Pls1 Cas9-CKO Strategy

Designer: JiaYu

Reviewer: Xiaojing Li

Design Date: 2020-2-18

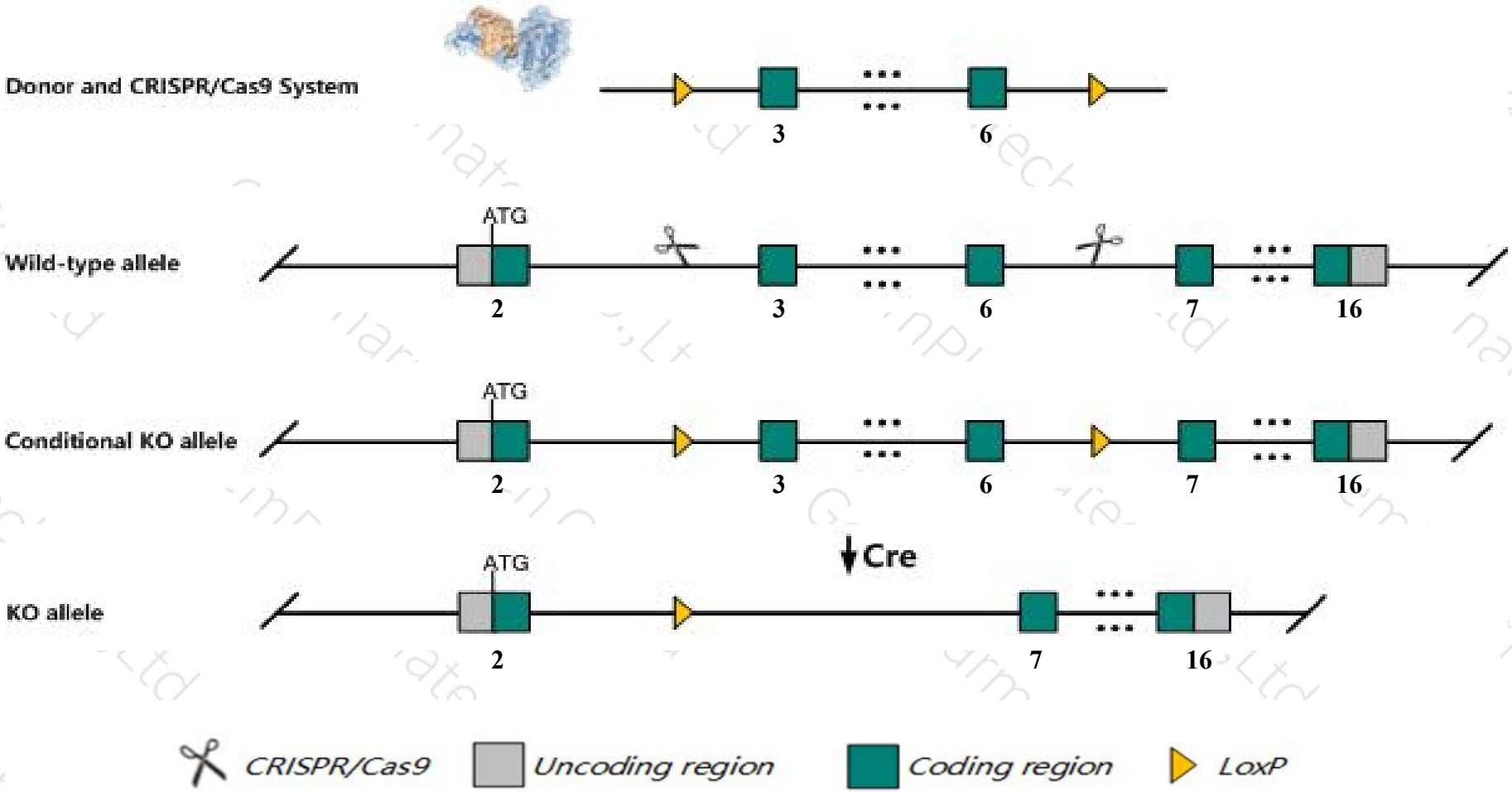
GemPharmatech Co.,Ltd

Project Overview

Project Name	***Pls1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pls1* gene. The schematic diagram is as follows:



Technical routes

- The *Pls1* gene has 3 transcripts. According to the structure of *Pls1* gene, exon3-exon6 of *Pls1-201* (ENSMUST00000093800.8) transcript is recommended as the knockout region.The region contains 509bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Pls1* 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.

Notice

- According to the existing MGI data,Homozygous inactivation for this gene leads to altered intestinal morphology and physiology, increased brush border fragility and susceptibility to induced colitis, as well as a moderate and progressive form of hearing loss associated with defects in stereocilia morphology.

