Arhgap40 Cas9-CKO Strategy

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Project Overview

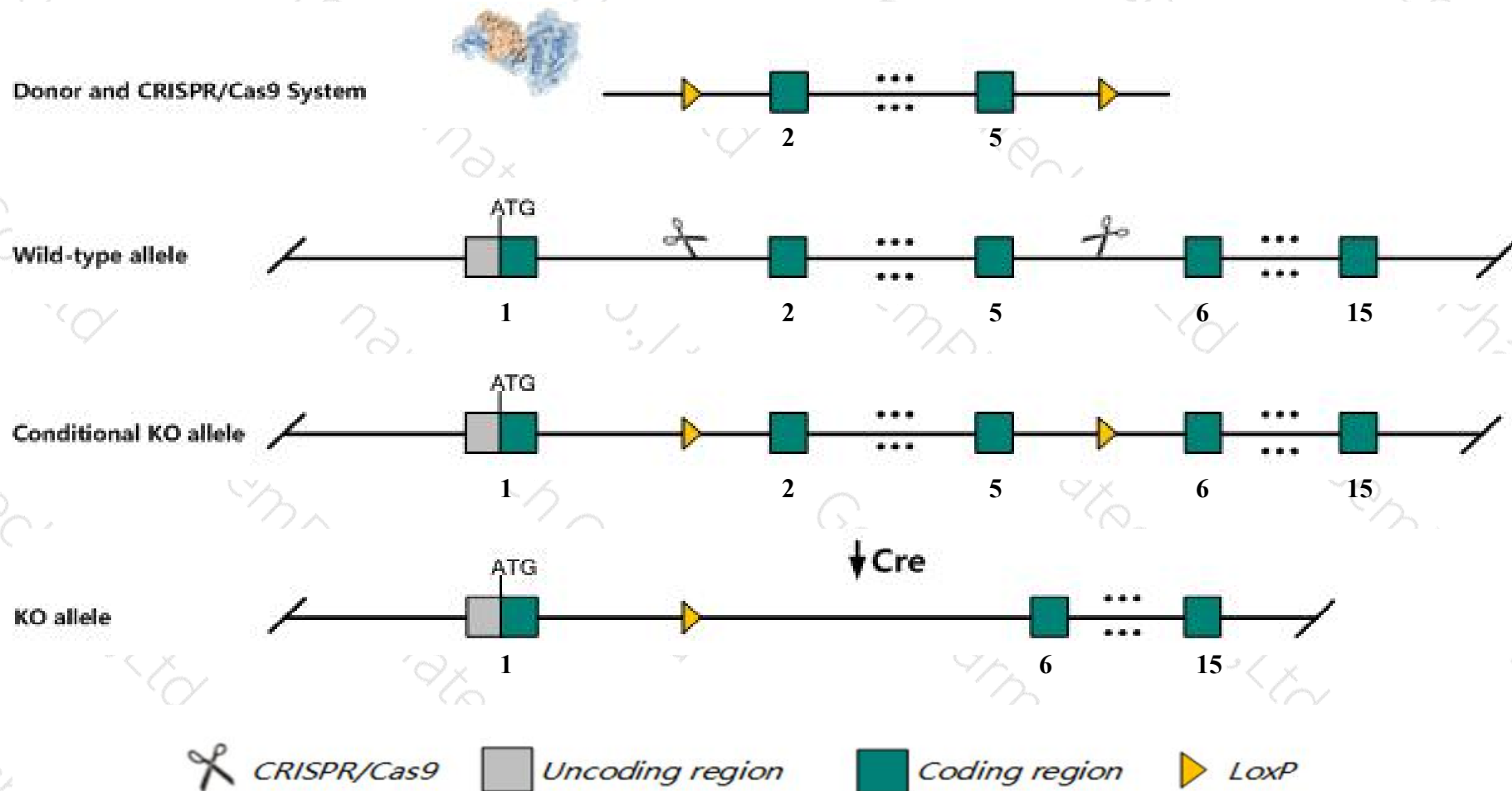|	
Project Name	***Arhgap40***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap40* gene. The schematic diagram is as follows:

Technical routes

➤ The *Arhgap40* gene has 3 transcripts. According to the structure of *Arhgap40* gene, exon2-exon5 of *Arhgap40-203*(ENSMUST00000165398.1) transcript is recommended as the knockout region.The region contains Ens 643bp coding sequence. Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Arhgap40* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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.

