Zc3h11a Cas9-CKO Strategy

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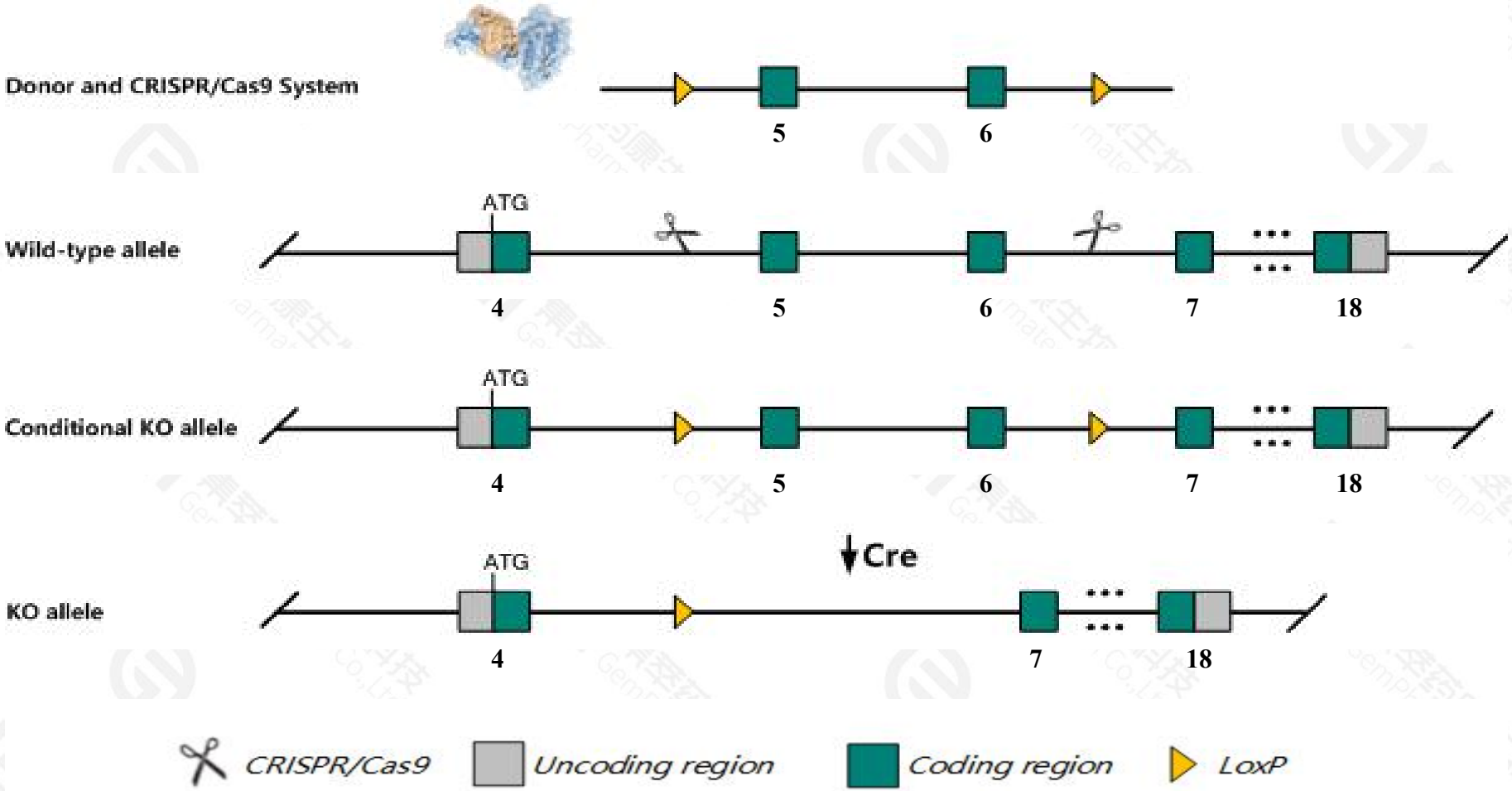
Project Overview

Project Name	***Zc3h11a***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zc3h11a* gene. The schematic diagram is as follows:



Technical routes

➢ The *Zc3h11a* gene has 12 transcripts. According to the structure of *Zc3h11a* gene, exon5-exon6 of *Zc3h11a-203*(ENSMUST00000191896.6) transcript is recommended as the knockout region.The region contains 244bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Zc3h11a* 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

➢ Gm38394-201 gene was also knocked out.

