

Crhr1 Cas9-KO Strategy

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Project Overview

Project Name

Crhr1

Project type

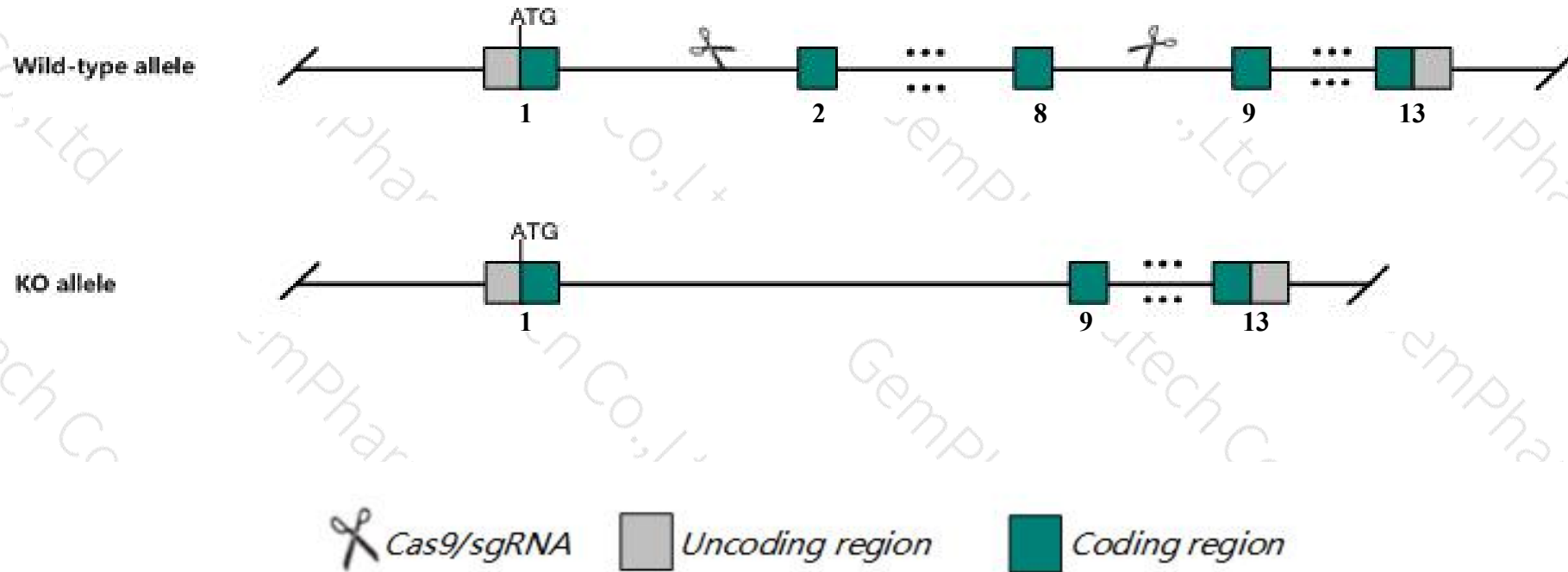
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Crhr1* gene. The schematic diagram is as follows:



- The *Crhr1* gene has 1 transcript. According to the structure of *Crhr1* gene, exon2-exon8 of *Crhr1-201* (ENSMUST00000093925.4) transcript is recommended as the knockout region. The region contains 737bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Crhr1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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, Homozygotes for targeted null mutations exhibit agenesis of the adrenal zona fasciculata, low adrenocorticotrophic hormone production, and reduced anxiety-related behaviors. Progeny of homozygote matings die from lung dysplasia within 48 hours of birth.
- The *Crhr1* gene is located on the Chr11. 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)

Crhr1 corticotropin releasing hormone receptor 1 [Mus musculus (house mouse)]

