

Nsmce2 Cas9-CKO Strategy

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Project Overview

Project Name

Nsmce2

Project type

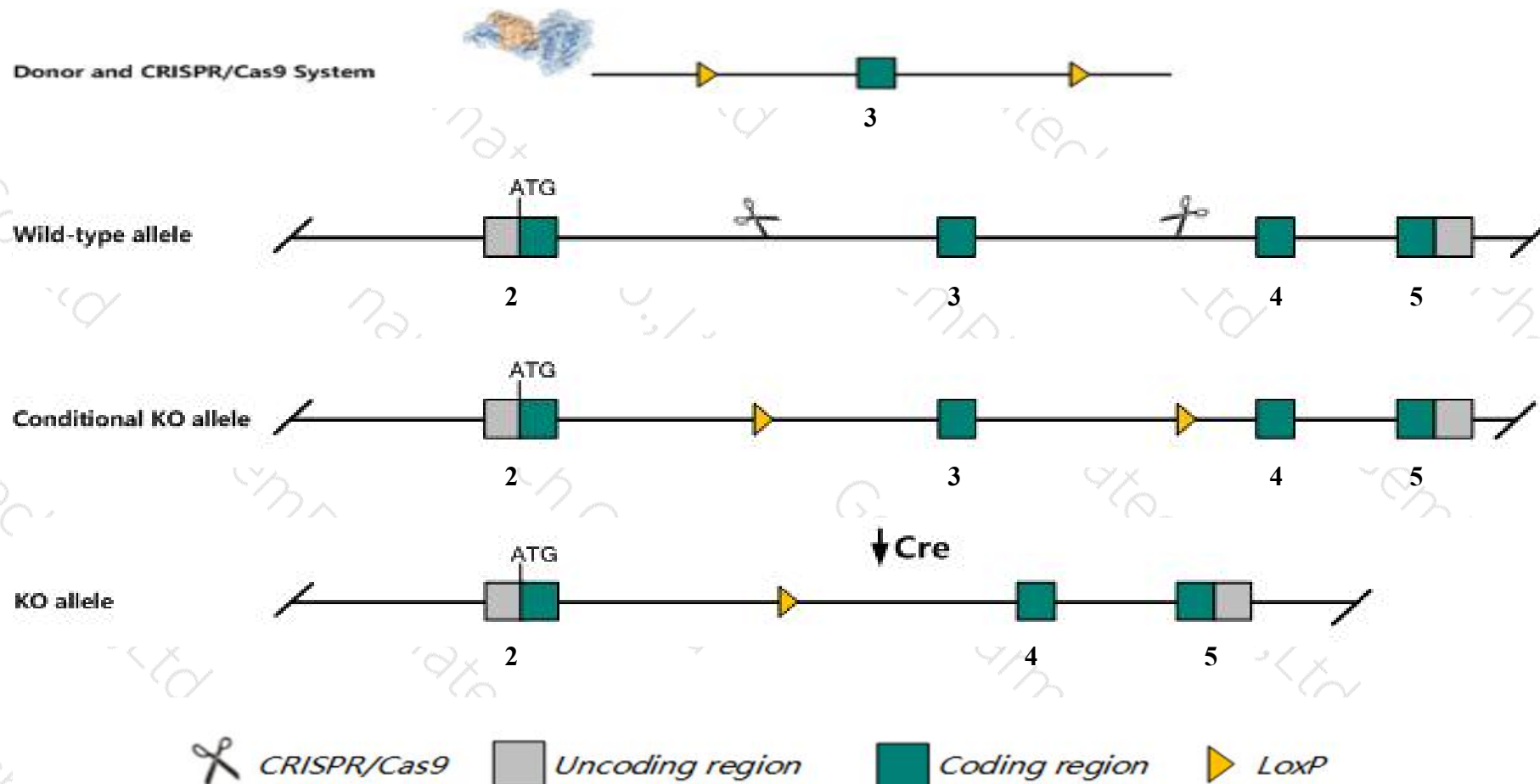
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nsmce2* gene. The schematic diagram is as follows:



- The *Nsmce2* gene has 3 transcripts. According to the structure of *Nsmce2* gene, exon3 of *Nsmce2-202* (ENSMUST00000168722.2) transcript is recommended as the knockout region. The region contains 107bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nsmce2* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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, Mice homozygous for a null allele display early embryonic lethality. Heterozygous null mice display reduced lifespans with increased tumor formation. Homozygous and heterozygous null mice display impaired mitotic segregation and elevated mitotic recombination.
- The *Nsmce2* gene is located on the Chr15. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Nsmce2 NSE2/MMS21 homolog, SMC5-SMC6 complex SUMO ligase [Mus musculus (house mouse)]

