

Ccdc141 Cas9-KO Strategy

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Design Date: 2020-8-21

Project Overview

Project Name

Ccdc141

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ccdc141* gene. The schematic diagram is as follows:



- The *Ccdc141* gene has 11 transcripts. According to the structure of *Ccdc141* gene, exon3-exon4 of *Ccdc141*-207(ENSMUST00000164114.8) transcript is recommended as the knockout region. The region contains 301bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ccdc141* 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.

- According to the existing MGI data, homozygous knockout impairs migration of neurons in the somatosensory cortex, resulting in increased anxiety and hyperactivity.
- Transcript *Ccdc141-203*, *Ccdc141-209*, *Ccdc141-210* may not be affected.
- The *Ccdc141* gene is located on the Chr2. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ccdc141 coiled-coil domain containing 141 [Mus musculus (house mouse)]

Gene ID: 545428, updated on 13-Mar-2020

Summary



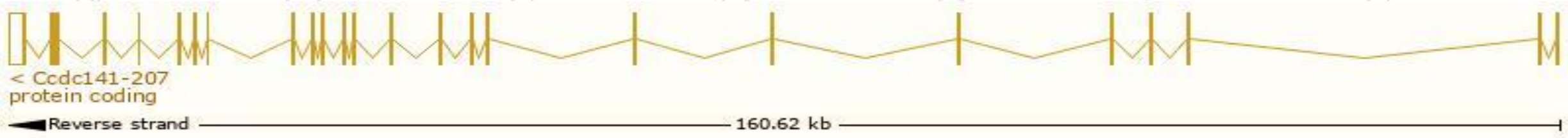
Official Symbol	Ccdc141 provided by MGI
Official Full Name	coiled-coil domain containing 141 provided by MGI
Primary source	MGI:MGI:1919735
See related	Ensembl:ENSMUSG00000044033
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610301F02Rik, CAMDI
Expression	Broad expression in heart adult (RPKM 8.9), lung adult (RPKM 4.1) and 19 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

