

# *Ubqln1* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Ubqln1*

**Project type**

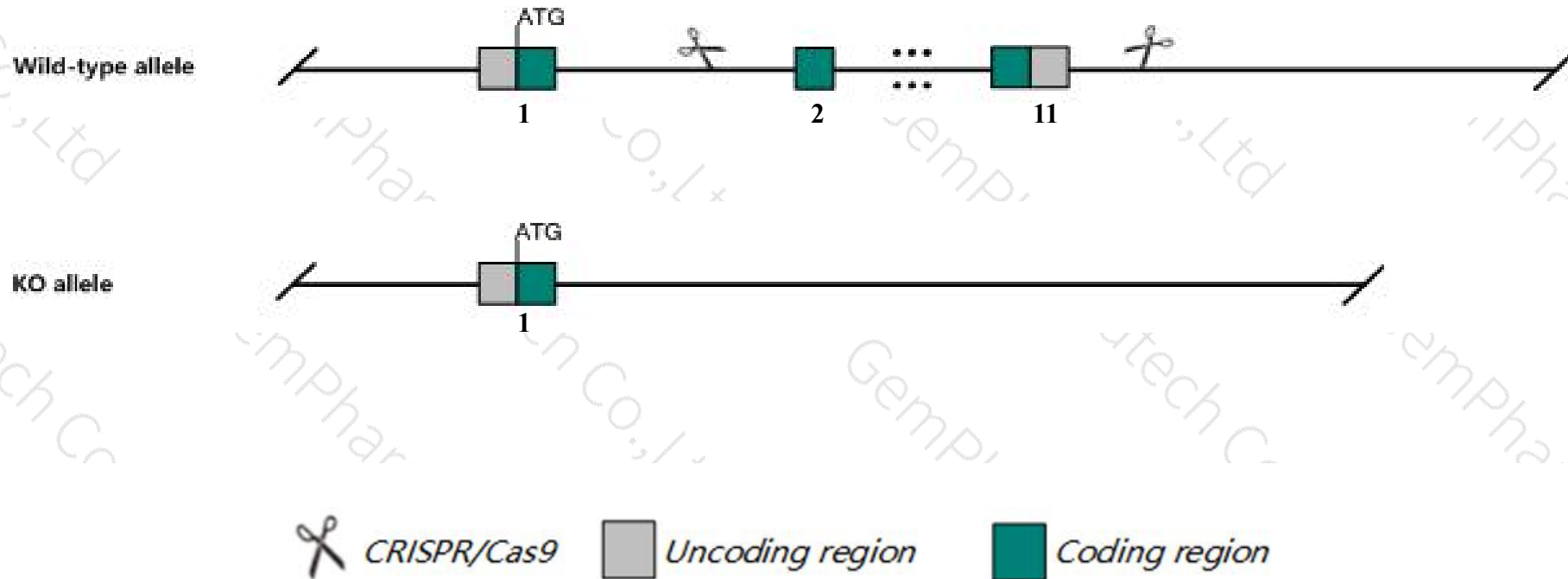
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ubqln1* gene. The schematic diagram is as follows:



- The *Ubqln1* gene has 4 transcripts. According to the structure of *Ubqln1* gene, exon2-exon11 of *Ubqln1-201* (ENSMUST00000058735.11) transcript is recommended as the knockout region. The region contains most 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 *Ubqln1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous null animals display impaired degradation of ubiquitinated proteins in the brain, increased ischemia/reperfusion-caused brain injury, and slower functional recovery after injury.
- The KO region contains *Gm48357-201* gene. Knockout the region may affect the function of *Gm48357-201* gene.
- The *Ubqln1* gene is located on the Chr13. 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.



