

Ms4a14 Cas9-CKO Strategy

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Reviewer: Xiaojing Li

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Project Overview

Project Name

Ms4a14

Project type

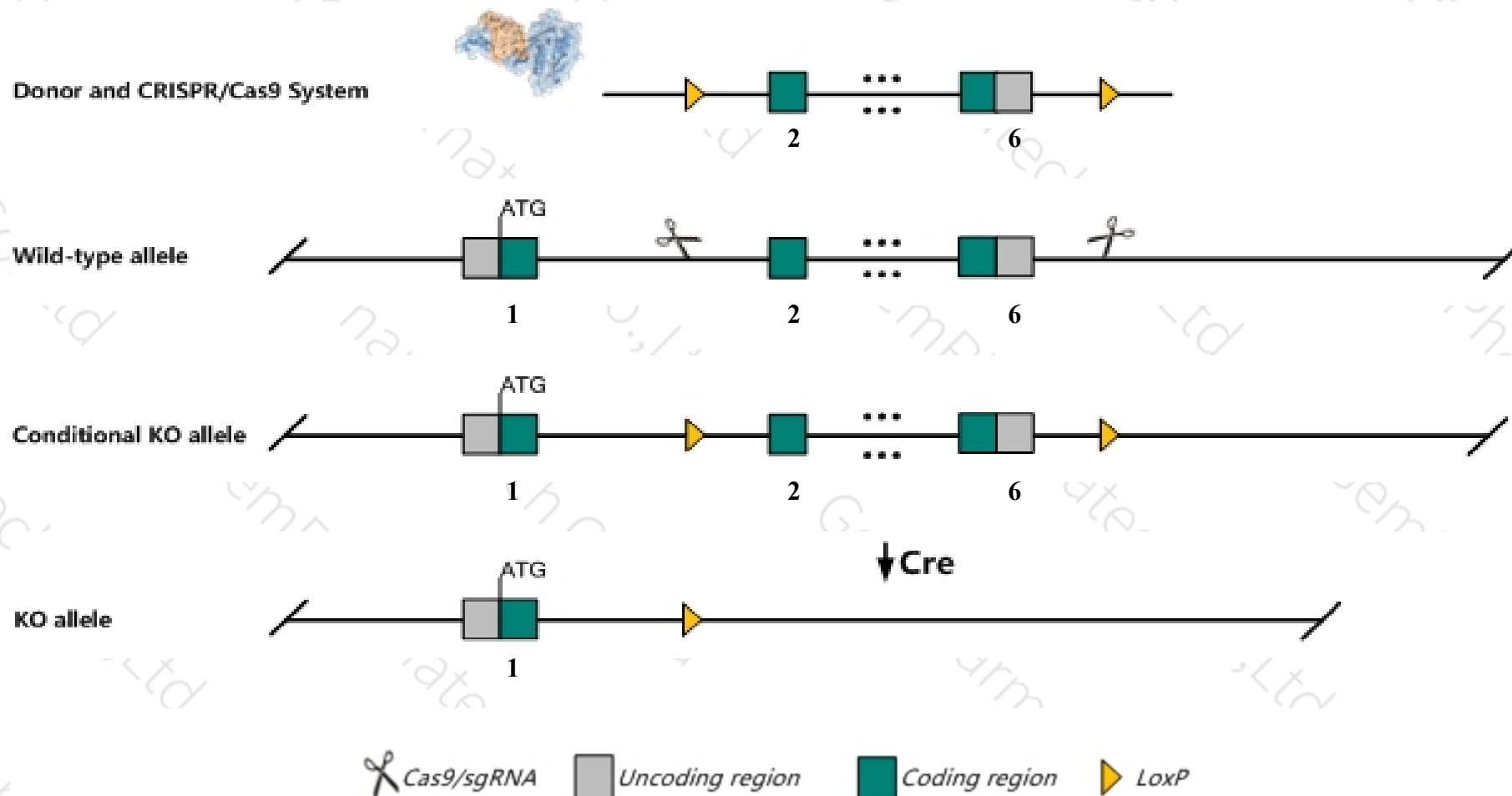
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ms4a14* gene. The schematic diagram is as follows:



