

Agap2 Cas9-KO Strategy

Designer:

JiaYu

Reviewer:

Xiaojing Li

Design Date:

2020-2-11

Project Overview

Project Name

Agap2

Project type

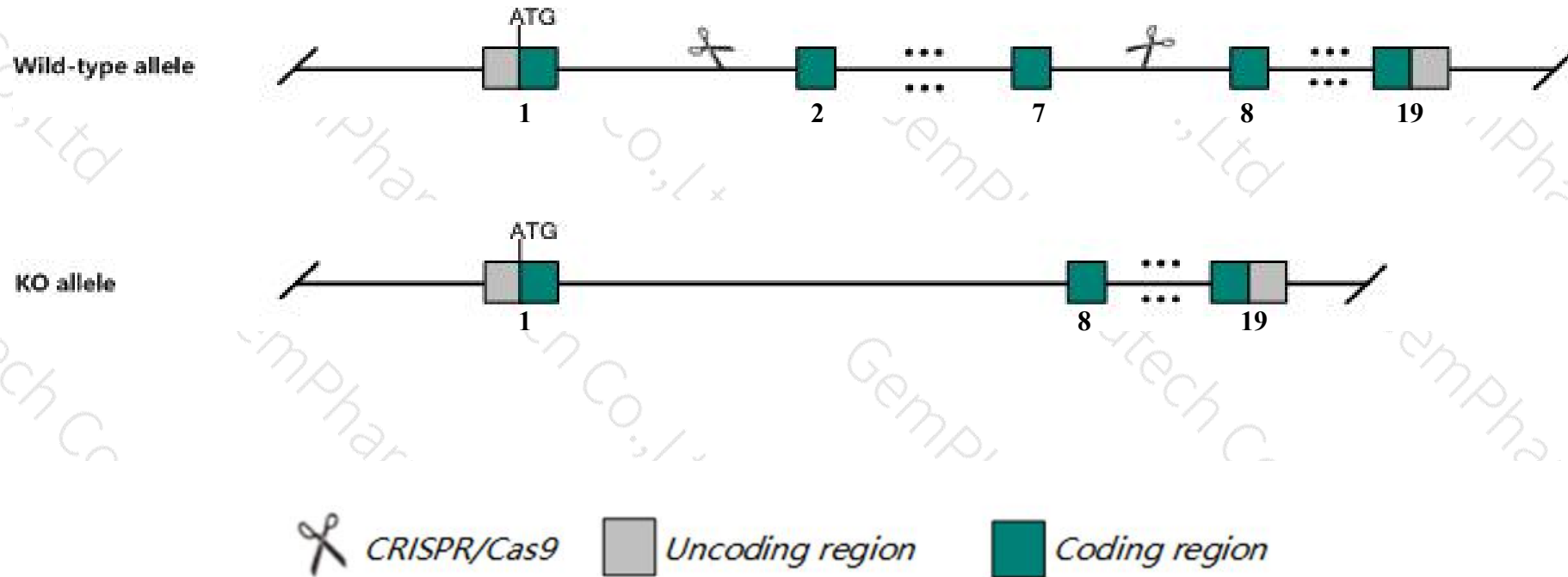
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Agap2* gene. The schematic diagram is as follows:



- The *Agap2* gene has 3 transcripts. According to the structure of *Agap2* gene, exon2-exon7 of *Agap2-201* (ENSMUST00000039259.6) transcript is recommended as the knockout region. The region contains 626bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Agap2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit impaired lactation due to abnormal mammary gland growth during lactation, failure of insulin-suppressed gluconeogenesis, and hyperglycemia.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- The *Agap2* gene is located on the Chr10. 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)

Agap2 ArfGAP with GTPase domain, ankyrin repeat and PH domain 2 [Mus musculus (house mouse)]

Gene ID: 216439, updated on 7-Apr-2019

Summary



Official Symbol Agap2 provided by [MGI](#)

Official Full Name ArfGAP with GTPase domain, ankyrin repeat and PH domain 2 provided by [MGI](#)

Primary source [MGI:MGI:3580016](#)

