

Pola2 Cas9-KO Strategy

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Project Overview

Project Name

Pola2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pola2* gene. The schematic diagram is as follows:



- The *Pola2* gene has 13 transcripts. According to the structure of *Pola2* gene, exon3-exon5 of *Pola2-201* (ENSMUST00000025752.14) transcript is recommended as the knockout region. The region contains 257bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pola2* gene. The brief process is as follows: CRISPR/Cas9 system

- The *Pola2* gene is located on the Chr19. 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.
- Both the *Pola2-205* and *Pola2-207* transcripts are incomplete, so the effect on them are unknown.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Pola2 polymerase (DNA directed), alpha 2 [Mus musculus (house mouse)]

Gene ID: 18969, updated on 31-Jan-2019

Summary



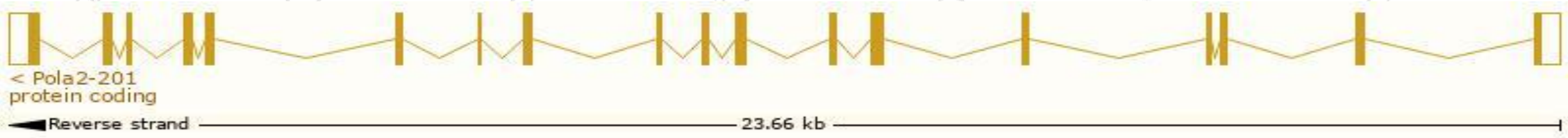
Official Symbol	Pola2 provided by MGI
Official Full Name	polymerase (DNA directed), alpha 2 provided by MGI
Primary source	MGI:MGI:99690
See related	Ensembl:ENSMUSG00000024833
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI573378
Expression	Ubiquitous expression in liver E14.5 (RPKM 23.1), liver E14 (RPKM 19.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

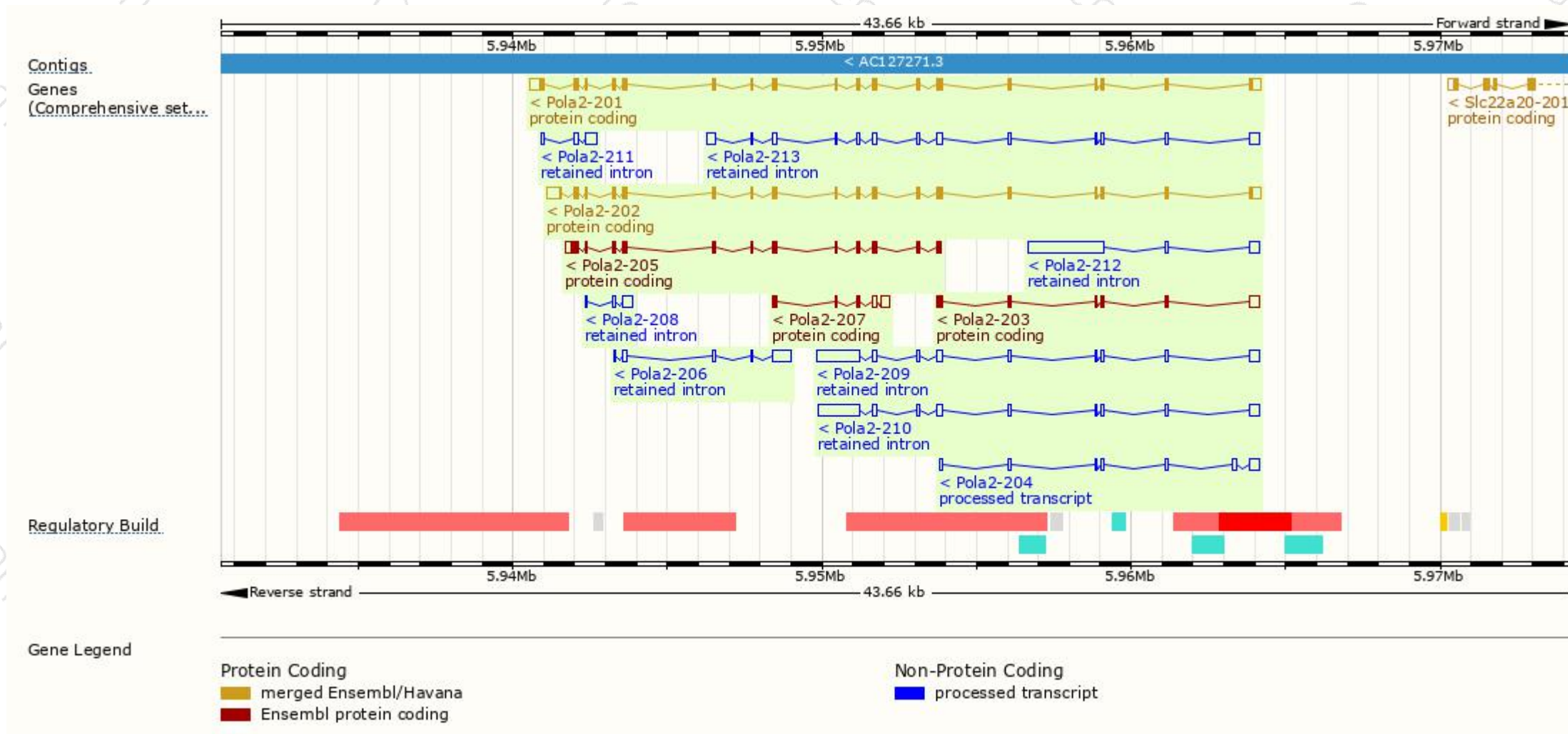
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pola2-201	ENSMUST00000025752.14	2421	600aa	Protein coding	CCDS29485	P33611	TSL:1 GENCODE basic APPRIS P1
Pola2-202	ENSMUST00000165143.2	2391	566aa	Protein coding	CCDS50362	Q8C2T6	TSL:1 GENCODE basic
Pola2-205	ENSMUST00000235535.1	1477	417aa	Protein coding	-	-	CDS 5' incomplete
Pola2-203	ENSMUST00000235224.1	886	178aa	Protein coding	-	-	CDS 3' incomplete
Pola2-207	ENSMUST00000236013.1	656	70aa	Protein coding	-	-	CDS 3' incomplete
Pola2-204	ENSMUST00000235426.1	889	No protein	Processed transcript	-	-	
Pola2-212	ENSMUST00000238043.1	2878	No protein	Retained intron	-	-	
Pola2-209	ENSMUST00000236176.1	2501	No protein	Retained intron	-	-	
Pola2-210	ENSMUST00000237136.1	2483	No protein	Retained intron	-	-	
Pola2-213	ENSMUST00000238075.1	1703	No protein	Retained intron	-	-	
Pola2-206	ENSMUST00000235790.1	891	No protein	Retained intron	-	-	
Pola2-211	ENSMUST00000237735.1	618	No protein	Retained intron	-	-	
Pola2-208	ENSMUST00000236089.1	481	No protein	Retained intron	-	-	

