

# ***Prosl* Cas9-CKO Strategy**

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Design Date: 2019-09-05

# Project Overview

**Project Name**

*Pros1*

**Project type**

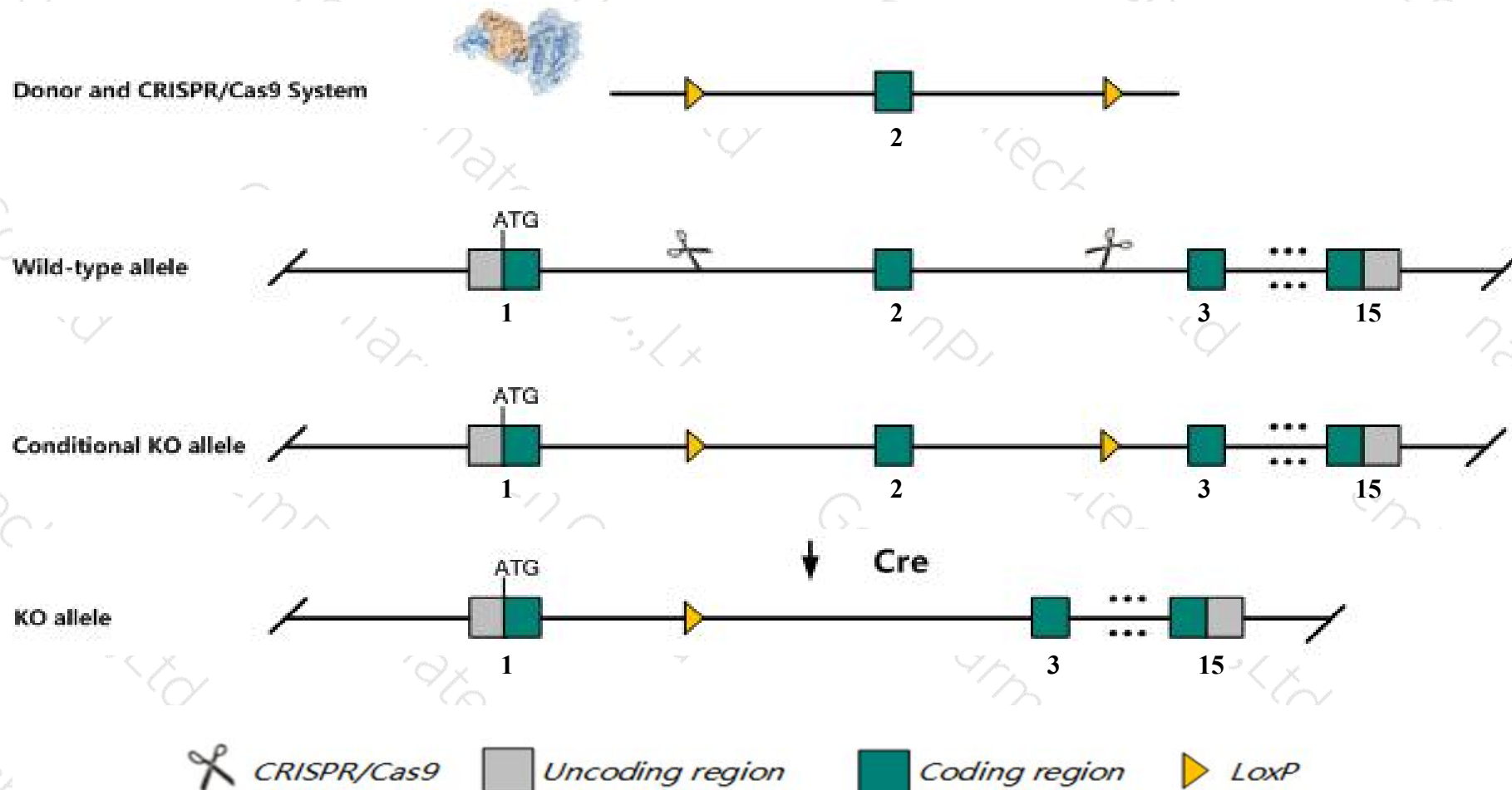
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prosl* 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 and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.



# Gene information (NCBI)

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

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

### Summary

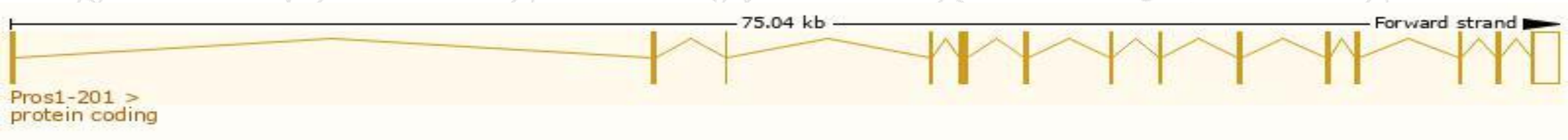
Official Symbol	Pros1 provided by MGI
Official Full Name	protein S (alpha) provided by MGI
Primary source	MGI:MGI:1095733
See related	Ensembl:ENSMUSG00000022912
Gene type	protein coding
RefSeq status	REVIEWED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; 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 <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

