Dscam Cas9-CKO Strategy

Designer: Jinlong Zhao

Reviewer: Shilei Zhu

Design Date: 2020-8-11

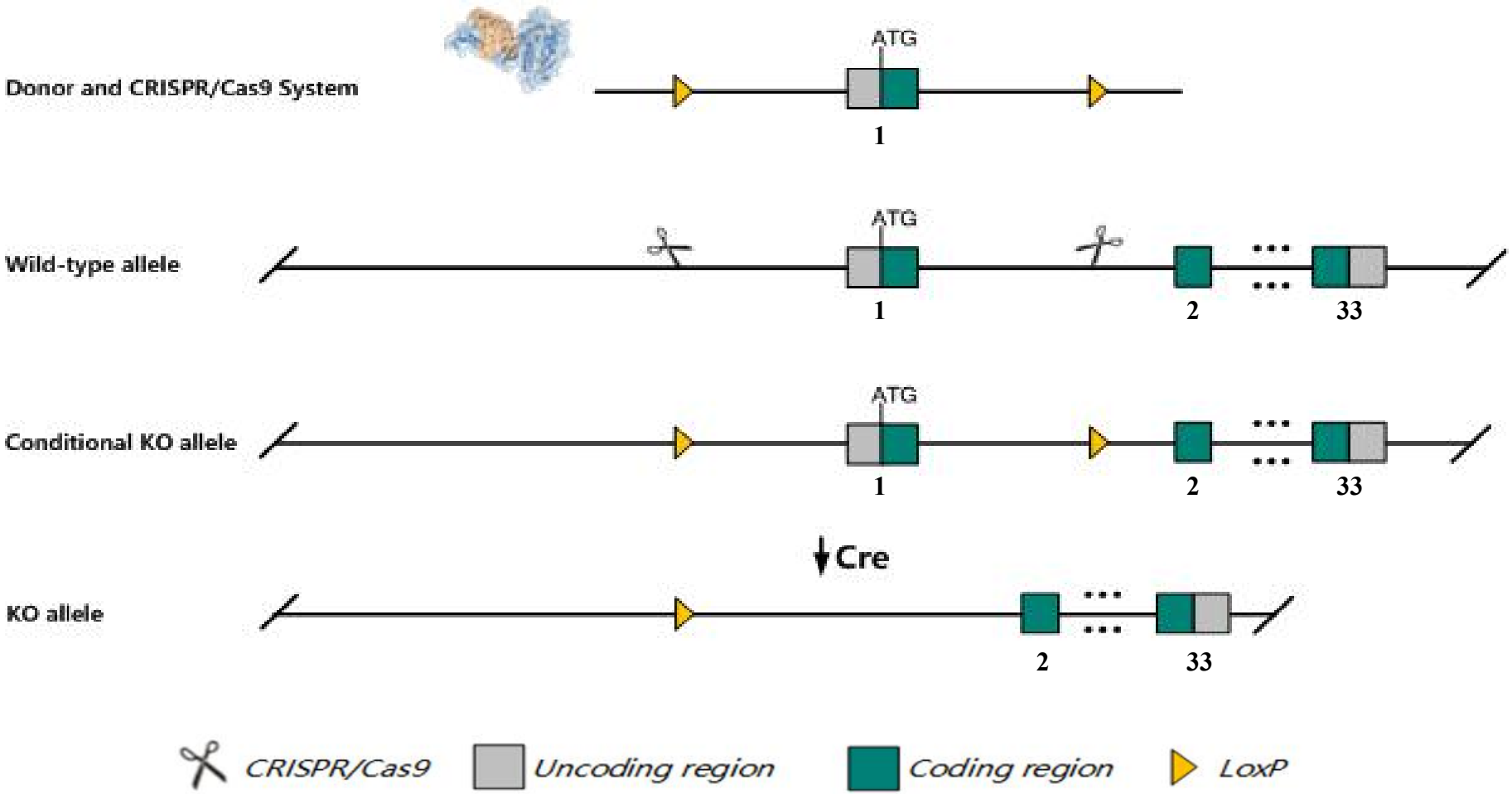
Project Overview

Project Name	***Dscam***
Project type	**Cas9-CKO**
Strain background	**C57BL/6J**

Conditional Knockout strategy

集萃药康 GemPharmatech

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



Technical routes

The *Dscam* gene has 2 transcripts. According to the structure of *Dscam* gene, exon1 of *Dscam-201* (ENSMUST00000056102.8) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Dscam* gene. The brief process is as follows:CRISPR/Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6J 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/6J 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,Mice homozygous for a null allele exhibit background-sensitive perinatal lethality associated with respiratory distress, altered C4 ventral root and pre-inspiratory neuron signaling, and abnormal response to hypercapnia.

