Ppp1cc Cas9-CKO Strategy

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Project Overview

Project Name	***Ppp1cc***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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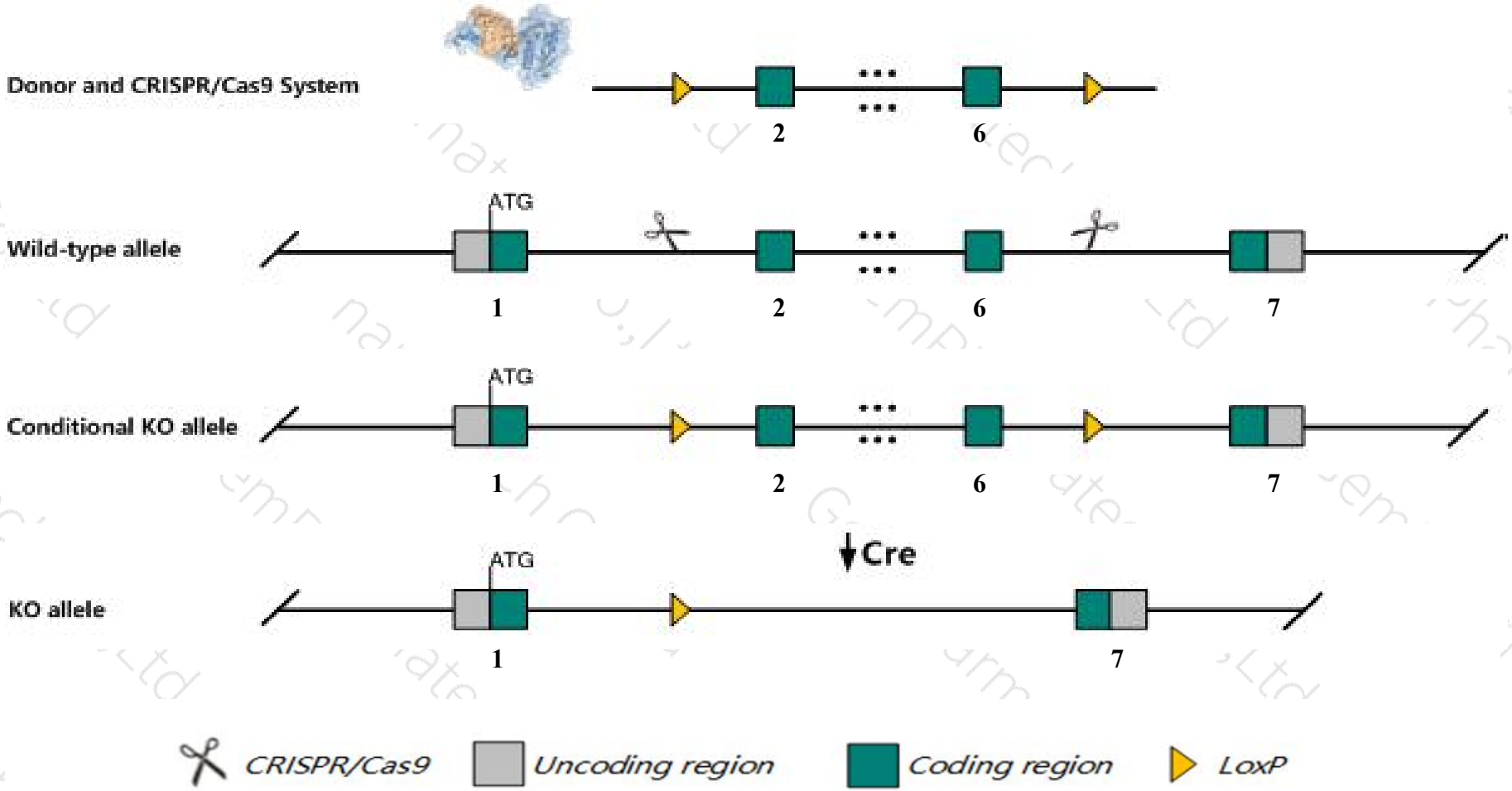
This model will use CRISPR/Cas9 technology to edit the *Ppp1cc* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ppp1cc* gene has 10 transcripts. According to the structure of *Ppp1cc* gene, exon2-exon6 of *Ppp1cc-202*(ENSMUST00000102528.10) transcript is recommended as the knockout region.The region contains 827bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ppp1cc* 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.