➢The effect of this strategy on transcripts *Zc3h11a*-210,212 is unknown.

➢ The *Zc3h11a* gene is located on the Chr1. 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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Zc3h11a zinc finger CCCH type containing 11A [Mus musculus (house mouse)]

Gene ID: 70579, updated on 10-Oct-2020

Summary

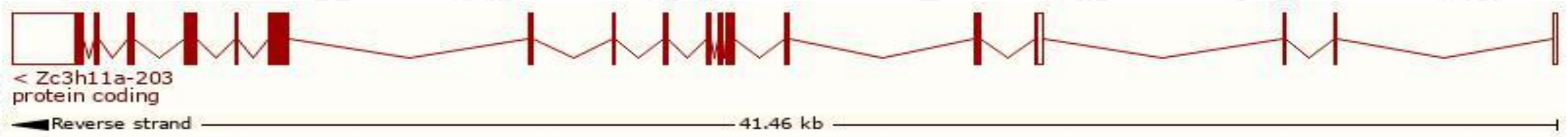
Official Symbol	Zc3h11a provided by MGI
Official Full Name	zinc finger CCCH type containing 11A provided by MGI
Primary source	MGI:MGI:1917829
See related	Ensembl:ENSMUSG00000102976
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110003F06Rik, 5730454B08Rik, G630041M05Rik, Zc3hdc11a, Zc3hh11a, mKIAA0663
Expression	Ubiquitous expression in CNS E11.5 (RPKM 42.5), bladder adult (RPKM 39.1) and 25 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

