

Akap13 Cas9-KO Strategy

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Project Overview

Project Name

Akap13

Project type

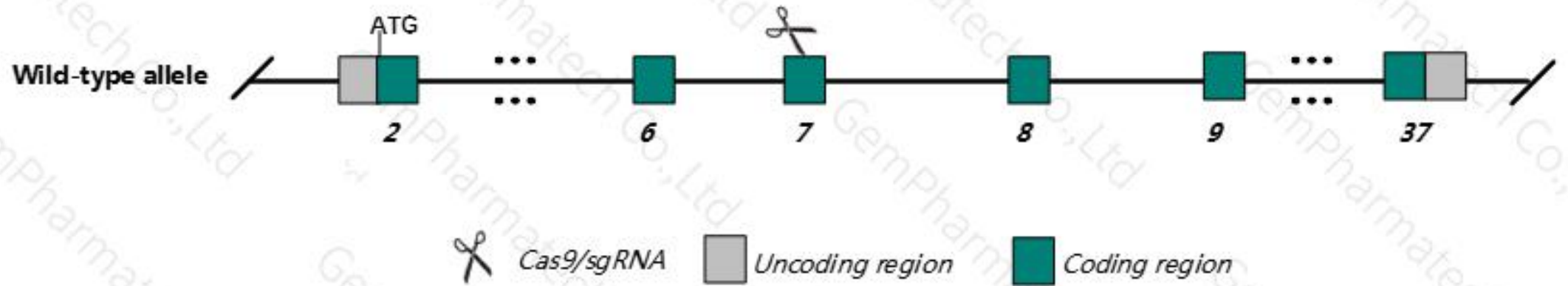
Cas9-KO

Strain background

BALB/cJ

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Akap13* gene. The schematic diagram is as follows:



- The *Akap13* gene has 2 transcripts. According to the structure of *Akap13* gene, partial sequence of exon7 of *GP_BALBcJ_T0084478.1* transcript is recommended as the knockout region. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Akap13* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of BALB/cJ 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 BALB/cJ mice.

- According to the existing MGI data, Mice homozygous for a null allele exhibit embryonic lethality during organogenesis, arrested heart development, and forebrain hypoplasia. Heterozygous mice exhibit small spleen, impaired lymphocyte response to osmotic stress, decreased response to glucocorticoid, osteoporosis and impaired osteogenesis.
- The *Akap13* gene is located on the Chr7. 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)

Akap13 A kinase (PRKA) anchor protein 13 [*Mus musculus* (house mouse)]

Gene ID: 75547, updated on 11-Jun-2019

Summary

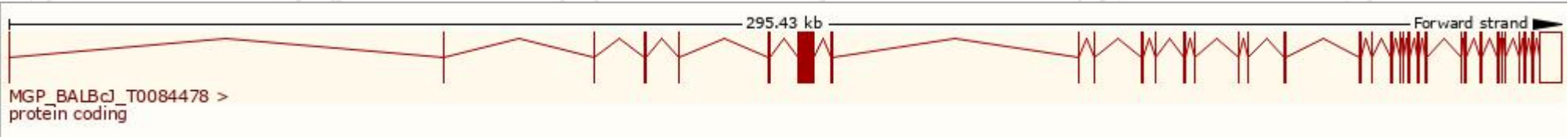
Official Symbol	Akap13 provided by MGI
Official Full Name	A kinase (PRKA) anchor protein 13 provided by MGI
Primary source	MGI:MGI:2676556
See related	Ensembl:ENSMUSG000000066406
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	BRX; LBC; Ht31; AKAP-13; AKAP-Lbc; PROTO-LB; PROTO-LBC; 1700026G02Rik; 5730522G15Rik; 5830460E08Rik
Expression	Ubiquitous expression in spleen adult (RPKM 15.7), lung adult (RPKM 14.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

