

Arhgap42 Cas9-CKO Strategy

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Project Overview

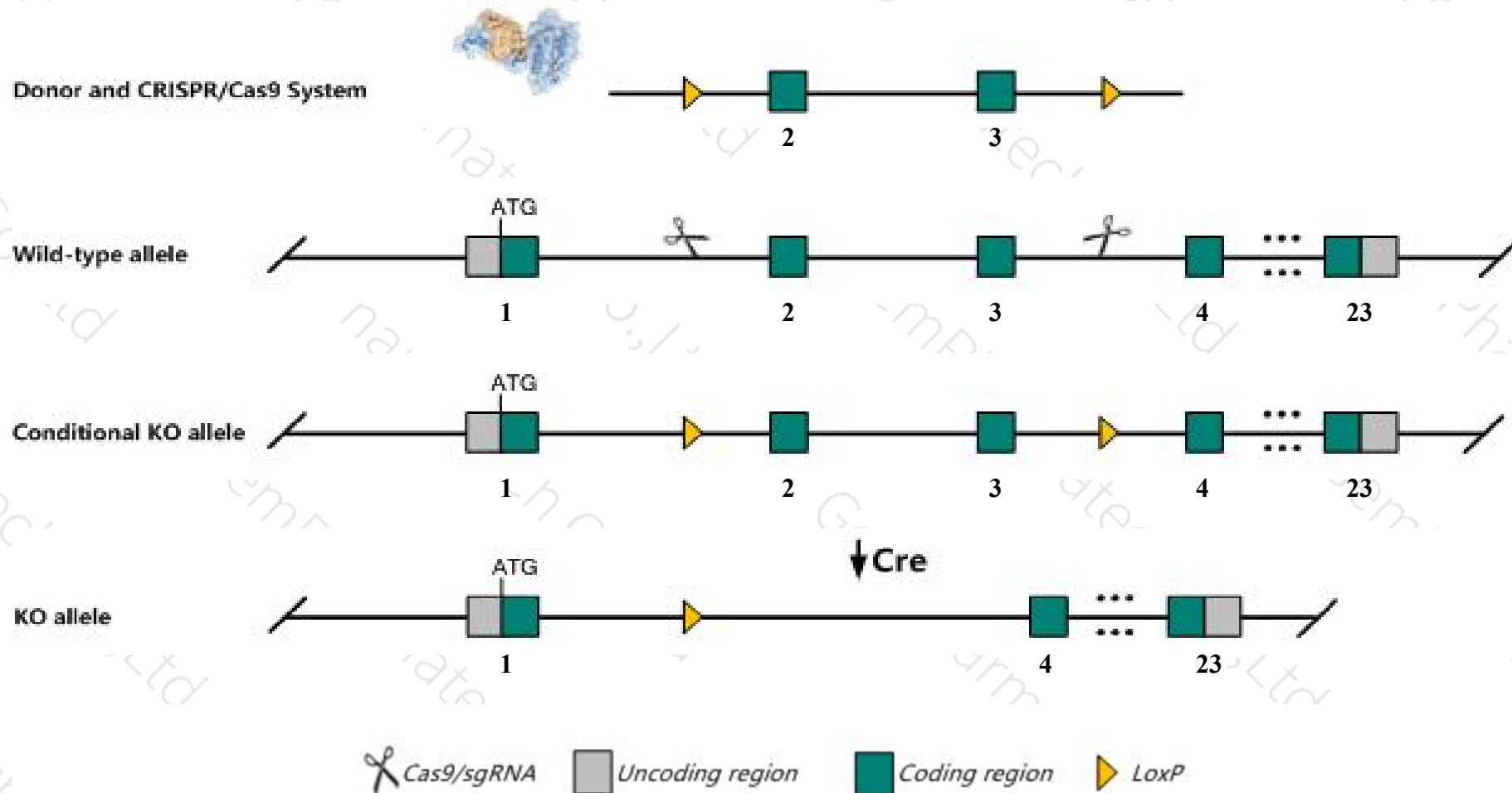
Project Name	<i>Arhgap42</i>
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Project type	Cas9-CKO
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Strain background	C57BL/6JGpt
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Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap42* gene. The schematic diagram is as follows:



