Lrrn1 Cas9-KO Strategy

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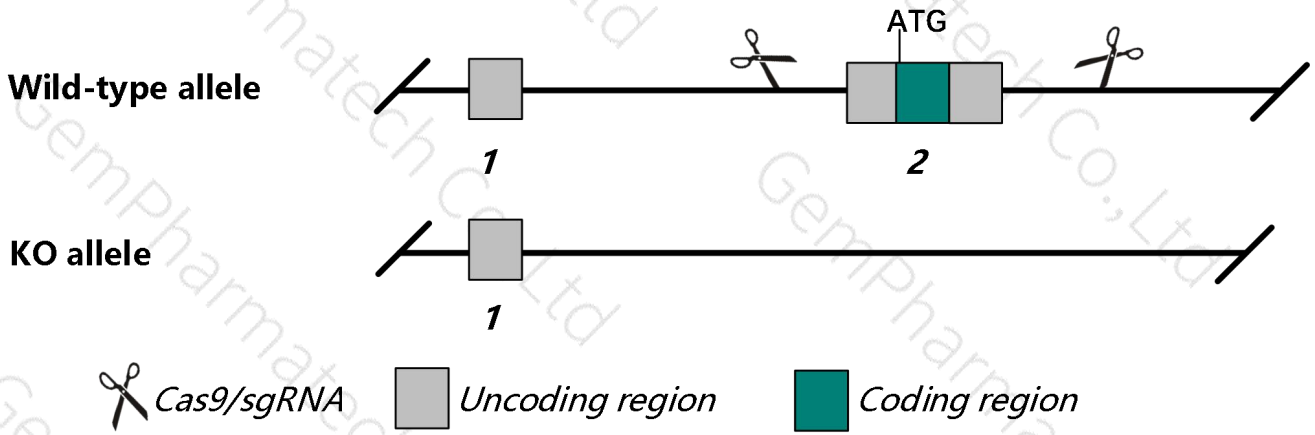
Project Overview

Project Name	***Lrrn1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lrrn1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Lrrn1* gene has 1 transcript. According to the structure of *Lrrn1* gene, exon2 of *Lrrn1-201* (ENSMUST00000049285.9) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Lrrn1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Homozygous null mutant mice exhibited decreased exploratory activity and the female mutants exhibited an increased anxiety-like response during open field testing.

➢ The *Lrrn1* gene is located on the Chr6. 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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Lrrn1 leucine rich repeat protein 1, neuronal [*Mus musculus* (house mouse)]

Gene ID: 16979, updated on 12-Aug-2019

Summary

Official Symbol	Lrrn1 provided by MGI
Official Full Name	leucine rich repeat protein 1, neuronal provided by MGI
Primary source	MGI:MGI:106038
See related	Ensembl:ENSMUSG00000034648
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	NLRR-1; 2810047E21Rik
Expression	Biased expression in adrenal adult (RPKM 59.2), ovary adult (RPKM 34.4) and 9 other tissues See more
Orthologs	human all

Genomic context

Location: 6; 6 E1

See Lrrn1 in Genome Data Viewer

Exon count: 2

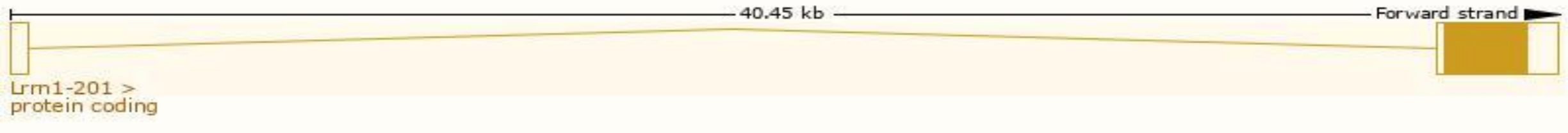
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	6	NC_000072.6 (107529726..107570228)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	6	NC_000072.5 (107479779..107520204)

