

Usp19 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Usp19

Project type

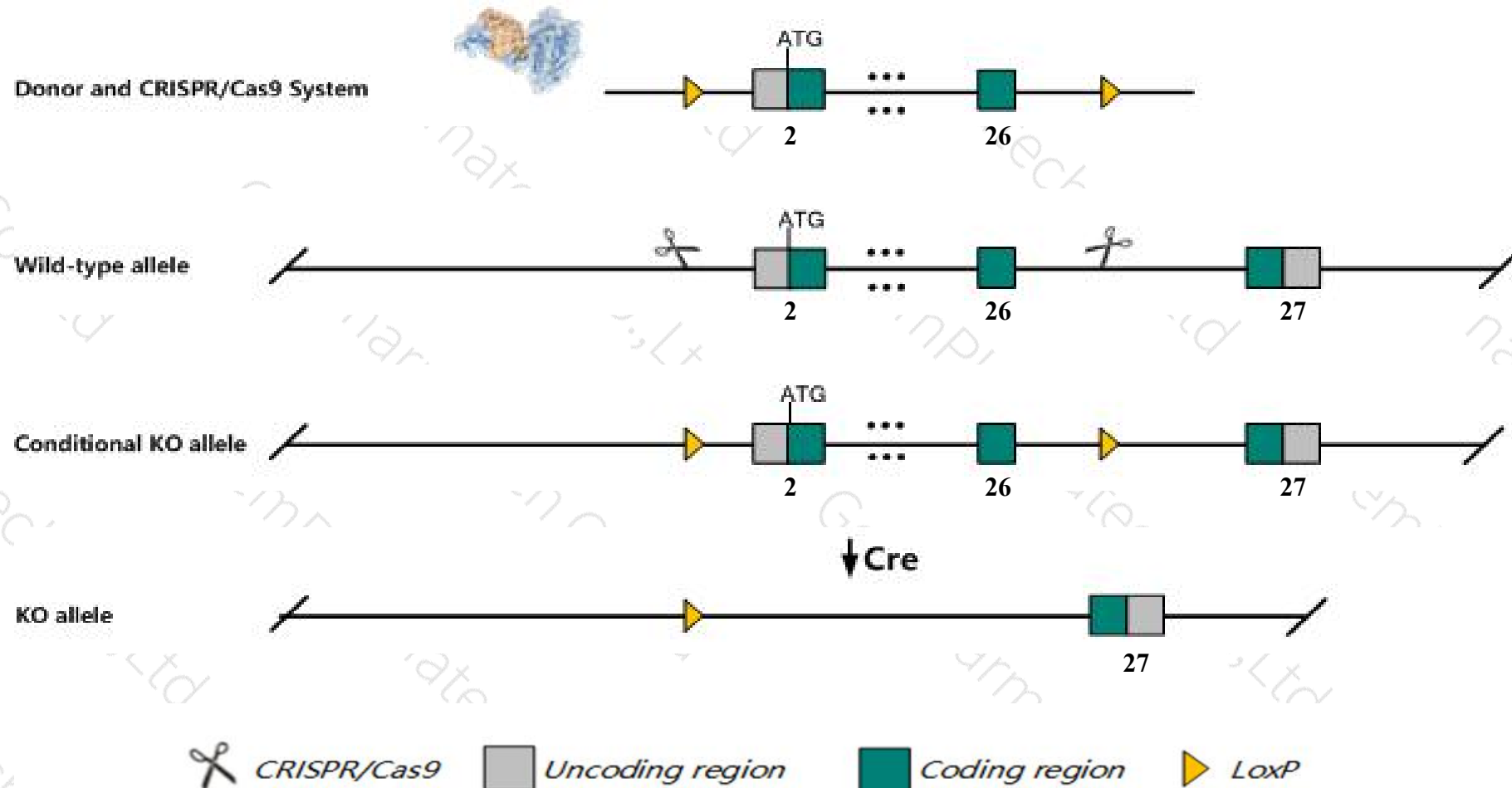
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp19* gene. The schematic diagram is as follows:



- The *Usp19* gene has 16 transcripts. According to the structure of *Usp19* gene, exon2-exon26 of *Usp19-201* (ENSMUST00000006854.12) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp19* 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 exhibit decreased body weight, reduced male fertility, and increased resistance to skeletal muscle atrophy induced by both glucocorticoids and denervation.
- The *Usp19* gene is located on the Chr9. 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)

