Cc2d1a Cas9-KO Strategy

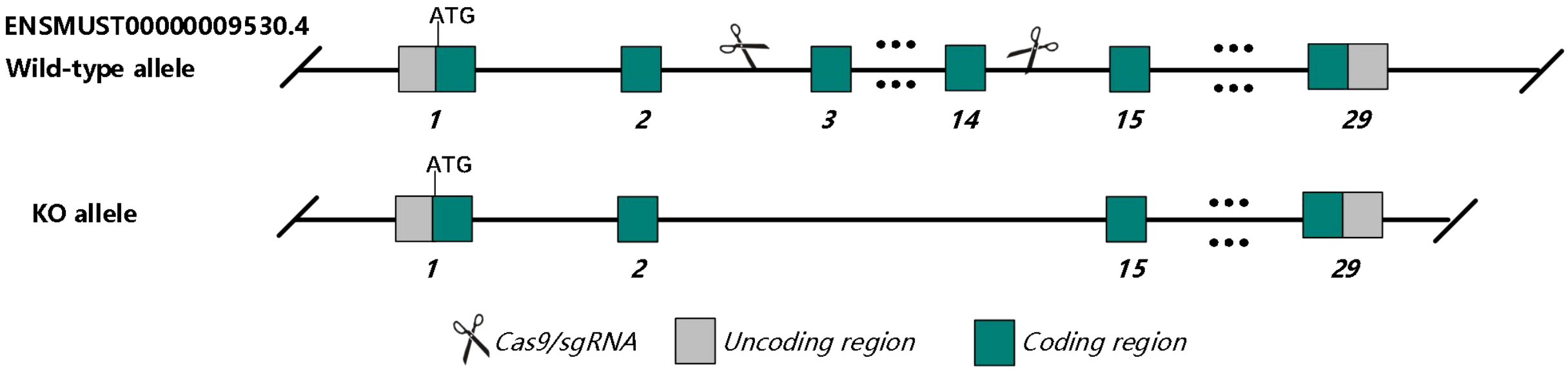
Designer:

Project Overview

Project Name	***Cc2d1a***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

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: gRNA was transcribed in vitro.Cas9 and gRNA 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.

Notice

➢ 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）

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

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

Summary

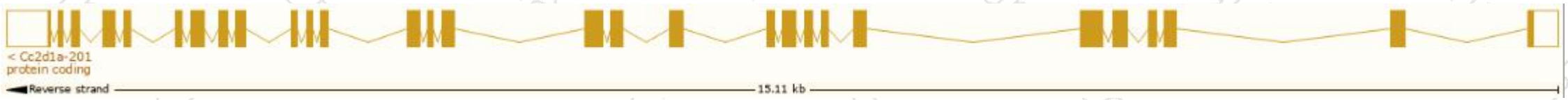
Official Symbol	Cc2d1a provided by MGI
Official Full Name	coiled-coil and C2 domain containing 1A provided by MGI
Primary source	MGI:MGI:2384831
See related	Ensembl:ENSMUSG00000036686
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata;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

Transcript information（Ensembl）

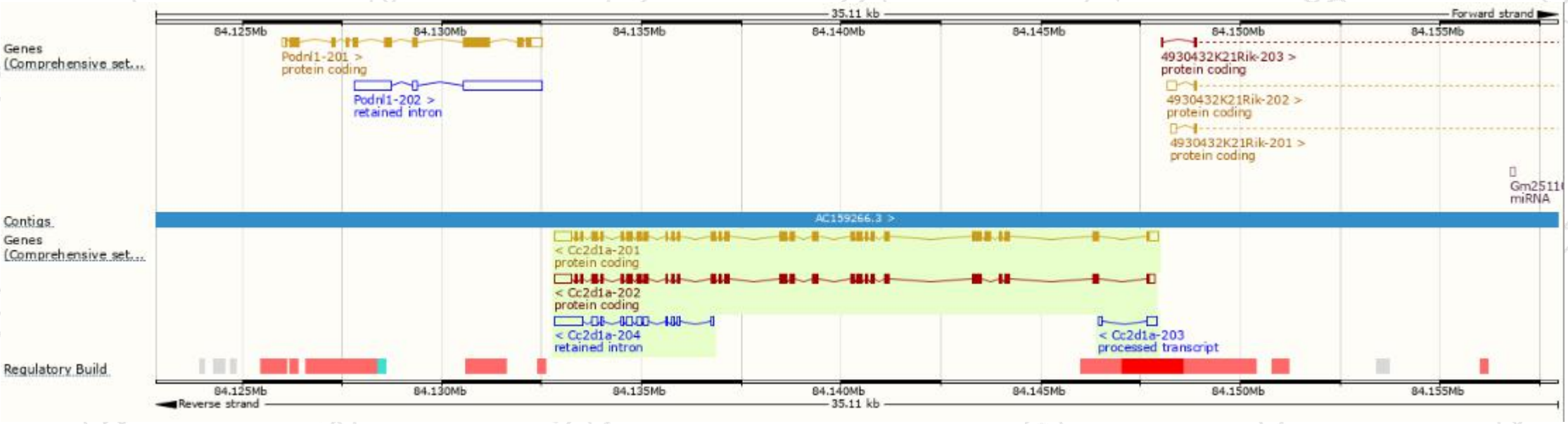
The gene has 4 transcripts,all transcripts are shown below:

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

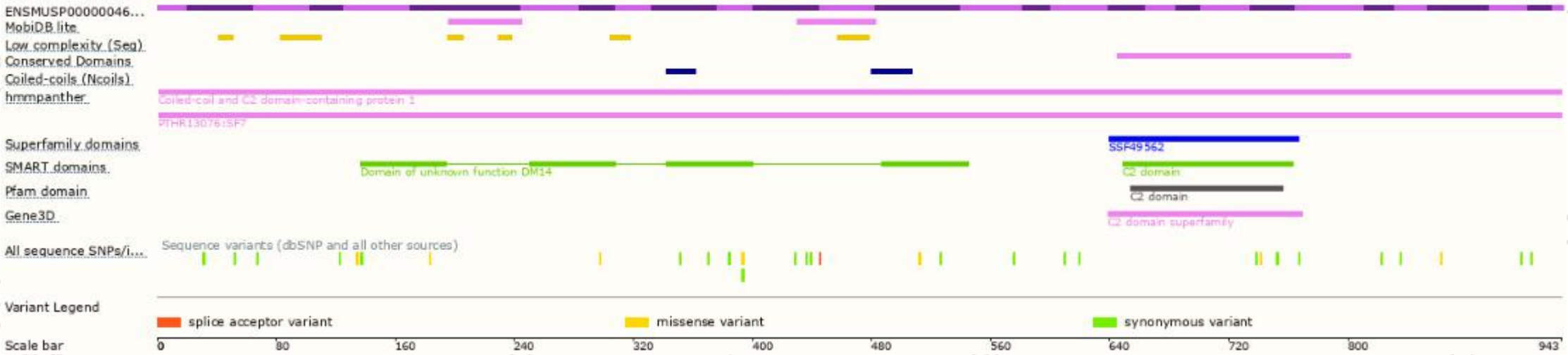
The strategy is based on the design of *Cc2d1a-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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