Gene ID: 12921, updated on 19-Mar-2019

Summary



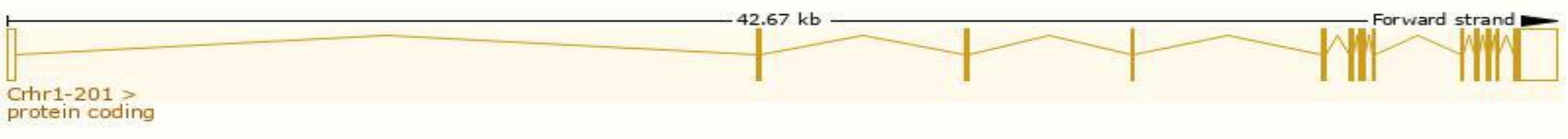
Official Symbol	Crhr1 provided by MGI
Official Full Name	corticotropin releasing hormone receptor 1 provided by MGI
Primary source	MGI:MGI:88498
See related	Ensembl:ENSMUSG00000018634
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CRF1R, CRFR1, Crhr
Summary	The protein encoded by this gene is a G-protein coupled receptor that binds corticotropin-releasing factor (CRH) and urocortin (UCN) with high affinity. The encoded protein upregulates adenylate cyclase activity and intracellular cAMP levels. This protein is essential for the activation of signal transduction pathways that regulate diverse physiological processes including stress, reproduction, immune response, and obesity. Several transcript variants encoding different isoforms have been found for this gene. [provided by RefSeq, Sep 2015]
Expression	Biased expression in cerebellum adult (RPKM 7.7), frontal lobe adult (RPKM 4.7) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

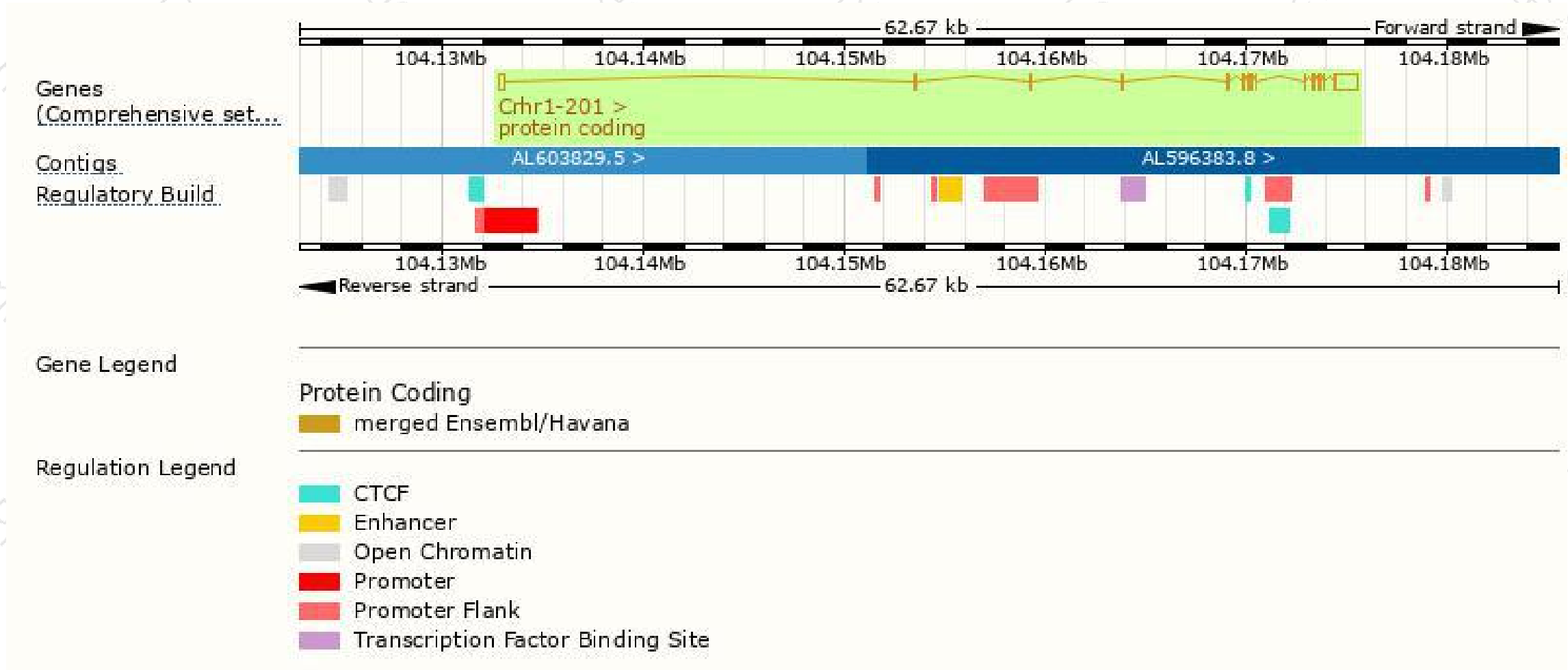
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Crhr1-201	ENSMUST00000093925.4	2460	415aa	Protein coding	CCDS25526	P35347 Q3ZAT0	TSL:1 GENCODE basic APPRIS P1

