

Sema6d Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Sema6d

Project type

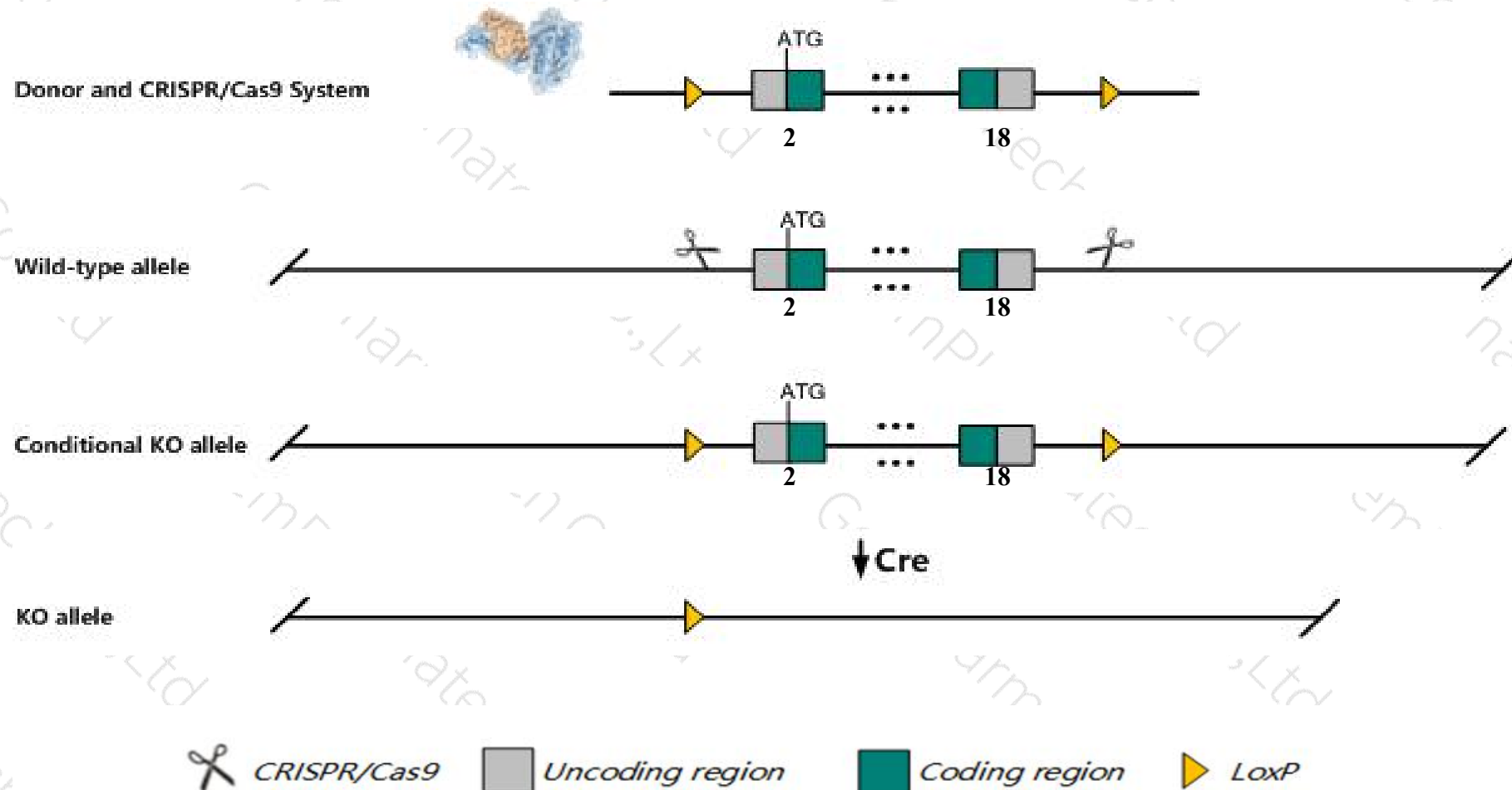
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sema6d* gene. The schematic diagram is as follows:



- The *Sema6d* gene has 11 transcripts. According to the structure of *Sema6d* gene, exon2-exon18 of *Sema6d*-203 (ENSMUST00000077847.11) transcript is recommended as the knockout region. The region contains all 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 *Sema6d* 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 normal dendritic cell trafficking and antigen-specific T cell priming.
- The *Sema6d* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Sema6d sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6D [Mus musculus (house mouse)]

Gene ID: 214968, updated on 12-Mar-2019

Summary



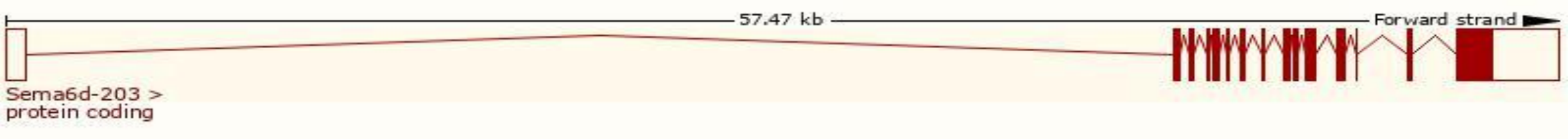
Official Symbol	Sema6d provided by MGI
Official Full Name	sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6D provided by MGI
Primary source	MGI:MGI:2387661
See related	Ensembl:ENSMUSG00000027200
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110067B02Rik, AA409156, D330011G23, mKIAA1479
Expression	Ubiquitous expression in cerebellum adult (RPKM 11.2), lung adult (RPKM 8.6) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