Usp19 ubiquitin specific peptidase 19 [Mus musculus (house mouse)]

Gene ID: 71472, updated on 2-Mar-2019

Summary



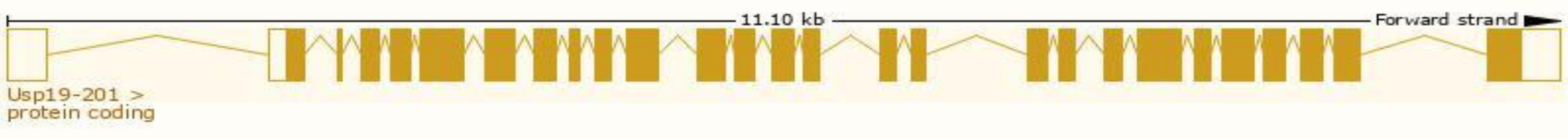
Official Symbol	Usp19 provided by MGI
Official Full Name	ubiquitin specific peptidase 19 provided by MGI
Primary source	MGI:MGI:1918722
See related	Ensembl:ENSMUSG00000006676
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	8430421I07Rik, AI047774, Zmynd9
Expression	Ubiquitous expression in adrenal adult (RPKM 57.6), ovary adult (RPKM 50.1) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

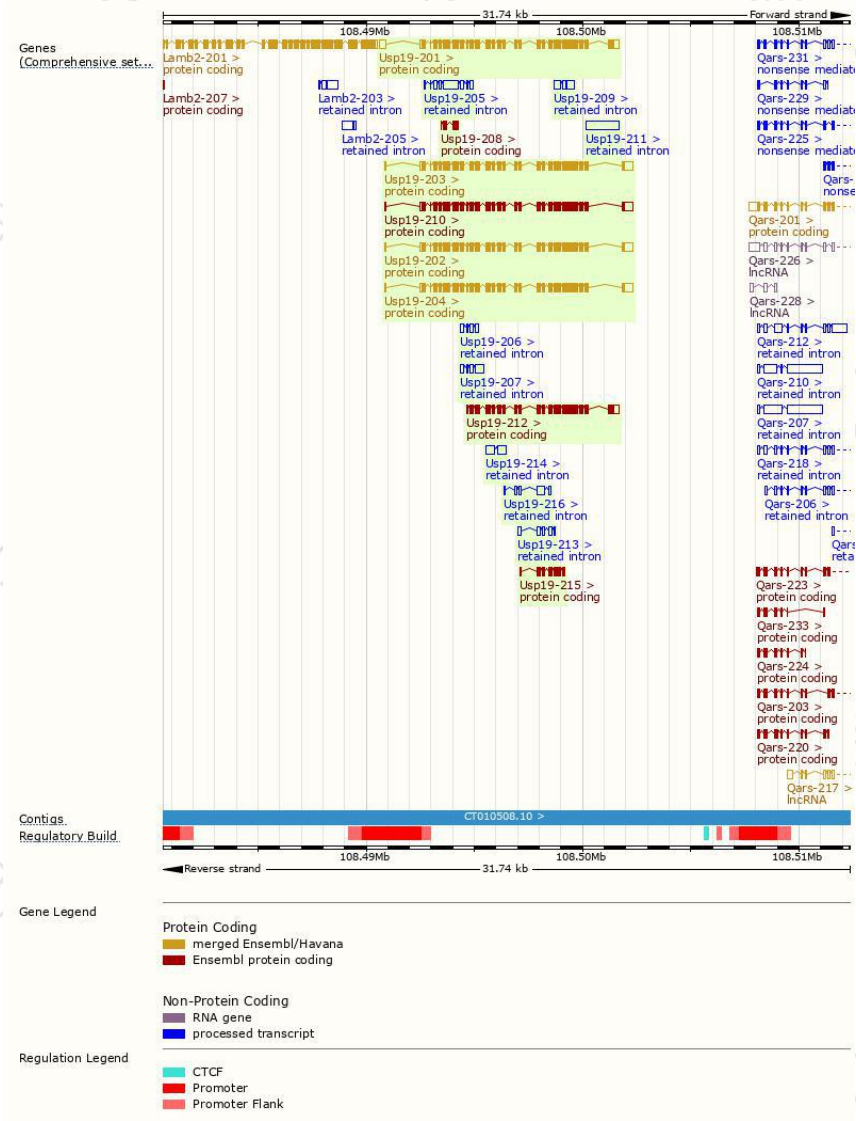
The gene has 16 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp19-201	ENSMUST00000006854.12	4791	1360aa	Protein coding	CCDS23529	Q3UJD6	TSL:1 GENCODE basic APPRIS P3
Usp19-202	ENSMUST000000085044.13	4520	1323aa	Protein coding	CCDS52924	Q3UJD6	TSL:1 GENCODE basic APPRIS ALT2
Usp19-210	ENSMUST00000193678.5	4517	1322aa	Protein coding	CCDS81075	A0A0A6YWX1	TSL:1 GENCODE basic APPRIS ALT2
Usp19-204	ENSMUST00000178075.7	4512	1324aa	Protein coding	CCDS57702	J3KMM1	TSL:1 GENCODE basic APPRIS ALT2
Usp19-203	ENSMUST00000166103.8	4473	1299aa	Protein coding	CCDS52925	E9Q9M5	TSL:1 GENCODE basic APPRIS ALT2
Usp19-212	ENSMUST00000194171.5	3252	991aa	Protein coding	-	A0A0A6YWN9	CDS 5' incomplete TSL:1
Usp19-215	ENSMUST00000194863.1	885	295aa	Protein coding	-	A0A0A6YX42	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Usp19-208	ENSMUST00000193558.1	384	128aa	Protein coding	-	A0A0A6YXT9	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:1
Usp19-211	ENSMUST00000193975.1	1548	No protein	Retained intron	-	-	TSL:NA
Usp19-205	ENSMUST00000192854.5	1352	No protein	Retained intron	-	-	TSL:5
Usp19-214	ENSMUST00000194499.1	803	No protein	Retained intron	-	-	TSL:1
Usp19-207	ENSMUST00000193412.1	753	No protein	Retained intron	-	-	TSL:3
Usp19-216	ENSMUST00000195763.1	744	No protein	Retained intron	-	-	TSL:3
Usp19-209	ENSMUST00000193571.1	729	No protein	Retained intron	-	-	TSL:2
Usp19-213	ENSMUST00000194225.1	607	No protein	Retained intron	-	-	TSL:5
Usp19-206	ENSMUST00000193183.5	525	No protein	Retained intron	-	-	TSL:2

