

Dact2 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Dact2

Project type

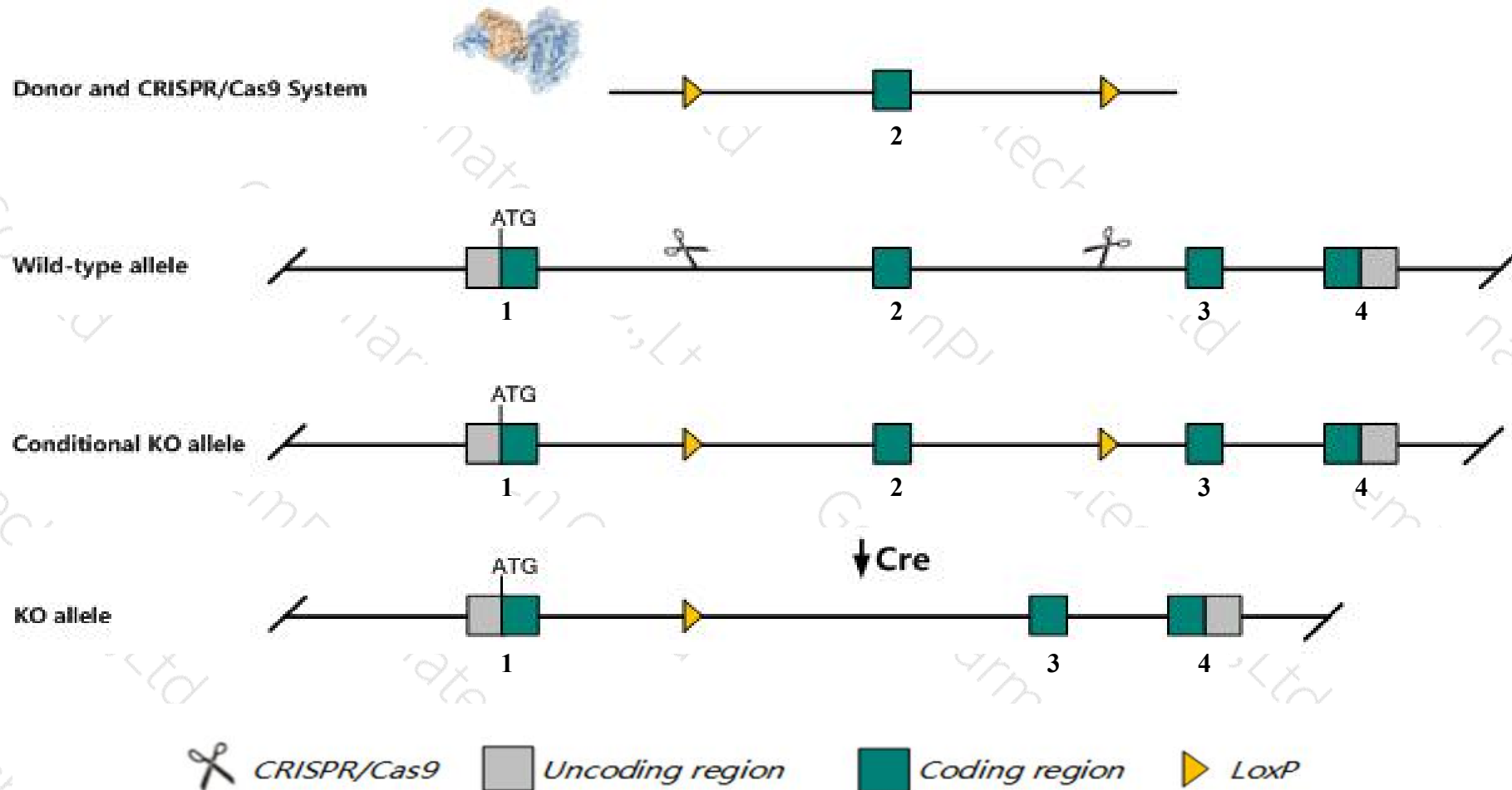
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dact2* gene. The schematic diagram is as follows:



Technical routes

- The *Dact2* gene has 2 transcripts. According to the structure of *Dact2* gene, exon2 of *Dact2-201* (ENSMUST00000053218.6) transcript is recommended as the knockout region. The region contains 133bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dact2* 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele develop normally but display enhanced keratinocyte migration and accelerated re-epithelialization during cutaneous wound healing.
- The *Dact2* gene is located on the Chr17. 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)

Dact2 dishevelled-binding antagonist of beta-catenin 2 [*Mus musculus* (house mouse)]

Gene ID: 240025, updated on 12-Aug-2019

Summary



Official Symbol Dact2 provided by [MGI](#)

Official Full Name dishevelled-binding antagonist of beta-catenin 2 provided by [MGI](#)

Primary source [MGI:MGI:1920347](#)

