

Prox1 Cas9-KO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2019-10-30

Project Overview

Project Name

Prox1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prox1* gene. The schematic diagram is as follows:



- The *Prox1* gene has 3 transcripts. According to the structure of *Prox1* gene, exon2-exon5 of *Prox1*-202 (ENSMUST00000175916.7) 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 *Prox1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutation of this gene results in embryonic lethality with impaired development of the lens, lymphatic system, liver and pancreas. Heterozygous mutation results in early postnatal lethality with varying penetrance on different genetic backgrounds, obesity and lymphatic vessel abnormalities
- The *Prox1* gene is located on the Chr1. 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)

Prox1 prospero homeobox 1 [Mus musculus (house mouse)]

Gene ID: 19130, updated on 26-Mar-2019

Summary



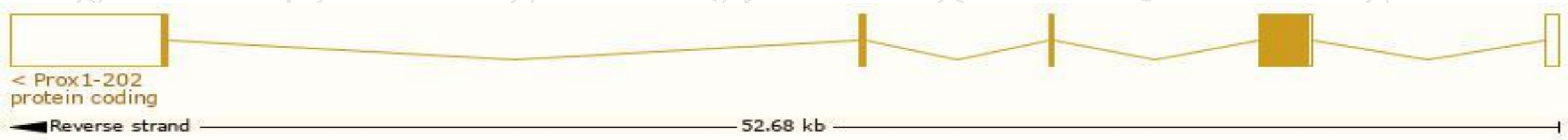
Official Symbol	Prox1 provided by MGI
Official Full Name	prospero homeobox 1 provided by MGI
Primary source	MGI:MGI:97772
See related	Ensembl:ENSMUSG00000010175
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A230003G05Rik, PROX-1
Expression	Broad expression in liver adult (RPKM 6.6), heart adult (RPKM 5.0) and 19 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

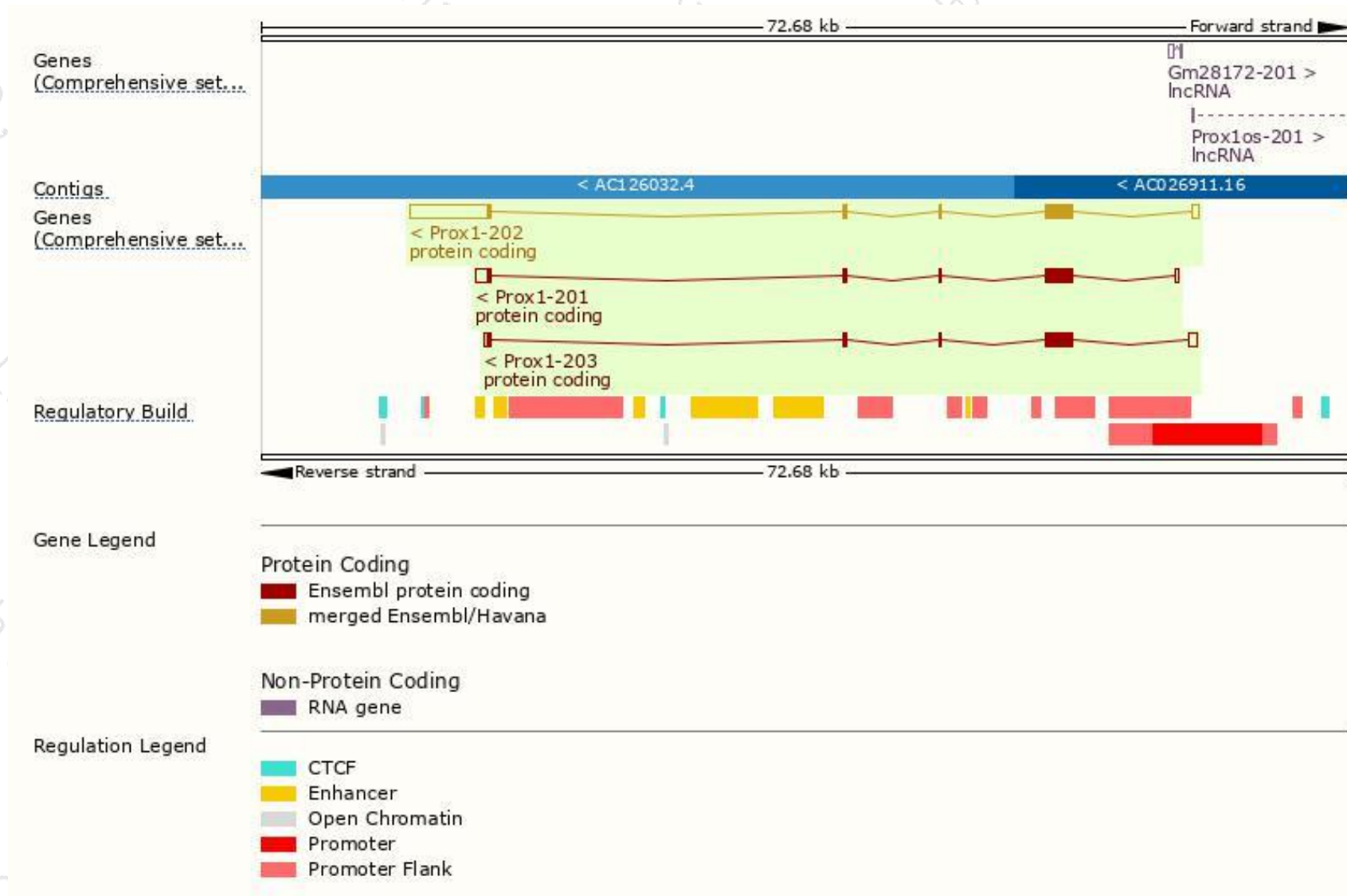
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prox1-202	ENSMUST00000175916.7	7913	737aa	Protein coding	CCDS35822	P48437	TSL:1 GENCODE basic APPRIS P1
Prox1-201	ENSMUST00000010319.13	3285	737aa	Protein coding	CCDS35822	P48437	TSL:1 GENCODE basic APPRIS P1
Prox1-203	ENSMUST00000177288.3	3144	737aa	Protein coding	CCDS35822	P48437	TSL:5 GENCODE basic APPRIS P1

