

Prosl Cas9-KO Strategy

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Project Overview

Project Name

Pros1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pros1* gene. The schematic diagram is as follows:



- The *Pros1* gene has 3 transcripts. According to the structure of *Pros1* gene, exon2 of *Pros1-201* (ENSMUST00000023629.8) transcript is recommended as the knockout region. The region contains 158bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pros1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit neonatal lethality associated with thrombosis, hemorrhage, and thrombocytopenia.
- Transcript 202, 203 are unaffected.
- The *Pros1* gene is located on the Chr16. 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)

Pros1 protein S (alpha) [*Mus musculus* (house mouse)]

Gene ID: 19128, updated on 12-Aug-2019

Summary

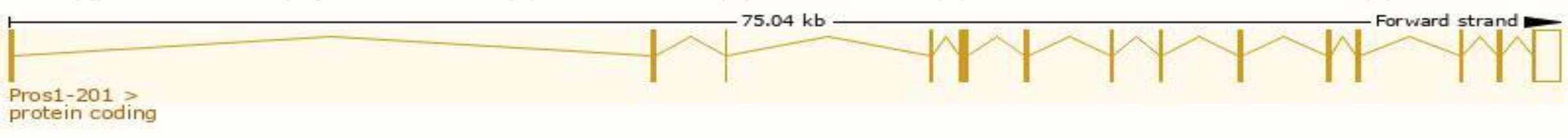
Official Symbol	Pros1 provided by MGI
Official Full Name	protein S (alpha) provided by MGI
Primary source	MGI:MGI:1095733
See related	Ensembl:ENSMUSG00000022912
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW214361
Summary	This gene encodes a vitamin K-dependent protein with key roles in multiple biological processes including coagulation, apoptosis and vasculogenesis. The encoded protein undergoes proteolytic processing to generate a mature protein which is secreted into the plasma. Mice lacking the encoded protein die in utero from a fulminant coagulopathy and associated hemorrhages. [provided by RefSeq, Oct 2015]
Expression	Ubiquitous expression in placenta adult (RPKM 16.0), bladder adult (RPKM 11.9) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

