

Gria1 Cas9-KO Strategy

Designer:

Ruirui Zhang

Reviewer:

Huimin Su

Design Date:

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Project Overview

Project Name

Gria1

Project type

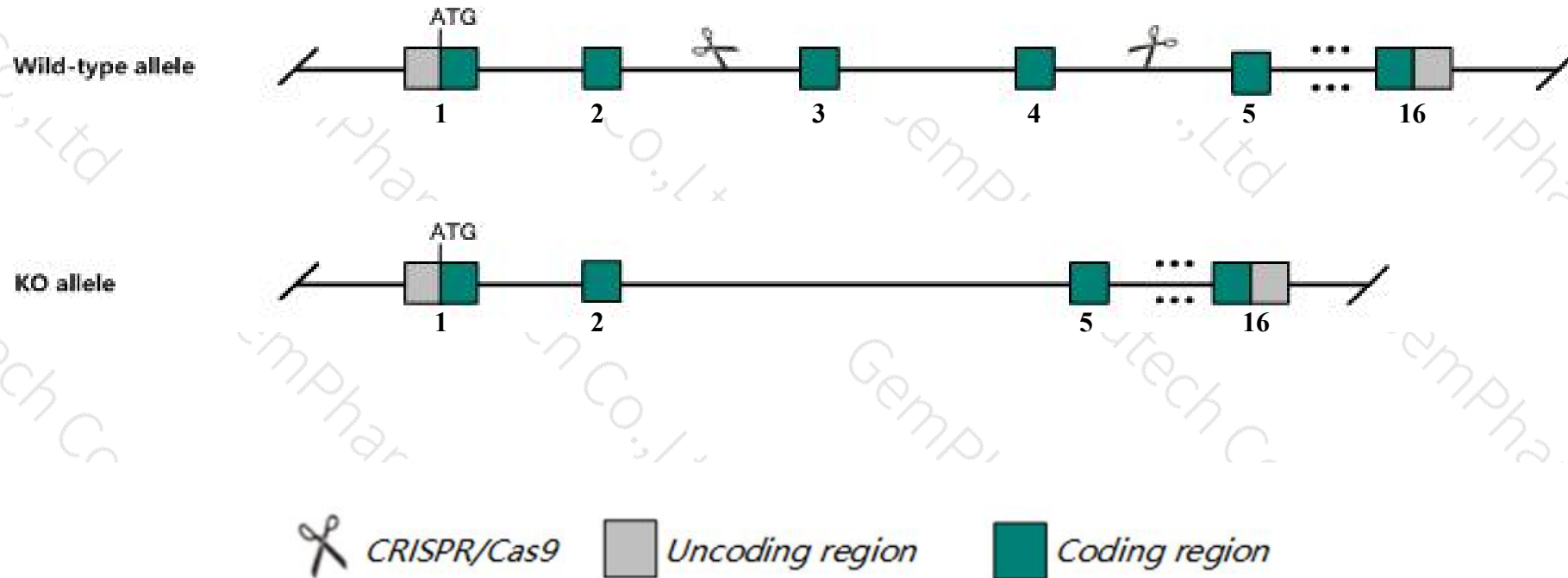
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Grial* gene has 5 transcripts. According to the structure of *Grial* gene, exon3-exon4 of *Grial*-201 (ENSMUST00000036315.15) 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 *Grial* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice with mutations in phosphorylation sites have LTD and LTP deficits and spatial learning memory defects. Null homozygotes also show stimulus-reward learning deficits and increases locomotor activity and context-dependent sensitization to amphetamine.
- The *Gria1* 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)

Gria1 glutamate receptor, ionotropic, AMPA1 (alpha 1) [*Mus musculus* (house mouse)]

Gene ID: 14799, updated on 21-Aug-2019

Summary

Official Symbol Gria1 provided by [MGI](#)

Official Full Name glutamate receptor, ionotropic, AMPA1 (alpha 1) provided by [MGI](#)

Primary source [MGI:MGI:95808](#)

See related [Ensembl:ENSMUSG00000020524](#)

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 Glr1; Glr-1; GluA1; GluRA; Glur1; HIPA1; GluR-A; Glur-1; glur-K1; 2900051M01Rik

Expression Biased expression in frontal lobe adult (RPKM 40.2), cerebellum adult (RPKM 32.5) and 4 other tissues [See more](#)

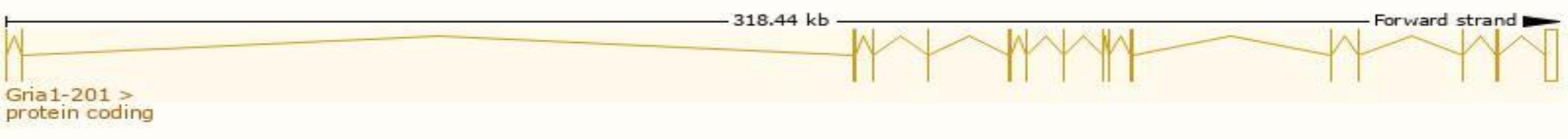
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

