

***Gata2* Cas9-CKO Strategy**

Designer:

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Design Date:

2019-8-5

Project Overview

Project Name

Gata2

Project type

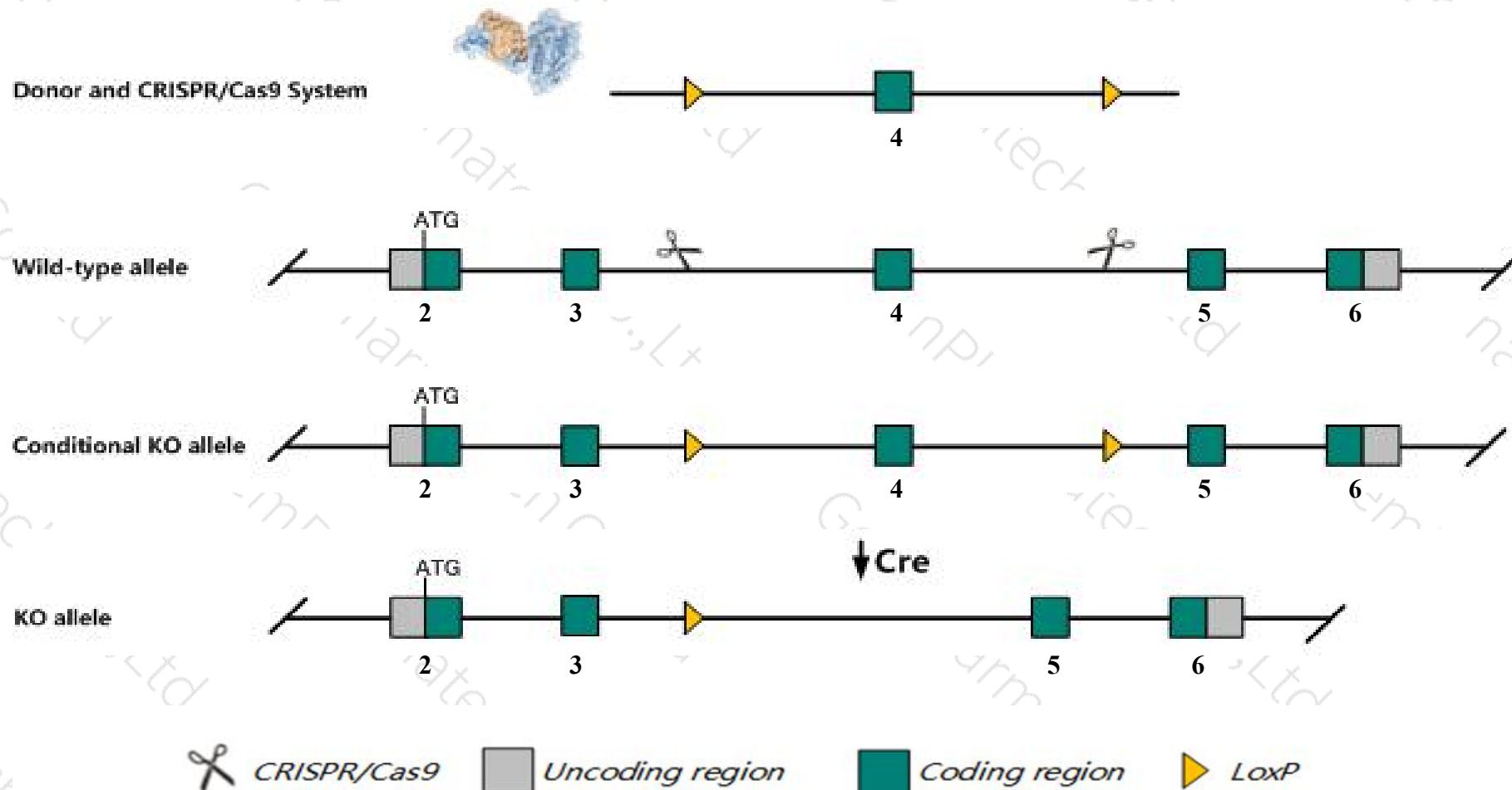
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gata2* gene. The schematic diagram is as follows:



Technical routes

- The *Gata2* gene has 5 transcripts. According to the structure of *Gata2* gene, exon4 of *Gata2-201* (ENSMUST00000015197.8) transcript is recommended as the knockout region. The region contains 146bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gata2* 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.

