

Scgb3a2 Cas9-KO Strategy

Designer:

Ruirui Zhang

Reviewer :

Huimin Su

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Project Overview

Project Name

Scgb3a2

Project type

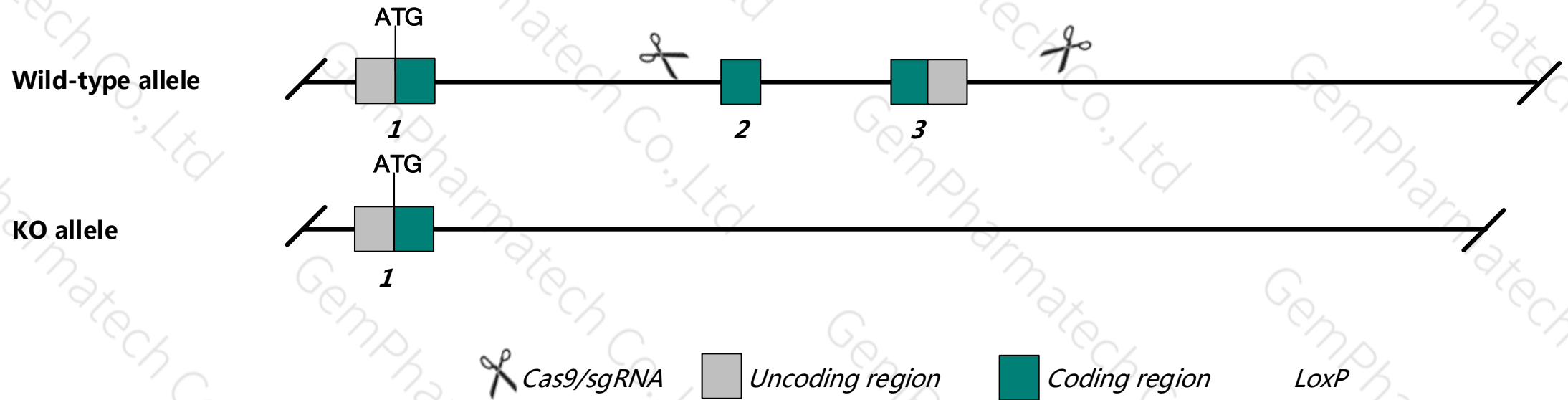
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Scgb3a2* gene. The schematic diagram is as follows:



Technical routes

- The *Scgb3a2* gene has 3 transcripts. According to the structure of *Scgb3a2* gene, exon2 and exon3 of *Scgb3a2*-*203 (ENSMUST00000189750.1) transcript is recommended as the knockout region. The region contains most of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Scgb3a2* 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 , mice homozygous for a knock-out allele exhibit background sensitive lung inflammatory response to ovalbumin exposure.
- The *Scgb3a2* gene is located on the Chr18. 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)

Scgb3a2 secretoglobin, family 3A, member 2 [*Mus musculus* (house mouse)]

Gene ID: 117158, updated on 12-Aug-2019

Summary

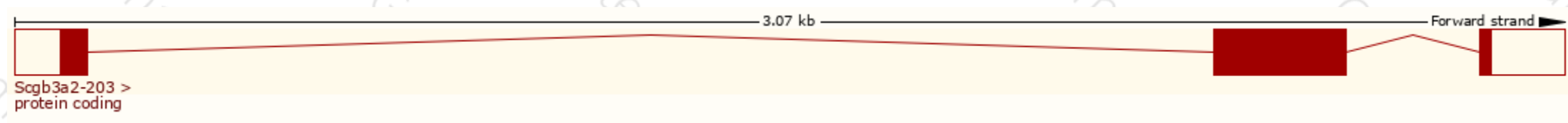
Official Symbol	Scgb3a2 provided by MGI
Official Full Name	secretoglobin, family 3A, member 2 provided by MGI
Primary source	MGI:MGI:2153470
See related	Ensembl:ENSMUSG00000038791
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Pnsp1; UGRP1; LuLeu1; Utgrp1
Expression	Restricted expression toward lung adult (RPKM 559.3) See more
Orthologs	human all

