

Swap70 Cas9-KO Strategy

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Project Overview

Project Name

Swap70

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Swap70* gene. The schematic diagram is as follows:



- The *Swap70* gene has 4 transcripts. According to the structure of *Swap70* gene, exon4-exon6 of *Swap70-201* (ENSMUST00000033325.8) transcript is recommended as the knockout region. The region contains 484bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Swap70* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutation of this gene results in increased sensitivity of B lymphocytes to gamma-radiation, increased autoantibody levels, and lower IgE levels, both before and after immunization.
- The *Swap70* gene is located on the Chr7. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

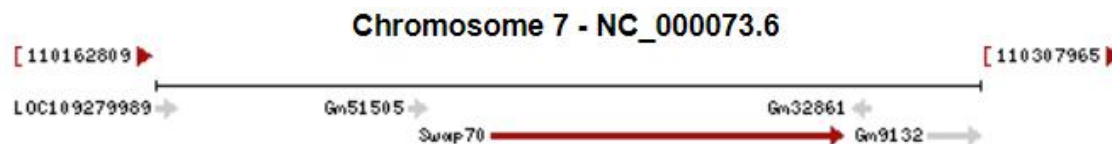
Gene information (NCBI)

Swap70 SWA-70 protein [*Mus musculus* (house mouse)]

Gene ID: 20947, updated on 10-Oct-2019

Summary

Official Symbol	Swap70 provided by MGI
Official Full Name	SWA-70 protein provided by MGI
Primary source	MGI:MGI:1298390
See related	Ensembl:ENSMUSG000000031015
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	70kDa; AV235546
Expression	Broad expression in spleen adult (RPKM 24.4), lung adult (RPKM 11.1) and 25 other tissues See more
Orthologs	human all

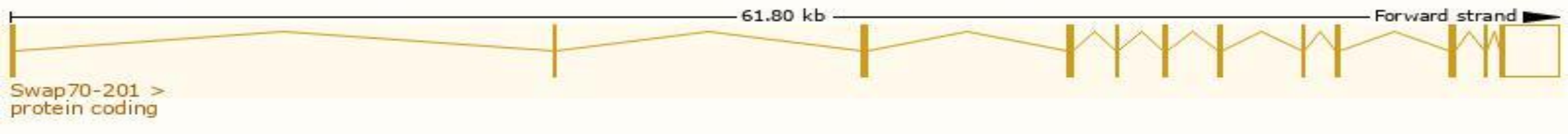


Transcript information (Ensembl)