Technical routes

- The *Ms4a14* gene has 1 transcript. According to the structure of *Ms4a14* gene, exon2-exon6 of *Ms4a14-201*(ENSMUST00000187467.1) 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 *Ms4a14* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Ms4a14* gene is located on the Chr19. 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)

Ms4a14 membrane-spanning 4-domains, subfamily A, member 14 [Mus musculus (house mouse)]

Gene ID: 383435, updated on 13-Mar-2020

Summary



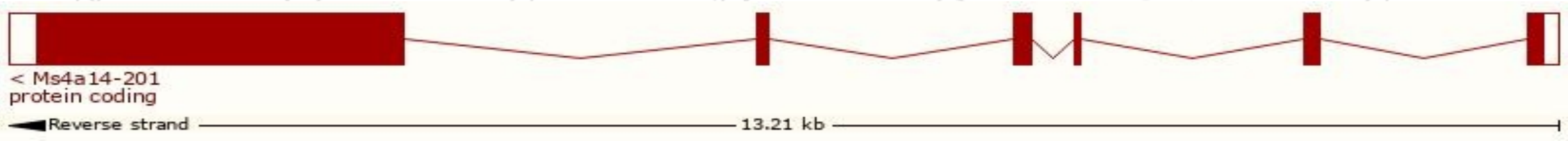
Official Symbol	Ms4a14 provided by MGI
Official Full Name	membrane-spanning 4-domains, subfamily A, member 14 provided by MGI
Primary source	MGI:MGI:2686122
See related	Ensembl:ENSMUSG00000099398
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm1276, SP3111
Expression	Restricted expression toward testis adult (RPKM 68.4) See more
Orthologs	human all

Transcript information (Ensembl)

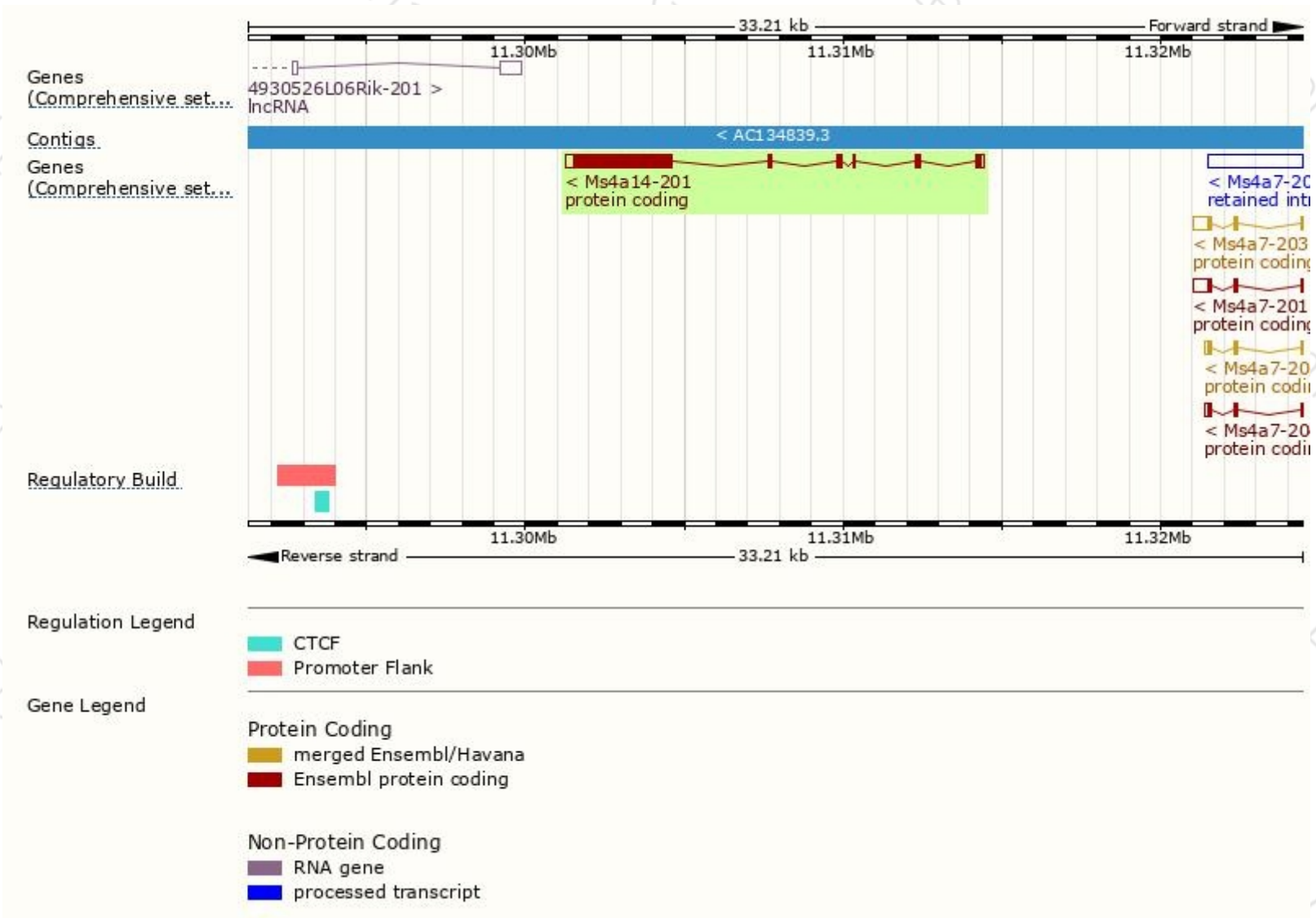
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ms4a14-201	ENSMUST00000187467.1	4065	1232aa	Protein coding	-	A0A087WSD2	TSL:5 GENCODE basic APPRIS P1

