Adra2a Cas9-KO *Strategy*

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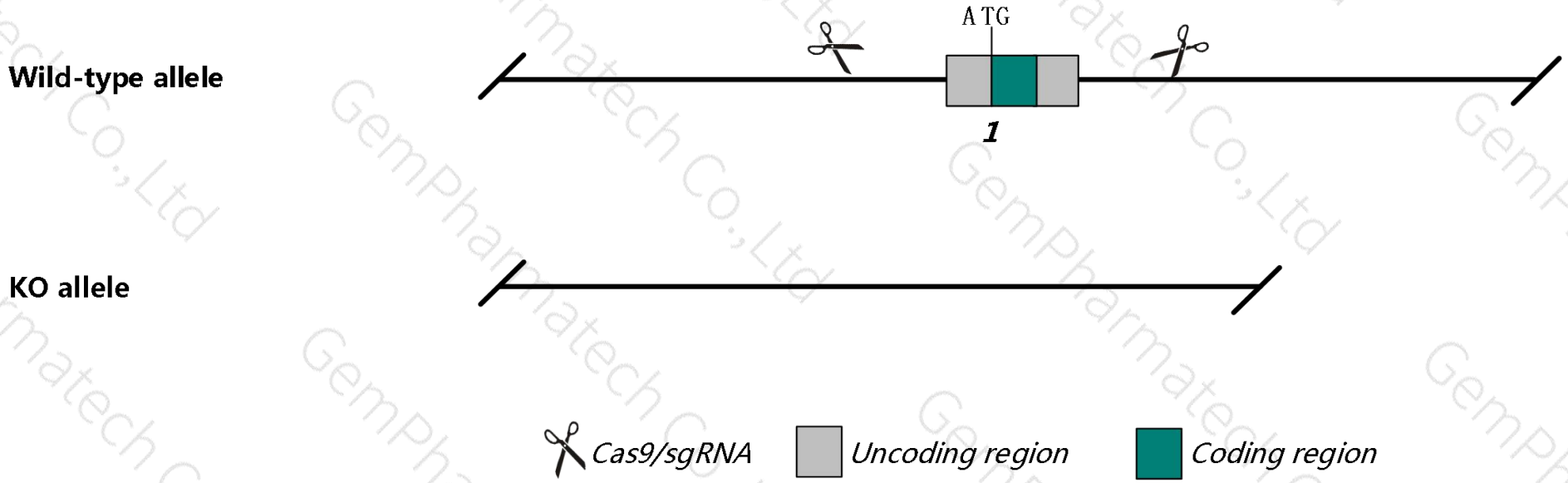
Design Date:2019-12-24

Project Overview

Project Name	***Adra2a***
Project type	Cas9-KO
Animal background	C57BL/6JGpt

Knockout strategy

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



Technical routes

- The *Adra2a* gene has 2 transcript.According to the structure of *Adra2a* gene, exon1 of Adra2a-201 (ENSMUST00000036700.6) transcript is recommended as the knockout region.The region contains most of coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify Adra2a gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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

- According to the existing MGI data，Mice homozygous for targeted mutations that inactivate the gene fail to produce hypotensive responsiveness to alpha2AR agonists, including failure to inhibit voltage-gated Ca2+ currents and spontaneous neuronal firing.
- The Adra2a gene is located on the Chr19. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information （NCBI）

集萃药康 GemPharmatech

Adra2a adrenergic receptor, alpha 2a [*Mus musculus* (house mouse)]

Gene ID: 11551, updated on 12-Aug-2019

Summary

Official Symbol	Adra2a provided by MGI
Official Full Name	adrenergic receptor, alpha 2a provided by MGI
Primary source	MGI:MGI:87934
See related	Ensembl:ENSMUSG00000033717
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	Adra-2; Adra-2a; alpha2A; AW122659; alpha2-C10; alpha2A-AR; alpha(2A)AR
Orthologs	human all

