

Plekhg1 Cas9-CKO Strategy

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Design Date: 2020-9-14

Project Overview

Project Name

Plekhg1

Project type

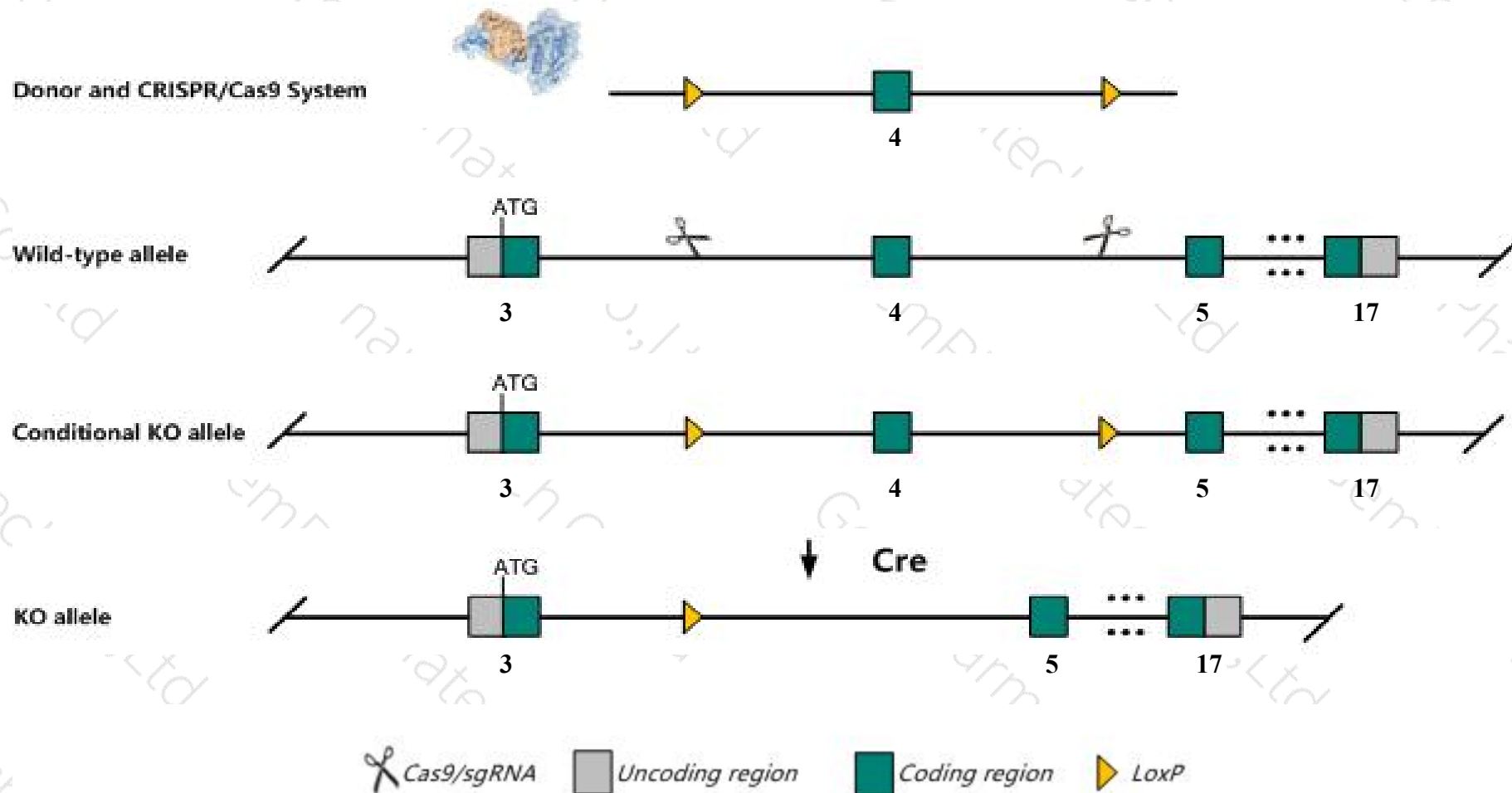
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Plekhhg1* gene. The schematic diagram is as follows:



Technical routes

- The *Plekhg1* gene has 10 transcripts. According to the structure of *Plekhg1* gene, exon4 of *Plekhg1*-202(ENSMUST00000120274.7) transcript is recommended as the knockout region. The region contains 101bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Plekhg1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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