- According to the existing MGI data, Homozygous mutants show reduced placental secretion of angiogenic factors, hematopoietic defects, enlarged pericardial sacs, reduced numbers of V2-expressing interneurons of ventral spinal cord, and die by embryonic day 11.5.
- The *Gata2* gene is located on the Chr6. 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)

Gata2 GATA binding protein 2 [Mus musculus (house mouse)]

Gene ID: 14461, updated on 31-Jan-2019

Summary



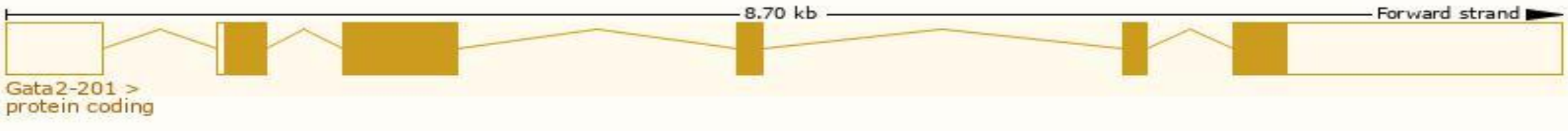
Official Symbol	Gata2 provided by MGI
Official Full Name	GATA binding protein 2 provided by MGI
Primary source	MGI:MGI:95662
See related	Ensembl:ENSMUSG00000015053
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gata-2
Expression	Biased expression in lung adult (RPKM 56.2), adrenal adult (RPKM 25.3) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

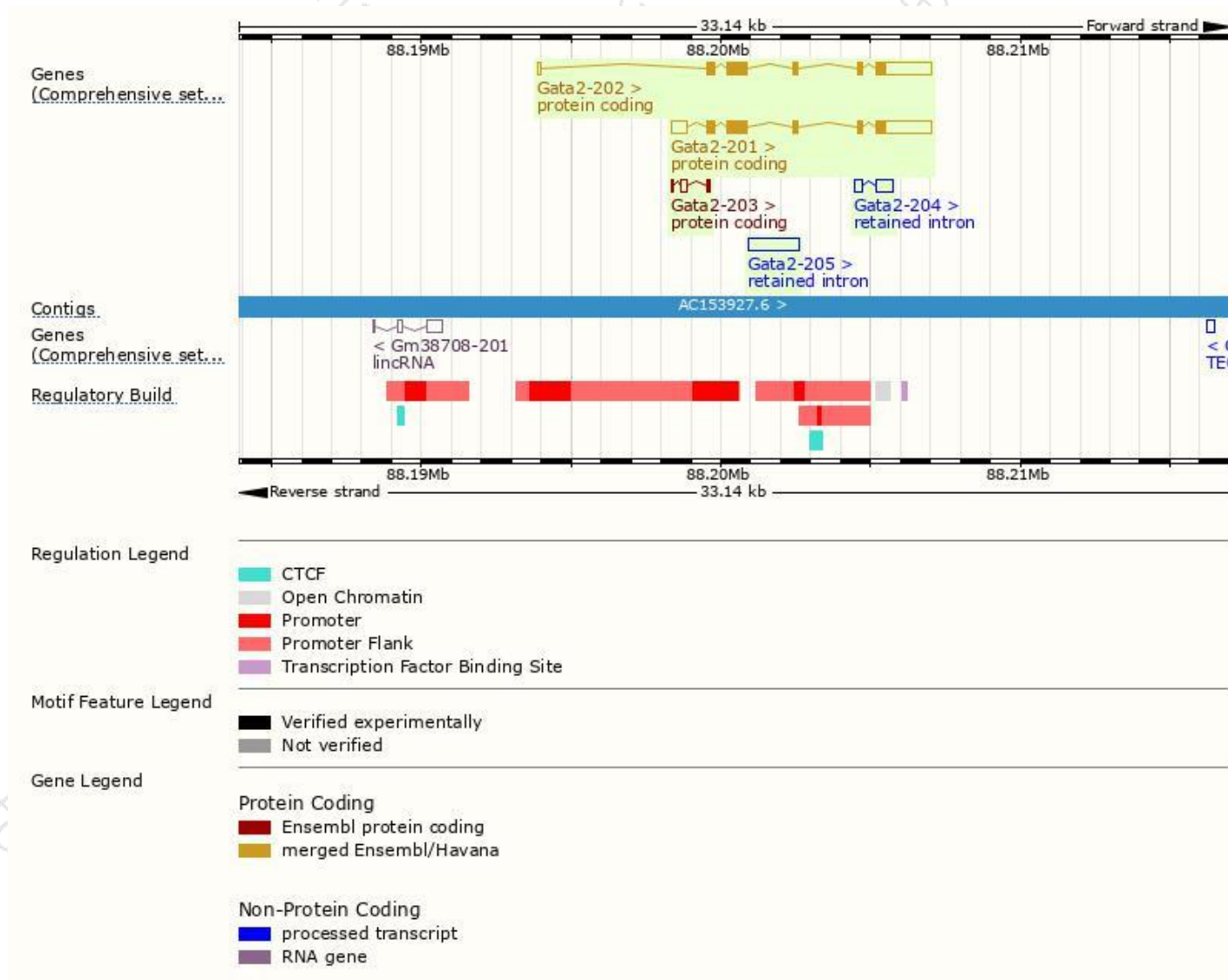
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gata2-201	ENSMUST00000015197.8	3571	480aa	Protein coding	CCDS20333	O09100 Q3U320	TSL:1 GENCODE basic APPRIS P1
Gata2-202	ENSMUST000000170089.7	3135	480aa	Protein coding	CCDS20333	O09100 Q3U320	TSL:1 GENCODE basic APPRIS P1
Gata2-203	ENSMUST000000203480.1	423	34aa	Protein coding	-	A0A0N4SWF9	CDS 3' incomplete TSL:5
Gata2-205	ENSMUST000000205151.1	1723	No protein	Retained intron	-	-	TSL:NA
Gata2-204	ENSMUST000000203579.1	841	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Gata2-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain

ENSMUSP00000015...

[MobiDB lite](#)

[Low complexity \(Seg\)](#)

[Conserved Domains](#)

[hmmpanther](#)

[Superfamily domains](#)

[SMART domains](#)

[Prints domain](#)

[Pfam domain](#)

[PROSITE profiles](#)

[PROSITE patterns](#)

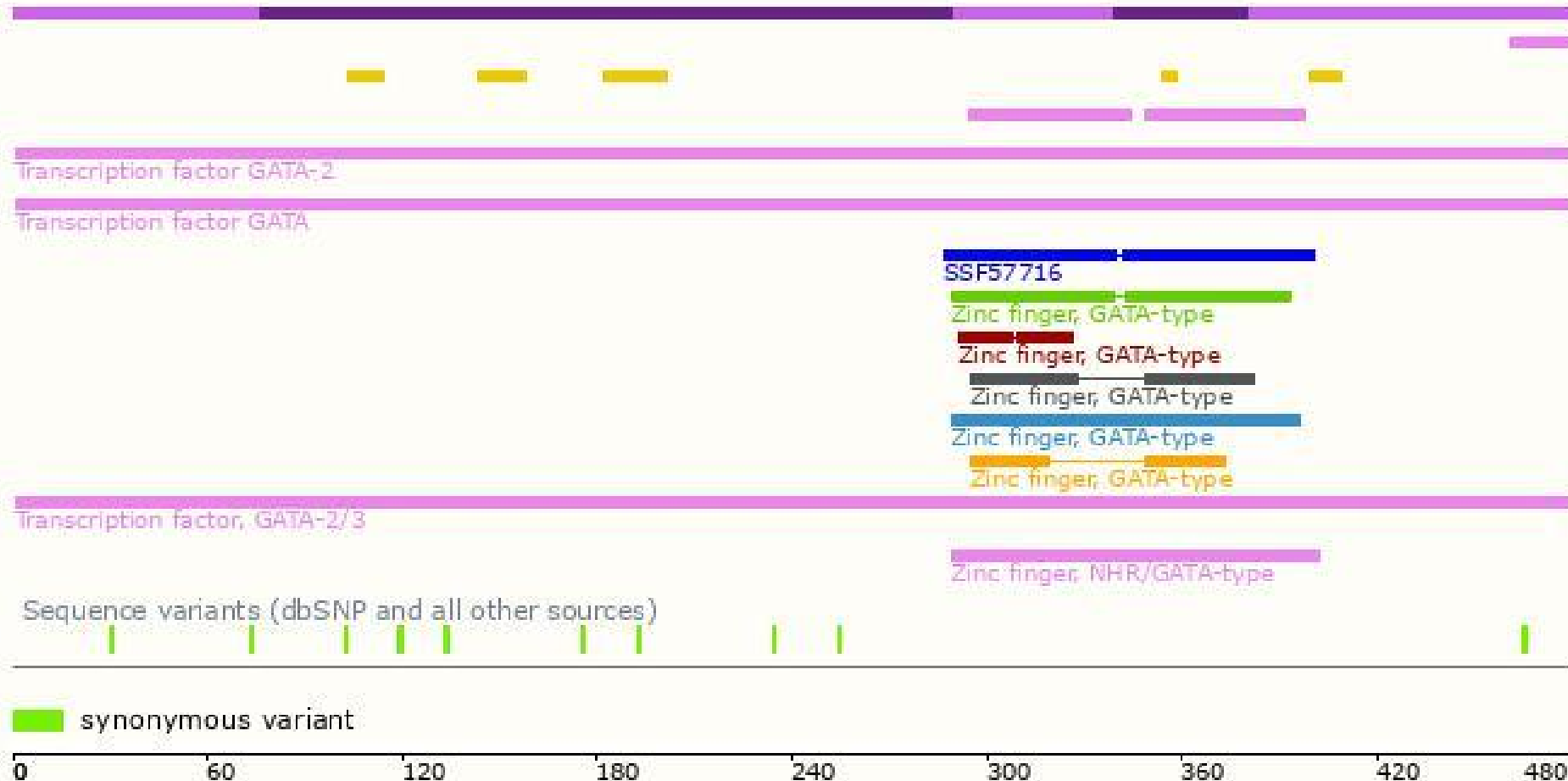
[PIRSF domain](#)

