

# Mc5r Cas9-KO Strategy

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# Overview

## Target Gene Name

- Mc5r

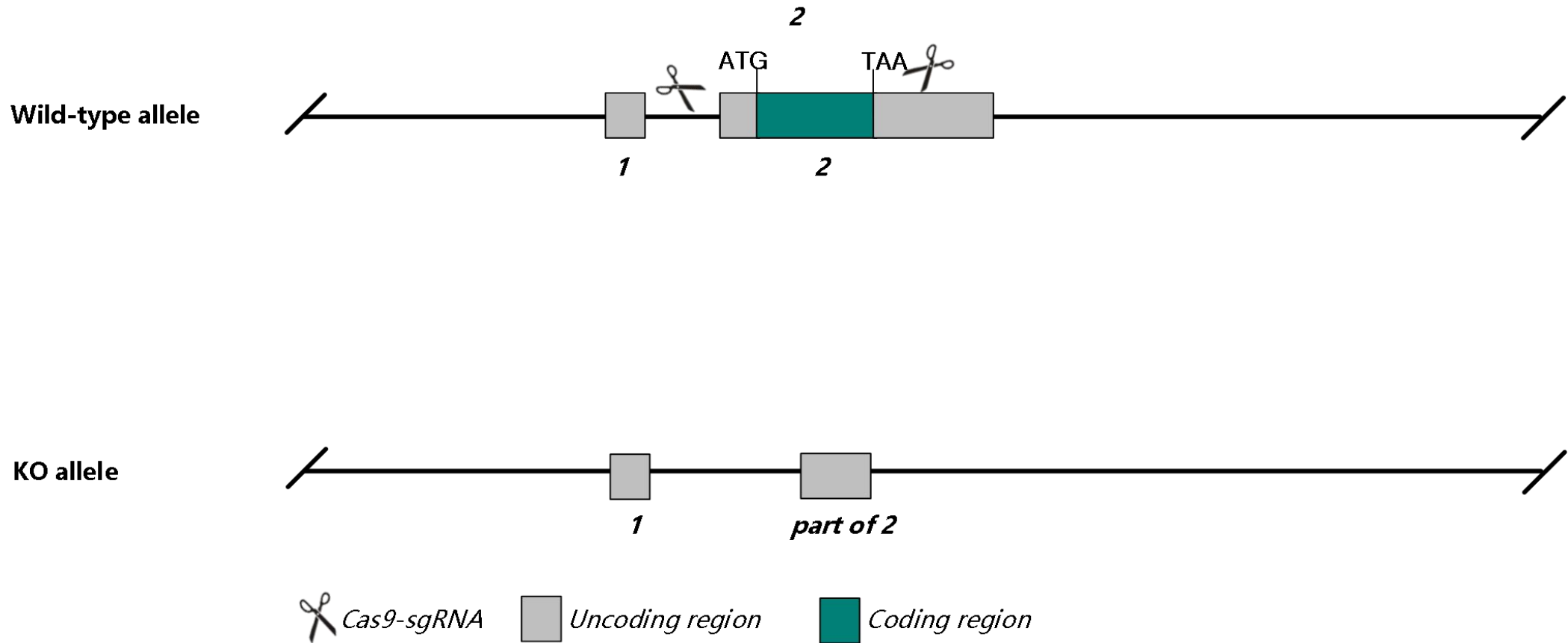
## Project Type

- Cas9-KO

## Genetic Background

- C57BL/6JGpt

# Strain Strategy



# Technical Information

- The *Mc5r* gene has 1 transcript. According to the structure of *Mc5r* gene, exon2 of *Mc5r*-201 (ENSMUST00000172148.5) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Mc5r* 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

## Mc5r melanocortin 5 receptor [Mus musculus (house mouse)]

Gene ID: 17203, updated on 13-Mar-2020

### Summary

Official Symbol	Mc5r provided by <a href="#">MGI</a>
Official Full Name	melanocortin 5 receptor provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:99420</a>
See related	<a href="#">Ensembl:ENSMUSG00000007480</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Broad expression in bladder adult (RPKM 1.6), mammary gland adult (RPKM 1.2) and 17 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

