

***Dact3* Cas9-CKO Strategy**

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Project Overview

Project Name

Dact3

Project type

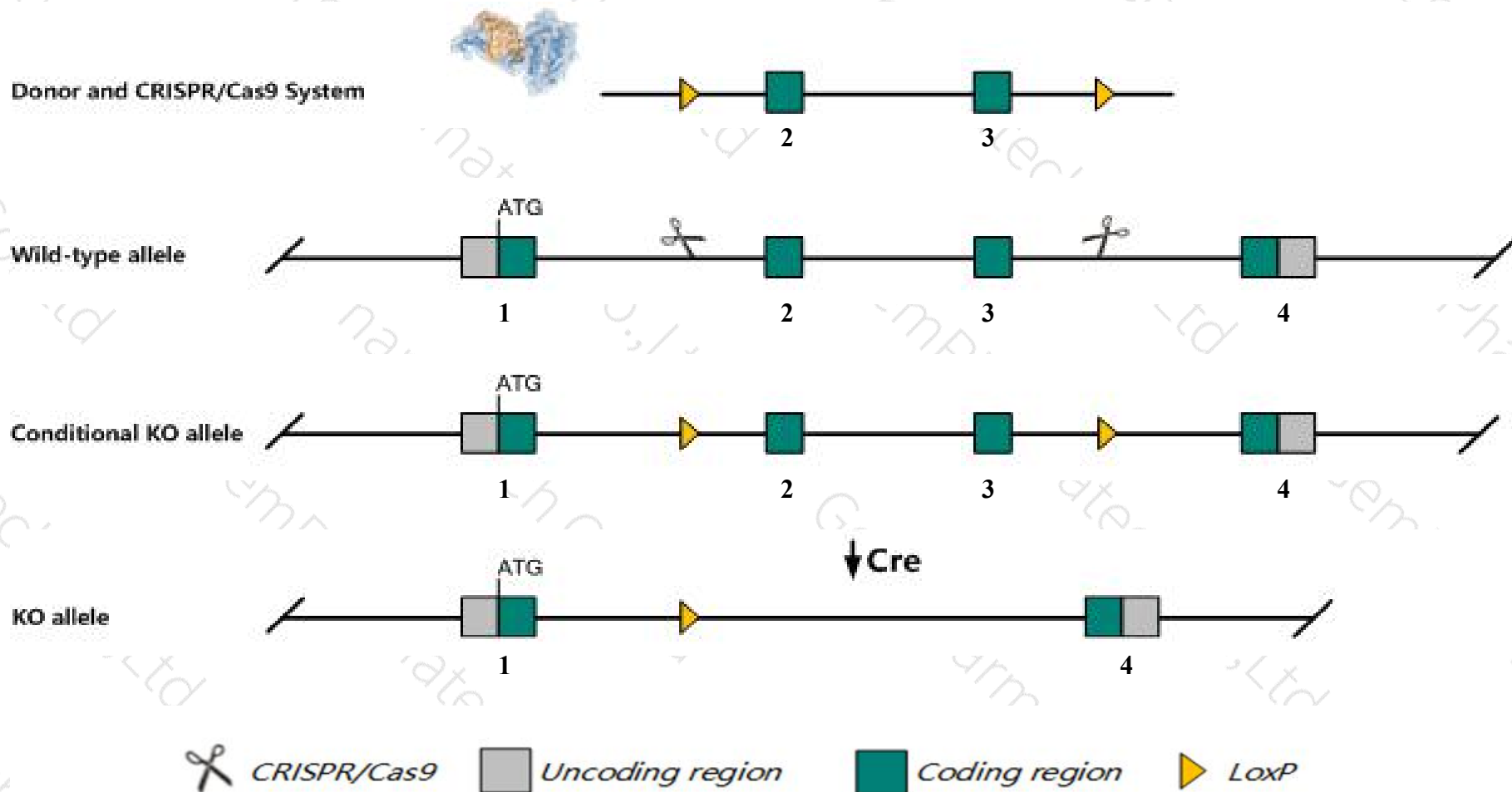
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dact3* gene. The schematic diagram is as follows:



- The *Dact3* gene has 1 transcript. According to the structure of *Dact3* gene, exon2-exon3 of *Dact3-201* (ENSMUST00000108493.2) transcript is recommended as the knockout region. The region contains 250bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dact3* 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 exhibit mild growth retardation and aggravated unilateral obstruction-mediated fibrosis.
- The *Dact3* gene is located on the Chr7. 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)

Dact3 dishevelled-binding antagonist of beta-catenin 3 [*Mus musculus* (house mouse)]