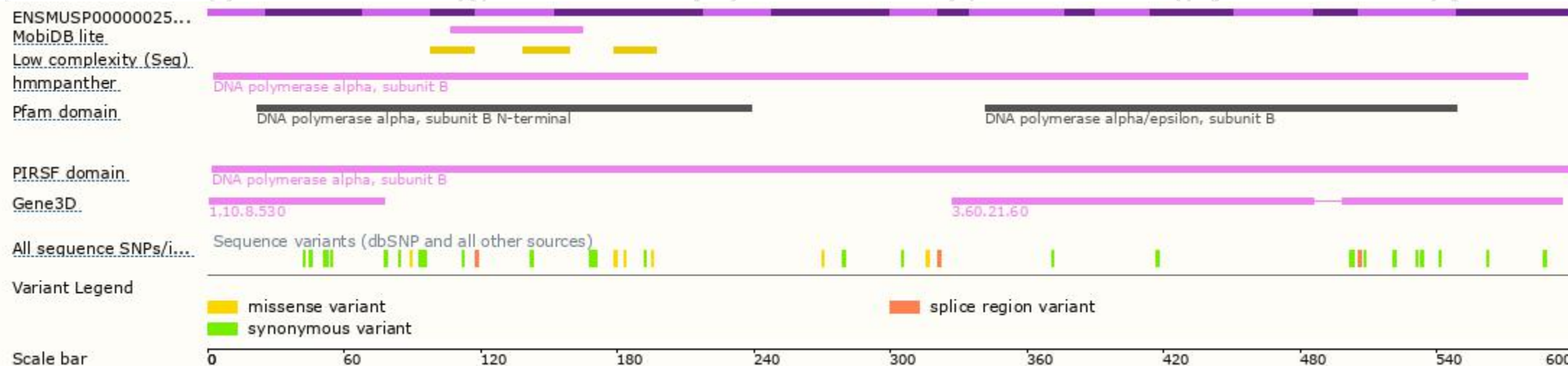
The strategy is based on the design of *Pola2-201* transcript,The transcription is shown below



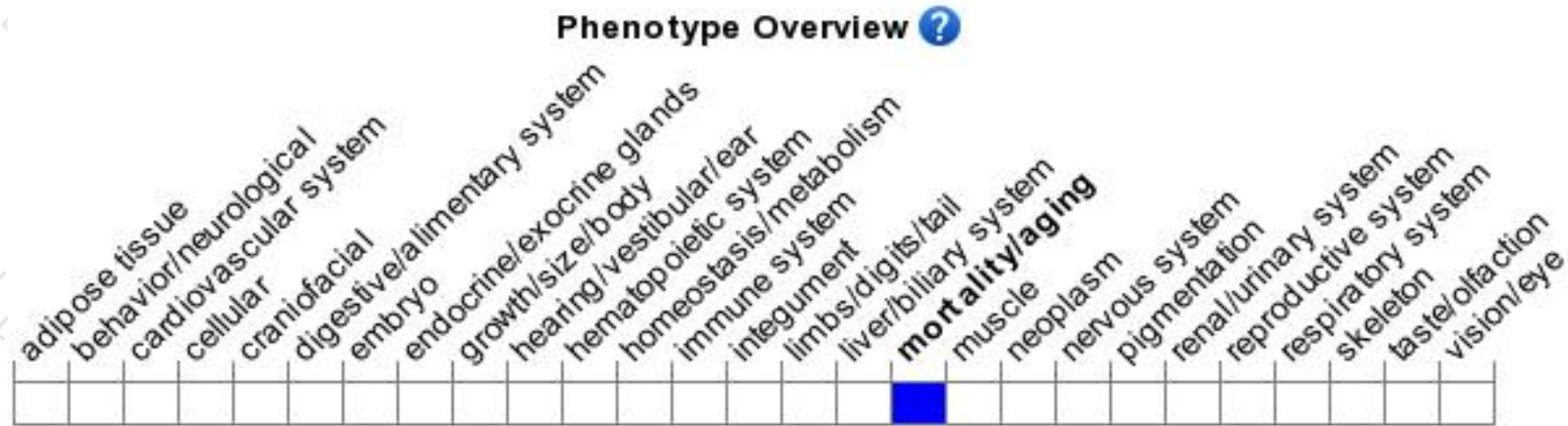
Genomic location distribution



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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