Sorl1 Cas9-KO Strategy

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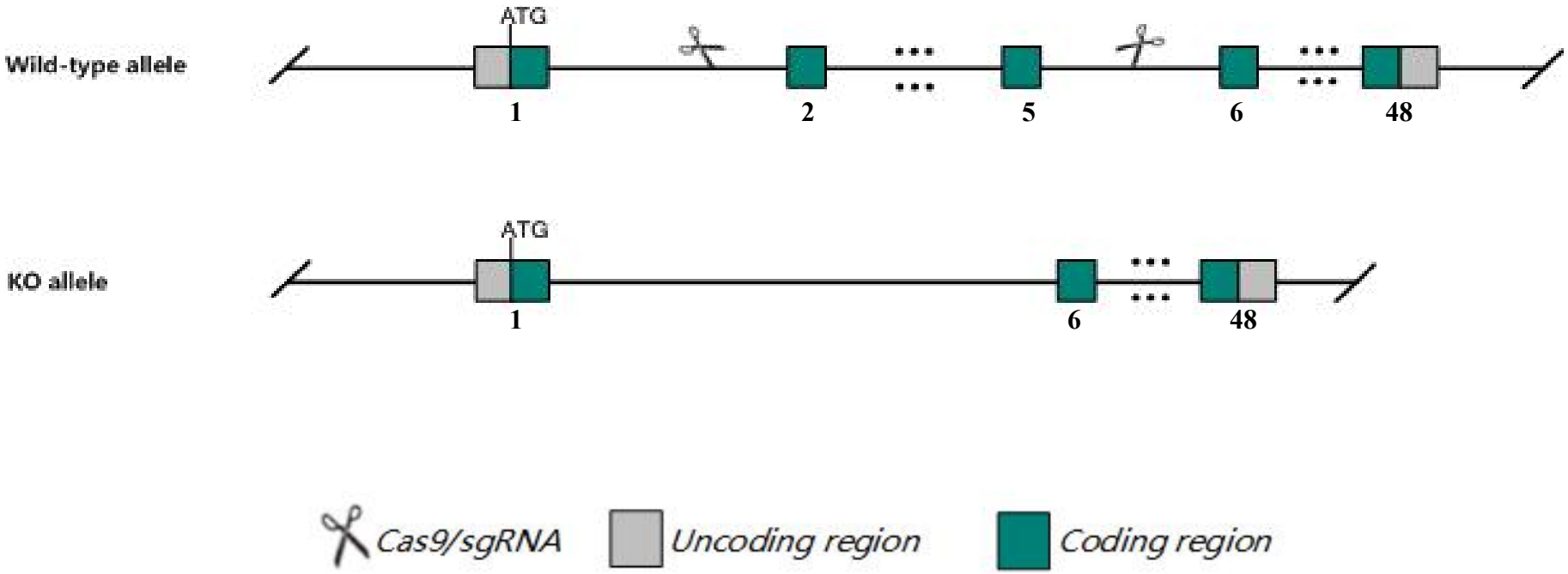
Date: 2019/12/31

Project Overview

Project Name	***Sorl1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sorl1* gene. The schematic diagram is as follows:



Technical routes

The *Sorl1* gene has 4 transcripts. According to the structure of *Sorl1* gene, exon2-exon5 of *Sorl1-201* (ENSMUST00000060989.8) transcript is recommended as the knockout region.The region contains 473bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Sorl1* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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,Homozygous mutation of this gene results in decreased femoral artery intimal thickness after cuff placement and abolished angiotensin II stimulated vascular smooth muscle migration and attachment. Two other alleles show an increase in beta-amyloid deposits or peptide in the brain.

The *Sorl1* 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.

