

Aak1 Cas9-CKO Strategy

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Project Overview

Project Name

Aak1

Project type

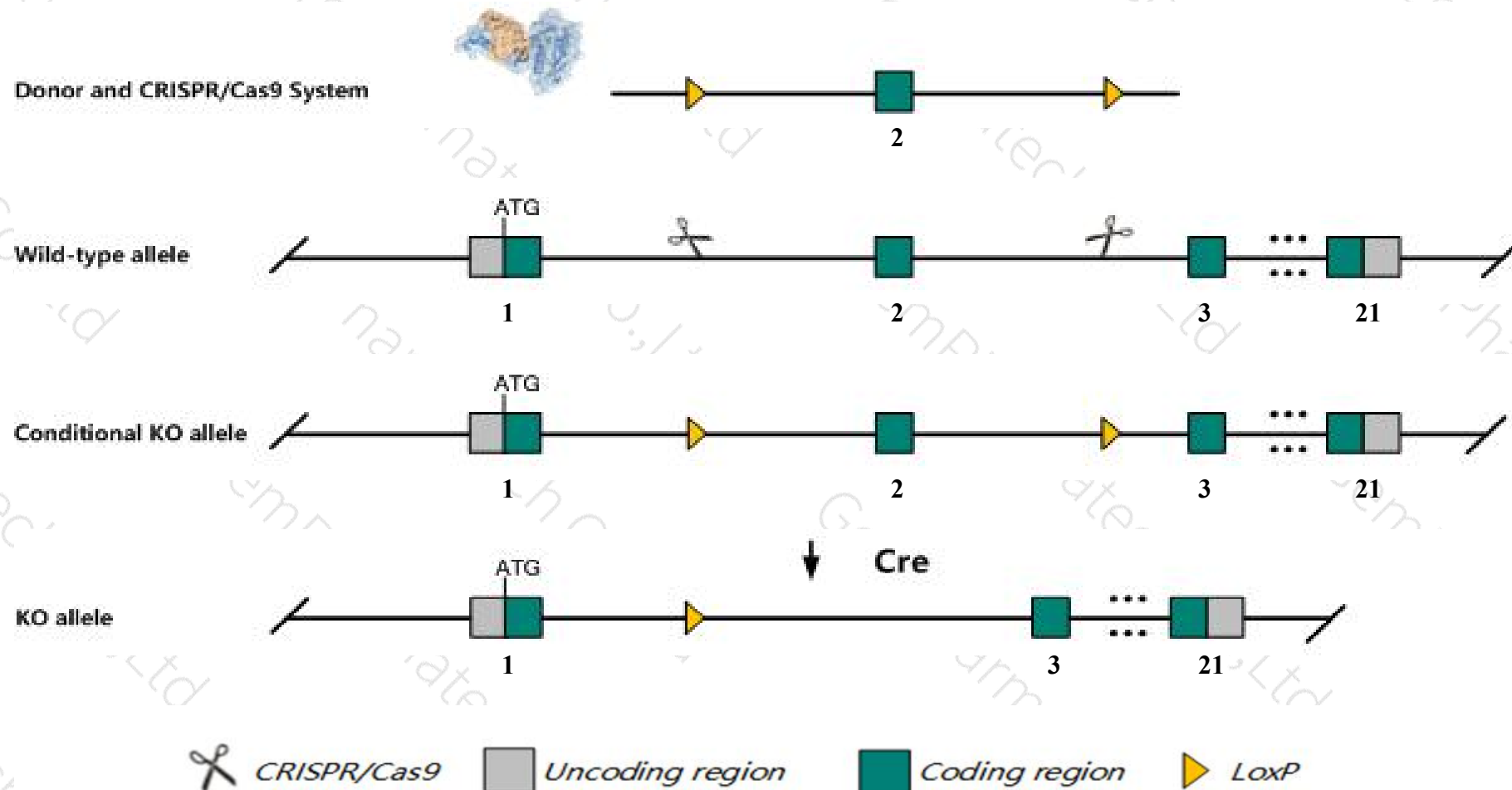
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Aak1* gene. The schematic diagram is as follows:



