

Ulk2 Cas9-CKO Strategy

Designer:

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Design Date:

2019-8-23

Project Overview

Project Name

Ulk2

Project type

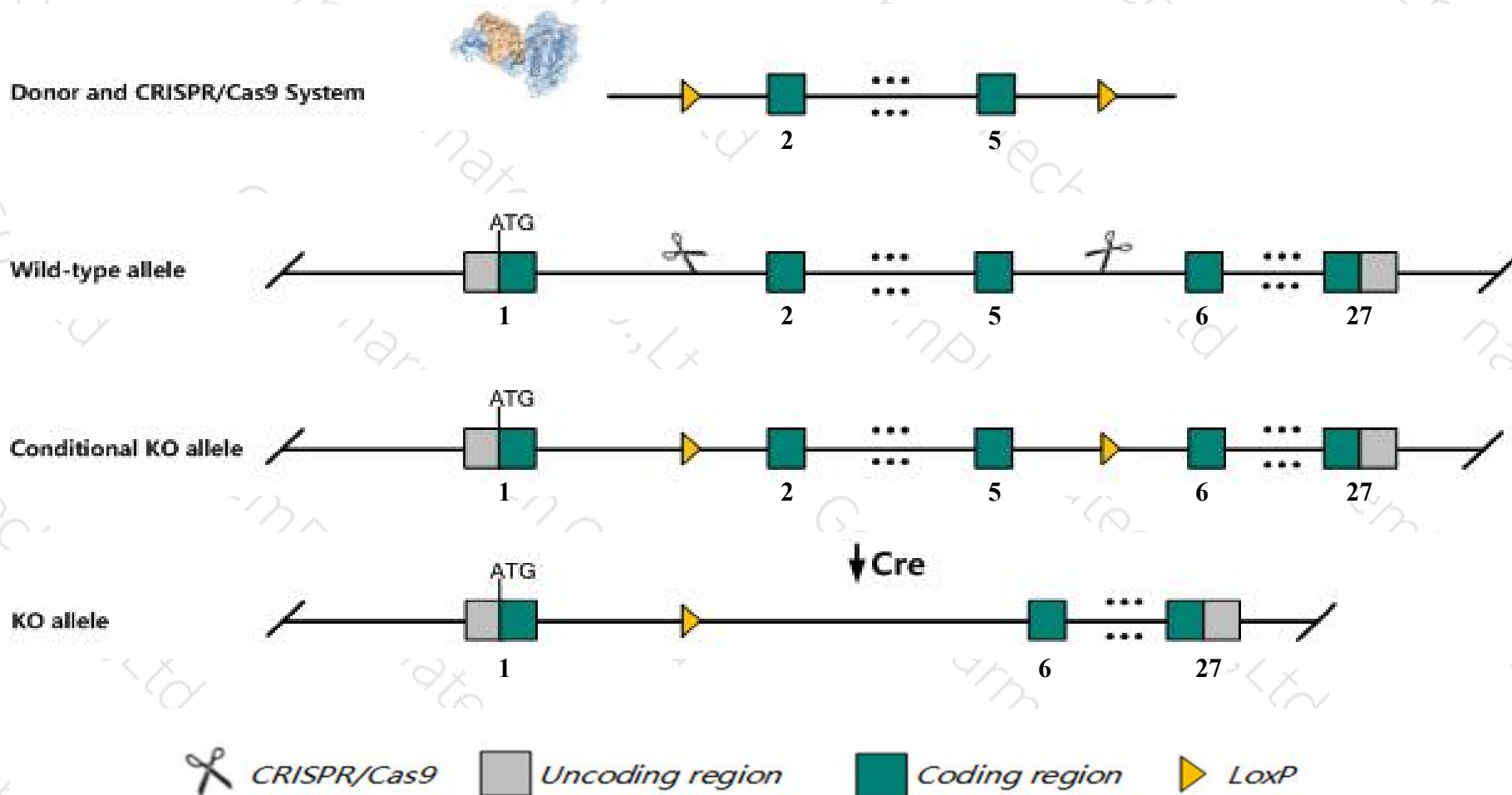
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ulk2* gene. The schematic diagram is as follows:



