Arhgap5 Cas9-KO Strategy

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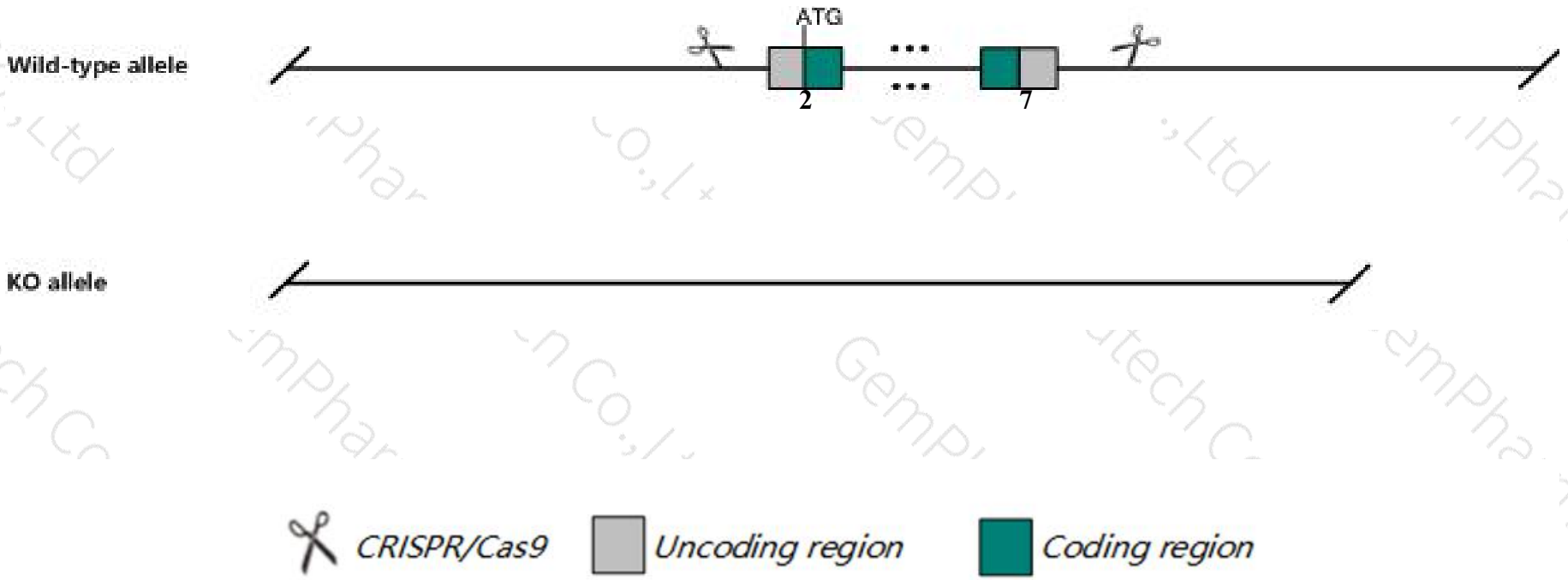
Project Overview

Project Name	***Arhgap5***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap5* gene. The schematic diagram is as follows:



Technical routes

➢ The *Arhgap5* gene has 4 transcripts. According to the structure of *Arhgap5* gene, exon2-exon7 of *Arhgap5-204* (ENSMUST00000219443.1) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Arhgap5* gene. The brief process is as follows: CRISPR/Cas9 syste

Notice

- According to the existing MGI data,Homozygotes die at birth, are 30% smaller, do not inflate their lungs, and show a small thymus, abnormal adipocyte differentiation and brain defects in the corpus callosum, anterior commissure and lateral ventricles. Mutant MEFs show impaired adipogenesis but undergo myogenesis in response to IGF-1.
- *Arhgap5* gene is located in intron of *Gm35188* gene,the partial sequence of intron of *Gm35188* gene will be deleted together i this strategy.
- The *Arhgap5* gene is located on the Chr12. 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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Arhgap5 Rho GTPase activating protein 5 [*Mus musculus* (house mouse)]