- The *Plekhg1* gene is located on the Chr10. 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.
- Transcript *Plekhg1*-206 may not be affected.
- The effect on transcript *Plekhg1*-208 is unknown.
- 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)

Plekhg1 pleckstrin homology domain containing, family G (with RhoGef domain) member 1 [Mus musculus (house mouse)]

Gene ID: 213783, updated on 13-Mar-2020

Summary



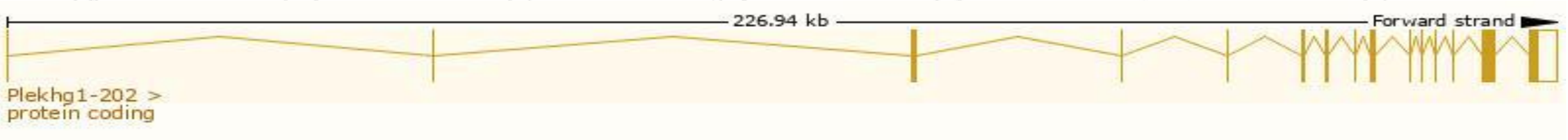
Official Symbol	Plekhg1 provided by MGI
Official Full Name	pleckstrin homology domain containing, family G (with RhoGef domain) member 1 provided by MGI
Primary source	MGI:MGI:2676551
See related	Ensembl:ENSMUSG00000040624
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	D10Ert733e, Gm521, mKIAA1209
Expression	Ubiquitous expression in genital fat pad adult (RPKM 3.8), limb E14.5 (RPKM 3.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

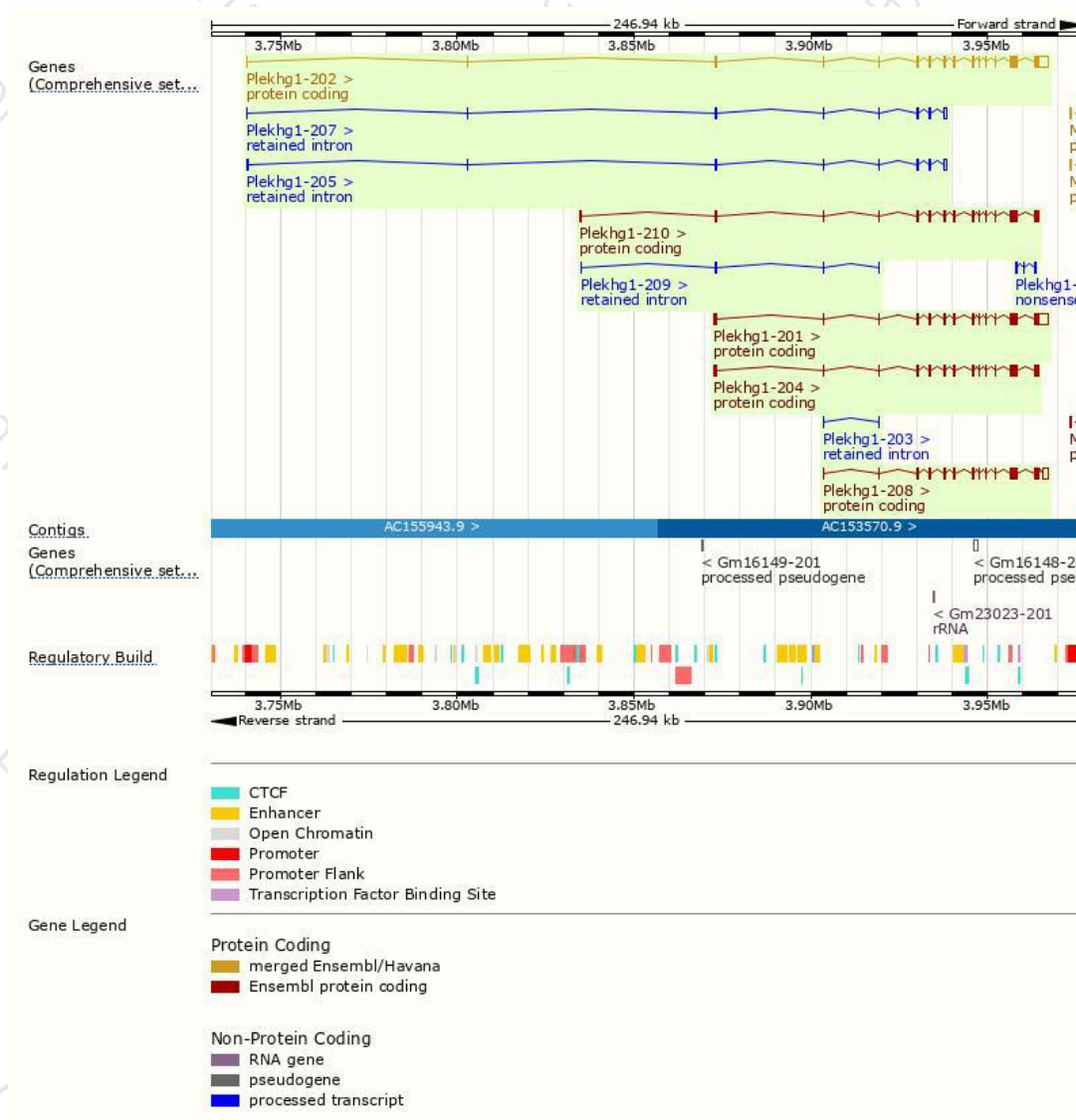
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Plekhg1-202	ENSMUST00000120274.7	7369	1390aa	Protein coding	CCDS56671	Q3UX37	TSL:5 GENCODE basic APPRIS P2
Plekhg1-201	ENSMUST00000042438.12	7190	1390aa	Protein coding	CCDS56671	Q3UX37	TSL:1 GENCODE basic APPRIS P2
Plekhg1-208	ENSMUST00000154727.1	5405	1213aa	Protein coding	-	F7C583	CDS 5' incomplete TSL:5
Plekhg1-210	ENSMUST00000239159.1	4478	1465aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Plekhg1-204	ENSMUST00000136671.7	4436	1446aa	Protein coding	-	F6S200	CDS 5' incomplete TSL:1
Plekhg1-206	ENSMUST00000141367.1	638	150aa	Nonsense mediated decay	-	F7CES2	CDS 5' incomplete TSL:3
Plekhg1-205	ENSMUST00000137111.1	2016	No protein	Retained intron	-	-	TSL:1
Plekhg1-207	ENSMUST00000144543.7	1854	No protein	Retained intron	-	-	TSL:1
Plekhg1-209	ENSMUST00000238840.1	1016	No protein	Retained intron	-	-	
Plekhg1-203	ENSMUST00000131525.1	303	No protein	Retained intron	-	-	TSL:3