Notice

➢ According to the existing MGI data,homozygotes for a targeted null mutation exhibit male infertility due to severely impaired spermiogenesis.

➢ The *Ppp1cc* gene is located on the Chr5. 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）

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Ppp1cc protein phosphatase 1 catalytic subunit gamma [Mus musculus (house mouse)]

Gene ID: 19047, updated on 13-Mar-2020

Summary

Official Symbol	Ppp1cc provided by MGI
Official Full Name	protein phosphatase 1 catalytic subunit gamma provided by MGI
Primary source	MGI:MGI:104872
See related	Ensembl:ENSMUSG00000004455
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	PP-1G, PP1, dis2m1
Expression	Ubiquitous expression in testis adult (RPKM 167.5), CNS E11.5 (RPKM 107.2) and 28 other tissues See more
Orthologs	human all

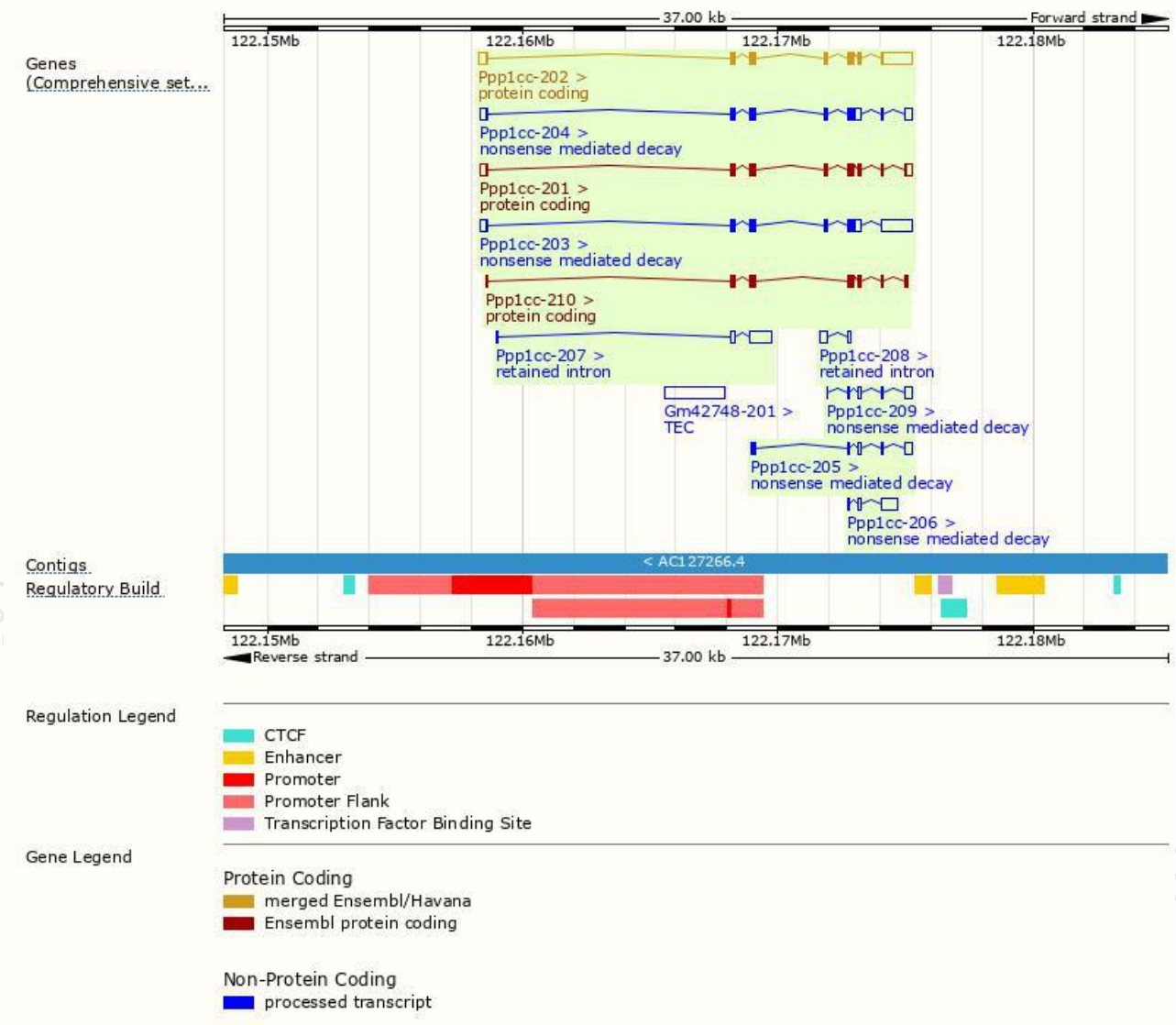
Transcript information（Ensembl）

The gene has 10 transcripts,all transcripts are shown below:

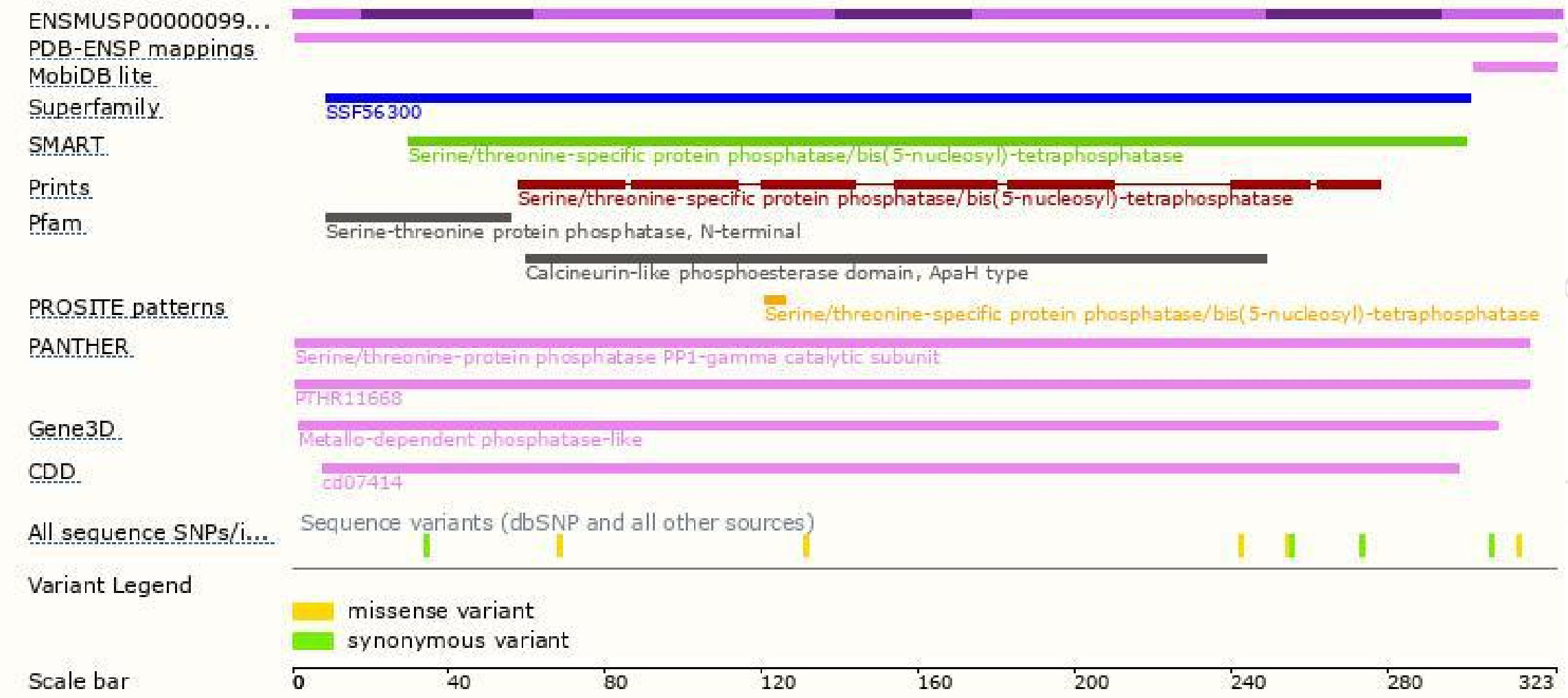