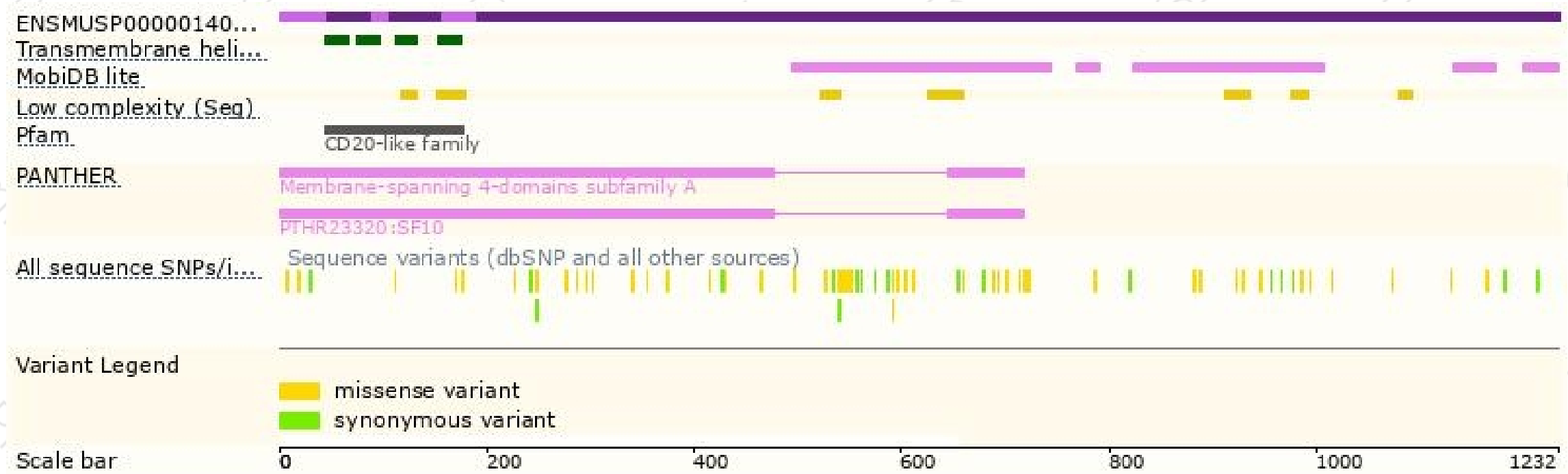
The strategy is based on the design of *Ms4a14-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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