- The *Pls1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Pls1 plastin 1 (l-isoform) [Mus musculus (house mouse)]

Gene ID: 102502, updated on 31-Jan-2019

Summary

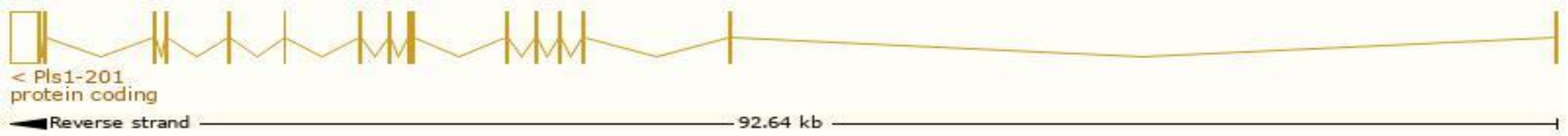
Official Symbol	Pls1 provided by MGI
Official Full Name	plastin 1 (l-isoform) provided by MGI
Primary source	MGI:MGI:104809
See related	Ensembl:ENSMUSG00000049493
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI427122
Expression	Biased expression in large intestine adult (RPKM 58.4), small intestine adult (RPKM 19.6) and 4 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

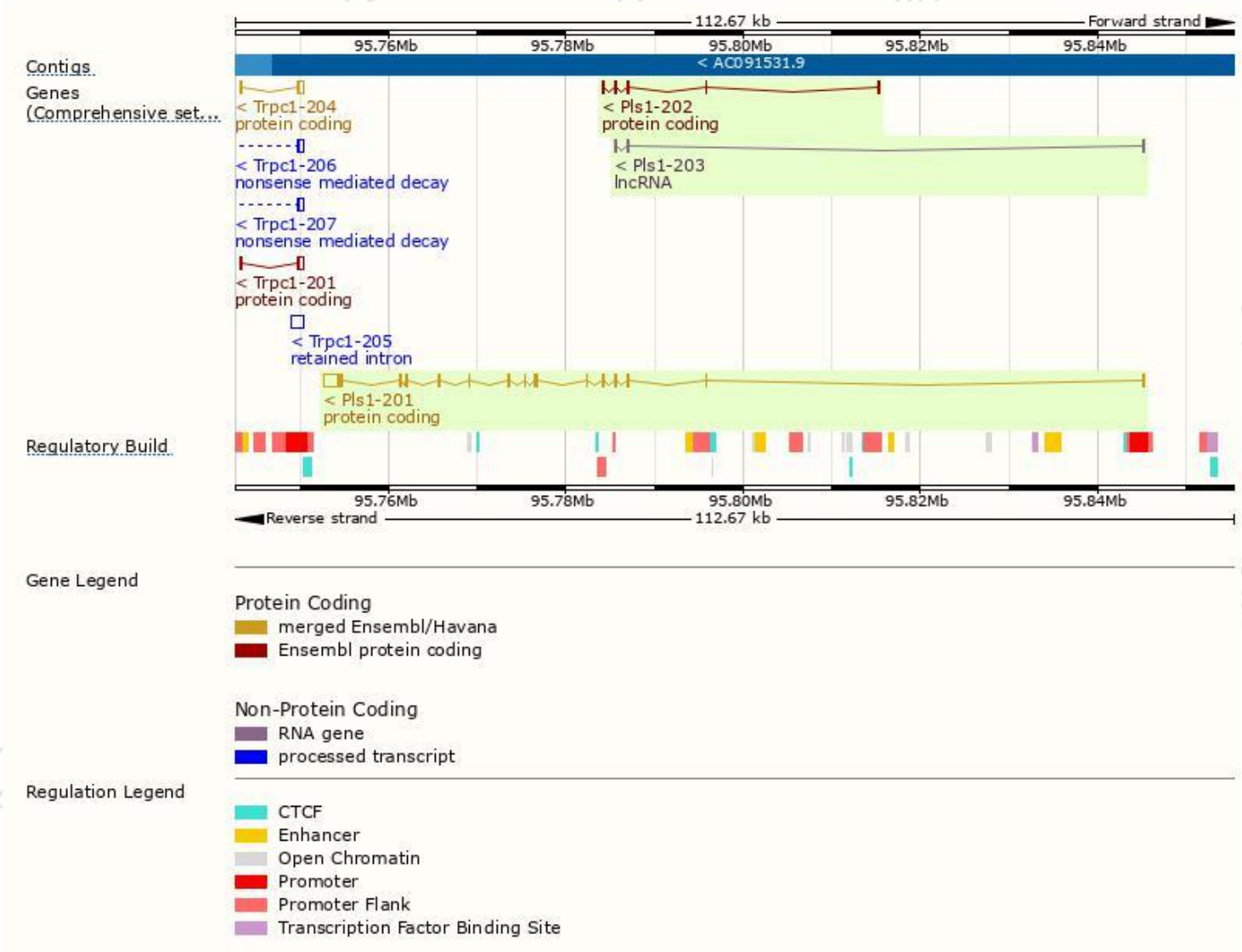
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pls1-201	ENSMUST00000093800.8	3704	630aa	Protein coding	CCDS23412	Q3V0K9	TSL:1 GENCODE basic APPRIS P1
Pls1-202	ENSMUST00000119760.1	612	138aa	Protein coding	-	D3Z6J7	CDS 3' incomplete TSL:3
Pls1-203	ENSMUST00000135816.1	371	No protein	lncRNA	-	-	TSL:3

