Rcor2 Cas9-CKO Strategy

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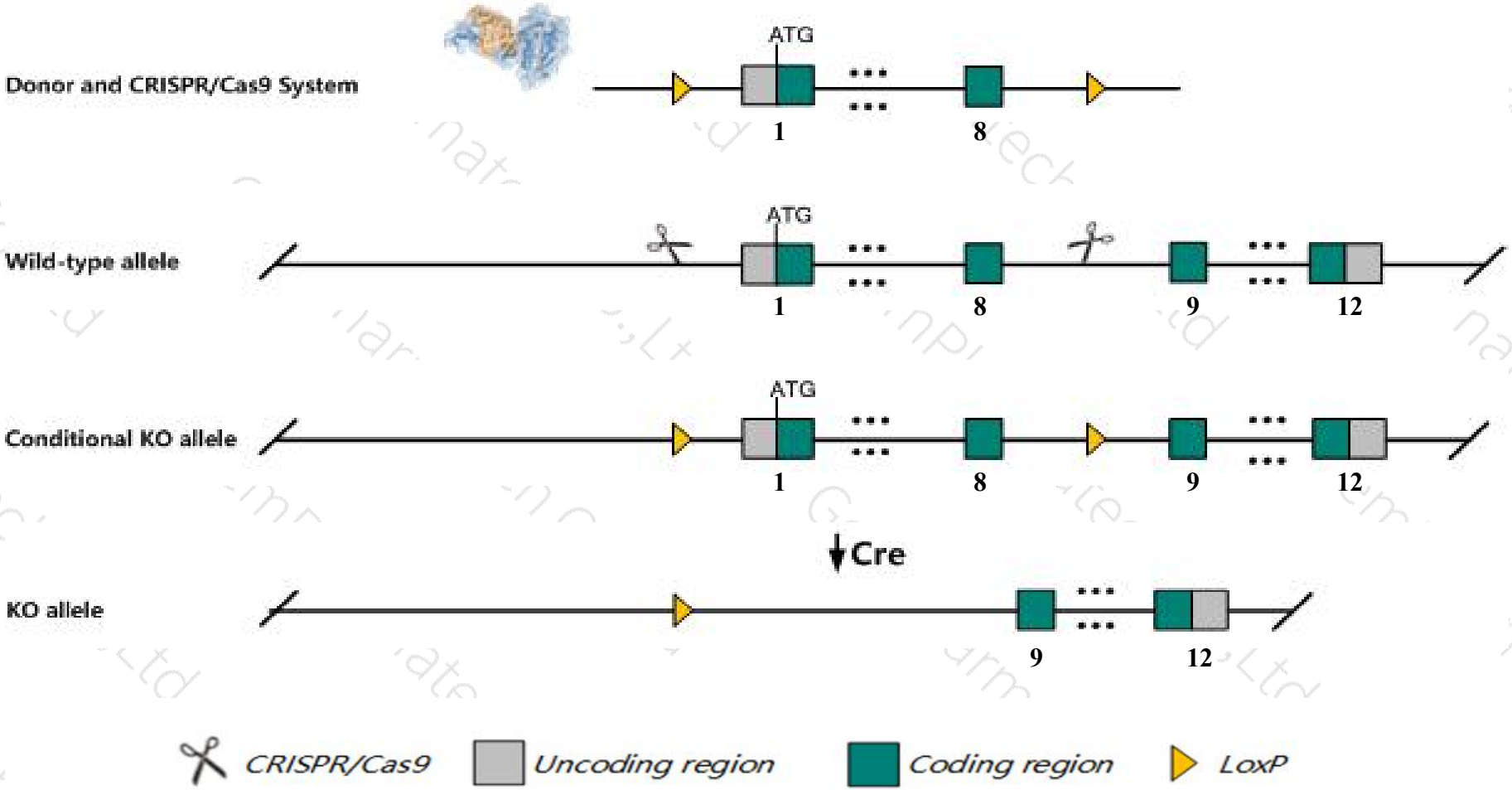
Project Overview

Project Name	***Rcor2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rcor2* gene. The schematic diagram is as follows:



Technical routes

- The *Rcor2* gene has 4 transcripts. According to the structure of *Rcor2* gene, exon1-exon8 of *Rcor2-201* (ENSMUST00000066646.11) 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 *Rcor2* 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.