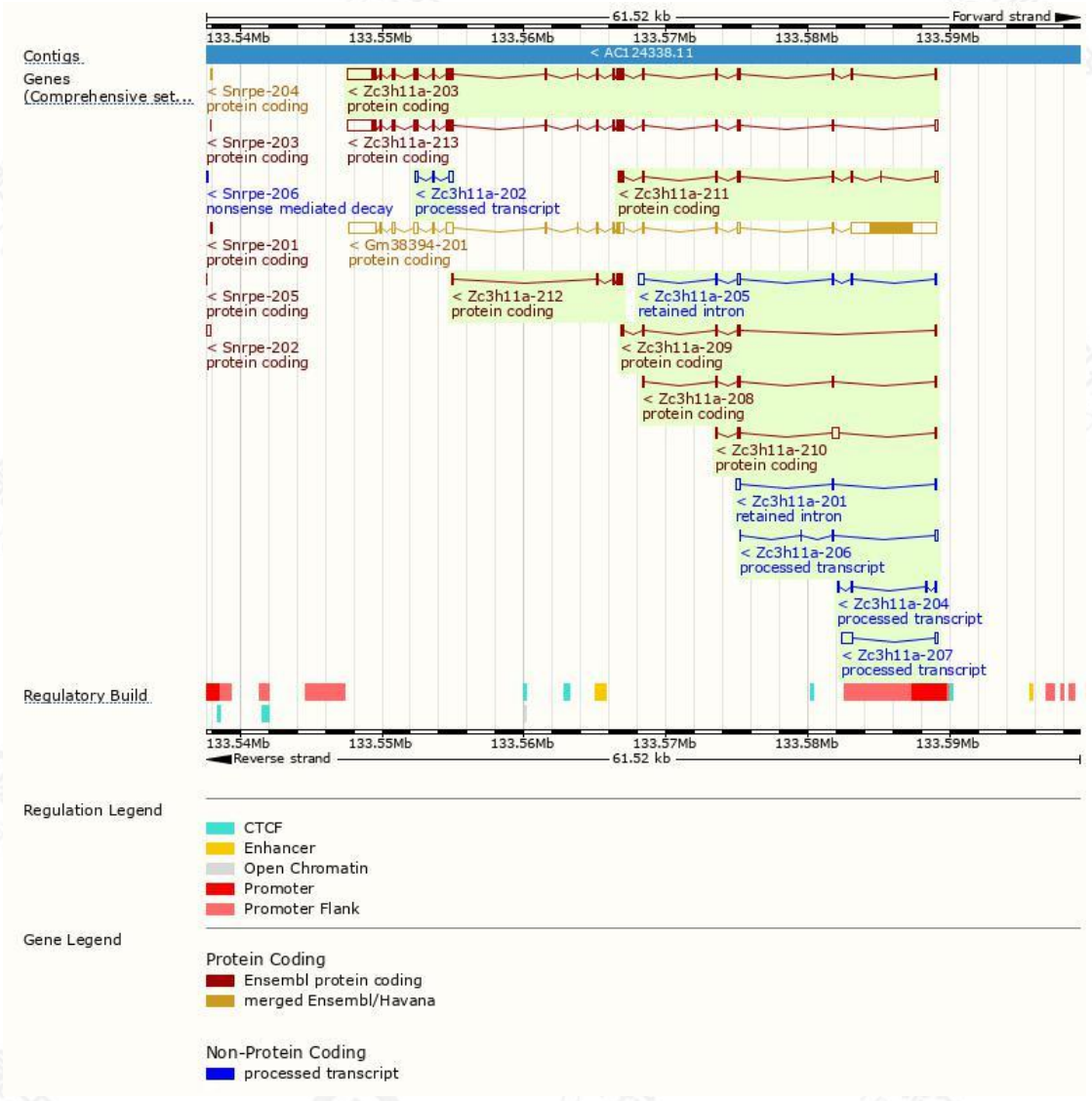
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zc3h11a-203	ENSMUST00000191896.6	4396	792aa	Protein coding	CCDS15297		TSL:1 , GENCODE basic , APPRIS P1 ,
Zc3h11a-211	ENSMUST00000195424.6	973	189aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Zc3h11a-210	ENSMUST00000195067.2	786	40aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Zc3h11a-209	ENSMUST00000194668.6	662	133aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Zc3h11a-212	ENSMUST00000195669.2	581	194aa	Protein coding	-		CDS 5' and 3' incomplete , TSL:3 ,
Zc3h11a-208	ENSMUST00000193504.6	479	84aa	Protein coding	-		CDS 3' incomplete , TSL:2 ,
Zc3h11a-207	ENSMUST00000192775.2	879	No protein	Processed transcript	-		TSL:1 ,
Zc3h11a-202	ENSMUST00000191828.2	552	No protein	Processed transcript	-		TSL:3 ,
Zc3h11a-204	ENSMUST00000191932.2	323	No protein	Processed transcript	-		TSL:3 ,
Zc3h11a-206	ENSMUST00000192148.2	300	No protein	Processed transcript	-		TSL:3 ,
Zc3h11a-205	ENSMUST00000192107.6	902	No protein	Retained intron	-		TSL:2 ,
Zc3h11a-201	ENSMUST00000191705.6	418	No protein	Retained intron	-		TSL:2 ,