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

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Sorl1 sortilin-related receptor, LDLR class A repeats-containing [Mus musculus (house mouse)]

Gene ID: 20660, updated on 31-Jan-2019

Summary

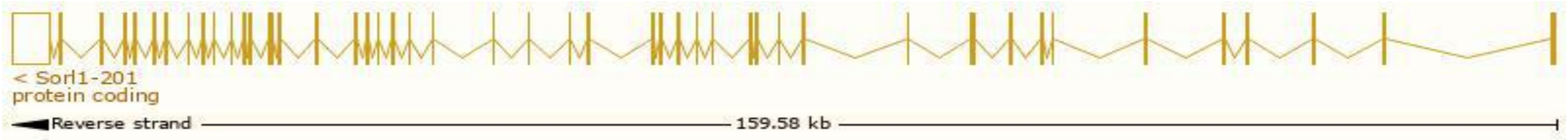
Official Symbol	Sorl1 provided by MGI
Official Full Name	sortilin-related receptor, LDLR class A repeats-containing provided by MGI
Primary source	MGI:MGI:1202296
See related	Ensembl:ENSMUSG00000049313
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2900010L19Rik, AI596264, AW261561, LR11, SorLA, gp250, mSorLA
Expression	Broad expression in cerebellum adult (RPKM 34.7), spleen adult (RPKM 18.6) and 21 other tissues See more
Orthologs	human all

Transcript information Ensembl

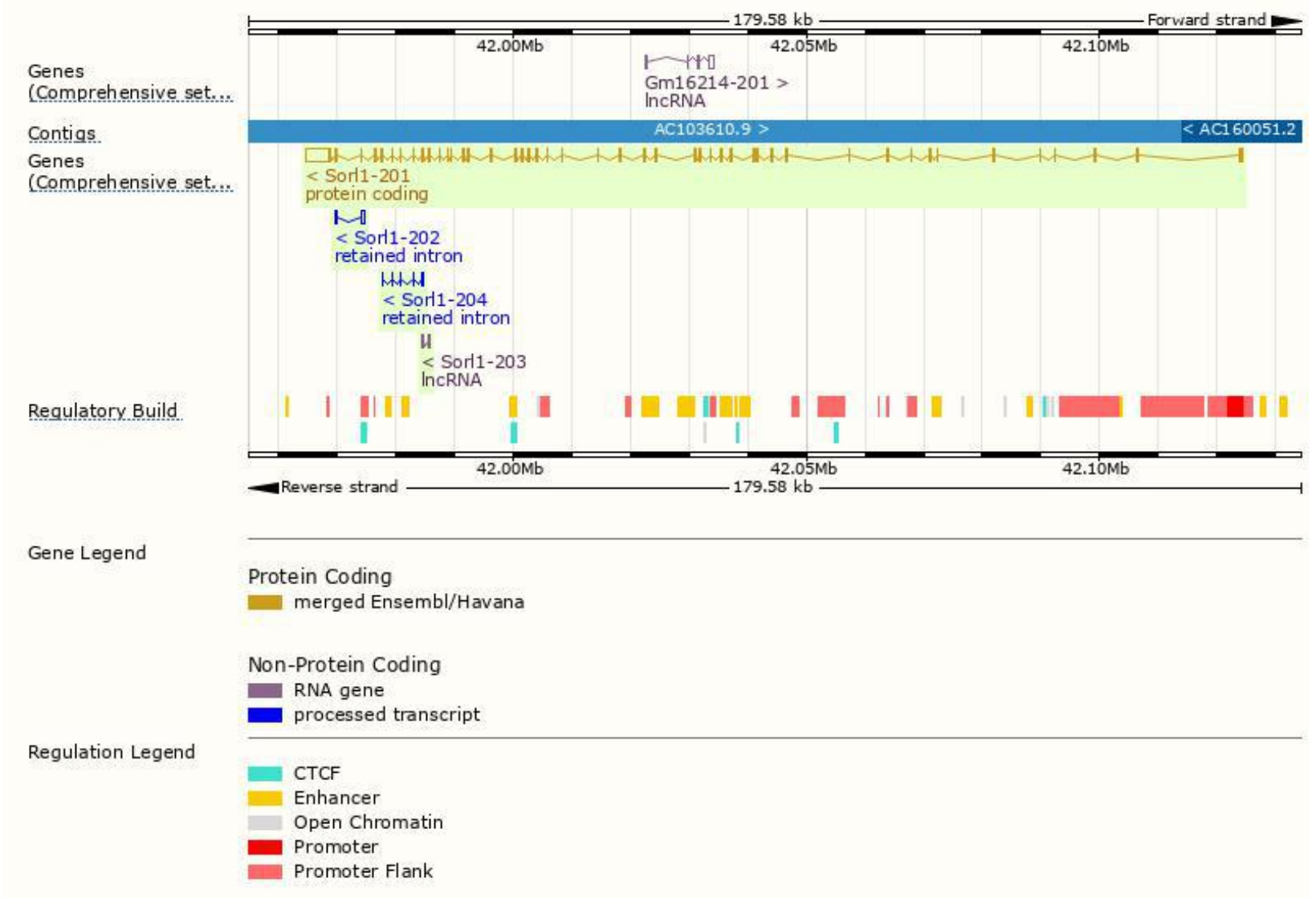
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sorl1-201	ENSMUST00000060989.8	10715	2215aa	Protein coding	CCDS40594	O88307	TSL:1 GENCODE basic APPRIS P1
Sorl1-202	ENSMUST00000134560.1	769	No protein	Retained intron	-	-	TSL:2
Sorl1-204	ENSMUST00000148800.1	654	No protein	Retained intron	-	-	TSL:3
Sorl1-203	ENSMUST00000139133.1	224	No protein	lncRNA	-	-	TSL:5