Notice

- According to the existing MGI data,Mice homozygous for neuronal specific conditional loss of expression display impaired neurogenesis and neuronal precursor cell proliferation resulting in a thin cerebral cortex.

- The *Rcor2* gene is located on the Chr19. 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）

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Rcor2 REST corepressor 2 [*Mus musculus* (house mouse)]

Gene ID: 104383, updated on 5-Jan-2020

Summary

Official Symbol	Rcor2 provided by MGI
Official Full Name	REST corepressor 2 provided by MGI
Primary source	MGI:MGI:1859854
See related	Ensembl:ENSMUSG00000024968
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	1A13; Rcor; Rcor1; CoREST; AW122124
Expression	Biased expression in CNS E11.5 (RPKM 58.1), CNS E14 (RPKM 45.4) and 10 other tissues See more
Orthologs	human all

Genomic context

Location: 19; 19 A

See Rcor2 in Genome Data Viewer

Exon count: 13

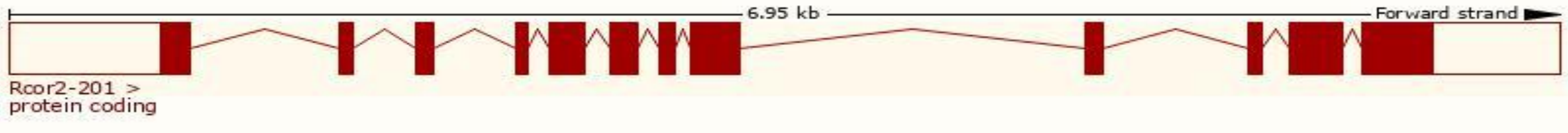
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	19	NC_000085.6 (7267394..7275225)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	19	NC_000085.5 (7344255..7349715)

Transcript information（Ensembl）

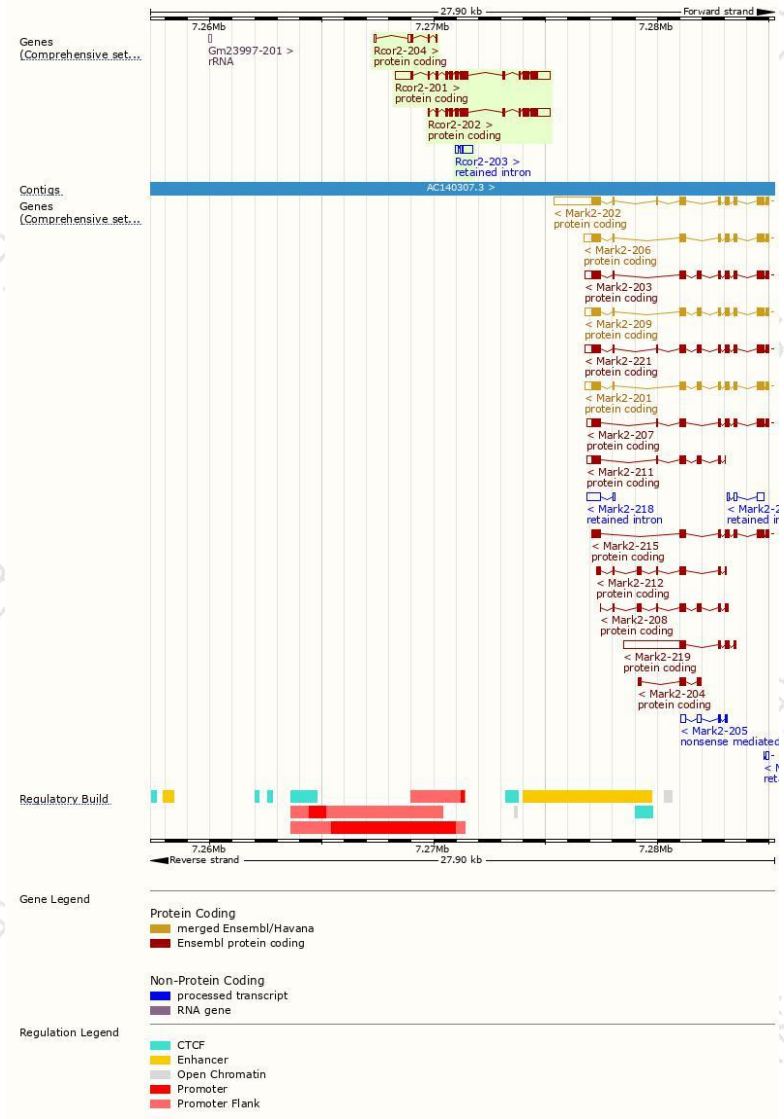
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rcor2-201	ENSMUST00000066646.11	2823	523aa	Protein coding	CCDS29522	Q8C796	TSL:1 GENCODE basic APPRIS P1
Rcor2-202	ENSMUST00000113369.2	2013	479aa	Protein coding	-	A0A0R4J1I0	TSL:1 GENCODE basic
Rcor2-204	ENSMUST00000140442.7	439	76aa	Protein coding	-	D3YUX3	CDS 3' incomplete TSL:3
Rcor2-203	ENSMUST00000134167.1	644	No protein	Retained intron	-	-	TSL:3

