

Dct Cas9-KO Strategy

Designer:

Ruirui Zhang

Reviewer:

Huimin Su

Design Date:

2019-9-19

Project Overview



Project Name

Dct

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Dct* gene has 4 transcripts. According to the structure of *Dct* gene, exon5-exon6 of *Dct-201* (ENSMUST00000022725.3) transcript is recommended as the knockout region. The region contains 316bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dct* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Mutations in this melanocyte protein gene cause coat color dilution.
- The *Dct* gene is located on the Chr14. 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)

Dct dopachrome tautomerase [*Mus musculus* (house mouse)]

Gene ID: 13190, updated on 12-Aug-2019

Summary

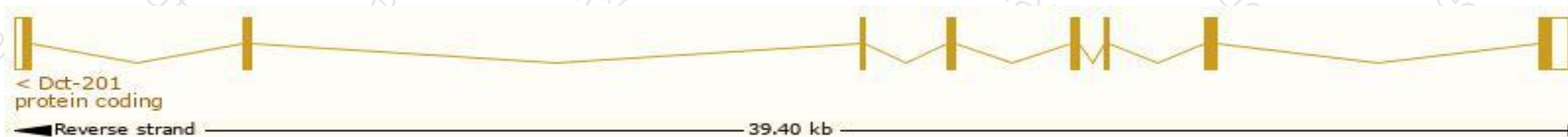
Official Symbol	Dct provided by MGI
Official Full Name	dopachrome tautomerase provided by MGI
Primary source	MGI:MGI:102563
See related	Ensembl:ENSMUSG00000022129
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	DT; slt; TRP2; TRP-2; Tyrp2; slaty; Tyrp-2
Expression	Biased expression in liver adult (RPKM 7.8), CNS E14 (RPKM 2.4) and 8 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

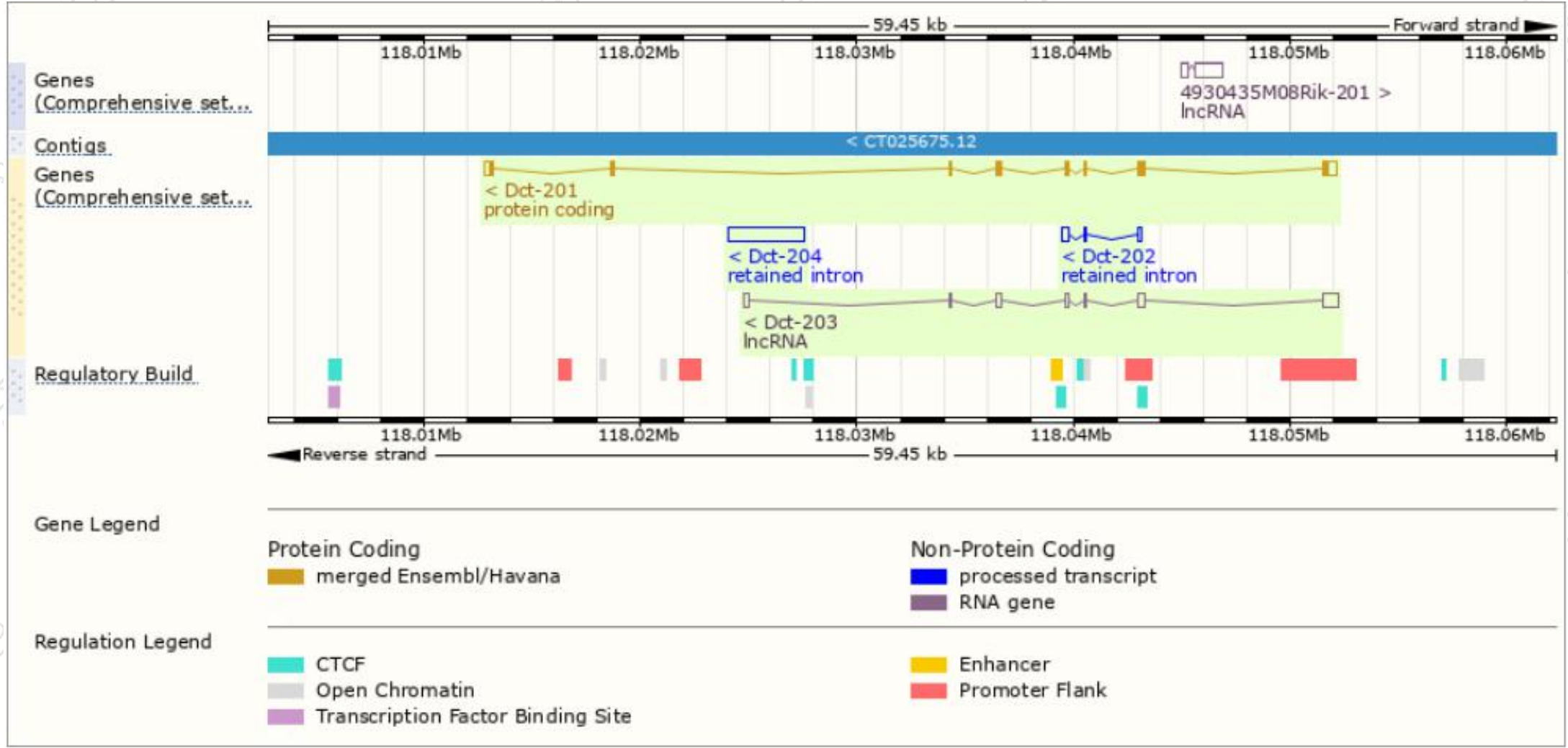
The gene has 4 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dct-201	ENSMUST00000022725.3	2202	517aa	Protein coding	CCDS27331	P29812	TSL:1 GENCODE basic APPRIS P1
Dct-204	ENSMUST00000228925.1	3459	No protein	Retained intron	-	-	-
Dct-202	ENSMUST00000227850.1	565	No protein	Retained intron	-	-	-
Dct-203	ENSMUST00000228548.1	1868	No protein	lncRNA	-	-	-

