Plekhg3 Cas9-CKO Strategy

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Project Overview

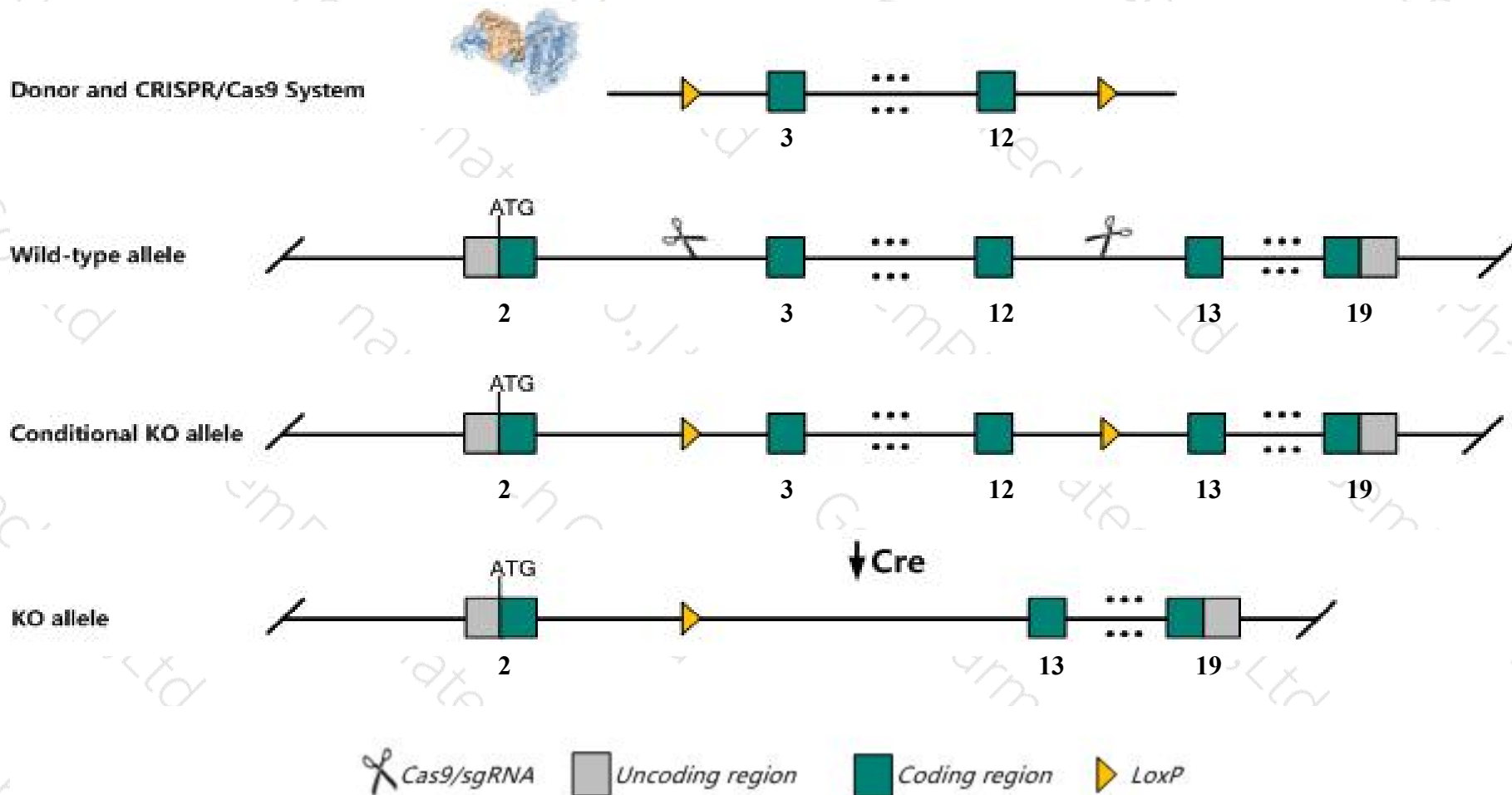|	
Project Name	*Plekhg3*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Plekhg3* gene. The schematic diagram is as follows:

Technical routes

➢ The *Plekhg3* gene has 9 transcripts. According to the structure of *Plekhg3* gene, exon3-exon12 of *Plekhg3-201*(ENSMUST00000075249.5) transcript is recommended as the knockout region.The region contains 994bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Plekhg3* 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 *Plekhg3* gene is located on the Chr12. 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 *Plekhg3*-205&208 may not be affected.