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppp1cc-202	ENSMUST00000102528.10	2384	323aa	Protein coding	CCDS19643	P63087 Q6ZWM8	TSL:1 GENCODE basic APPRIS P2
Ppp1cc-201	ENSMUST00000086294.10	1442	337aa	Protein coding	-	P63087	TSL:1 GENCODE basic APPRIS ALT1
Ppp1cc-210	ENSMUST00000197730.1	923	292aa	Protein coding	-	A0A0G2JFF1	CDS 5' incomplete TSL:5
Ppp1cc-203	ENSMUST00000128309.7	2492	273aa	Nonsense mediated decay	-	A0A0G2JGC1	TSL:1
Ppp1cc-204	ENSMUST00000132555.7	1632	273aa	Nonsense mediated decay	-	A0A0G2JGC1	TSL:1
Ppp1cc-206	ENSMUST00000134719.2	828	26aa	Nonsense mediated decay	-	A0A0G2JEB0	CDS 5' incomplete TSL:3
Ppp1cc-205	ENSMUST00000133568.5	768	87aa	Nonsense mediated decay	-	A0A0G2JF34	CDS 5' incomplete TSL:5
Ppp1cc-209	ENSMUST00000151184.7	557	27aa	Nonsense mediated decay	-	A0A0G2JE42	CDS 5' incomplete TSL:5
Ppp1cc-207	ENSMUST00000135090.2	1040	No protein	Retained intron	-	-	TSL:5
Ppp1cc-208	ENSMUST00000142562.1	407	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Ppp1cc-202* transcript,the transcription is shown below:

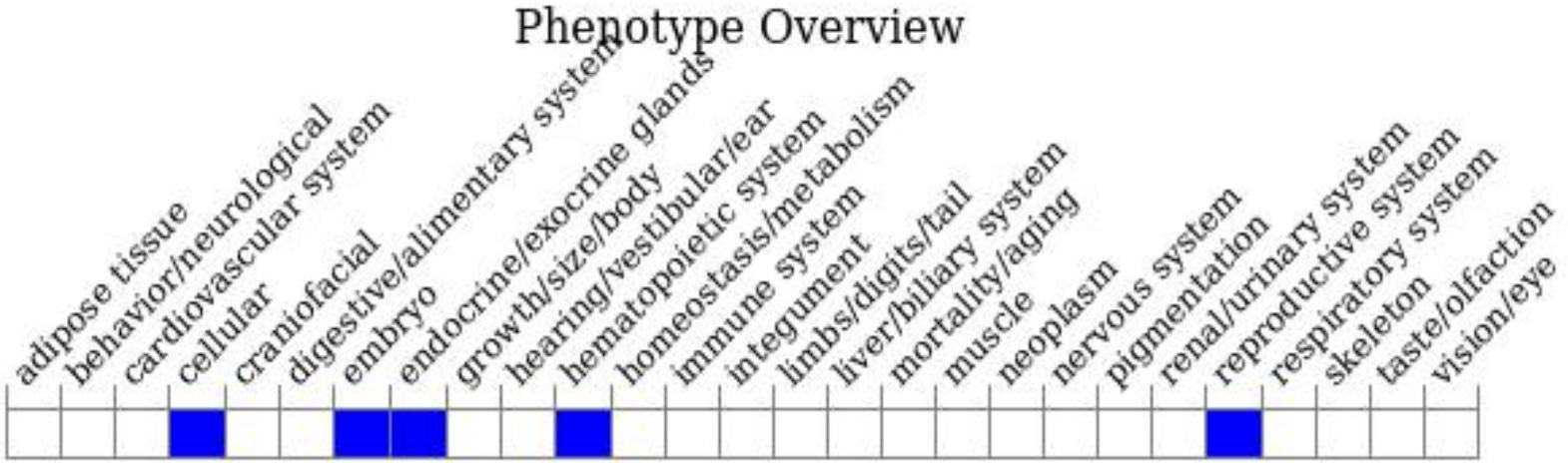
Genomic location distribution



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,homozygotes for a targeted null mutation exhibit male infertility due to severely impaired spermiogenesis.

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

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