

Gstk1 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Gstk1

Project type

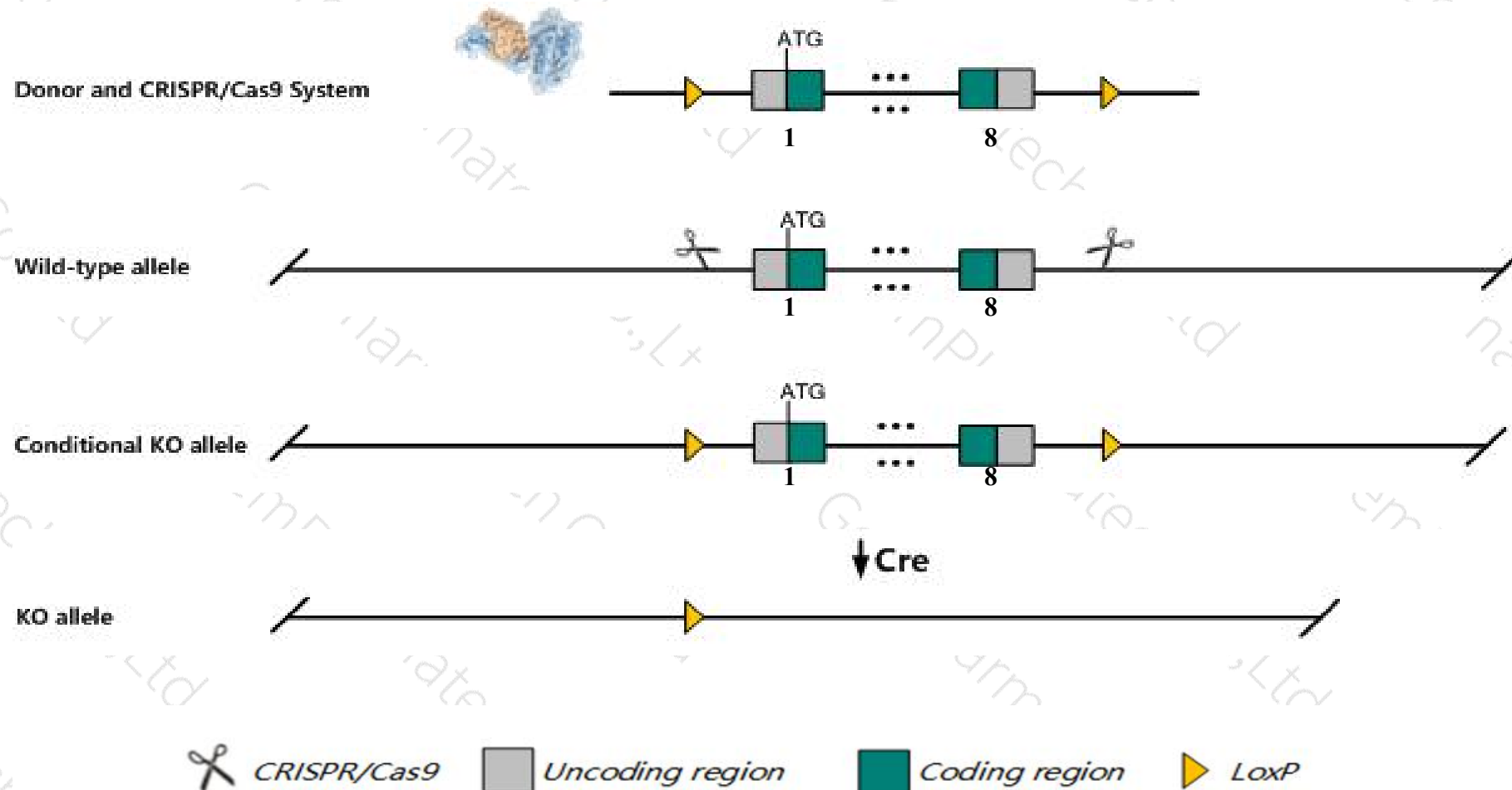
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gstk1* gene. The schematic diagram is as follows:



- The *Gstk1* gene has 4 transcripts. According to the structure of *Gstk1* gene, exon1-exon8 of *Gstk1-201* (ENSMUST00000031897.7) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gstk1* 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 knock-out allele exhibit abnormal male survival curves associated with increased glomerular nephropathy.
- The *Gstk1* 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)

Gstk1 glutathione S-transferase kappa 1 [Mus musculus (house mouse)]