See related [Ensembl:ENSMUSG00000025422](#)

Gene type protein coding

RefSeq status REVIEWED

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as AGAP-2, Centg1, PIKE, cnt-g1, mKIAA0167

Summary The protein encoded by this gene is a member of the centaurin GTPase family. This gene product regulates the activity of multiple kinases, including PI3K. Reduced expression of this gene results in multiple defects, including neural deficiencies, while increased expression of this gene has been observed in some tumors. Alternative splicing results in multiple protein isoforms. [provided by RefSeq, Jul 2014]

Expression Biased expression in frontal lobe adult (RPKM 84.2), cortex adult (RPKM 70.9) and 8 other tissues [See more](#)

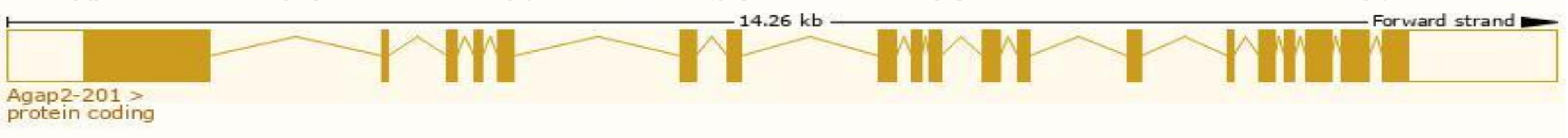
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

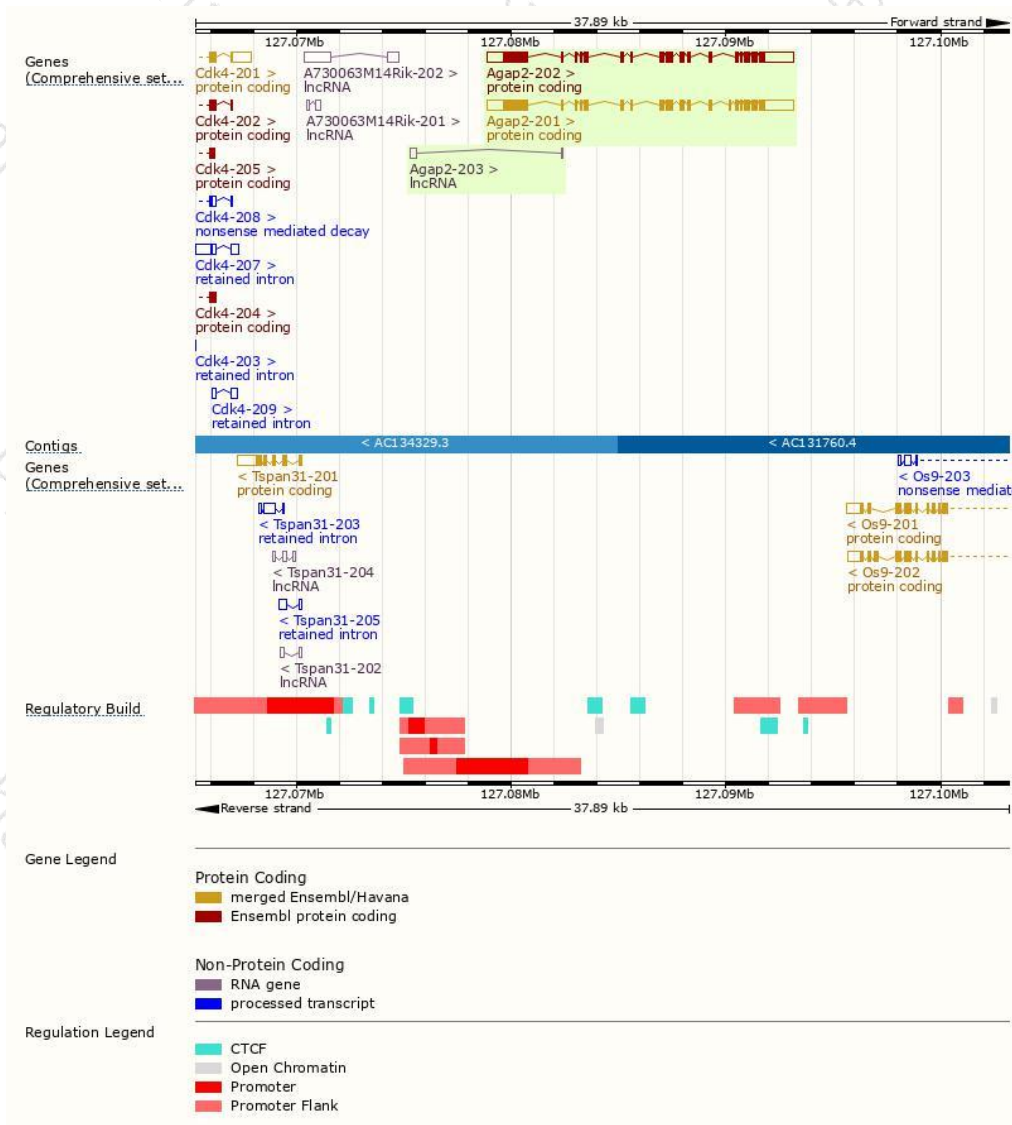
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Agap2-201	ENSMUST00000039259.6	5633	1186aa	Protein coding	CCDS24228	Q3UHD9	TSL:1 GENCODE basic APPRIS P2
Agap2-202	ENSMUST00000217941.1	5573	1166aa	Protein coding	-	Q3UHD9	TSL:1 GENCODE basic APPRIS ALT 2
Agap2-203	ENSMUST00000218292.1	357	No protein	lncRNA	-	-	TSL:2