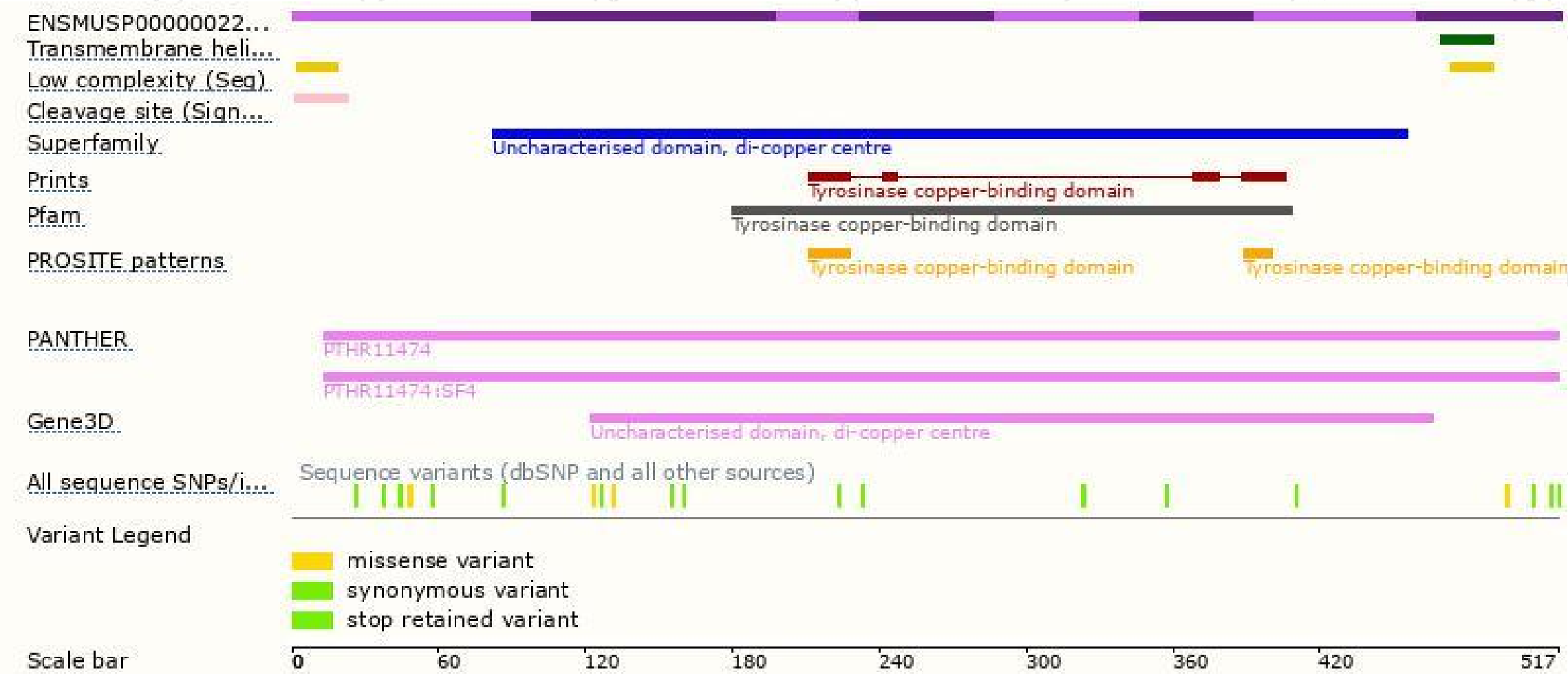
The strategy is based on the design of *Dct-201* transcript, The transcription is shown below



