

Srgap2 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2019-8-30

Project Overview

Project Name

Srgap2

Project type

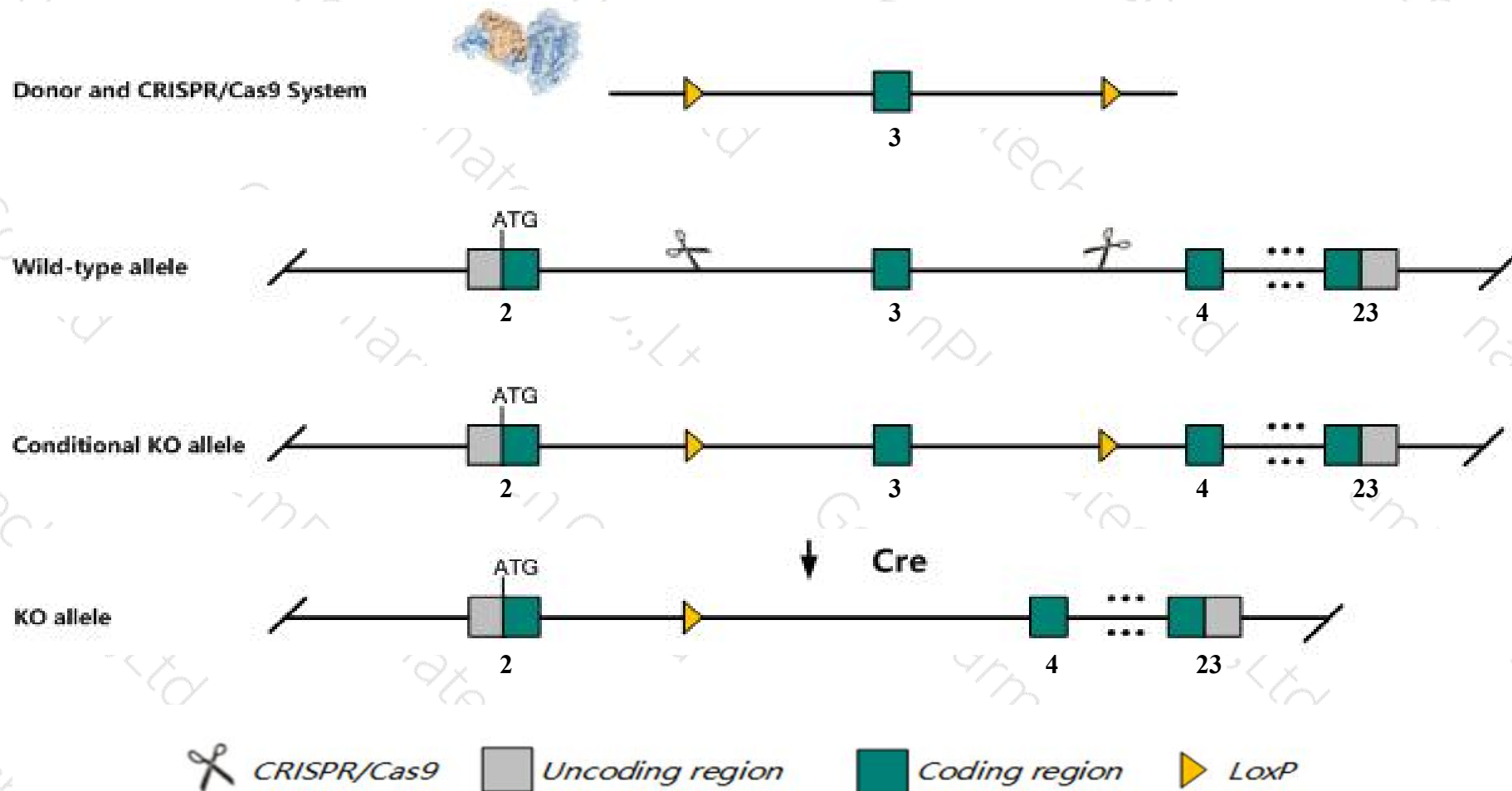
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Srgap2* gene. The schematic diagram is as follows:



