

Kiss1r Cas9-KO Strategy

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Overview

Target Gene Name

- Kiss1r

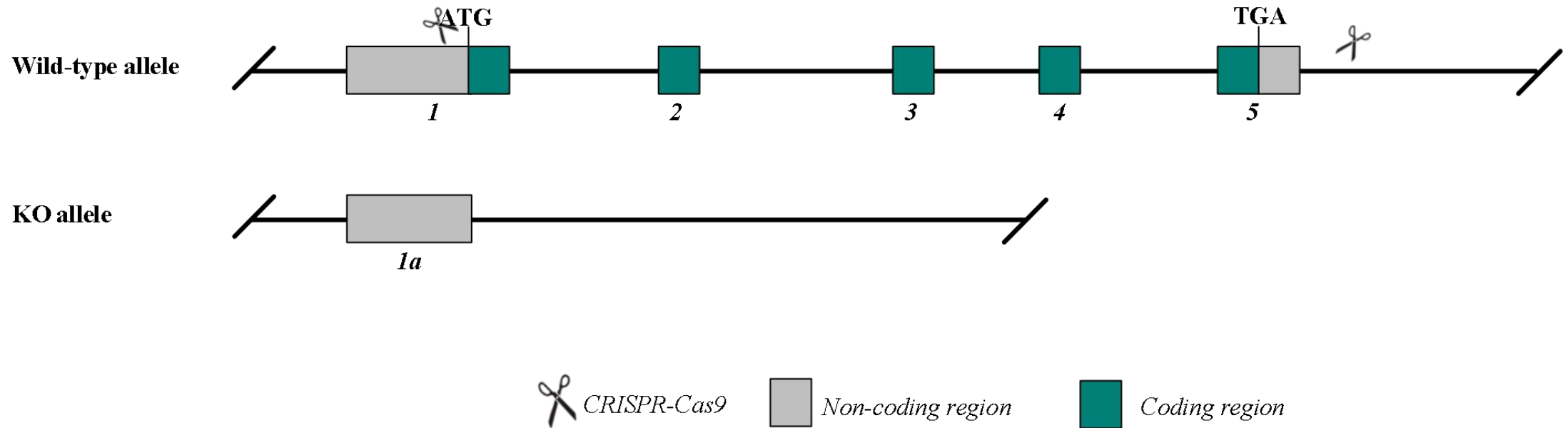
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Kiss1r* gene.

Technical Information

- The *Kiss1r* gene has 3 transcripts. According to the structure of *Kiss1r* gene, partial exon1-exon5 of *Kiss1r-201* (ENSMUST00000045529.3) transcript is recommended as the knockout region. The region contains most 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 *Kiss1r* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

Gene Information

Kiss1r KISS1 receptor [*Mus musculus* (house mouse)]

Gene ID: 114229, updated on 17-Jan-2023

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Summary

Official Symbol Kiss1r provided by [MGI](#)
Official Full Name KISS1 receptor provided by [MGI](#)
Primary source [MGI:MGI:2148793](#)
See related [Ensembl:ENSMUSG00000035773](#) [AllianceGenome:MGI:2148793](#)
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 Gpr54; KISS-1; kiSS-1R
Summary Enables G protein-coupled peptide receptor activity. Acts upstream of or within negative regulation of cell migration; negative regulation of cell population proliferation; and signal transduction. Located in cell surface. Is expressed in alimentary system; brain; genitourinary system; sensory organ; and thymus. Used to study hypogonadotropic hypogonadism 8 with or without anosmia. Human ortholog(s) of this gene implicated in central precocious puberty 1; hypogonadism; and hypogonadotropic hypogonadism 8 with or without anosmia. Orthologous to human KISS1R (KISS1 receptor). [provided by Alliance of Genome Resources, Apr 2022]
Expression Ubiquitous expression in lung adult (RPKM 3.2), adrenal adult (RPKM 2.2) and 26 other tissues [See more](#)
Orthologs [human](#) [all](#)
NEW Try the new [Gene table](#)
Try the new [Transcript table](#)

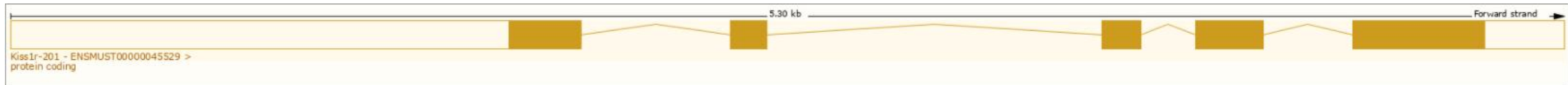
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

