

Dsc2 Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Dsc2

Project type

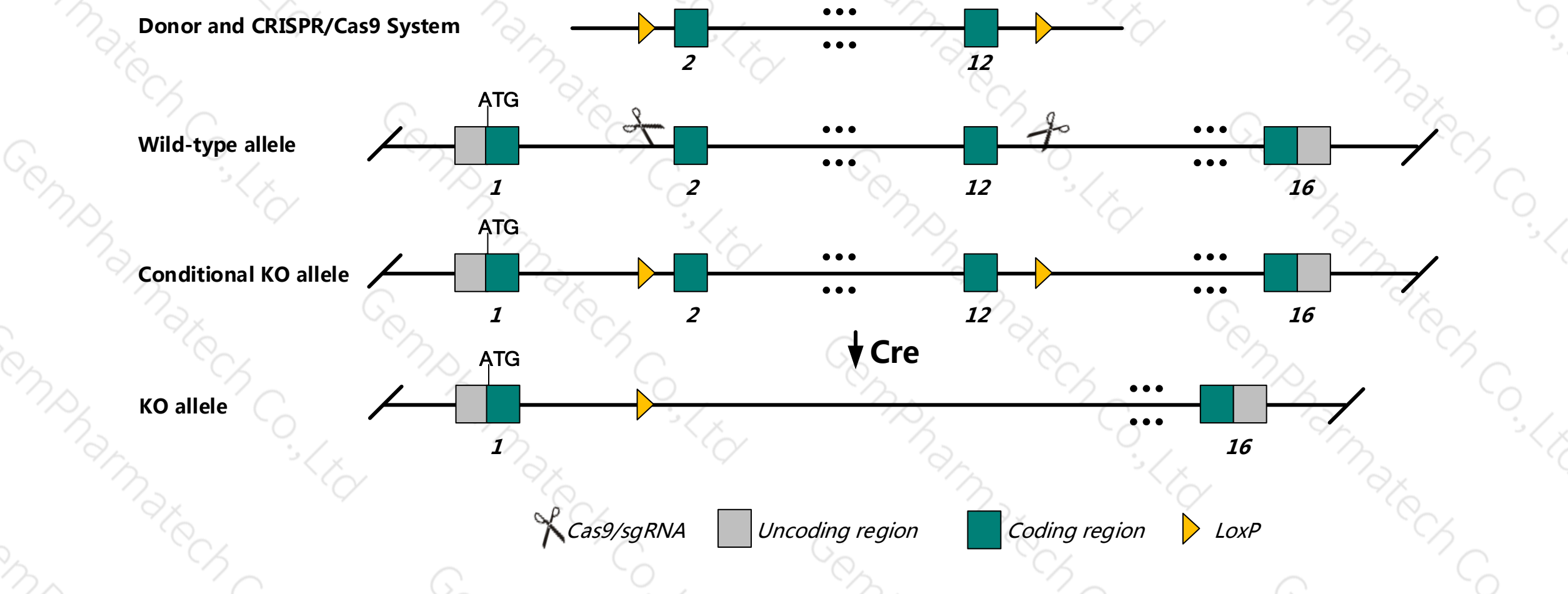
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dsc2* gene. The schematic diagram is as follows:



- The *Dsc2* gene has 4 transcripts. According to the structure of *Dsc2* gene, exon2-exon12 of *Dsc2*-202 (ENSMUST00000075214.8) transcript is recommended as the knockout region. The region contains 1819bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dsc2* 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 or cell types.

- The *Dsc2* gene is located on the Chr18. 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 the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Dsc2 desmocollin 2 [*Mus musculus* (house mouse)]

Gene ID: 13506, updated on 12-May-2019

Summary

Official Symbol Dsc2 provided by [MGI](#)

Official Full Name desmocollin 2 provided by [MGI](#)

Primary source [MGI:MGI:103221](#)

See related [Ensembl:ENSMUSG00000024331](#)

Gene type protein coding

RefSeq status REVIEWED

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as AW228162

Summary This gene encodes a member of the desmocollin protein subfamily. Desmocollins are cadherin-like transmembrane glycoproteins that are major components of the desmosome. Desmosomes are cell-cell junctions that help resist shearing forces and are found in high concentrations in cells subject to mechanical stress. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Dec 2015]

Expression Biased expression in placenta adult (RPKM 20.2), large intestine adult (RPKM 17.3) and 14 other tissues [See more](#)

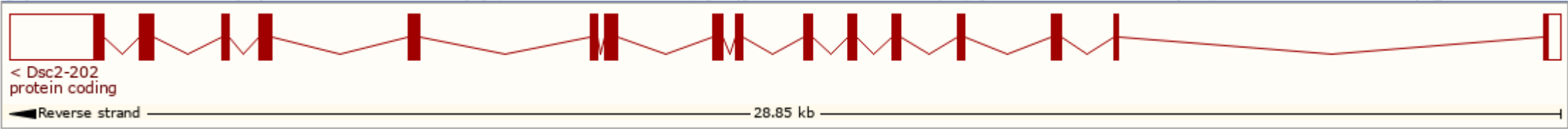
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

