

Agtr2 Cas9-KO Strategy

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Project Overview

Project Name

Agtr2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Agtr2* gene. The schematic diagram is as follows:



- The *Agtr2* gene has 2 transcripts. According to the structure of *Agtr2* gene, exon3 of *Agtr2-201* (ENSMUST00000089188.8) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Agtr2* 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele may exhibit abnormal response to angiotensin II, induced pancreatitis, and myocardial infarction; cardiovascular morphology and physiology; renal and urinary morphology and physiology; and glucose and lipid homeostasis.
- The *Agtr2* gene is located on the ChrX. 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)

Agtr2 angiotensin II receptor, type 2 [*Mus musculus* (house mouse)]

Gene ID: 11609, updated on 23-Apr-2019

Summary

Official Symbol Agtr2 provided by [MGI](#)
Official Full Name angiotensin II receptor, type 2 provided by [MGI](#)
Primary source [MGI:MGI:87966](#)
See related [Ensembl:ENSMUSG00000068122](#)
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 AI316812; AW107640
Expression Biased expression in limb E14.5 (RPKM 70.4) and CNS E14 (RPKM 3.9) [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: X A2; X 16.71 cM

See Agtr2 in [Genome Data Viewer](#)

Exon count: 3

Annotation release	Status	Assembly	Chr	Location
106	current	GRCm38.p4 (GCF_000001635.24)	X	NC_000086.7 (21484549..21488833)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	X	NC_000086.6 (21061752..21065957)

Transcript information (Ensembl)

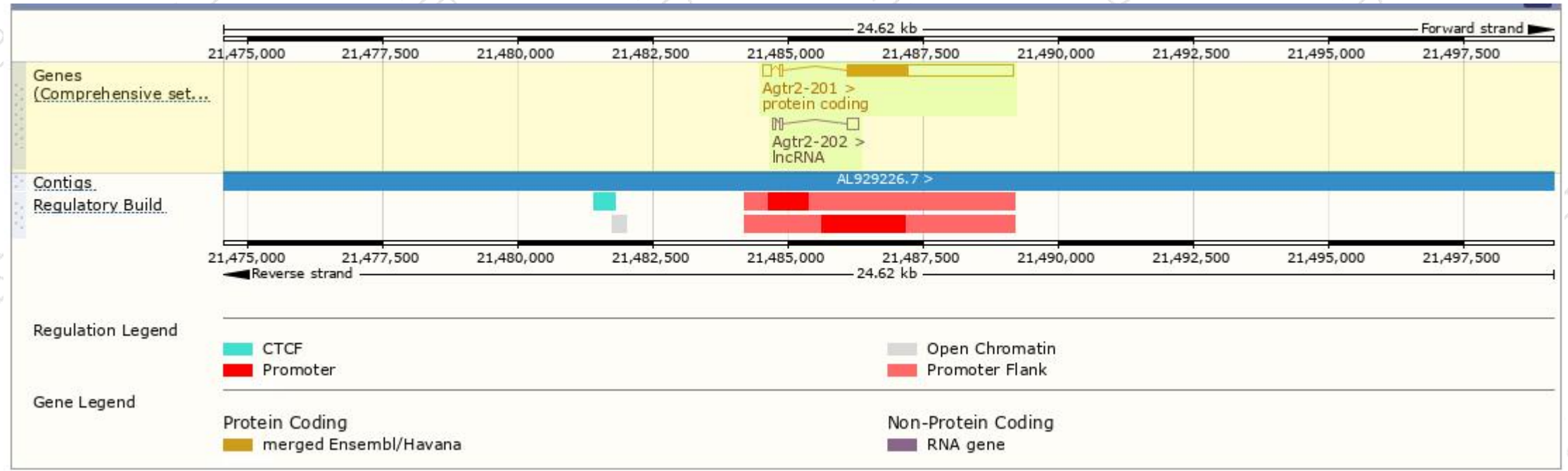
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Agtr2-201	ENSMUST00000089188.8	3283	363aa	Protein coding	CCDS40889	P35374	TSL:1 GENCODE basic APPRIS P1
Agtr2-202	ENSMUST00000131150.1	314	No protein	lncRNA	-	-	TSL:3