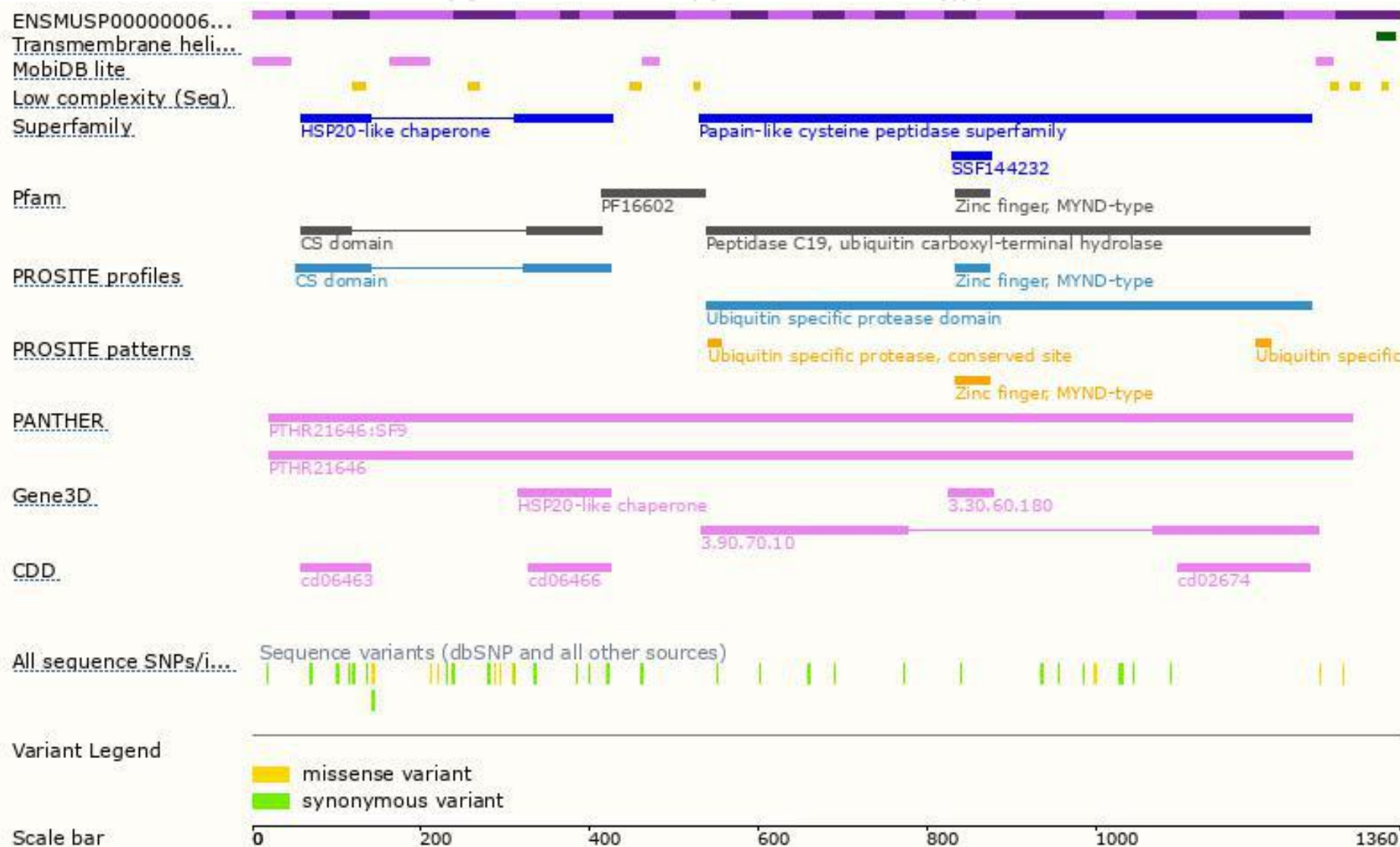
The strategy is based on the design of *Usp19-201* transcript,The transcription is shown below