Transcript information（Ensembl）

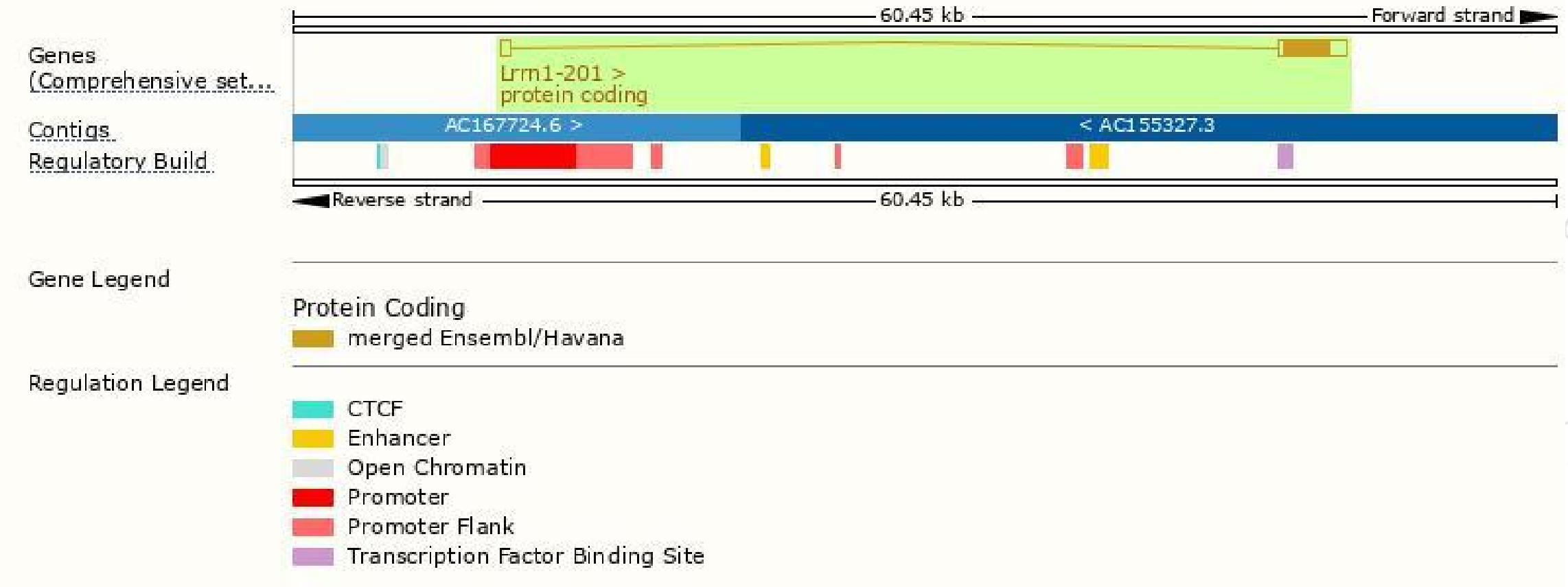
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lrrn1-201	ENSMUST00000049285.9	3700	716aa	Protein coding	CCDS20399	Q61809	TSL:1 GENCODE basic APPRIS P1