The *Dscam* gene is located on the Chr16. 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

集萃药康 GemPharmatech

Dscam DS cell adhesion molecule [Mus musculus (house mouse)]

Gene ID: 13508, updated on 3-Feb-2019

Summary

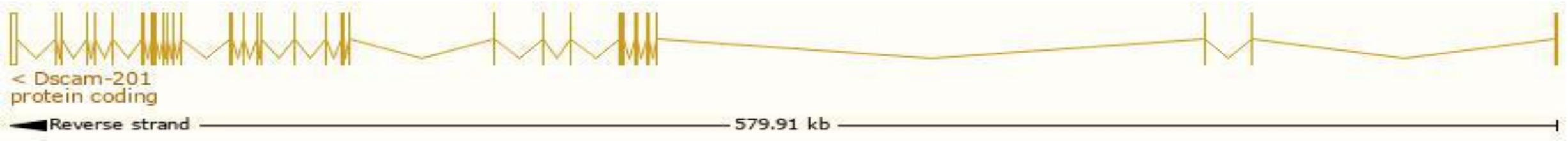
Official Symbol	Dscam provided by MGI
Official Full Name	DS cell adhesion molecule provided by MGI
Primary source	MGI:MGI:1196281
See related	Ensembl:ENSMUSG00000050272
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4932410A21Rik
Expression	Biased expression in whole brain E14.5 (RPKM 4.0), CNS E18 (RPKM 3.5) and 6 other tissues See more
Orthologs	human all

Transcript information Ensembl

The gene has 2 transcripts,all transcripts are shown below:

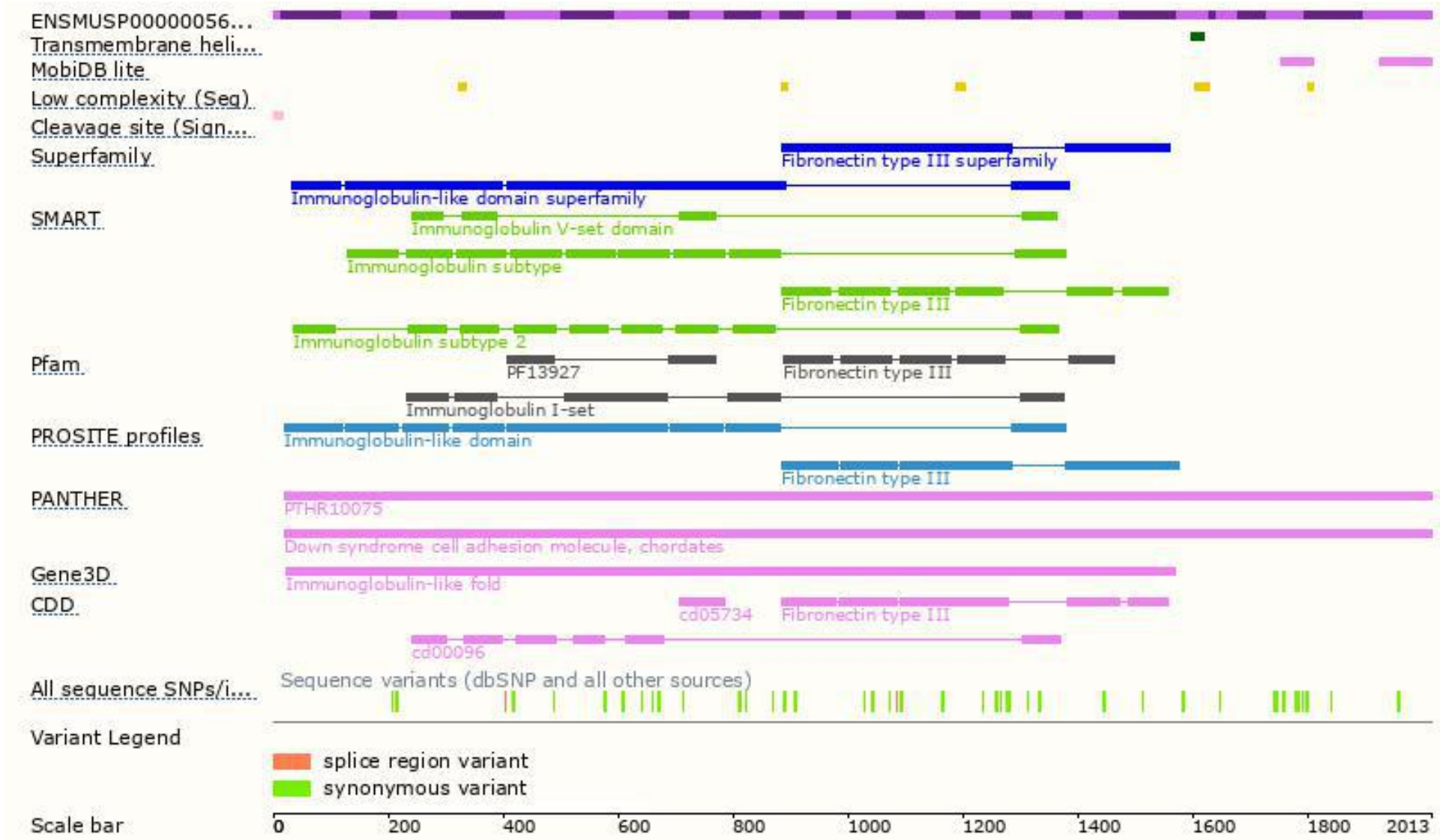
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dscam-201	ENSMUST00000056102.8	8737	2013aa	Protein coding	CCDS37415	Q9ERC8	TSL:1 GENCODE basic APPRIS P1
Dscam-202	ENSMUST00000232829.1	1738	371aa	Protein coding	-	A0A3B2W3U6	CDS 5' incomplete