- The *Ulk2* gene has 3 transcripts. According to the structure of *Ulk2* gene, exon2-exon5 of *Ulk2-201* (ENSMUST00000004920.3) transcript is recommended as the knockout region. The region contains 205bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ulk2* 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 mutation of this gene results in an increased anxiety-like response in males.
- The *Ulk2* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Ulk2 unc-51 like kinase 2 [Mus musculus (house mouse)]

Gene ID: 29869, updated on 16-Mar-2019

Summary



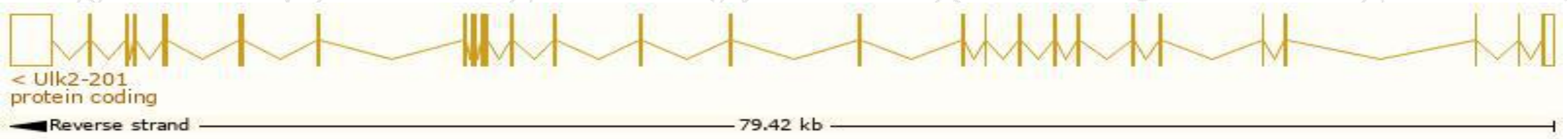
Official Symbol	Ulk2 provided by MGI
Official Full Name	unc-51 like kinase 2 provided by MGI
Primary source	MGI:MGI:1352758
See related	Ensembl:ENSMUSG000000004798
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A830085I22Rik, AU015340, Unc51.2, mKIAA0623
Expression	Ubiquitous expression in testis adult (RPKM 33.4), CNS E18 (RPKM 21.5) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

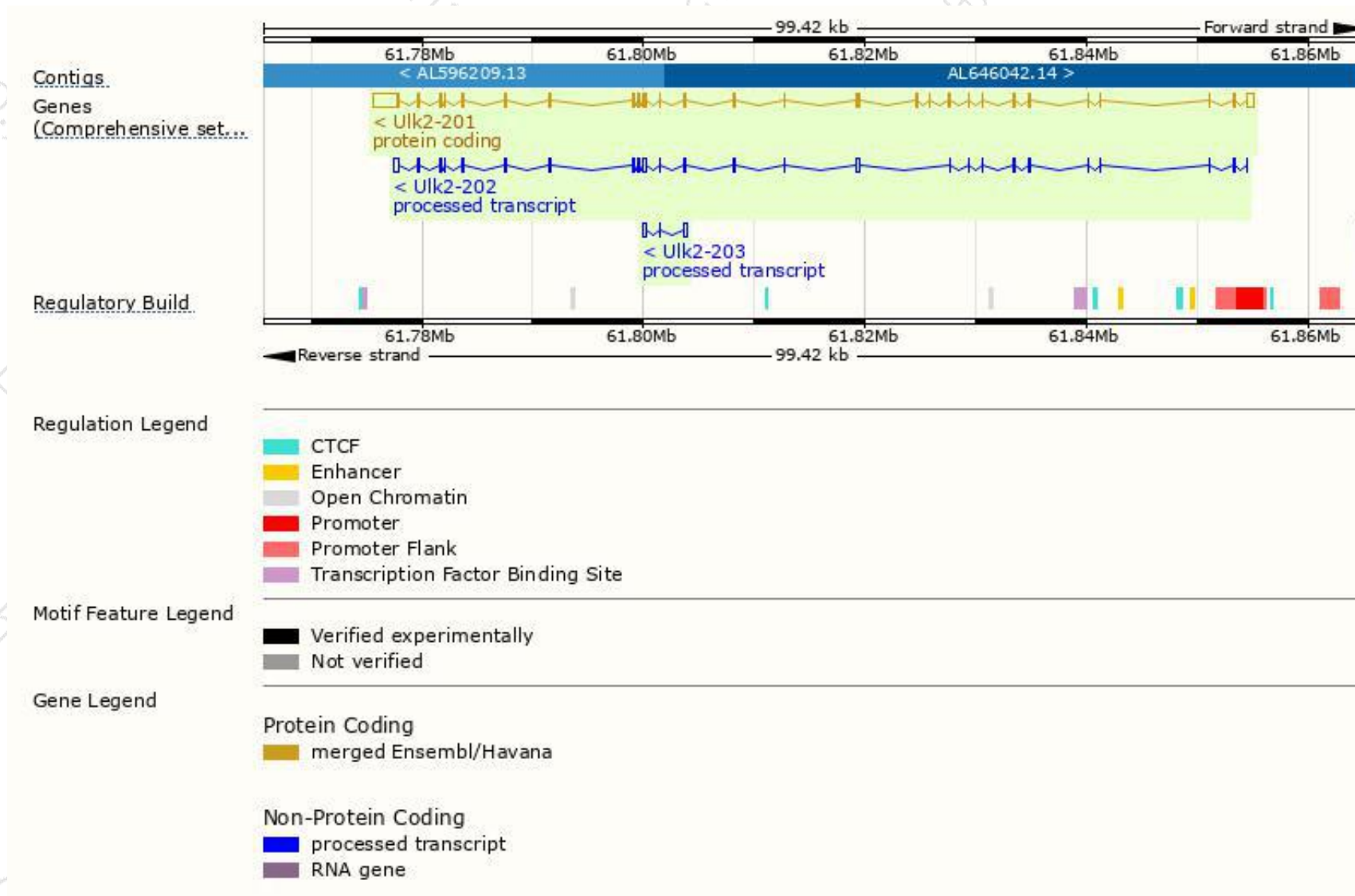
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ulk2-201	ENSMUST00000004920.3	5743	1037aa	Protein coding	CCDS24820	Q9QY01	TSL:1 GENCODE basic APPRIS P1
Ulk2-202	ENSMUST00000129025.7	3151	No protein	Processed transcript	-	-	TSL:5
Ulk2-203	ENSMUST00000157049.1	748	No protein	Processed transcript	-	-	TSL:2