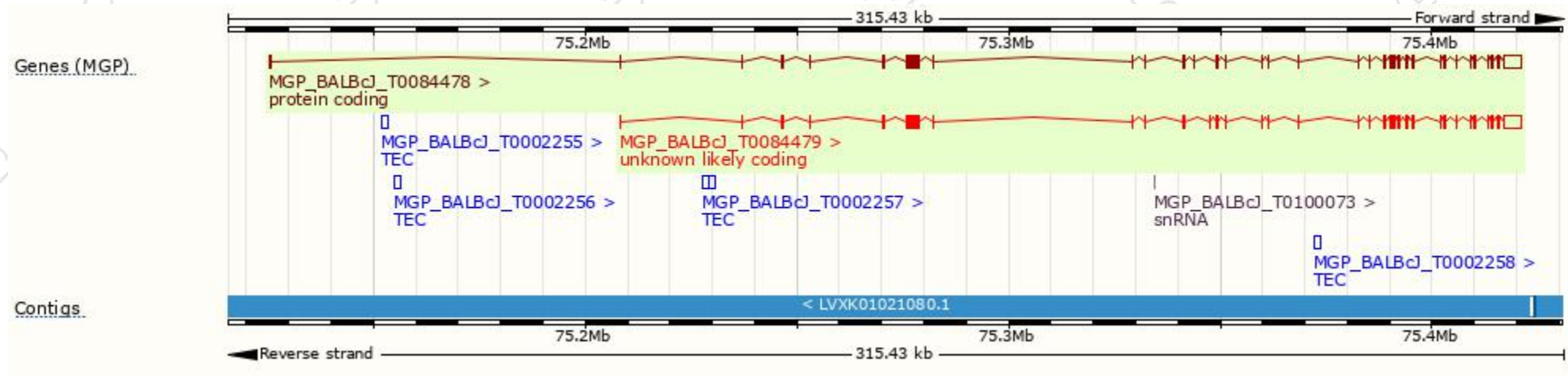
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
-	MGP_BALBcJ_T0084478.1	12551	2776aa	<div><div></div>Protein coding</div>	CCDS52276	A0A140LHG3 A0A140LHQ3 A0A140LID7 A0A140LIX0 A0A140LJJ5 E9Q394	-
-	MGP_BALBcJ_T0084479.1	12330	2776aa	<div><div></div>Unknown likely coding</div>	-	-	-

The strategy is based on the design of *GP_BALBcJ_T0084478.1* transcript,The transcription is shown below



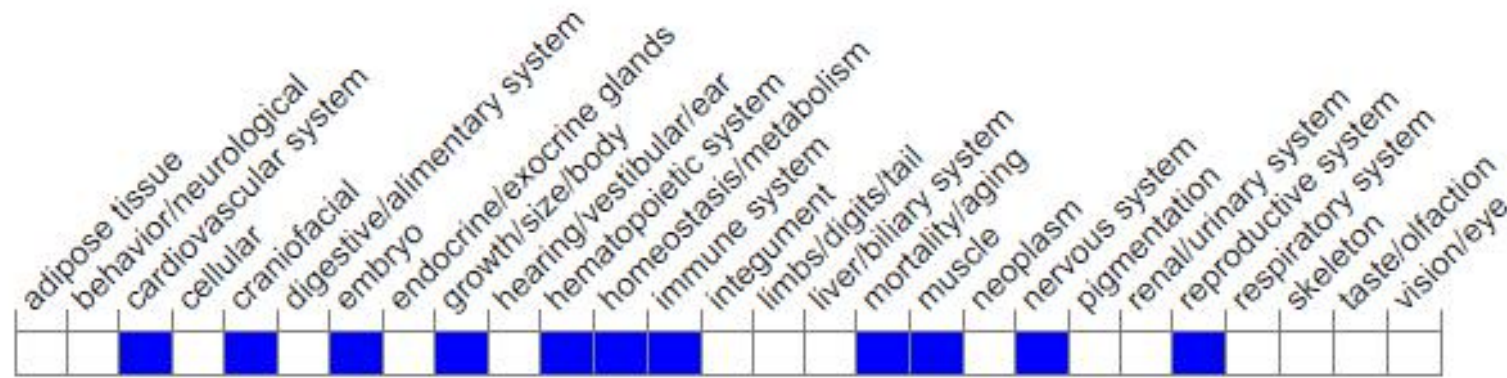
Genomic location distribution



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 null allele exhibit embryonic lethality during organogenesis, arrested heart development, and forebrain hypoplasia. Heterozygous mice exhibit small spleen, impaired lymphocyte response to osmotic stress, decreased response to glucocorticoid, osteoporosis and impaired osteogenesis.

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

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