

Arhgap10 Cas9-KO Strategy

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Project Overview

Project Name

Arhgap10

Project type

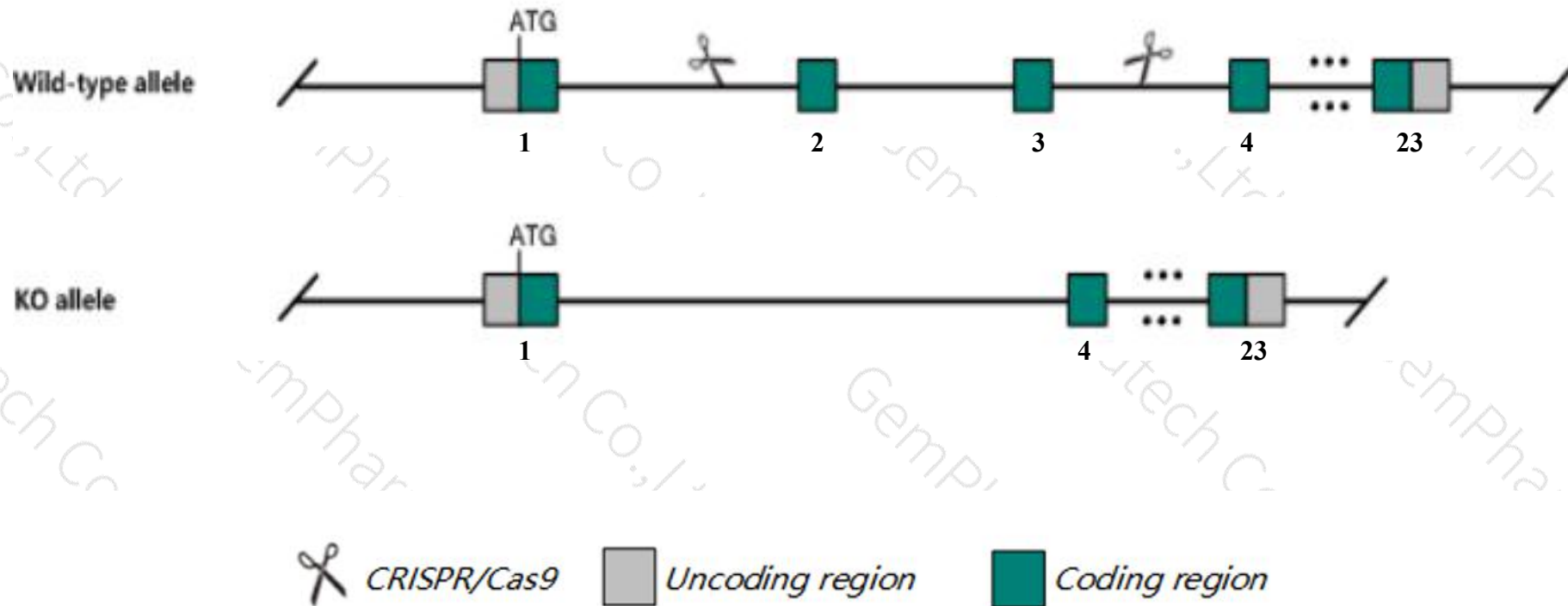
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap10* gene. The schematic diagram is as follows:



- The *Arhgap10* gene has 3 transcripts. According to the structure of *Arhgap10* gene, exon2-exon3 of *Arhgap10-201*(ENSMUST00000076316.5) transcript is recommended as the knockout region. The region contains 158bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arhgap10* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, mice homozygous for an ENU-induced allele exhibit paraparesis, ataxic hindlimbs and splaying of hindlimbs.
- The *Arhgap10* 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)

Arhgap10 Rho GTPase activating protein 10 [Mus musculus (house mouse)]