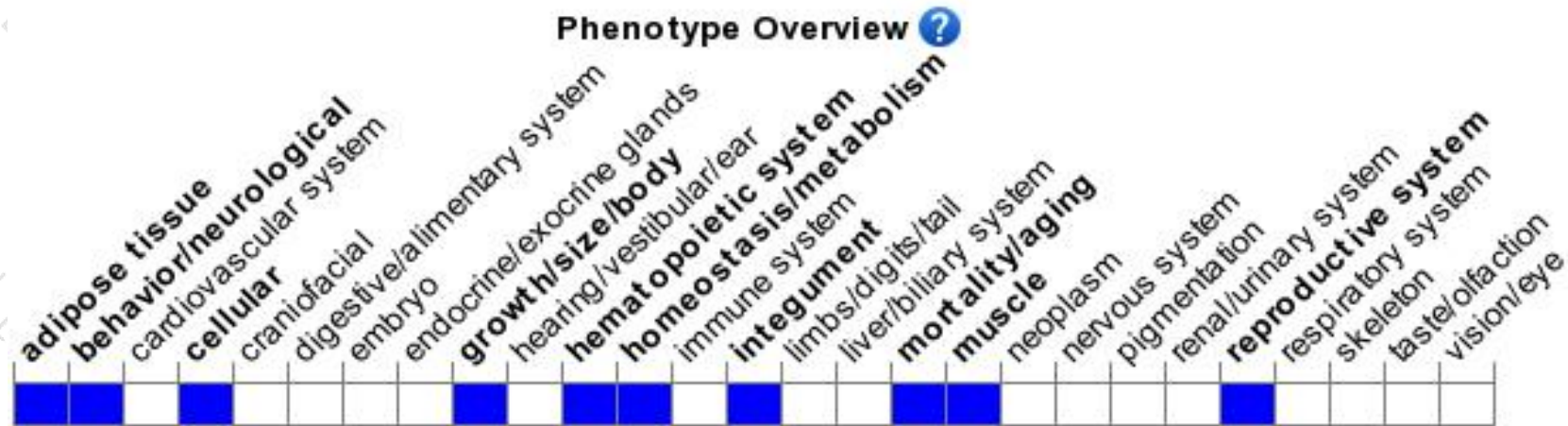
Genomic location distribution



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 exhibit decreased body weight, reduced male fertility, and increased resistance to skeletal muscle atrophy induced by both glucocorticoids and denervation.

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

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