Arhgap23 Cas9-KO Strategy

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Design Date: 2020-9-23

Project Overview

Project Name	***Arhgap23***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap23* gene. The schematic diagram is as follows:

Technical routes
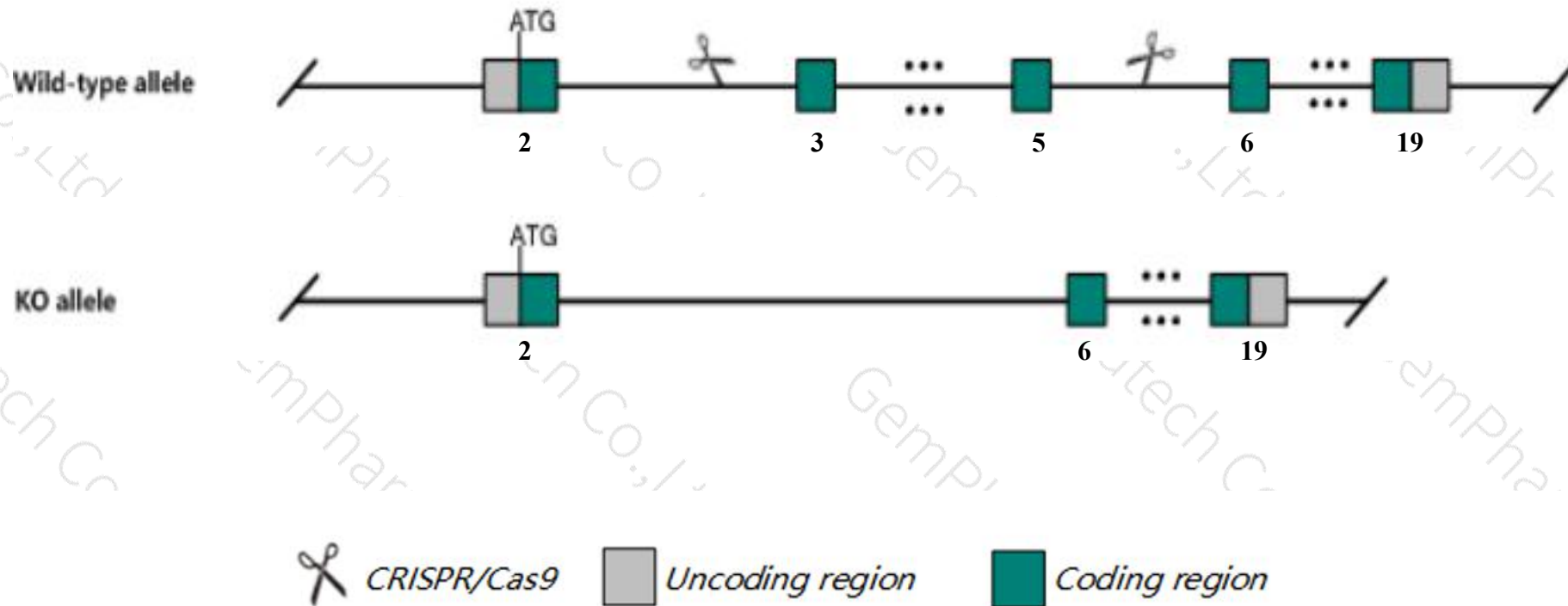
➢ The *Arhgap23* gene has 5 transcripts. According to the structure of *Arhgap23* gene, exon3-exon5 of *Arhgap23-202*(ENSMUST00000107601.7) transcript is recommended as the knockout region.The region contains 326bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Arhgap23* 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.

Notice

➢ The *Arhgap23* gene is located on the Chr11. 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.

➢ Transcript *Arhgap23*-201&205 may not be affected.