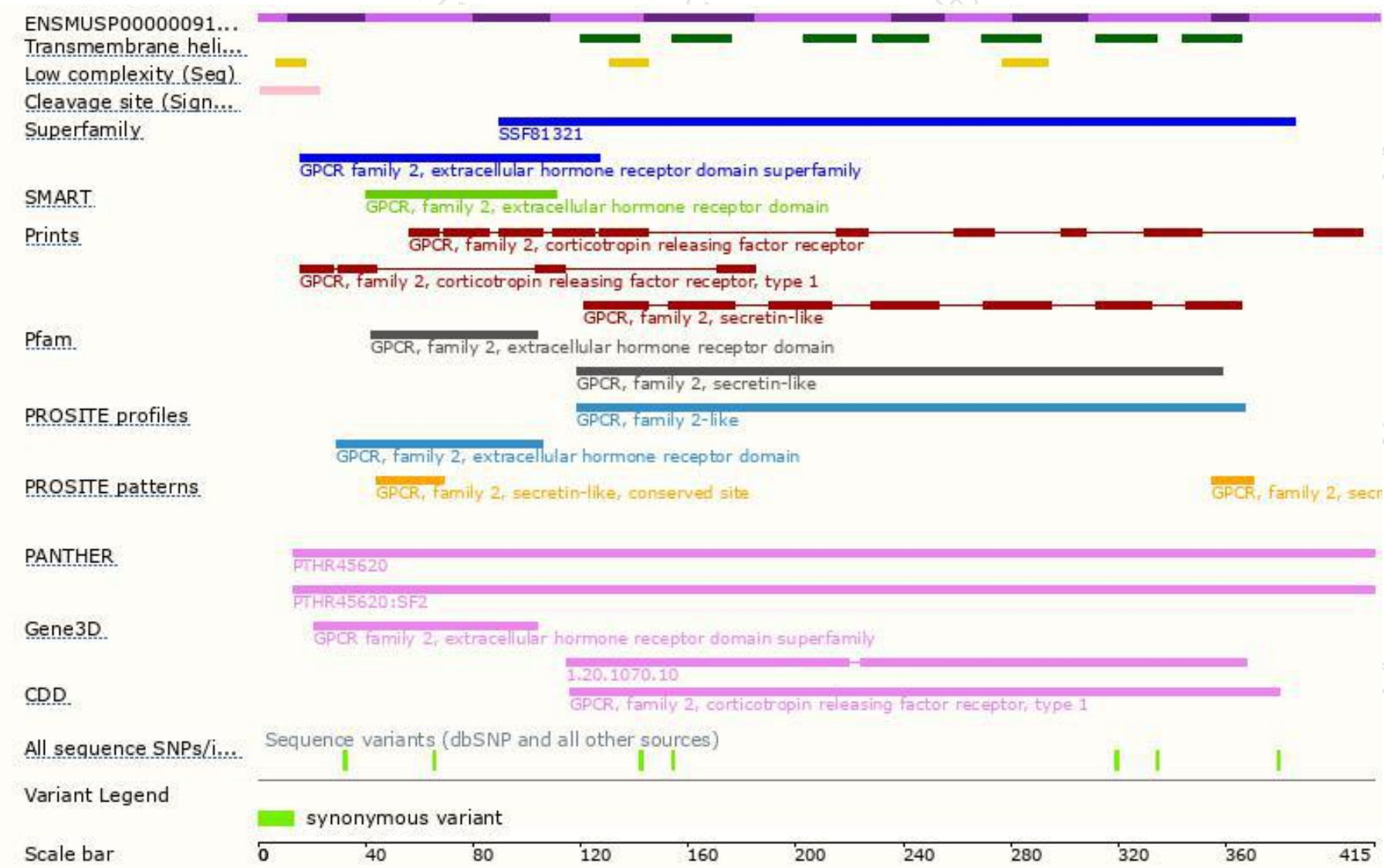
The strategy is based on the design of *Crhr1-201* transcript, The transcription is shown below



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, Homozygotes for targeted null mutations exhibit agenesis of the adrenal zona fasciculata, low adrenocorticotrophic hormone production, and reduced anxiety-related behaviors. Progeny of homozygote matings die from lung dysplasia within 48 hours of birth.

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

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