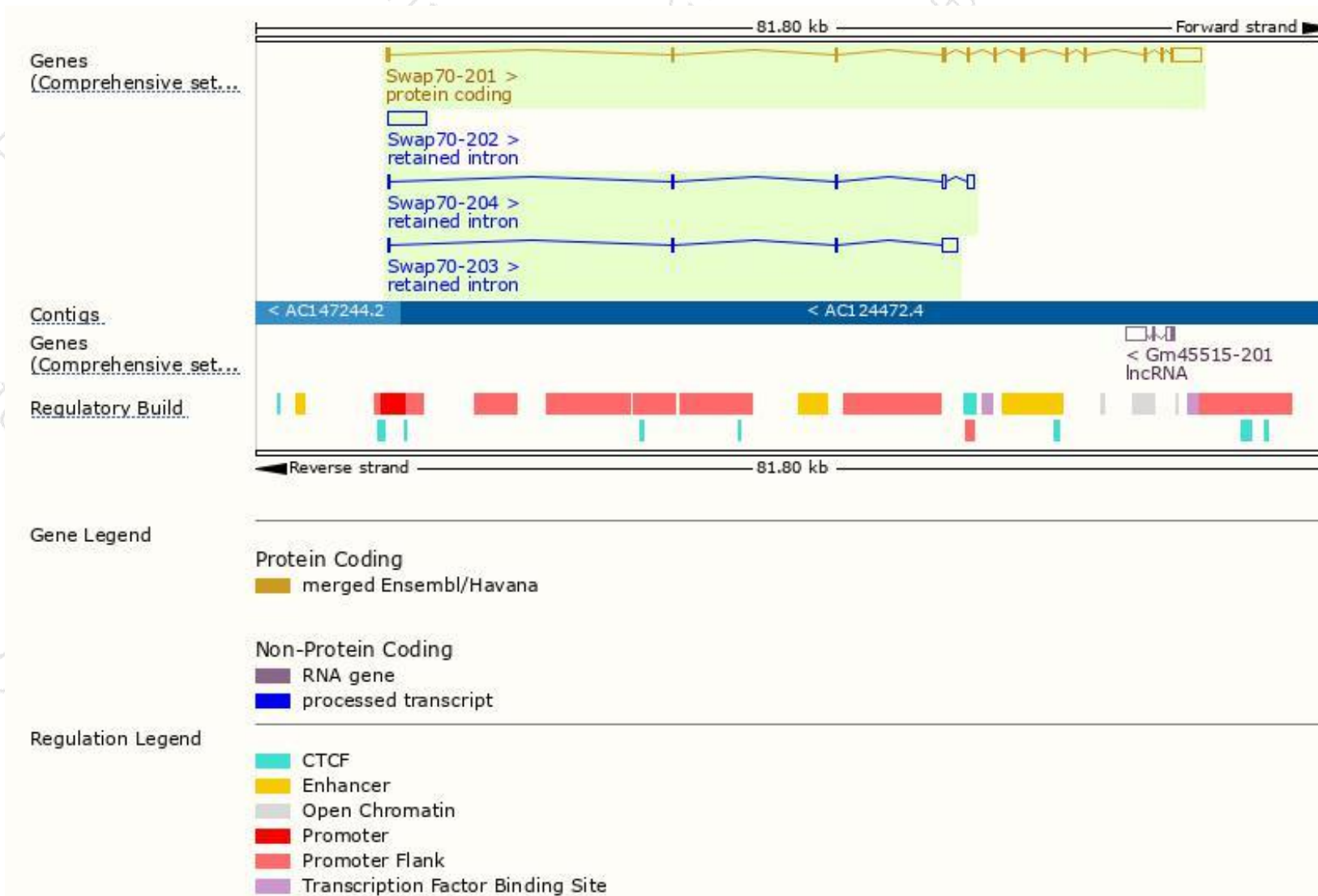
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Swap70-201	ENSMUST00000033325.8	4027	585aa	Protein coding	CCDS21744	Q6A028	TSL:1 GENCODE basic APPRIS P1
Swap70-202	ENSMUST00000209261.1	2975	No protein	Retained intron	-	-	TSL:NA
Swap70-203	ENSMUST00000210513.1	1670	No protein	Retained intron	-	-	TSL:1
Swap70-204	ENSMUST00000210743.1	1163	No protein	Retained intron	-	-	TSL:1

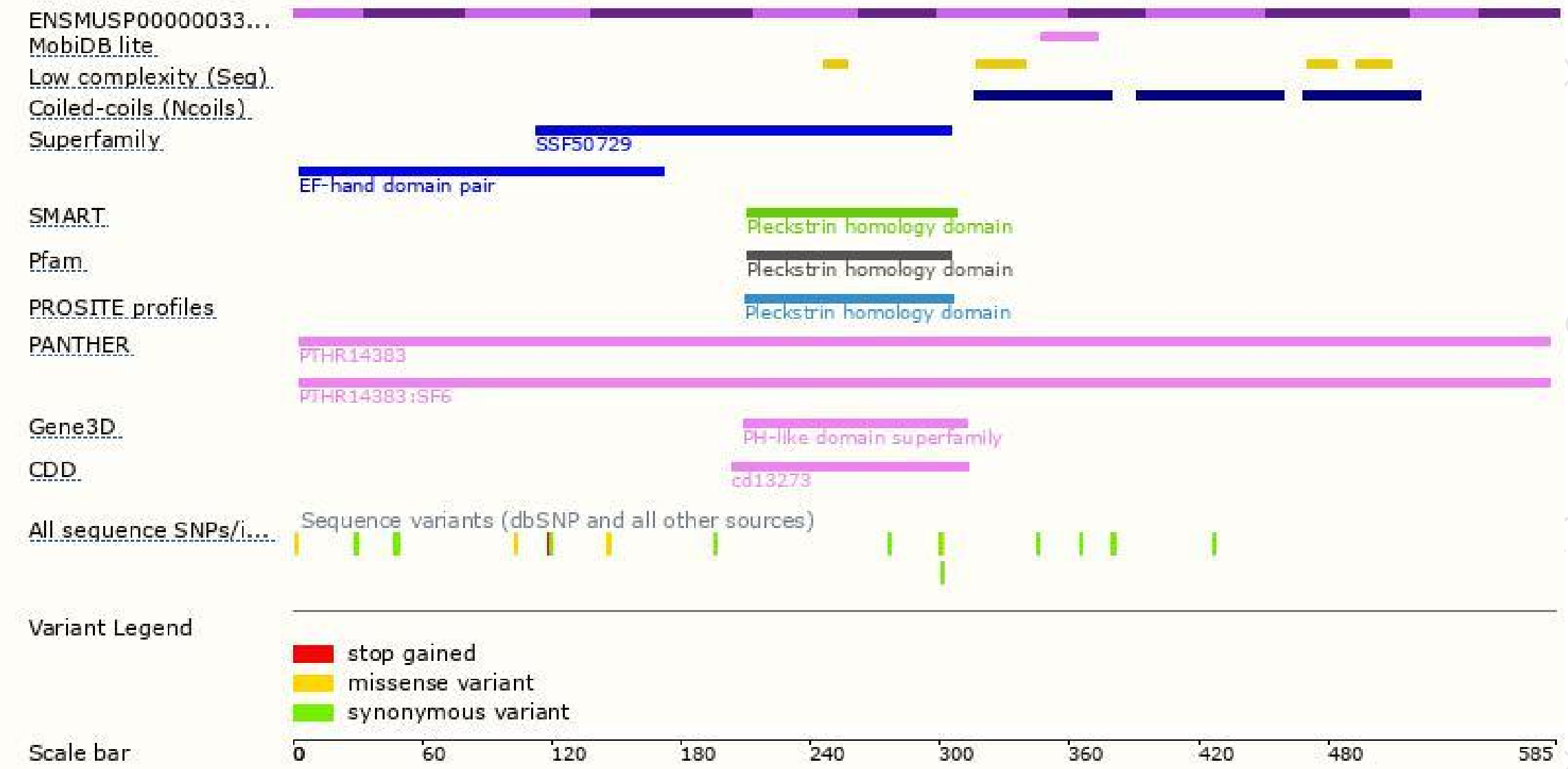
The strategy is based on the design of *Swap70-201* transcript,The transcription is shown below