Technical routes

- The *Srgap2* gene has 12 transcripts. According to the structure of *Srgap2* gene, exon3 of *Srgap2-201* (ENSMUST00000097588.8) transcript is recommended as the knockout region. The region contains 193bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Srgap2* 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 hypomorphic gene trap allele are born at below the expected Mendelian ratio, but are otherwise viable. Layer 5 cortical pyramidal neurons exhibit an increased density of dendritic spines with a decreased spine head width and increased length of spine necks.
- The *Srgap2* gene is located on the Chr1. 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)

Srgap2 SLIT-ROBO Rho GTPase activating protein 2 [*Mus musculus* (house mouse)]

Gene ID: 14270, updated on 14-Aug-2019

Summary

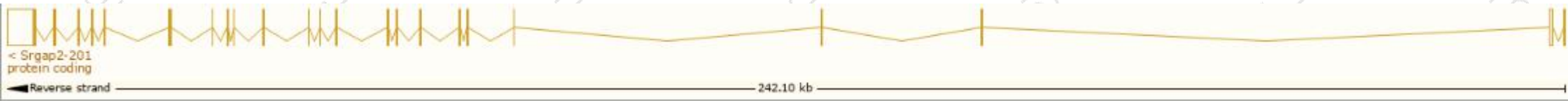
Official Symbol	Srgap2 provided by MGI
Official Full Name	SLIT-ROBO Rho GTPase activating protein 2 provided by MGI
Primary source	MGI:MGI:109605
See related	Ensembl:ENSMUSG00000026425
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	FBP2; Fnbp2; srGAP3; AI448945; 9930124L22Rik
Expression	Ubiquitous expression in cerebellum adult (RPKM 9.6), CNS E18 (RPKM 8.8) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

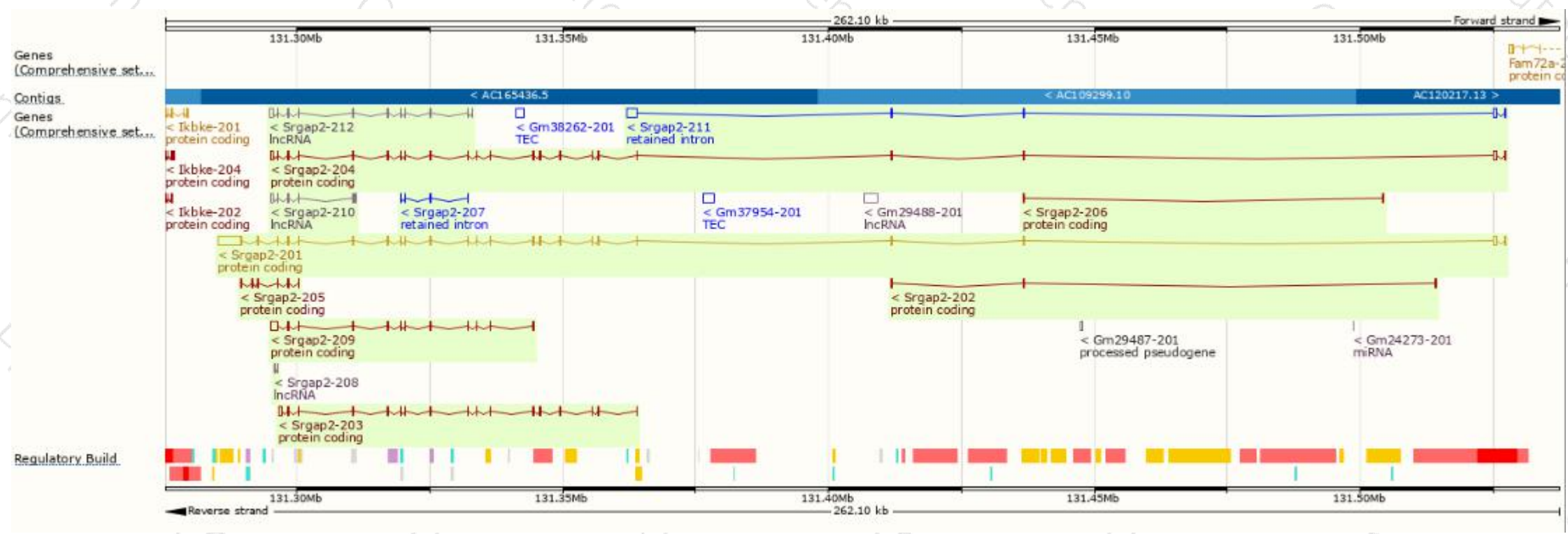
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Srgap2-201	ENSMUST00000097588.8	8026	1071aa	Protein coding	CCDS48355.4	Q91Z67.4	TSL:5 GENCODE basic APPRIS P1
Srgap2-204	ENSMUST00000186543.6	3533	858aa	Protein coding	-	A0A087WNM1.4	TSL:5 GENCODE basic
Srgap2-203	ENSMUST00000185596.1	2496	649aa	Protein coding	-	A0A087WSQ1.4	CDS 5' incomplete TSL:5
Srgap2-209	ENSMUST00000188770.6	2449	451aa	Protein coding	-	A0A087WS59.4	CDS 5' incomplete TSL:1
Srgap2-205	ENSMUST00000187042.6	1192	267aa	Protein coding	-	A0A087WS73.4	CDS 5' incomplete TSL:5
Srgap2-202	ENSMUST00000185445.2	418	110aa	Protein coding	-	A0A087WRV4.4	CDS 3' incomplete TSL:5
Srgap2-206	ENSMUST00000187273.2	395	55aa	Protein coding	-	A0A087WNR5.4	CDS 3' incomplete TSL:2
Srgap2-211	ENSMUST00000189893.6	3171	No protein	Retained intron	-	-	TSL:1
Srgap2-207	ENSMUST00000188437.1	411	No protein	Retained intron	-	-	TSL:3
Srgap2-212	ENSMUST00000190336.6	1680	No protein	lncRNA	-	-	TSL:1
Srgap2-210	ENSMUST00000189892.1	1044	No protein	lncRNA	-	-	TSL:1
Srgap2-208	ENSMUST00000188604.1	213	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Srgap2-201* transcript,The transcription is shown below



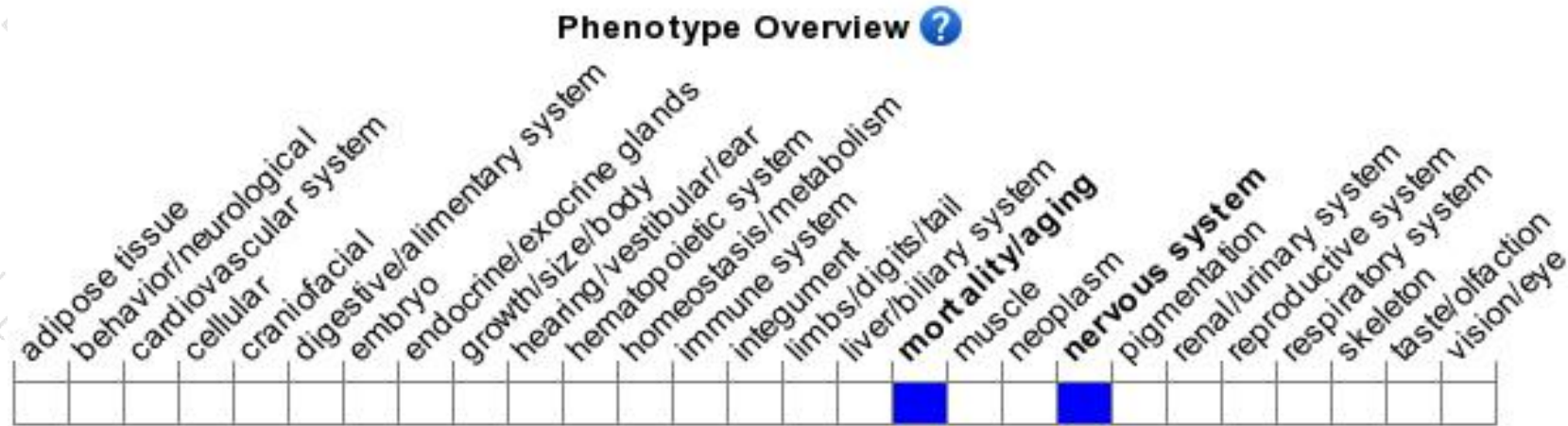
Genomic location distribution



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

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