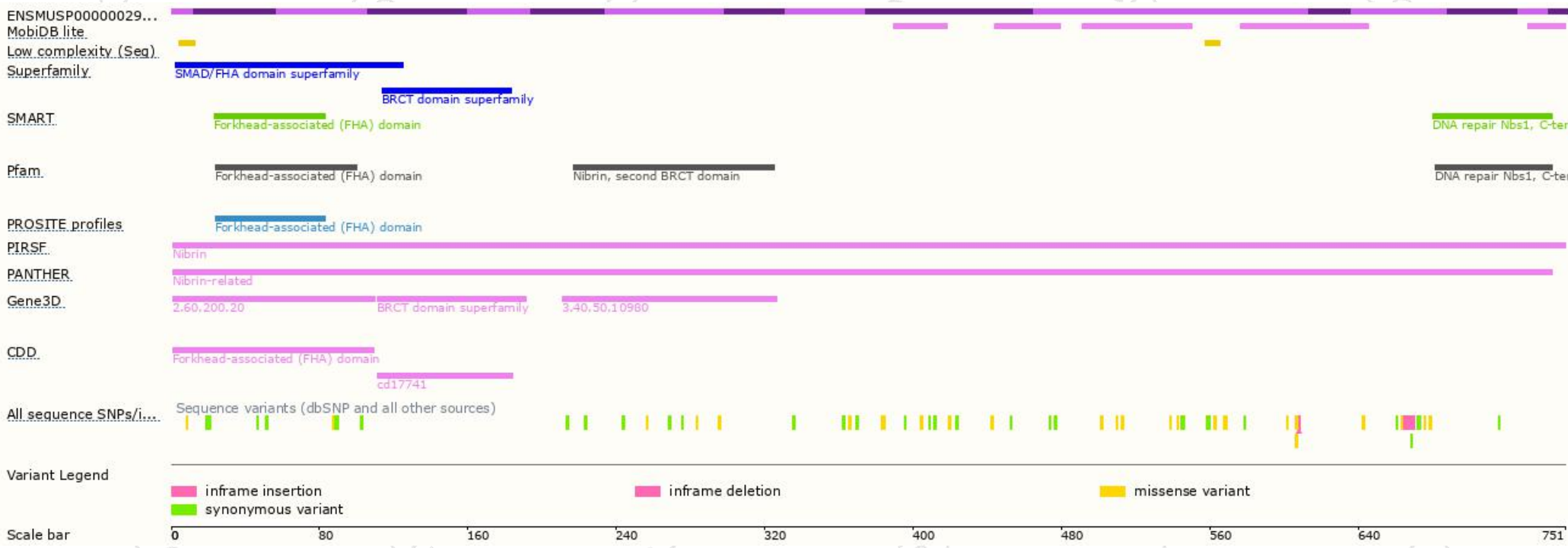
The strategy is based on the design of *Nbn-201* transcript,The transcription is shown below



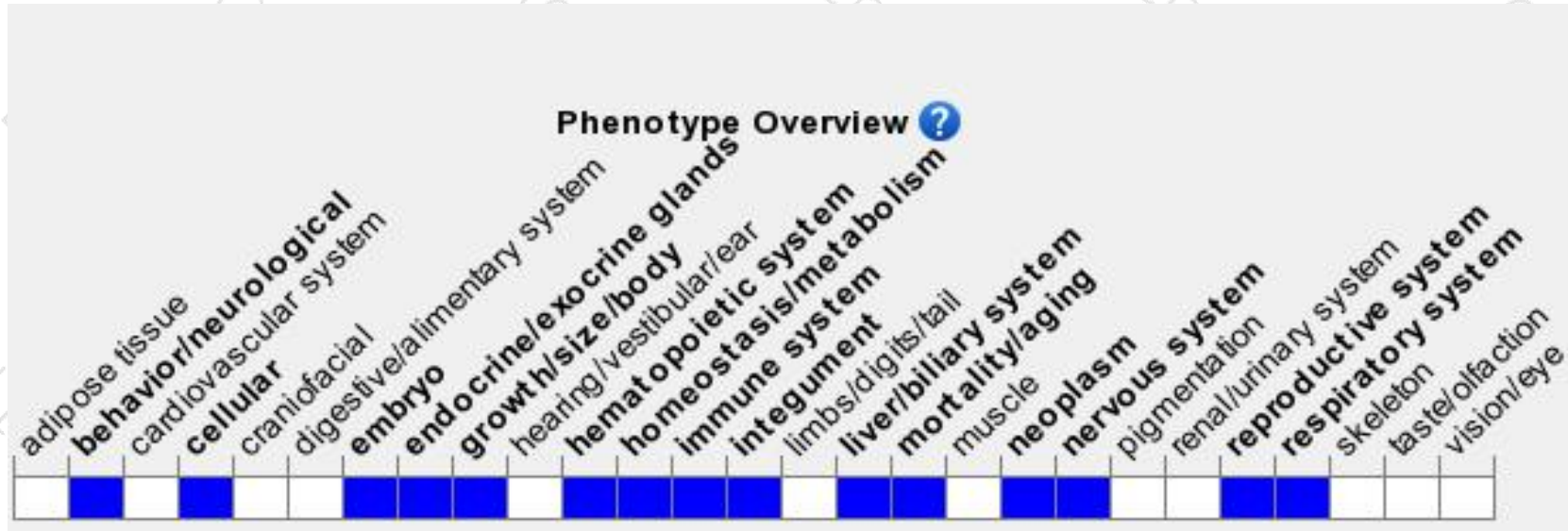
Genomic location distribution



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 targeted mutations exhibit phenotypes ranging from impaired extraembryonic tissue growth and early embryonic death to growth retardation, lymphoid defects, lymphoma susceptibility, and failure of oogenesis. Null heterozygotes are cancer prone.

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

Tel: 400-9660890