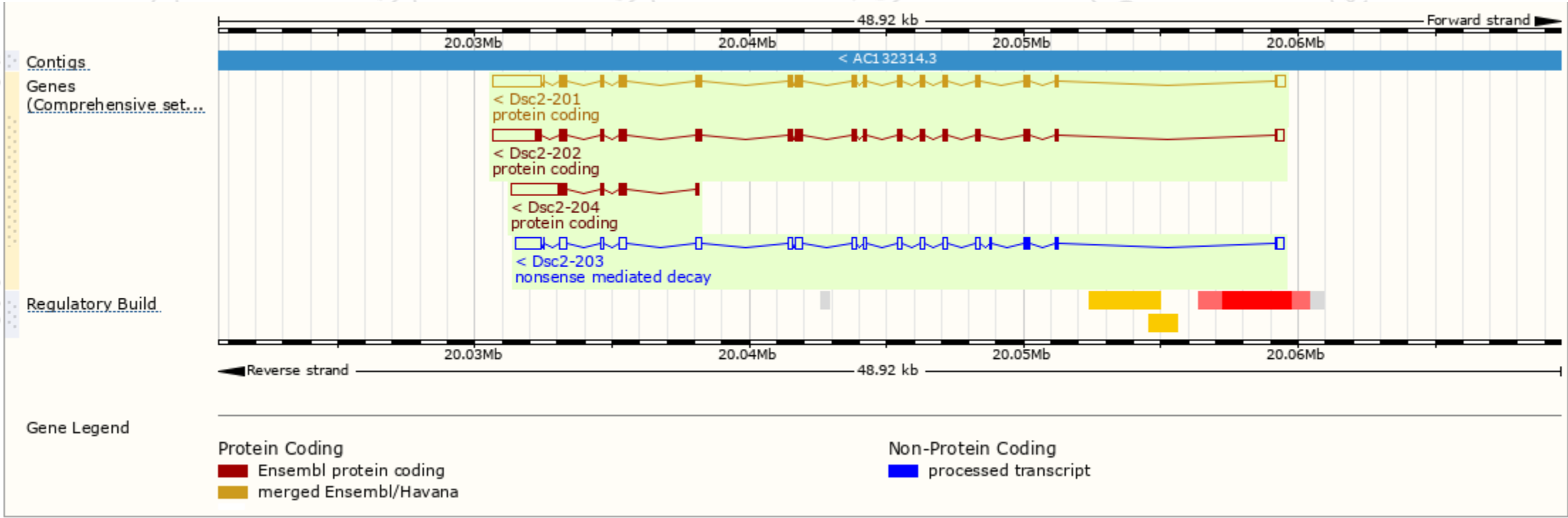
The gene has 4 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Dsc2-201	ENSMUST00000039247.10	4630	848aa	Protein coding	CCDS29077	P55292 Q544V1	TSL:1	GENCODE basic APPRIS P3
Dsc2-202	ENSMUST00000075214.8	4508	902aa	Protein coding	CCDS84361	P55292	TSL:5	GENCODE basic APPRIS ALT2
Dsc2-204	ENSMUST00000155407.1	2429	240aa	Protein coding	-	F6RM34	CDS 5' incomplete	TSL:1
Dsc2-203	ENSMUST00000128464.1	3774	131aa	Nonsense mediated decay	-	D6RDD6	TSL:1	

The strategy is based on the design of *Dsc2-202* transcript,The transcription is shown below



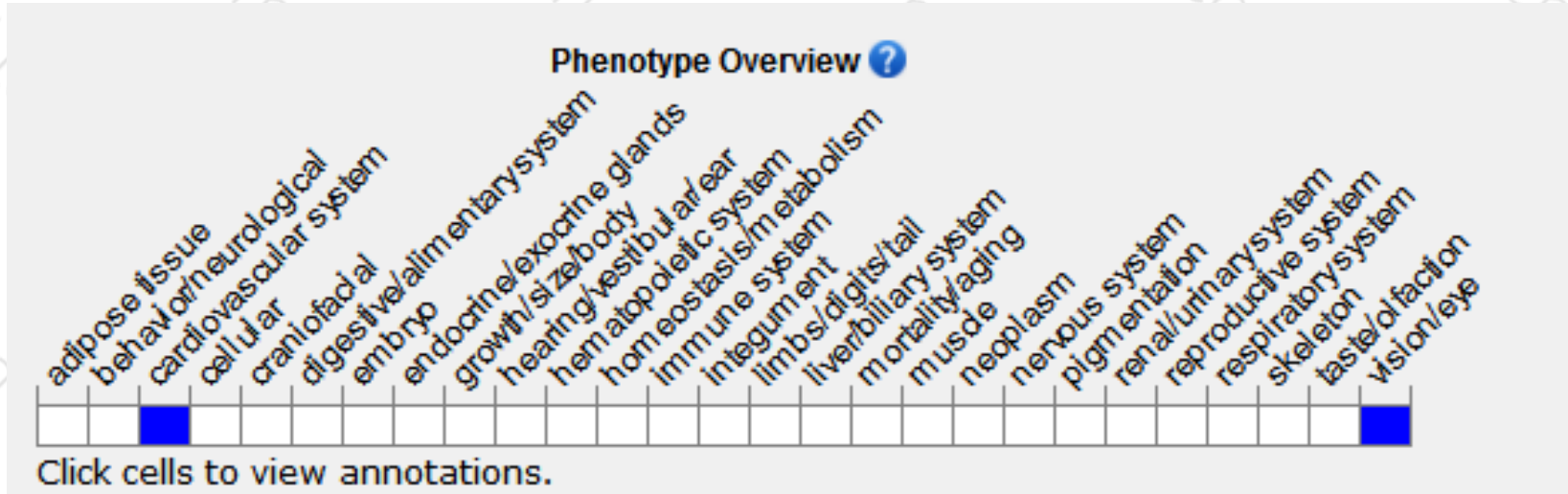
Genomic location distribution



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/>).

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