Apobec2 Cas9-CKO Strategy

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Project Overview

Project Name	***Apobec2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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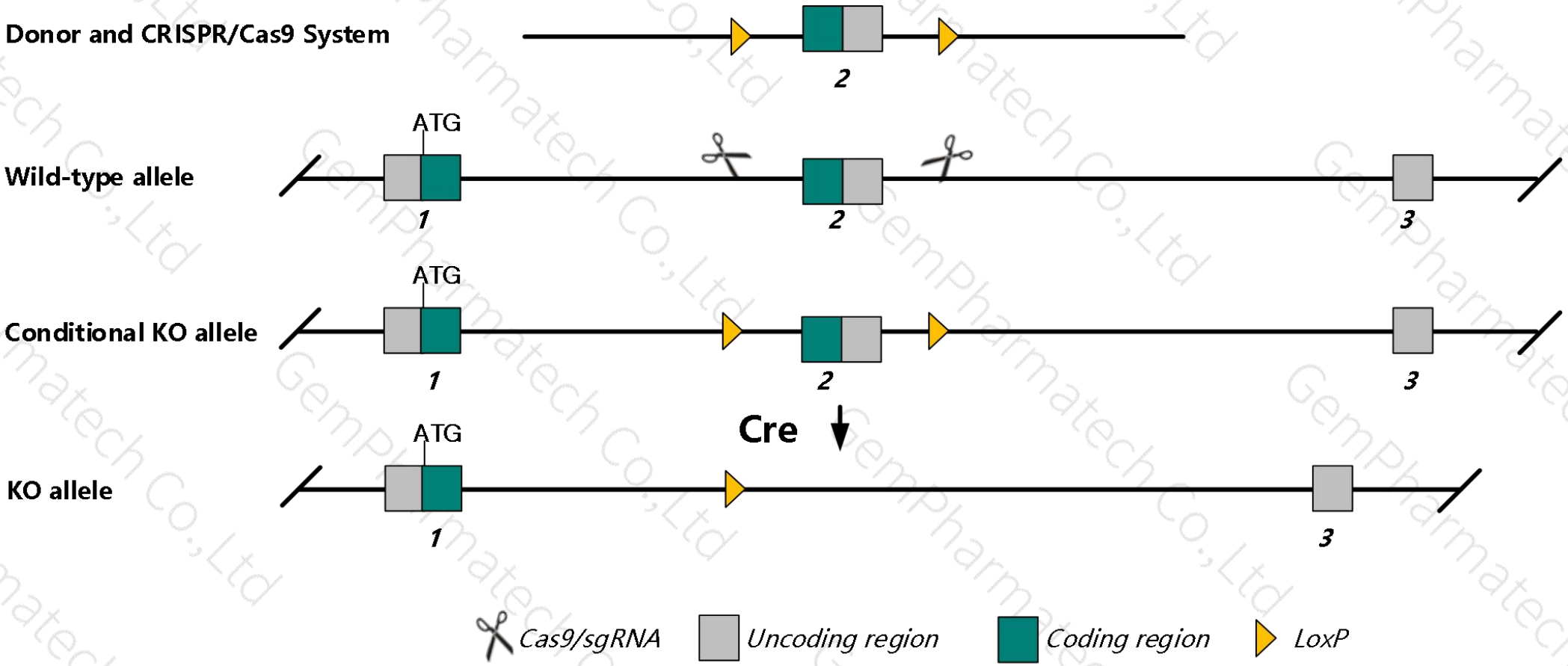
This model will use CRISPR/Cas9 technology to edit the *Apobec2* gene. The schematic diagram is as follows:



Technical routes

- The *Apobec2* gene has 2 transcripts. According to the structure of *Apobec2* gene, exon2 of *Apobec2-201* (ENSMUST00000046549.4) transcript is recommended as the knockout region.The region contains most of coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Apobec2* 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 a gene trapped allele display growth retardation and decreased bone mineralization and density. Mice homozygous for a knockout allele exhibit reduced body mass and a shift in muscle fiber type and develop a mild myopathy as as they age.