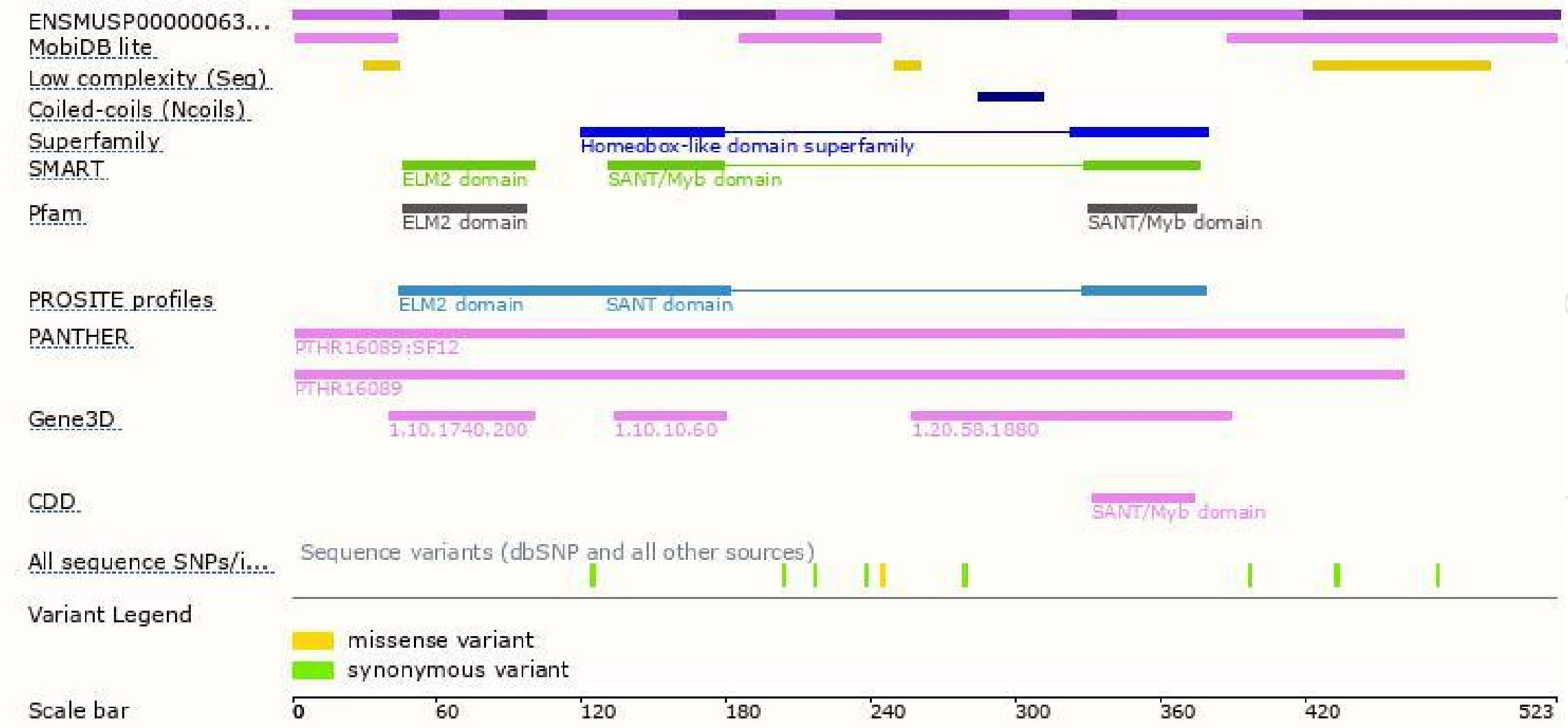
The strategy is based on the design of *Rcor2-201* transcript,The transcription is shown below



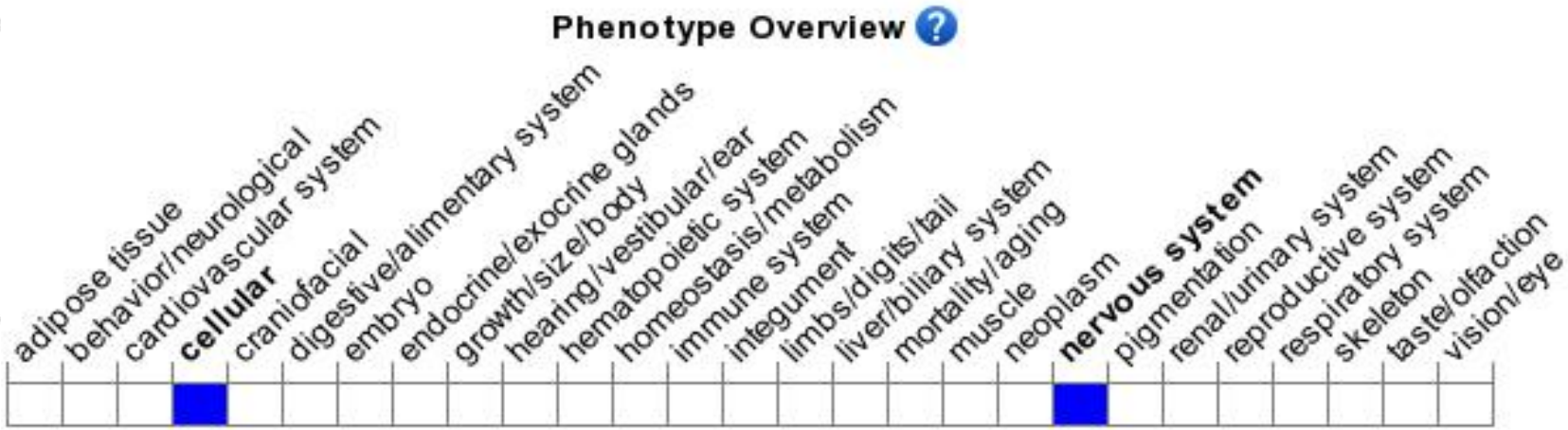
Genomic location distribution



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 neuronal specific conditional loss of expression display impaired neurogenesis and neuronal precursor cell proliferation resulting in a thin cerebral cortex.

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

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