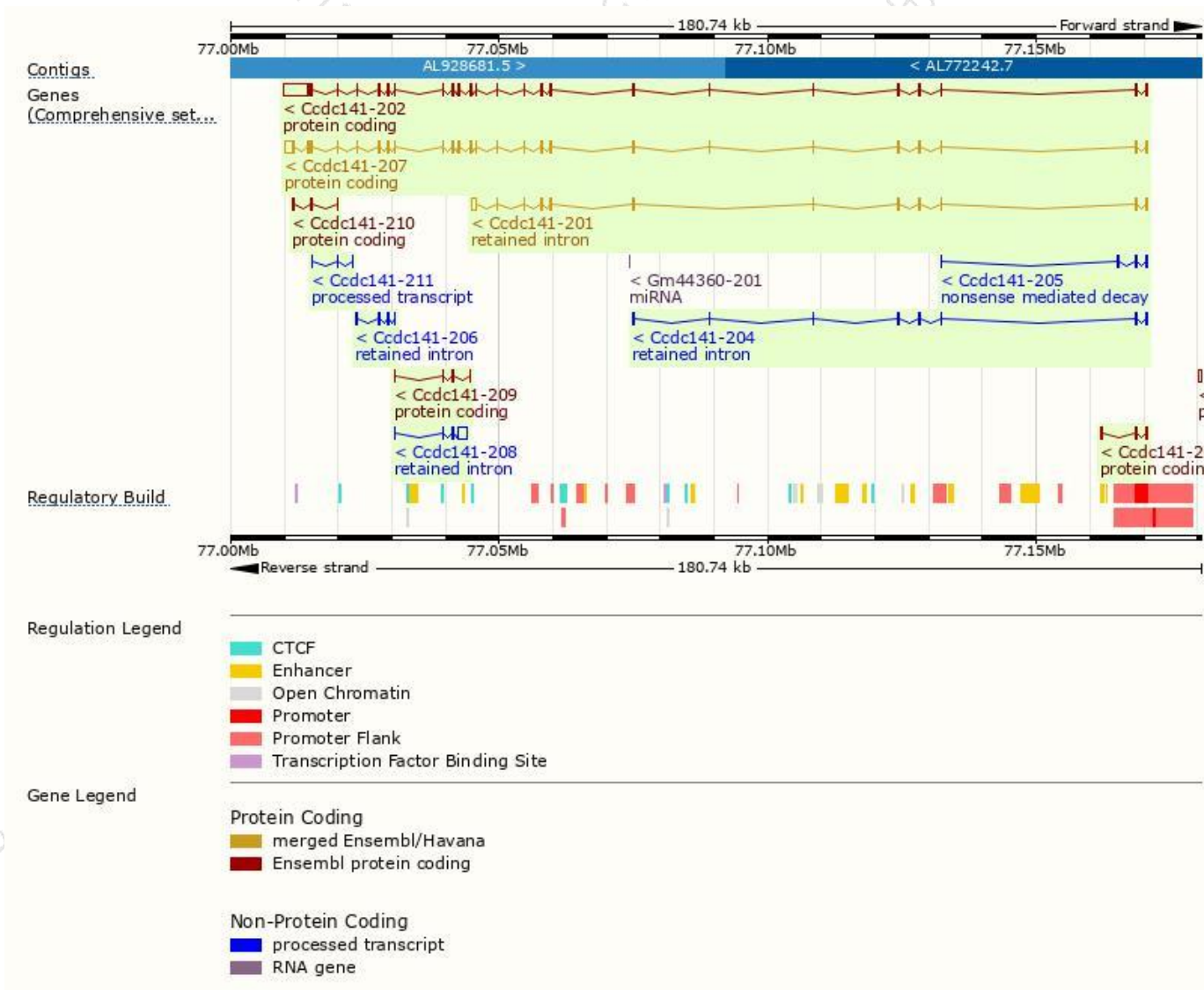
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccdc141-207	ENSMUST00000164114.8	6222	1531aa	Protein coding	CCDS38155	E9Q8Q6	TSL:5 GENCODE basic APPRIS P1
Ccdc141-202	ENSMUST00000049544.13	8969	1451aa	Protein coding	-	A2AST1	TSL:1 GENCODE basic
Ccdc141-203	ENSMUST00000111833.2	631	117aa	Protein coding	-	A2AK24	TSL:2 GENCODE basic
Ccdc141-210	ENSMUST00000179868.1	514	157aa	Protein coding	-	J3QN68	CDS 5' incomplete TSL:5
Ccdc141-209	ENSMUST00000179467.1	461	154aa	Protein coding	-	J3QNK9	CDS 5' and 3' incomplete TSL:3
Ccdc141-205	ENSMUST00000133503.8	658	78aa	Nonsense mediated decay	-	D6RJ38	TSL:2
Ccdc141-211	ENSMUST00000180261.1	363	No protein	Processed transcript	-	-	TSL:3
Ccdc141-201	ENSMUST00000028406.10	2669	No protein	Retained intron	-	-	TSL:2
Ccdc141-208	ENSMUST00000175840.1	2028	No protein	Retained intron	-	-	TSL:1
Ccdc141-204	ENSMUST00000131660.2	1464	No protein	Retained intron	-	-	TSL:1
Ccdc141-206	ENSMUST00000154013.1	635	No protein	Retained intron	-	-	TSL:3