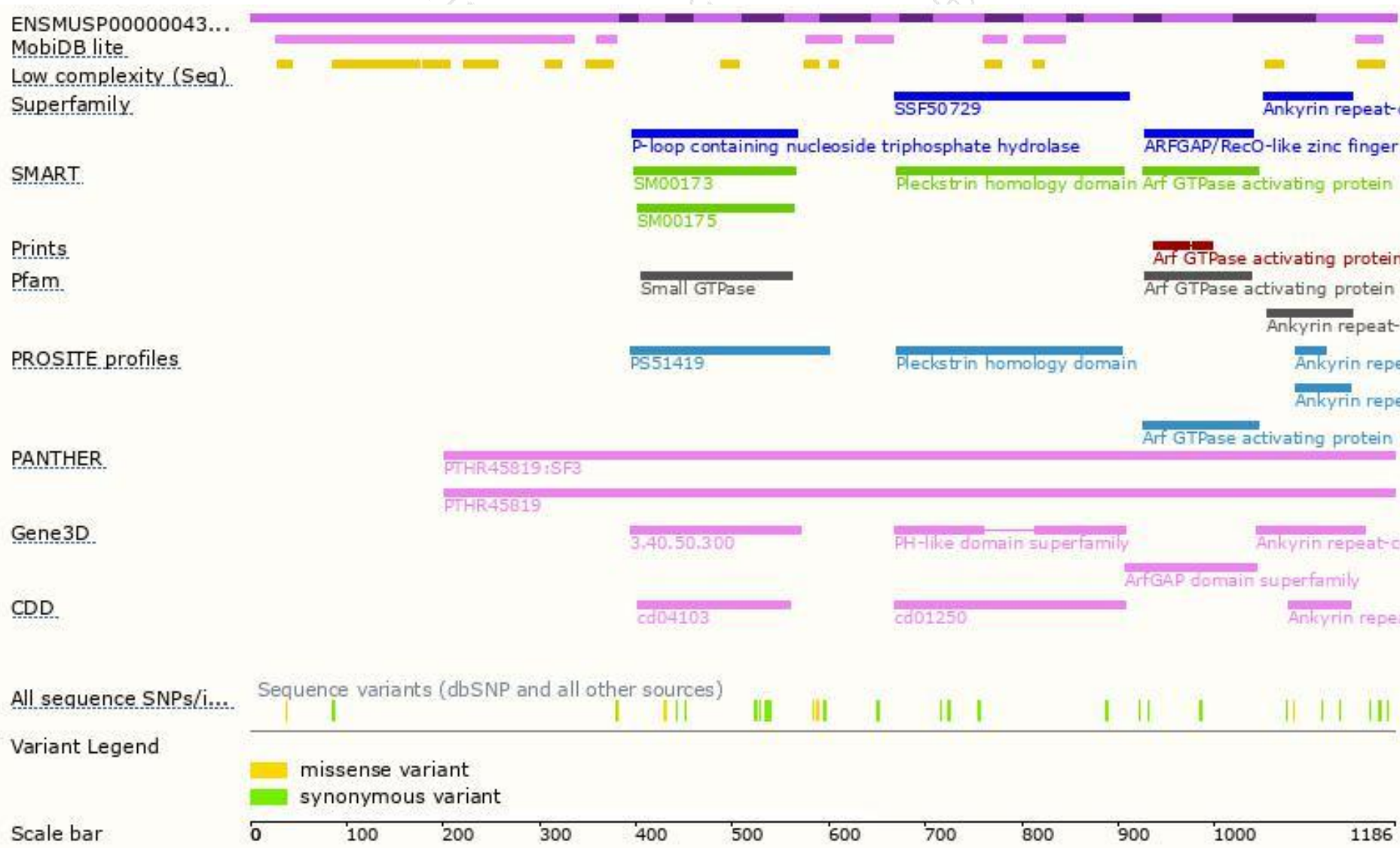
The strategy is based on the design of *Agap2-201* transcript,The transcription is shown below