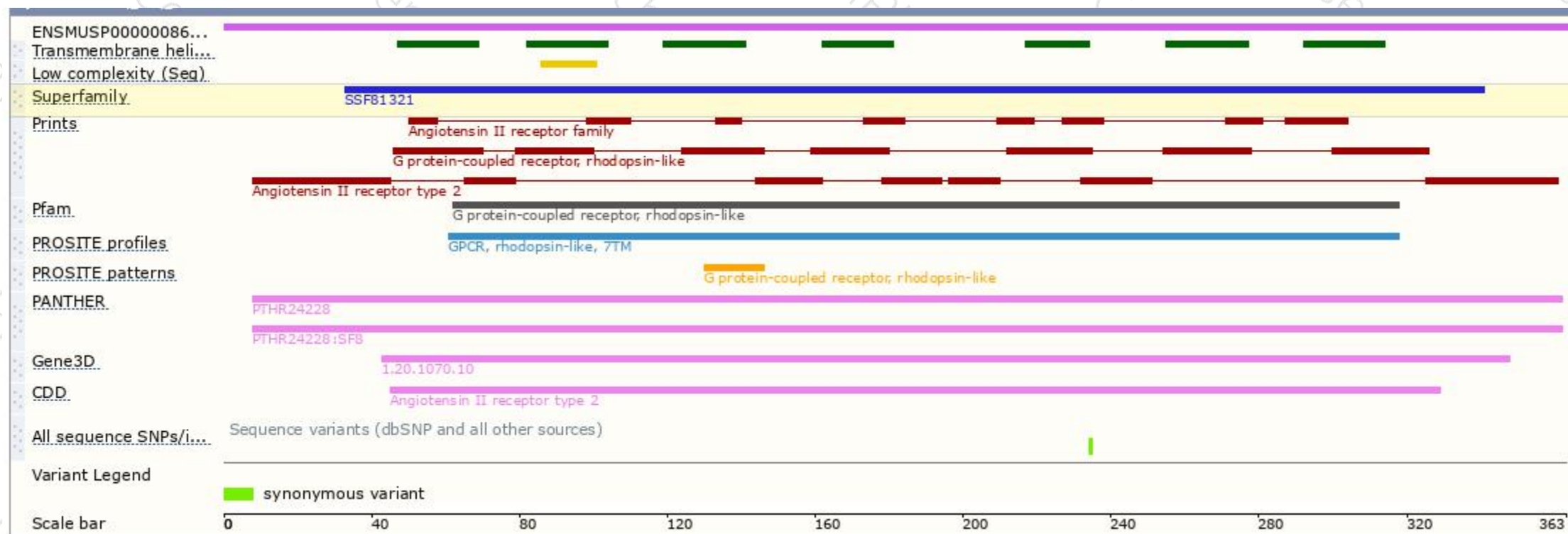
The strategy is based on the design of *Agtr2-201* transcript,The transcription is shown below



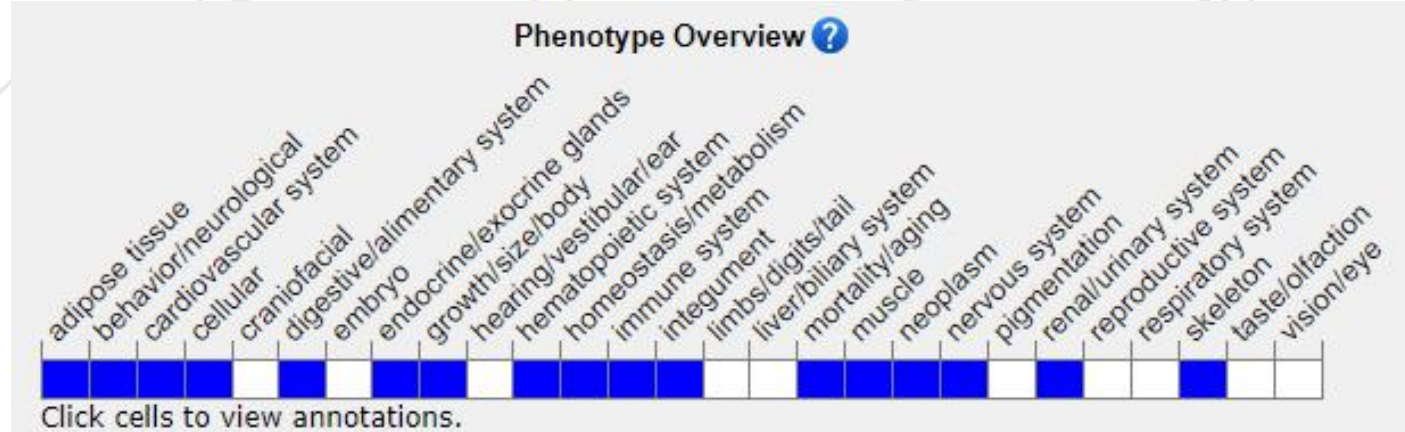
Genomic location distribution



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/>).

Mice homozygous for a knock-out allele may exhibit abnormal response to angiotensin II, induced pancreatitis, and myocardial infarction; cardiovascular morphology and physiology; renal and urinary morphology and physiology; and glucose and lipid homeostasis.

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

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