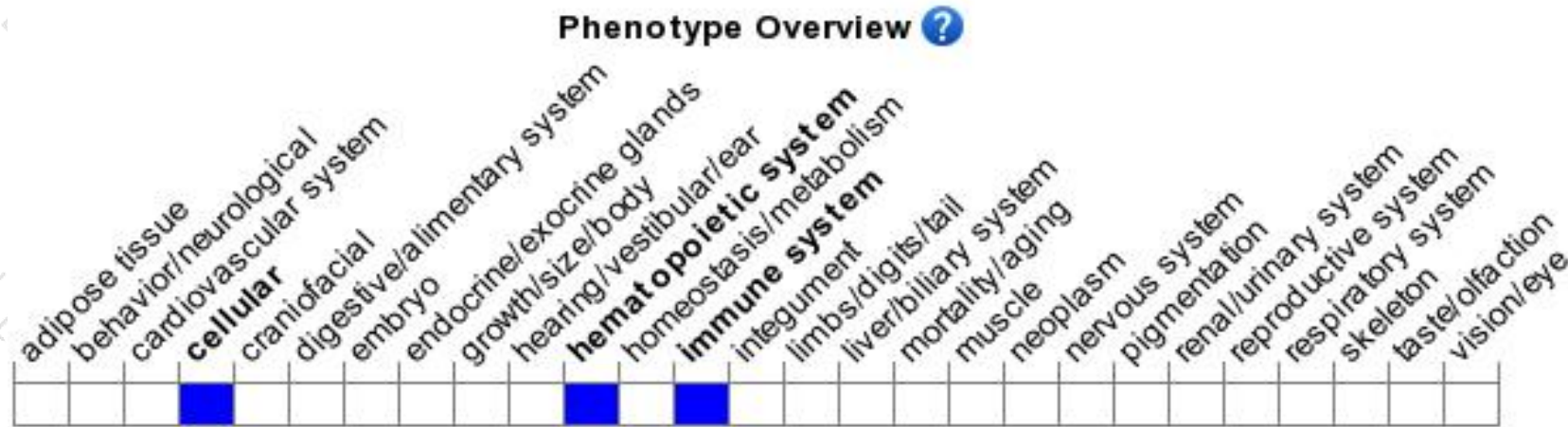
Genomic location distribution



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/>).

According to the existing MGI data, Homozygous mutation of this gene results in increased sensitivity of B lymphocytes to gamma-radiation, increased autoantibody levels, and lower IgE levels, both before and after immunization.

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

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