

Adarb2 Cas9-CKO Strategy

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Project Overview

Project Name

Adarb2

Project type

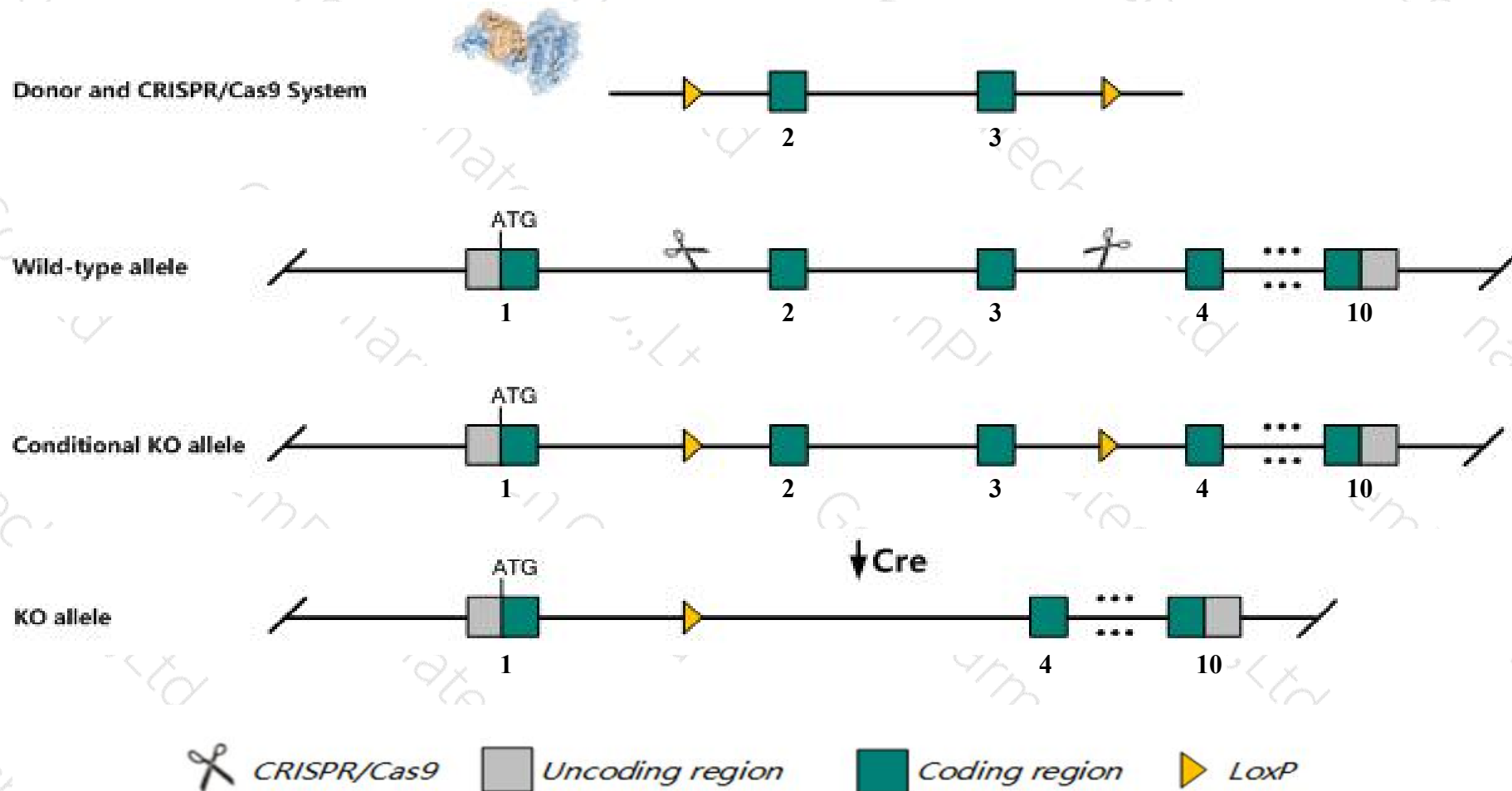
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adarb2* gene. The schematic diagram is as follows:



- The *Adarb2* gene has 6 transcripts. According to the structure of *Adarb2* gene, exon2-exon3 of *Adarb2-201* (ENSMUST00000064473.12) transcript is recommended as the knockout region. The region contains 995bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adarb2* 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 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 knock-out allele exhibit increased anxiety-related behavior and impaired contextual learning and memory.
- The *Adarb2* gene is located on the Chr13. 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)

Adarb2 adenosine deaminase, RNA-specific, B2 [Mus musculus (house mouse)]

Gene ID: 94191, updated on 31-Jan-2019

Summary



Official Symbol	Adarb2 provided by MGI
Official Full Name	adenosine deaminase, RNA-specific, B2 provided by MGI
Primary source	MGI:MGI:2151118
See related	Ensembl:ENSMUSG00000052551
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	Adar3, RED2
Expression	Biased expression in frontal lobe adult (RPKM 3.3), CNS E18 (RPKM 2.8) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

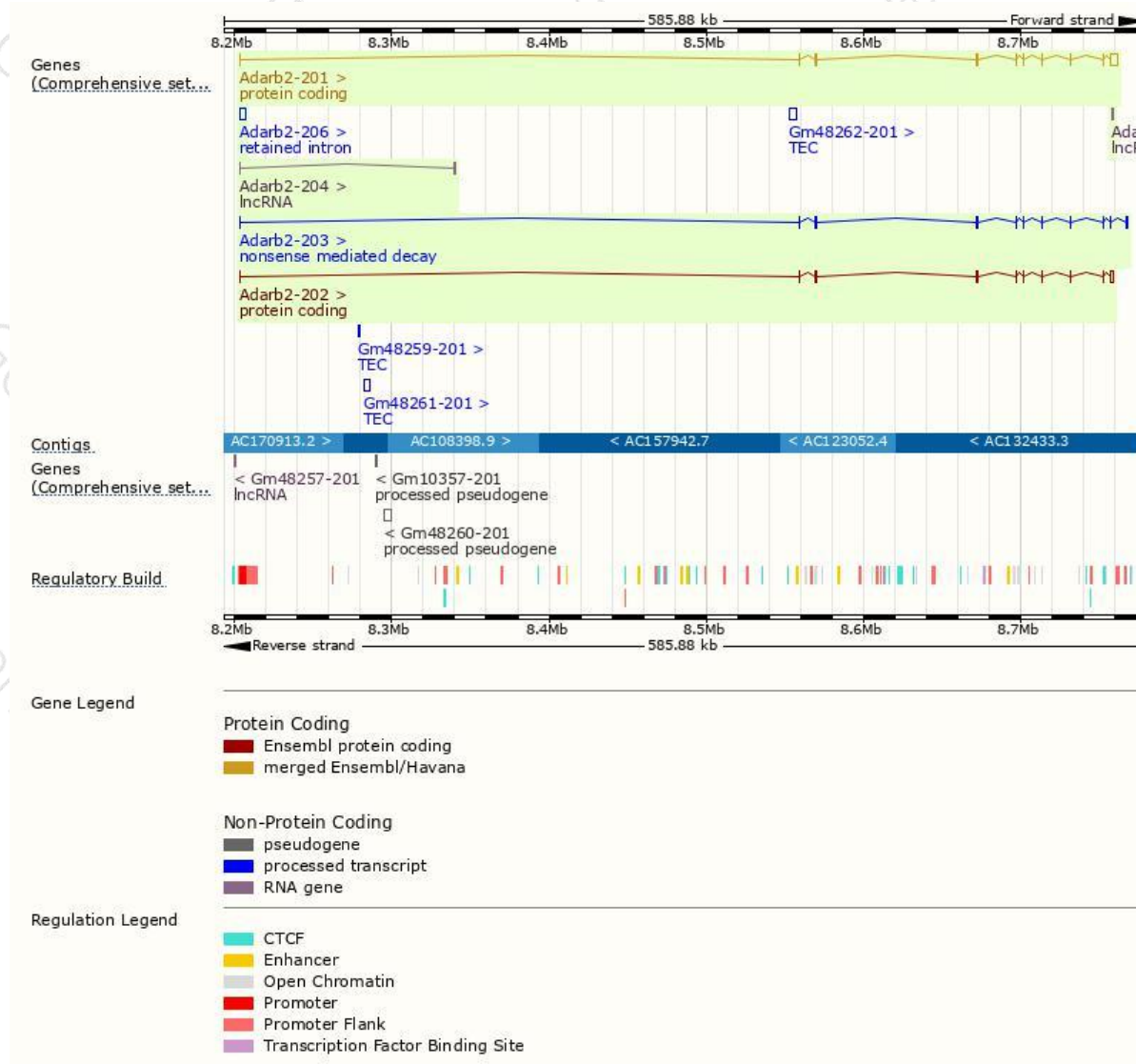
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adarb2-201	ENSMUST00000064473.12	6721	745aa	Protein coding	CCDS26231	Q9JI20	TSL:1 GENCODE basic APPRIS P1
Adarb2-202	ENSMUST00000123187.1	4002	701aa	Protein coding	CCDS70428	Q6PB89	TSL:1 GENCODE basic
Adarb2-203	ENSMUST00000135574.7	4318	745aa	Nonsense mediated decay	CCDS26231	Q9JI20	TSL:5
Adarb2-206	ENSMUST00000223223.1	3887	No protein	Retained intron	-	-	TSL:NA
Adarb2-204	ENSMUST00000139438.1	1659	No protein	lncRNA	-	-	TSL:1
Adarb2-205	ENSMUST00000223148.1	427	No protein	lncRNA	-	-	TSL:5

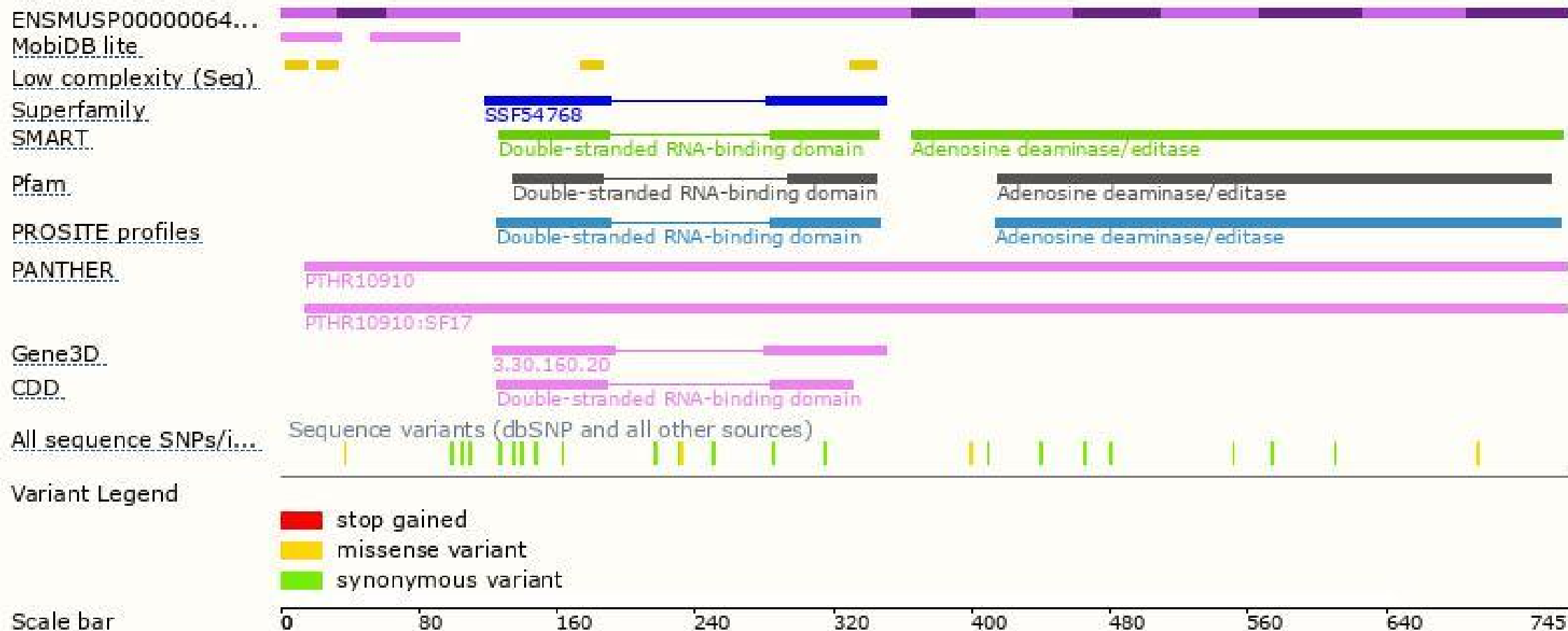
The strategy is based on the design of *Adarb2-201* transcript,The transcription is shown below



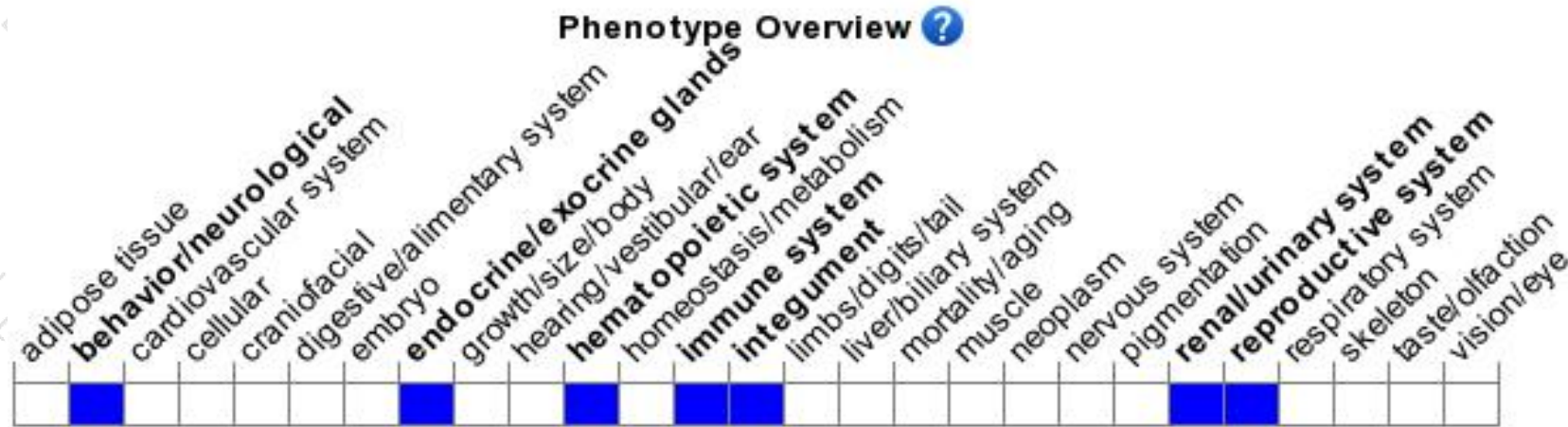
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit increased anxiety-related behavior and impaired contextual learning and memory.

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

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