Dsc2 Cas9-KO *Strategy*

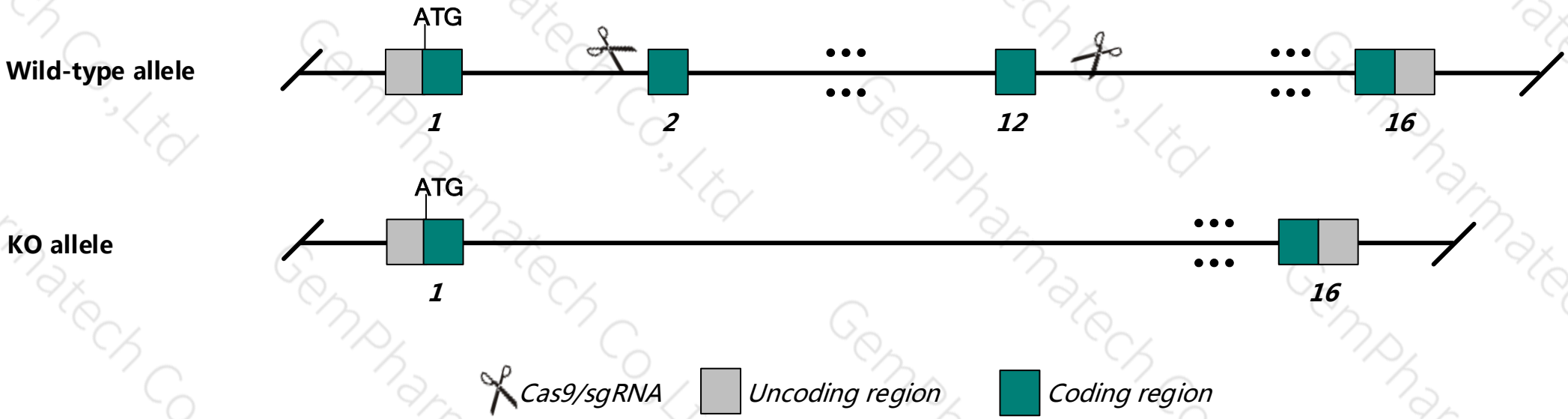
Designer: **Daohua Xu**

Project Overview

Project Name	***Dsc2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

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



Technical routes

- 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 1819bpcoding 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.Cas9 and sgRNA 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.

Notice

- 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, 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