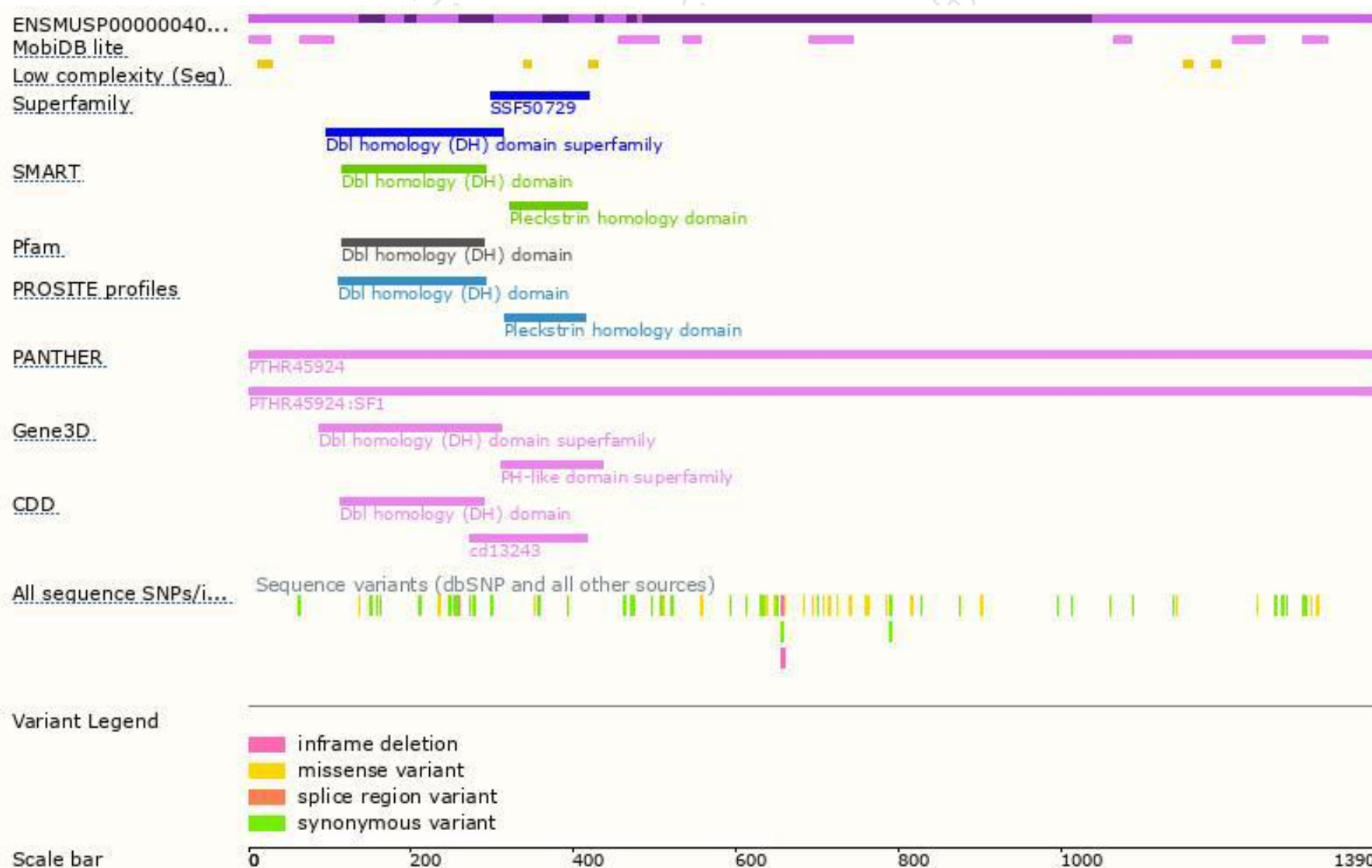
The strategy is based on the design of *Plekhg1-202* transcript,the transcription is shown below:



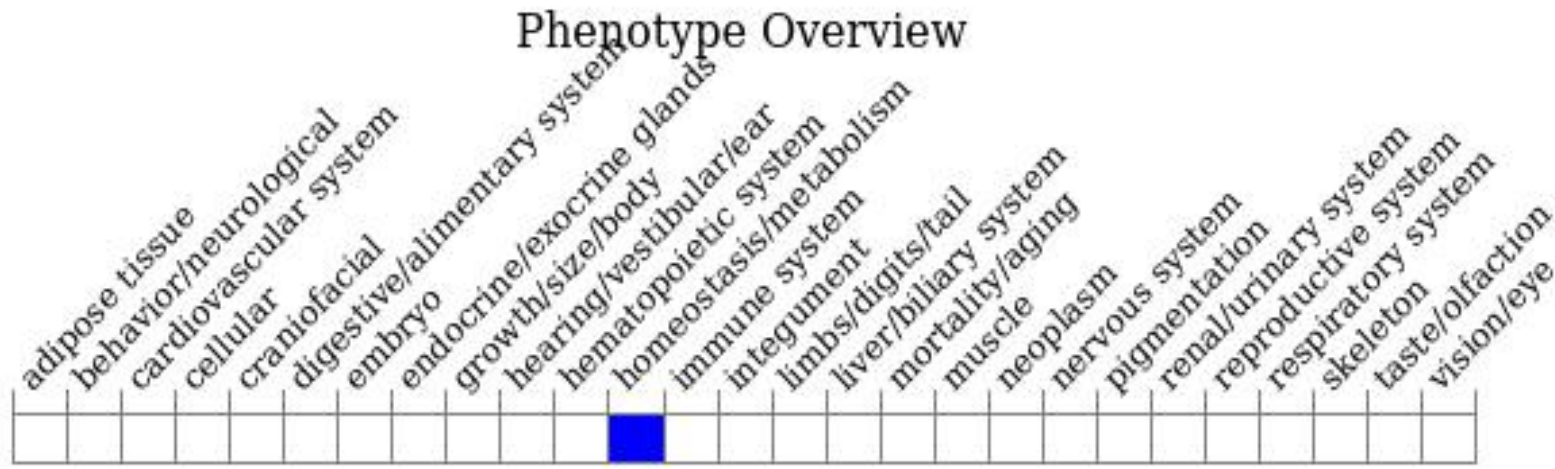
Genomic location distribution



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/>).

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

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