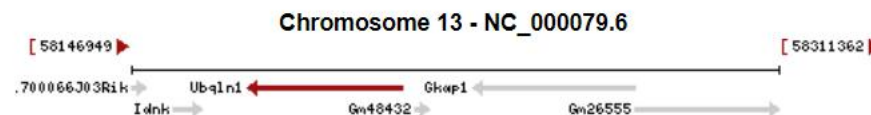
# Gene information (NCBI)

## Ubqln1 ubiquilin 1 [ *Mus musculus* (house mouse) ]

Gene ID: 56085, updated on 3-Sep-2019

### Summary

**Official Symbol** Ubqln1 provided by MGI  
**Official Full Name** ubiquilin 1 provided by MGI  
**Primary source** MGI:MGI:1860276  
**See related** Ensembl:ENSMUSG00000005312  
**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** Da41; Dsk2; Plc1; Xdrp1; C77538; Plc-1; AU019746; D13Ert372e; 1110046H03Rik; 1810030E05Rik  
**Expression** Ubiquitous expression in ovary adult (RPKM 72.0), adrenal adult (RPKM 65.9) and 28 other tissues [See more](#)  
**Orthologs** [human](#) [all](#)

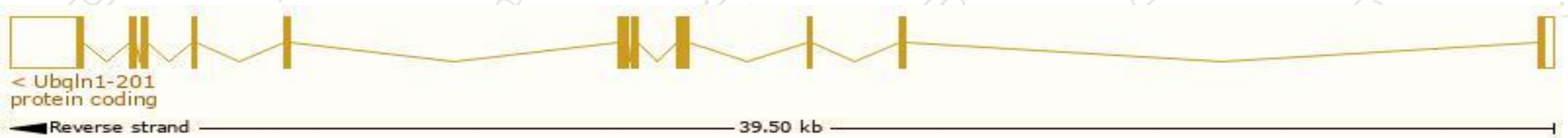


# Transcript information (Ensembl)

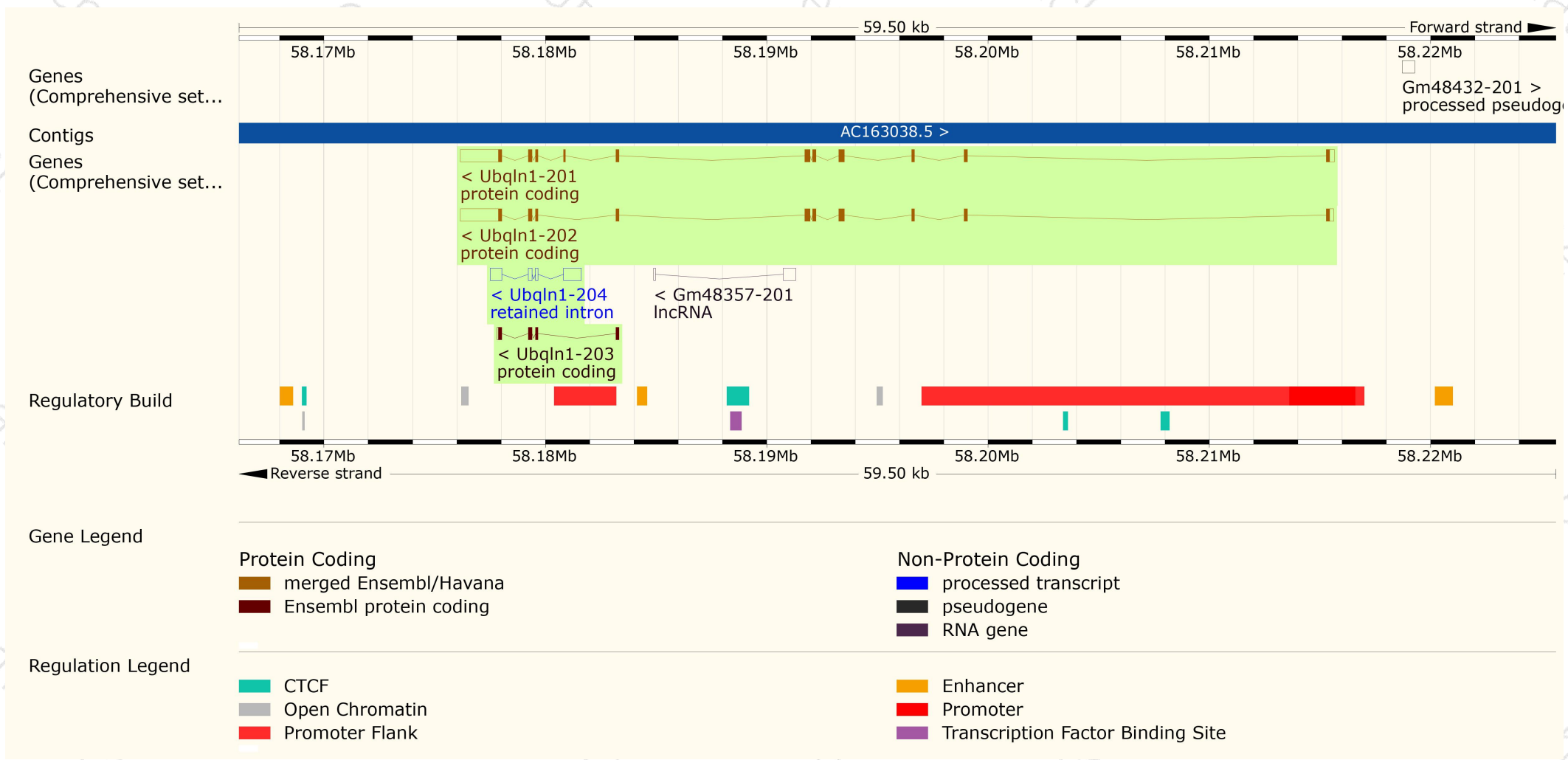
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Ubqln1-201	<a href="#">ENSMUST00000058735.11</a>	3686	<a href="#">582aa</a>	<a href="#">ENSMUSP00000050191.5</a>	Protein coding	<a href="#">CCDS49281</a>	<a href="#">Q8R317</a>	TSL:1 GENCODE basic APPRIS ALT2
Ubqln1-202	<a href="#">ENSMUST00000076454.7</a>	3561	<a href="#">554aa</a>	<a href="#">ENSMUSP00000075782.6</a>	Protein coding	<a href="#">CCDS26569</a>	<a href="#">Q8R317</a>	TSL:1 GENCODE basic APPRIS P3
Ubqln1-203	<a href="#">ENSMUST00000225645.1</a>	631	<a href="#">190aa</a>	<a href="#">ENSMUSP00000153666.1</a>	Protein coding	-	<a href="#">A0A286YE09</a>	CDS 5' incomplete
Ubqln1-204	<a href="#">ENSMUST00000225818.1</a>	1596	No protein	-	Retained intron	-	-	-

The strategy is based on the design of *Ubqln1-201* transcript,The transcription is shown below