See related [Ensembl:ENSMUSG00000048826](#)

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 Dpr2; Frd2; dapper2; A630024E20; 2900084M21Rik

Expression Broad expression in cortex adult (RPKM 12.9), thymus adult (RPKM 11.5) and 19 other tissues [See more](#)

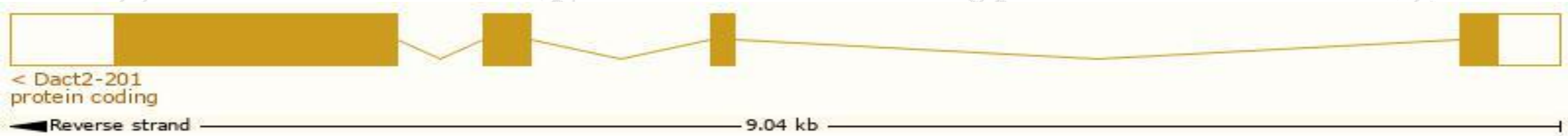
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

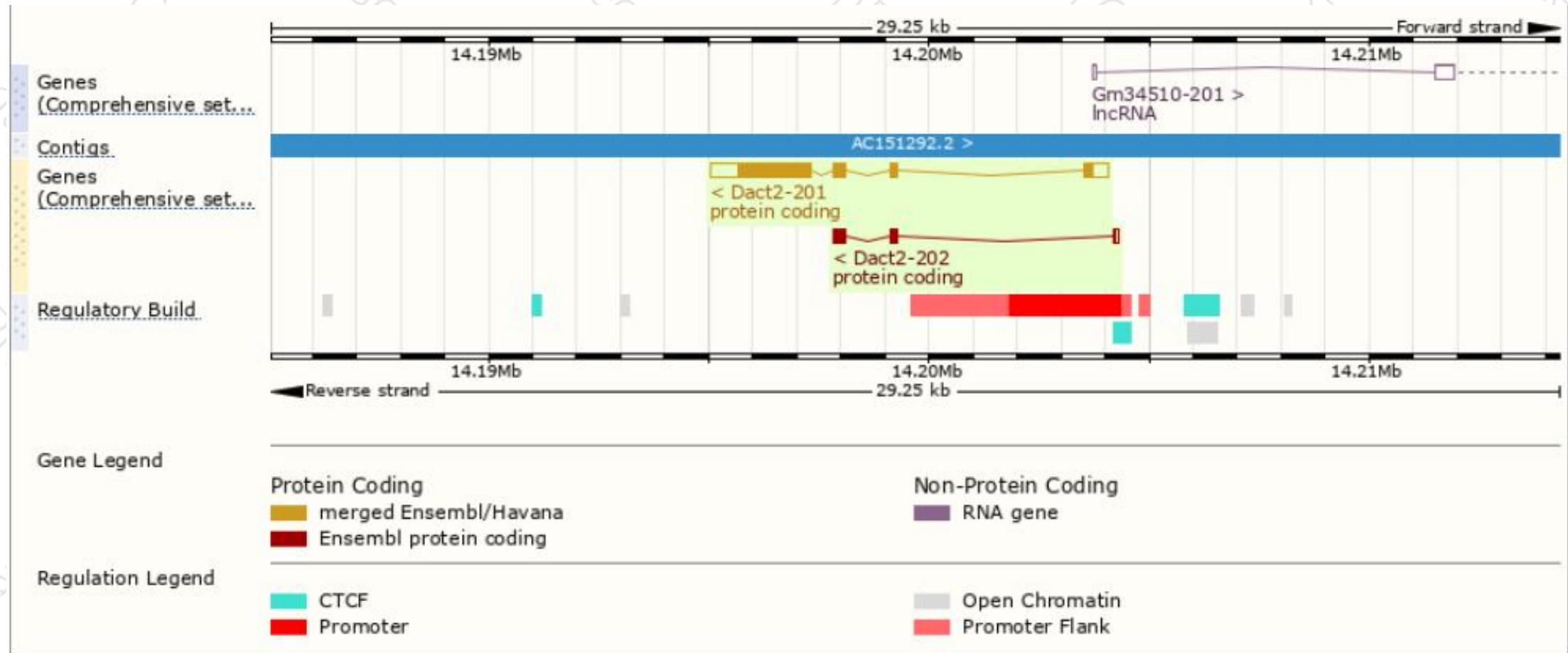
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dact2-201	ENSMUST00000053218.6	3250	757aa	Protein coding	CCDS28406	Q7TN08	TSL:1 GENCODE basic APPRIS P1
Dact2-202	ENSMUST00000232816.1	532	150aa	Protein coding	-	A0A3B2W472	CDS 3' incomplete

