Hrh3 Cas9-KO Strategy

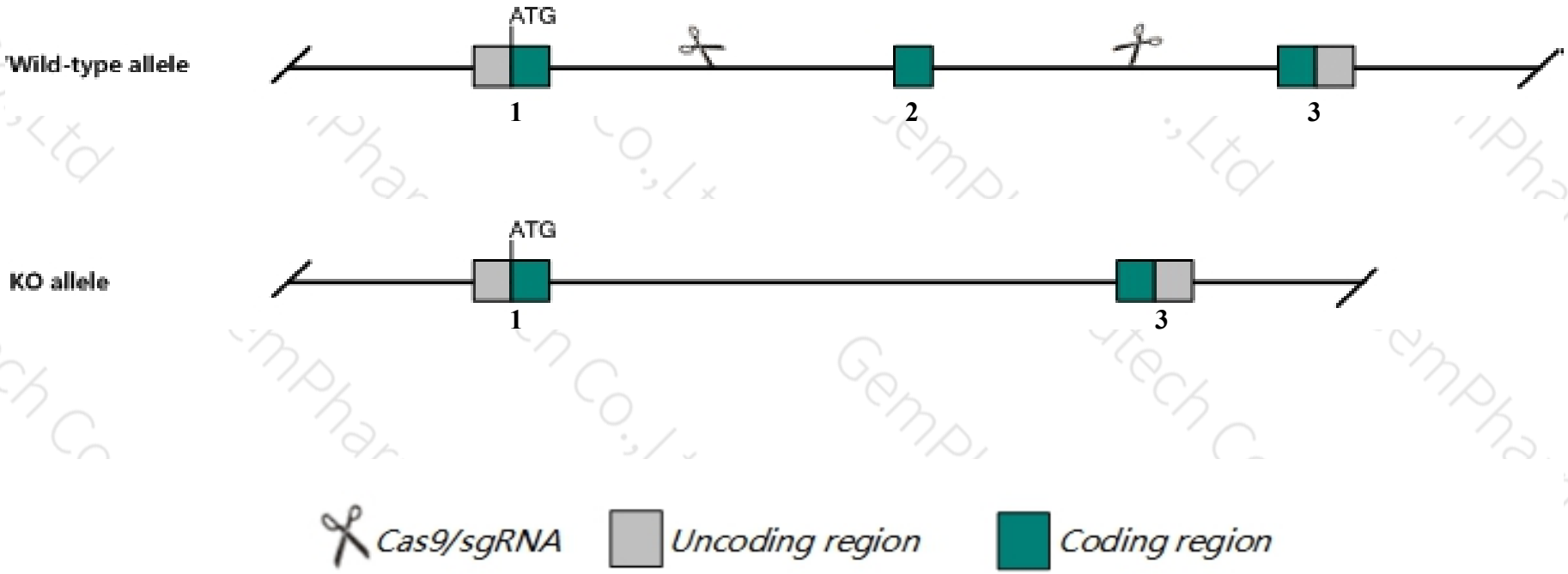
Designer: JiaYu

Project Overview

Project Name	***Hrh3***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hrh3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Hrh3* gene has 8 transcripts. According to the structure of *Hrh3* gene, exon2 of *Hrh3-201* (ENSMUST00000056480.9) transcript is recommended as the knockout region.The region contains 167bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Hrh3* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data,Homozygotes for a targeted null mutation exhibit reduced locomotor activity and body temperature, and attenuated behavioral responses to the drugs thioperamide, methamphetamine, and scopolamine.

