

Sema3g Cas9-CKO Strategy

Designer:

Daohua Xu

Design Date:

2019-7-30

Project Overview

Project Name

Sema3g

Project type

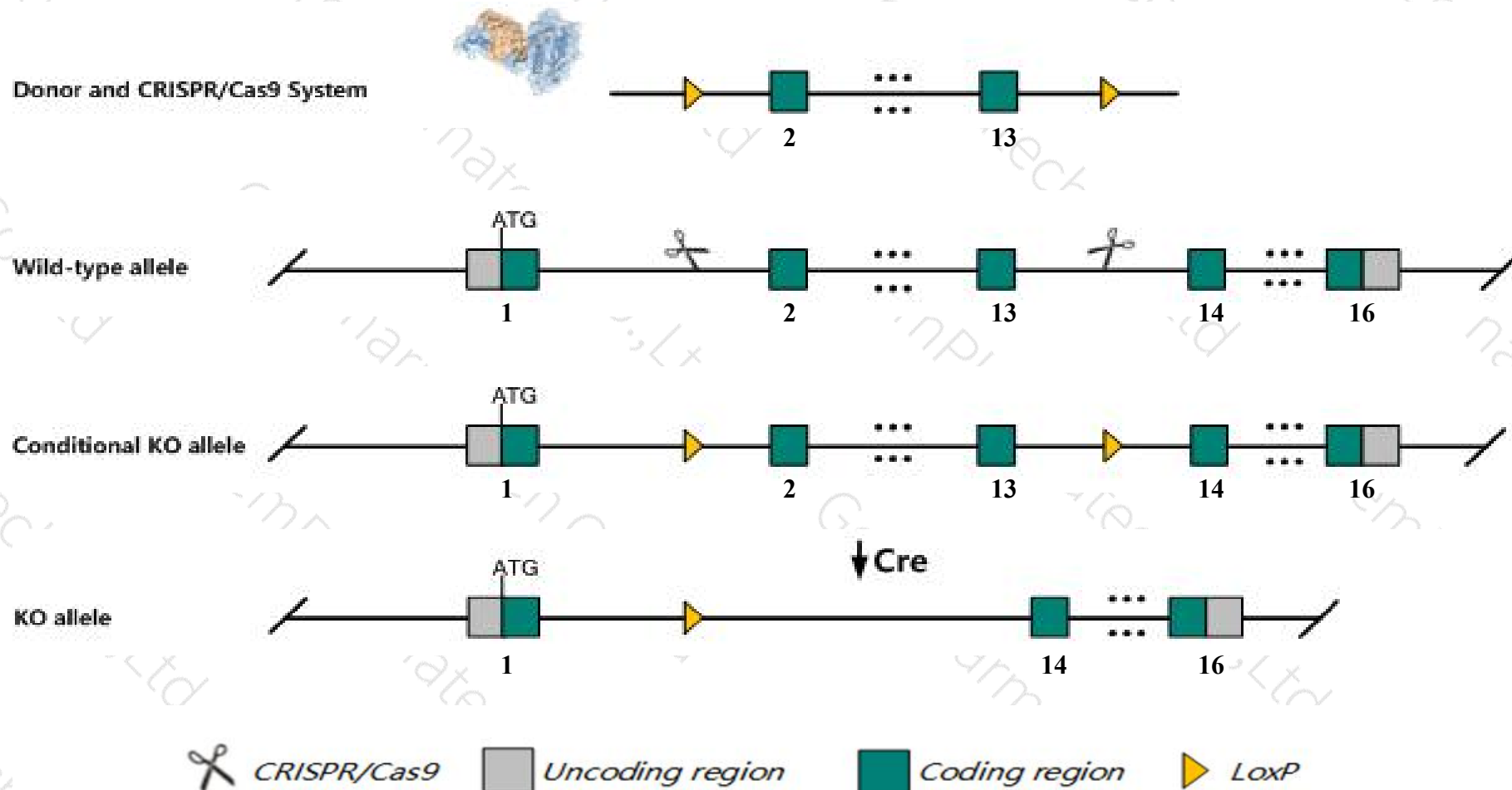
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sema3g* gene. The schematic diagram is as follows:



Technical routes

- The *Sema3g* gene has 1 transcript. According to the structure of *Sema3g* gene, exon2-exon13 of *Sema3g-201* (ENSMUST00000090180.3) transcript is recommended as the knockout region. The region contains 1394bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Sema3g* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit increased lymphatic branching complexity with decreased lymphatic width.
- The *Sema3g* gene is located on the Chr14. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Sema3g sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3G [Mus musculus (house mouse)]

Gene ID: 218877, updated on 31-Jan-2019

Summary



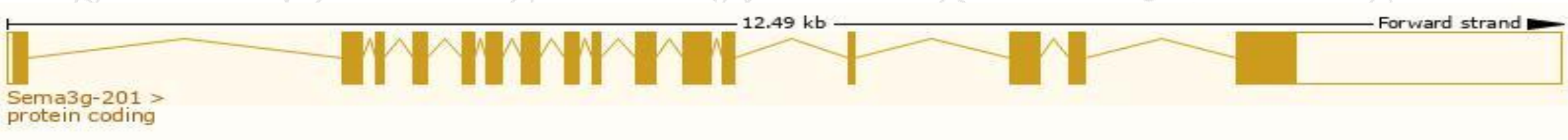
Official Symbol	Sema3g provided by MGI
Official Full Name	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3G provided by MGI
Primary source	MGI:MGI:3041242
See related	Ensembl:ENSMUSG000000021904
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AK129018
Expression	Biased expression in lung adult (RPKM 46.9), kidney adult (RPKM 14.8) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

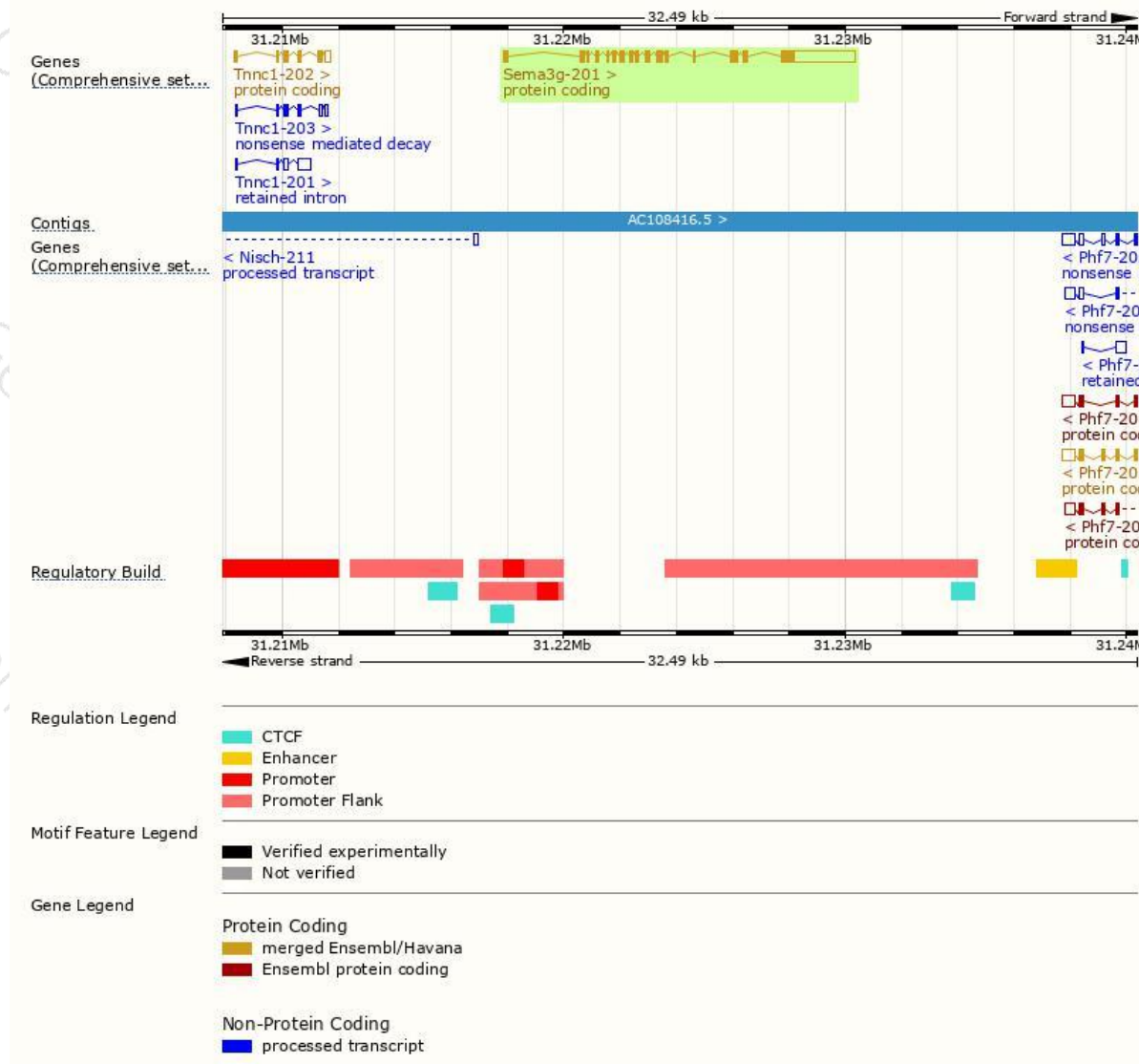
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sema3g-201	ENSMUST00000090180.3	4540	780aa	Protein coding	CCDS26908	Q4LFA9	TSL:1 Gencode basic APPRIS P1