Technical routes

- The *Aak1* gene has 9 transcripts. According to the structure of *Aak1* gene, exon2 of *Aak1*-202 (ENSMUST00000089519.12) transcript is recommended as the knockout region. The region contains 119bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Aak1* 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

- Transcript *Aak1-206* and *Aak1-208* are incomplete, so the effect on them are unknown.
- The *Aak1* 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)

Aak1 AP2 associated kinase 1 [*Mus musculus* (house mouse)]

Gene ID: 269774, updated on 3-May-2020

Summary

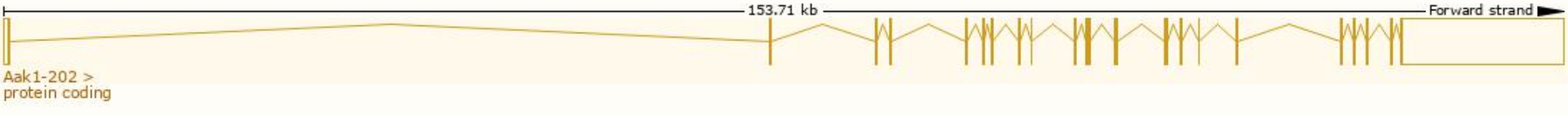
Official Symbol	Aak1 provided by MGI
Official Full Name	AP2 associated kinase 1 provided by MGI
Primary source	MGI:MGI:1098687
See related	Ensembl:ENSMUSG00000057230
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C79663; R75501; Gm38495; AU067724; AU067726; BC028270; mKIAA1048; 9630042K20; D6Erd245e; 5530400K14Rik
Expression	Broad expression in cerebellum adult (RPKM 16.3), cortex adult (RPKM 15.4) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

