GemPharmatech™

Nup155 Cas9-CKO Strategy

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Design Date: 2023-7-11

Overview

Target Gene Name

- Nup155

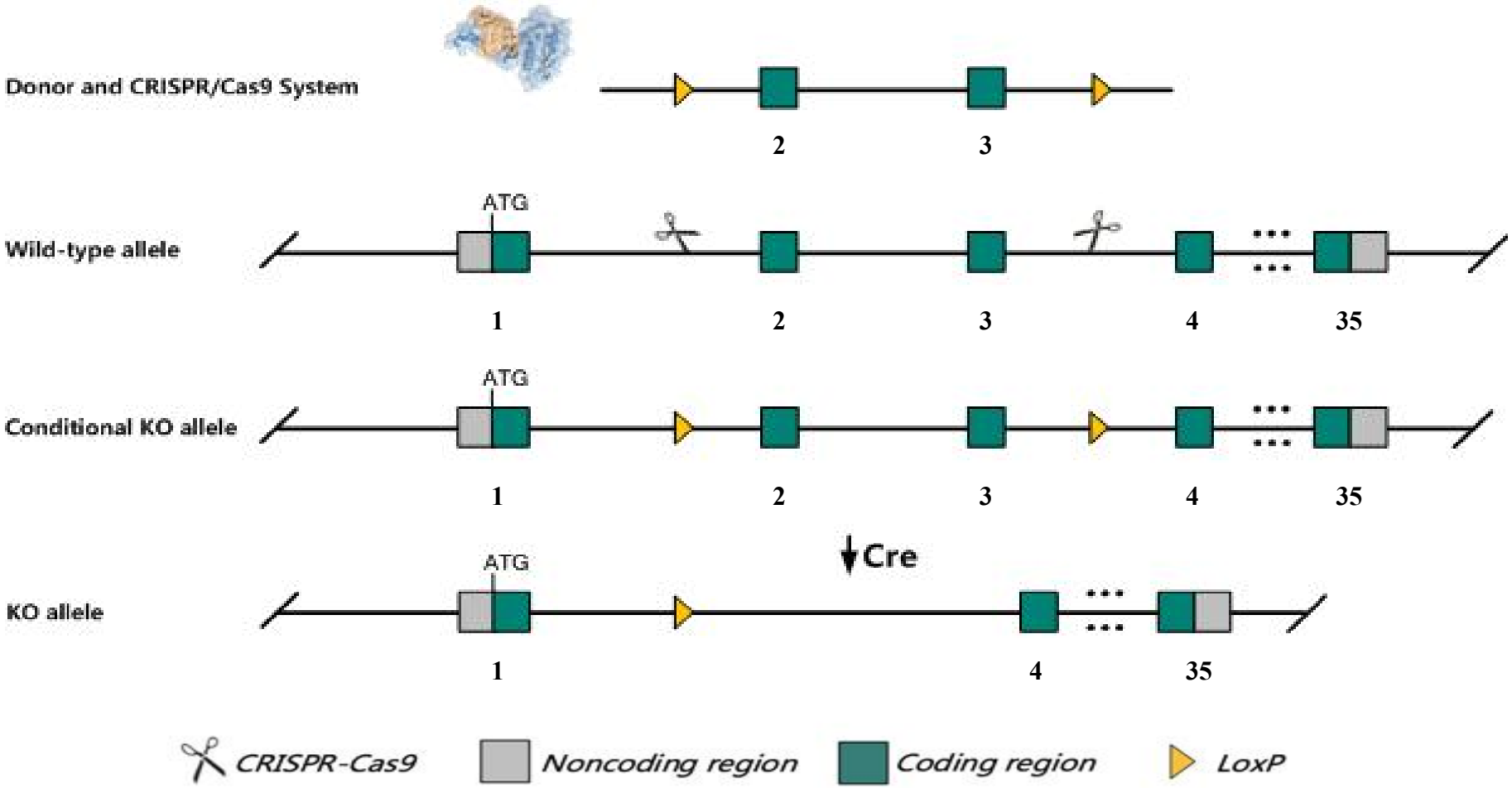
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Nup155* gene.