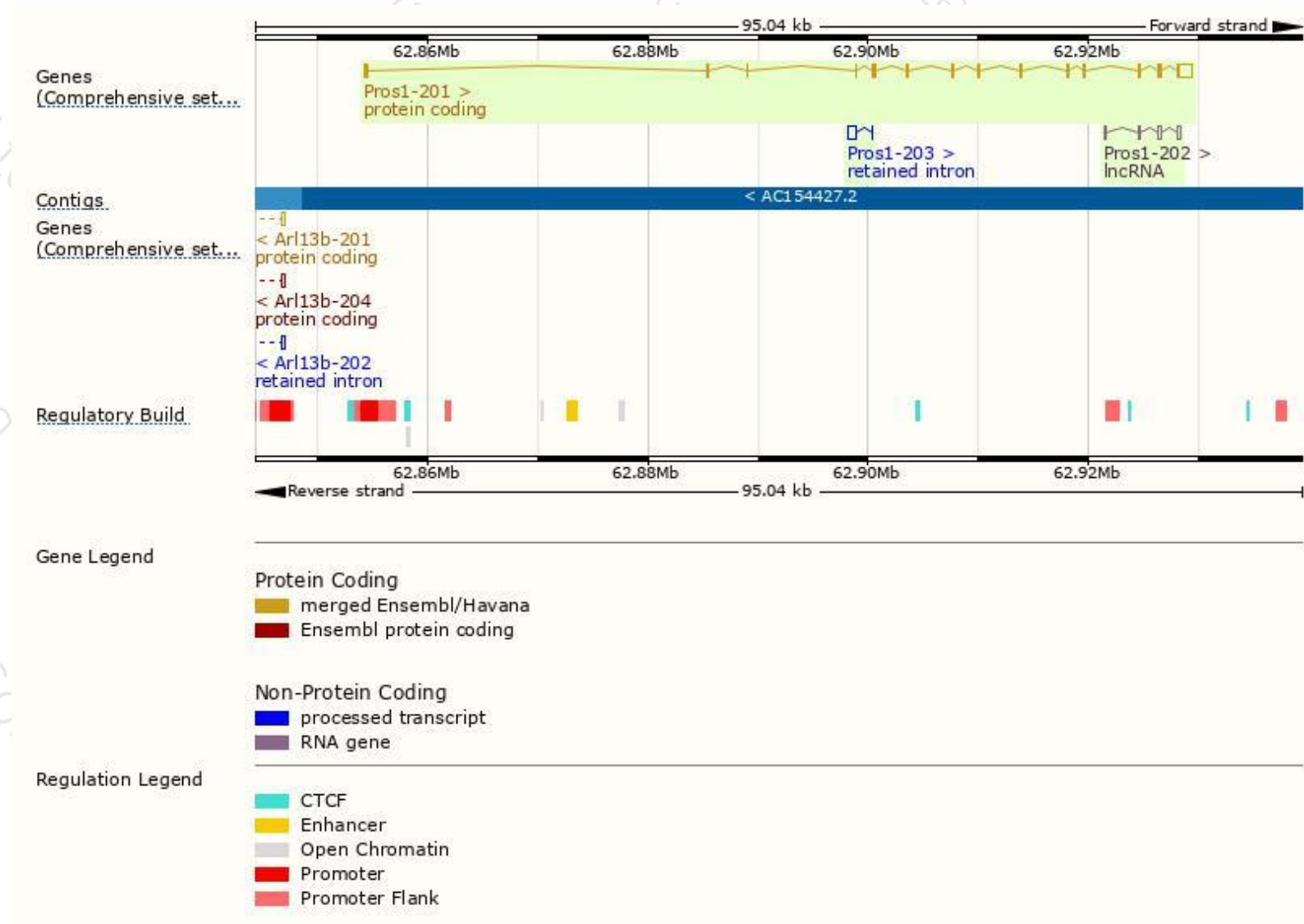
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pros1-201	ENSMUST00000023629.8	3303	675aa	Protein coding	CCDS28263	Q08761 Q3TR66	TSL:1 GENCODE basic APPRIS P1
Pros1-203	ENSMUST00000155940.1	863	No protein	Retained intron	-	-	TSL:5
Pros1-202	ENSMUST00000127502.1	791	No protein	lncRNA	-	-	TSL:1

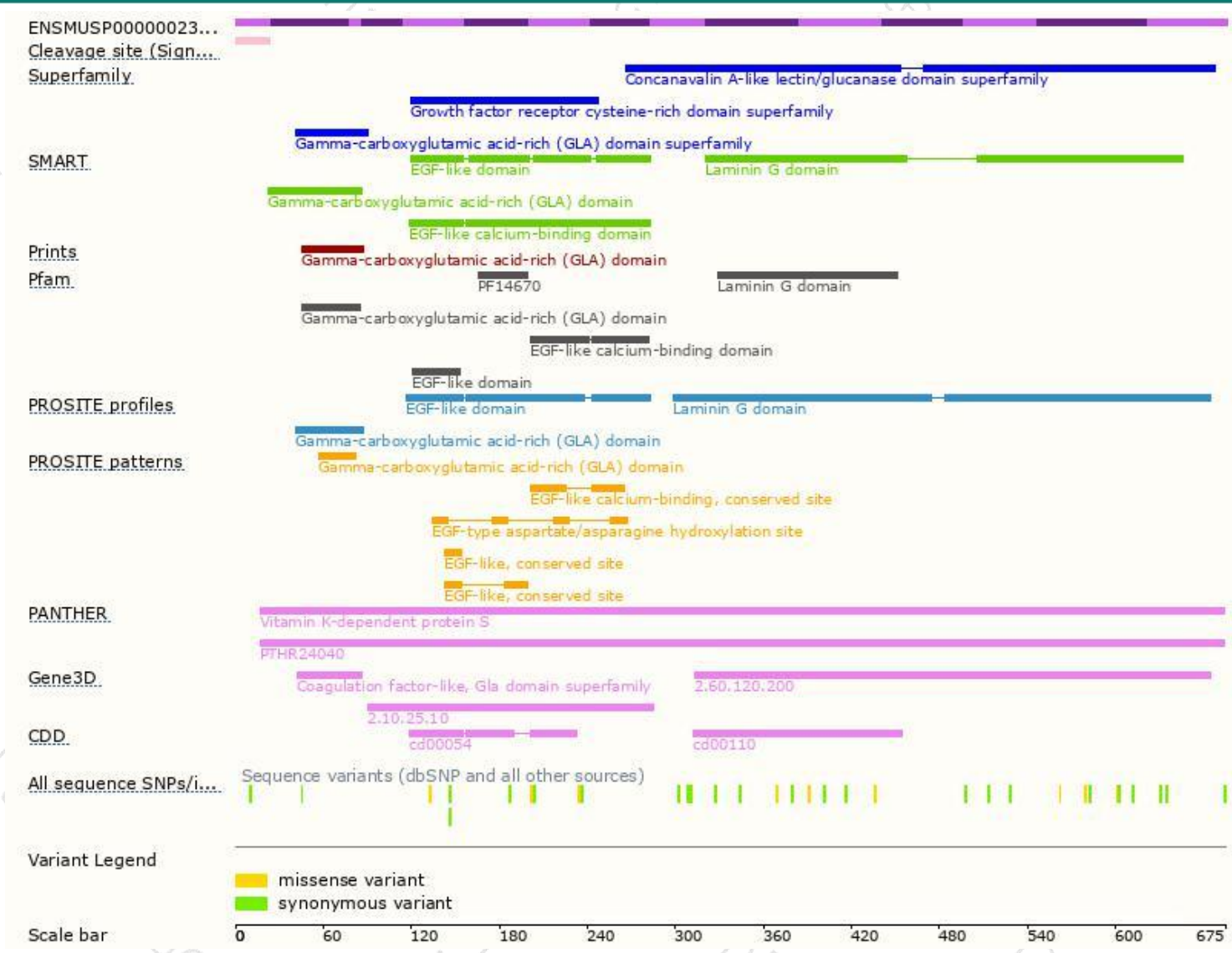
The strategy is based on the design of *Pros1-201* transcript,The transcription is shown below