➢ 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）

Arhgap23 Rho GTPase activating protein 23 [Mus musculus (house mouse)]

Gene ID: 58996, updated on 13-Mar-2020

▲Summary

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Official Symbol	Arhgap23 provided by MGI
Official Full Name	Rho GTPase activating protein 23 provided byMGI
Primary source	MGI:MGI:3697726
See related	Ensembl:ENSMUSG00000049807
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	A330041B18Rik
Expression	Ubiquitous expression in adrenal adult (RPKM 28.9), lung adult (RPKM 24.8) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap23-202	ENSMUST00000107601.7	5450	1277aa	Protein coding	CCDS36293	F8VQ11	TSL:5 GENCODE basic
Arhgap23-203	ENSMUST00000121799.7	5816	1488aa	Protein coding	-	B1AQY2	TSL:5 GENCODE basic APPRIS P1
Arhgap23-201	ENSMUST00000093940.3	2409	325aa	Protein coding	-	Q69ZH9	TSL:1 GENCODE basic
Arhgap23-204	ENSMUST00000142465.7	4531	634aa	Nonsense mediated decay	-	D6RDB5	TSL:5
Arhgap23-205	ENSMUST00000152933.1	637	No protein	Processed transcript	-	-	TSL:3

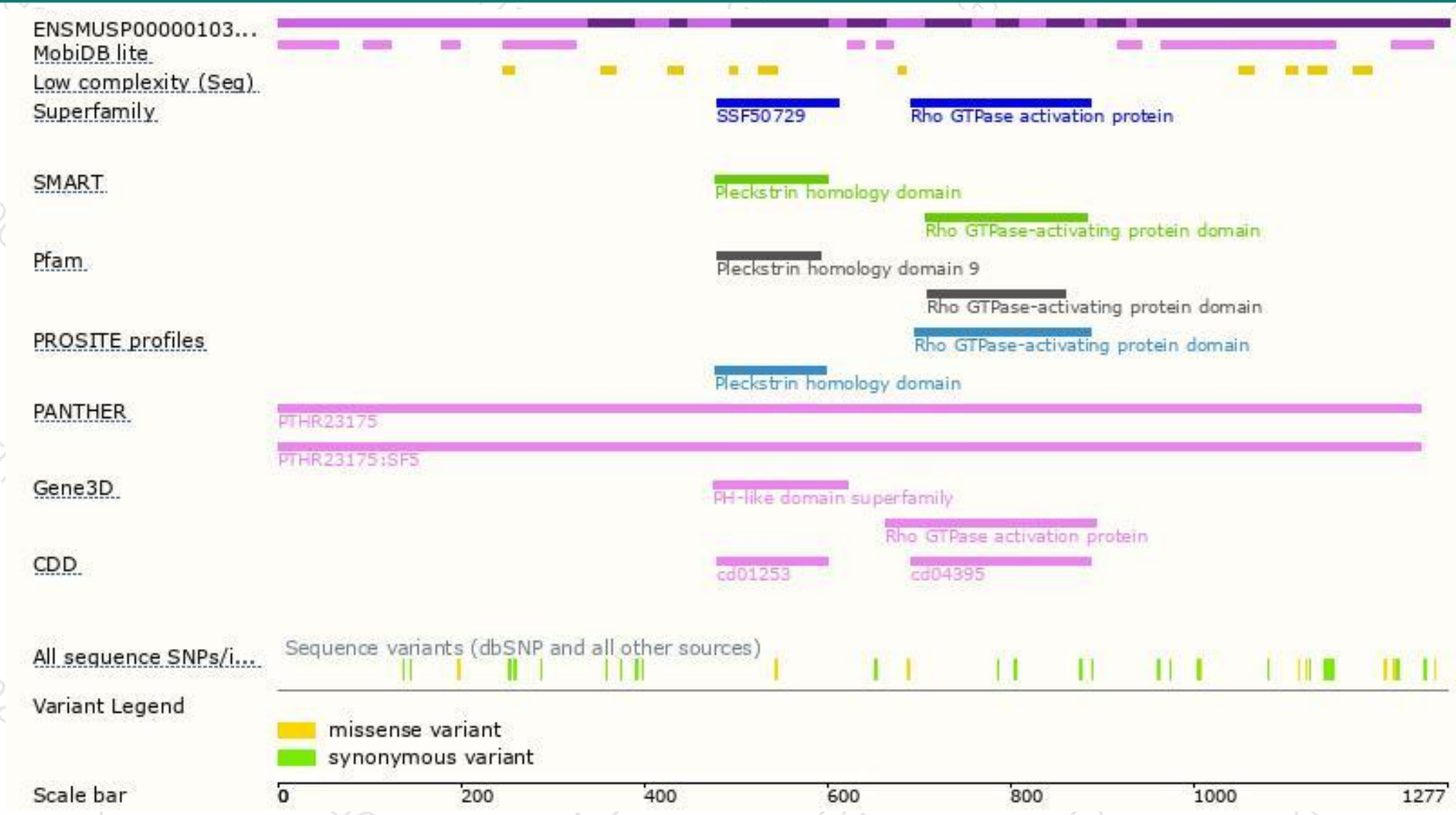The strategy is based on the design of *Arhgap23-202* transcript,the transcription is shown below:
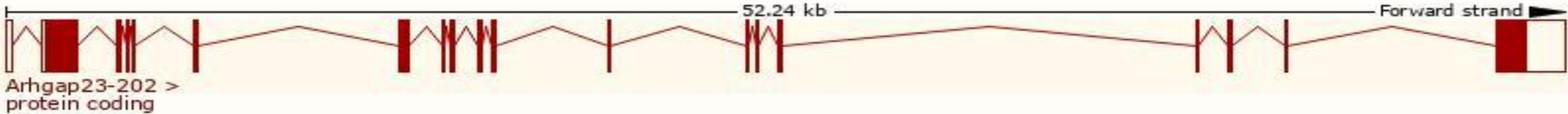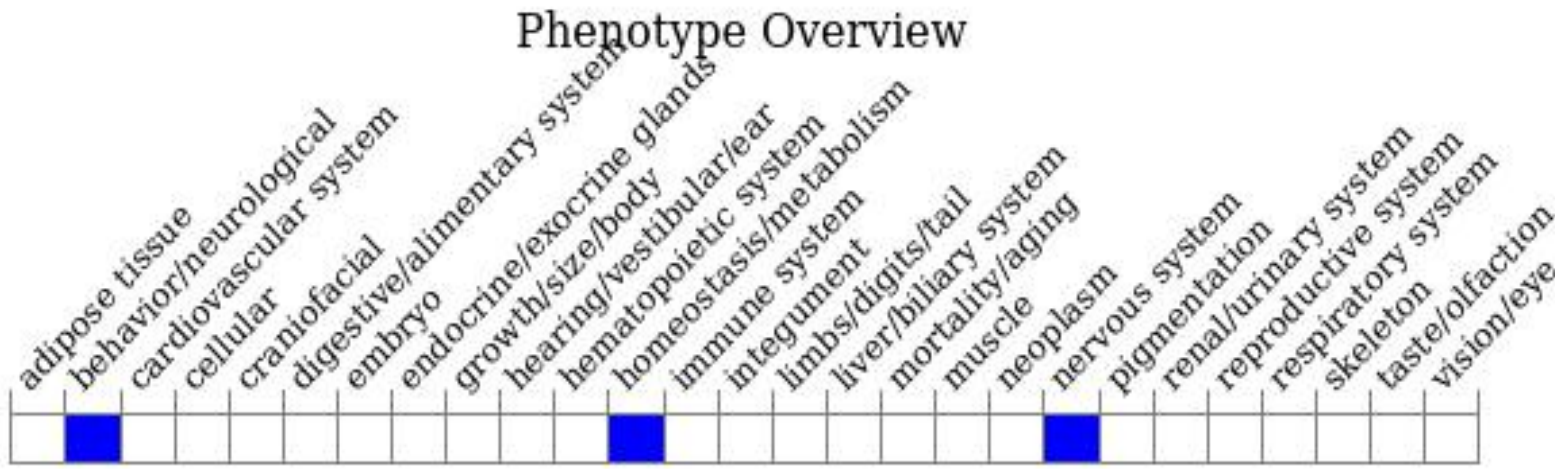
Genomic location distribution
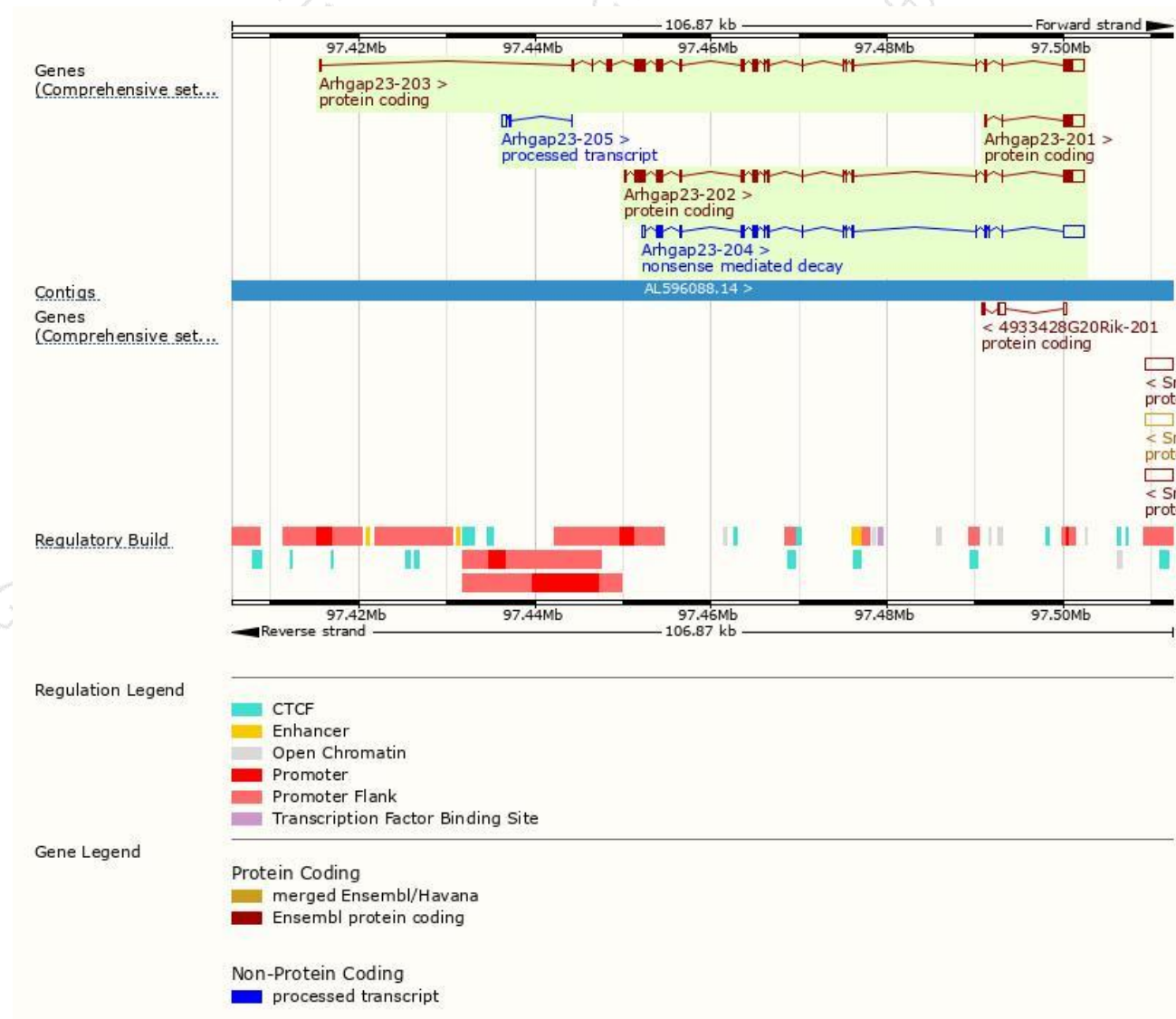
Protein domain

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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