

Acp1 Cas9-CKO Strategy

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Design Date: 2020-1-22
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Project Overview

Project Name

Acp1

Project type

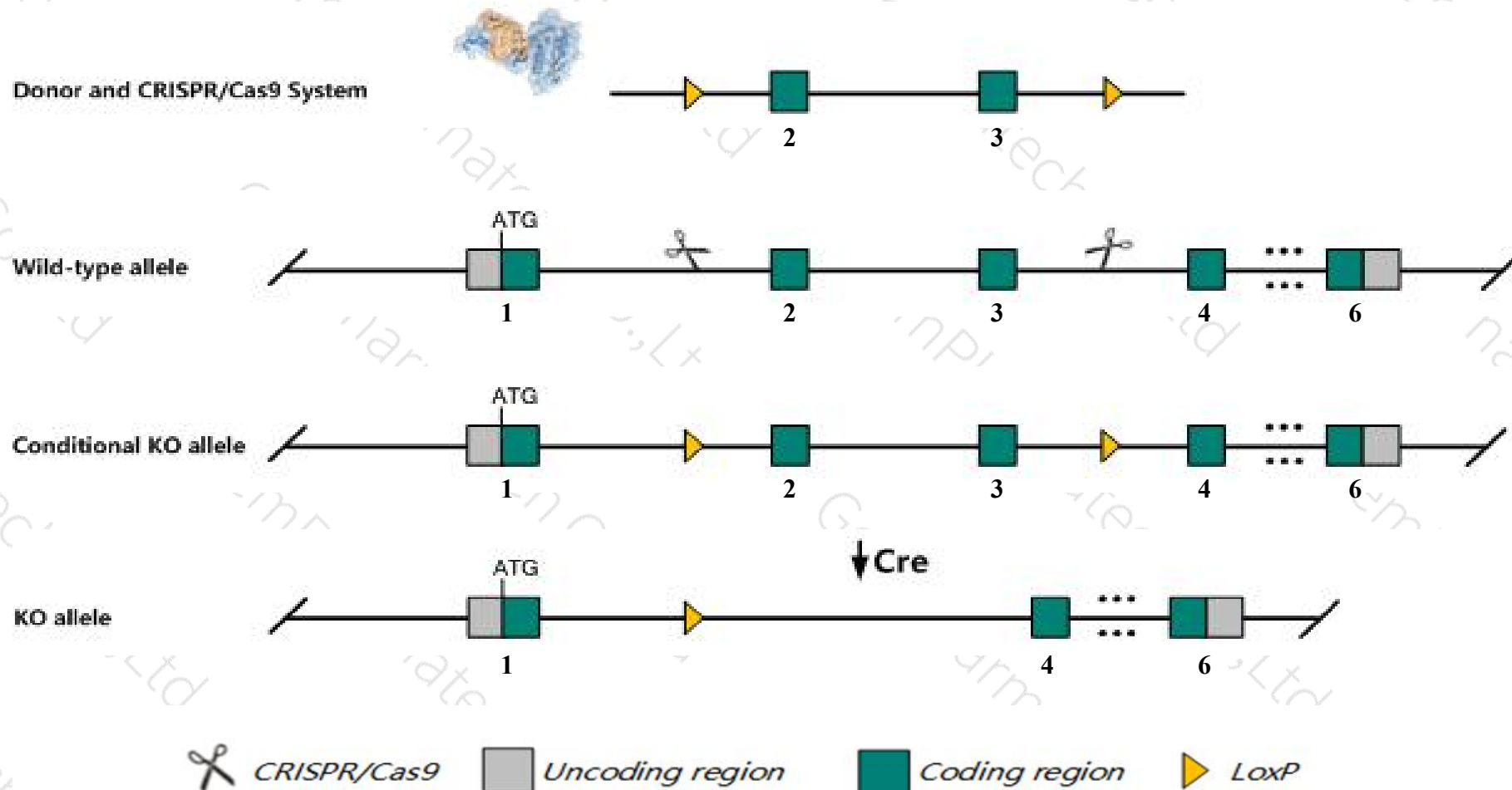
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Acp1* gene. The schematic diagram is as follows:



- The *Acp1* gene has 6 transcripts. According to the structure of *Acp1* gene, exon2-exon3 of *Acp1-201* (ENSMUST00000062740.14) transcript is recommended as the knockout region. The region contains 188bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acp1* 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.