Gene ID: 76263, updated on 31-Jan-2019

Summary



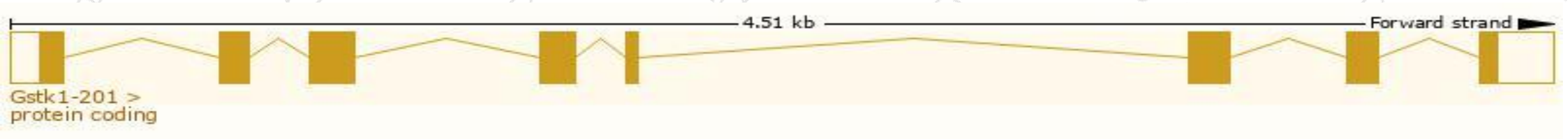
Official Symbol	Gstk1 provided by MGI
Official Full Name	glutathione S-transferase kappa 1 provided by MGI
Primary source	MGI:MGI:1923513
See related	Ensembl:ENSMUSG00000029864
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	0610025I19Rik, AW260476, DsbA-L
Expression	Broad expression in liver adult (RPKM 68.9), adrenal adult (RPKM 41.8) and 19 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

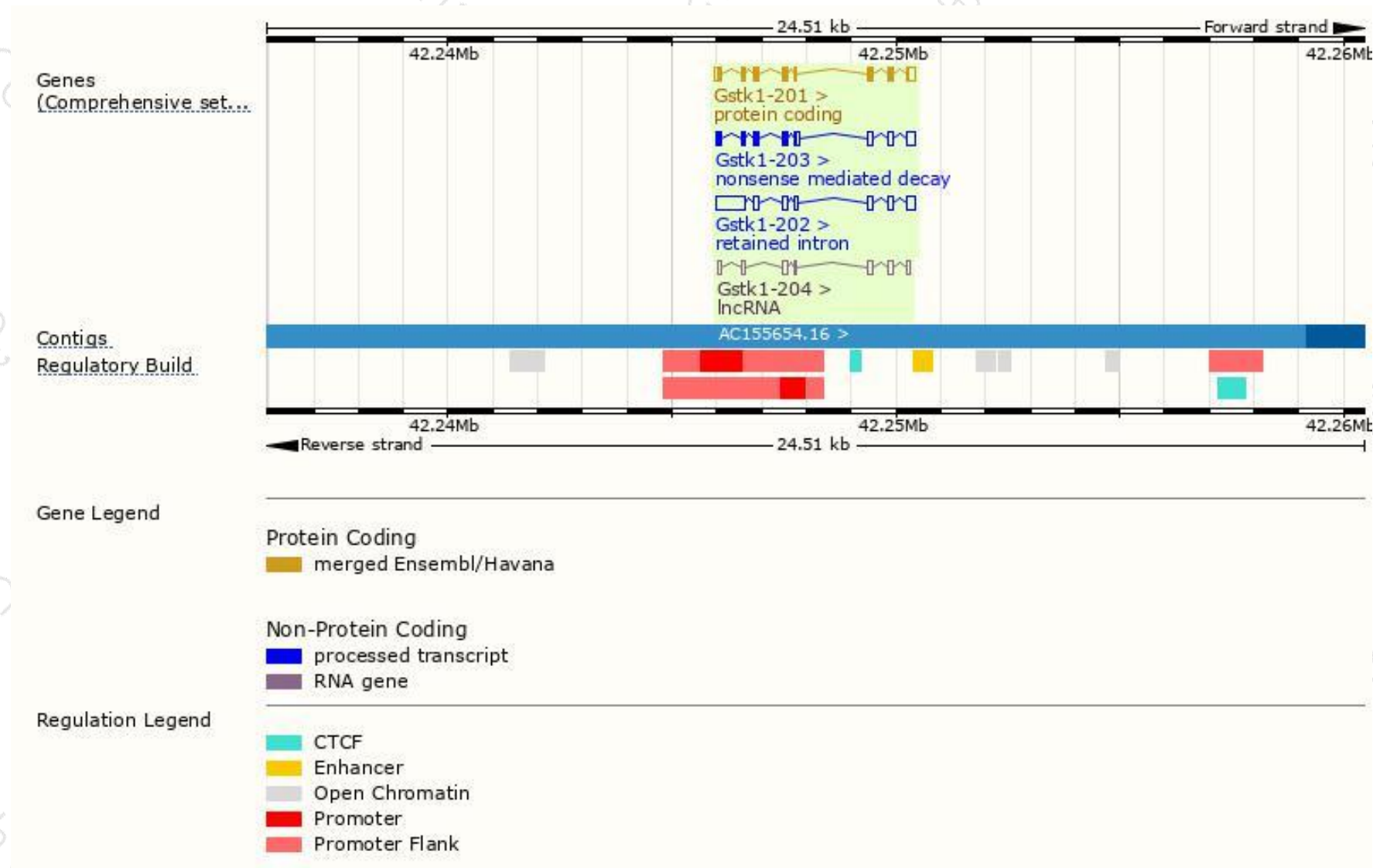
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gstk1-201	ENSMUST00000031897.7	930	226aa	Protein coding	CCDS20063	Q9DCM2	TSL:1 GENCODE basic APPRIS P1
Gstk1-203	ENSMUST00000204088.2	963	143aa	Nonsense mediated decay	-	A0A0N4SVE5	TSL:1
Gstk1-204	ENSMUST00000204792.1	591	No protein	Processed transcript	-	-	TSL:5
Gstk1-202	ENSMUST00000203174.2	1396	No protein	Retained intron	-	-	TSL:5

