Socs7 Cas9-CKO Strategy

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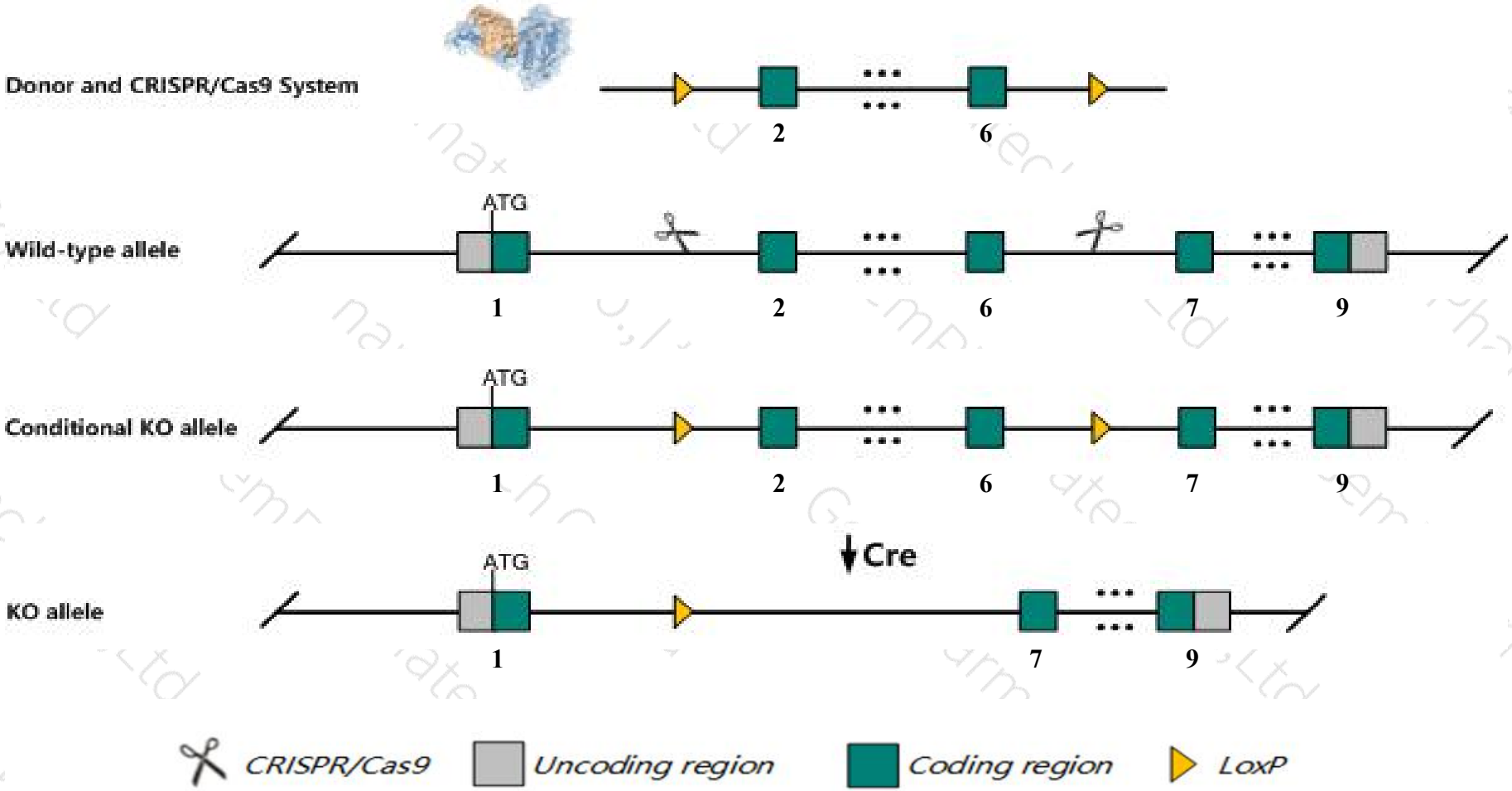
Design Date: 2020-8-4

Project Overview

Project Name	***Socs7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Socs7* gene. The schematic diagram is as follows:



Technical routes

➢ The *Socs7* gene has 3 transcripts. According to the structure of *Socs7* gene, exon2-exon6 of *Socs7-201*(ENSMUST00000045540.3) transcript is recommended as the knockout region.The region contains 572bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Socs7* 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.