➢ The *Apobec2* gene is located on the Chr17. 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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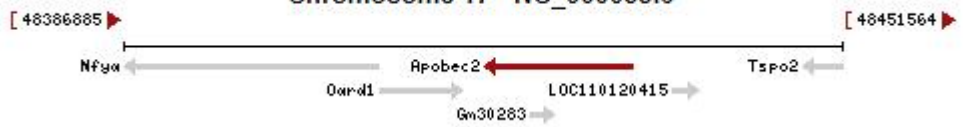
Apobec2 apolipoprotein B mRNA editing enzyme, catalytic polypeptide 2 [*Mus musculus* (house mouse)]

Gene ID: 11811, updated on 12-Aug-2019

Summary

Official Symbol	Apobec2 provided by MGI
Official Full Name	apolipoprotein B mRNA editing enzyme, catalytic polypeptide 2 provided by MGI
Primary source	MGI:MGI:1343178
See related	Ensembl:ENSMUSG00000040694
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	Arp1
Expression	Biased expression in heart adult (RPKM 62.8), mammary gland adult (RPKM 42.7) and 3 other tissues See more
Orthologs	human all

Chromosome 17 - NC_000083.6

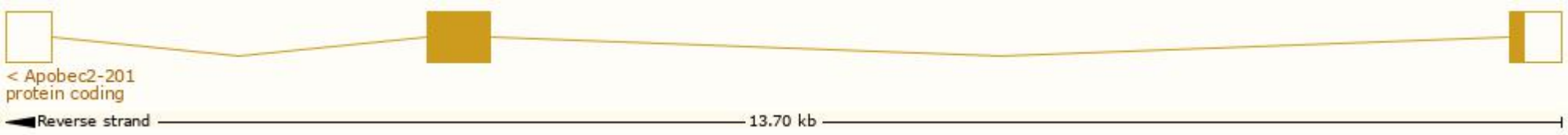


Transcript information（Ensembl）

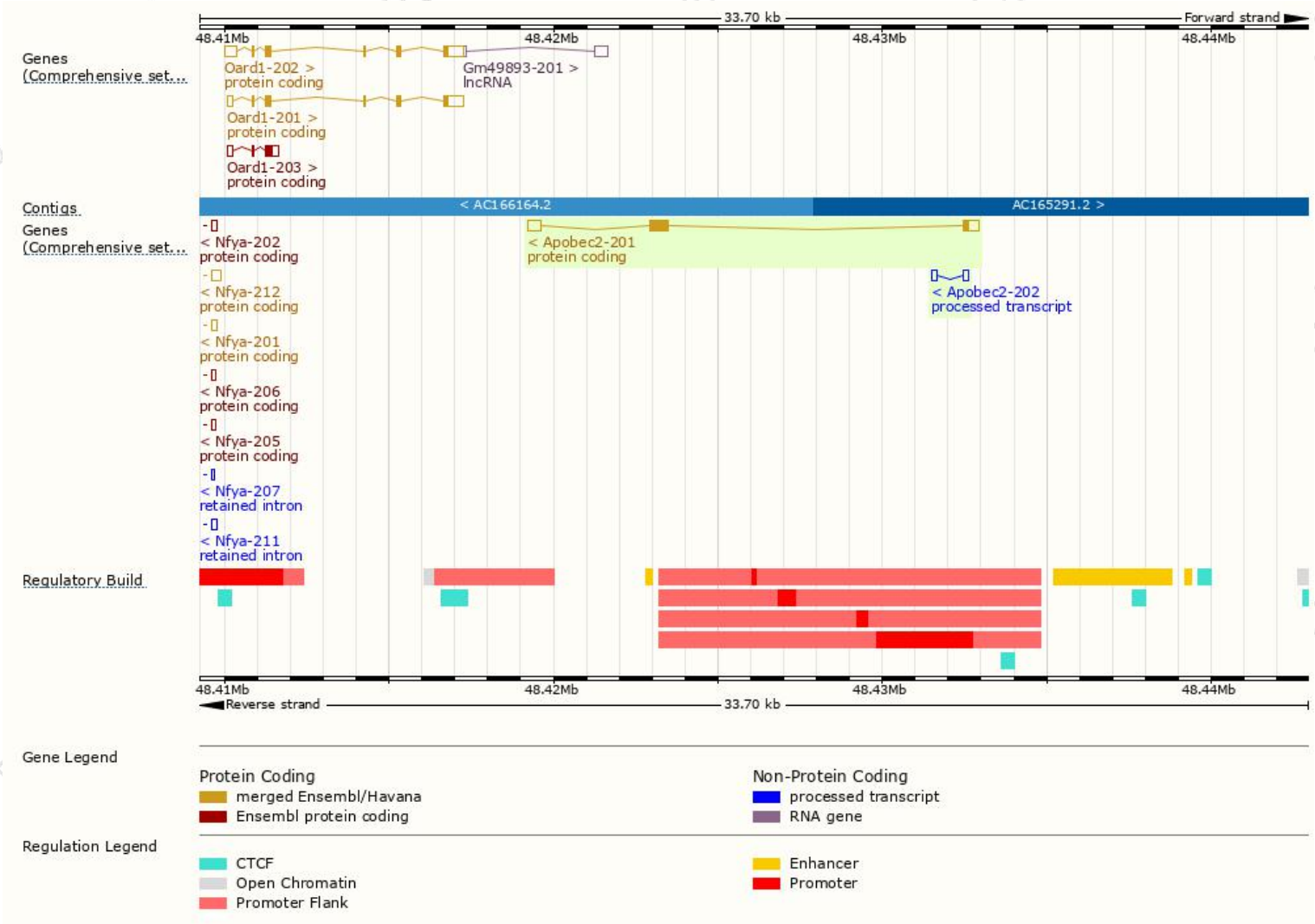
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Apobec2-201	ENSMUST00000046549.4	1420	224aa	Protein coding	CCDS28868	Q9WV35	TSL:1 GENCODE basic APPRIS P1
Apobec2-202	ENSMUST00000233707.1	317	No protein	Processed transcript	-	-	-