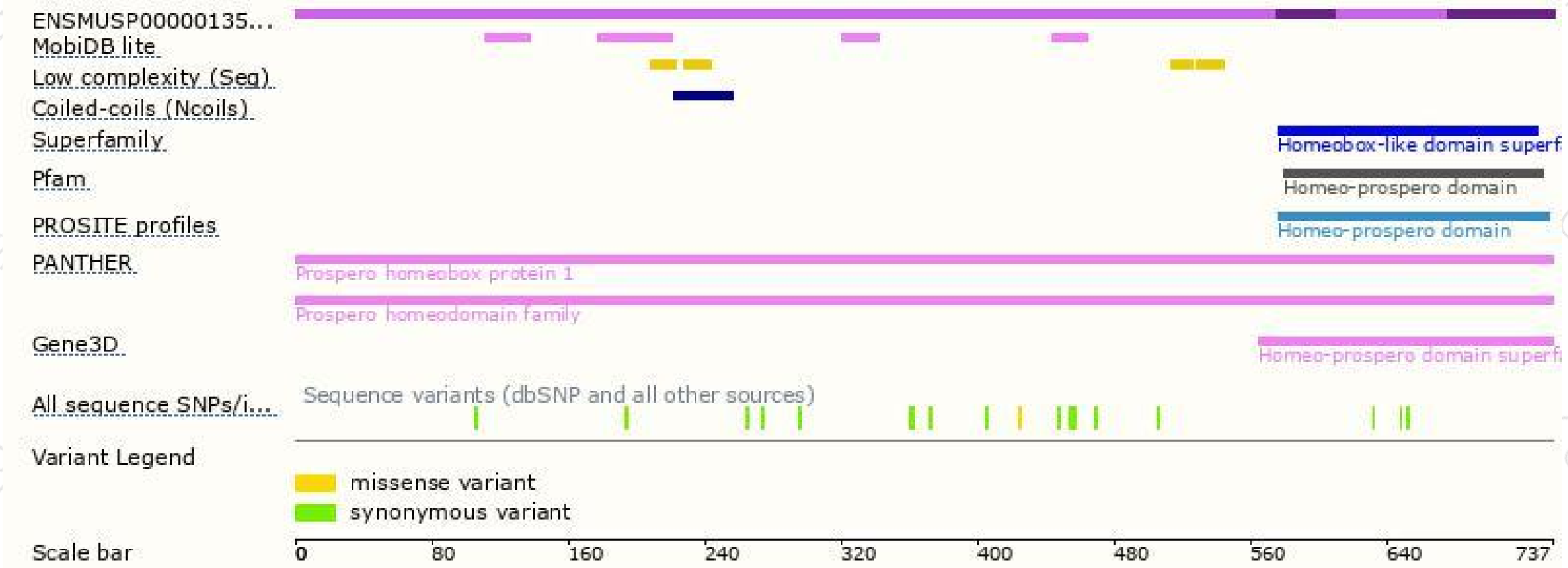
The strategy is based on the design of *Prox1-202* transcript,The transcription is shown below