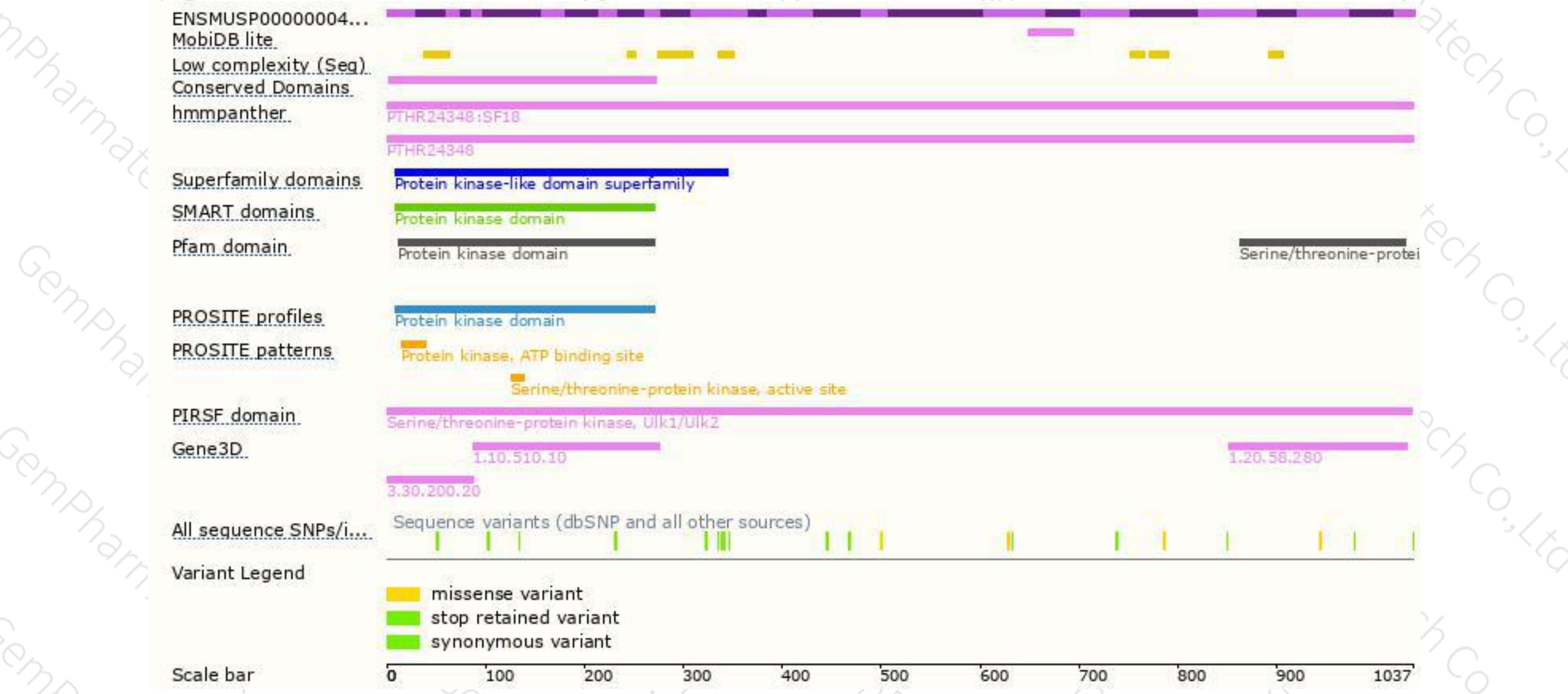
The strategy is based on the design of *Ulk2-201* transcript,The transcription is shown below