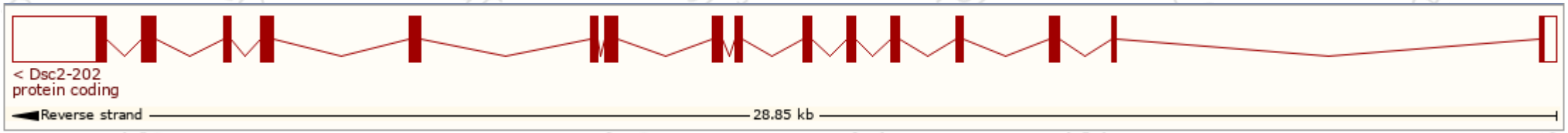
Transcript information（ Ensembl ）

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

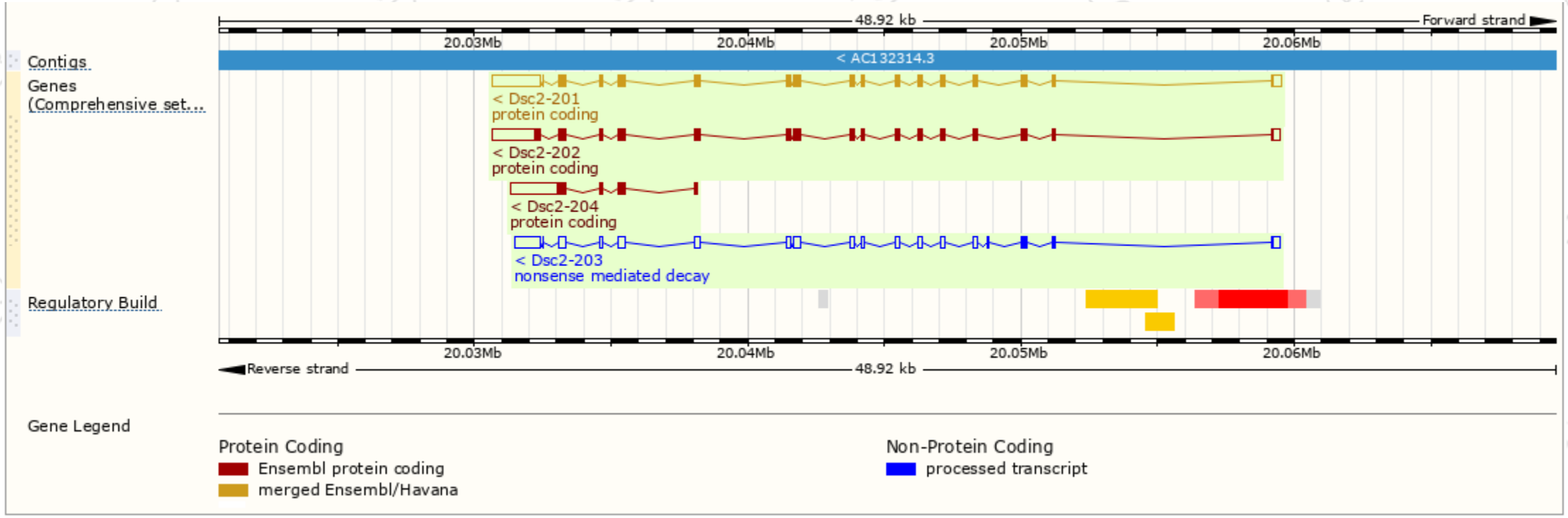
Show/hide columns (1 hidden) Filter

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

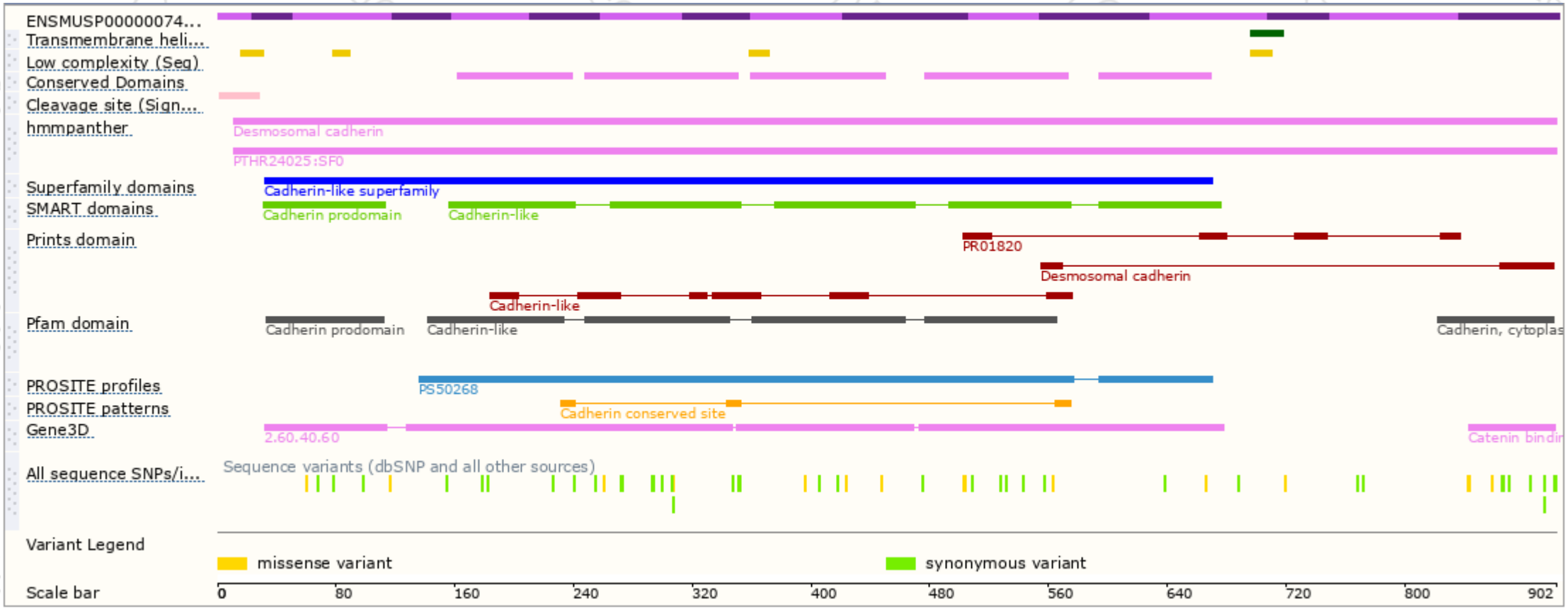
The strategy is based on the design of *Dsc2*-202 transcript,The transcription is shown below