- The *Hrh3* gene is located on the Chr2. 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）

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Hrh3 histamine receptor H3 [Mus musculus (house mouse)]

Gene ID: 99296, updated on 12-Mar-2019

Summary

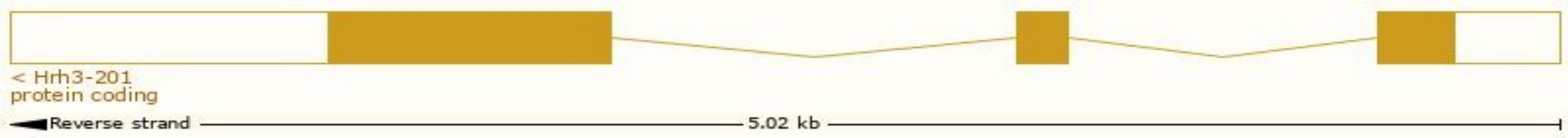
Official Symbol	Hrh3 provided by MGI
Official Full Name	histamine receptor H3 provided by MGI
Primary source	MGI:MGI:2139279
See related	Ensembl:ENSMUSG00000039059
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW049250, Eae8, H3R, HH3R
Expression	Biased expression in frontal lobe adult (RPKM 17.2), cortex adult (RPKM 16.0) and 8 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

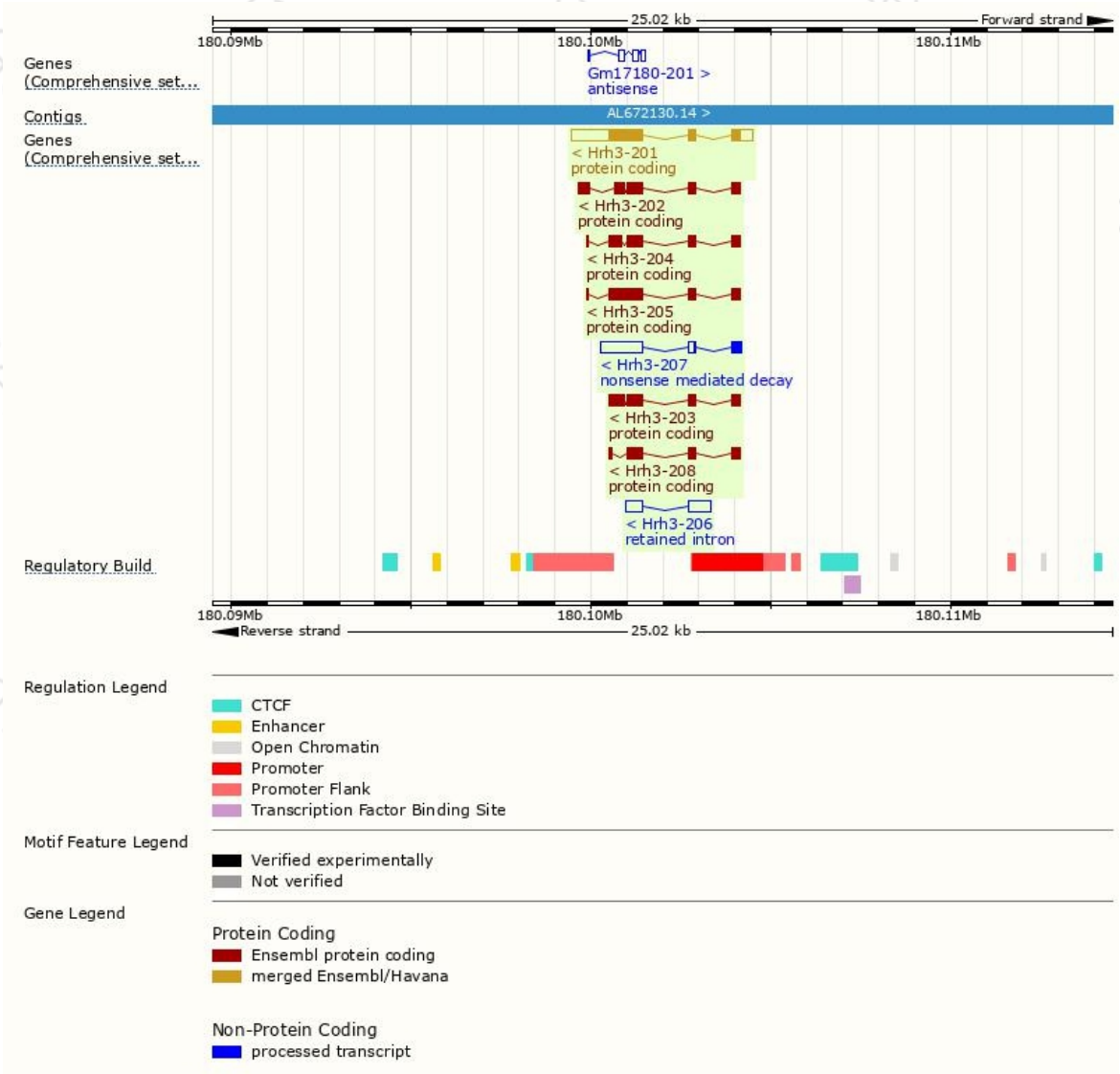
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hrh3-201	ENSMUST00000056480.9	2706	445aa	Protein coding	CCDS17169	P58406 Q540P3	TSL:1 GENCODE basic APPRIS P2
Hrh3-202	ENSMUST00000163215.7	1401	466aa	Protein coding	-	E9Q540	TSL:5 GENCODE basic
Hrh3-205	ENSMUST00000165762.7	1368	455aa	Protein coding	-	E9Q292	TSL:5 GENCODE basic APPRIS ALT2
Hrh3-203	ENSMUST00000164442.1	1242	413aa	Protein coding	-	E9Q5S3	TSL:5 GENCODE basic APPRIS ALT2
Hrh3-204	ENSMUST00000165248.7	1224	407aa	Protein coding	-	E9Q7T5	TSL:5 GENCODE basic APPRIS ALT2
Hrh3-208	ENSMUST00000171736.7	906	301aa	Protein coding	-	E9Q522	TSL:5 GENCODE basic
Hrh3-207	ENSMUST00000166724.1	1574	94aa	Nonsense mediated decay	-	E9PZM9	TSL:1
Hrh3-206	ENSMUST00000166392.1	1040	No protein	Retained intron	-	-	TSL:3