Notice

➢ According to the existing MGI data,homozygous null mice display partial penetrance of hydroencephaly, premature death, intracranial hemorrhage, abnormally large islets of Langerhans and fully penetrant disorganization of the subcommissural organ and reduced body weight.

➢ The *Socs7* gene is located on the Chr11. 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）

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Socs7 suppressor of cytokine signaling 7 [Mus musculus (house mouse)]

Gene ID: 192157, updated on 13-Mar-2020

Summary

Official Symbol	Socs7 provided by MGI
Official Full Name	suppressor of cytokine signaling 7 provided byMGI
Primary source	MGI:MGI:2651588
See related	Ensembl:ENSMUSG00000038485
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	2310063P06Rik, C85125, Nap4
Expression	Broad expression in testis adult (RPKM 29.8), cerebellum adult (RPKM 12.3) and 24 other tissuesSee more
Orthologs	human all

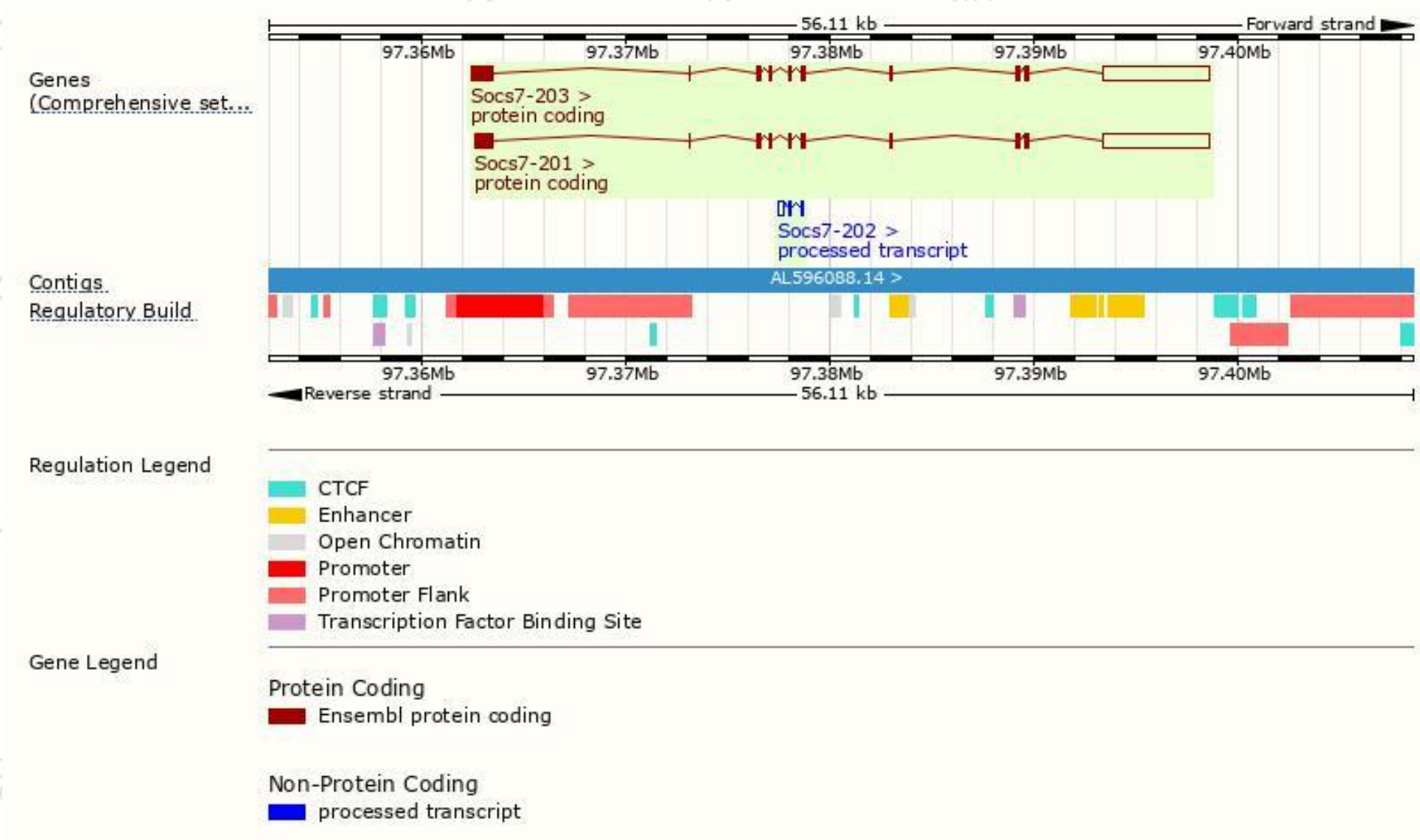
Transcript information（Ensembl）

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

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Socs7-201	ENSMUST00000045540.3	7015	579aa	Protein coding	CCDS25319	Q8VHQ2	TSL:1 GENCODE basic APPRIS P1
Socs7-203	ENSMUST00000238729.1	7131	648aa	Protein coding	-	-	GENCODE basic
Socs7-202	ENSMUST00000149212.1	506	No protein	Processed transcript	-	-	TSL:2

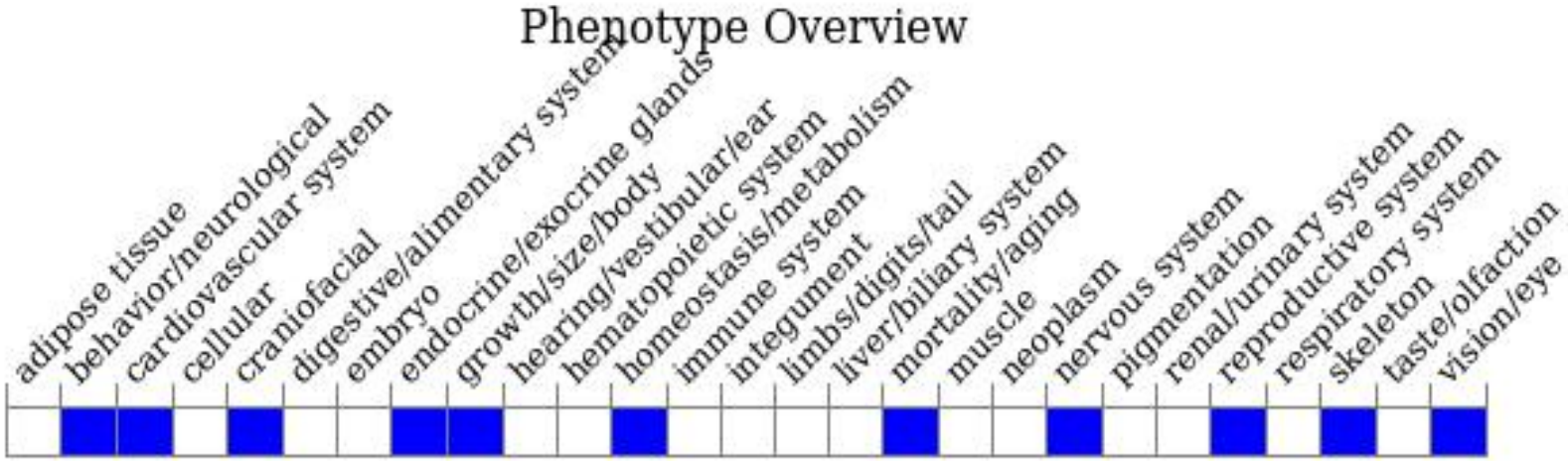
The strategy is based on the design of *Socs7-201* transcript,the transcription is shown below:

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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