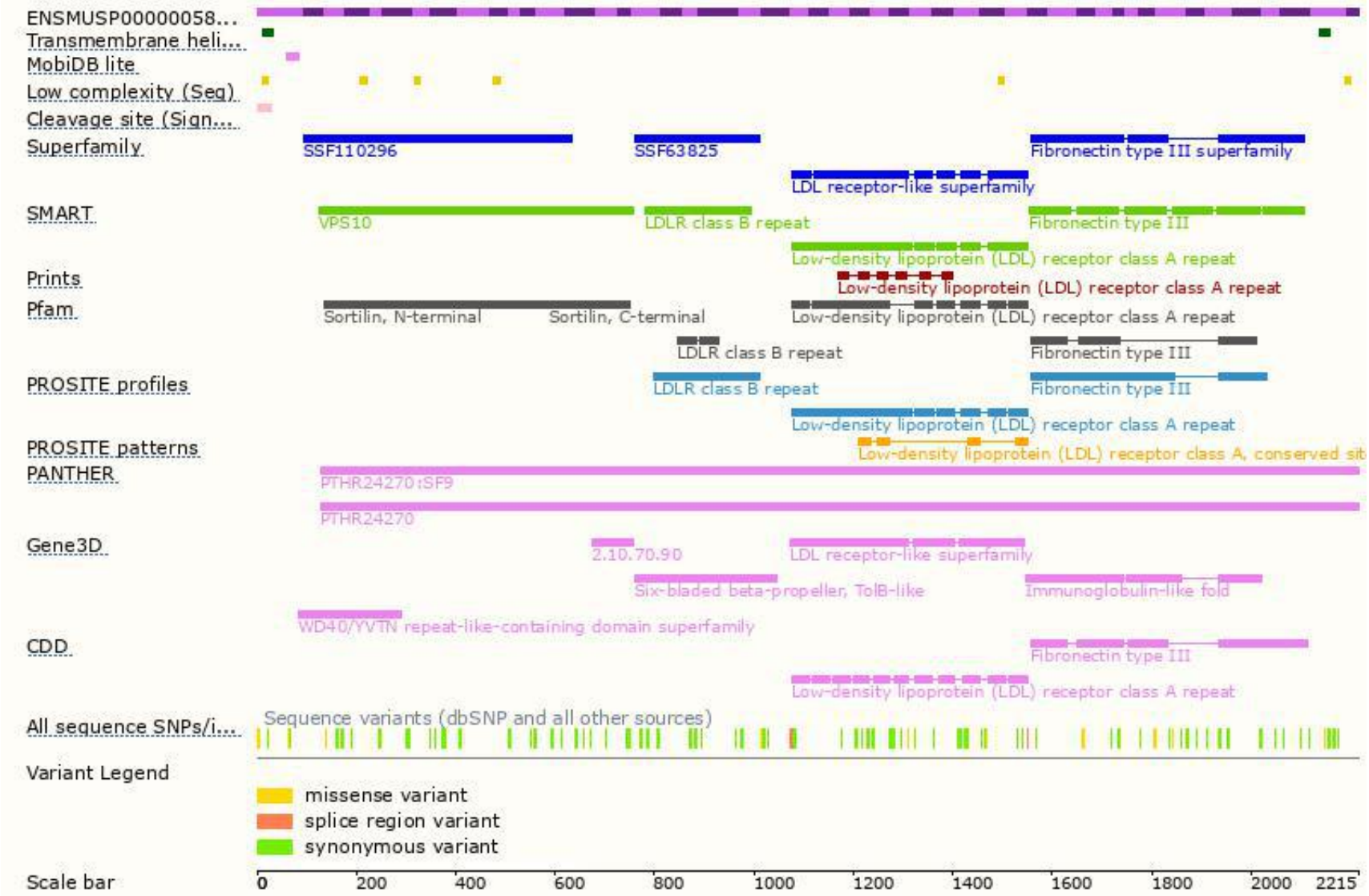
The strategy is based on the design of *Sorl1-201* transcript,The transcription is shown below