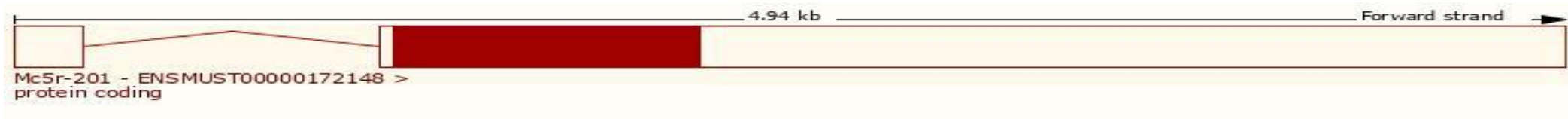
Source: <https://www.ncbi.nlm.nih.gov/>

# Transcript Information

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

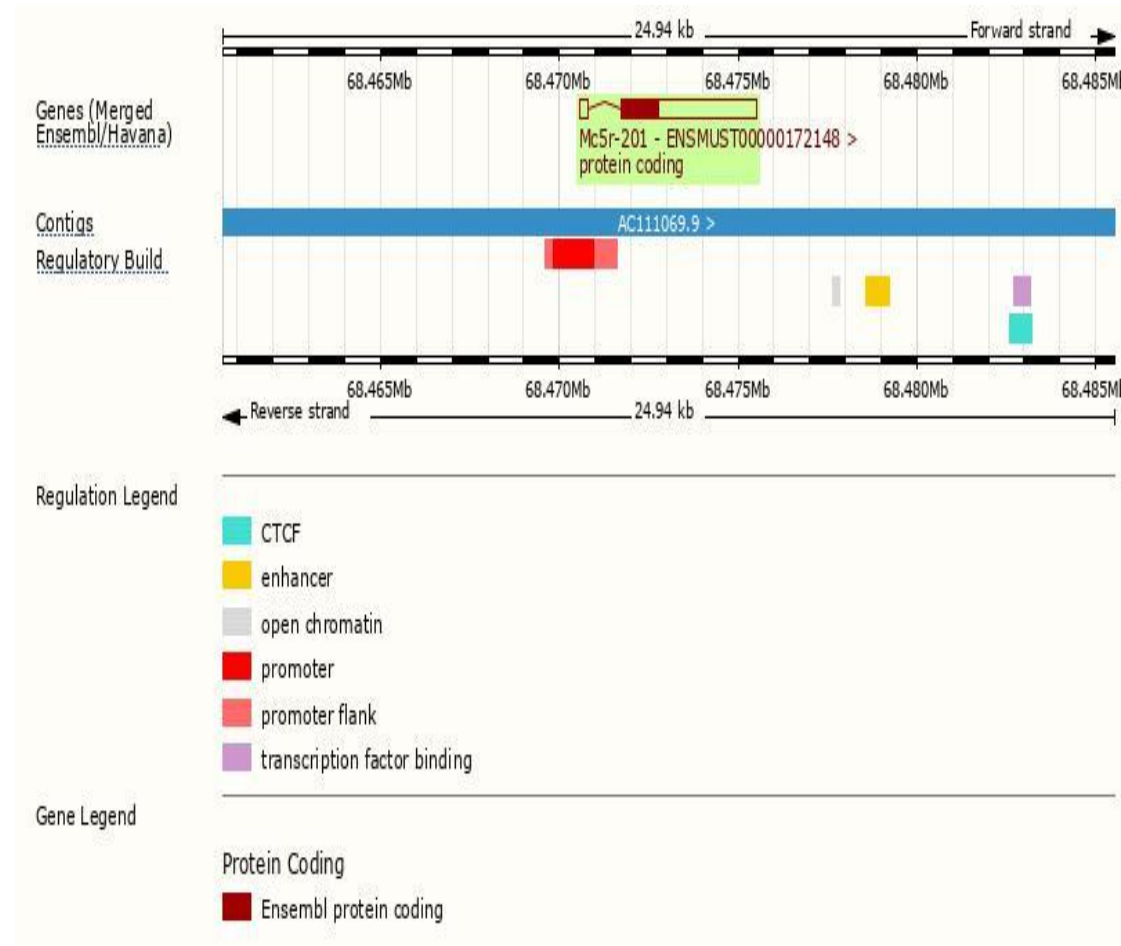
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
<a href="#">ENSMUST00000172148.5</a>	Mc5r-201	3996	<a href="#">325aa</a>	Protein coding		<a href="#">G3UWB6</a> & <a href="#">P41149</a>	Ensembl Canonical Gencode basic APPRIS P1 TSL:1

The strategy is based on the design of *Mc5r-201* transcript, the transcription is shown below:



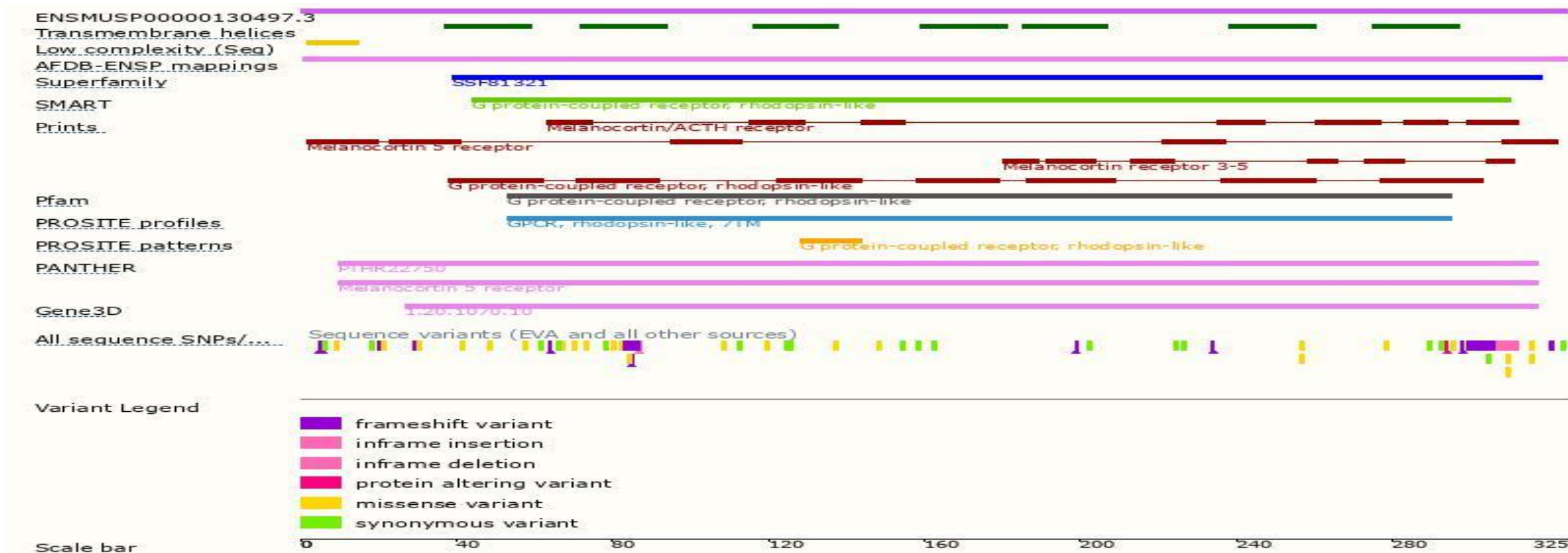
Source: <https://www.ensembl.org>

# Genomic Information



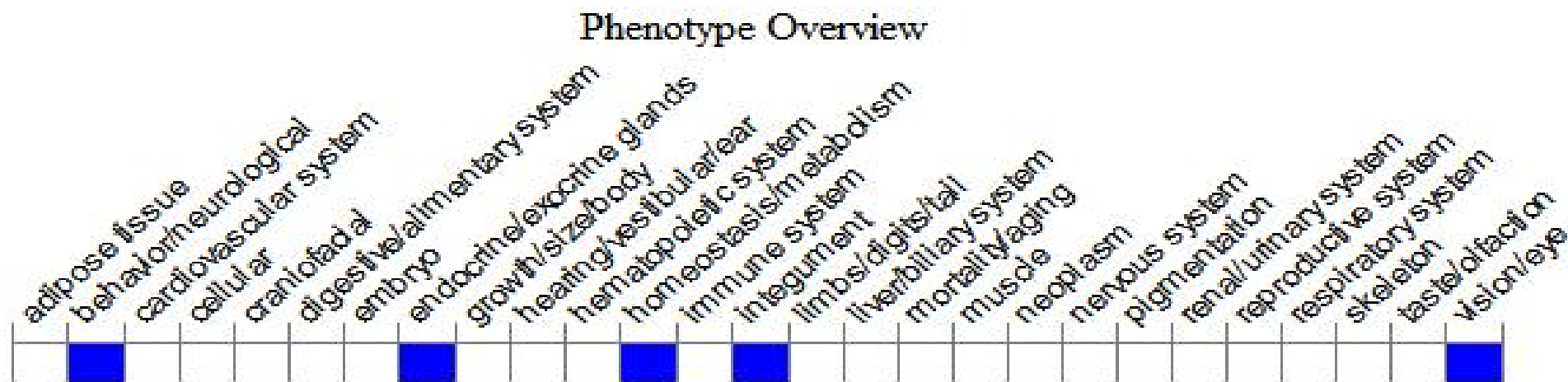


# Protein Information





# Mouse Phenotype Information (MGI)



- Homozygous mutation of this gene results in a severe defect in water repulsion and thermoregulation due to decreased production of sebaceous lipids. Males exhibit less aggressive and more defensive behavior when placed with wildtype males.

# Important Information

- *Mc5r* is located on Chr18. 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.