Dcn Cas9-KO Strategy

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Project Overview

Project Name	***Dcn***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

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

Technical routes

➢ The *Dcn* gene has 5 transcripts. According to the structure of *Dcn* gene, exon3 of *Dcn-201* (ENSMUST00000105287.10) transcript is recommended as the knockout region.The region contains 113bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Dcn* gene. The brief process is as follows: CRISPR/Cas9 system w

Notice

➢ According to the existing MGI data,Mutant mice have fragile skin and exhibit abnormal collagen morphology in skin and tendons, supporting this genes role in regulating collagen fiber formation.

➢Transcript *Dcn-205* may not be affected.

➢ The *Dcn* gene is located on the Chr10. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Dcn decorin [Mus musculus (house mouse)]

Gene ID: 13179, updated on 3-Feb-2019

Summary

Official Symbol	Dcn provided by MGI
Official Full Name	decorin provided by MGI
Primary source	MGI:MGI:94872
See related	Ensembl:ENSMUSG00000019929
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	DC, DSPG2, PG40, PGII, PGS2, SLRR1B
Summary	This gene encodes a member of the small leucine-rich proteoglycan (SLRP) family of proteins. The encoded preproprotein is proteolytically processed to generate a mature protein product, which is secreted into the extracellular space to regulate collagen fibril assembly. Homozygous knockout mice for this gene exhibit enhanced tumorigenesis in a liver cancer model, and defects in collagen fibrils, leading to weakened skin and tendons. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Aug 2015]
Expression	Biased expression in bladder adult (RPKM 1095.0), subcutaneous fat pad adult (RPKM 305.9) and 7 other tissuesSee more
Orthologs	human all

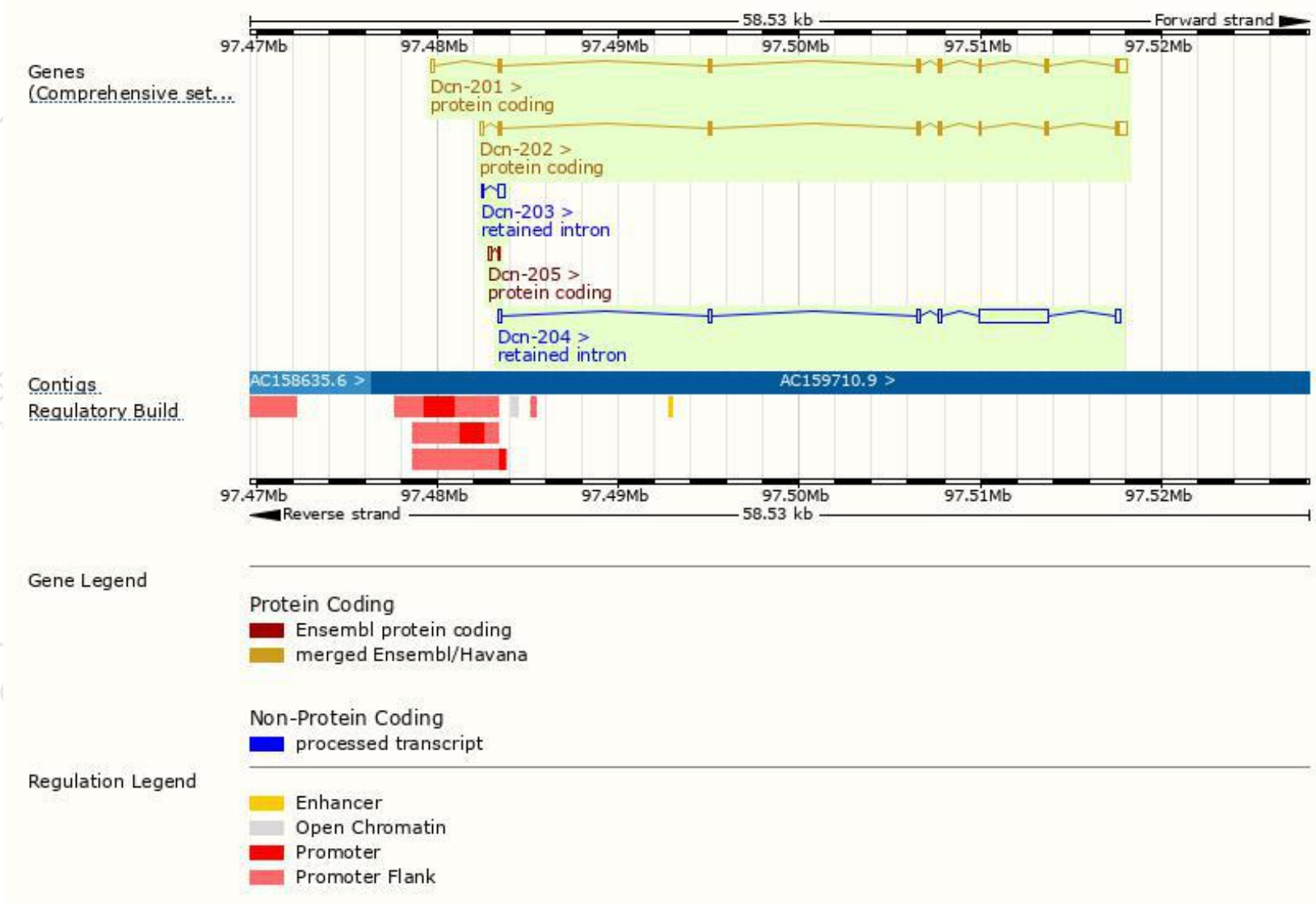
Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

