

Ccdc33 Cas9-CKO Strategy

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Project Overview

Project Name

Ccdc33

Project type

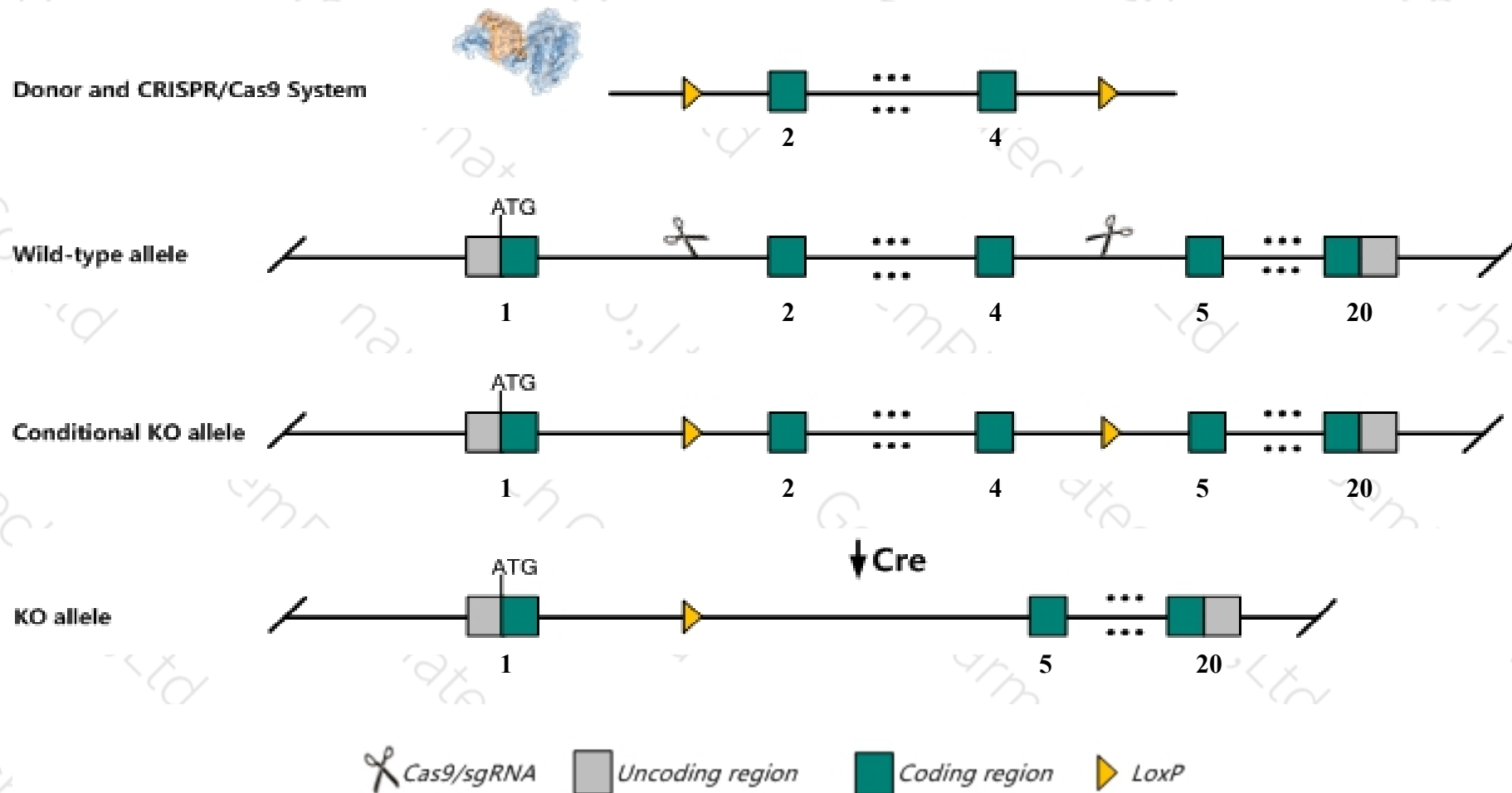
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ccdc33* gene. The schematic diagram is as follows:



- The *Ccdc33* gene has 10 transcripts. According to the structure of *Ccdc33* gene, exon2-exon4 of *Ccdc33*-203(ENSMUST00000098682.9) transcript is recommended as the knockout region. The region contains 610bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ccdc33* 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.