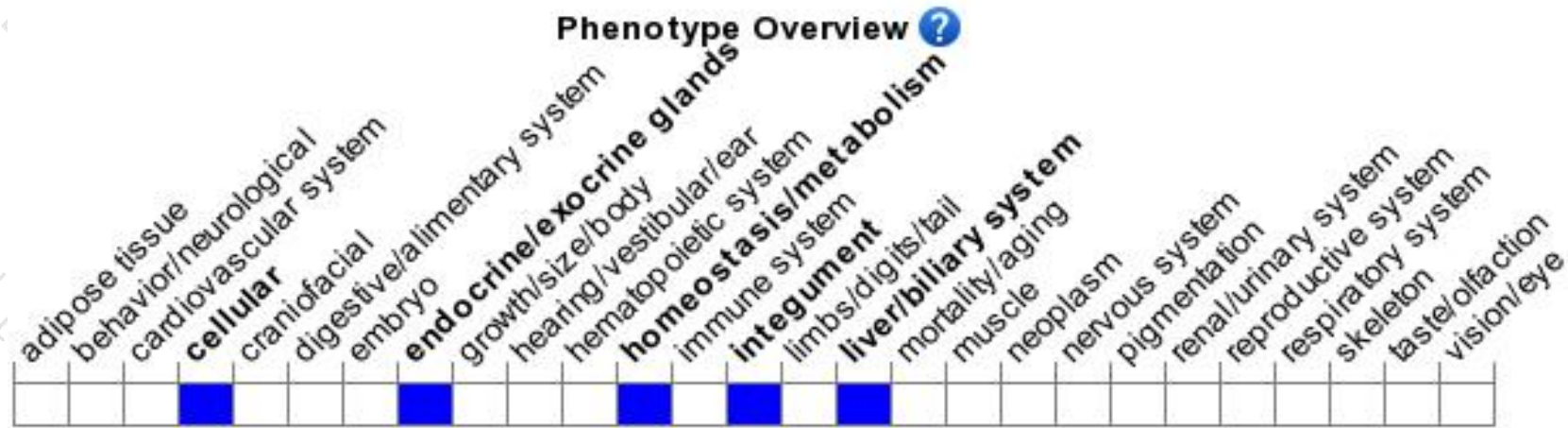
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit impaired lactation due to abnormal mammary gland growth during lactation, failure of insulin-suppressed gluconeogenesis, and hyperglycemia.

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

Tel: 400-9660890

