Derl3 Cas9-CKO Strategy

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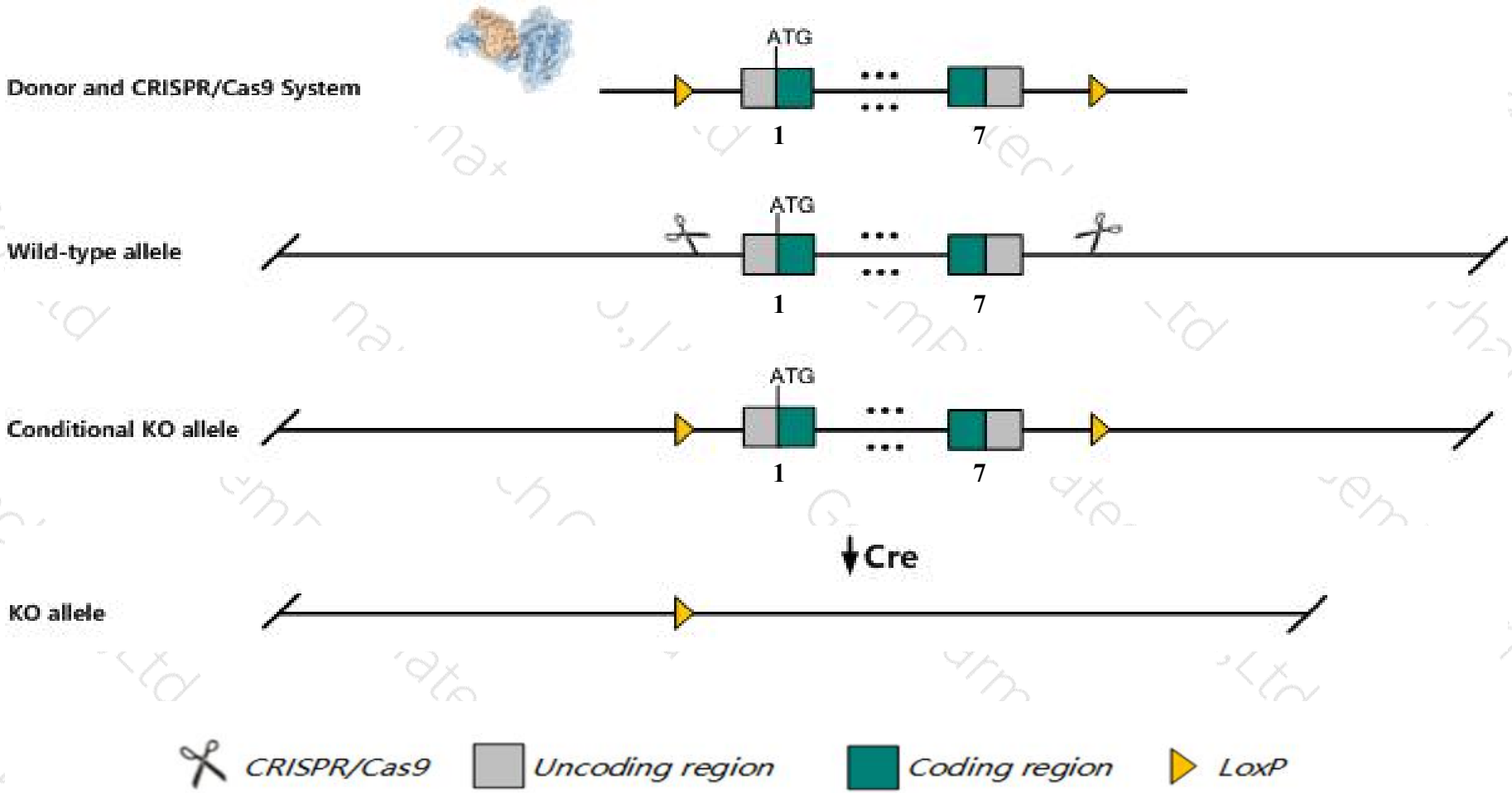
Project Overview

Project Name	***Derl3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Derl3* gene. The schematic diagram is as follows:



Technical routes

- The *Derl3* gene has 8 transcripts. According to the structure of *Derl3* gene, exon1-exon7 of *Derl3-201* (ENSMUST00000009236.5) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Derl3* 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,mice homozygous for this gene trapped allele show no obvious phenotype alterations.