- The *Ccdc33* gene is located on the Chr9. 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.
- The flox region is in the intron of the *Stra6* gene, which may affect the regulation of this gene.
- 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)

Ccdc33 coiled-coil domain containing 33 [Mus musculus (house mouse)]

Gene ID: 382077, updated on 13-Mar-2020

Summary



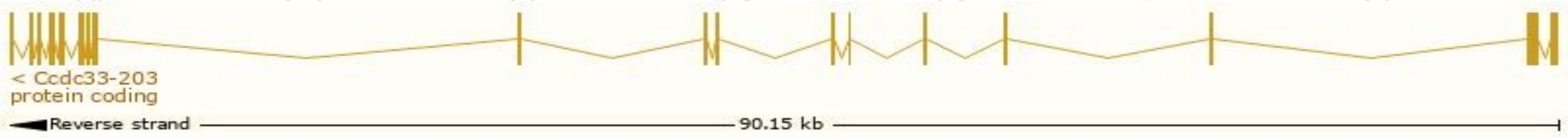
Official Symbol	Ccdc33 provided by MGI
Official Full Name	coiled-coil domain containing 33 provided by MGI
Primary source	MGI:MGI:1922464
See related	Ensembl:ENSMUSG00000037716
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930535E21Rik, Gm1117, Tzip1
Expression	Biased expression in testis adult (RPKM 23.9) and ovary adult (RPKM 2.7) See more
Orthologs	human all

Transcript information (Ensembl)