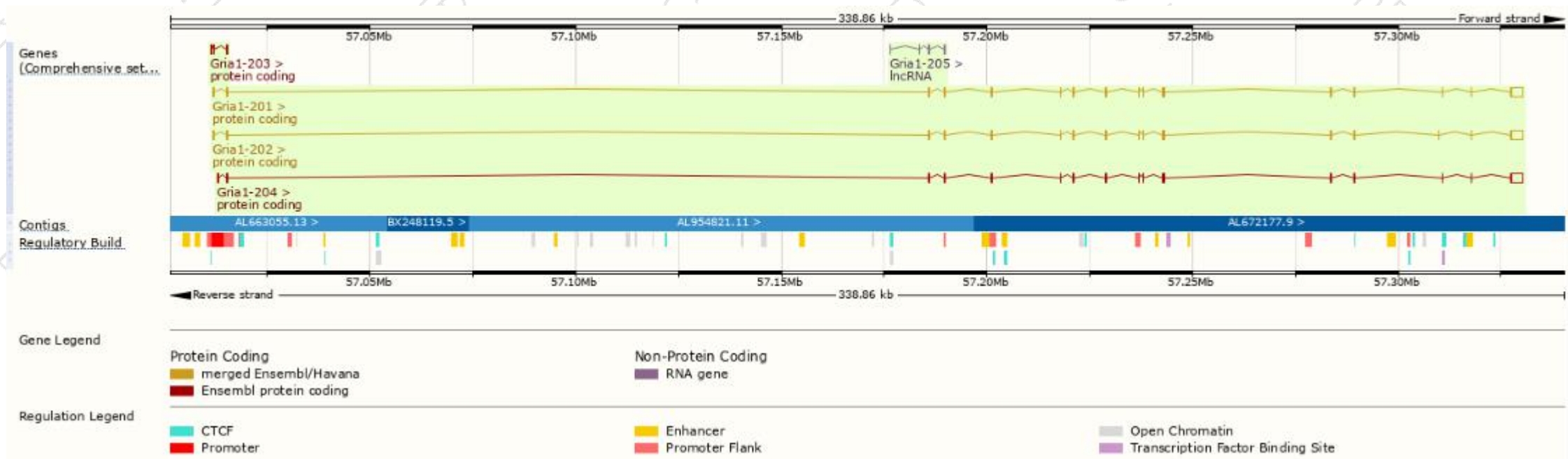
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gria1-201	ENSMUST00000036315.15	5546	907aa	Protein coding	CCDS48800	P23818	TSL:1 GENCODE basic APPRIS ALT2
Gria1-202	ENSMUST00000094179.10	5399	907aa	Protein coding	CCDS36159	Q7TNB5	TSL:1 GENCODE basic APPRIS P3
Gria1-204	ENSMUST00000151045.2	5361	838aa	Protein coding	CCDS56770	F6YNQ1	TSL:1 GENCODE basic APPRIS ALT2
Gria1-203	ENSMUST00000125292.1	287	4aa	Protein coding	-	-	CDS 3' incomplete TSL:5
Gria1-205	ENSMUST00000173531.1	531	No protein	lncRNA	-	-	TSL:3