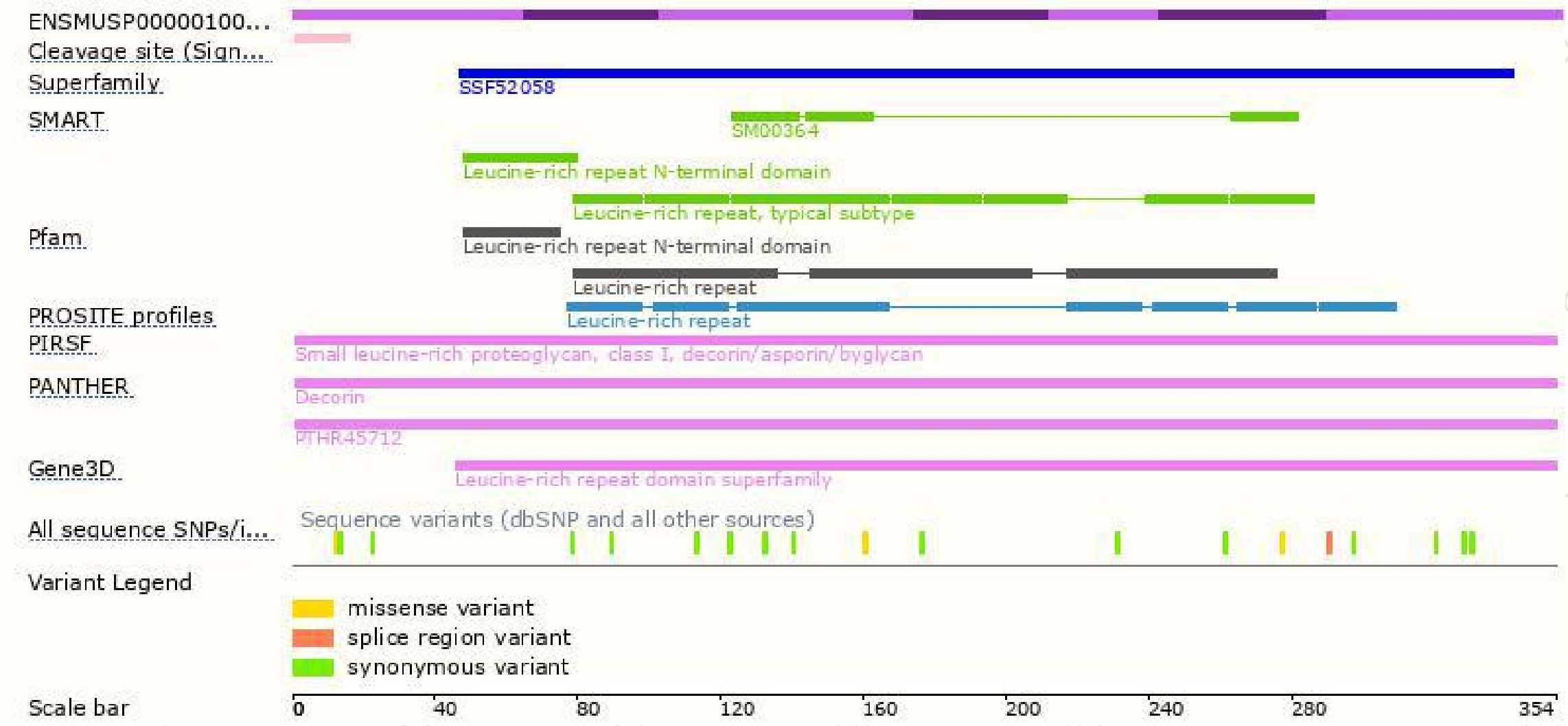
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dcn-201	ENSMUST00000105287.10	1758	354aa	Protein coding	CCDS24141	P28654 Q3UKR1	TSL:1 GENCODE basic APPRIS P1
Dcn-202	ENSMUST00000163448.3	1758	354aa	Protein coding	CCDS24141	P28654 Q3UKR1	TSL:1 GENCODE basic APPRIS P1
Dcn-205	ENSMUST00000219784.1	254	22aa	Protein coding	-	A0A1W2P6I8	CDS 3' incomplete TSL:3
Dcn-204	ENSMUST00000219539.1	4692	No protein	Retained intron	-	-	TSL:2
Dcn-203	ENSMUST00000218853.1	523	No protein	Retained intron	-	-	TSL:2