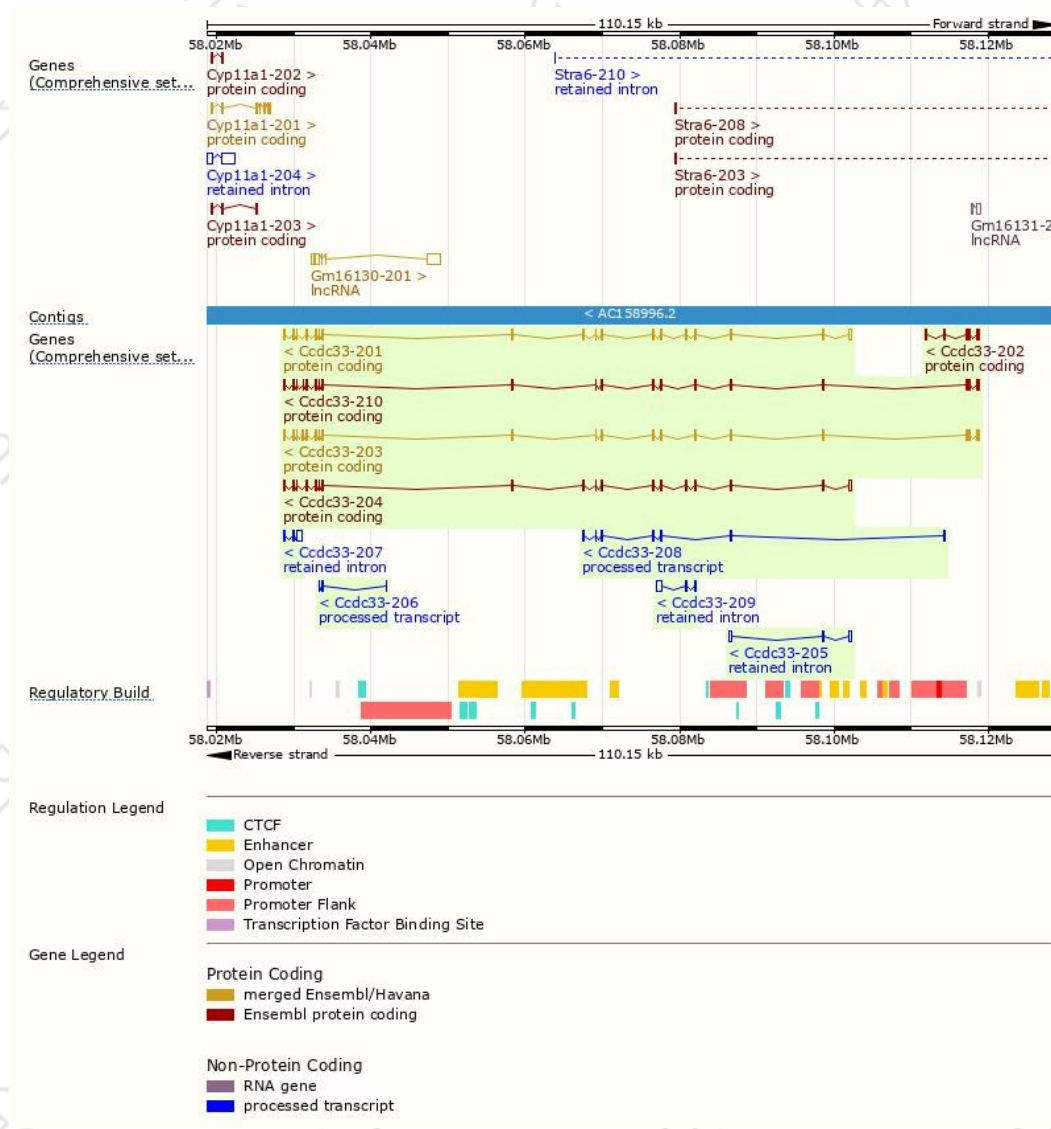
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccdc33-203	ENSMUST00000098682.9	3117	985aa	Protein coding	CCDS52811	E9QQ55	TSL:1 GENCODE basic APPRIS ALT2
Ccdc33-201	ENSMUST00000042205.12	2632	731aa	Protein coding	CCDS40654	A0A0R4J0H2	TSL:1 GENCODE basic APPRIS P3
Ccdc33-204	ENSMUST00000119665.1	2552	730aa	Protein coding	CCDS81006	D3YU68	TSL:1 GENCODE basic APPRIS ALT2
Ccdc33-210	ENSMUST00000215944.1	3012	950aa	Protein coding	-	A0A1L1SR74	TSL:5 GENCODE basic APPRIS ALT2
Ccdc33-202	ENSMUST00000098681.3	1093	278aa	Protein coding	-	Q3ULW6	TSL:1 GENCODE basic
Ccdc33-208	ENSMUST00000146741.1	747	No protein	Processed transcript	-	-	TSL:3
Ccdc33-206	ENSMUST00000143797.1	313	No protein	Processed transcript	-	-	TSL:5
Ccdc33-207	ENSMUST00000144887.1	922	No protein	Retained intron	-	-	TSL:2
Ccdc33-205	ENSMUST00000123746.1	893	No protein	Retained intron	-	-	TSL:1
Ccdc33-209	ENSMUST00000151404.1	835	No protein	Retained intron	-	-	TSL:5

