

# *Cc2d1a* Cas9-CKO Strategy

Designer:

# Project Overview

**Project Name**

*Cc2d1a*

**Project type**

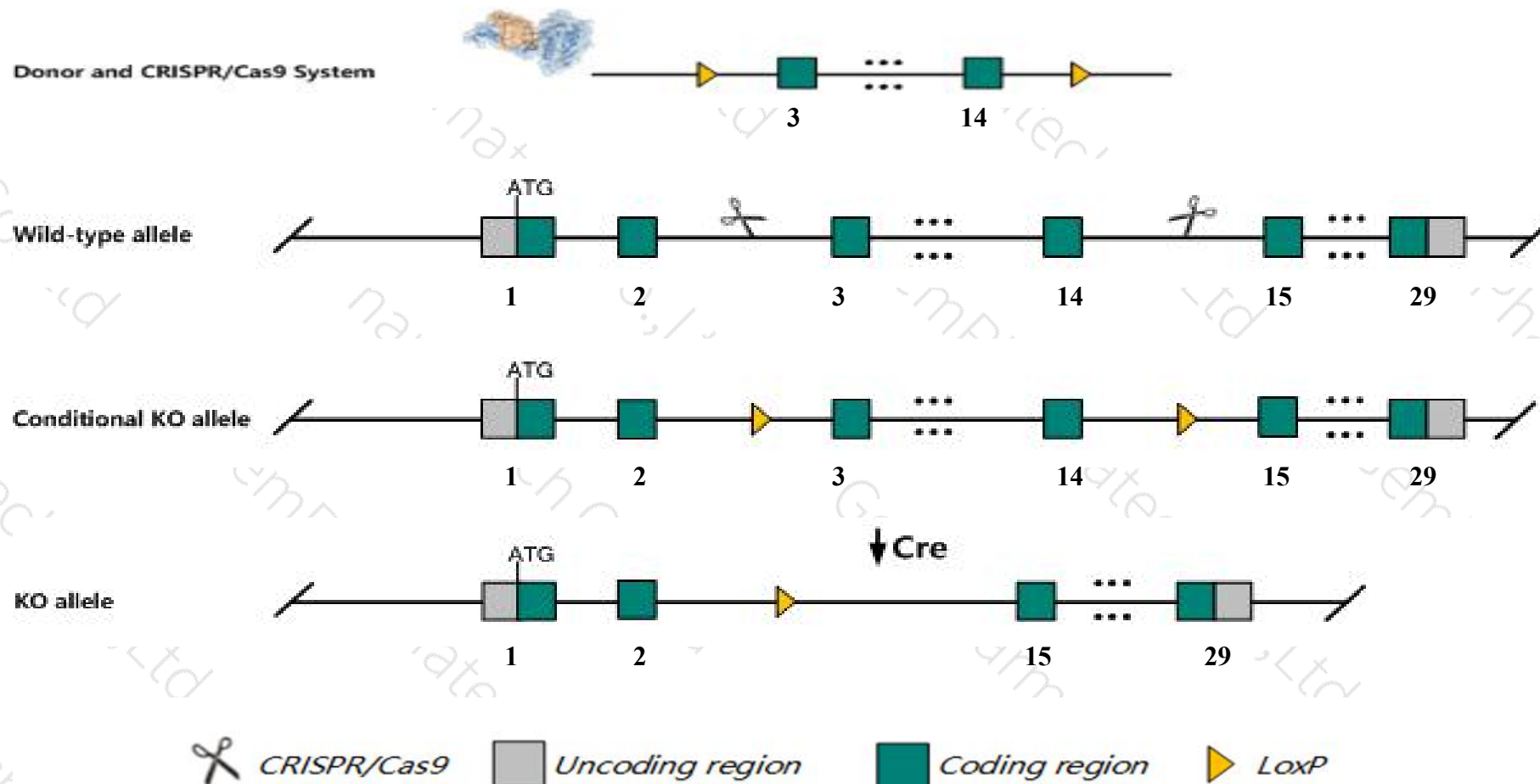
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cc2d1a* gene. The schematic diagram is as follows:



# Technical routes

- The *Cc2d1a* gene has 4 transcripts. According to the structure of *Cc2d1a* gene, exon3-exon14 of *Cc2d1a-201* (ENSMUST00000040383.8) transcript is recommended as the knockout region. The region contains 1424bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cc2d1a* 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 partial neonatal lethality, reduced body weight, hunched posture, respiratory distress, increased sensitivity of neurons to hydrogen peroxide, reduced dendrite length, abnormal brain vasculature and reduced synaptic number and density.
- The *Cc2d1a* gene is located on the Chr8. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.



