Gpr19 Cas9-CKO Strategy

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Project Overview

Project Name	***Gpr19***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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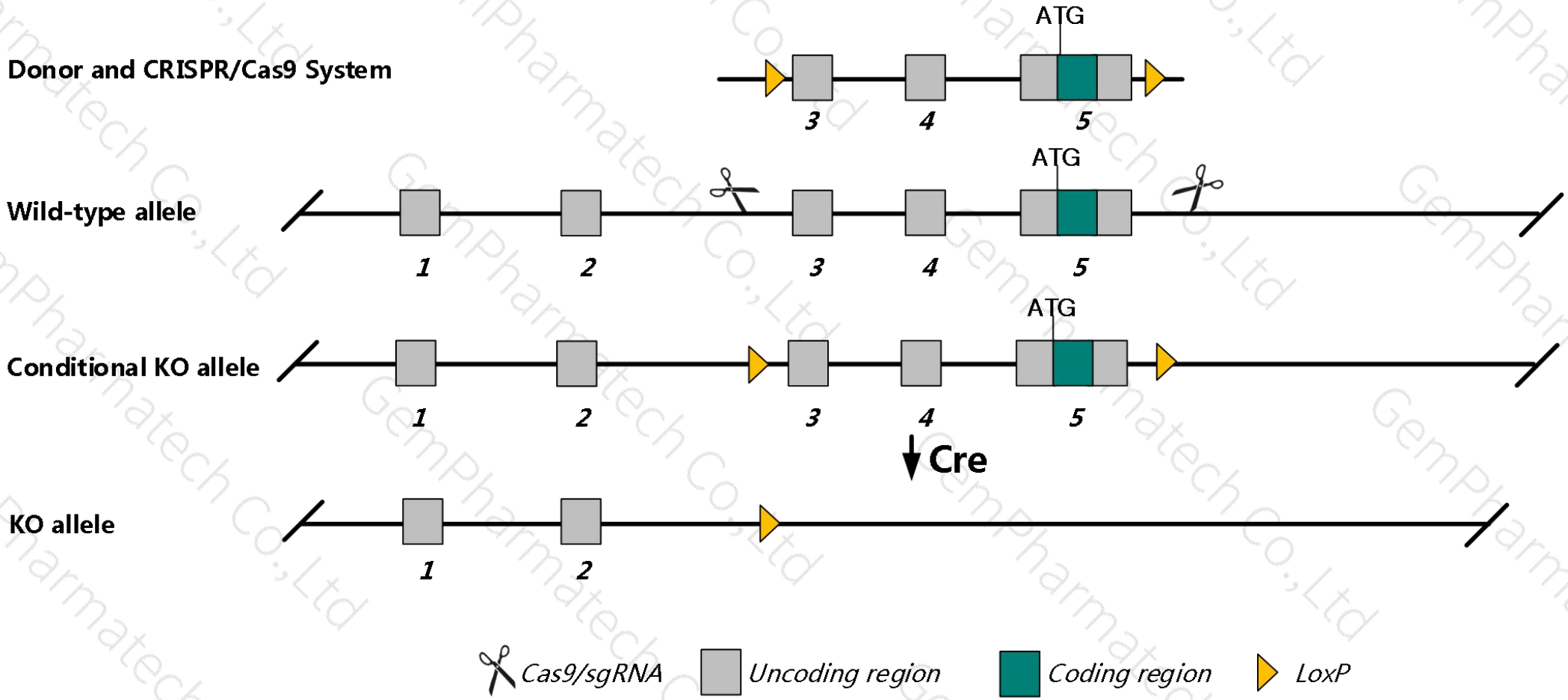
This model will use CRISPR/Cas9 technology to edit the *Gpr19* gene. The schematic diagram is as follows:



Technical routes

- The *Gpr19* gene has 13 transcripts. According to the structure of *Gpr19* gene, exon3-exon5 of *Gpr19-204* (ENSMUST00000116515.8) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gpr19* 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

➢ According to the existing MGI data,Homozygous mutation of this gene results in increased anxiety-like behavior.