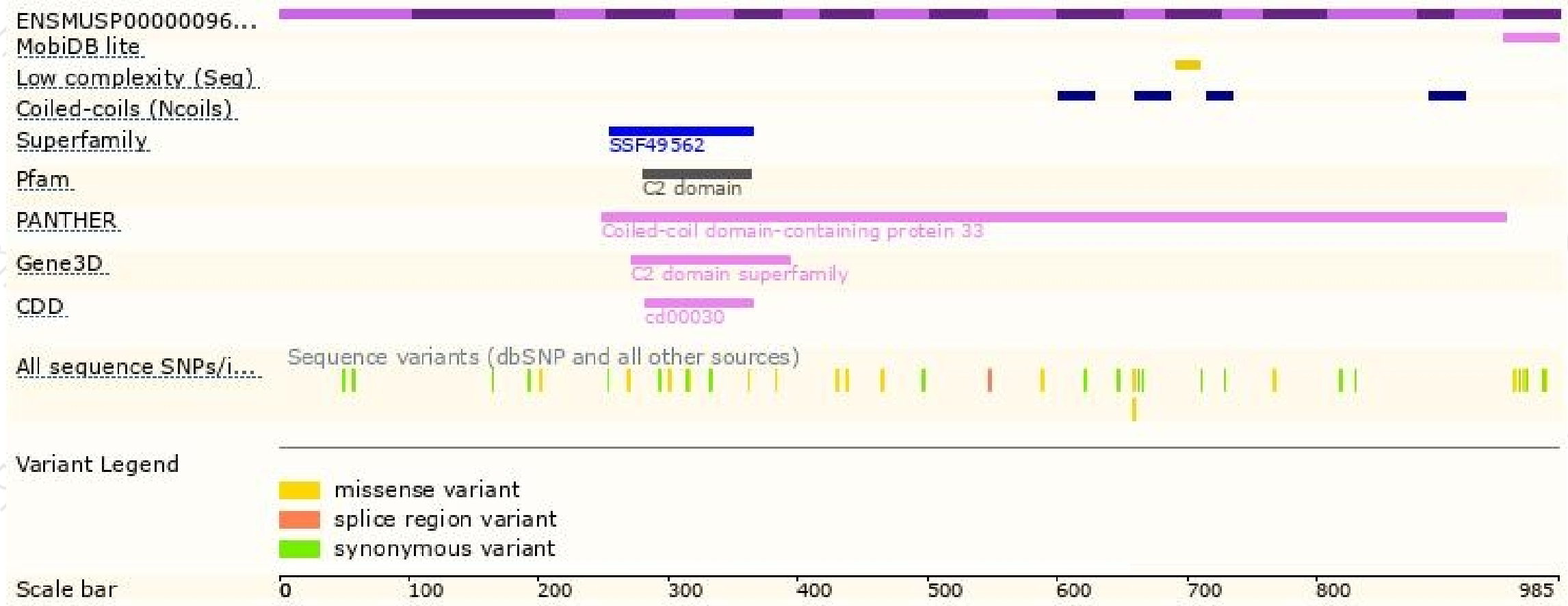
The strategy is based on the design of *Ccdc33-203* transcript,the transcription is shown below:



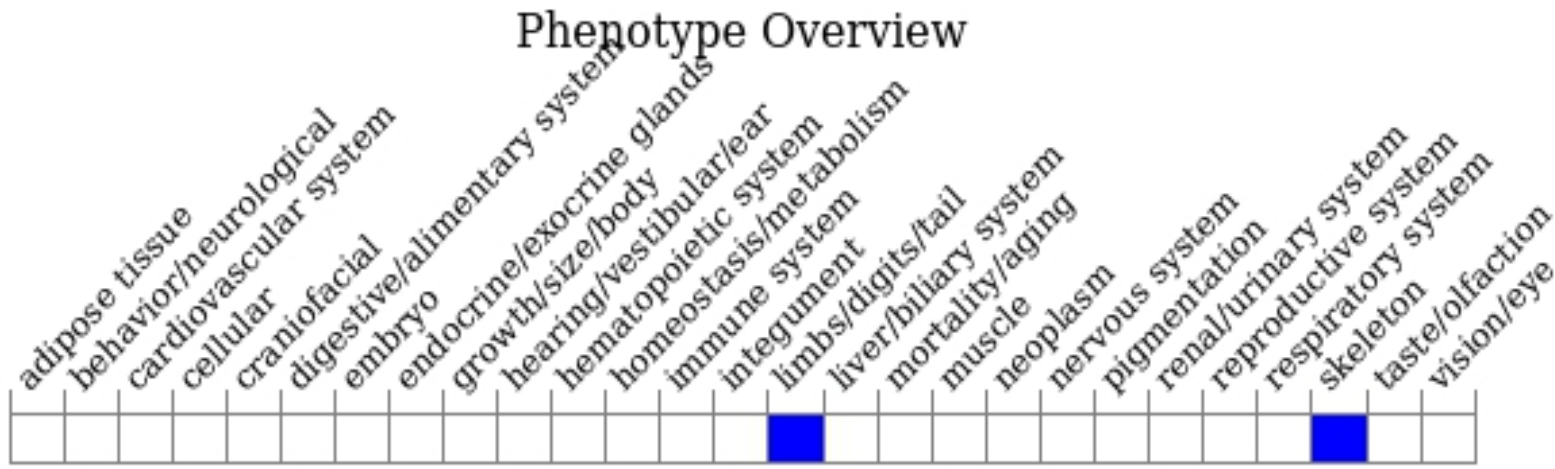
Genomic location distribution



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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