- According to the existing MGI data, Mice homozygous for a null allele show an increased mean serum IL-6 response to LPS challenge. Male homozygotes are smaller than controls whereas female homozygotes show an increased mean skin fibroblast proliferation rate. Males homozygous for a different null allele show decreased response of heart to induced stress.
- The *Acp1* 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.
- 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)

Acp1 acid phosphatase 1, soluble [*Mus musculus* (house mouse)]

Gene ID: 11431, updated on 5-Jan-2020

Summary

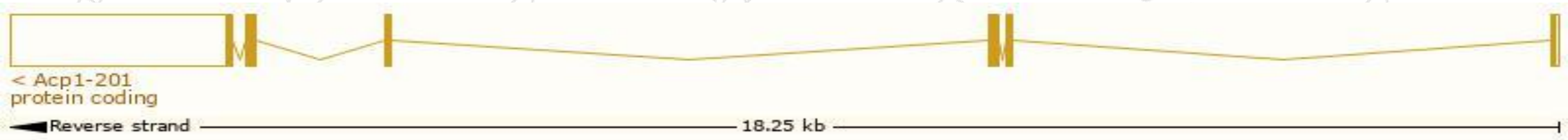
Official Symbol	Acp1 provided by MGI
Official Full Name	acid phosphatase 1, soluble provided by MGI
Primary source	MGI:MGI:87881
See related	Ensembl:ENSMUSG00000044573
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Acp-1; Lmptp; LMW-PTP; AI427468; 4632432E04Rik
Expression	Ubiquitous expression in liver E14 (RPKM 16.3), liver E14.5 (RPKM 13.9) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

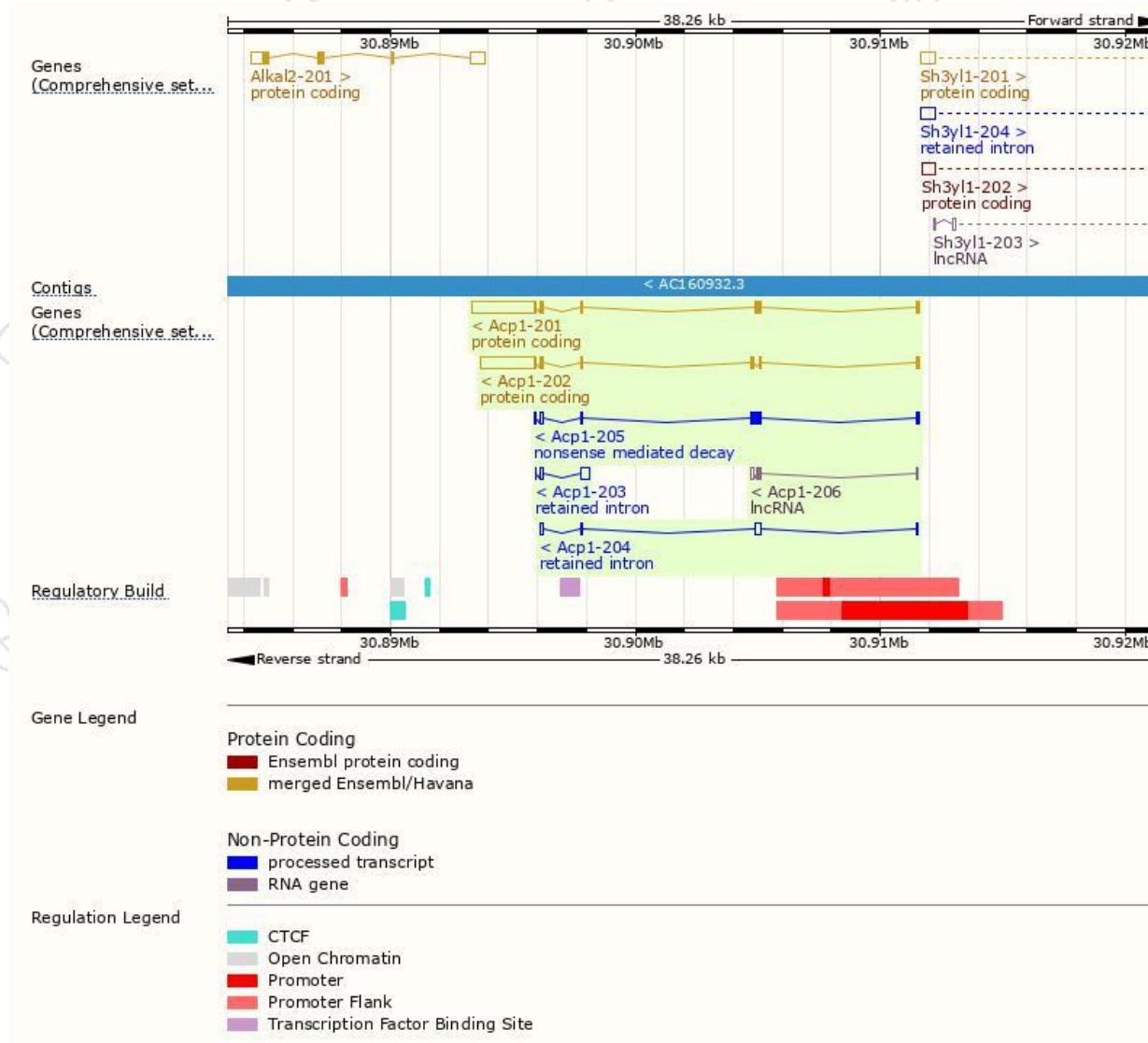
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acp1-201	ENSMUST00000062740.14	3066	158aa	Protein coding	CCDS36427	Q4VAI2 Q9D358	TSL:1 GENCODE basic APPRIS P3
Acp1-202	ENSMUST00000074038.6	2754	158aa	Protein coding	CCDS49045	Q561M1	TSL:1 GENCODE basic APPRIS ALT 1
Acp1-205	ENSMUST00000219697.1	668	114aa	Nonsense mediated decay	-	A0A1W2P7X3	TSL:5
Acp1-203	ENSMUST00000218615.1	531	No protein	Retained intron	-	-	TSL:2
Acp1-204	ENSMUST00000218696.1	499	No protein	Retained intron	-	-	TSL:3
Acp1-206	ENSMUST00000222791.1	307	No protein	lncRNA	-	-	TSL:5

