Ap1g1 Cas9-KO Strategy

Designer: Jing Jin

Reviewer: Yang Zeng

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Project Overview

Project Name	***Ap1g1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ap1g1* gene. The schematic diagram is as follows:

Technical routes

➢ The *Ap1g1* gene has 6 transcripts. According to the structure of *Ap1g1* gene, exon3 of *Ap1g1-202*(ENSMUST00000093157.12) transcript is recommended as the knockout region.The region contains 125bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ap1g1* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

➢ According to the existing MGI data,mice homozygous for a null allele exhibit complete embryonic lethality before implantation. Heterozygotes display slow postnatal weight gain, decreased CD4-positive, alpha beta T cell number in the thymus, and decreased body size up to 10 months of age.

➢ The *Ap1g1* gene is located on the Chr8. 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）

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Ap1g1 adaptor protein complex AP-1, gamma 1 subunit [Mus musculus (house mouse)]

Gene ID: 11765, updated on 13-Mar-2020

Summary

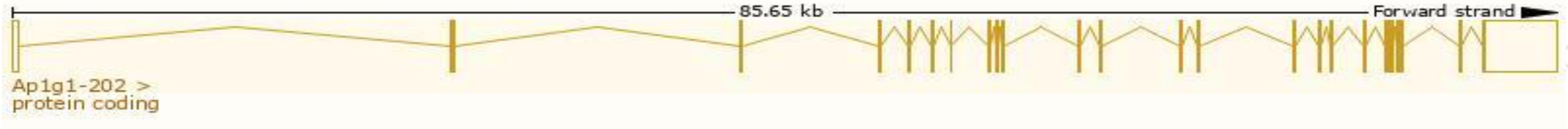
Official Symbol	Ap1g1 provided by MGI
Official Full Name	adaptor protein complex AP-1, gamma 1 subunit provided byMGI
Primary source	MGI:MGI:101919
See related	Ensembl:ENSMUSG00000031731
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA409002, AU041323, AW551707, Adtg, D8Ertd374e
Expression	Ubiquitous expression in whole brain E14.5 (RPKM 17.8), CNS E18 (RPKM 17.7) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