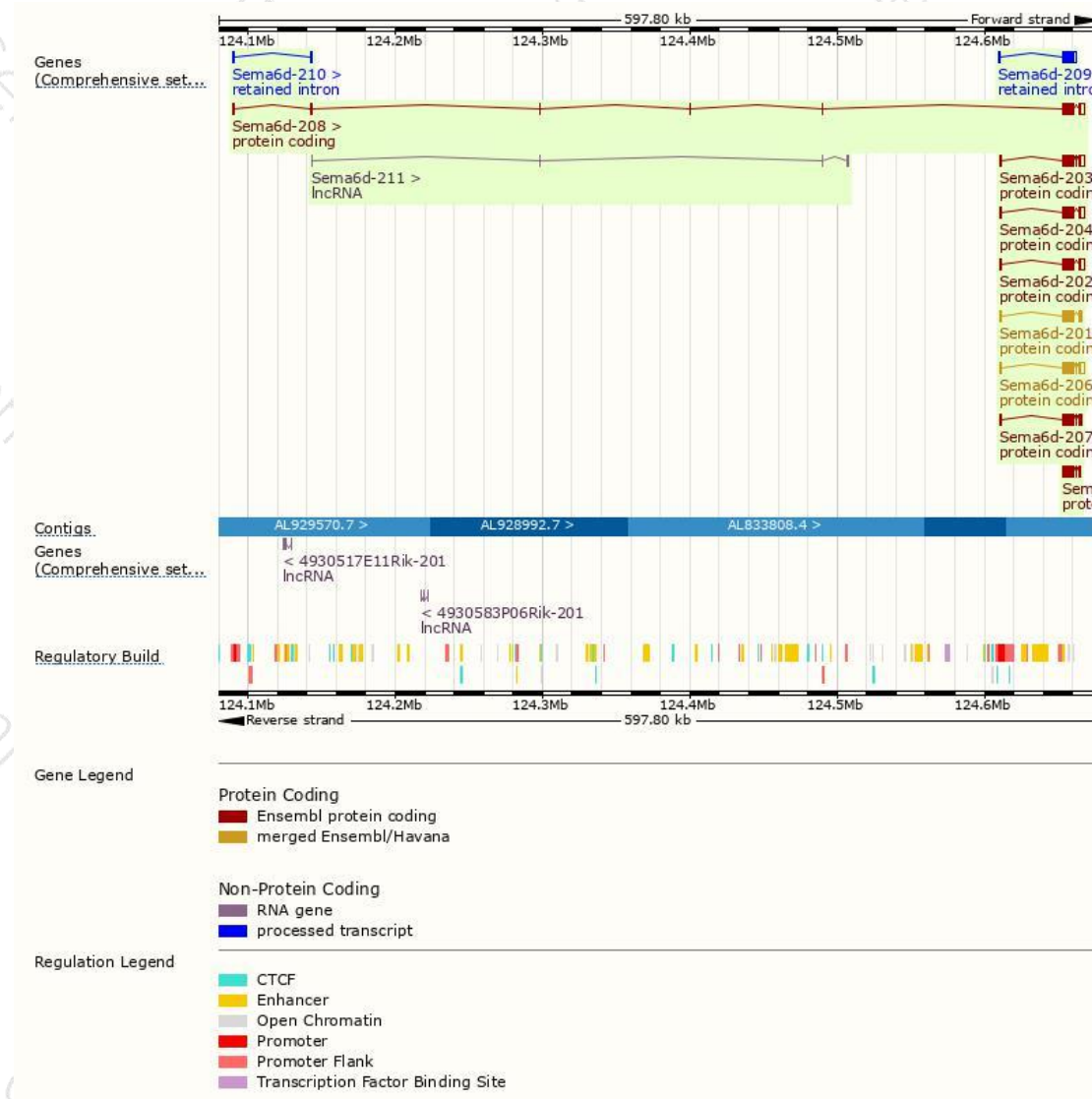
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sema6d-203	ENSMUST00000077847.11	6444	1054aa	Protein coding	CCDS16672	Q76KF0	TSL:5 GENCODE basic APPRIS ALT1
Sema6d-204	ENSMUST00000078621.11	6372	1030aa	Protein coding	CCDS38225	Q76KF0	TSL:5 GENCODE basic APPRIS ALT1
Sema6d-202	ENSMUST00000076335.11	6276	998aa	Protein coding	CCDS16671	Q76KF0	TSL:1 GENCODE basic APPRIS ALT1
Sema6d-206	ENSMUST00000103239.9	6225	1073aa	Protein coding	CCDS16673	Q76KF0	TSL:5 GENCODE basic APPRIS P4
Sema6d-208	ENSMUST00000103241.7	6157	998aa	Protein coding	CCDS16671	Q76KF0	TSL:5 GENCODE basic APPRIS ALT1
Sema6d-201	ENSMUST00000051419.14	4503	1011aa	Protein coding	CCDS16670	Q76KF0	TSL:1 GENCODE basic APPRIS ALT1
Sema6d-207	ENSMUST00000103240.8	4372	1069aa	Protein coding	CCDS71132	A2AW73	TSL:1 GENCODE basic APPRIS ALT1
Sema6d-205	ENSMUST00000103238.1	3165	1054aa	Protein coding	CCDS16672	Q76KF0	TSL:1 GENCODE basic APPRIS ALT1
Sema6d-209	ENSMUST00000132088.1	4475	No protein	Retained intron	-	-	TSL:2
Sema6d-210	ENSMUST00000137172.1	713	No protein	Retained intron	-	-	TSL:2
Sema6d-211	ENSMUST00000151199.1	746	No protein	lncRNA	-	-	TSL:3

