Baiap2 Cas9-KO *Strategy*

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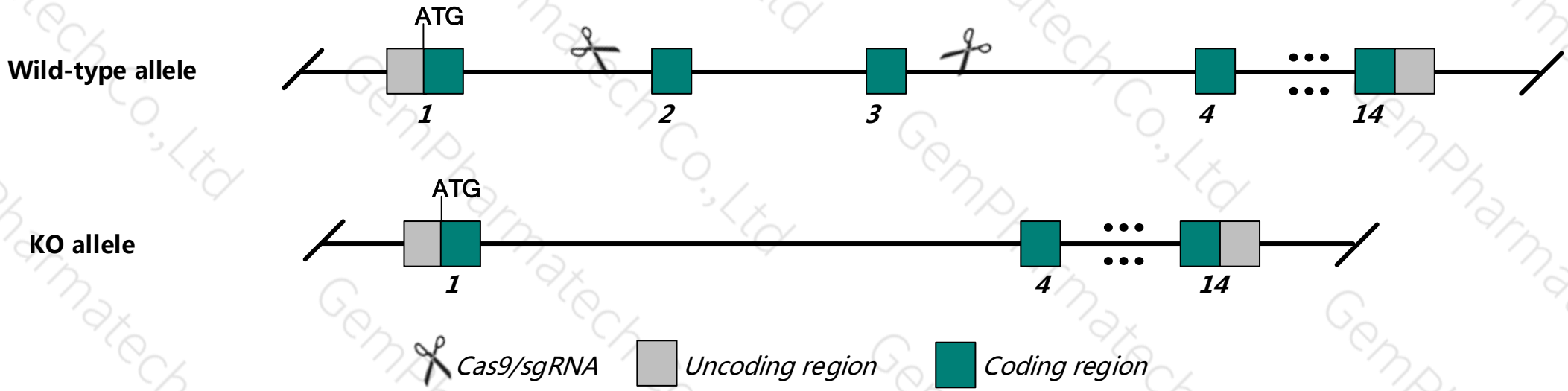
Design Date: **2020-4-2**

Project Overview

Project Name	***Baiap2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Baiap2* gene. The schematic diagram is as follows:



Technical routes

- The *Baiap2* gene has 9 transcripts.According to the structure of *Baiap2* gene, exon2~exon3 of *Baiap2*-201 (ENSMUST00000026436.9)transcript is recommended as the knockout region.The region contains 163bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Baiap2* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

- According to the existing MGI data，homozygotes for a knock-out allele show mid to late gestation lethality, developmental delay, oligodactyly, subcutaneous edema, and severely impaired cardiac and placental development. Adult homozygotes fail to regulate synaptic plasticity and exhibit hippocampus-associated learning deficits.
- The *Baiap2* gene is located on the Chr11. 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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Baiap2 brain-specific angiogenesis inhibitor 1-associated protein 2 [*Mus musculus* (house mouse)]

Gene ID: 108100, updated on 13-Mar-2020

Summary

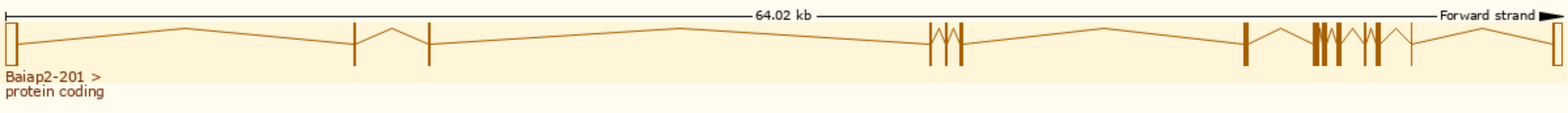
Official Symbol	Baiap2 provided by MGI
Official Full Name	brain-specific angiogenesis inhibitor 1-associated protein 2 provided by MGI
Primary source	MGI:MGI:2137336
See related	Ensembl:ENSMUSG00000025372
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	IRSp53; R75030
Expression	Ubiquitous expression in frontal lobe adult (RPKM 31.0), cortex adult (RPKM 30.6) and 27 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