➢ The effect on transcript *Plekhg3*-202&204&209 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）

Plekhg3 pleckstrin homology domain containing, family G (with RhoGef domain) member 3 [Mus musculus (house mouse)]

Gene ID: 263406, updated on 20-Mar-2020

▲ Summary

|	
Official Symbol	Plekhg3 provided by MGI
Official Full Name	pleckstrin homology domain containing, family G (with RhoGef domain) member 3 provided byMGI
Primary source	MGI:MGI:2388284
See related	Ensembl:ENSMUSG00000052609
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	BC030417
Expression	Ubiquitous expression in kidney adult (RPKM 15.9), bladder adult (RPKM 13.1) and 25 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 9 transcripts,all transcripts are shown below:

| Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Plekhg3-201	ENSMUST00000075249.5	5138	1341aa	Protein coding	CCDS25994	Q4VAC9	TSL:1 GENCODE basic APPRIS P2
Plekhg3-207	ENSMUST00000219063.1	4535	1340aa	Protein coding	-	Q4VAC9	TSL:5 GENCODE basic APPRIS ALT2
Plekhg3-209	ENSMUST00000219751.1	693	143aa	Protein coding	-	A0A1W2P7L9	CDS 3' incomplete TSL:3
Plekhg3-204	ENSMUST00000218380.1	474	91aa	Protein coding	-	A0A1W2P7Z4	CDS 3' incomplete TSL:3
Plekhg3-202	ENSMUST00000217730.1	449	9aa	Protein coding	-	A0A1W2P798	CDS 3' incomplete TSL:2
Plekhg3-208	ENSMUST00000219426.1	5641	No protein	Retained intron	-	-	TSL:1