➢ The *Gpr19* 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）

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Gpr19 G protein-coupled receptor 19 [Mus musculus (house mouse)]

Gene ID: 14760, updated on 19-Mar-2019

Summary

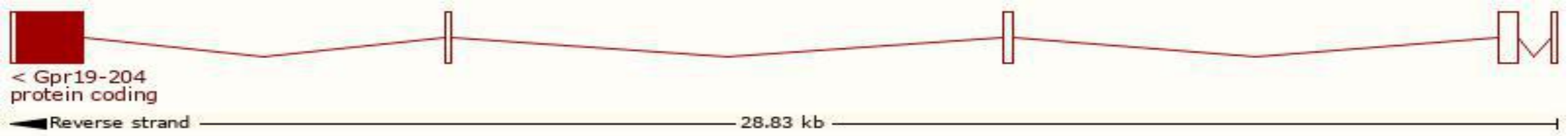
Official Symbol	Gpr19 provided by MGI
Official Full Name	G protein-coupled receptor 19 provided by MGI
Primary source	MGI:MGI:892973
See related	Ensembl:ENSMUSG00000032641
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Ubiquitous expression in testis adult (RPKM 6.5), whole brain E14.5 (RPKM 5.0) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

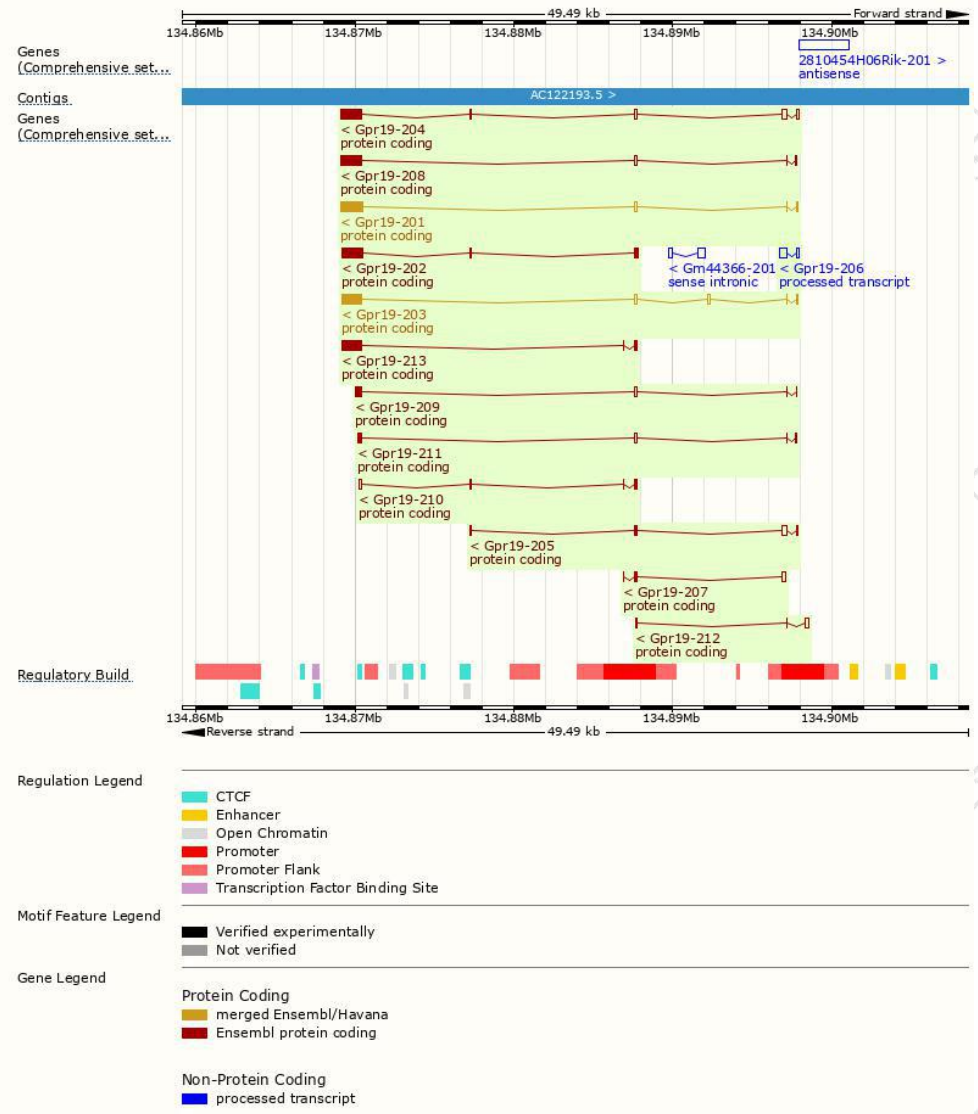
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpr19-204	ENSMUST00000116515.8	2075	409aa	Protein coding	CCDS20641	Q61121	TSL:1 GENCODE basic
Gpr19-203	ENSMUST00000111932.7	1711	409aa	Protein coding	CCDS20641	Q61121	TSL:1 GENCODE basic
Gpr19-208	ENSMUST00000165392.7	1643	409aa	Protein coding	CCDS20641	Q61121	TSL:3 GENCODE basic
Gpr19-201	ENSMUST00000046255.13	1610	415aa	Protein coding	CCDS51937	Q61121	TSL:1 GENCODE basic APPRIS P1
Gpr19-202	ENSMUST00000066107.9	1647	501aa	Protein coding	-	A0A1N9MDH9	TSL:1 GENCODE basic
Gpr19-213	ENSMUST00000215088.1	1484	464aa	Protein coding	-	A0A1L1SSP1	TSL:5 GENCODE basic
Gpr19-209	ENSMUST00000203409.2	679	135aa	Protein coding	-	A0A0N4SVJ1	CDS 3' incomplete TSL:3
Gpr19-205	ENSMUST00000149375.7	652	67aa	Protein coding	-	A0A1L1SRV5	CDS 3' incomplete TSL:5
Gpr19-211	ENSMUST00000204880.2	528	78aa	Protein coding	-	A0A0N4SV21	CDS 3' incomplete TSL:3
Gpr19-210	ENSMUST00000203762.3	498	96aa	Protein coding	-	A0A0N4SWA6	TSL:3 GENCODE basic
Gpr19-212	ENSMUST00000204908.1	457	32aa	Protein coding	-	A0A1L1SRU3	CDS 3' incomplete TSL:3
Gpr19-207	ENSMUST00000156379.1	429	54aa	Protein coding	-	A0A1L1SUR2	CDS 3' incomplete TSL:5
Gpr19-206	ENSMUST00000152140.2	610	No protein	Processed transcript	-	-	TSL:1