Technical routes

- The *Arhgap42* gene has 4 transcripts. According to the structure of *Arhgap42* gene, exon2-exon3 of *Arhgap42-201*(ENSMUST00000093893.11) 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 *Arhgap42* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- According to the existing MGI data, mice homozygous for a hypomorphic allele exhibit hypertension and increased vascular smooth muscle contractility.
- The *Arhgap42* gene is located on the Chr9. 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)

Arhgap42 Rho GTPase activating protein 42 [Mus musculus (house mouse)]

Gene ID: 71544, updated on 13-Mar-2020

Summary



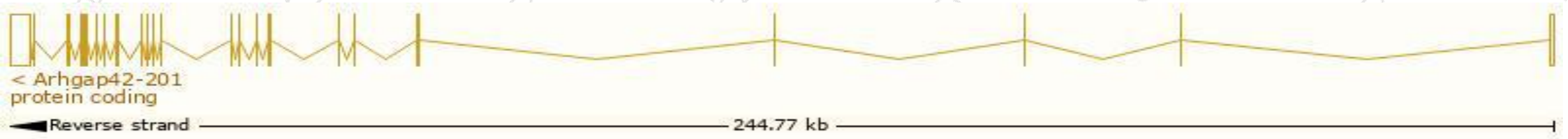
Official Symbol	Arhgap42 provided by MGI
Official Full Name	Rho GTPase activating protein 42 provided by MGI
Primary source	MGI:MGI:1918794
See related	Ensembl:ENSMUSG00000050730
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9030420J04Rik, BE136619
Expression	Ubiquitous expression in ovary adult (RPKM 12.1), limb E14.5 (RPKM 6.3) and 25 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

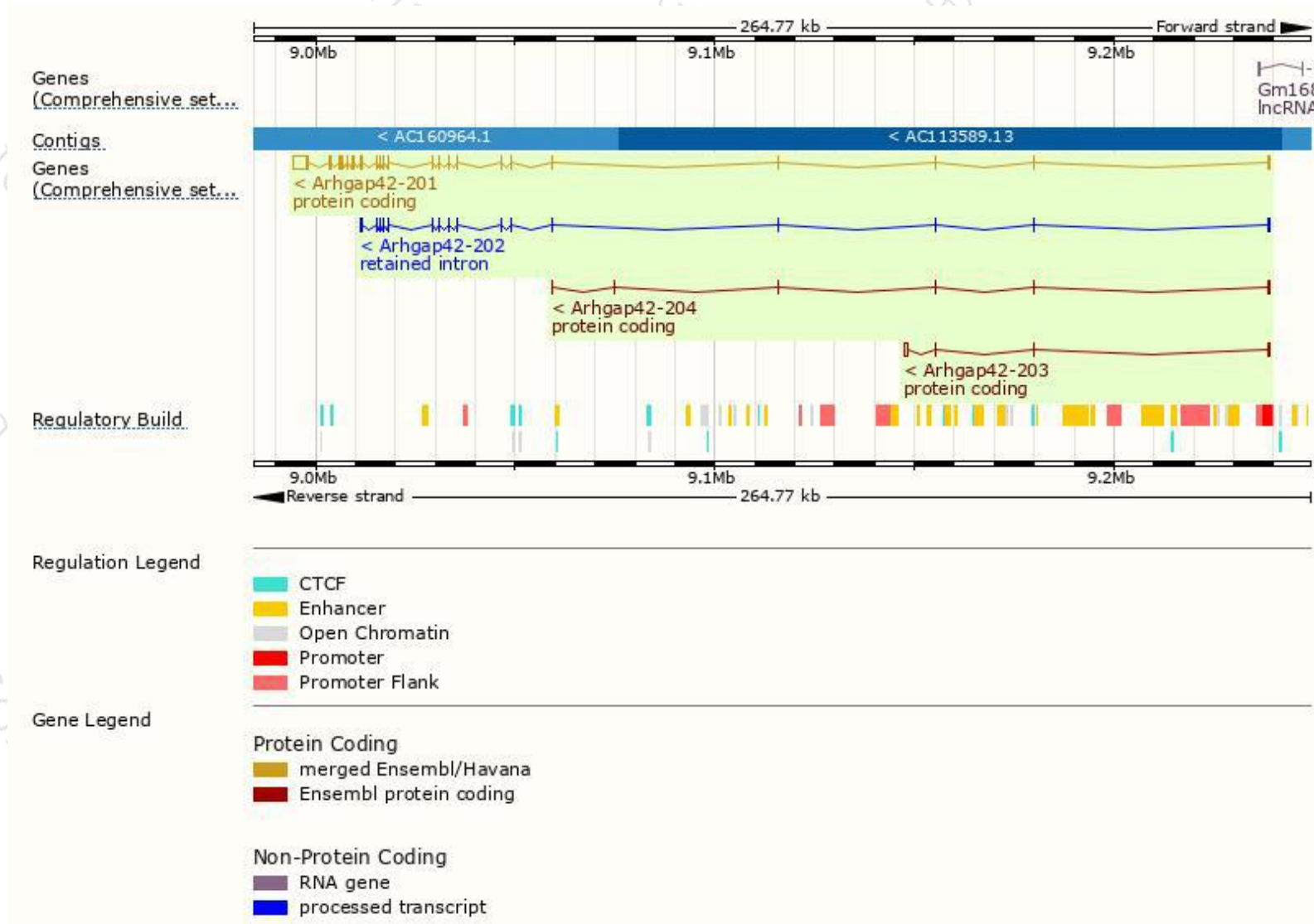
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap42-201	ENSMUST00000093893.11	6116	841aa	Protein coding	CCDS52720	B2RQE8	TSL:1 GENCODE basic APPRIS P1
Arhgap42-203	ENSMUST00000183182.1	1458	139aa	Protein coding	-	Q9D333	TSL:1 GENCODE basic
Arhgap42-204	ENSMUST00000215397.1	663	180aa	Protein coding	-	A0A1L1SSL0	CDS 3' incomplete TSL:3
Arhgap42-202	ENSMUST00000182617.1	1868	No protein	Retained intron	-	-	TSL:1

