Vti1b Cas9-KO Strategy

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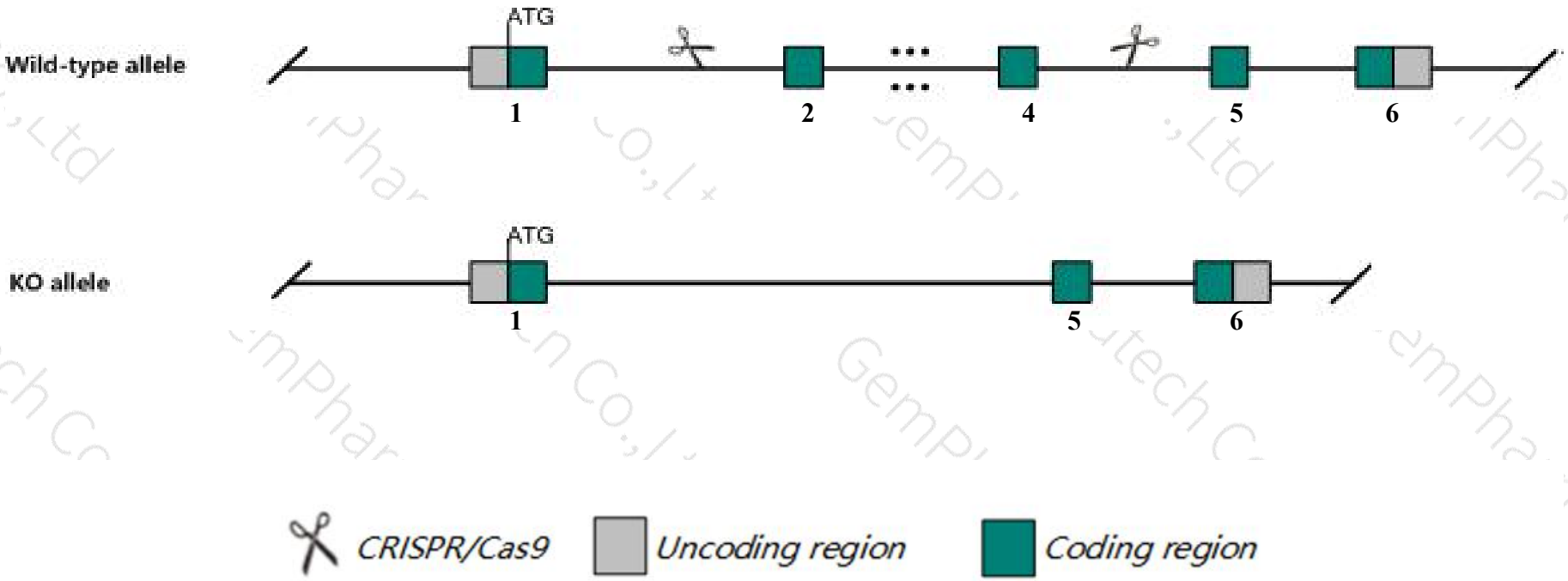
Design Date: 2020-2-10

Project Overview

Project Name	***Vti1b***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vti1b* gene. The schematic diagram is as follows:



Technical routes

➢ The *Vti1b* gene has 4 transcripts. According to the structure of *Vti1b* gene, exon2-exon4 of *Vti1b-201* (ENSMUST00000055262.12) transcript is recommended as the knockout region.The region contains 425bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Vti1b* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,While the majority of homozygous mutant mice are of normal size, some show reduced weight. A portion of these smaller mice died within 6 weeks of life. Liver cysts were identified in some of the mutant mice that were of normal size.