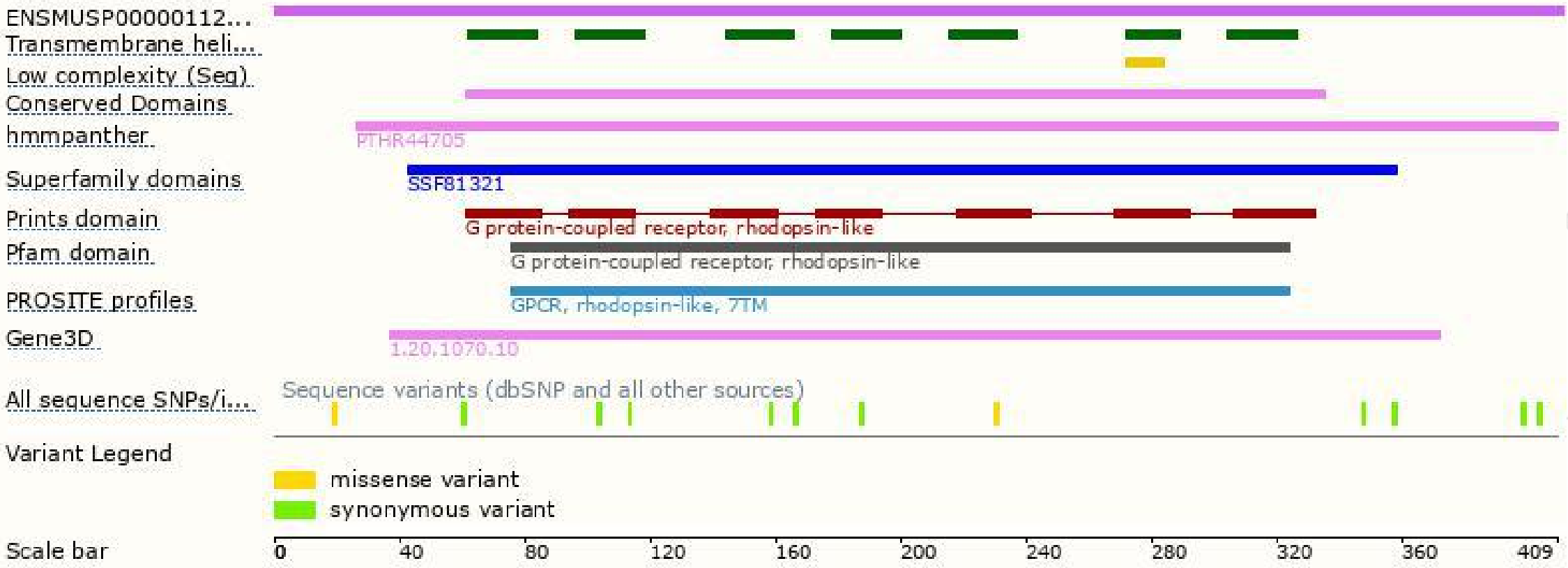
The strategy is based on the design of *Gpr19-204* transcript,The transcription is shown below