Gene ID: 68501, updated on 31-Jan-2019

Summary



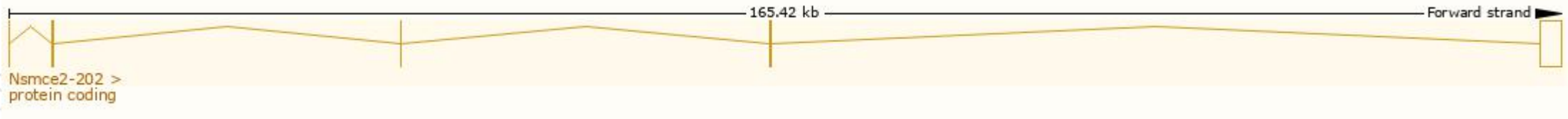
Official Symbol	Nsmce2 provided by MGI
Official Full Name	NSE2/MMS21 homolog, SMC5-SMC6 complex SUMO ligase provided by MGI
Primary source	MGI:MGI:1915751
See related	Ensembl:ENSMUSG00000059586
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110014D18Rik, AI661537
Expression	Ubiquitous expression in CNS E11.5 (RPKM 5.9), placenta adult (RPKM 4.5) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

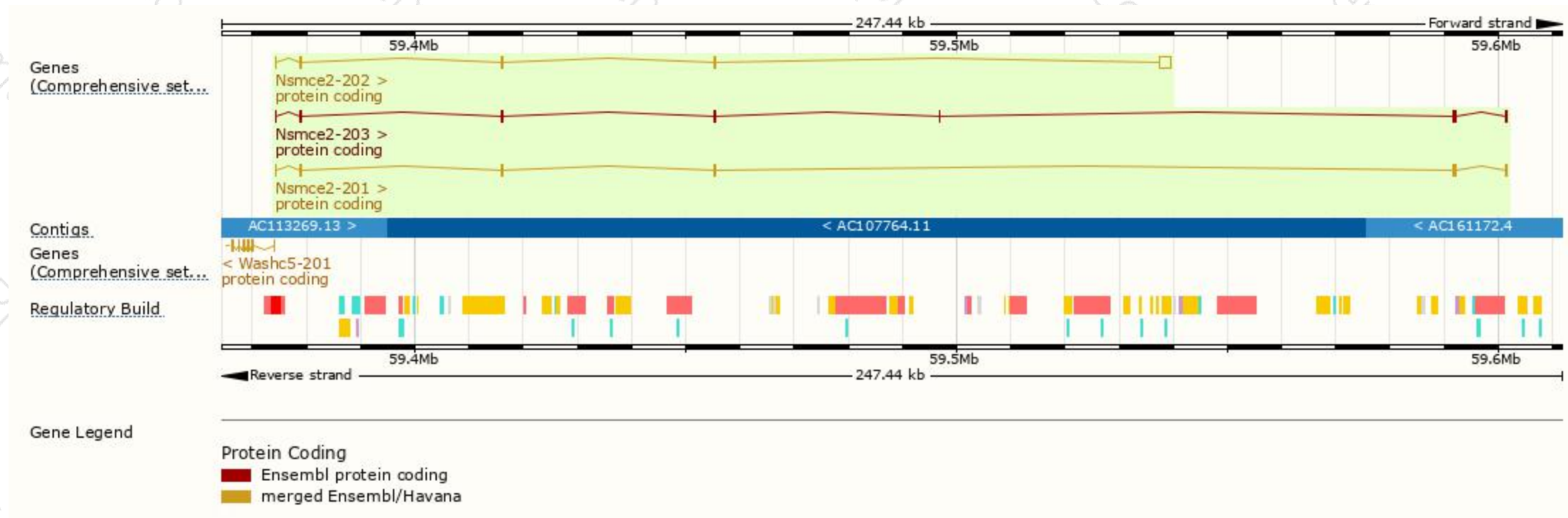
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nsmce2-202	ENSMUST00000168722.2	2679	139aa	Protein coding	CCDS49611	Q91VT1	TSL:1 GENCODE basic
Nsmce2-201	ENSMUST00000079703.10	1054	247aa	Protein coding	CCDS27498	Q91VT1	TSL:1 GENCODE basic APPRIS P1
Nsmce2-203	ENSMUST00000227173.1	1122	273aa	Protein coding	-	A0A2I3BS18	GENCODE basic