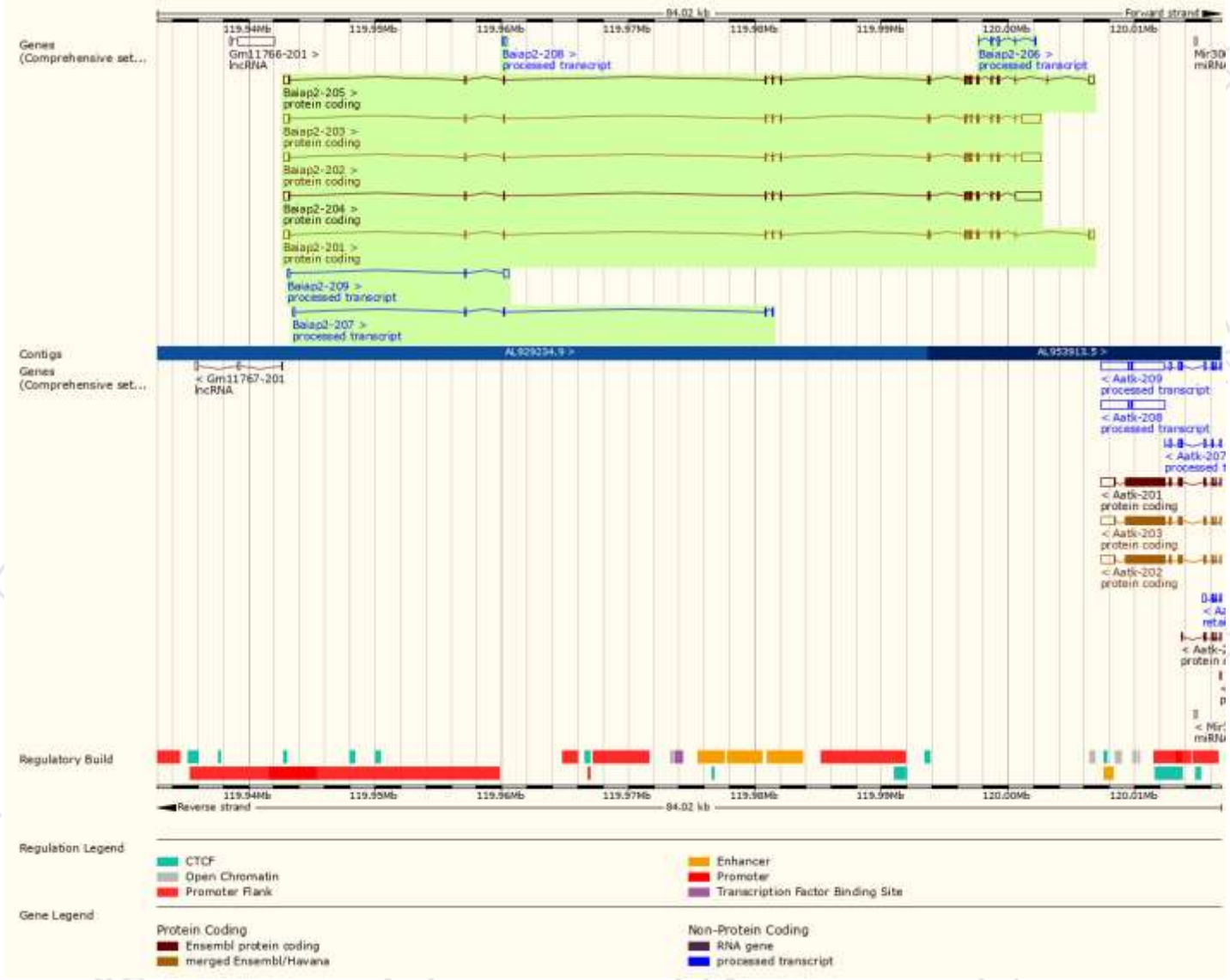
The gene has 9 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Baiap2-202	ENSMUST00000075180.11	3518	522aa	Protein coding	CCDS25724	Q3UKP6 Q8BKX1	TSL:1 GENCODE basic APPRIS ALT1
Baiap2-203	ENSMUST00000103021.9	3398	482aa	Protein coding	CCDS25723	Q8BKX1	TSL:1 GENCODE basic
Baiap2-201	ENSMUST00000026436.9	2394	535aa	Protein coding	CCDS25722	Q8BKX1	TSL:1 GENCODE basic APPRIS P4
Baiap2-204	ENSMUST00000106231.7	4005	513aa	Protein coding	-	Q8BKX1	TSL:1 GENCODE basic
Baiap2-205	ENSMUST00000106233.1	2442	521aa	Protein coding	-	B1AZ46	TSL:5 GENCODE basic APPRIS ALT1
Baiap2-209	ENSMUST00000152523.7	585	No protein	Processed transcript	-	-	TSL:2
Baiap2-207	ENSMUST00000146566.1	433	No protein	Processed transcript	-	-	TSL:3
Baiap2-206	ENSMUST00000131580.1	360	No protein	Processed transcript	-	-	TSL:5
Baiap2-208	ENSMUST00000146960.1	276	No protein	Processed transcript	-	-	TSL:5