# Gene information (NCBI)

## Cc2d1a coiled-coil and C2 domain containing 1A [ *Mus musculus* (house mouse) ]

Gene ID: 212139, updated on 31-Jan-2019

### Summary

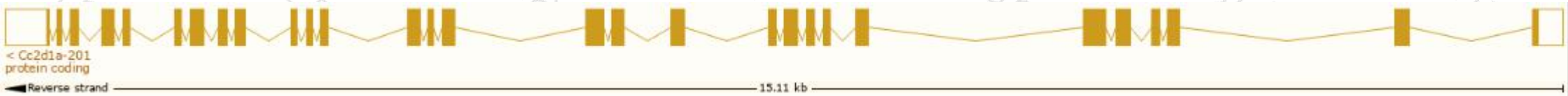
Official Symbol	Cc2d1a provided by <a href="#">MGI</a>
Official Full Name	coiled-coil and C2 domain containing 1A provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:2384831</a>
See related	<a href="#">Ensembl:ENSMUSG00000036686</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tape; Freud-1; BC016188
Expression	Ubiquitous expression in colon adult (RPKM 20.2), CNS E18 (RPKM 19.8) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

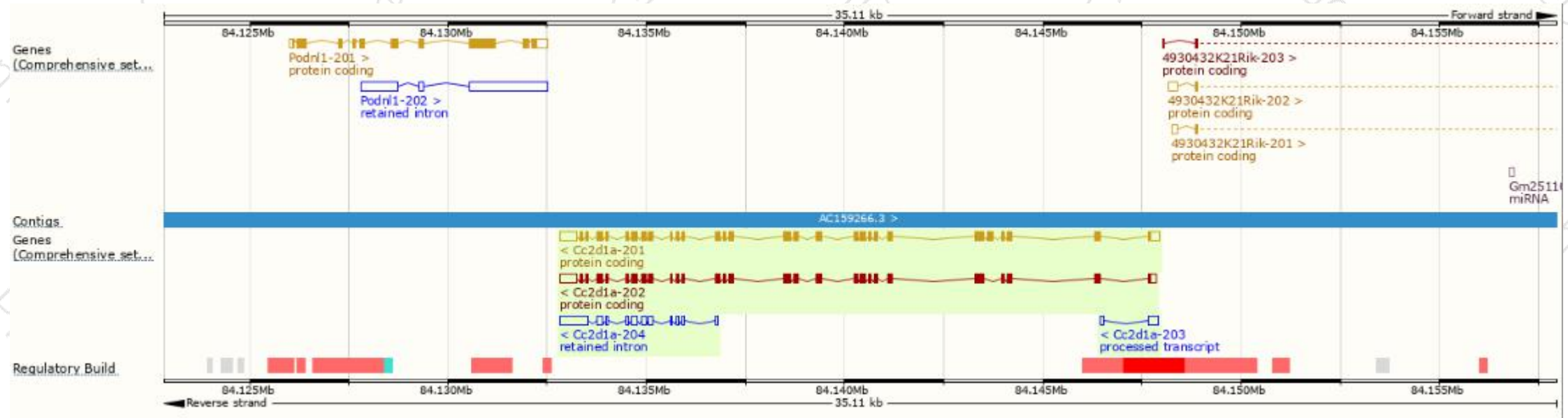
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cc2d1a-201	<a href="#">ENSMUST00000040383.8</a>	3471	<a href="#">943aa</a>	Protein coding	<a href="#">CCDS40407</a>	<a href="#">Q8K1A6</a>	TSL:1 GENCODE basic APPRIS P2
Cc2d1a-202	<a href="#">ENSMUST00000117424.8</a>	3262	<a href="#">897aa</a>	Protein coding	-	<a href="#">E9PX94</a>	TSL:5 GENCODE basic APPRIS ALT2
Cc2d1a-203	<a href="#">ENSMUST00000126364.1</a>	332	No protein	Processed transcript	-	-	TSL:3
Cc2d1a-204	<a href="#">ENSMUST00000154029.1</a>	1521	No protein	Retained intron	-	-	TSL:5

The strategy is based on the design of *Cc2d1a-201* transcript,The transcription is shown below

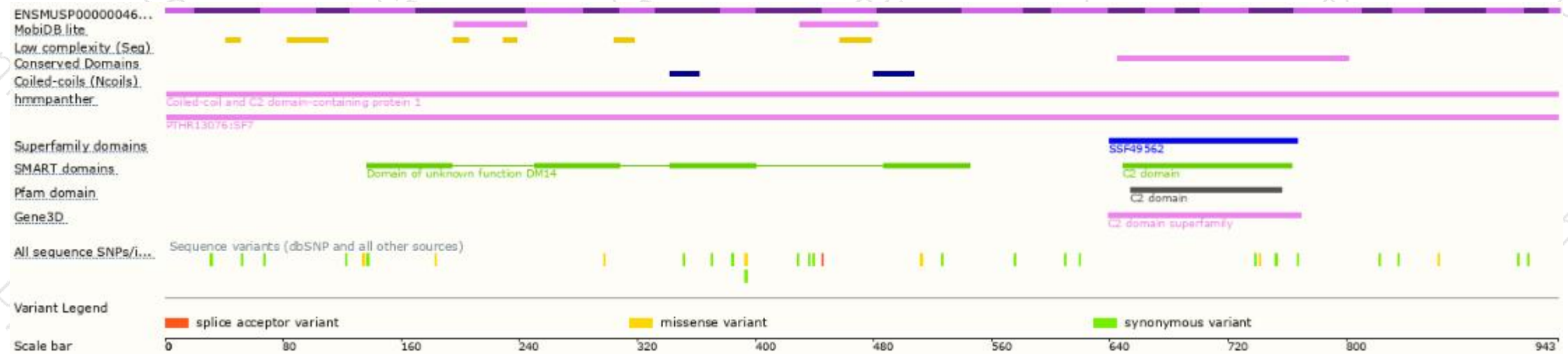


# Genomic location distribution





# Protein domain



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

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