Gene ID: 78514, updated on 13-Mar-2020

Summary



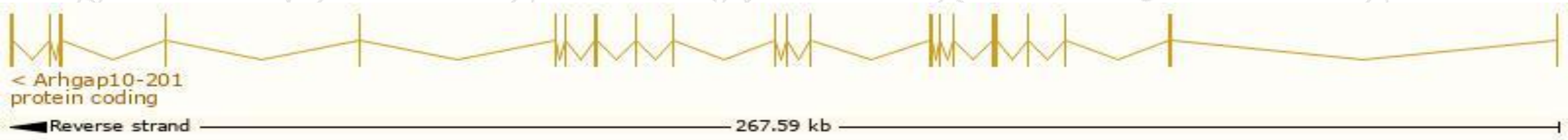
Official Symbol	Arhgap10 provided by MGI
Official Full Name	Rho GTPase activating protein 10 provided by MGI
Primary source	MGI:MGI:1925764
See related	Ensembl:ENSMUSG00000037148
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A930033B01Rik, PS-GAP, PSGAP, PSGAP-m, PSGAP-s
Expression	Ubiquitous expression in placenta adult (RPKM 13.3), bladder adult (RPKM 9.9) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

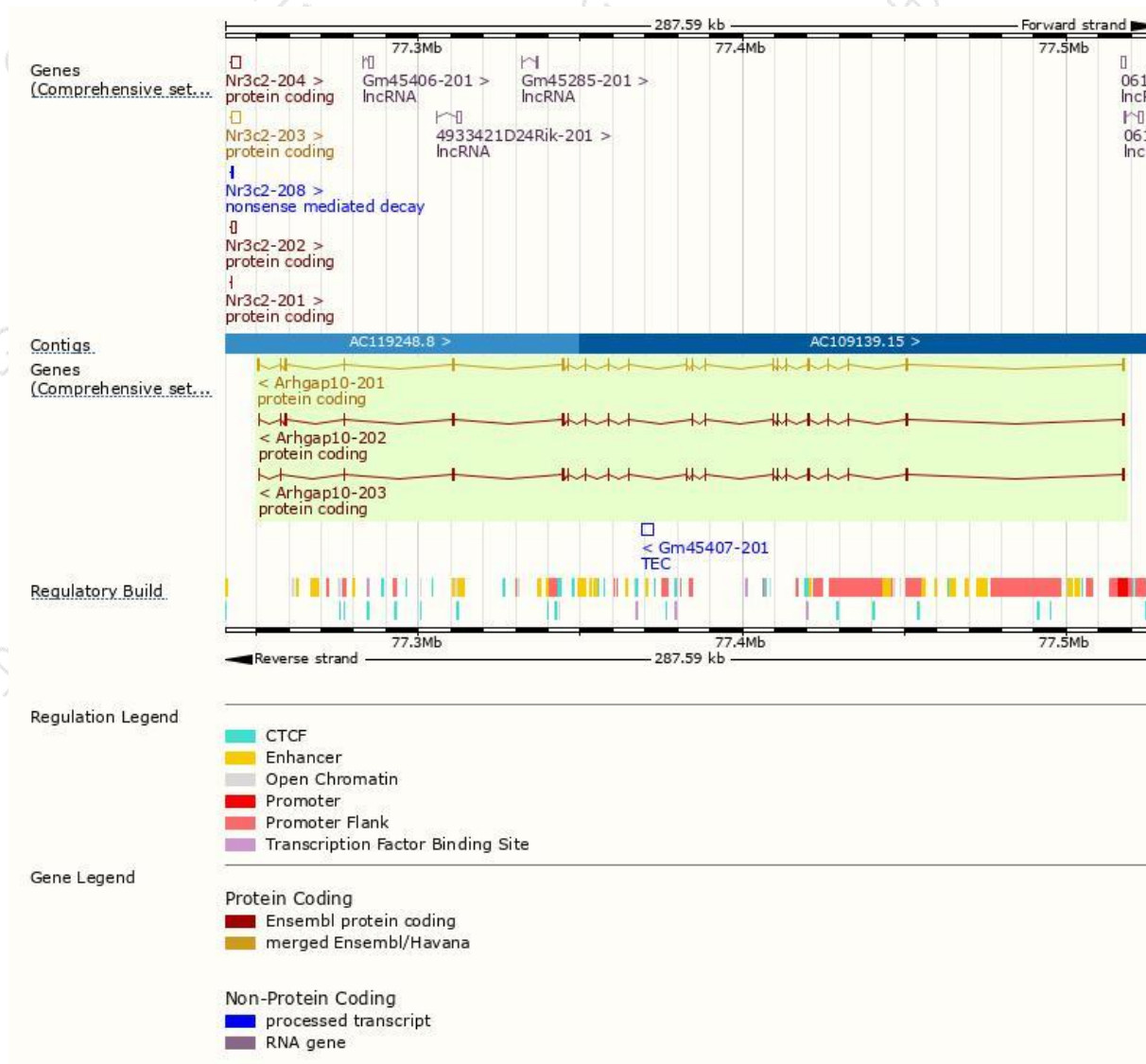
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap10-201	ENSMUST00000076316.5	3084	786aa	Protein coding	CCDS22425	Q6Y5D8	TSL:1 GENCODE basic APPRIS P2
Arhgap10-202	ENSMUST00000210519.1	2295	764aa	Protein coding	-	Q6Y5D8	TSL:1 GENCODE basic
Arhgap10-203	ENSMUST00000210922.1	2208	735aa	Protein coding	-	Q6Y5D8	TSL:1 GENCODE basic APPRIS ALT2