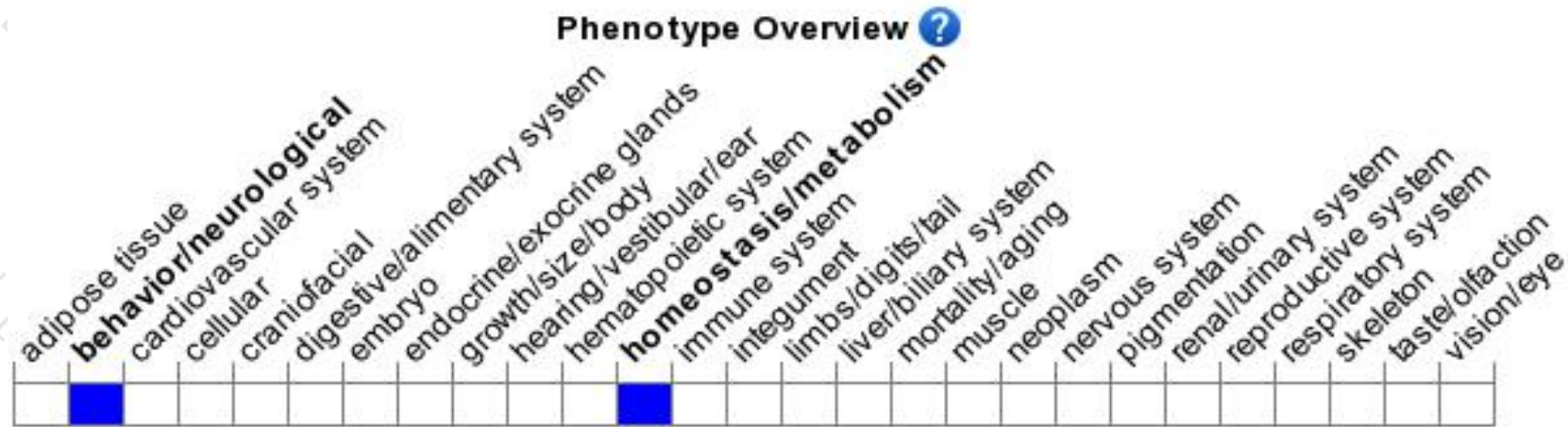
Genomic location distribution



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/>).

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

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

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