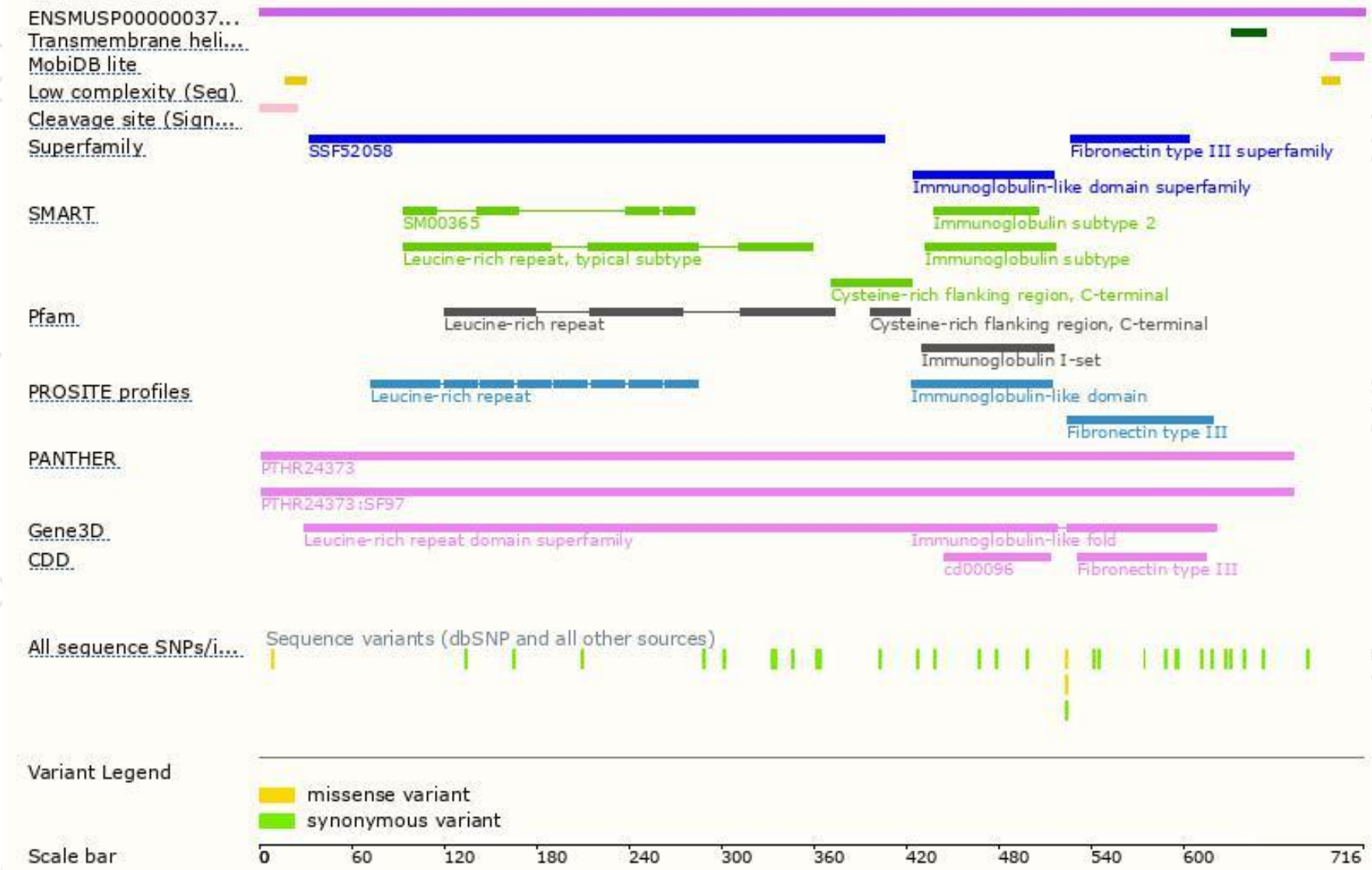
The strategy is based on the design of *Lrrn1-201* transcript,The transcription is shown below



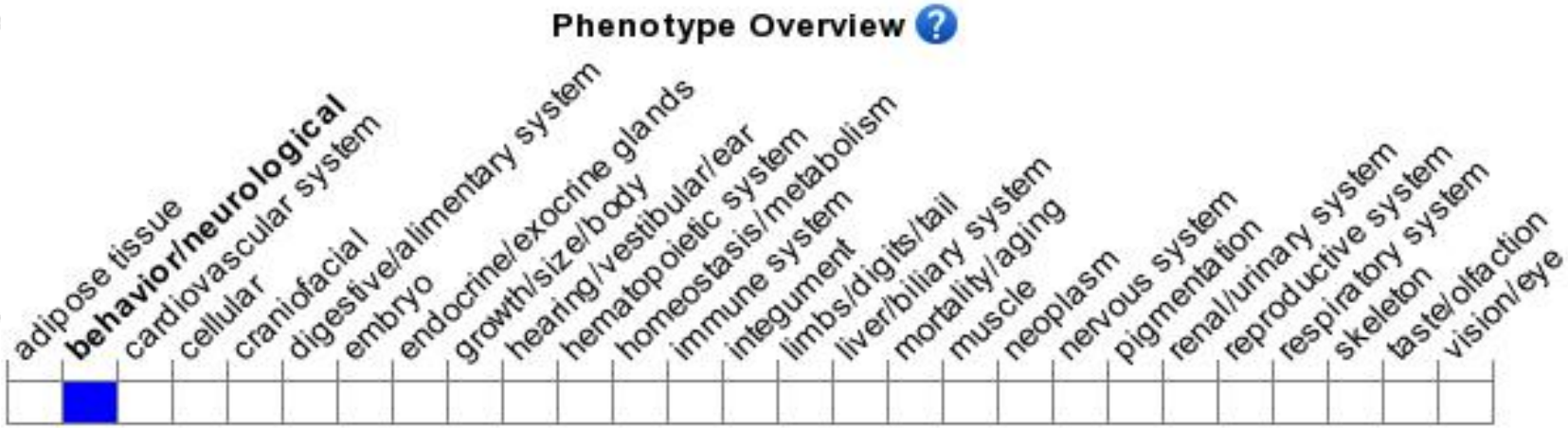
Genomic location distribution



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/).

According to the existing MGI data,Homozygous null mutant mice exhibited decreased exploratory activity and the female mutants exhibited an increased anxiety-like response during open field testing.

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

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