

Nacc2 Cas9-CKO Strategy

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Project Overview

Project Name

Nacc2

Project type

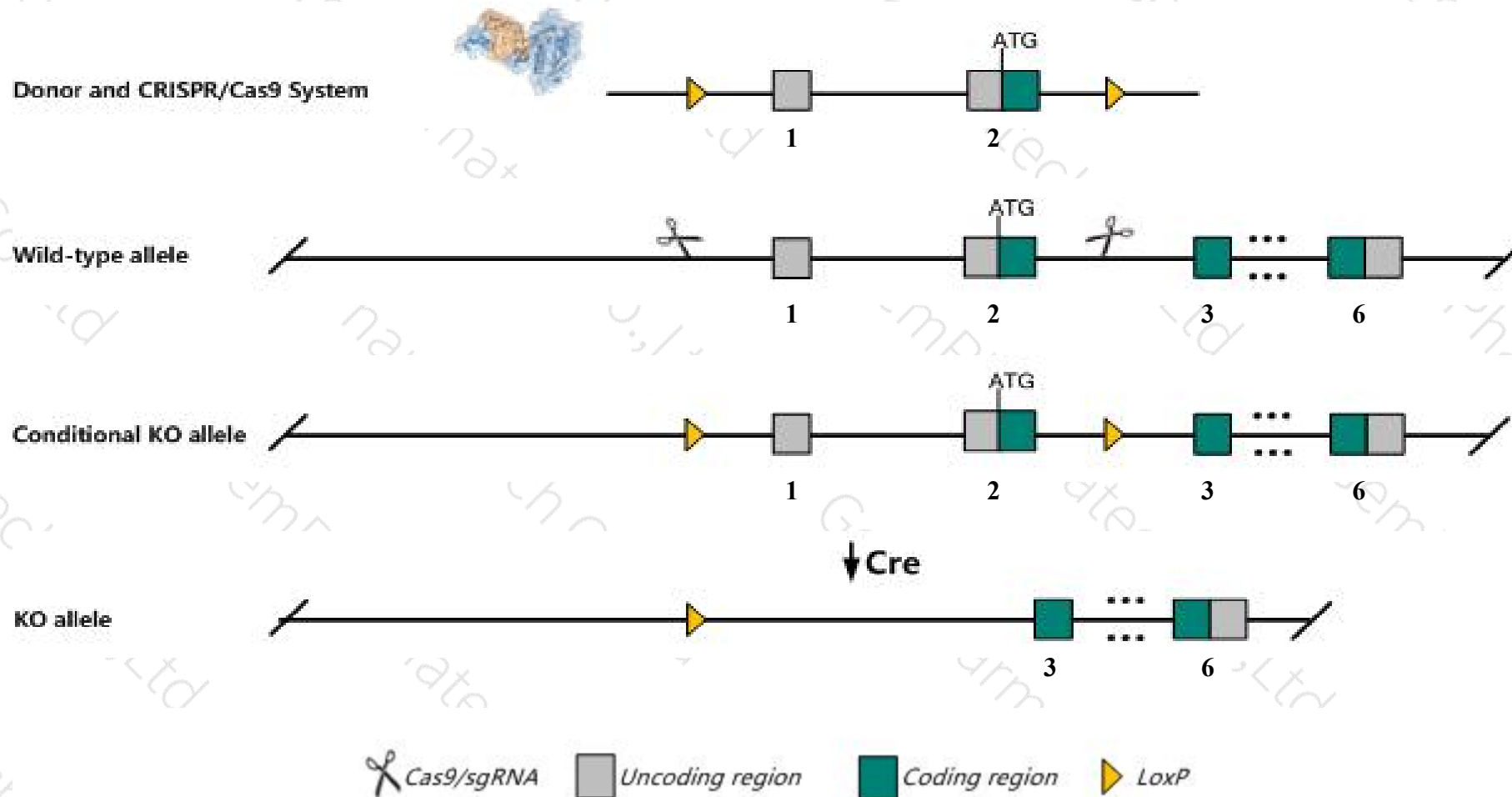
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nacc2* gene. The schematic diagram is as follows:



Technical routes

- The *Nacc2* gene has 8 transcripts. According to the structure of *Nacc2* gene, exon1-exon2 of *Nacc2*-202(ENSMUST00000114159.8) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nacc2* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- Transcript *Nacc2*-203 may not be affected.
- The KO region contains start codon ATG, new protein may be formed.
- The *Nacc2* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Nacc2 nucleus accumbens associated 2, BEN and BTB (POZ) domain containing [*Mus musculus* (house mouse)]

Gene ID: 67991, updated on 25-Sep-2020

Summary



Official Symbol	Nacc2 provided by MGI
Official Full Name	nucleus accumbens associated 2, BEN and BTB (POZ) domain containing provided by MGI
Primary source	MGI:MGI:1915241
See related	Ensembl:ENSMUSG00000026932
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	Btbd14; Btbd14a; AI448087; 0610020I02Rik; C030048H19Rik
Expression	Ubiquitous expression in cerebellum adult (RPKM 26.3), bladder adult (RPKM 17.2) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

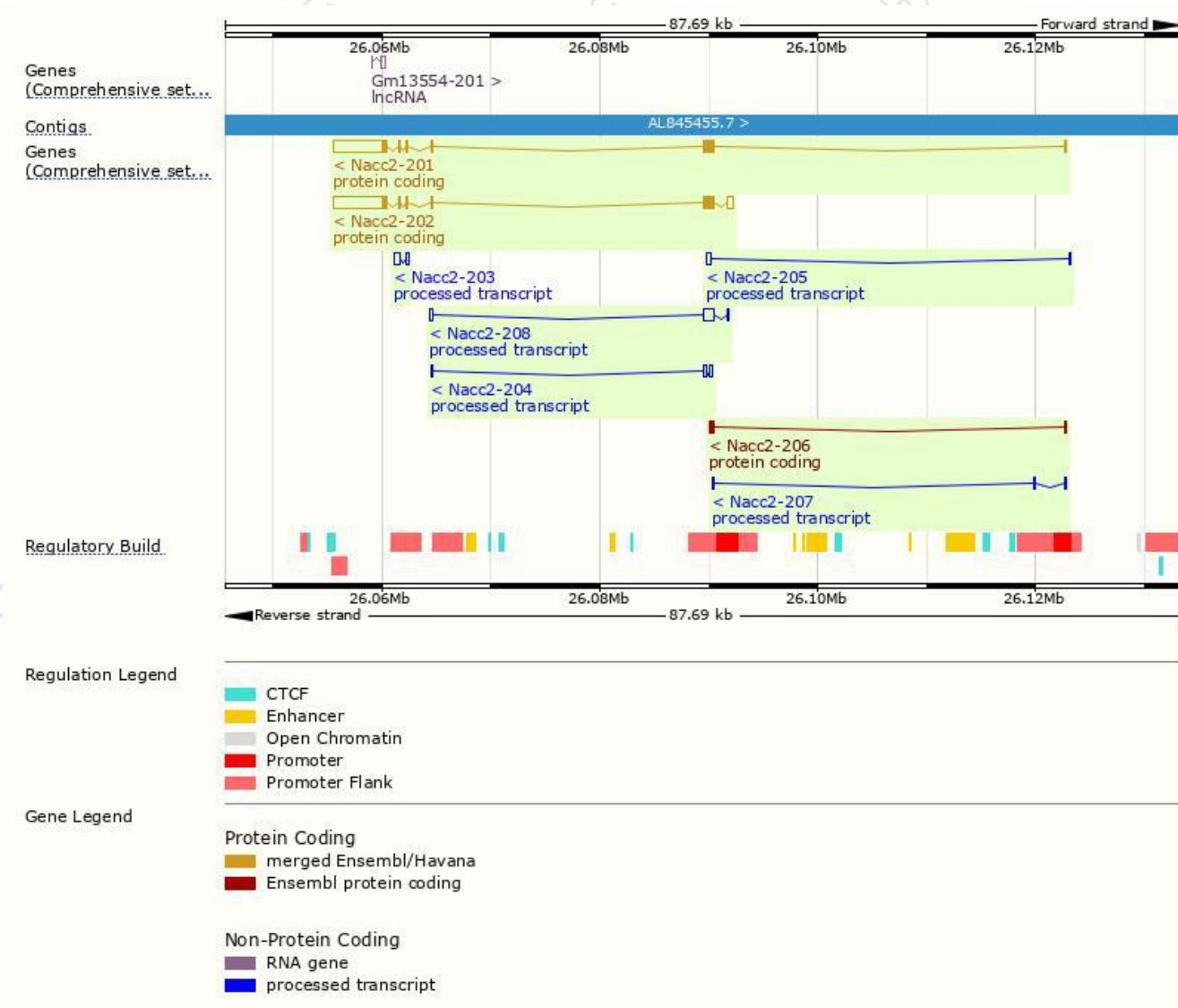
The gene has 8 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nacc2-202	ENSMUST00000114159.8	6675	586aa	Protein coding	CCDS15796	Q9DCM7	TSL:1 GENCODE basic APPRIS P1
Nacc2-201	ENSMUST0000028300.5	6378	586aa	Protein coding	CCDS15796	Q9DCM7	TSL:1 GENCODE basic APPRIS P1
Nacc2-206	ENSMUST00000140993.1	411	85aa	Protein coding	-	A2ARL3	CDS 3' incomplete TSL:2
Nacc2-208	ENSMUST00000152133.1	1258	No protein	Processed transcript	-	-	TSL:1
Nacc2-203	ENSMUST00000126921.1	906	No protein	Processed transcript	-	-	TSL:5
Nacc2-204	ENSMUST00000128674.1	628	No protein	Processed transcript	-	-	TSL:5
Nacc2-205	ENSMUST00000133212.1	482	No protein	Processed transcript	-	-	TSL:3
Nacc2-207	ENSMUST00000149408.1	351	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Nacc2-202* transcript, the transcription is shown below:



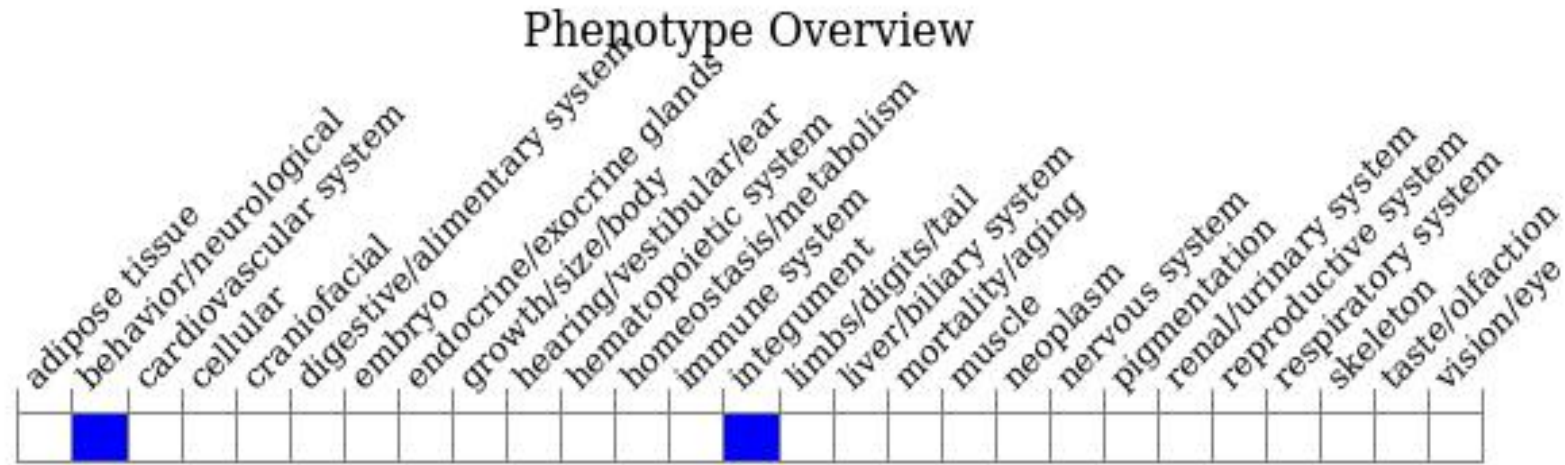
Genomic location distribution



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/>).

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

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