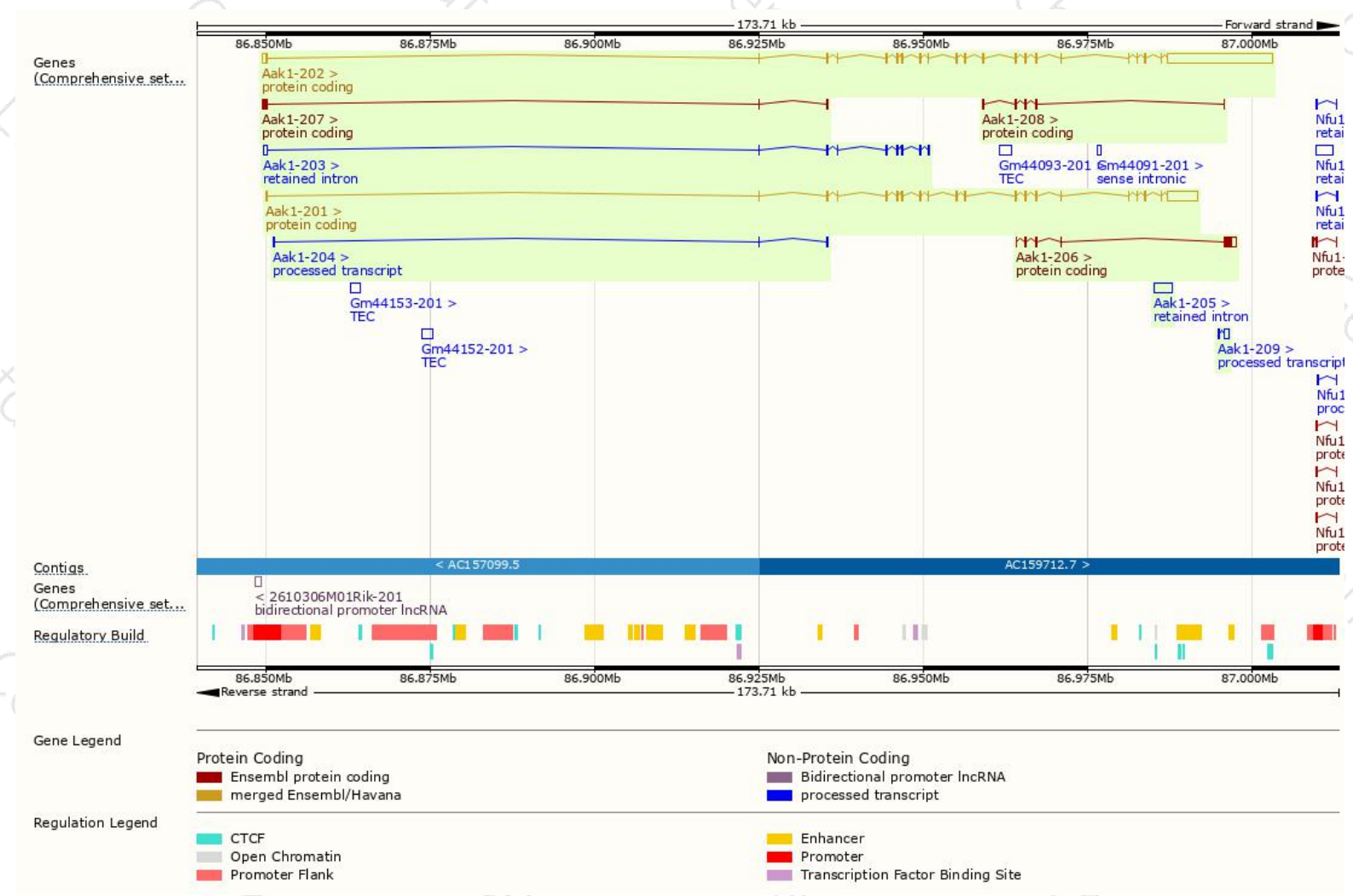
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Aak1-202	ENSMUST00000089519.12	19341	959aa	Protein coding	CCDS39544	Q3UHQ0	TSL:1 GENCODE basic APPRIS ALT2
Aak1-201	ENSMUST00000003710.9	7203	878aa	Protein coding	CCDS20317	Q3UHQ0	TSL:5 GENCODE basic APPRIS P3
Aak1-206	ENSMUST00000204139.2	2192	510aa	Protein coding	-	A0A571BEI2	CDS 5' incomplete TSL:5
Aak1-208	ENSMUST00000204613.1	711	237aa	Protein coding	-	A0A571BDM4	CDS 5' and 3' incomplete TSL:3
Aak1-207	ENSMUST00000204414.2	706	121aa	Protein coding	-	A0A0N4SVA1	CDS 3' incomplete TSL:2
Aak1-209	ENSMUST00000204793.1	890	No protein	Processed transcript	-	-	TSL:3
Aak1-204	ENSMUST00000156885.1	328	No protein	Processed transcript	-	-	TSL:3
Aak1-205	ENSMUST00000203647.1	2768	No protein	Retained intron	-	-	TSL:NA
Aak1-203	ENSMUST00000113668.7	1639	No protein	Retained intron	-	-	TSL:1