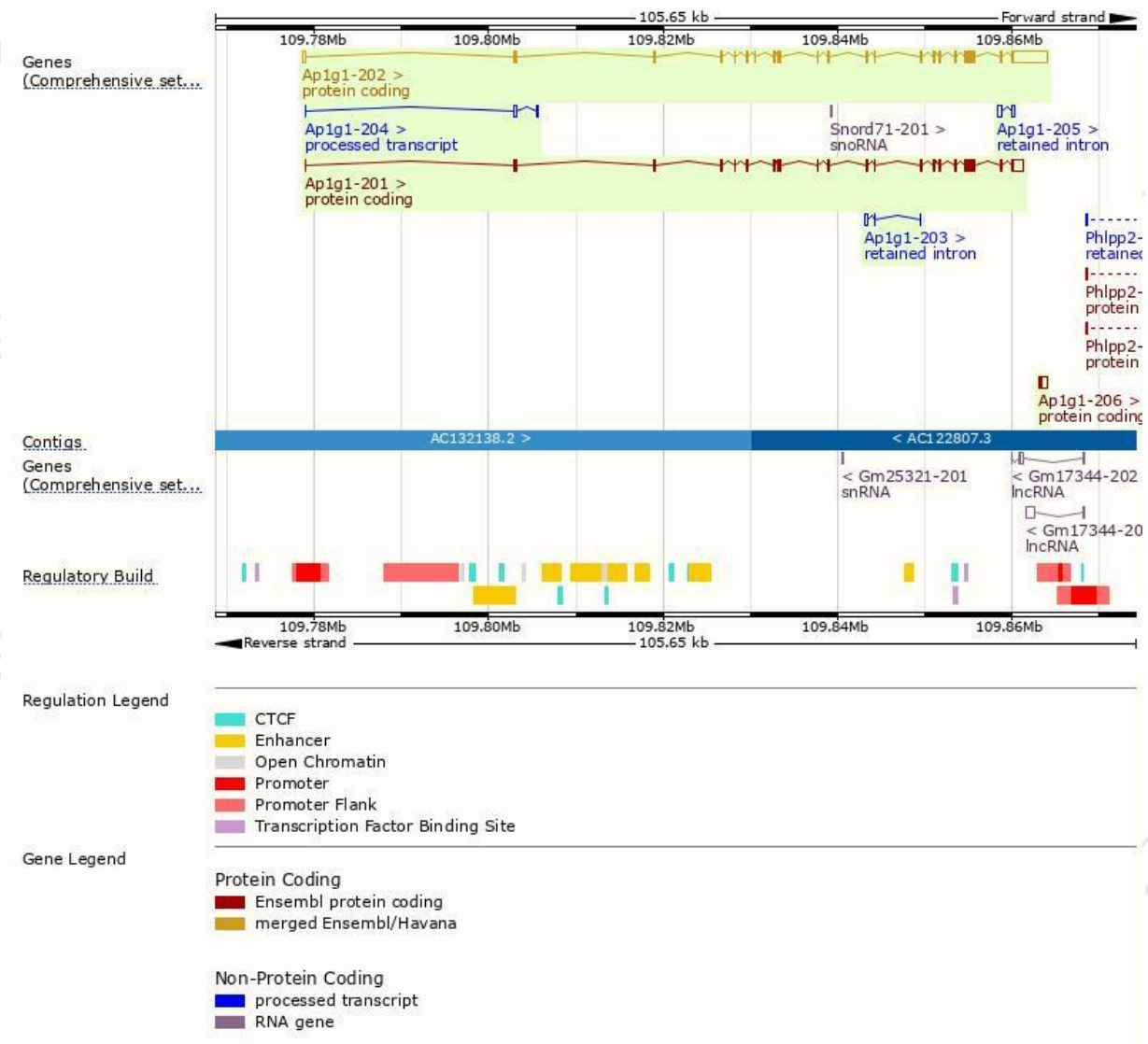
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ap1g1-202	ENSMUST00000093157.12	6899	825aa	Protein coding	CCDS40475	Q8CBB7	TSL:5 GENCODE basic APPRIS P3
Ap1g1-201	ENSMUST00000034171.8	3692	822aa	Protein coding	CCDS80929	P22892	TSL:1 GENCODE basic APPRIS ALT1
Ap1g1-206	ENSMUST00000179104.1	1096	49aa	Protein coding	-	Q3TDN1	TSL:NA GENCODE basic
Ap1g1-204	ENSMUST00000173200.1	466	No protein	Processed transcript	-	-	TSL:3
Ap1g1-205	ENSMUST00000173476.1	647	No protein	Retained intron	-	-	TSL:2
Ap1g1-203	ENSMUST00000172892.1	441	No protein	Retained intron	-	-	TSL:3

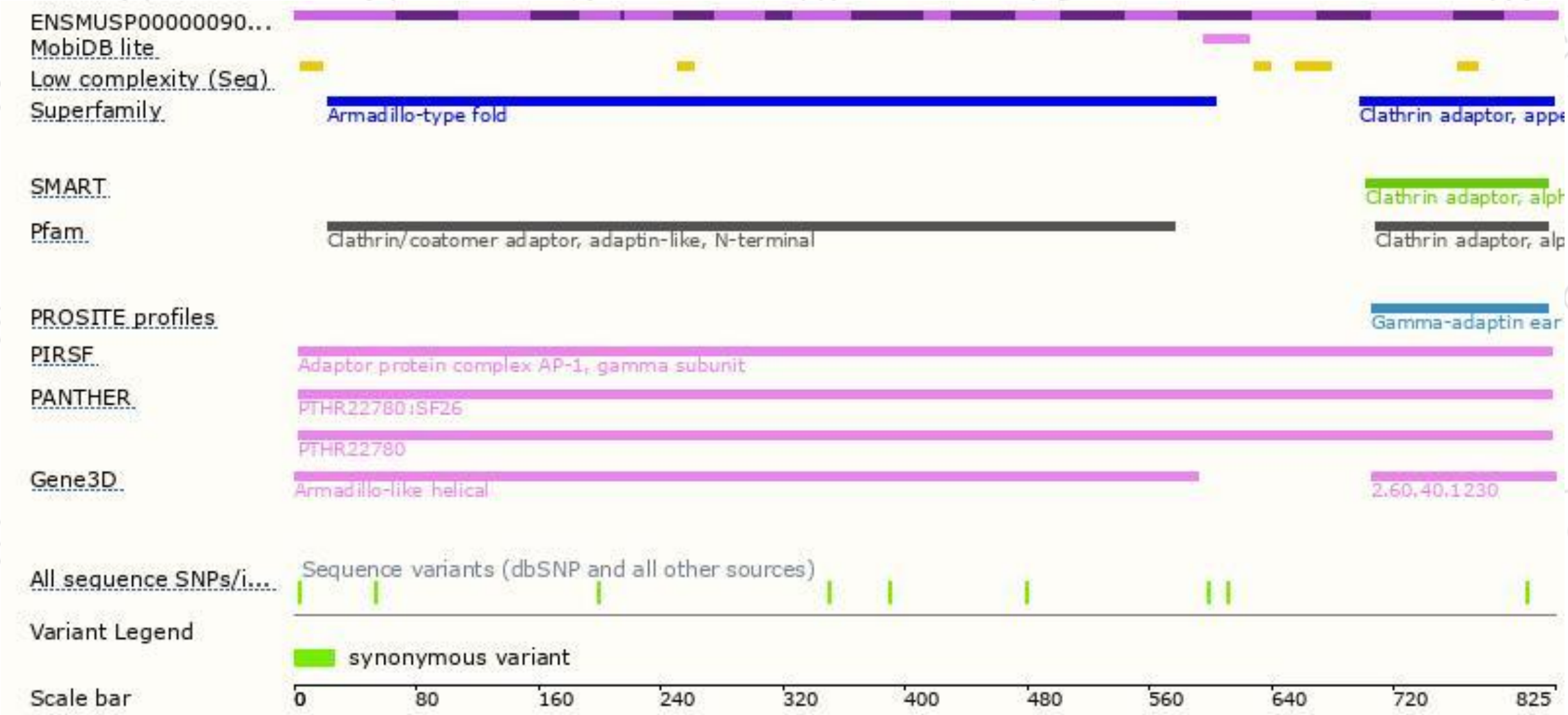
The strategy is based on the design of *Ap1g1-202* transcript,the transcription is shown below:



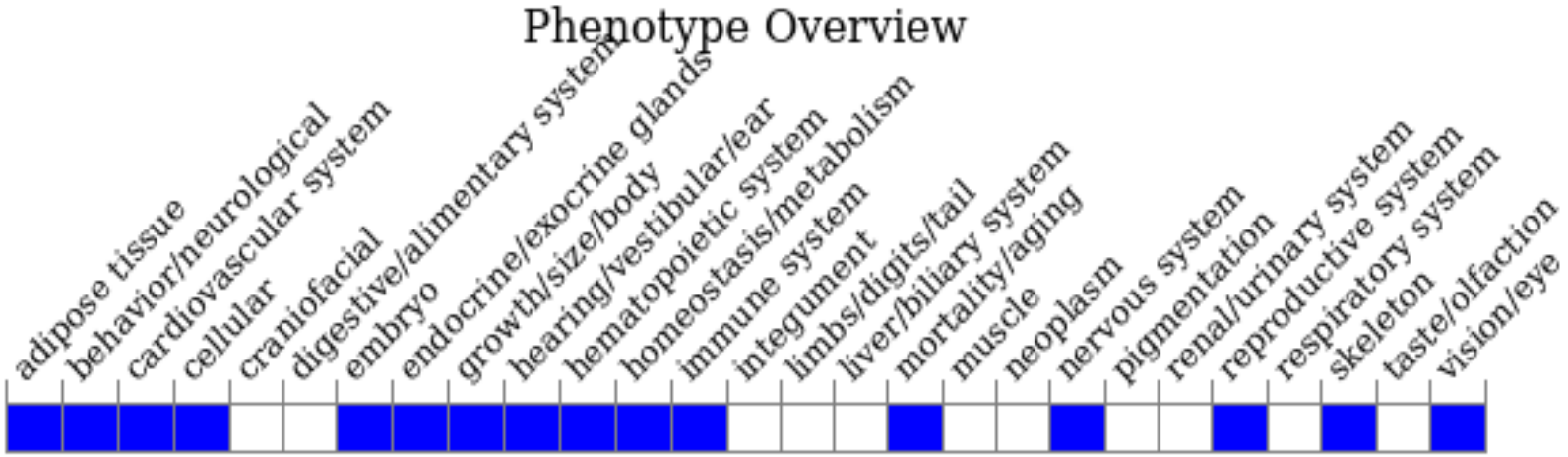
Genomic location distribution



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/).

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

Tel: 025-5864 1534

集萃药康生物科技
GemPharmatech Co.,Ltd