The strategy is based on the design of *Arhgap10-201* transcript,the transcription is shown below:



Genomic location distribution



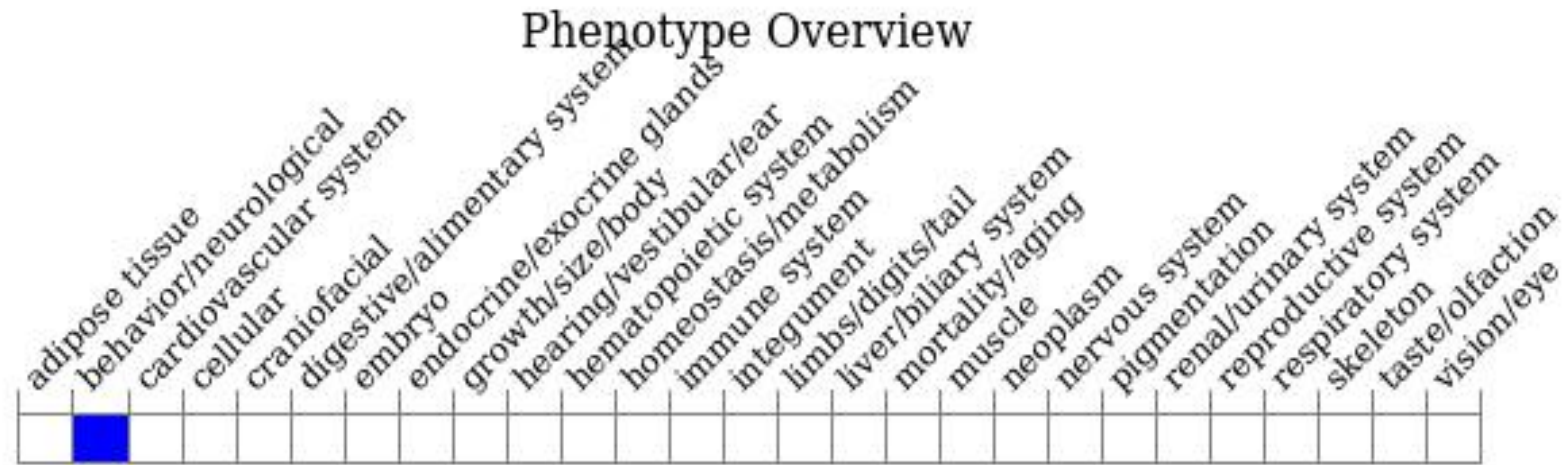
Protein domain



集萃药康
GemPharmatech



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 an ENU-induced allele exhibit paraparesis, ataxic hindlimbs and splaying of hindlimbs.

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

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