Transcript information（Ensembl）

The gene has 2 transcripts, and all transcripts are shown below ：

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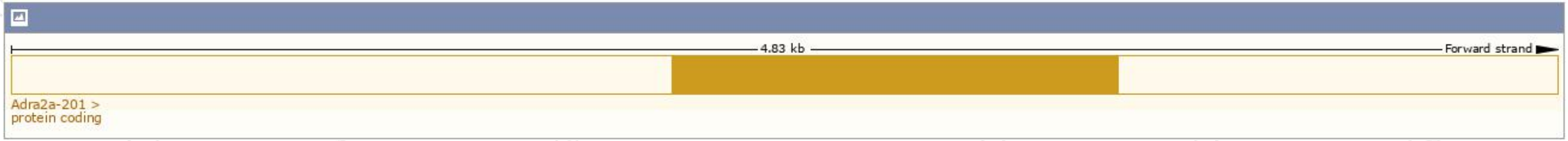
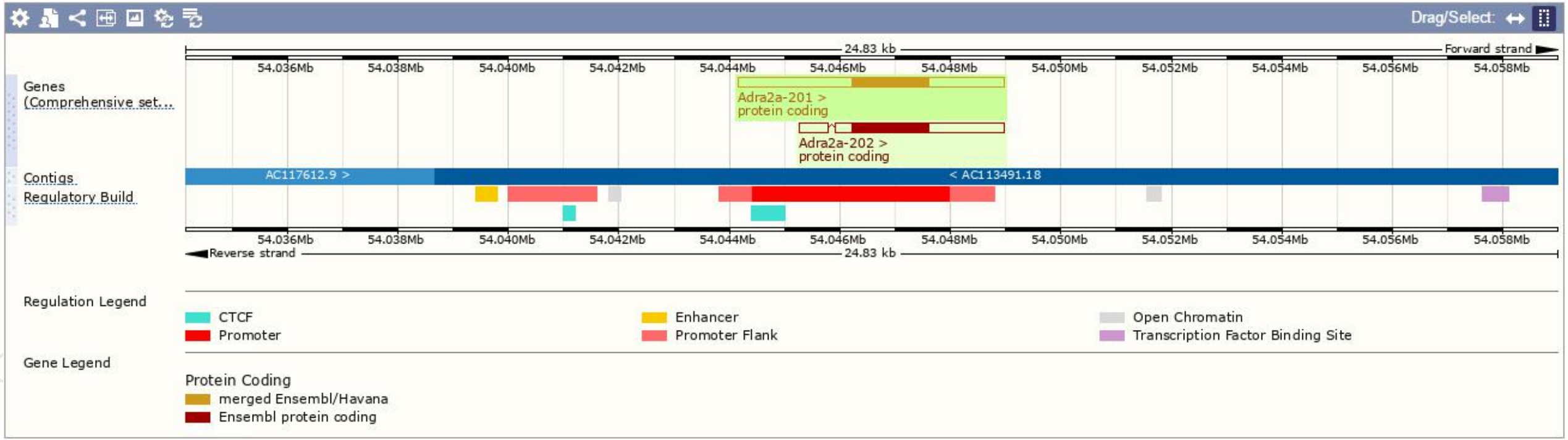
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adra2a-202	ENSMUST00000237285.1	3592	465aa	Protein coding	CCDS29905	Q3URE6	GENCODE basic APPRIS P1
Adra2a-201	ENSMUST00000036700.6	4832	465aa	Protein coding	CCDS29905	Q3URE6	TSL:NA GENCODE basic APPRIS P1

The strategy is based on the design of *Adra2a-201* transcript,The transcription is shown below

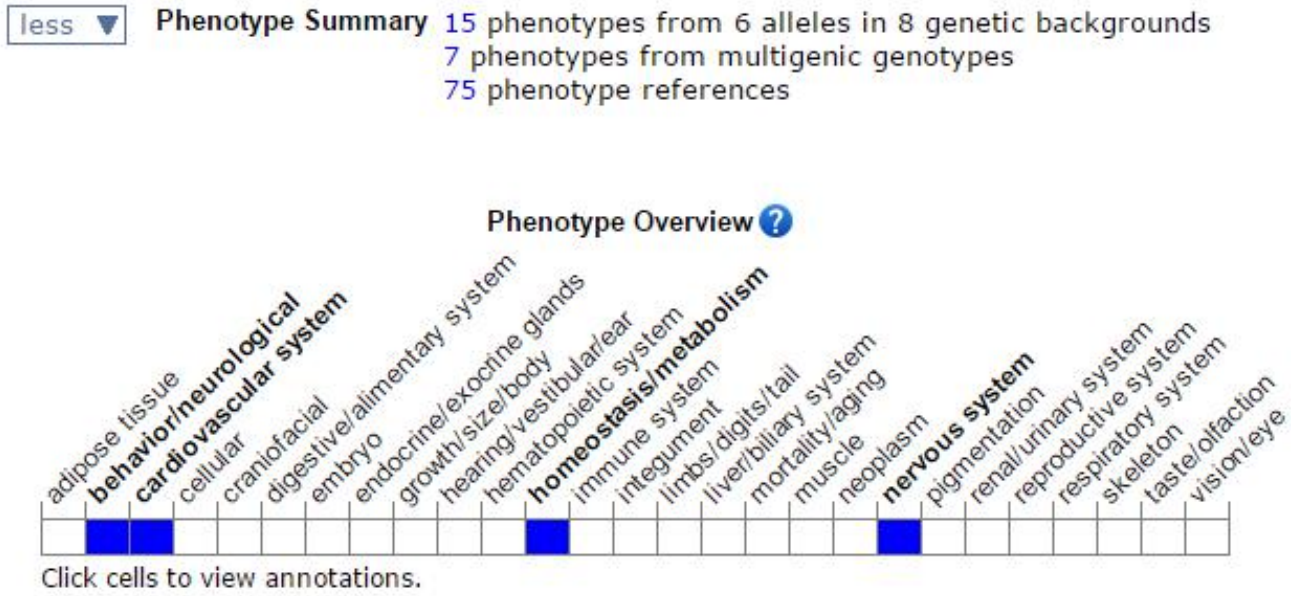


Genomic location (Ensembl)



Protein domain (Ensembl)

Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/) .

Mice homozygous for targeted mutations that inactivate the gene fail to produce hypotensive responsiveness to alpha2AR agonists, including failure to inhibit voltage-gated Ca2+ currents and spontaneous neuronal firing.

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