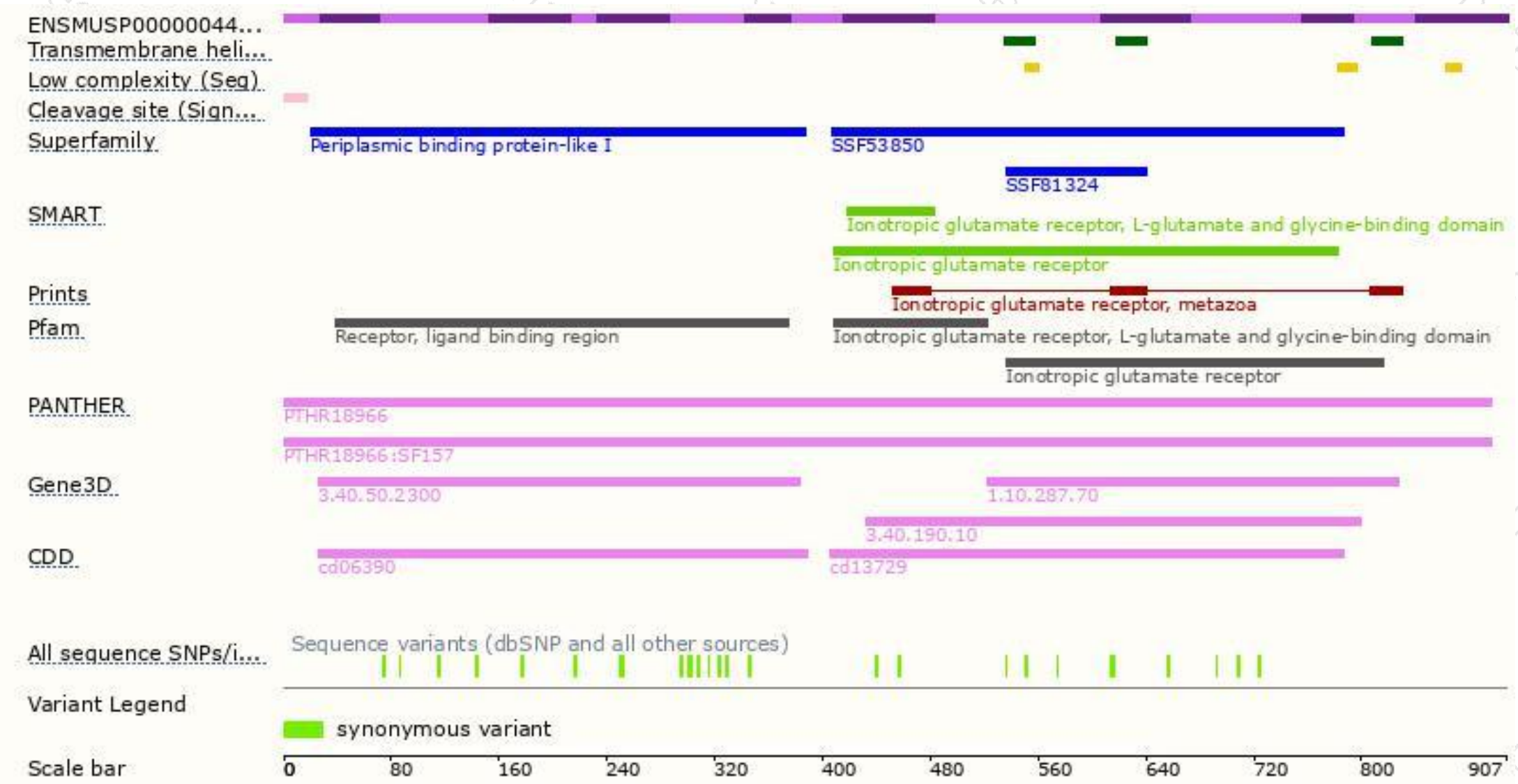
The strategy is based on the design of *Gria1-201* transcript,The transcription is shown below



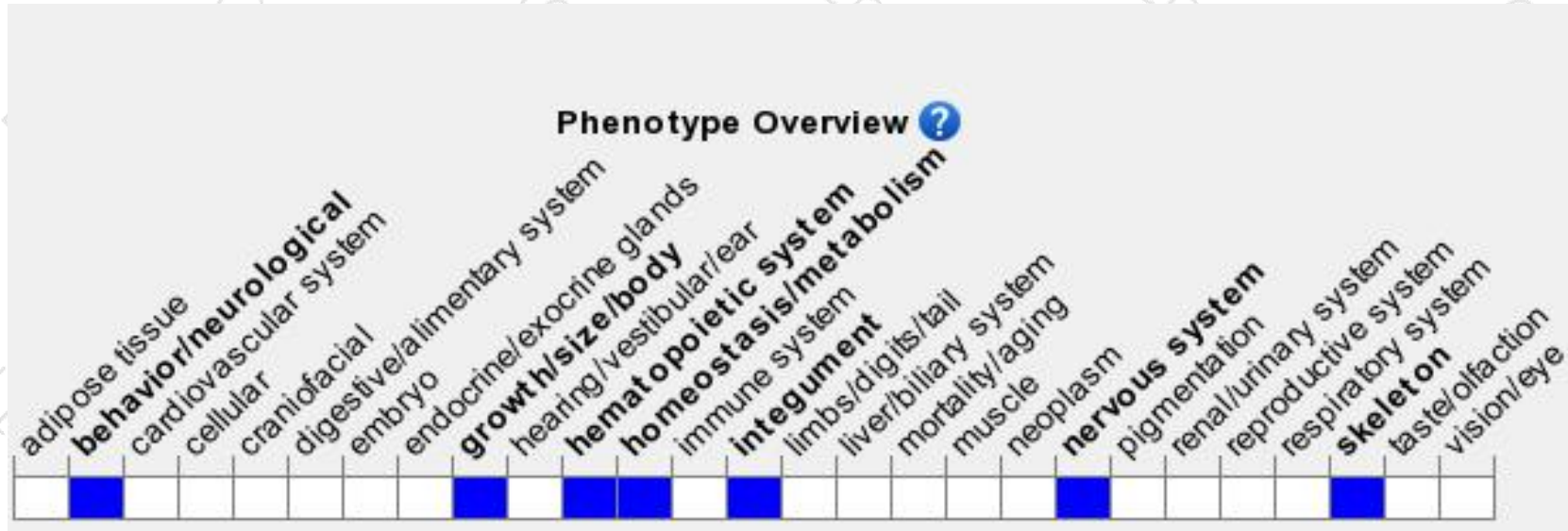
Genomic location distribution



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.

Tel: 400-9660890