➢ The *Derl3* 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.

➢ 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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Derl3 Der1-like domain family, member 3 [Mus musculus (house mouse)]

Gene ID: 70377, updated on 13-Mar-2020

Summary

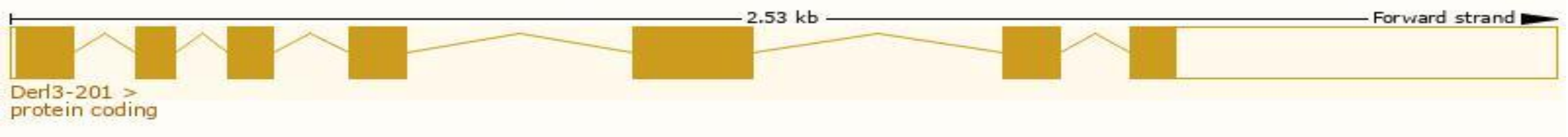
Official Symbol	Derl3 provided by MGI
Official Full Name	Der1-like domain family, member 3 provided by MGI
Primary source	MGI:MGI:1917627
See related	Ensembl:ENSMUSG00000009092
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1810006I20Rik, 1810063P04Rik, IZP6, derlin-3
Expression	Biased expression in ovary adult (RPKM 82.9), genital fat pad adult (RPKM 42.8) and 8 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

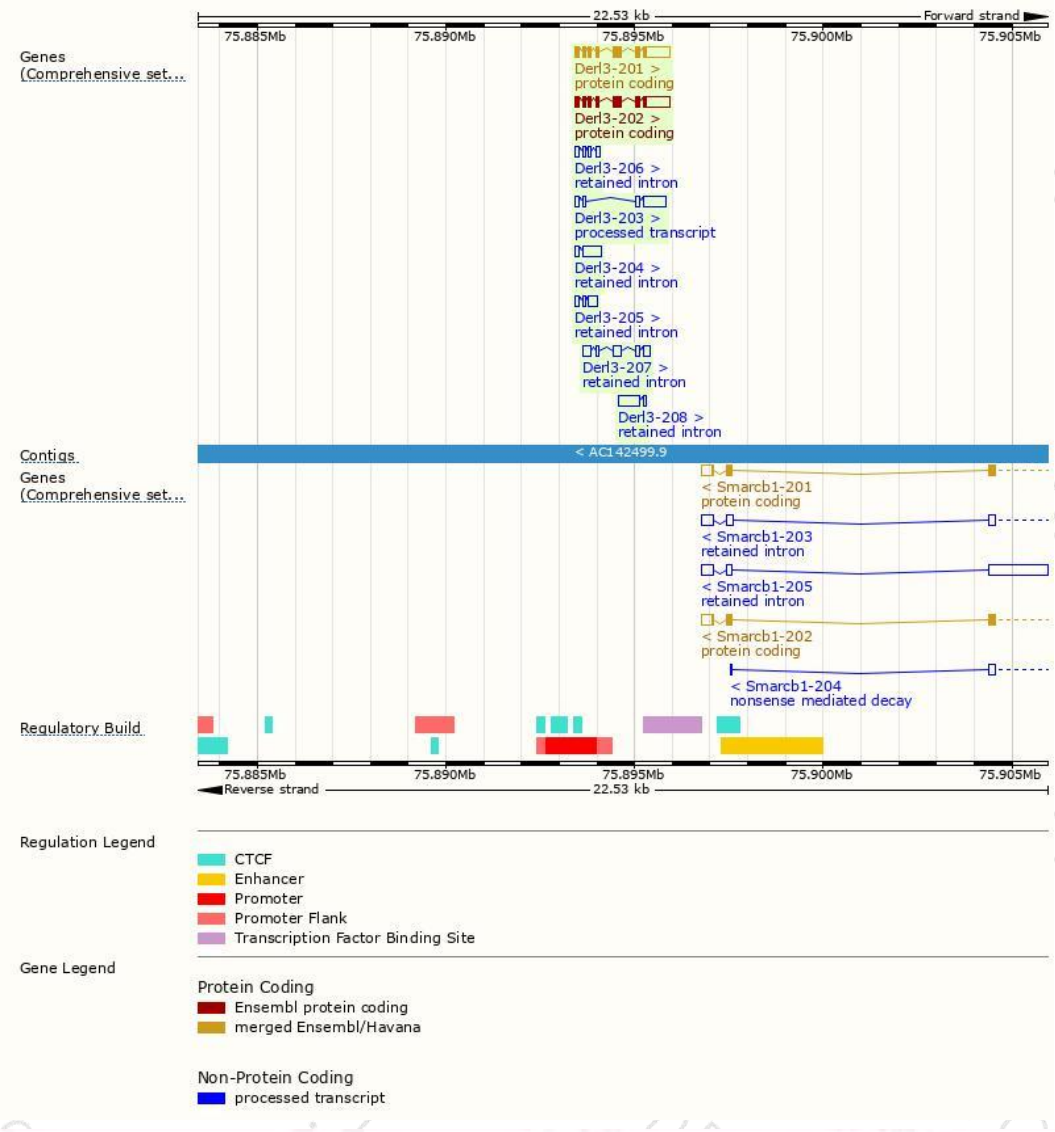
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Derl3-201	ENSMUST00000009236.5	1321	228aa	Protein coding	CCDS23935	Q14C34 Q9D8K3	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P2
Derl3-202	ENSMUST00000217811.1	1316	227aa	Protein coding	-	A0A1W2P7B5	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS ALT2
Derl3-203	ENSMUST00000218506.1	815	No protein	Processed transcript	-	-	TSL:3
Derl3-207	ENSMUST00000219994.1	774	No protein	Retained intron	-	-	TSL:3
Derl3-208	ENSMUST00000220190.1	604	No protein	Retained intron	-	-	TSL:2
Derl3-204	ENSMUST00000218718.1	579	No protein	Retained intron	-	-	TSL:3
Derl3-205	ENSMUST00000218932.1	395	No protein	Retained intron	-	-	TSL:2
Derl3-206	ENSMUST00000219568.1	362	No protein	Retained intron	-	-	TSL:2