➢ The *Vti1b* gene is located on the Chr12. 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）

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Vti1b vesicle transport through interaction with t-SNAREs 1B [Mus musculus (house mouse)]

Gene ID: 53612, updated on 31-Jan-2019

Summary

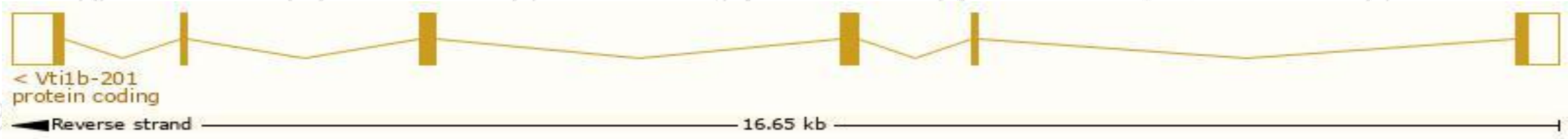
Official Symbol	Vti1b provided by MGI
Official Full Name	vesicle transport through interaction with t-SNAREs 1B provided by MGI
Primary source	MGI:MGI:1855688
See related	Ensembl:ENSMUSG00000021124
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AU015348, GES30, MVti1b, SNARE, Vti1-rp1
Expression	Ubiquitous expression in cortex adult (RPKM 37.7), frontal lobe adult (RPKM 36.2) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

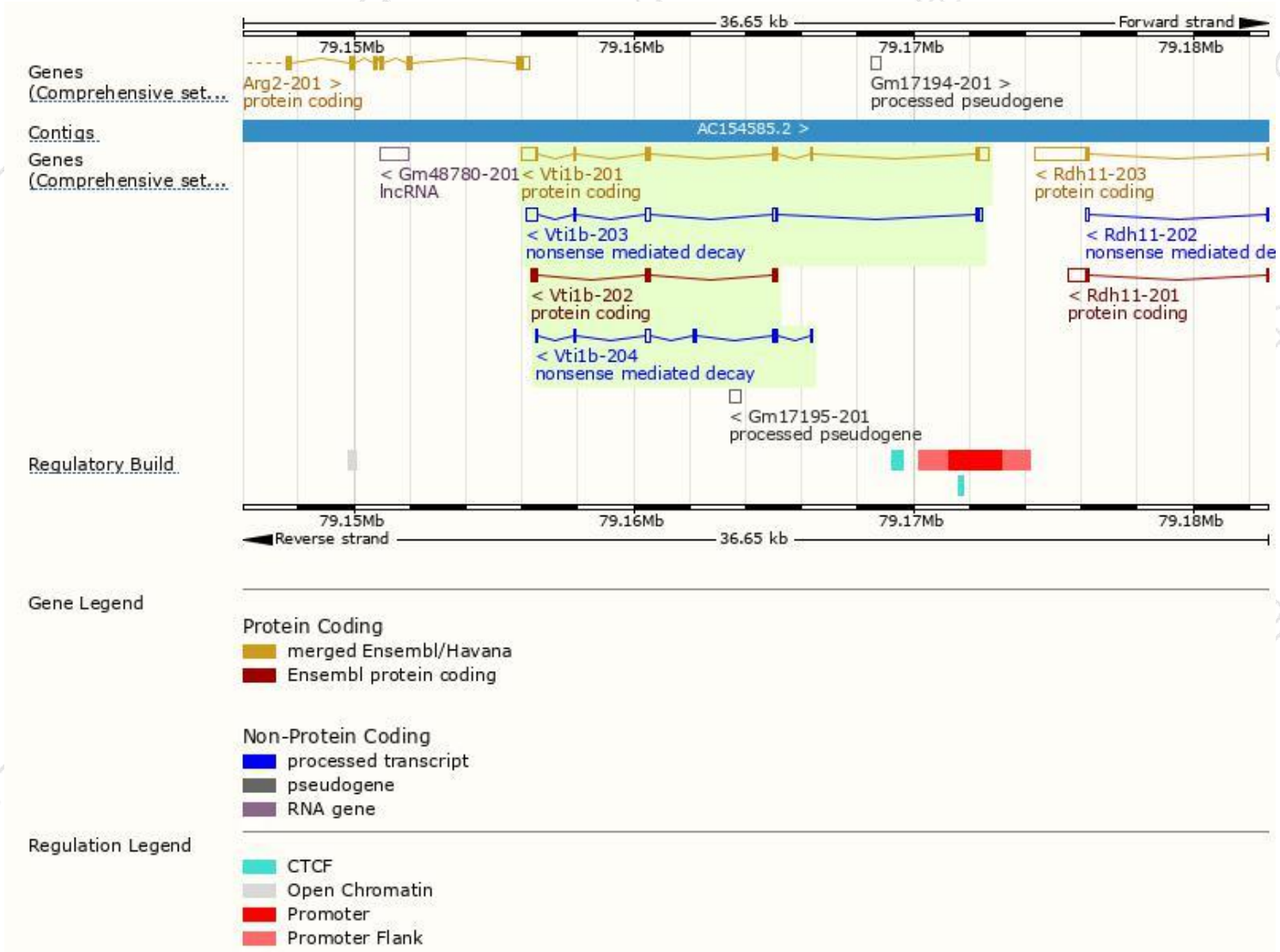
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Vti1b-201	ENSMUST00000055262.12	1490	232aa	Protein coding	CCDS26008	Q91XH6	TSL:1 GENCODE basic APPRIS P1
Vti1b-202	ENSMUST00000162569.7	609	182aa	Protein coding	-	F6UHS3	CDS 5' incomplete TSL:3
Vti1b-203	ENSMUST00000162789.8	1059	54aa	Nonsense mediated decay	-	E0CYE5	TSL:1
Vti1b-204	ENSMUST00000163031.1	623	74aa	Nonsense mediated decay	-	F6T4B9	CDS 5' incomplete TSL:5