The gene has 3 transcripts, all transcripts are shown below:

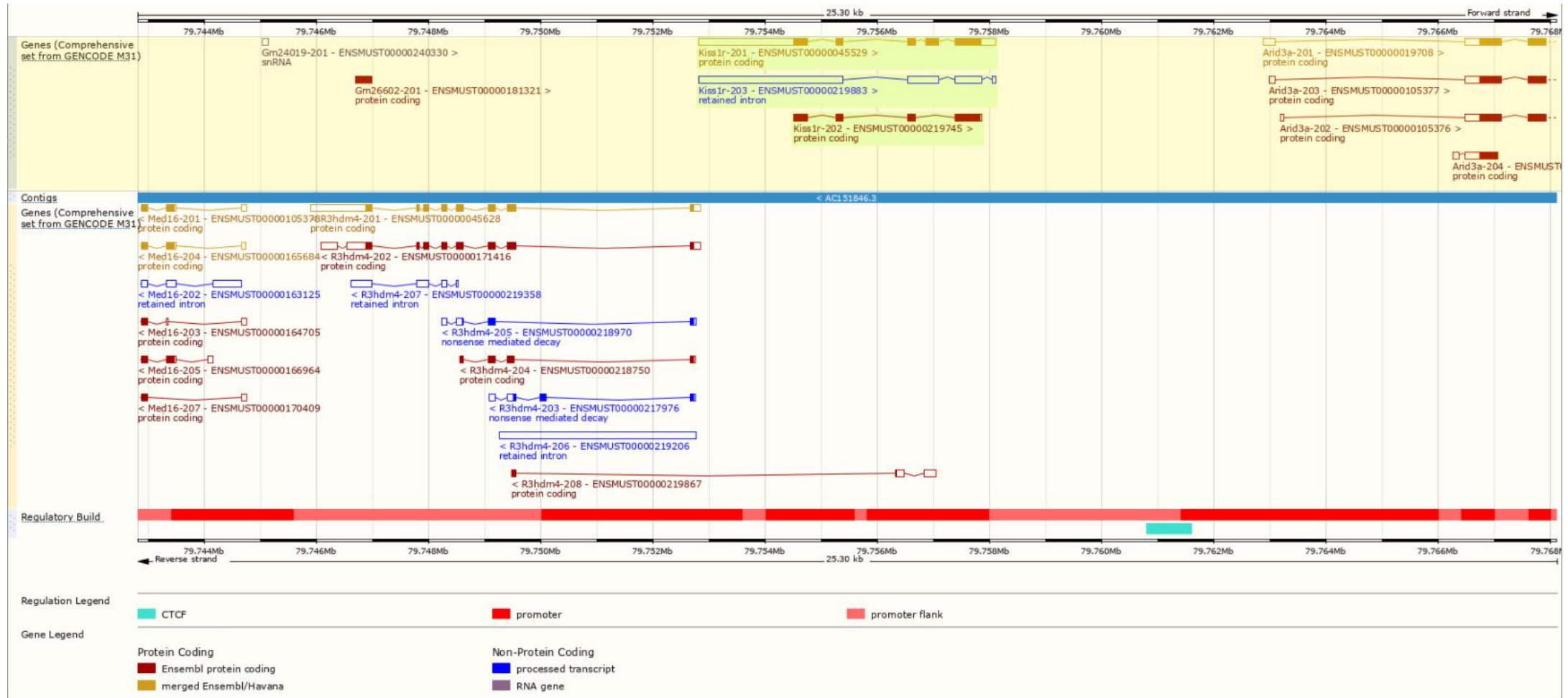
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000219745.2	Kiss1r-202	979	312aa	Protein coding		C5H7S2	GENCODE basic TSL:1
ENSMUST00000219883.2	Kiss1r-203	3663	No protein	Retained intron		-	TSL:2
ENSMUST00000045529.3	Kiss1r-201	3163	396aa	Protein coding	CCDS23998	B2CP06 Q91V45	Ensembl Canonical GENCODE basic APPRIS P1 TSL:1

The strategy is based on the design of *Kiss1r-201* transcript, the transcription is shown below:

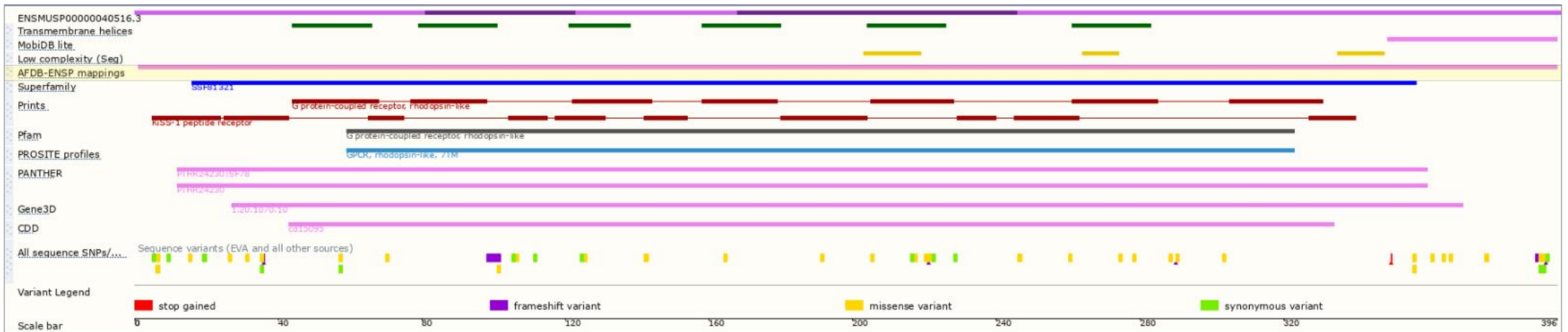


Source: <https://www.ensembl.org>

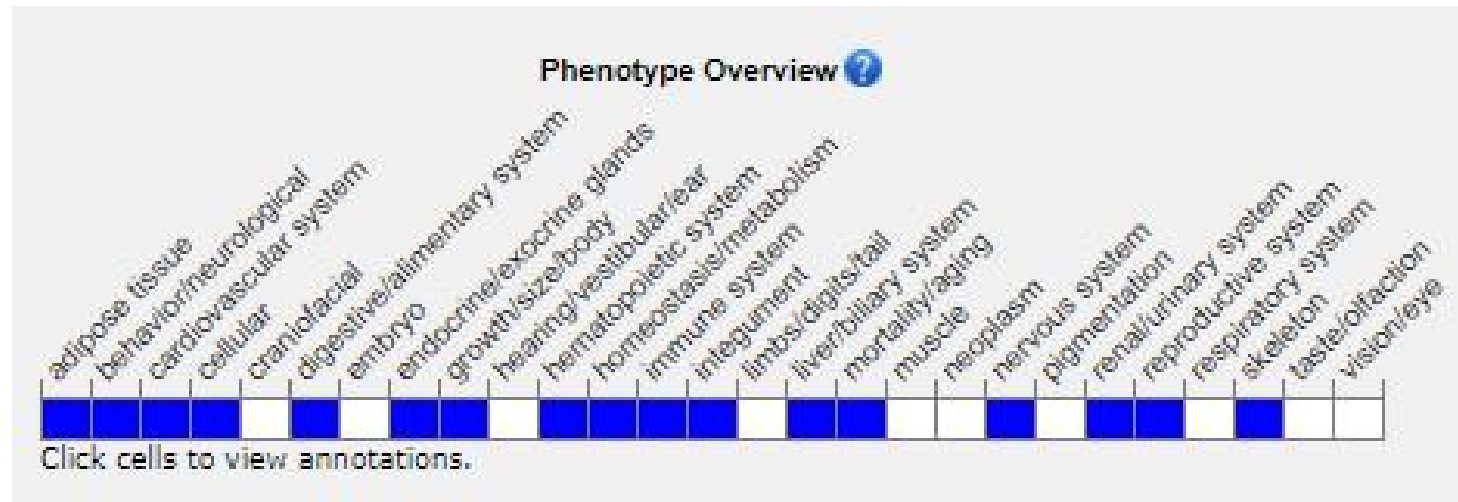
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



- Homozygous null mutations result in male and female infertility associated with abnormal sexual maturation and hypogonadotropic hypogonadism.

Important Information

- According to the breeding data, homozygous null mutations result in male and female infertility associated with abnormal sexual maturation and hypogonadotropic hypogonadism.
- The knockout region of this strategy is close to the 5 terminal of *Arid3a* and *R3hdm4* gene, which may affect the 5 terminal regulation of *Arid3a* and *R3hdm4* gene.
- This strategy will destroy the *R3hdm4*-208 transcript while knocking out the target gene, which may affect the function of *R3hdm4* gene.
- *Kiss1r* is located on Chr10. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.