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

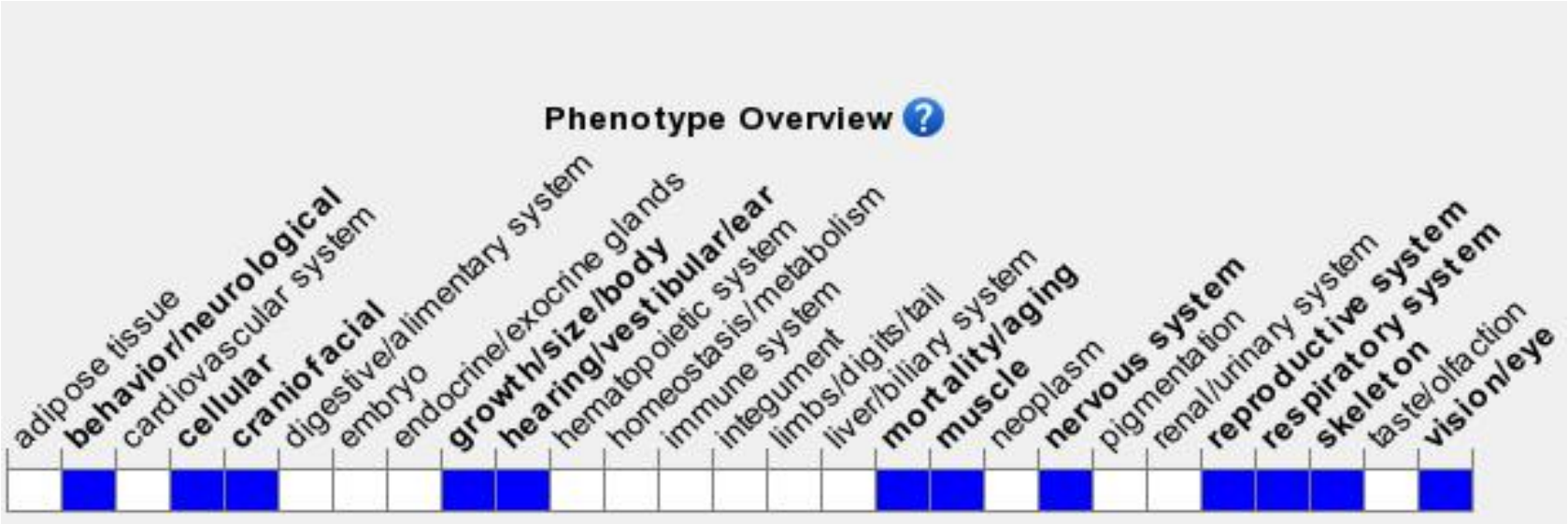


Genomic location distribution

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 null allele exhibit background-sensitive perinatal lethality associated with respiratory distress, altered C4 ventral root and pre-inspiratory neuron signaling, and abnormal response to hypercapnia.

集萃药康
GemPharmatech

If you have any questions, you are welcome to inquire.
Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd