

Colq Cas9-CKO Strategy

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Project Overview

Project Name

Colq

Project type

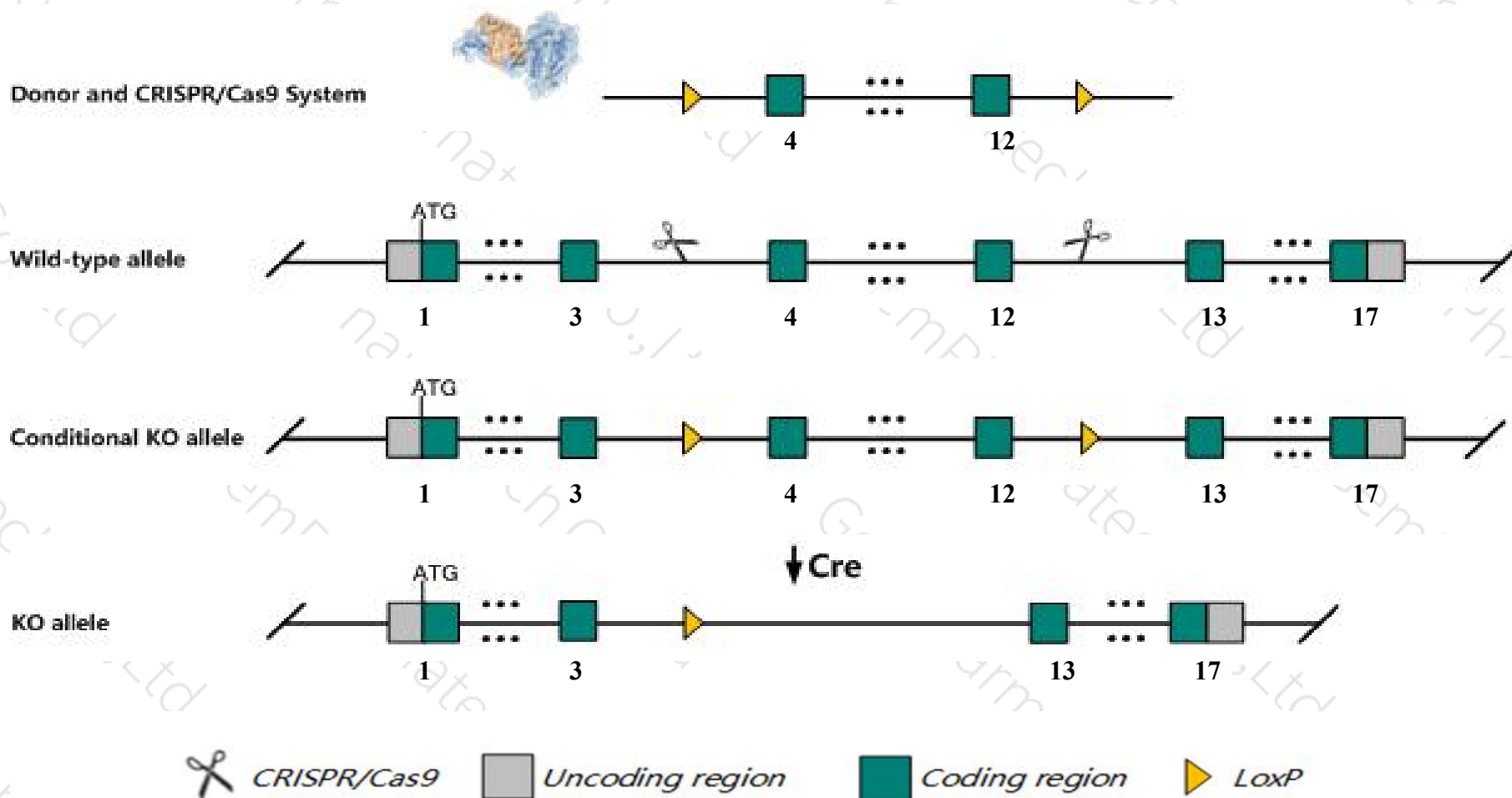
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Colq* gene has 5 transcripts. According to the structure of *Colq* gene, exon4-exon12 of *Colq-201* (ENSMUST00000112027.8) transcript is recommended as the knockout region. The region contains 502bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Colq* 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, homozygotes for targeted null mutations exhibit tremors, reduced body weight, lack of asymmetric forms of acetylcholinesterase and butyrylcholinesterase, and lethality prior to maturation.
- *Gm24057* gene will be deleted.
- The effect on transcript *Colq-202* is unknown.
- Transcript *Colq-203&204* may not be affected.
- The *Colq* gene is located on the Chr14. 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)

Colq collagen-like tail subunit (single strand of homotrimer) of asymmetric acetylcholinesterase [Mus musculus (house mouse)]

Gene ID: 382864, updated on 13-Mar-2020

Summary



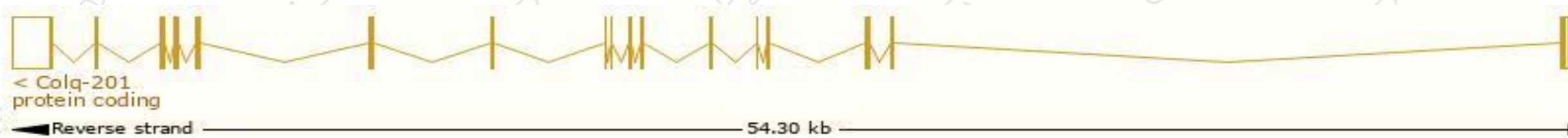
Official Symbol	Colq provided by MGI
Official Full Name	collagen-like tail subunit (single strand of homotrimer) of asymmetric acetylcholinesterase provided by MGI
Primary source	MGI:MGI:1338761
See related	Ensembl:ENSMUSG00000057606
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A130034K24Rik
Expression	Biased expression in thymus adult (RPKM 39.3), lung adult (RPKM 15.6) and 3 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

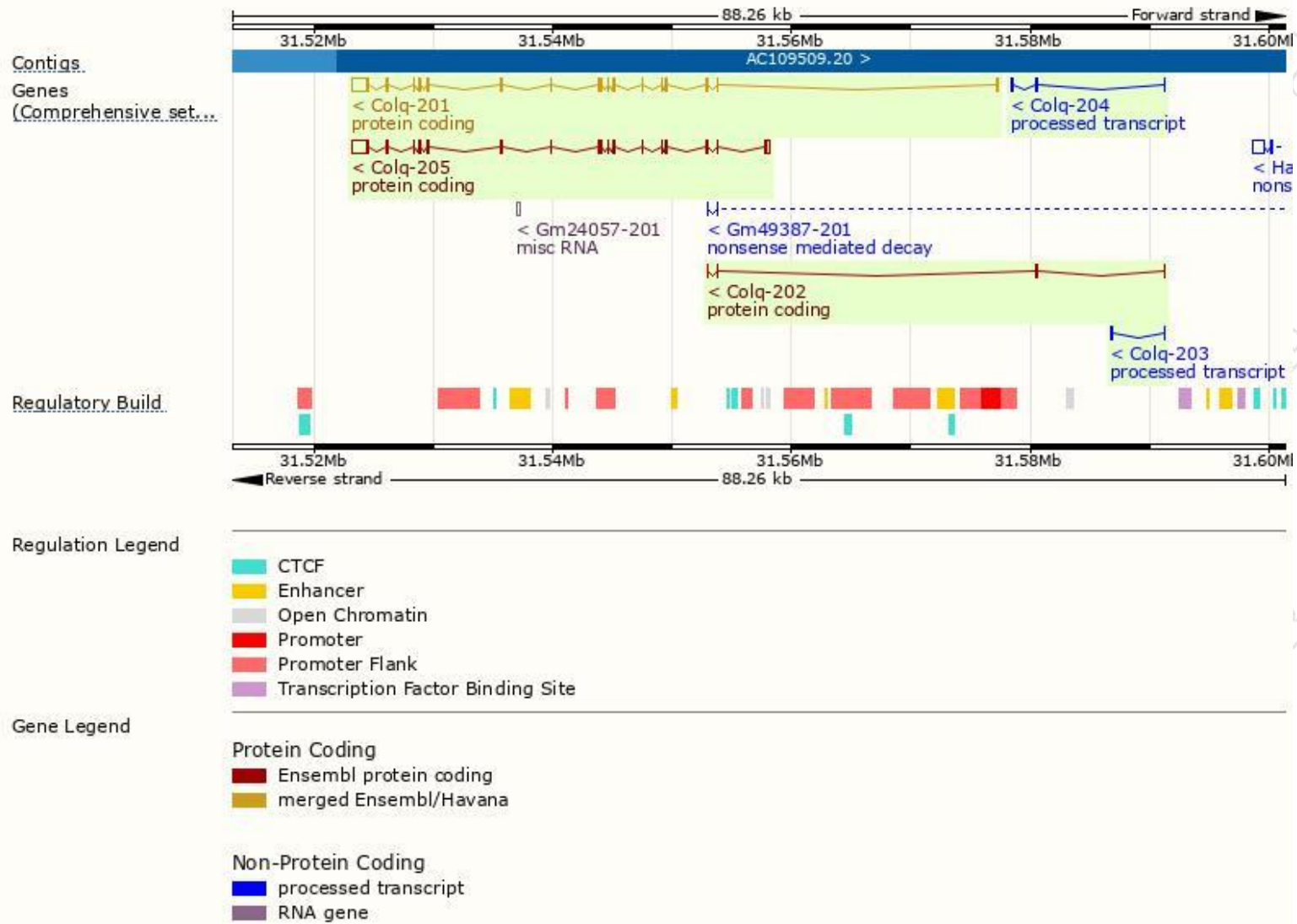
The gene has 5 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Colq-201	ENSMUST00000112027.8	2837	457aa	Protein coding	CCDS36856	O35348	TSL:1 GENCODE basic APPRIS P1
Colq-205	ENSMUST00000150054.1	2867	447aa	Protein coding	-	E9PVR3	TSL:5 GENCODE basic
Colq-202	ENSMUST00000124014.7	428	46aa	Protein coding	-	D3Z1C2	CDS 3' incomplete TSL:3
Colq-204	ENSMUST00000146302.1	444	No protein	Processed transcript	-	-	TSL:3
Colq-203	ENSMUST00000129238.1	198	No protein	Processed transcript	-	-	TSL:3

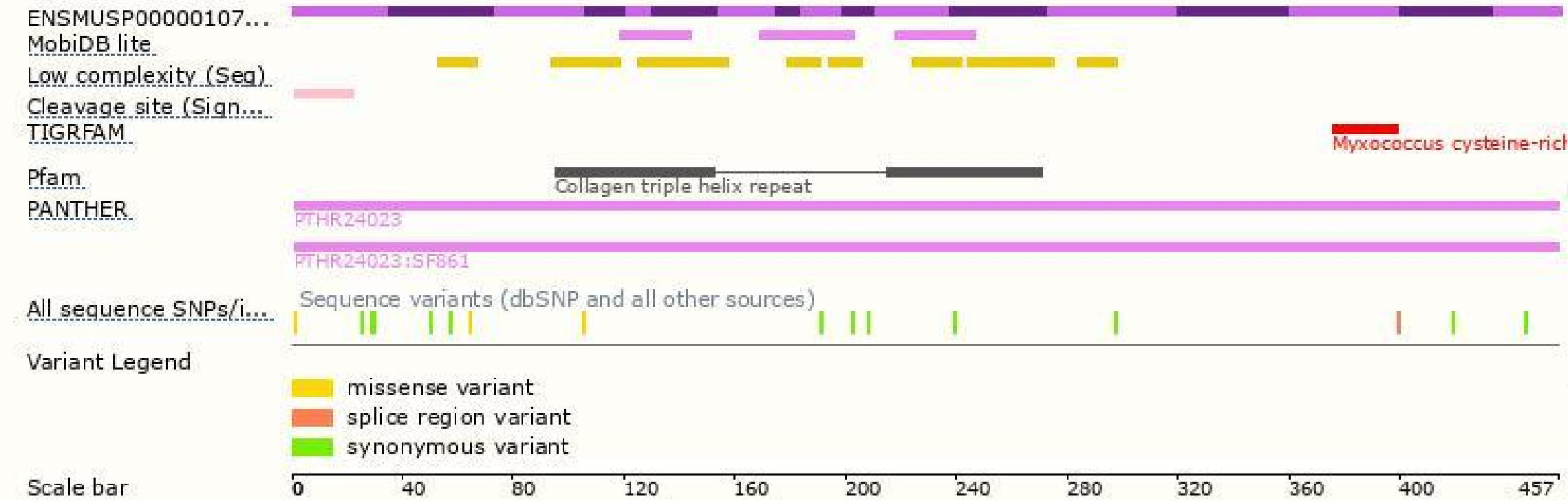
The strategy is based on the design of *Colq-201* transcript, the transcription is shown below:



Genomic location distribution

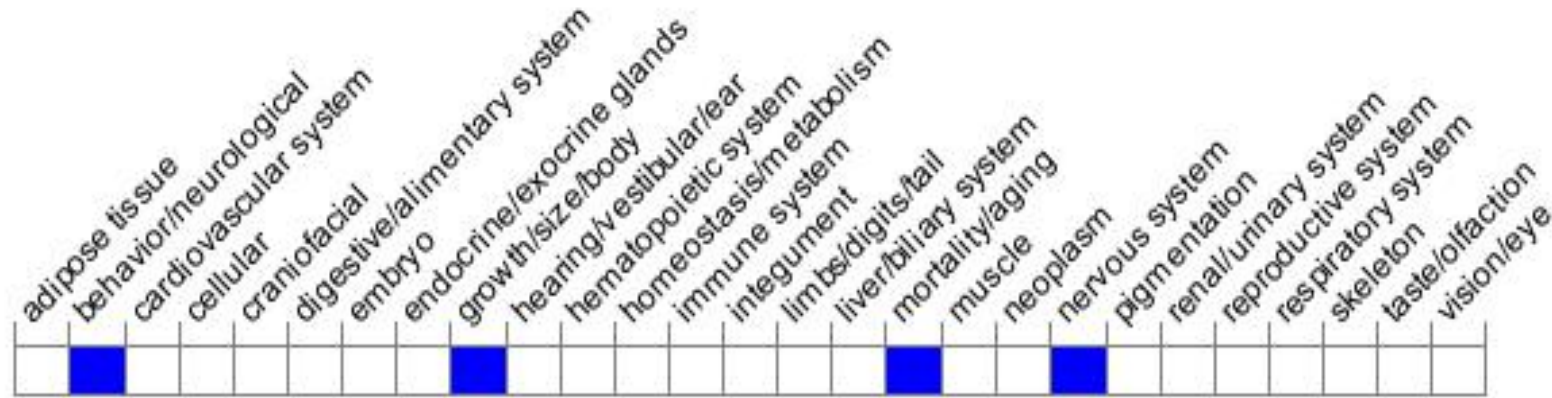


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

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