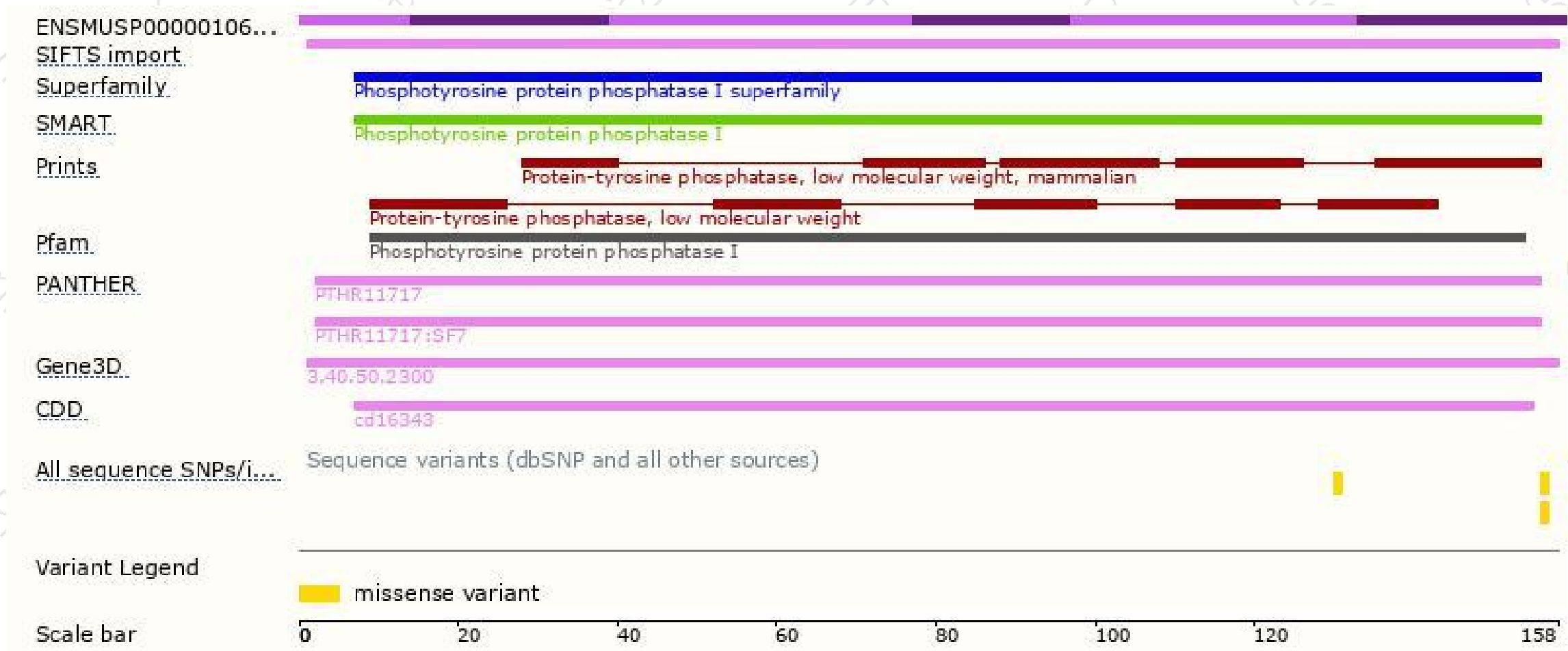
The strategy is based on the design of *Acp1-201* transcript,The transcription is shown below