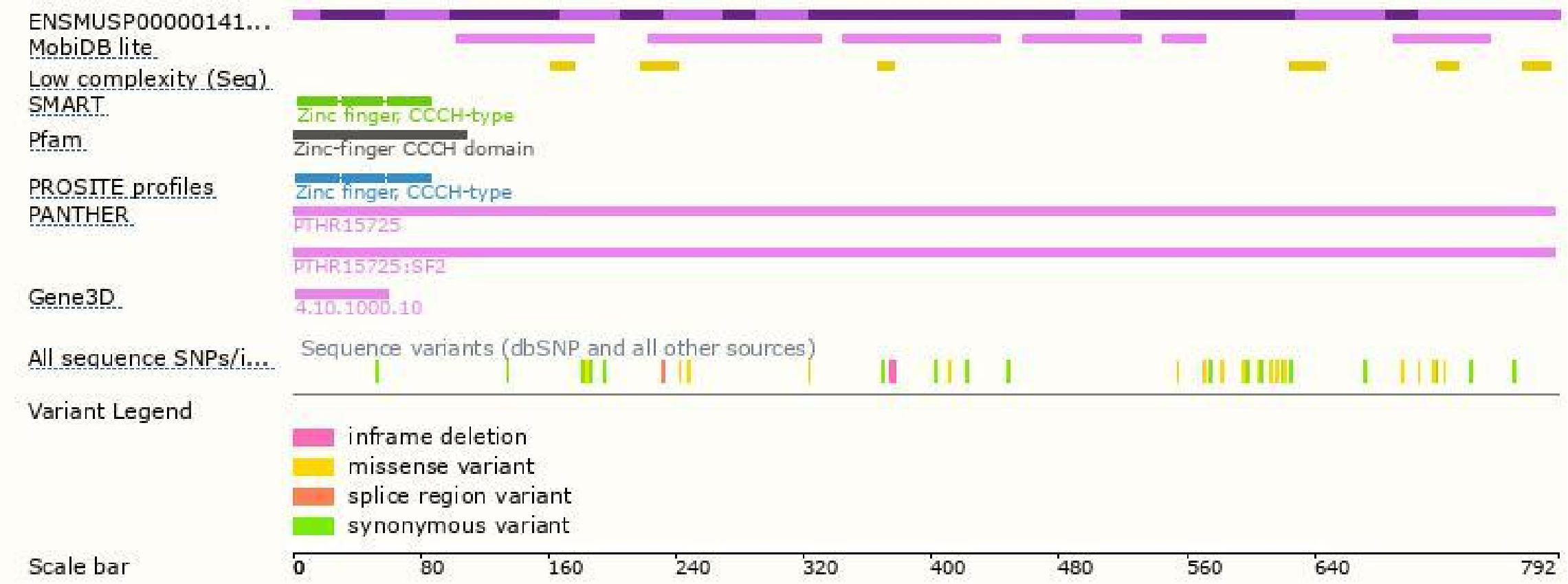
The strategy is based on the design of *Zc3h11a-203* transcript,the transcription is shown below:



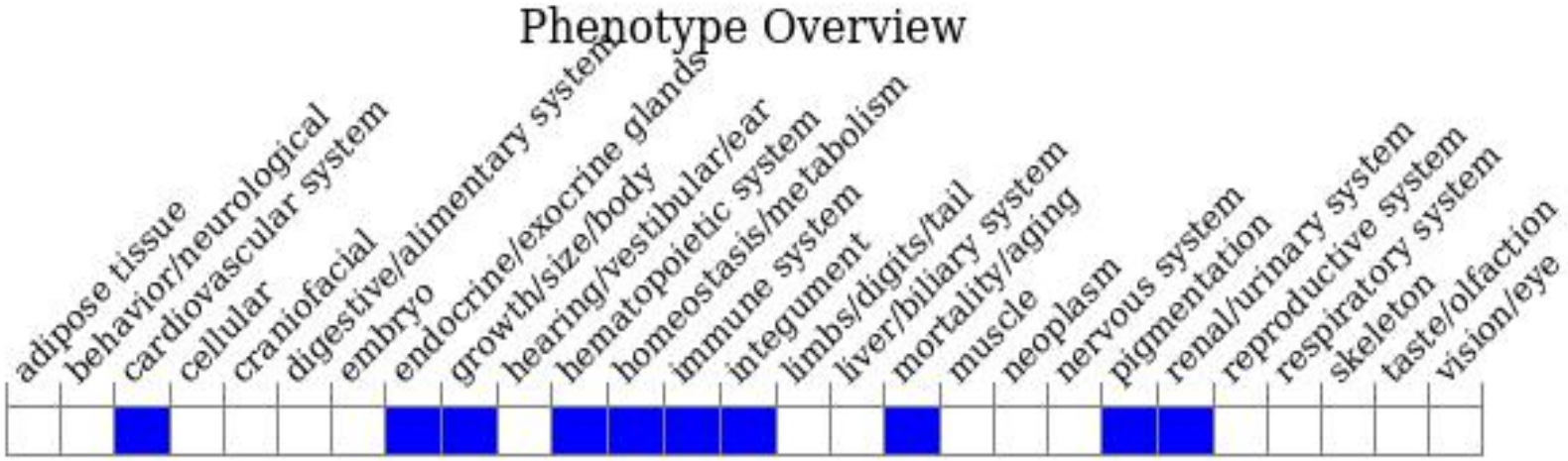
Genomic location distribution



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/).

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