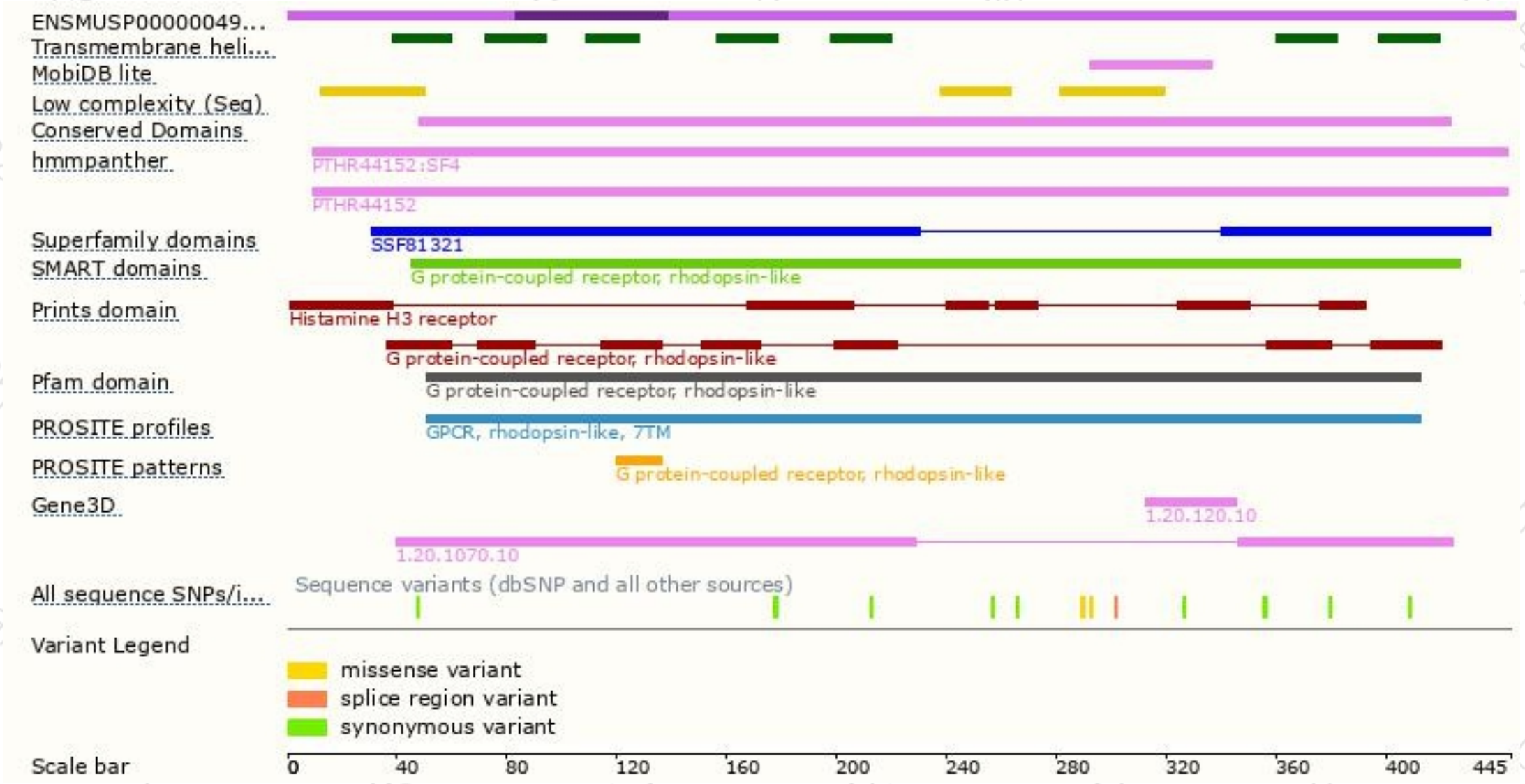
The strategy is based on the design of *Hrh3-201* transcript,The transcription is shown below