Gene ID: 11855, updated on 12-Aug-2019

Summary

Official Symbol	Arhgap5 provided by MGI
Official Full Name	Rho GTPase activating protein 5 provided by MGI
Primary source	MGI:MGI:1332637
See related	Ensembl:ENSMUSG00000035133
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	p190B; p190-B
Expression	Broad expression in cerebellum adult (RPKM 9.8), frontal lobe adult (RPKM 6.6) and 21 other tissues See more
Orthologs	human all

Genomic context

Location: 12 C1; 12 22.16 cM

See Arhgap5 in Genome Data Viewer

Exon count: 8

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	12	NC_000078.6 (52503763..52571978)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	12	NC_000078.5 (53617064..53668839)

Transcript information（Ensembl）

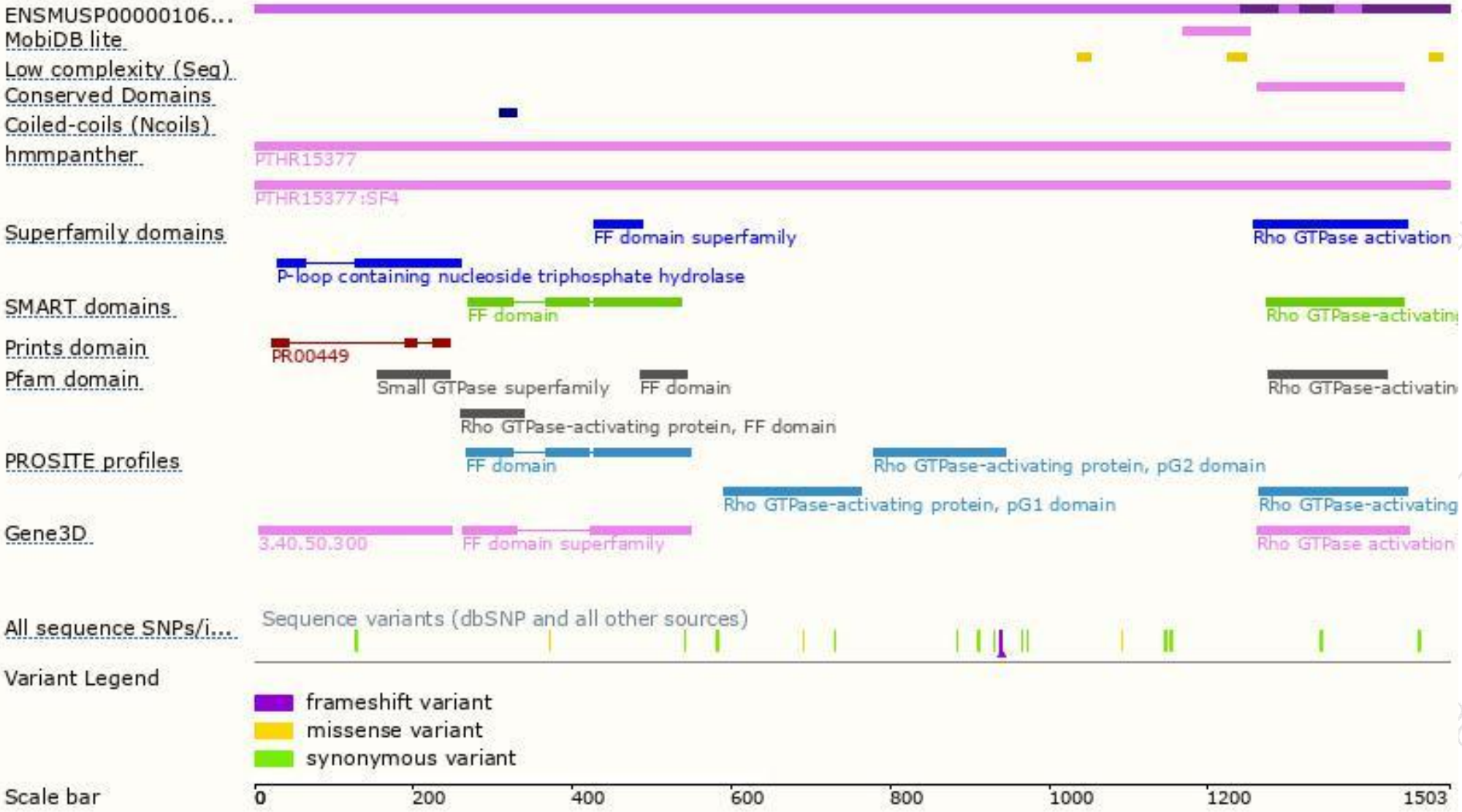
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap5-204	ENSMUST00000219443.1	9323	1503aa	Protein coding	CCDS36443	E9PYT0	TSL:5 GENCODE basic APPRIS P1
Arhgap5-201	ENSMUST00000110725.1	5197	1503aa	Protein coding	CCDS36443	E9PYT0	TSL:1 GENCODE basic APPRIS P1
Arhgap5-202	ENSMUST00000217820.1	2332	241aa	Protein coding	-	A0A1W2P6H9	TSL:5 GENCODE basic
Arhgap5-203	ENSMUST00000218755.1	1669	No protein	Processed transcript	-	-	TSL:1