Technical Information

- The *Nup155* gene has 7 transcripts. According to the structure of *Nup155* gene, exon2-exon3 of *Nup155*-201 (ENSMUST00000163765.3) transcript is recommended as the knockout region. The region contains 235bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Nup155* 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- 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.

Gene Information

Nup155 nucleoporin 155 [Mus musculus (house mouse)]

Gene ID: 170762, updated on 19-Mar-2019

Summary

Official Symbol	Nup155 provided by MGI
Official Full Name	nucleoporin 155 provided by MGI
Primary source	MGI:MGI:2181182
See related	Ensembl:ENSMUSG00000022142
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	D930027M19Rik, mKIAA0791
Expression	Ubiquitous expression in CNS E11.5 (RPKM 11.0), limb E14.5 (RPKM 8.9) and 26 other tissues See more
Orthologs	human all

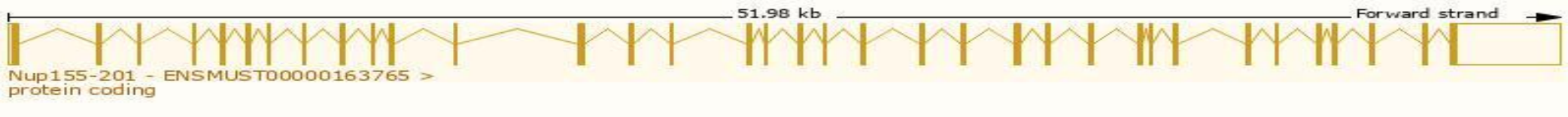
Source: https://www.ncbi.nlm.nih.gov/

Transcript Information

The gene has 7 transcripts,all transcripts are shown below:

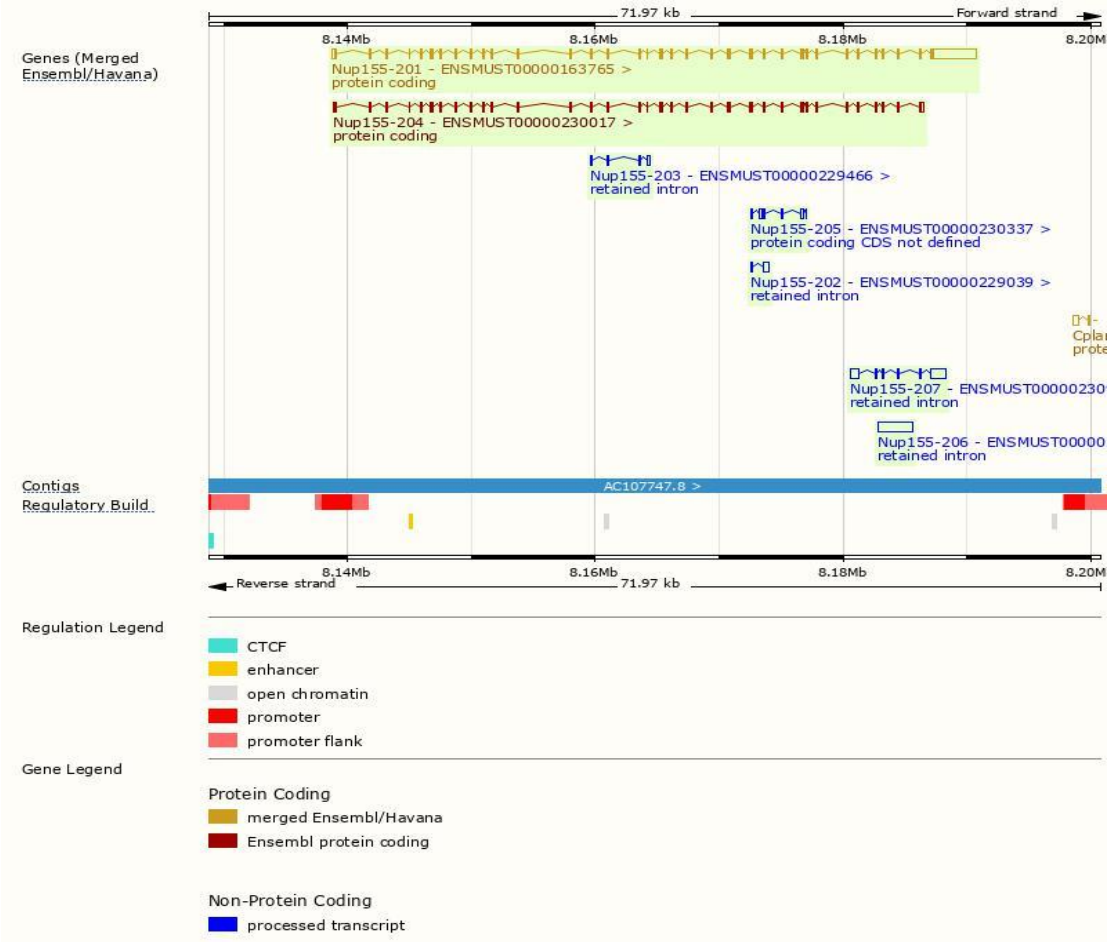
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nup155-201	ENSMUST00000163765.2	7832	1391aa	Protein coding	CCDS37034	Q99P88	TSL:1 GENCODE basic APPRIS P1
Nup155-204	ENSMUST00000230017.1	4391	1346aa	Protein coding	-	A0A2R8VHH1	GENCODE basic
Nup155-206	ENSMUST00000230647.1	2730	No protein	Retained intron	-	-	
Nup155-207	ENSMUST00000230925.1	2419	No protein	Retained intron	-	-	
Nup155-203	ENSMUST00000229466.1	594	No protein	Retained intron	-	-	
Nup155-202	ENSMUST00000229039.1	558	No protein	Retained intron	-	-	
Nup155-205	ENSMUST00000230337.1	762	No protein	lncRNA	-	-	

The strategy is based on the design of *Nup155*-201 transcript, the transcription is shown below:



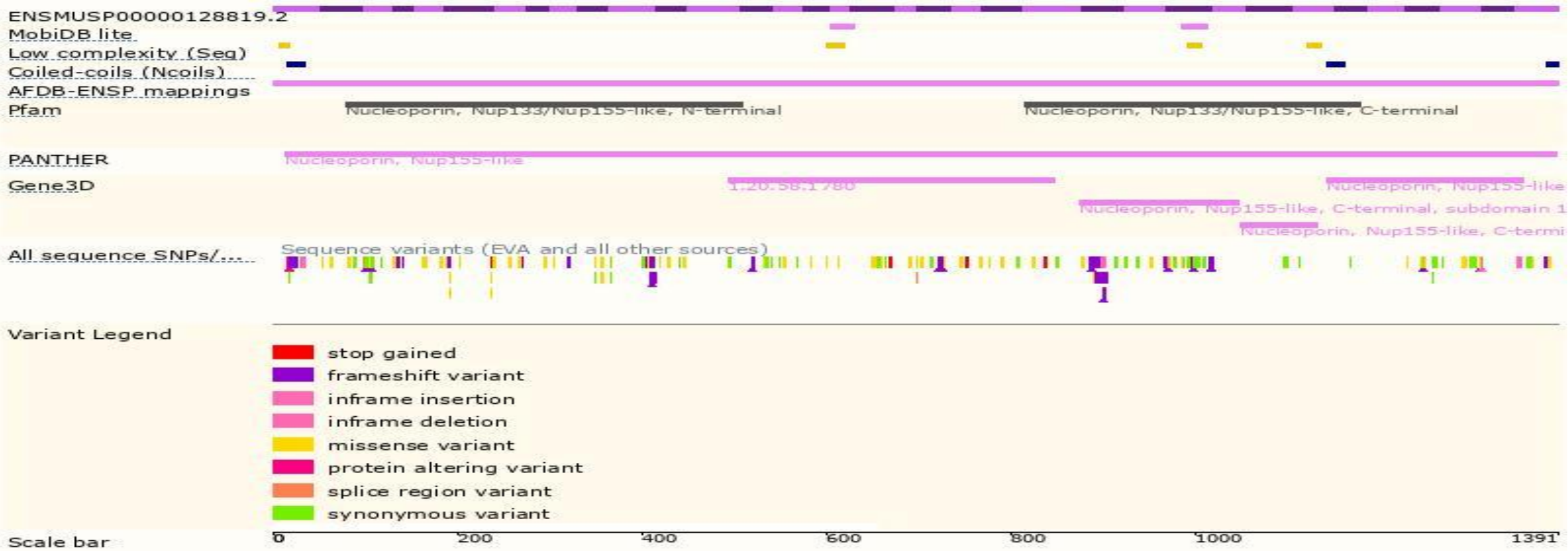
Source: https://www.ensembl.org

Genomic Information



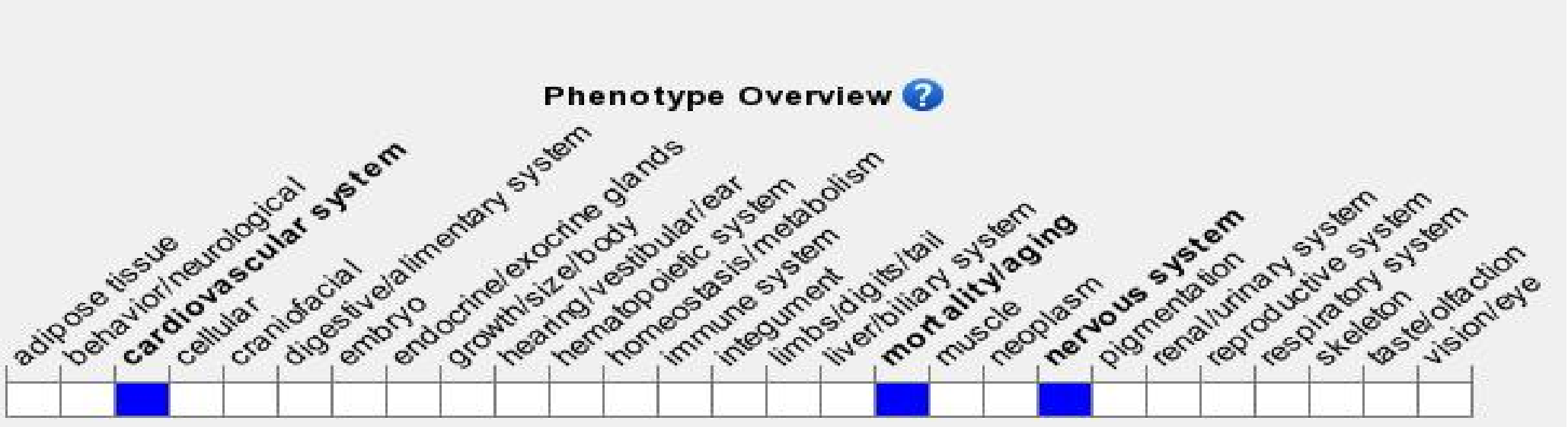
Source: : https://www.ensembl.org

Protein Information



Source: : https://www.ensembl.org

Mouse Phenotype Information (MGI)



- Mice homozygous for a gene trap allele die prior to E8.5. Mice homozygous for a gene trap allele exhibit atria fibrillation associated with shortened action potential duration.

Source: https://www.informatics.jax.org

Important Information

- *Nup155* is located on Chr15. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 the existing technology level.