Plekhg3-205	ENSMUST00000218427.1	4815	No protein	Retained intron	-	-	TSL:1
Plekhg3-206	ENSMUST00000218461.1	3434	No protein	Retained intron	-	-	TSL:1
Plekhg3-203	ENSMUST00000218357.1	3152	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Plekhg3-201* transcript,the transcription is shown below:
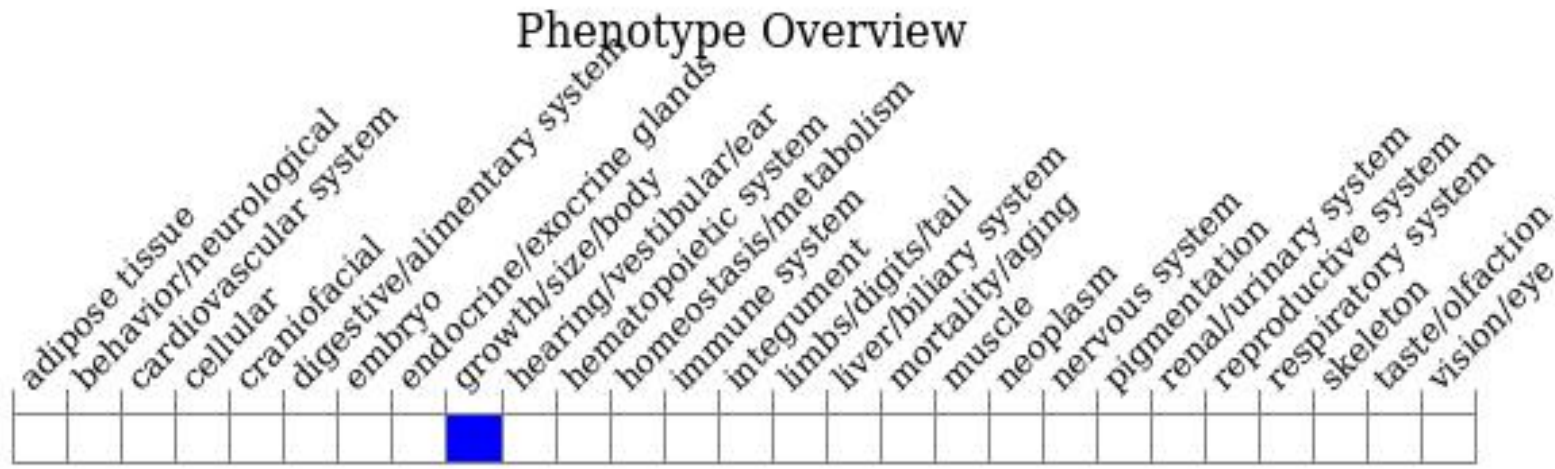
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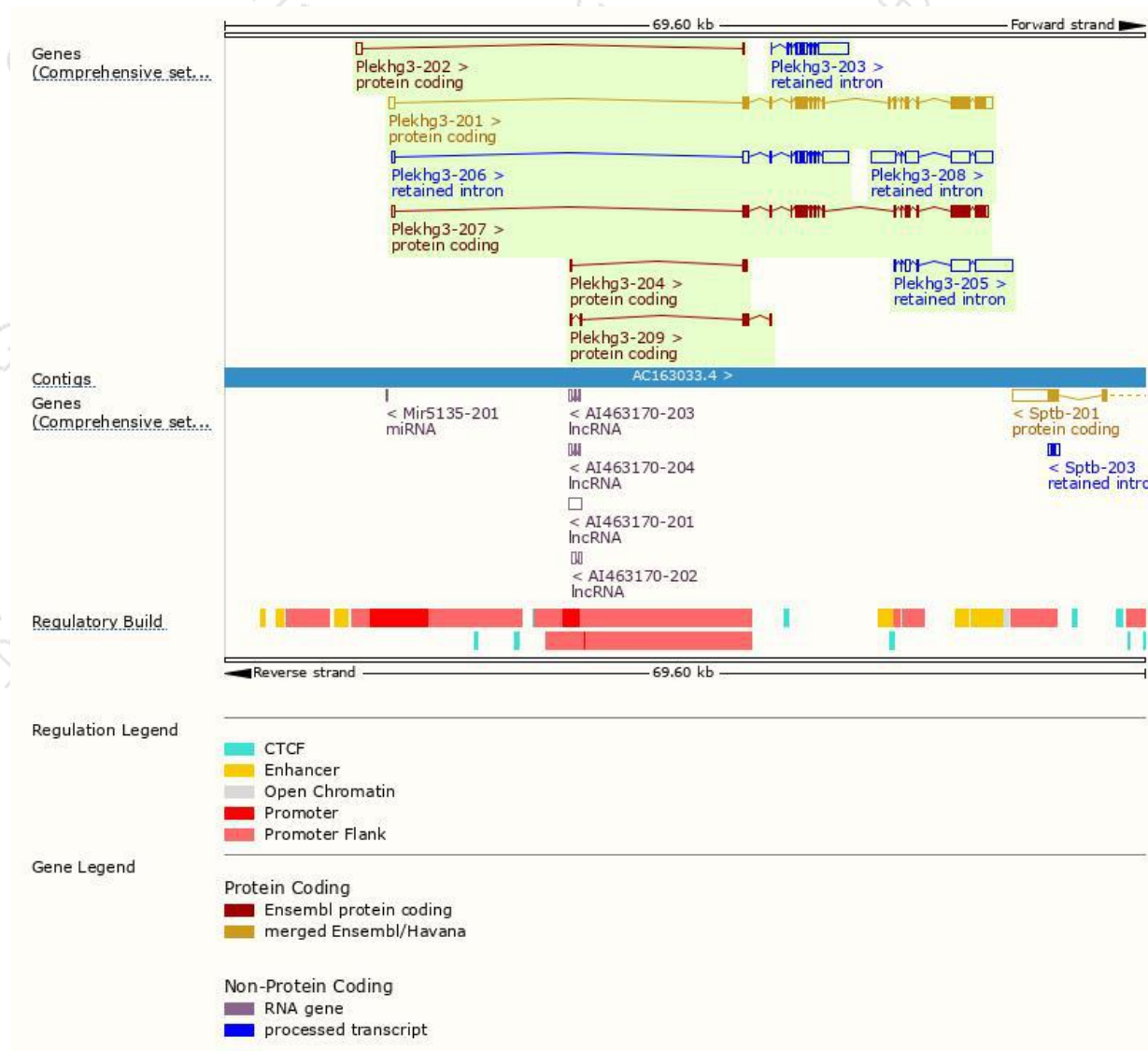
Protein domain
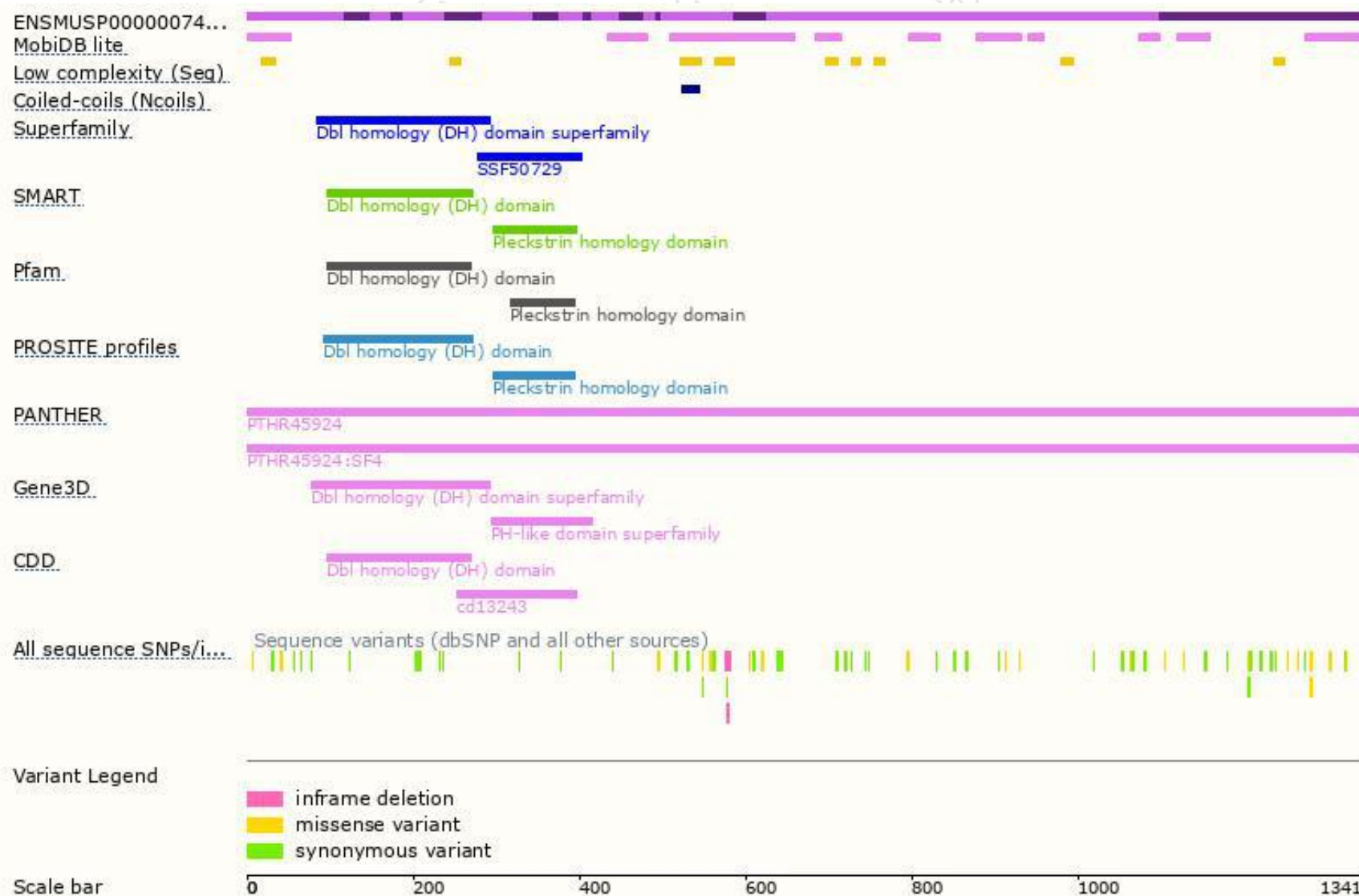
Mouse phenotype description(MGI)

Phenotype Overview

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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