

Adra2c Cas9-KO Strategy

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Project Overview

Project Name

Adra2c

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adra2c* gene. The schematic diagram is as follows:



- The *Adra2c* gene has 1 transcript. According to the structure of *Adra2c* gene, exon1 of *Adra2c-201* (ENSMUST00000049545.6) 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 *Adra2c* 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.

- Mice homozygous for targeted mutations that inactivate the gene are viable and fertile and appear grossly normal.
- The *Adra2c* gene is located on the Chr5. 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)

Adra2c adrenergic receptor, alpha 2c [*Mus musculus* (house mouse)]

Gene ID: 11553, updated on 12-Aug-2019

Summary

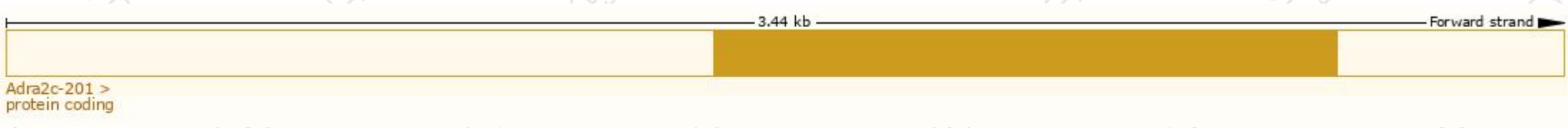
Official Symbol	Adra2c provided by MGI
Official Full Name	adrenergic receptor, alpha 2c provided by MGI
Primary source	MGI:MGI:87936
See related	Ensembl:ENSMUSG00000045318
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	[a]2C; Adra-2c; alpha2C; alpha2-C4
Orthologs	human all

Transcript information (Ensembl)

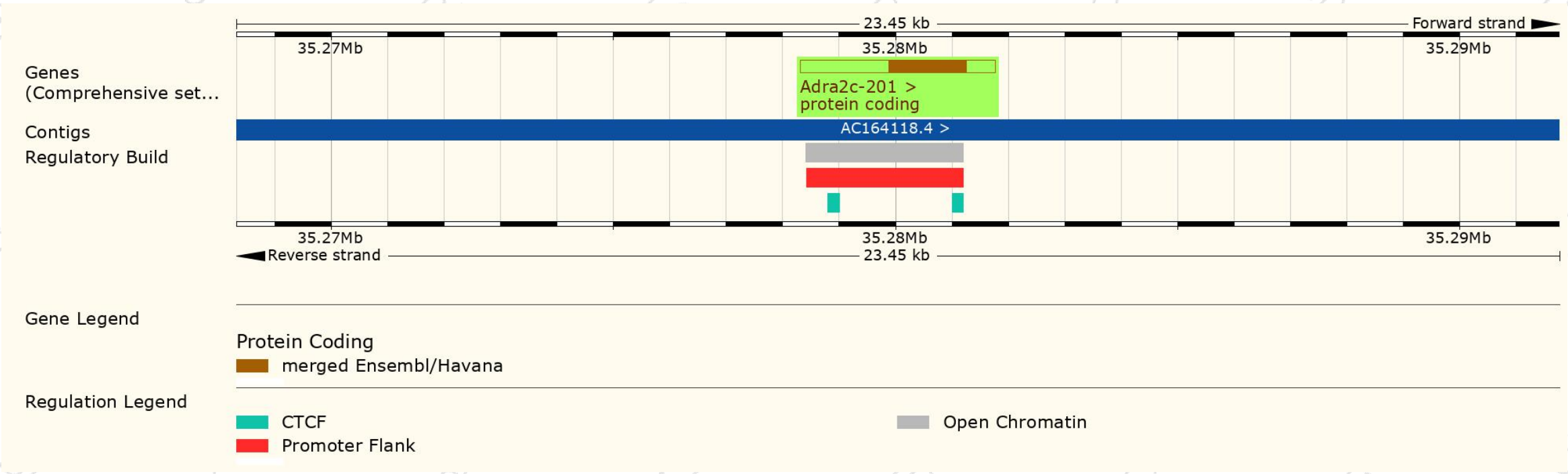
The gene has 1 transcript, and the transcript is shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Adra2c-201	ENSMUST00000049545.6	3445	458aa	Protein coding	CCDS19226	Q01337	TSL:NA Gencode basic APPRIS P1