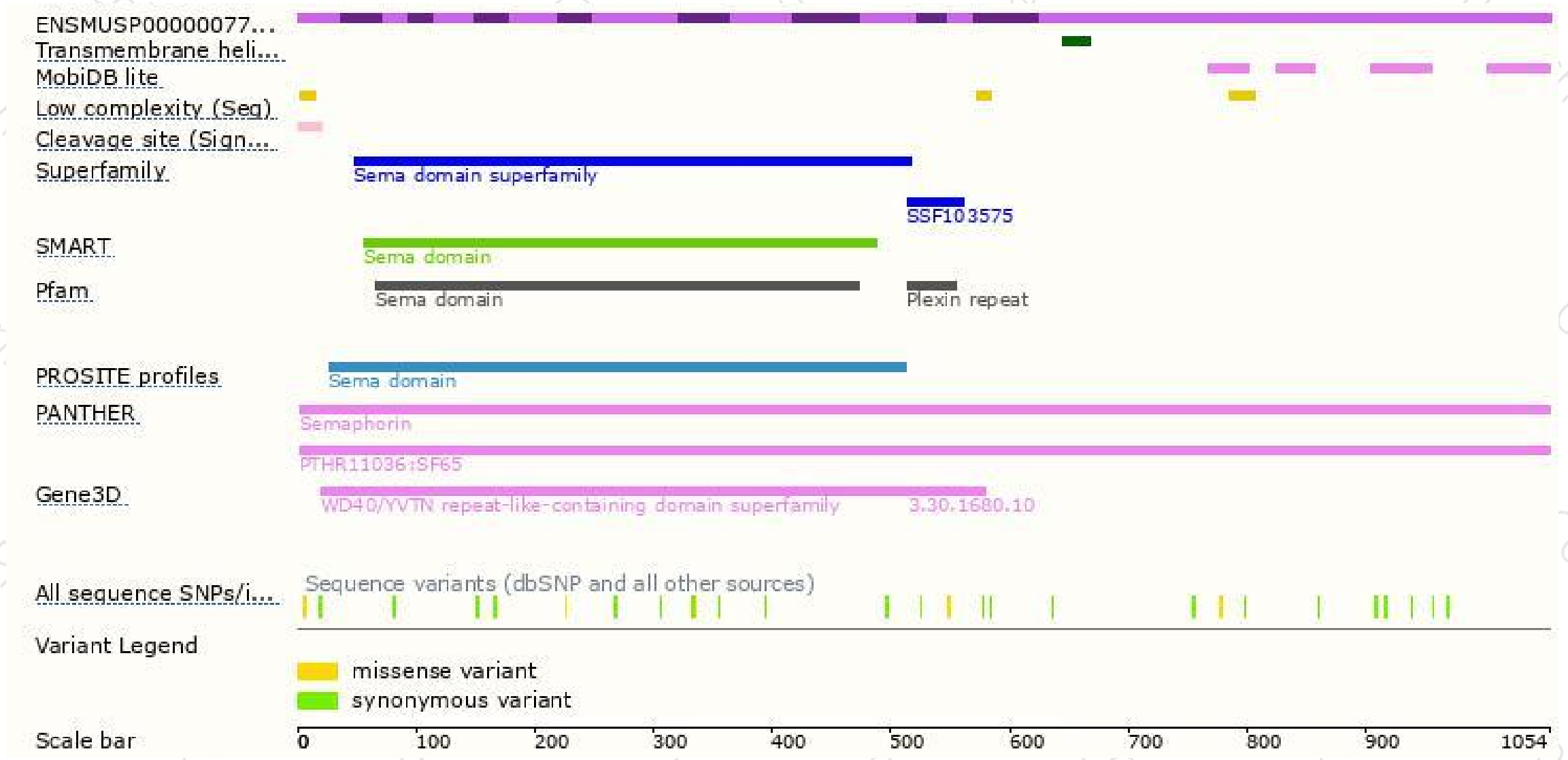
The strategy is based on the design of *Sema6d-203* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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