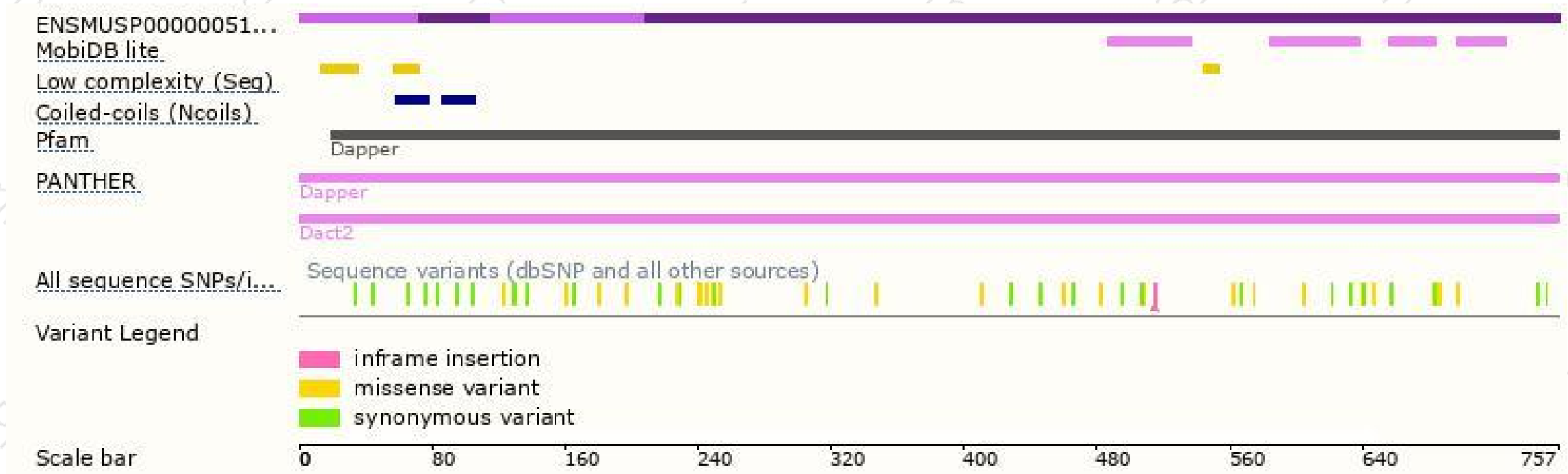
The strategy is based on the design of *Dact2-201* transcript,The transcription is shown below



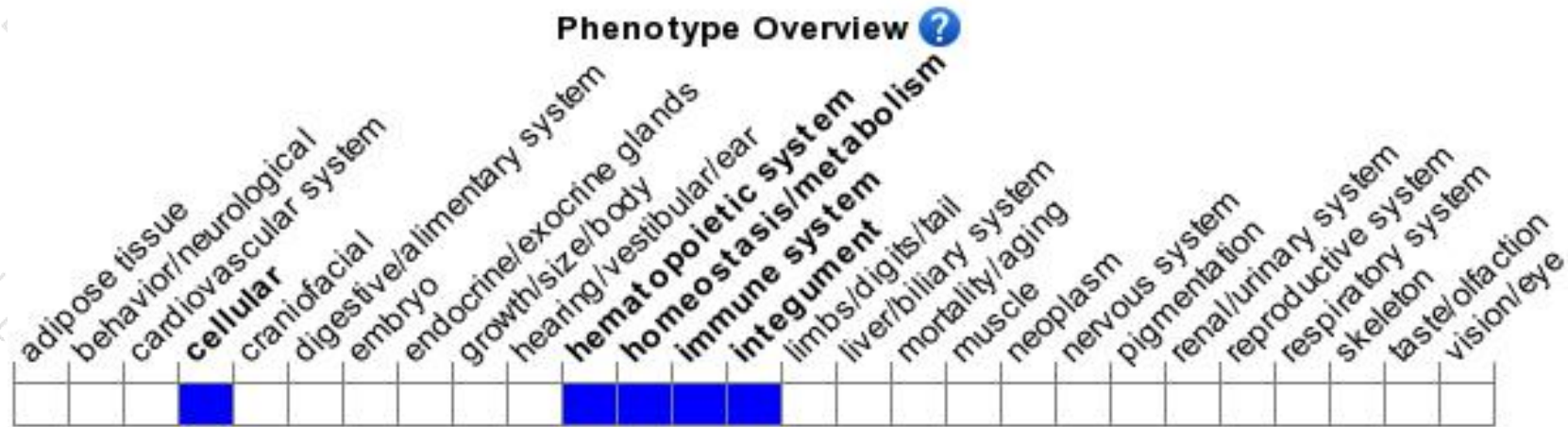
Genomic location distribution



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 knock-out allele develop normally but display enhanced keratinocyte migration and accelerated re-epithelialization during cutaneous wound healing.

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

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