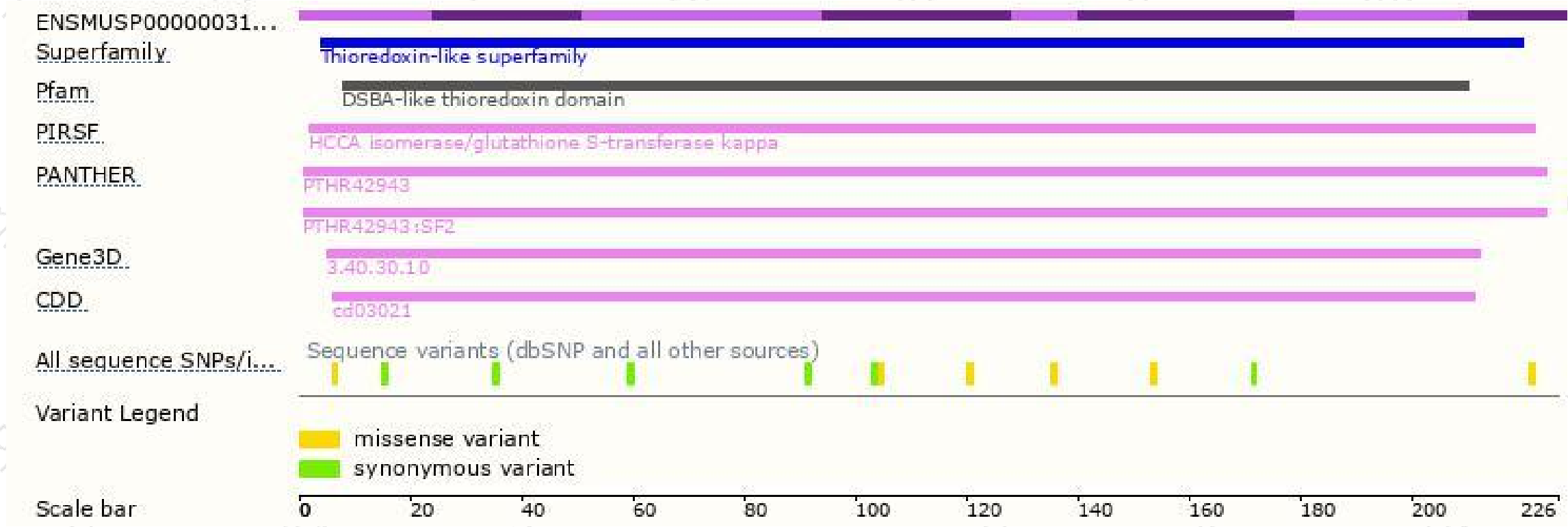
The strategy is based on the design of *Gstk1-201* transcript,The transcription is shown below



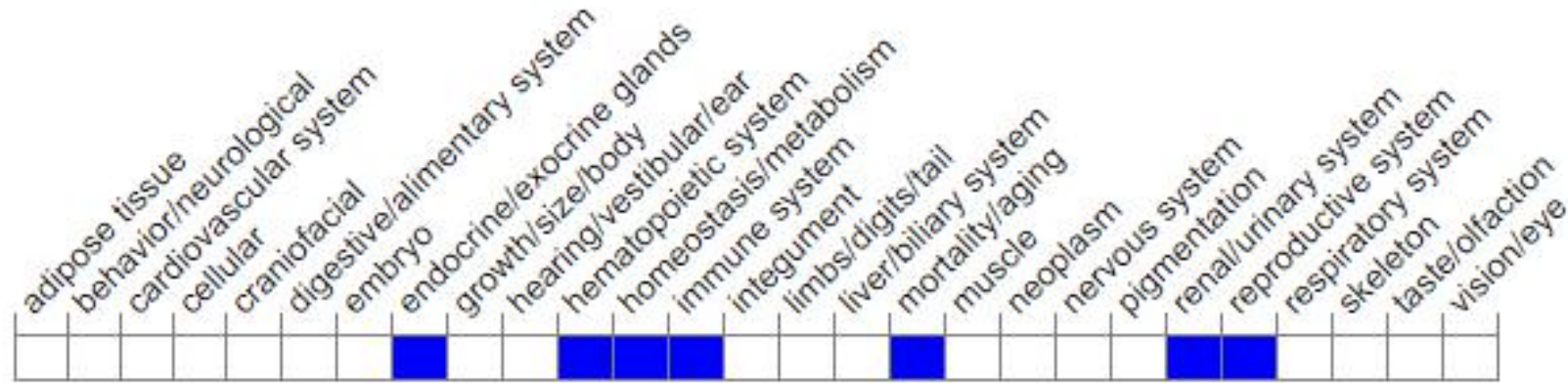
Genomic location distribution



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 knock-out allele exhibit abnormal male survival curves associated with increased glomerular nephropathy.

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

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