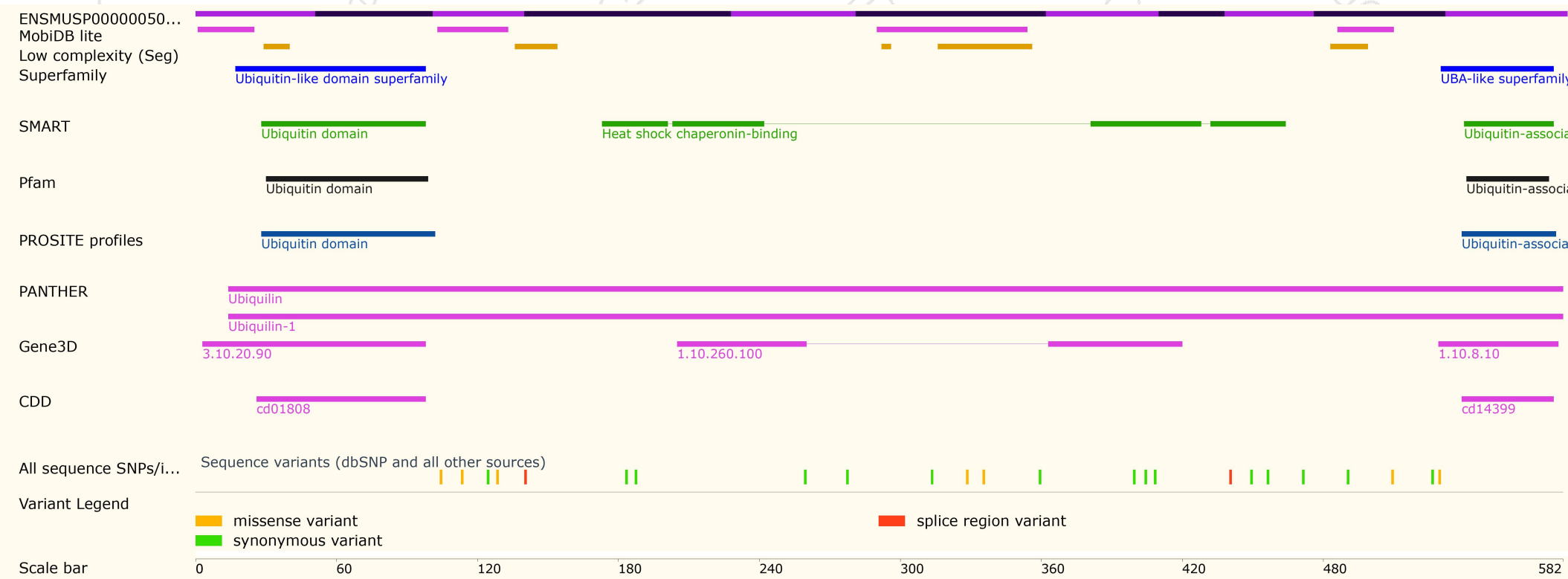


# Genomic location distribution



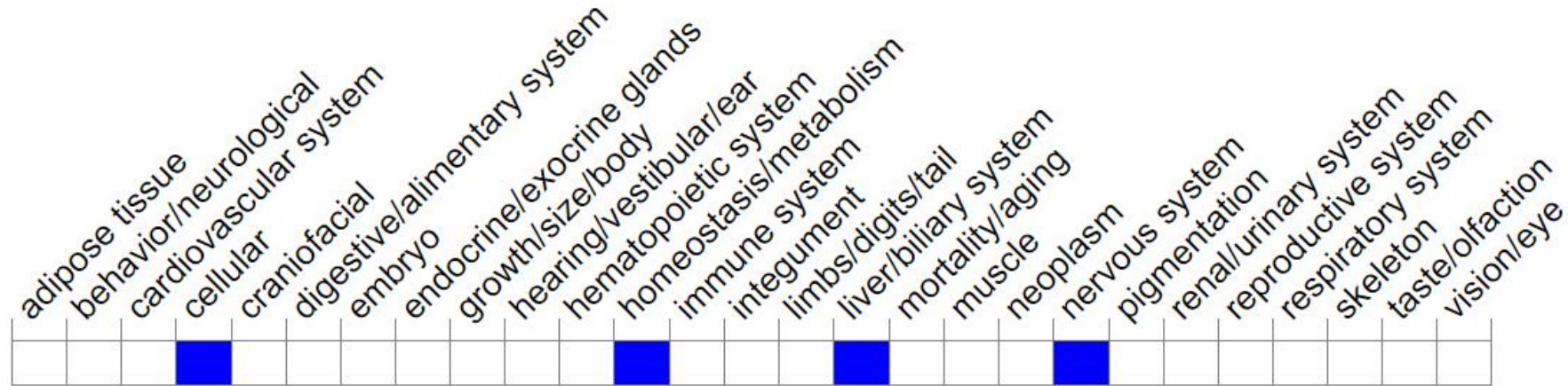


# Protein domain



# Mouse phenotype description(MGI)

## Phenotype Overview ?



*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 null animals display impaired degradation of ubiquitinated proteins in the brain, increased ischemia/reperfusion-caused brain injury, and slower functional recovery after injury.

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

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