Notice

➢ The *Arhgap40* gene is located on the Chr2. 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）

Arhgap40 Rho GTPase activating protein 40 [Mus musculus (house mouse)]

Gene ID: 545481, updated on 13-Mar-2020

▲ Summary

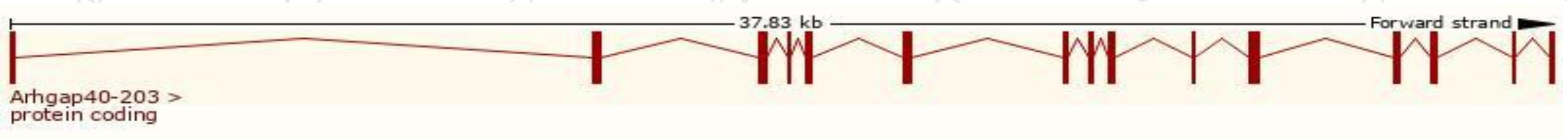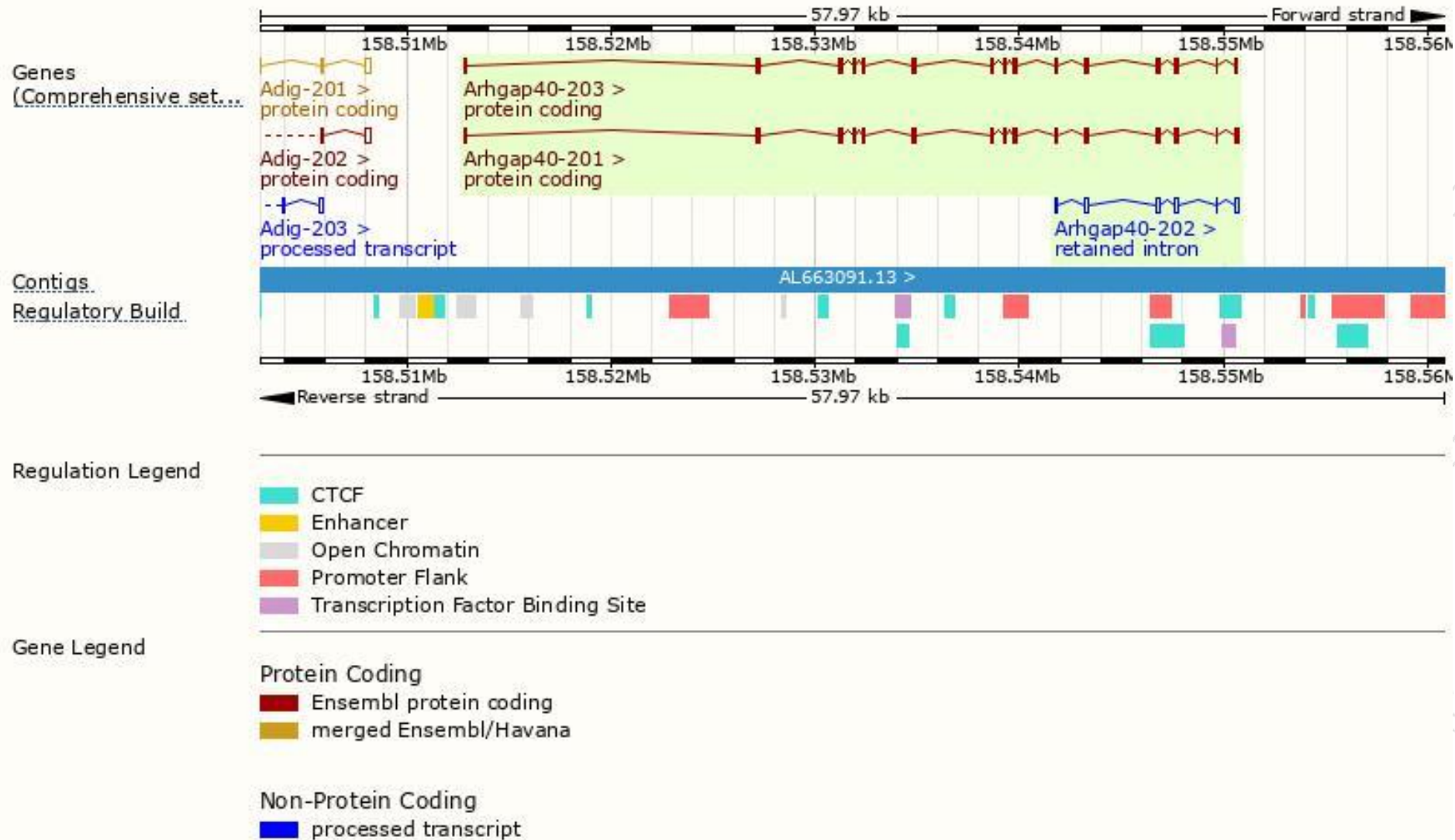|	
Official Symbol	Arhgap40 provided by MGI
Official Full Name	Rho GTPase activating protein 40 provided by MGI
Primary source	MGI:MGI:3649852
See related	Ensembl:ENSMUSG00000074625
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C20orf95, Gm14203
Expression	Biased expression in bladder adult (RPKM 8.5), mammary gland adult (RPKM 4.5) and 7 other tissuesSee 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
Arhgap40-203	ENSMUST00000165398.1	2028	672aa	Protein coding	CCDS50787	E9Q6X9	TSL:5 GENCODE basic APPRIS P1
Arhgap40-201	ENSMUST00000099133.9	2162	675aa	Protein coding	-	A0A0A0MQB4	CDS 5' incomplete TSL:5
Arhgap40-202	ENSMUST00000135838.1	924	No protein	Retained intron	-	-	TSL:5

The strategy is based on the design of *Arhgap40-203* transcript,the transcription is shown below:

Genomic location distribution

Protein domain

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