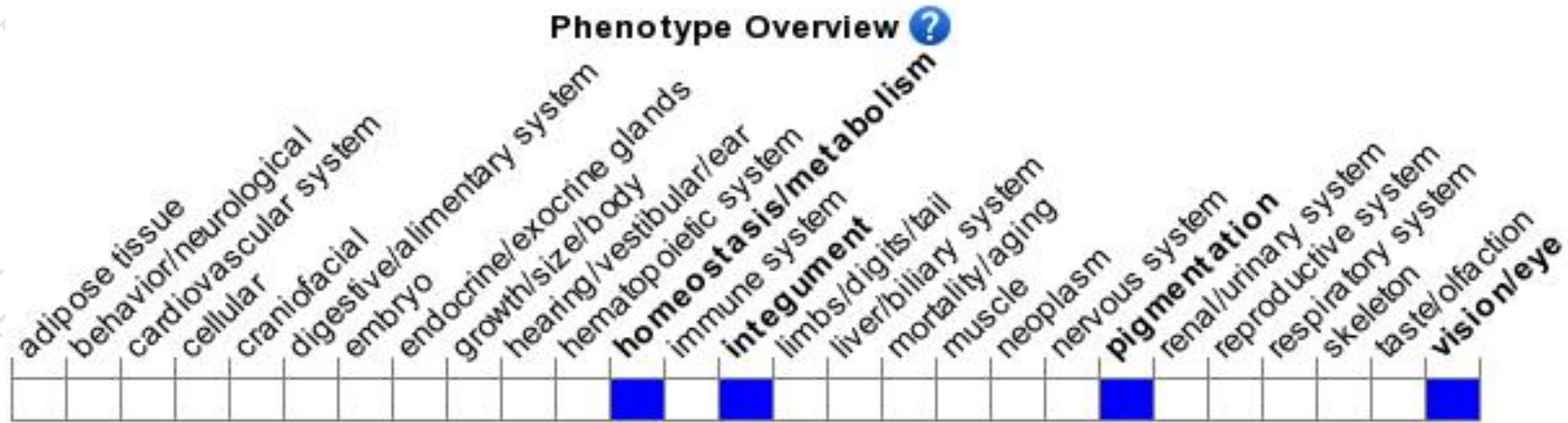
Genomic location distribution



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, Mutations in this melanocyte protein gene cause coat color dilution.

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

Tel: 400-9660890