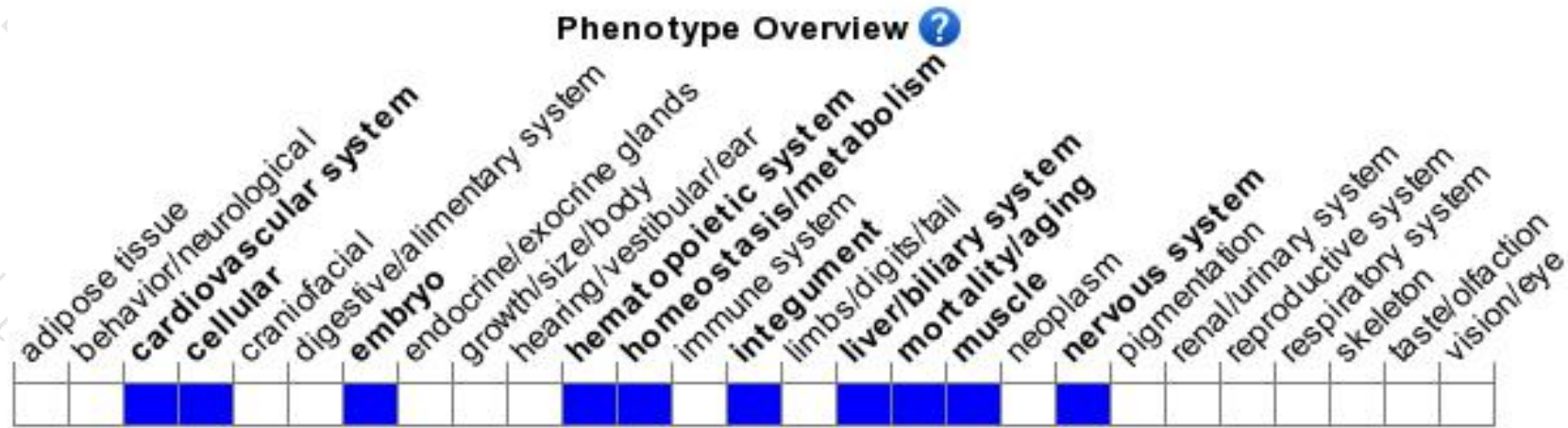
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit neonatal lethality associated with thrombosis, hemorrhage, and thrombocytopenia.

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

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