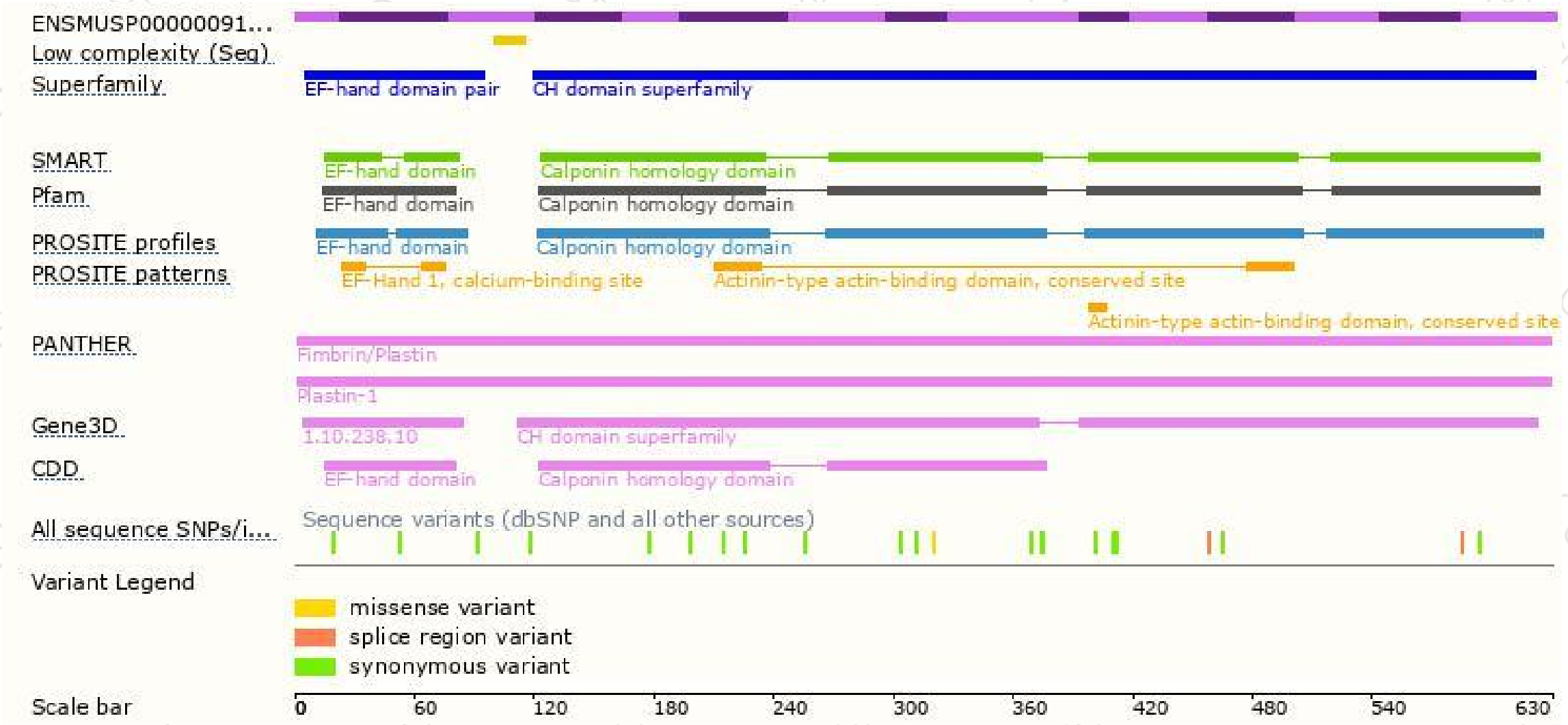
The strategy is based on the design of *Pls1-201* transcript,The transcription is shown below



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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集萃药康
GemPharmatech

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

Tel: 400-9660890

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