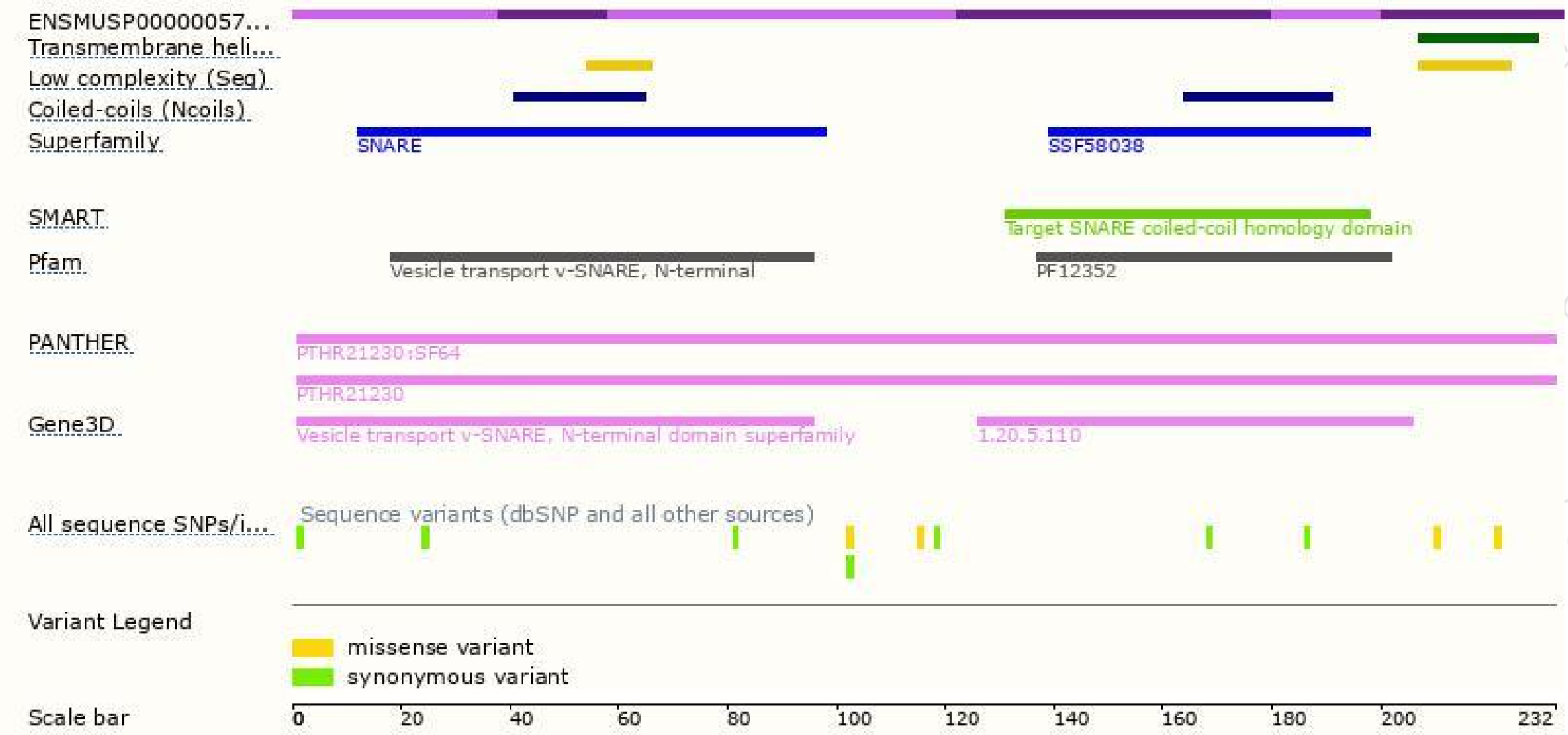
The strategy is based on the design of *Vti1b-201* transcript,The transcription is shown below