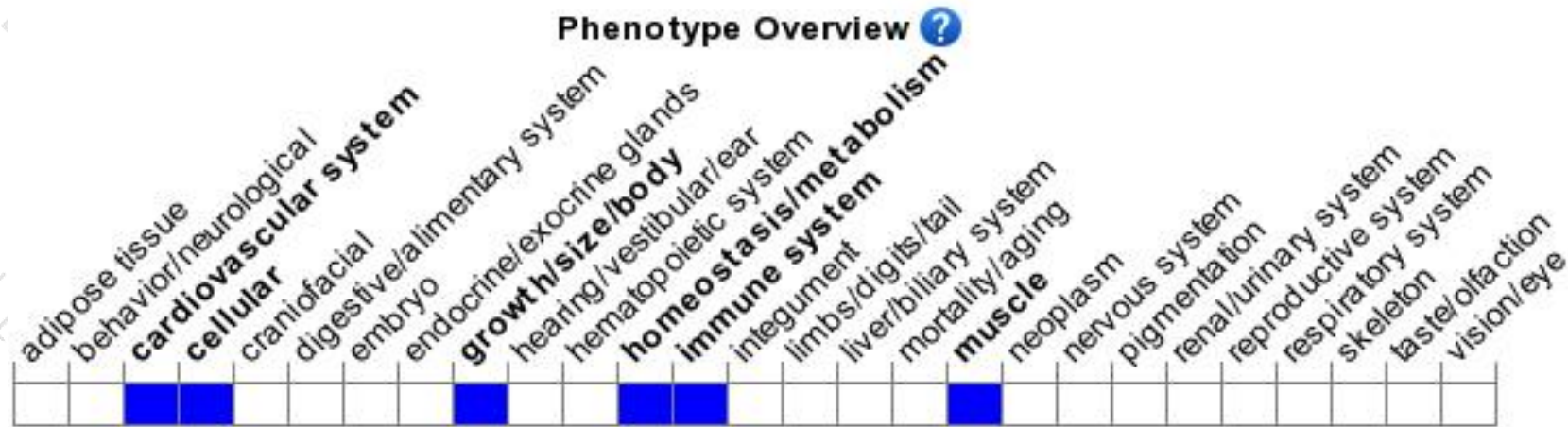
Genomic location distribution



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, Mice homozygous for a null allele show an increased mean serum IL-6 response to LPS challenge. Male homozygotes are smaller than controls whereas female homozygotes show an increased mean skin fibro proliferation rate. Males homozygous for a different null allele show decreased response of heart to induced stress.

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

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