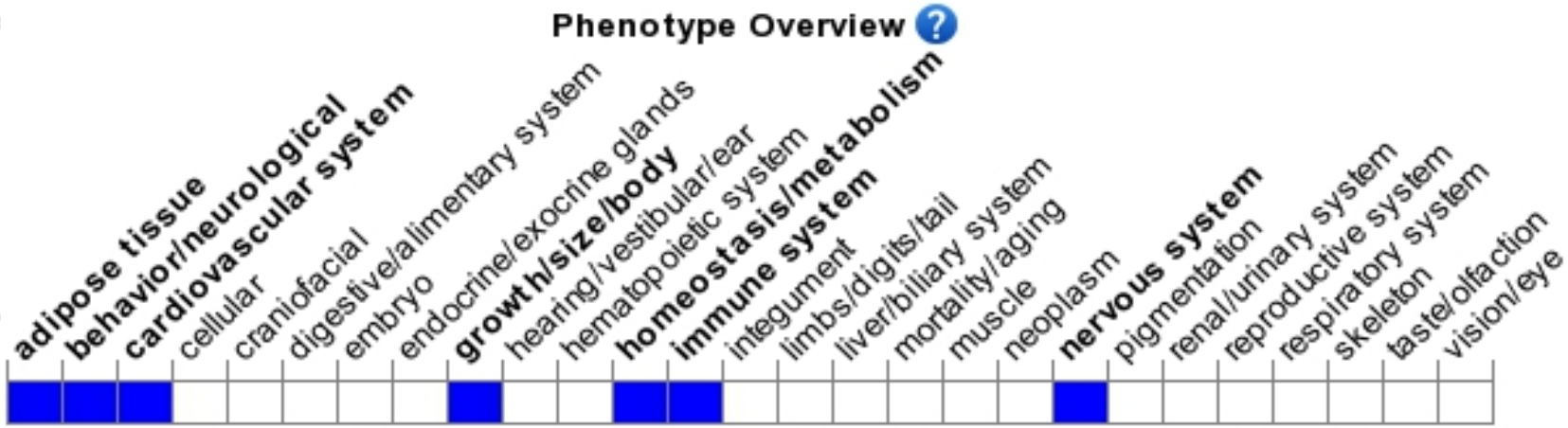
Genomic location distribution



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/).

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集萃药康
GemPharmatech

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

Tel: 025-5864 1534

集萃药康生物科技
GemPharmatech Co.,Ltd