Transcript information (Ensembl)

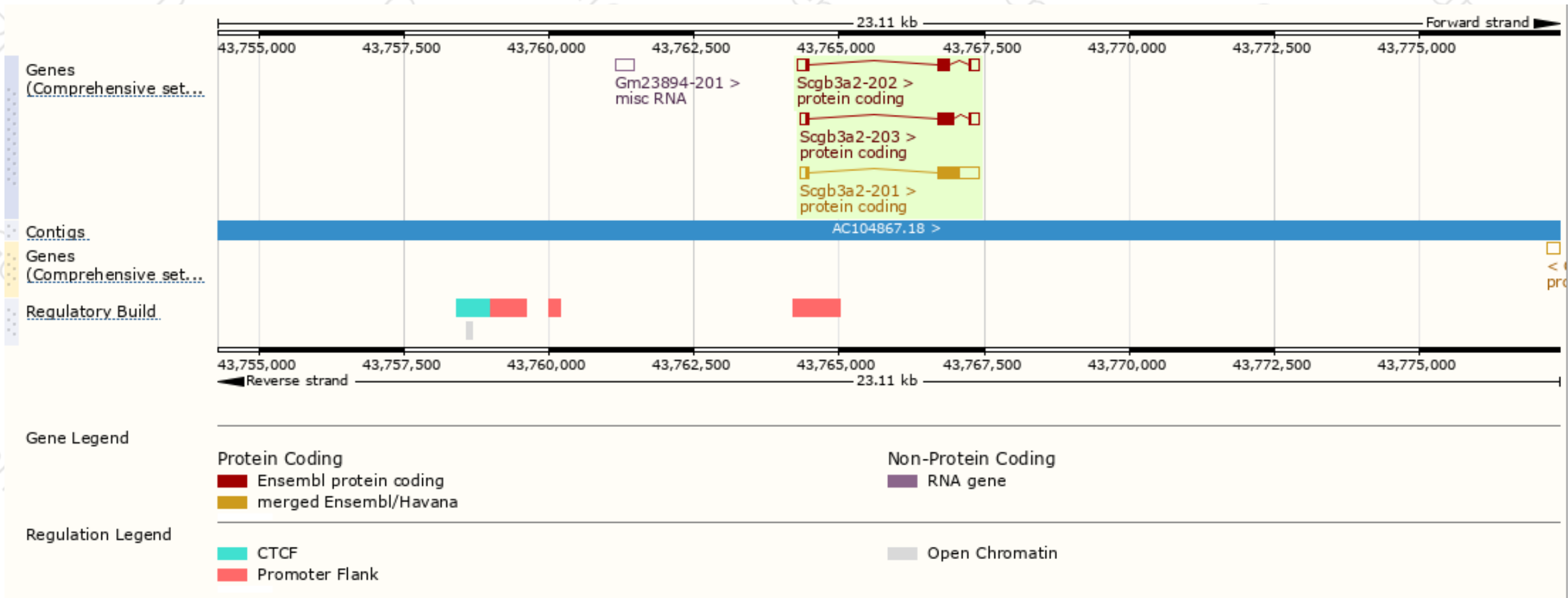
The gene has 3 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Scgb3a2-203	ENSMUST00000189750.1	578	113aa	Protein coding	CCDS79641	Q920H1	TSL:1 GENCODE basic
Scgb3a2-202	ENSMUST00000187157.6	550	91aa	Protein coding	CCDS79640	Q920H1	TSL:1 GENCODE basic APPRIS P1
Scgb3a2-201	ENSMUST00000043803.12	842	139aa	Protein coding	-	Q920H1	TSL:1 GENCODE basic

