

Polr1a Cas9-CKO Strategy

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Project Overview

Project Name

Polr1a

Project type

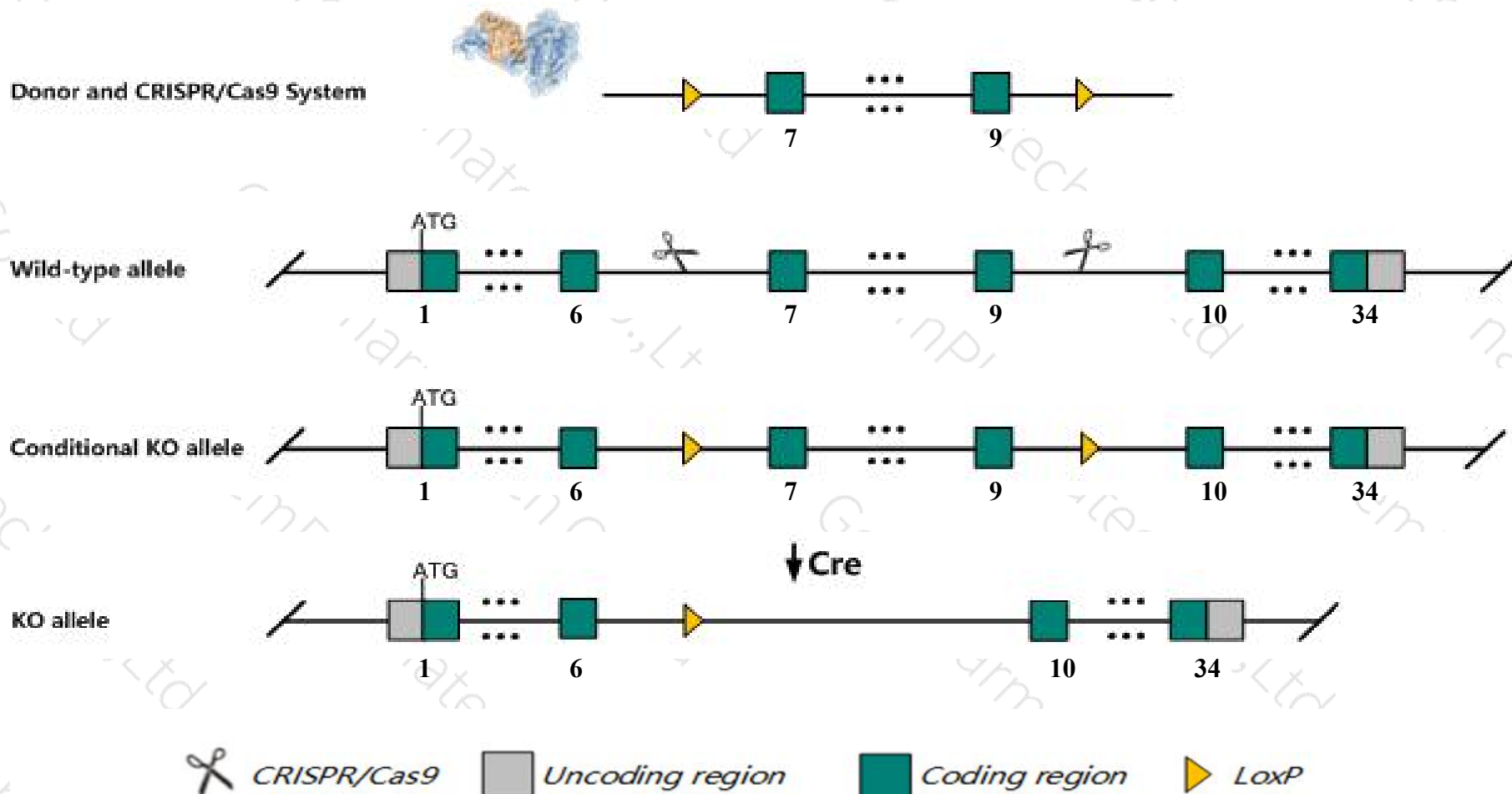
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Polr1a* gene. The schematic diagram is as follows:



- The *Polr1a* gene has 10 transcripts. According to the structure of *Polr1a* gene, exon7-exon9 of *Polr1a*-201 (ENSMUST00000055296.10) transcript is recommended as the knockout region. The region contains 377bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Polr1a* 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

- The *Polr1a* gene is located on the Chr6. 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)

Polr1a polymerase (RNA) I polypeptide A [Mus musculus (house mouse)]