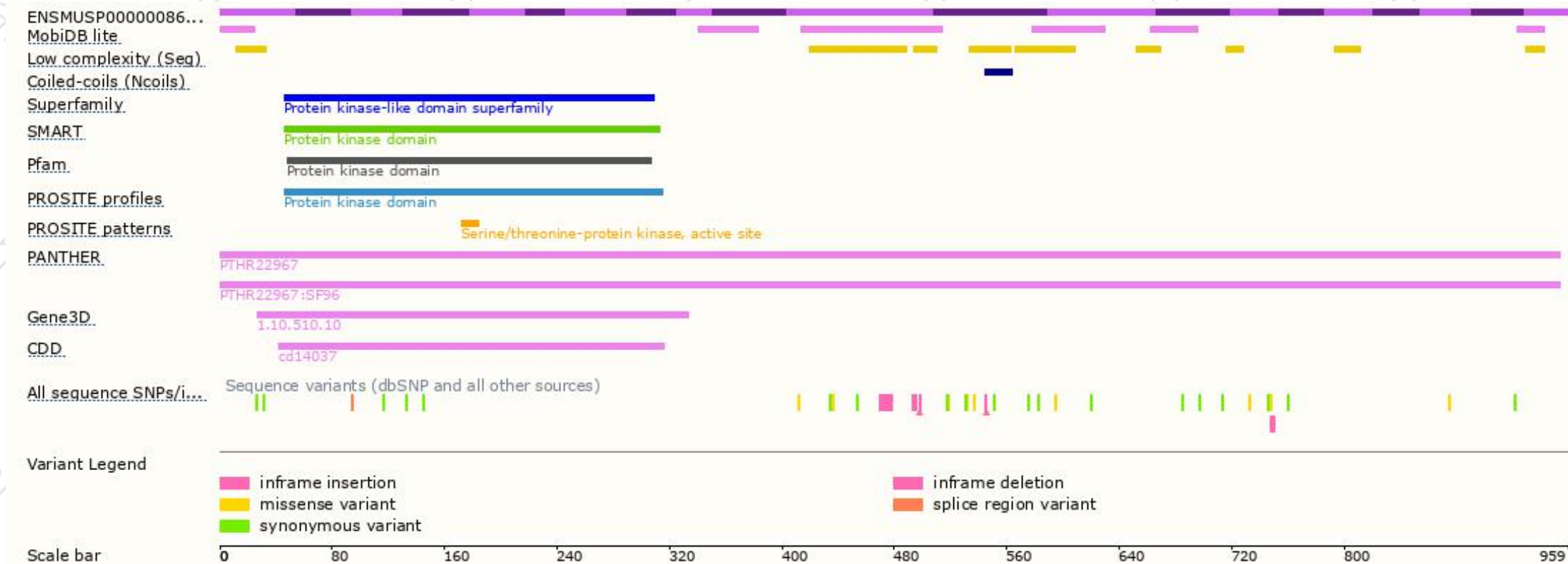
The strategy is based on the design of *Aak1-202* transcript,the transcription is shown below:



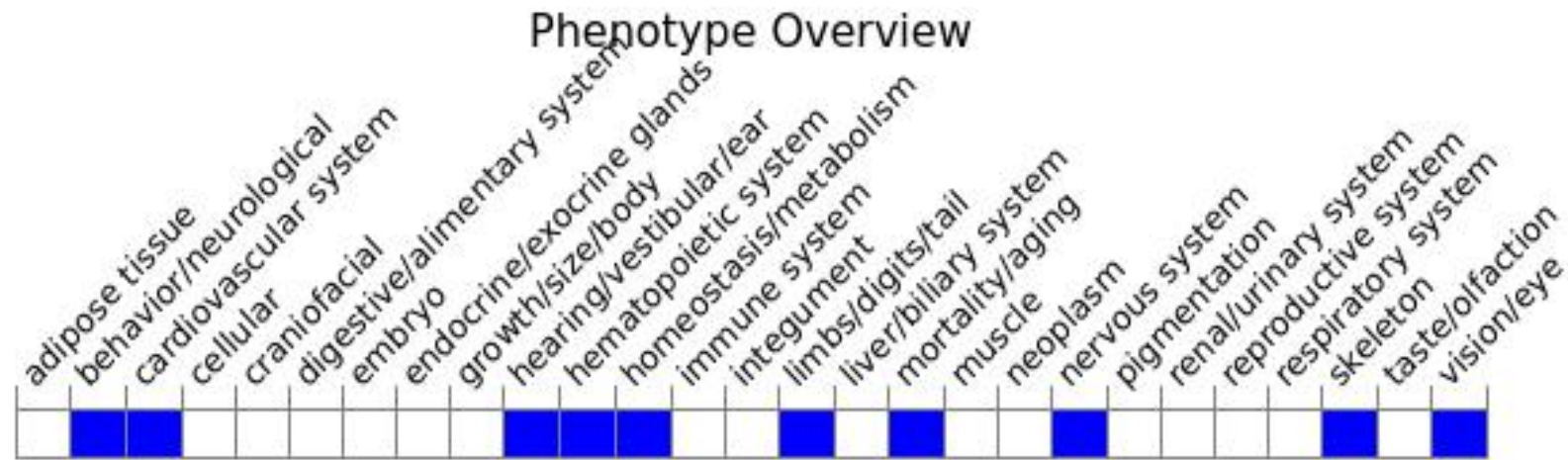
Genomic location distribution



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/>).

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

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