The strategy is based on the design of *Sema3g-201* transcript, The transcription is shown below



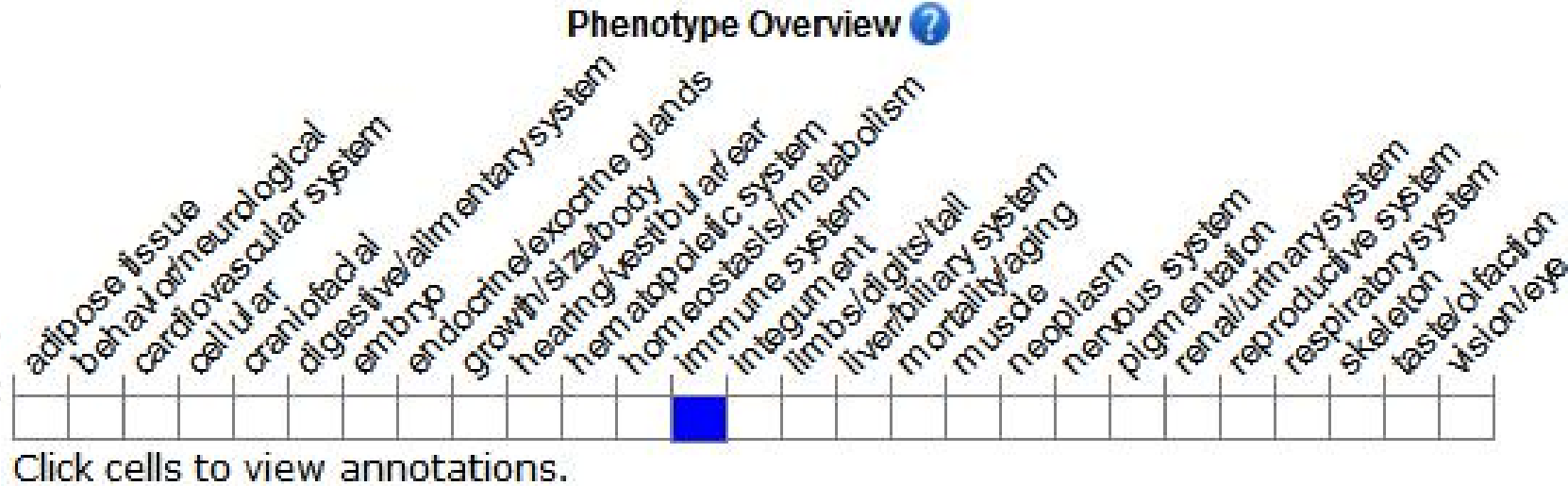
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit increased lymphatic branching complexity with decreased lymphatic width.

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

Tel: 400-9660890