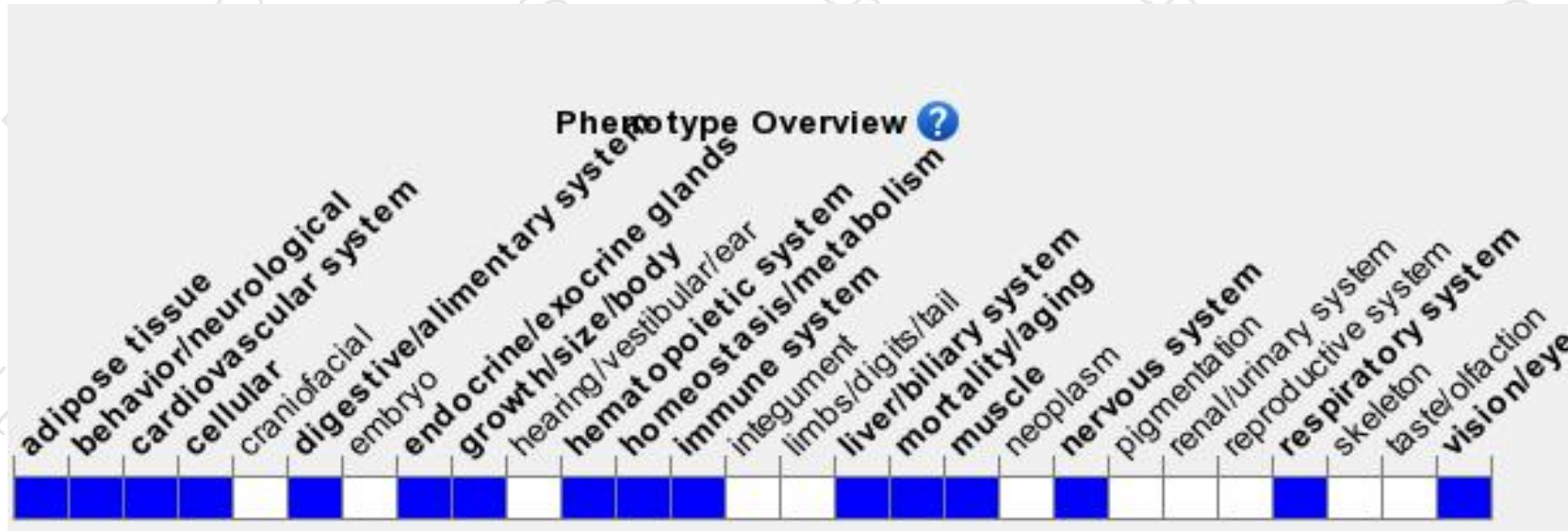
Genomic location distribution



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 mutation of this gene results in embryonic lethality with impaired development of the lens, lymphatic system, liver and pancreas. Heterozygous mutation results in early postnatal lethality with varying penetrance on different genetic backgrounds, obesity and lymphatic vessel abnormalities

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

Tel: 400-9660890