Gene ID: 20019, updated on 31-Jan-2019

Summary



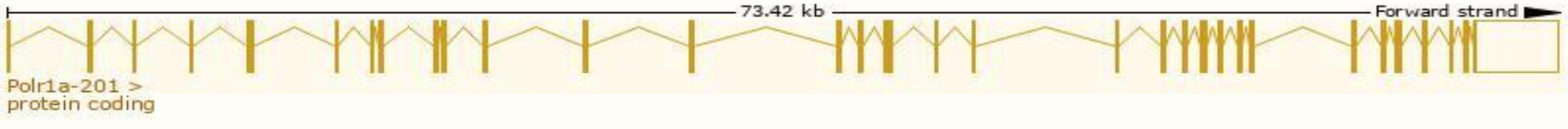
Official Symbol	Polr1a provided by MGI
Official Full Name	polymerase (RNA) I polypeptide A provided by MGI
Primary source	MGI:MGI:1096397
See related	Ensembl:ENSMUSG00000049553
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	194kDa, 2900087K15Rik, 3010014K16Rik, RPA194, Rpo1-4, mRPA1
Expression	Ubiquitous expression in ovary adult (RPKM 10.9), adrenal adult (RPKM 8.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

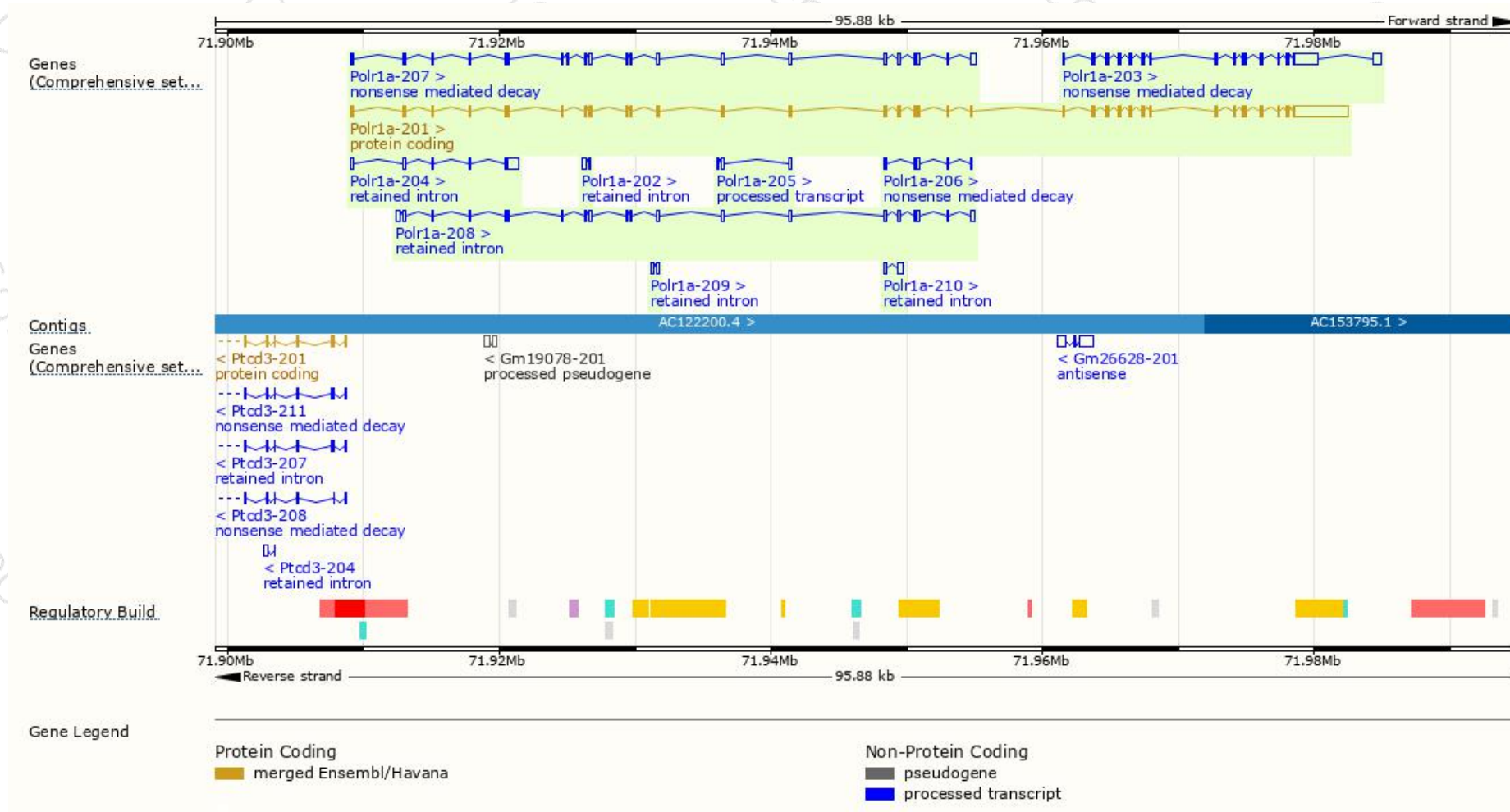
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Polr1a-201	ENSMUST00000055296.10	9216	1717aa	Protein coding	CCDS20236	Q35134	TSL:1 GENCODE basic APPRIS P1
Polr1a-203	ENSMUST00000205517.1	4572	743aa	Nonsense mediated decay	-	A0A0U1RPM9	CDS 5' incomplete TSL:1
Polr1a-207	ENSMUST00000206556.1	3394	282aa	Nonsense mediated decay	-	A0A0U1RPX8	TSL:1
Polr1a-206	ENSMUST00000206513.1	625	48aa	Nonsense mediated decay	-	A0A0U1RNG3	CDS 5' incomplete TSL:2
Polr1a-205	ENSMUST00000205942.1	584	No protein	Processed transcript	-	-	TSL:3
Polr1a-208	ENSMUST00000206753.1	3302	No protein	Retained intron	-	-	TSL:1
Polr1a-204	ENSMUST00000205842.1	1492	No protein	Retained intron	-	-	TSL:1
Polr1a-210	ENSMUST00000206982.1	554	No protein	Retained intron	-	-	TSL:2
Polr1a-202	ENSMUST00000205333.1	359	No protein	Retained intron	-	-	TSL:3
Polr1a-209	ENSMUST00000206823.1	352	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Polr1a-201* transcript,The transcription is shown below