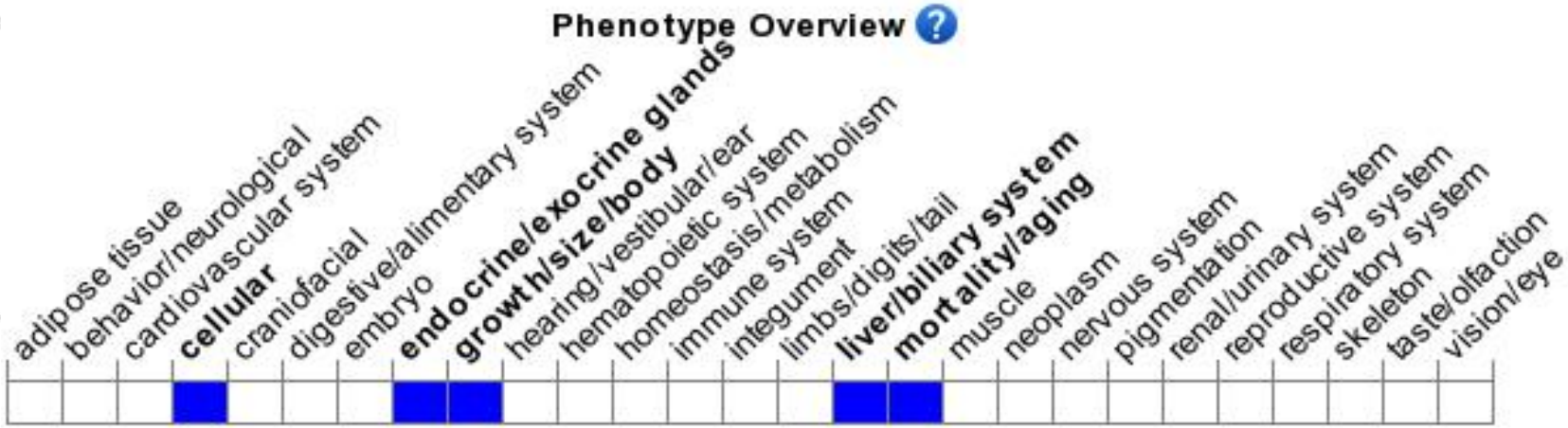
Genomic location distribution



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/).

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

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