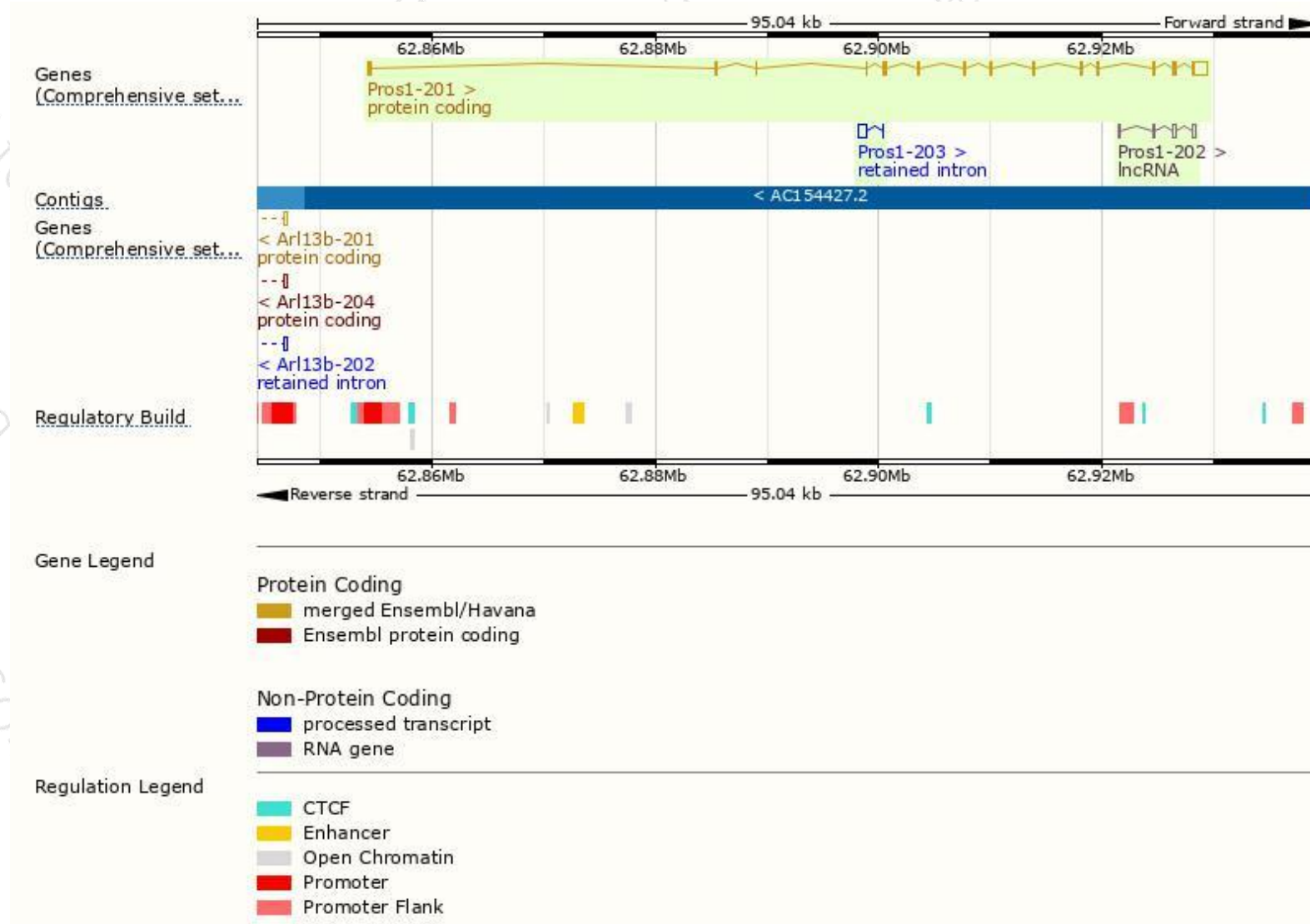
The gene has 3 transcripts,all transcripts are shown below:

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

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

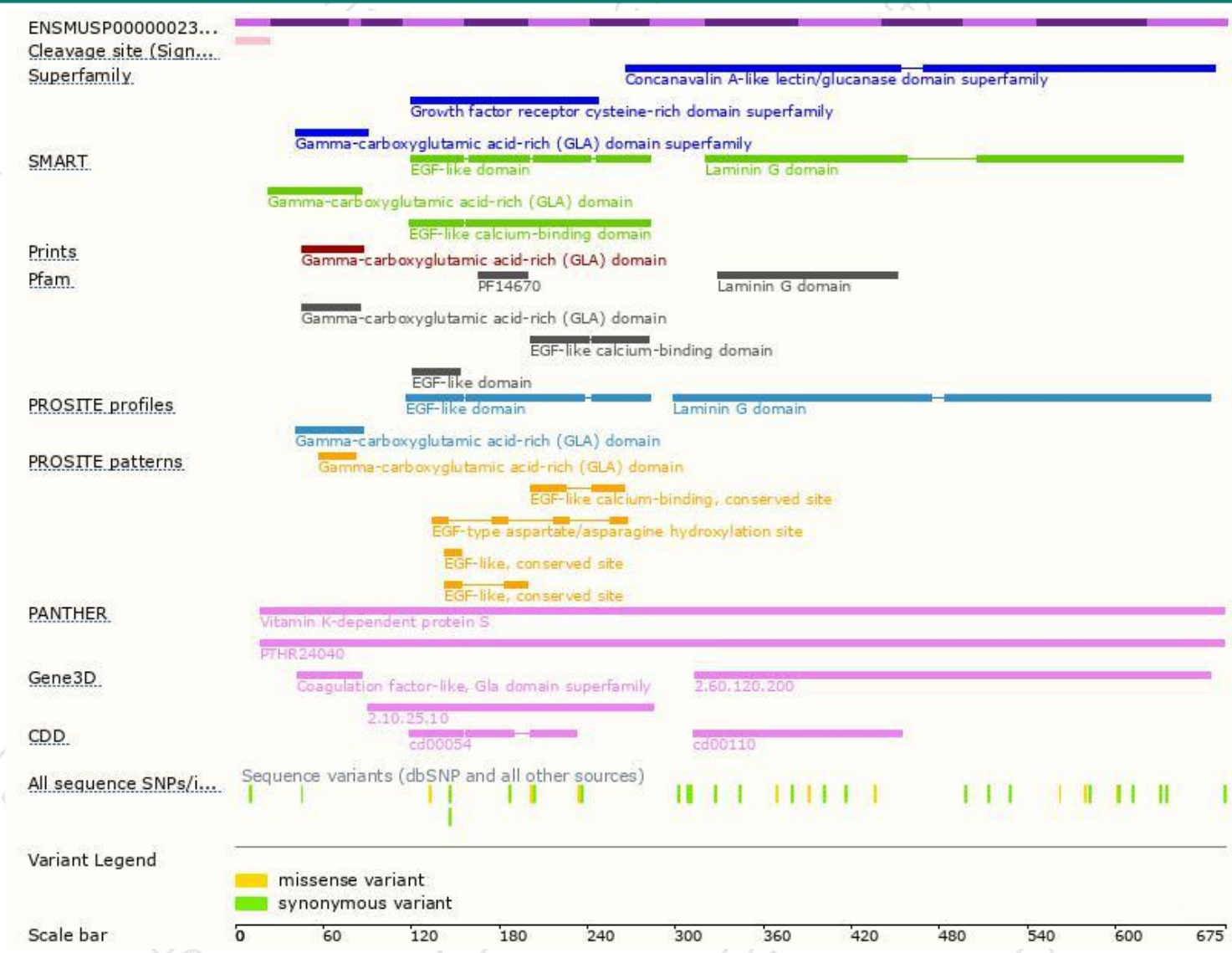


# Genomic location distribution

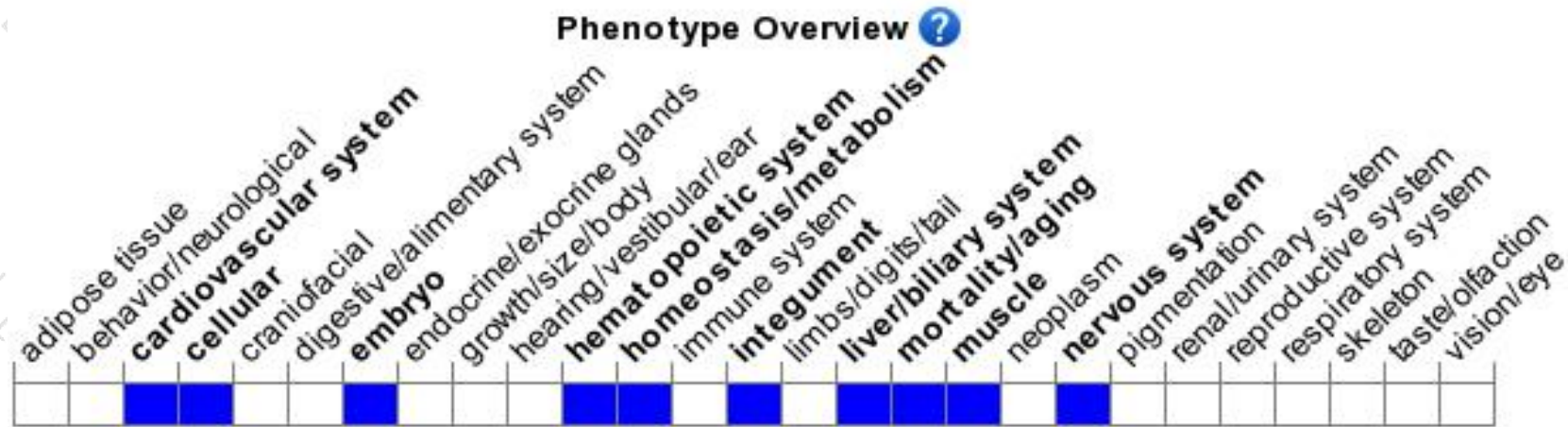




# Protein domain



# 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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