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

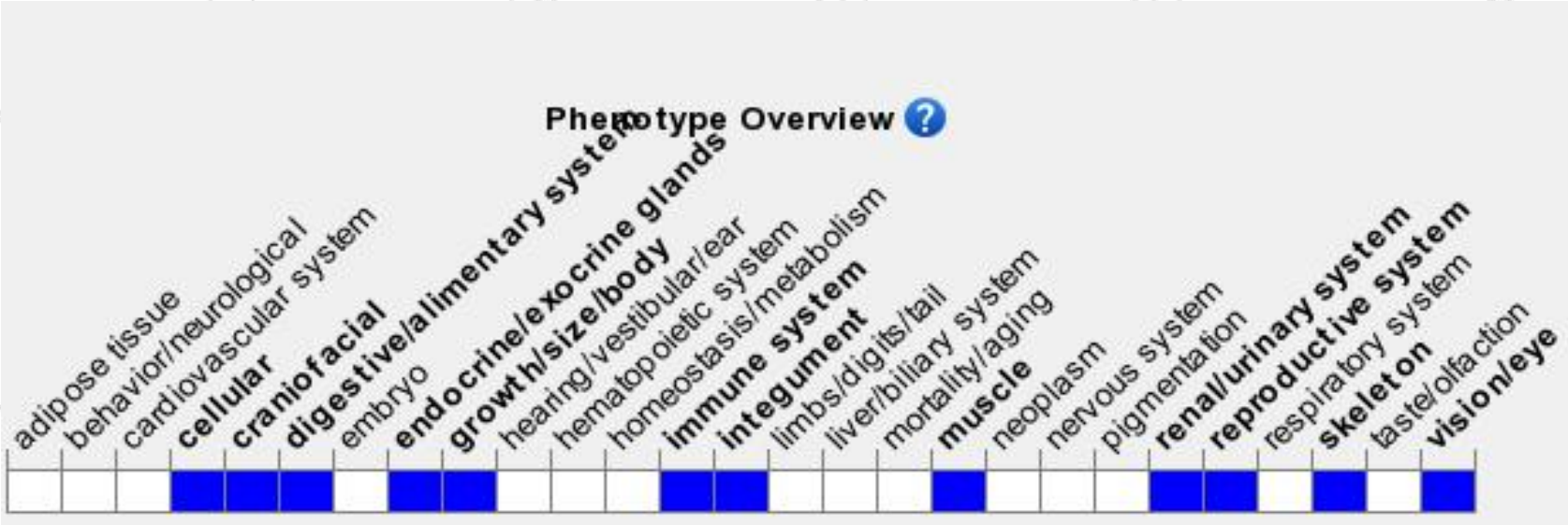
Genomic location distribution



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,Mutant mice have fragile skin and exhibit abnormal collagen morphology in skin and tendons, supporting this genes role in regulating collagen fiber formation.

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

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