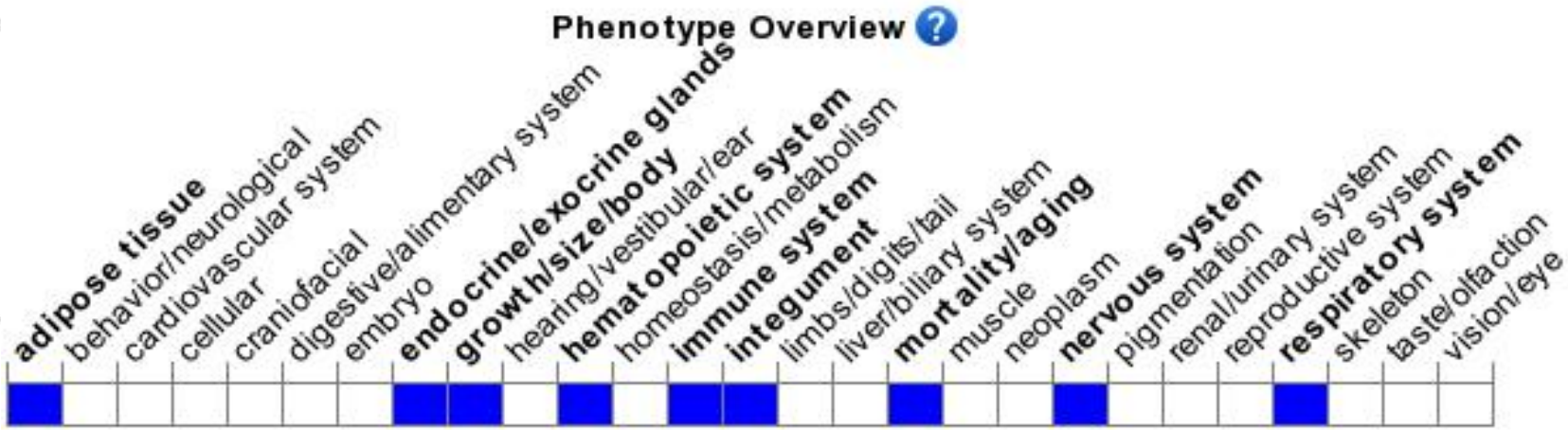
The strategy is based on the design of *Arhgap5-204* transcript,The transcription is shown below

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.

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