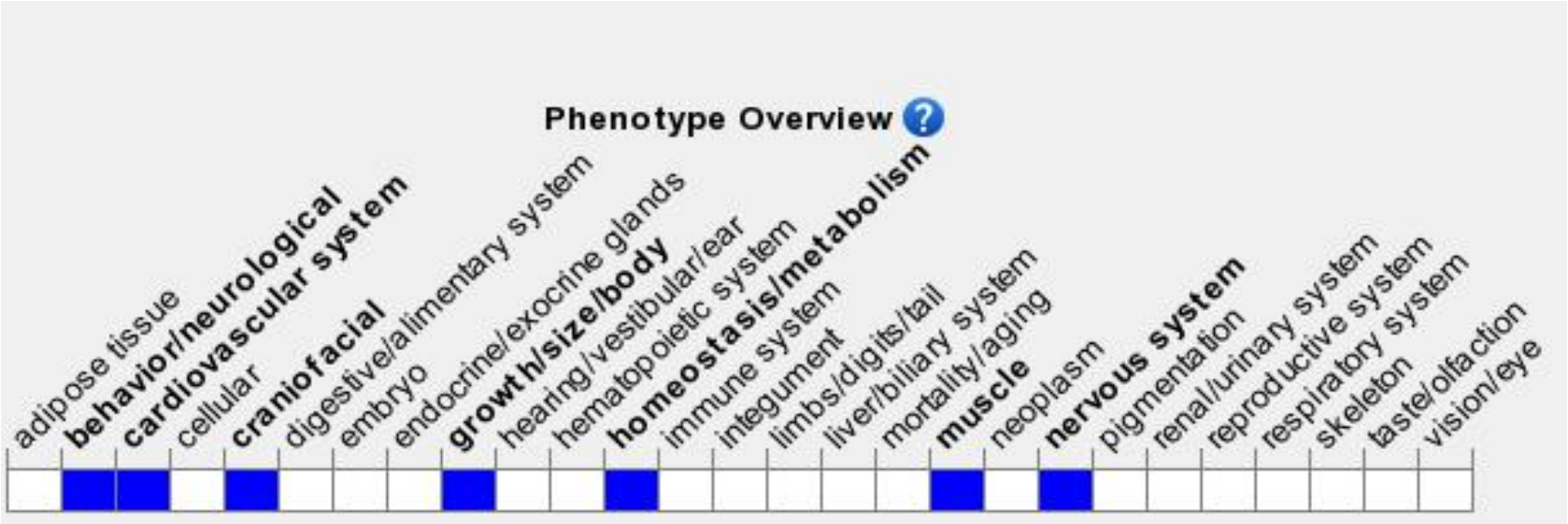
Genomic location distribution



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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