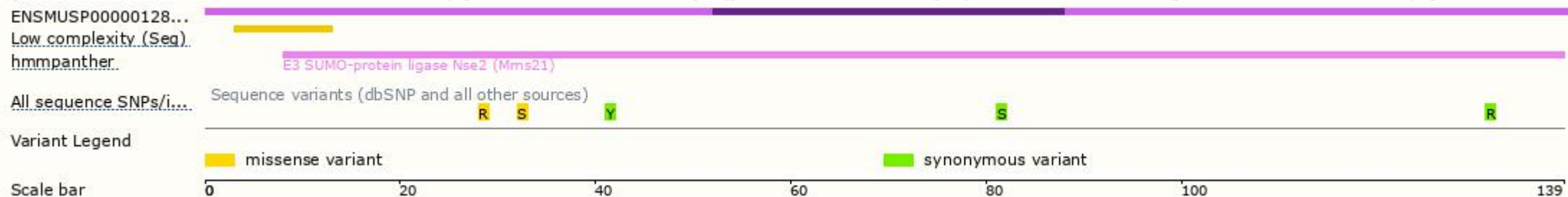
The strategy is based on the design of *Nsmce2-202* transcript, the transcription is shown below



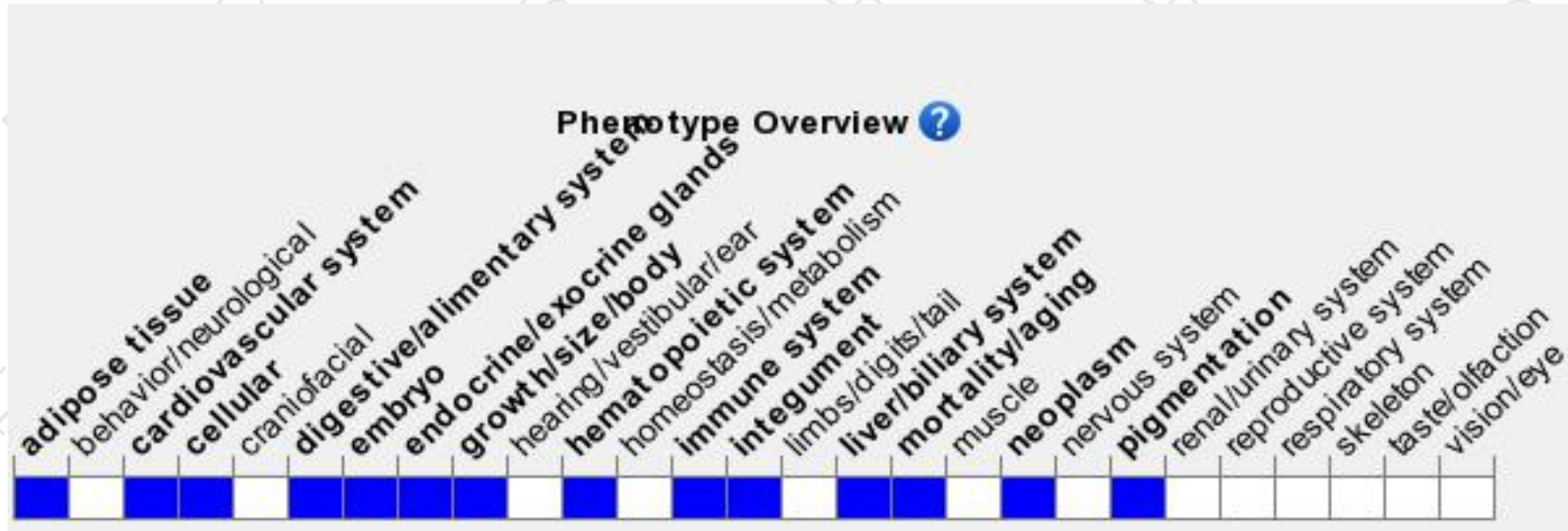
Genomic location distribution



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 null allele display early embryonic lethality. Heterozygous null mice display reduced lifespans with increased tumor formation. Homozygous and heterozygous null mice display impaired mitotic segregation and elevated mitotic recombination.

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

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