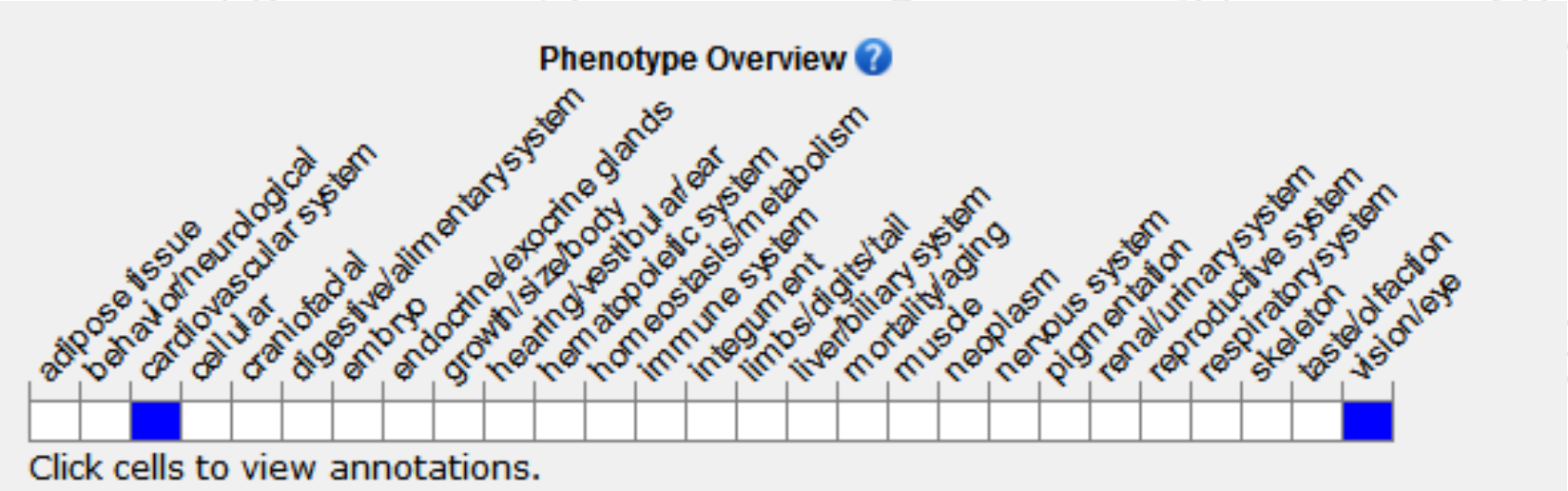
Genomic location distribution



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.

Tel: 025-5864 1534

集萃药康生物科技

GemPharmatech Co.,Ltd