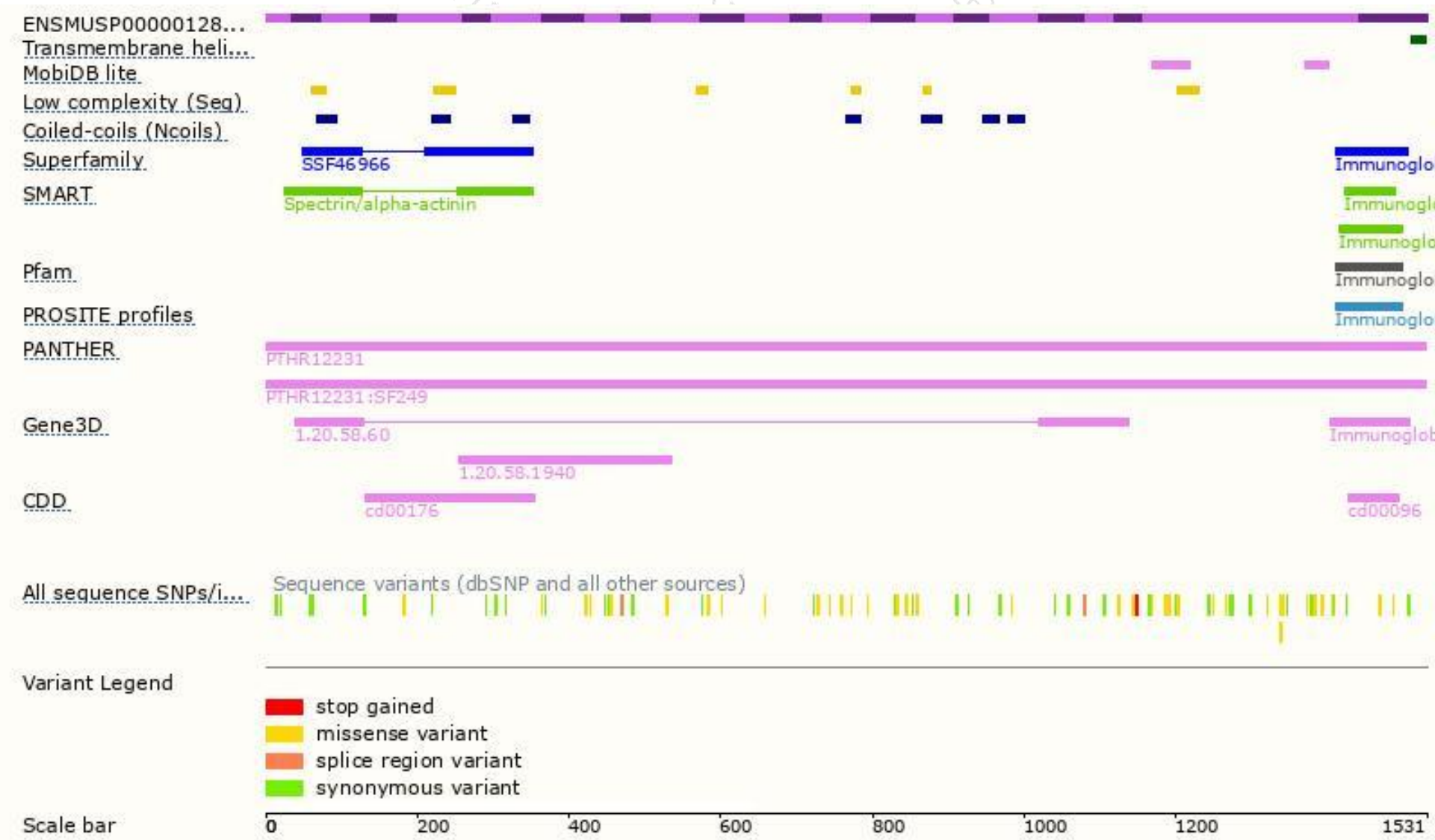
The strategy is based on the design of *Ccdc141-207* transcript,the transcription is shown below:



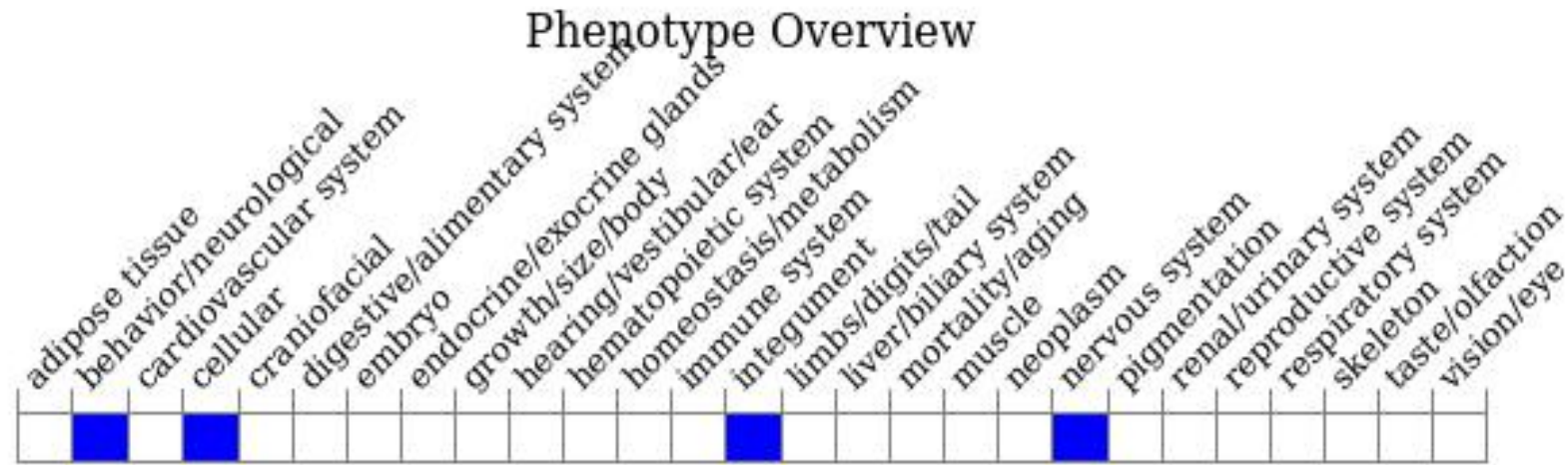
Genomic location distribution



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/>).

According to the existing MGI data, homozygous knockout impairs migration of neurons in the somatosensory cortex, resulting in increased anxiety and hyperactivity.

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

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