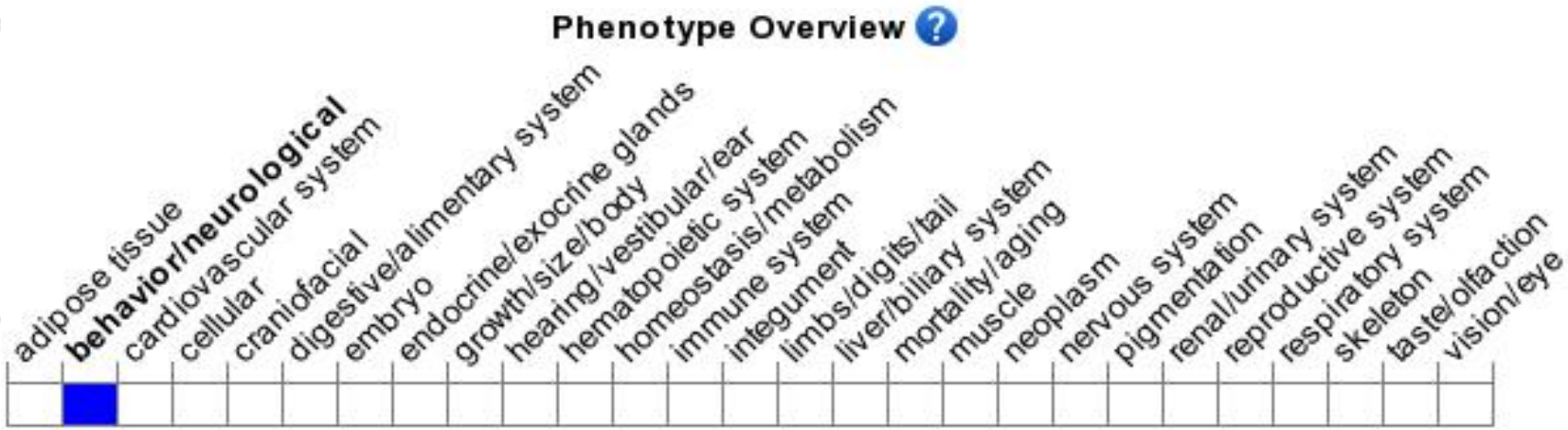
Genomic location distribution



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/).

According to the existing MGI data,Homozygous mutation of this gene results in increased anxiety-like behavior.

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

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