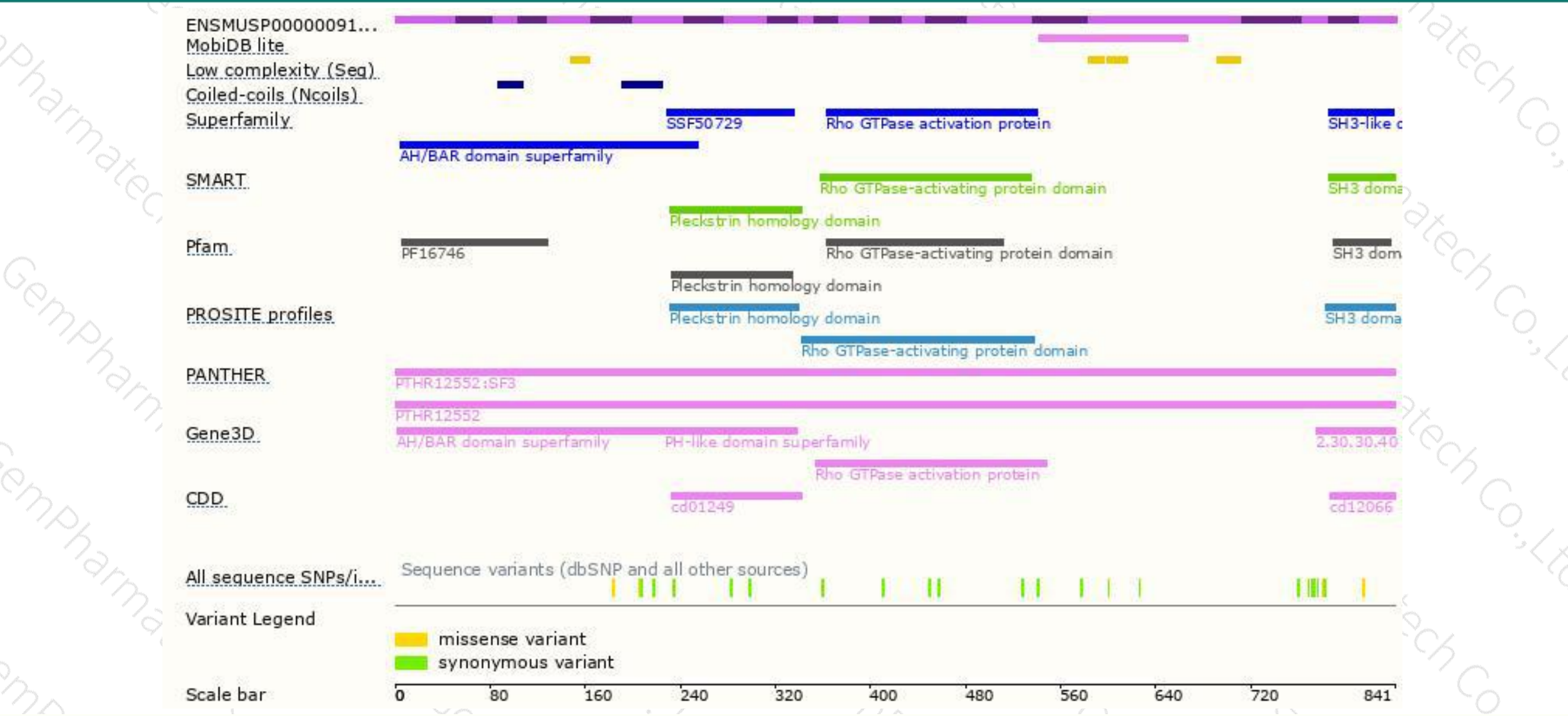
The strategy is based on the design of *Arhgap42-201* transcript,the transcription is shown below:



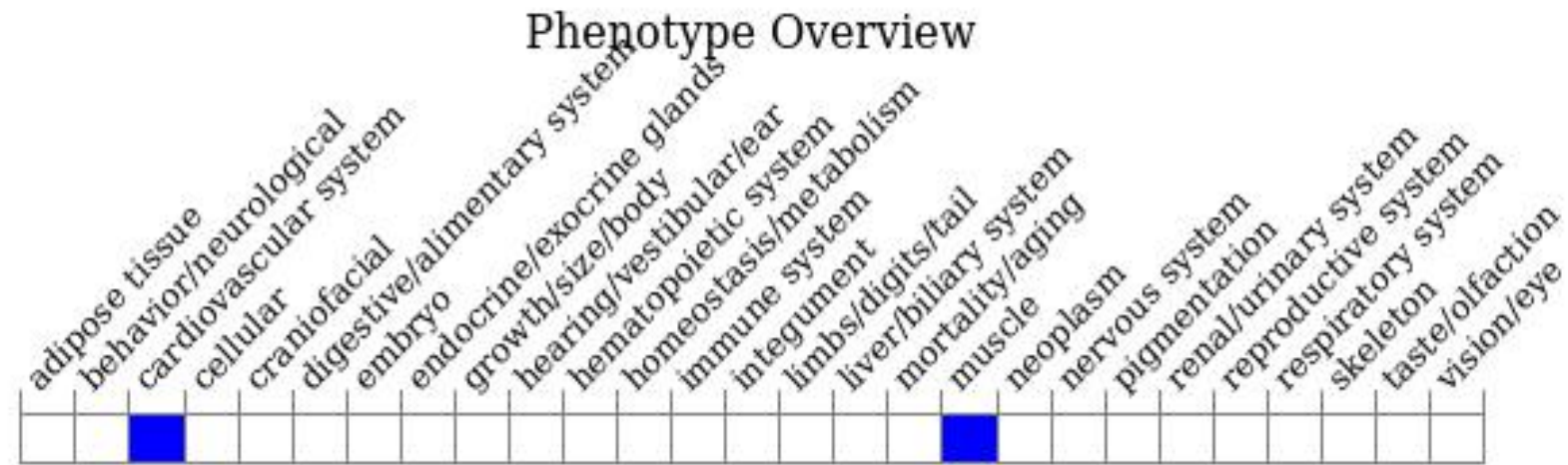
Genomic location distribution



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/>).

According to the existing MGI data, mice homozygous for a hypomorphic allele exhibit hypertension and increased vascular smooth muscle contractility.

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

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