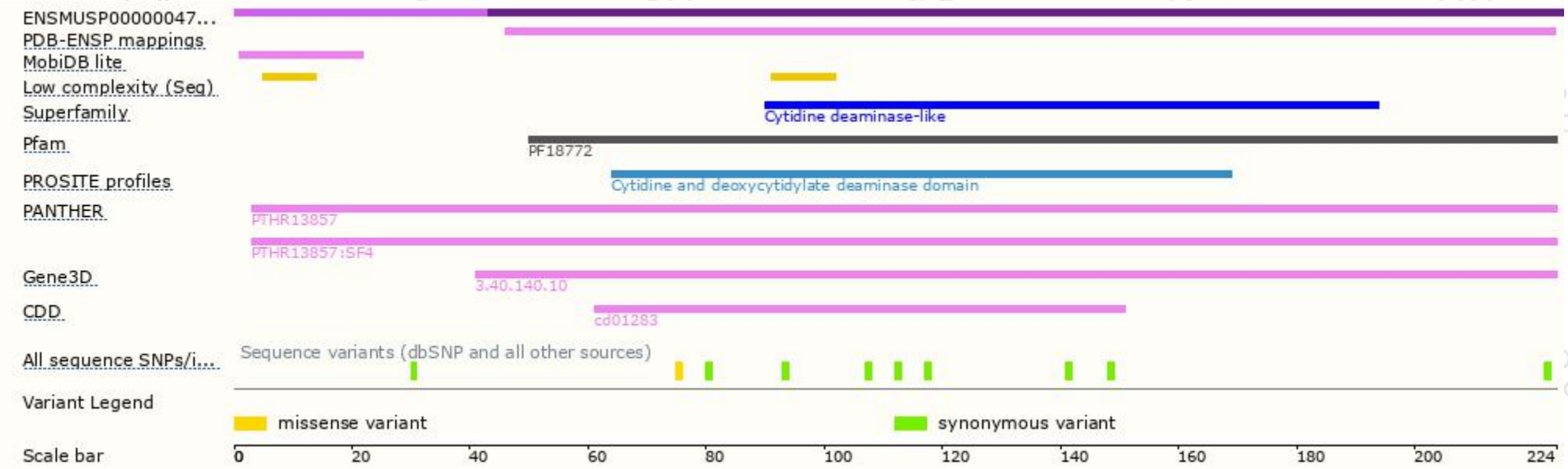
The strategy is based on the design of *Apobec2-201* transcript,The transcription is shown below



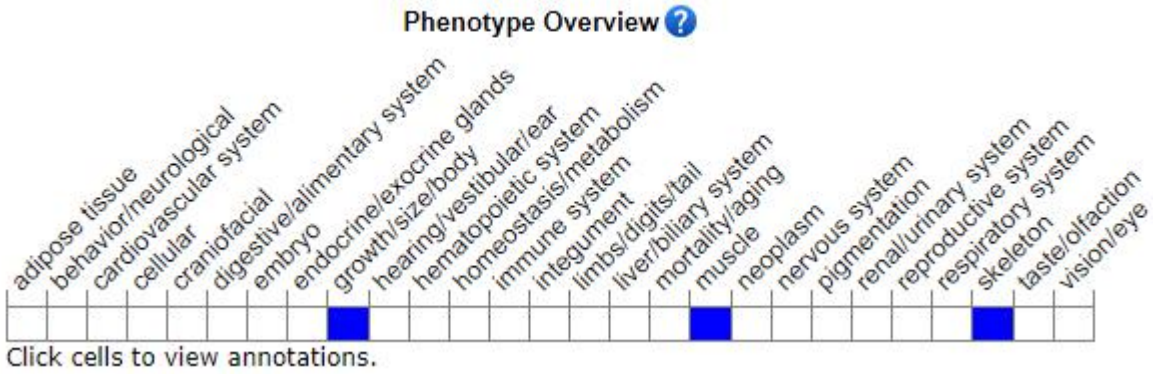
Genomic location distribution



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/).

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

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