[Gene3D](#)

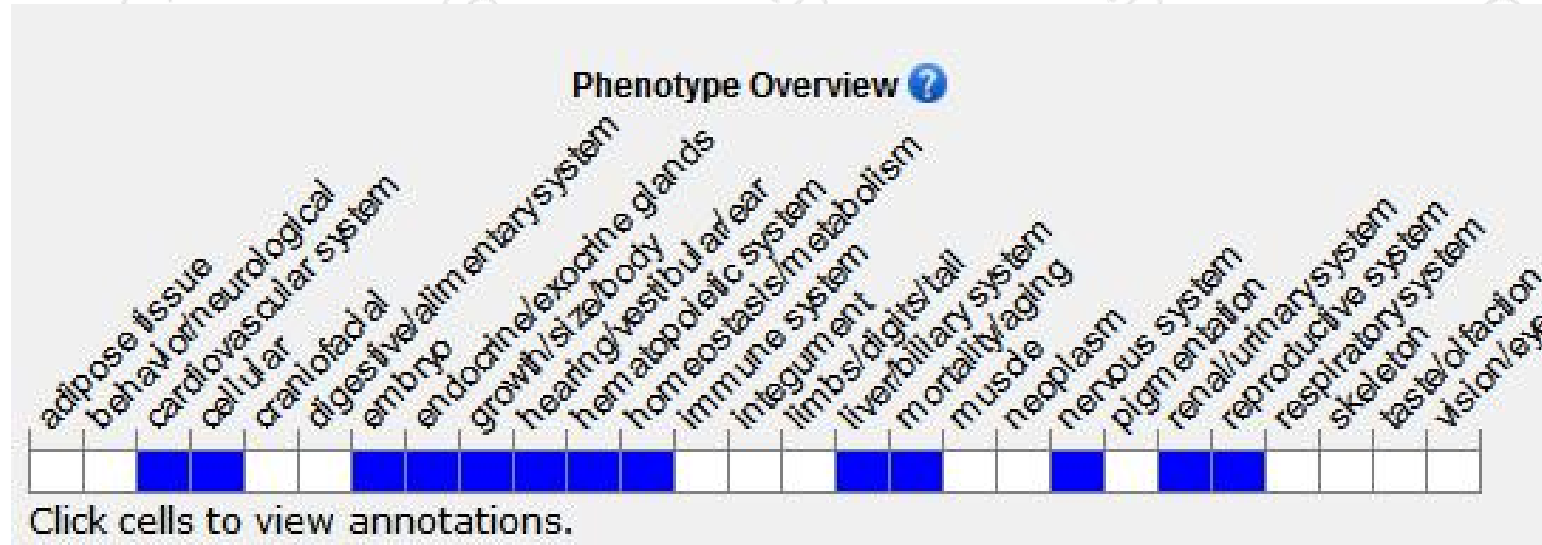
[All sequence SNPs/i....](#)

[Variant Legend](#)

[Scale bar](#)



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, Homozygous mutants show reduced placental secretion of angiogenic factors, hematopoietic defects, enlarged pericardial sacs, reduced numbers of V2-expressing interneurons of ventral spinal cord, and die by embryonic day 11.5.

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

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