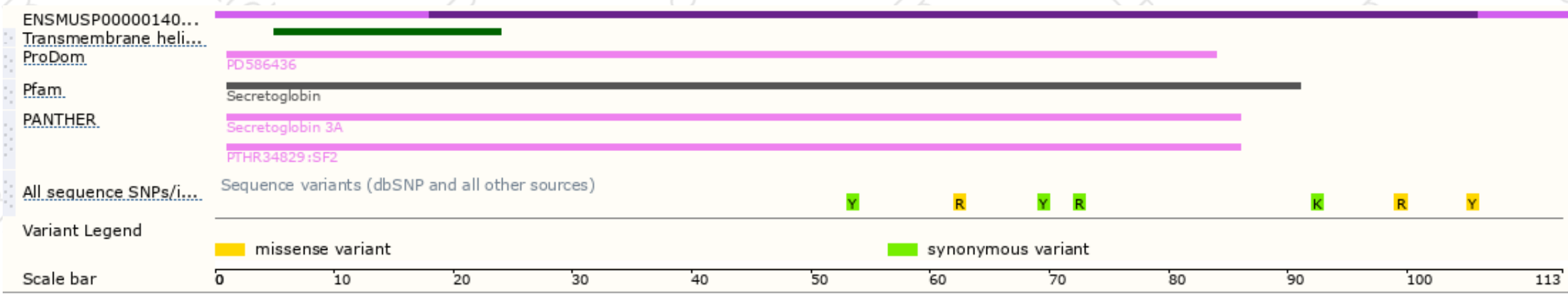
The strategy is based on the design of *Scgb3a2-203* transcript, The transcription is shown below



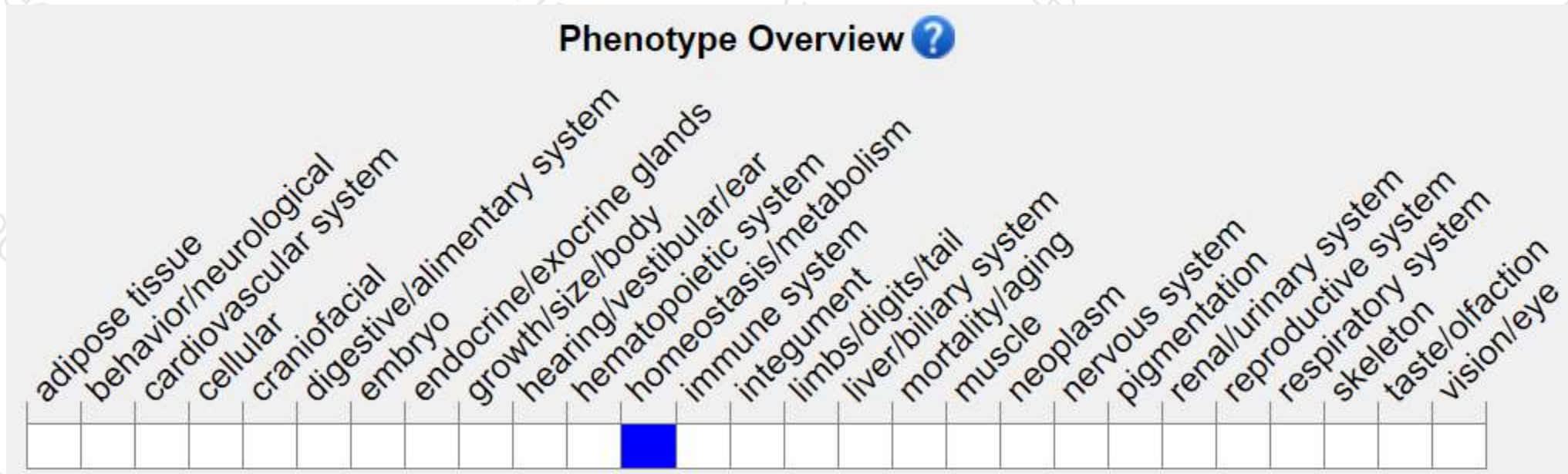
Genomic location (Ensembl)



Protein domain (Ensembl)



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 a knock-out allele exhibit background sensitive lung inflammatory response to ovalbumin exposure.

If you have any questions, you are welcome to inquire.
Tel: 025-5864 1534