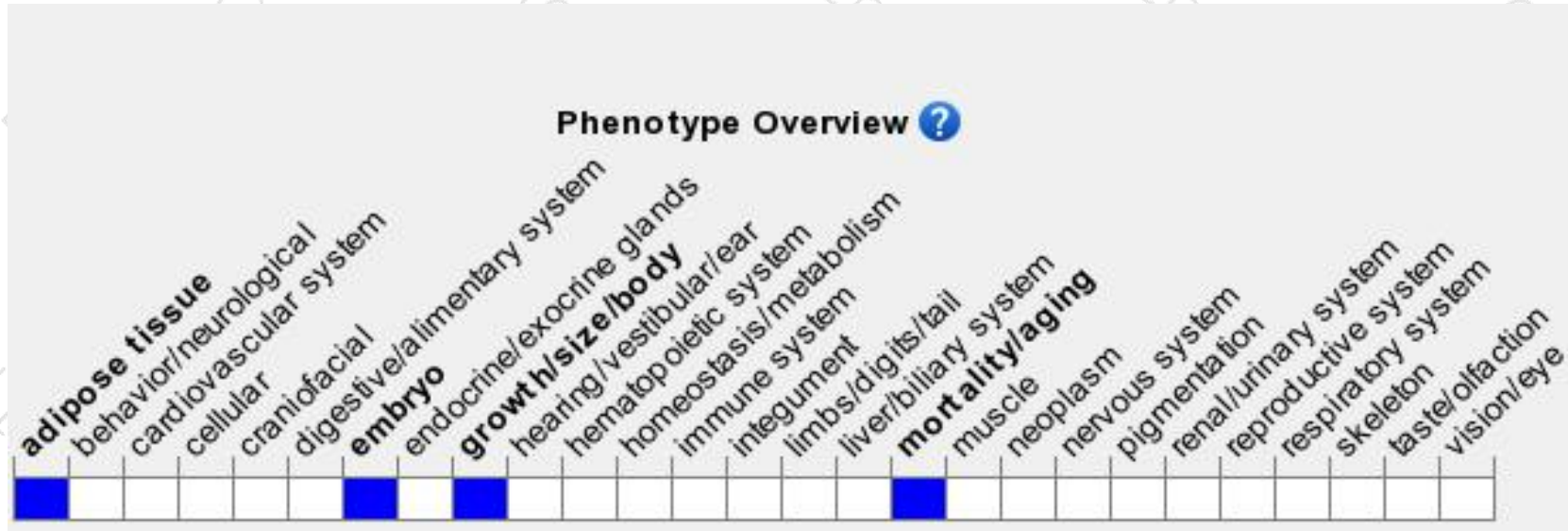
Genomic location distribution



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/>).

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

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