Gene ID: 629378, updated on 12-Aug-2019

Summary

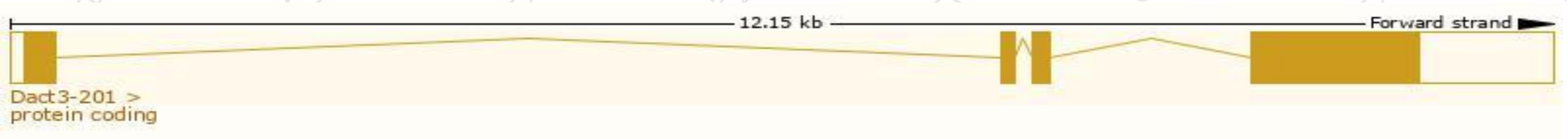
Official Symbol	Dact3 provided by MGI
Official Full Name	dishevelled-binding antagonist of beta-catenin 3 provided by MGI
Primary source	MGI:MGI:3654828
See related	Ensembl:ENSMUSG00000078794
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	naa-3; EG666671
Expression	Broad expression in ovary adult (RPKM 53.0), cortex adult (RPKM 47.1) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

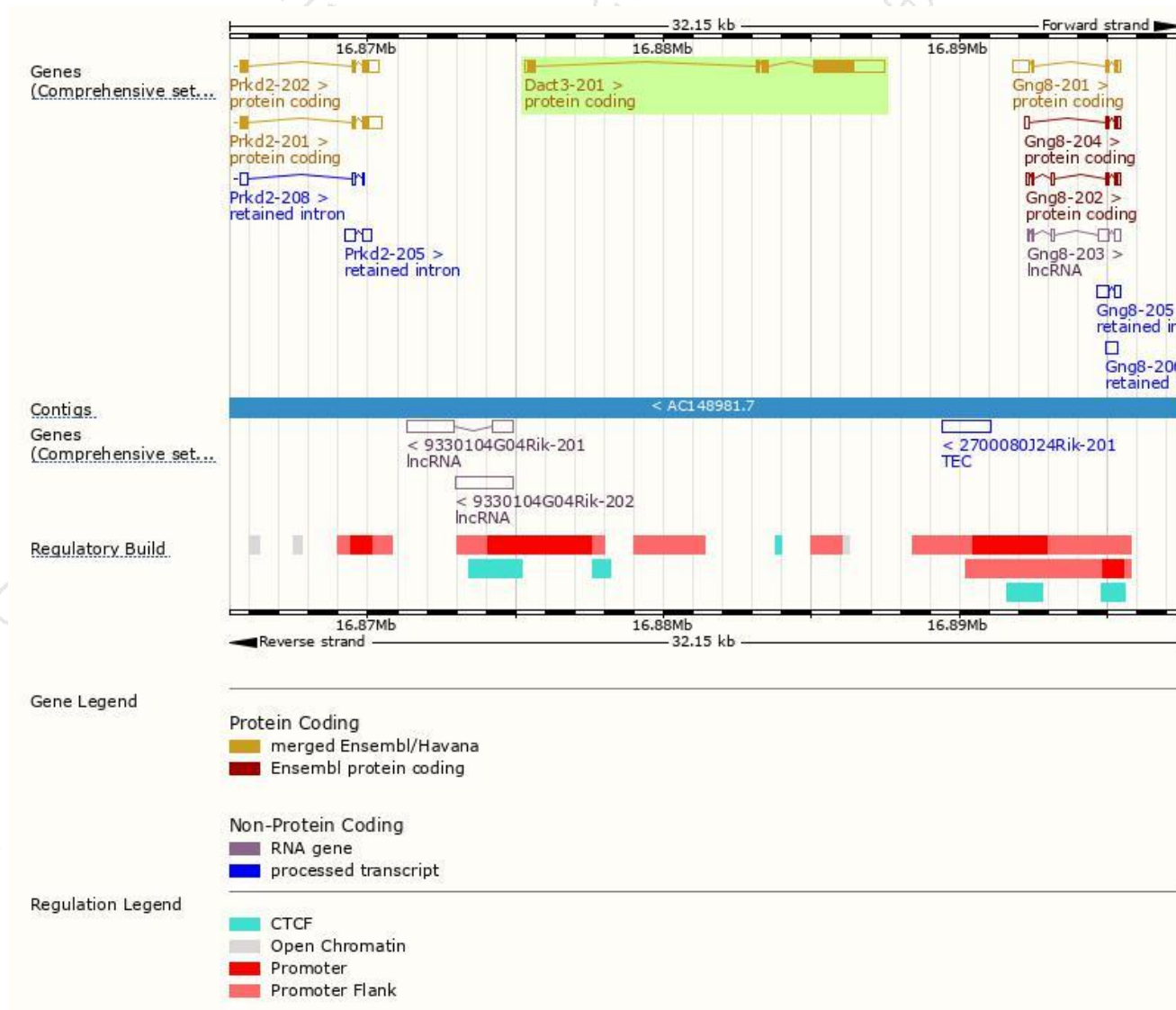
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dact3-201	ENSMUST00000108493.2	2989	610aa	Protein coding	CCDS39788	Q0PHV7	TSL:1 GENCODE basic APPRIS P1

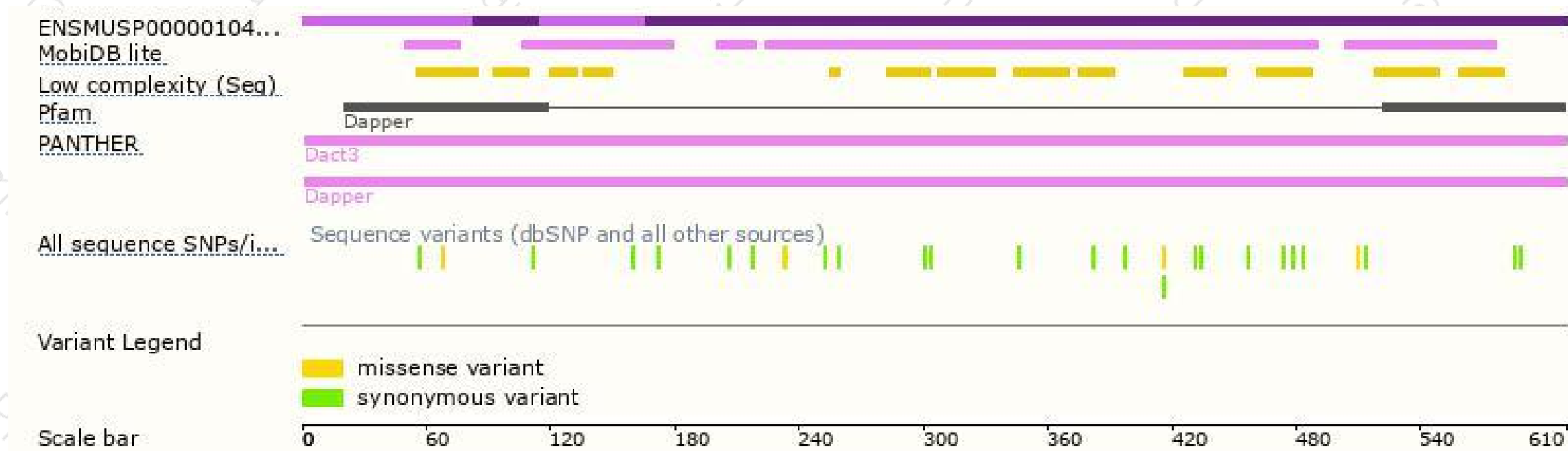
The strategy is based on the design of *Dact3-201* transcript, The transcription is shown below



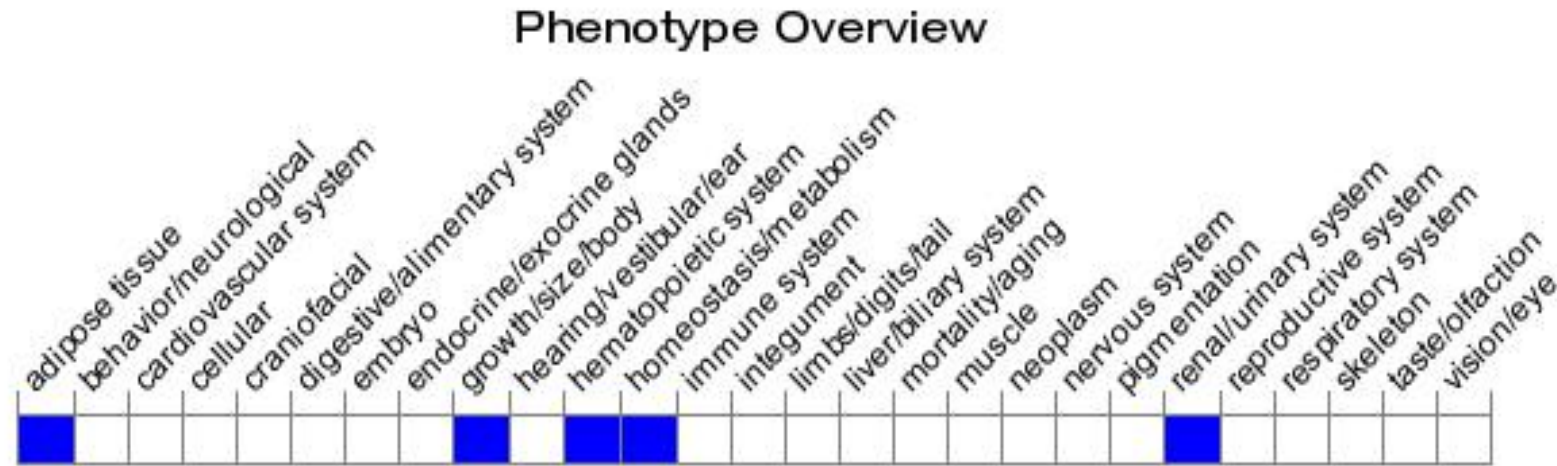
Genomic location distribution



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 exhibit mild growth retardation and aggravated unilateral obstruction-mediated fibrosis.

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

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