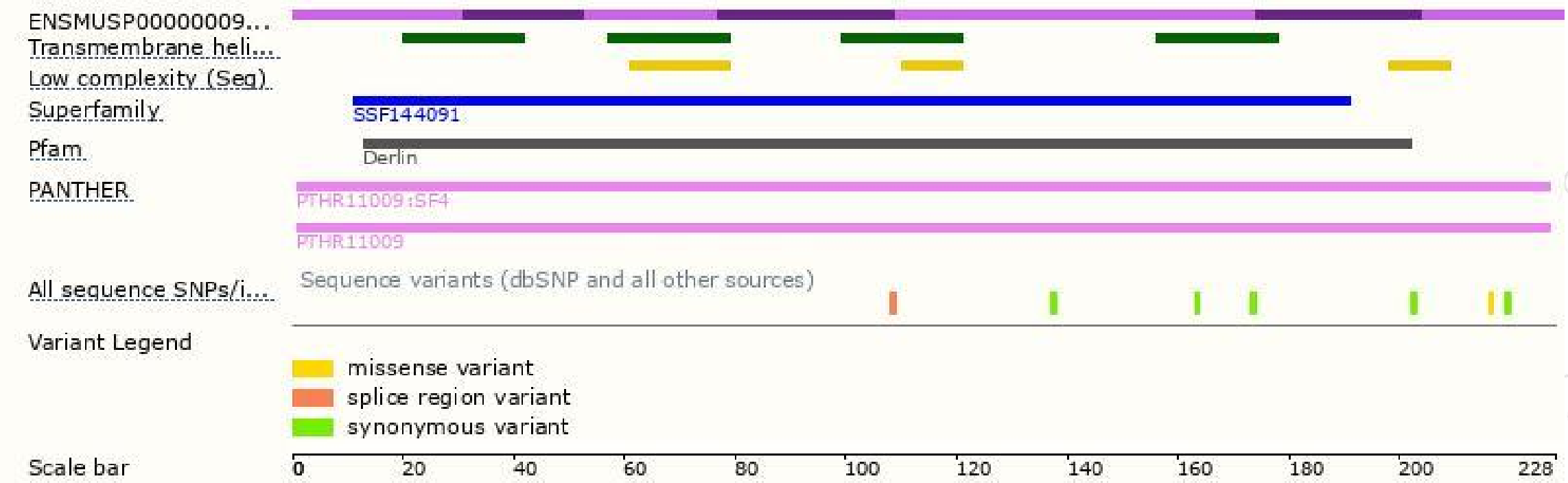
The strategy is based on the design of *Derl3-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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