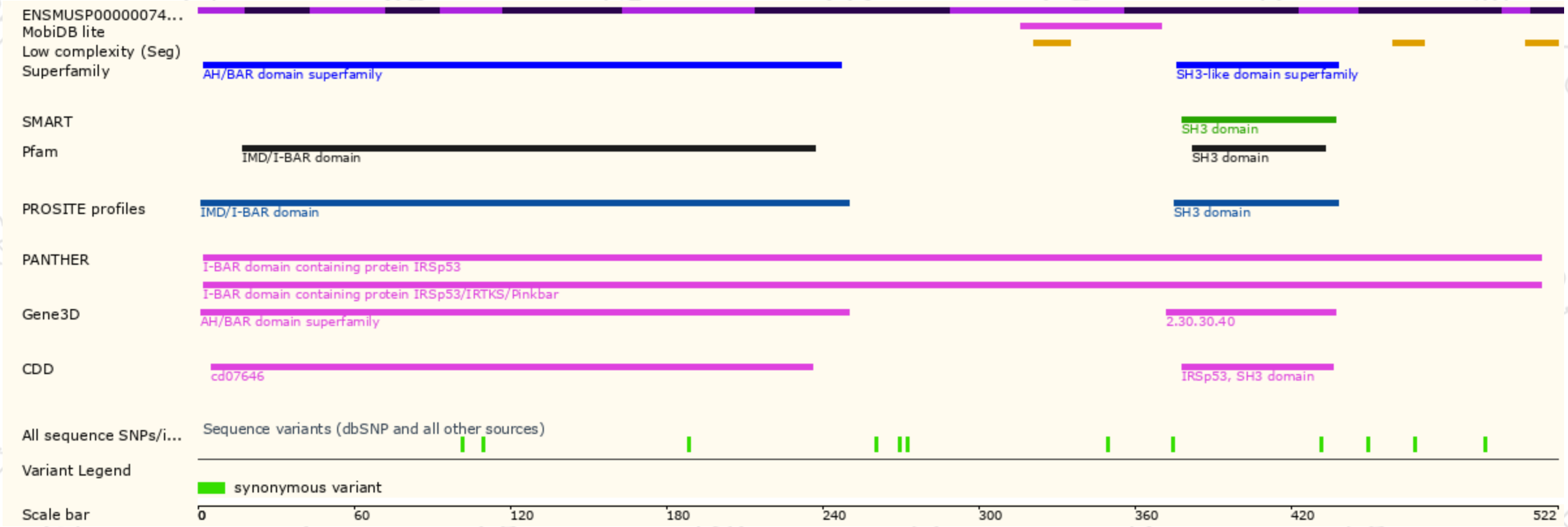
The strategy is based on the design of *Baiap2*-201 transcript, the transcription is shown below:



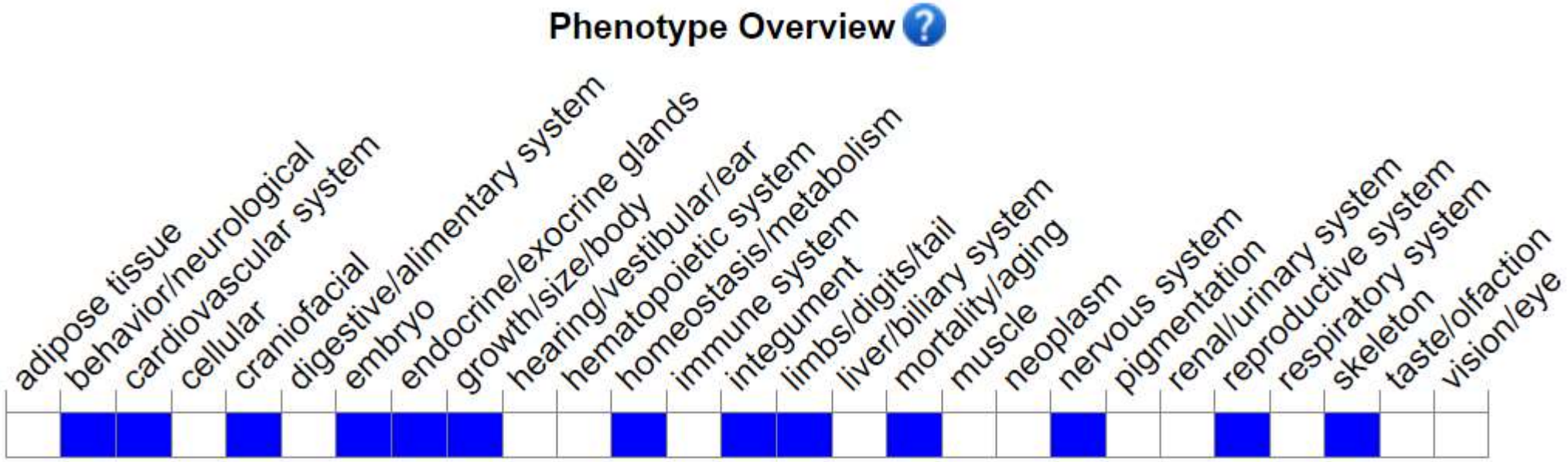
Genomic location (Ensembl)



Protein domain（Ensembl）



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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