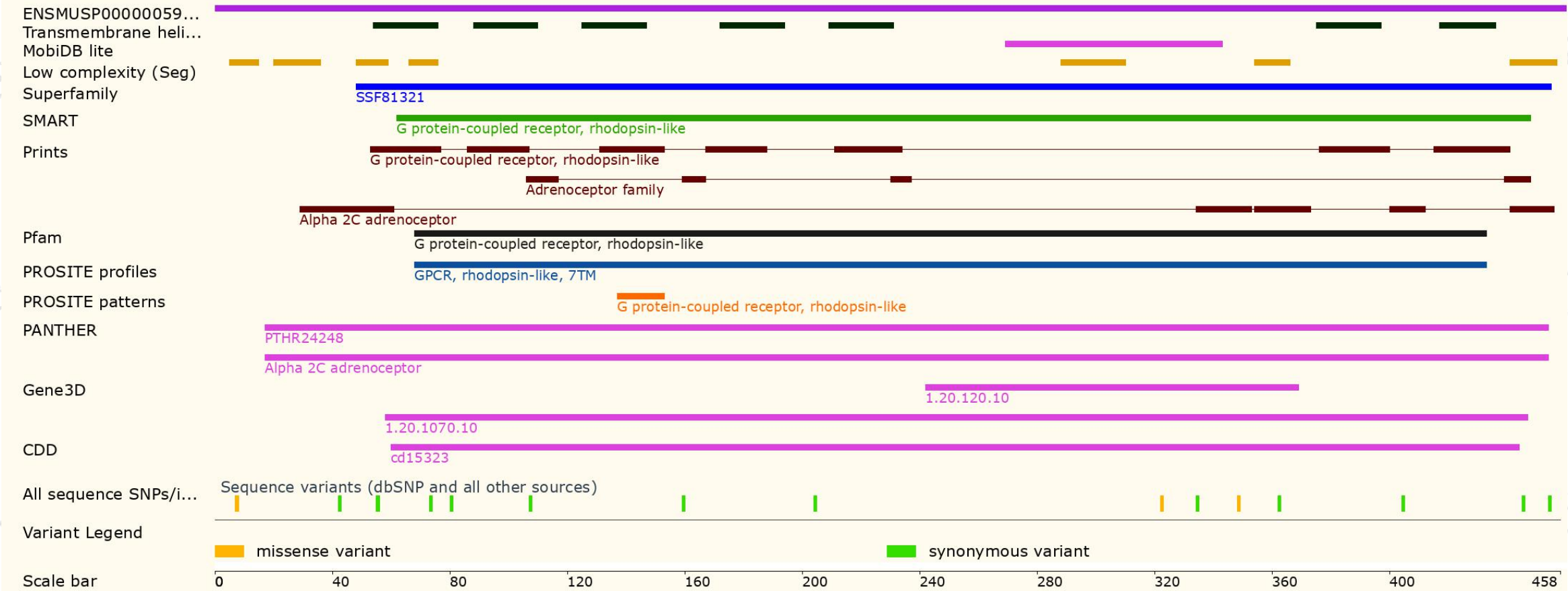
The strategy is based on the design of *Adra2c-201* transcript, The transcription is shown below



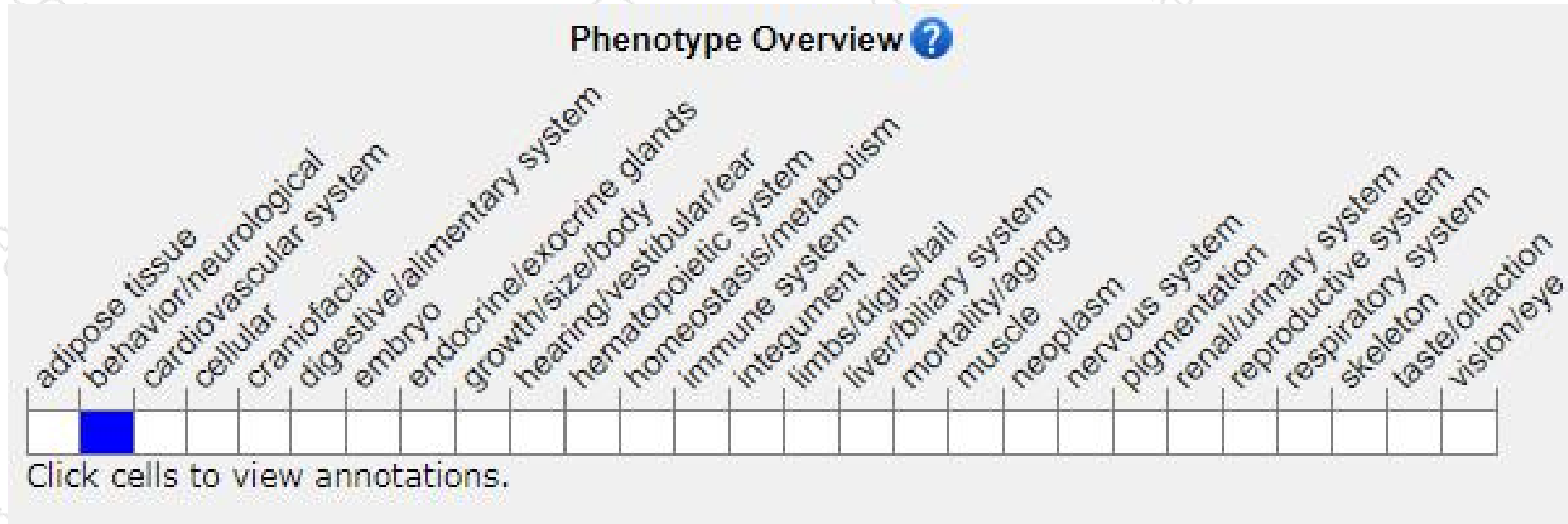
Genomic location distribution



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 targeted mutations that inactivate the gene are viable and fertile and appear grossly normal.

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

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