

***Dusp1* Cas9-KO Strategy**

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Project Overview

Project Name

Dusp1

Project type

Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dusp1* gene. The schematic diagram is as follows:



- The *Dusp1* gene has 6 transcripts. According to the structure of *Dusp1* gene, exon2-exon4 of *Dusp1-202* (ENSMUST00000025025.6) transcript is recommended as the knockout region. The region contains 737bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dusp1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, Homozygous mutant mice were viable, fertile, and showed no apparent morphological defects.
- The *Duspl* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Dusp1 dual specificity phosphatase 1 [Mus musculus (house mouse)]

Gene ID: 19252, updated on 2-Apr-2019

Summary



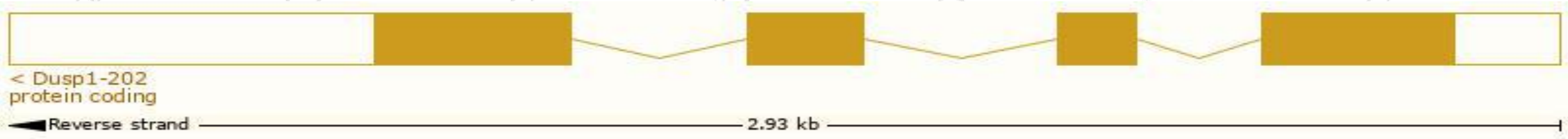
Official Symbol	Dusp1 provided by MGI
Official Full Name	dual specificity phosphatase 1 provided by MGI
Primary source	MGI:MGI:105120
See related	Ensembl:ENSMUSG000000024190
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	3CH134, MKP1, Ptpn16, U19515, erp, mkp-1
Expression	Ubiquitous expression in lung adult (RPKM 117.9), heart adult (RPKM 43.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

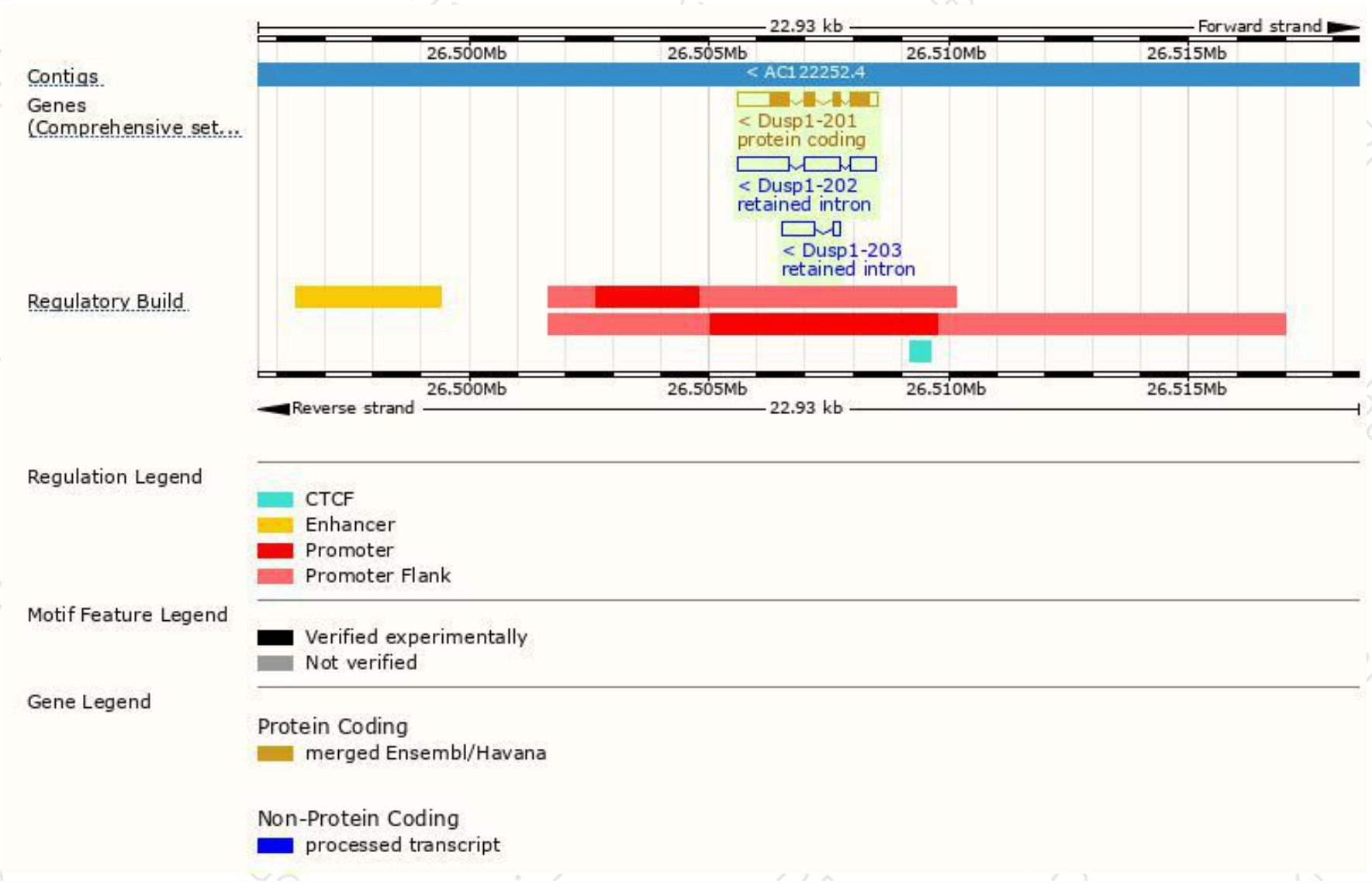
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dusp1-202	ENSMUST00000025025.6	1990	367aa	Protein coding	CCDS28552	P28563 Q3U8K3	TSL:1 GENCODE basic APPRIS P1
Dusp1-205	ENSMUST00000235532.1	1809	276aa	Protein coding	-	-	GENCODE basic
Dusp1-206	ENSMUST00000236661.1	1587	174aa	Protein coding	-	-	GENCODE basic
Dusp1-201	ENSMUST00000011196.6	421	No protein	Processed transcript	-	-	TSL:1
Dusp1-203	ENSMUST00000126178.1	2313	No protein	Retained intron	-	-	TSL:2
Dusp1-204	ENSMUST00000146077.1	839	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Dusp1-202* transcript,The transcription is shown below



Genomic location distribution



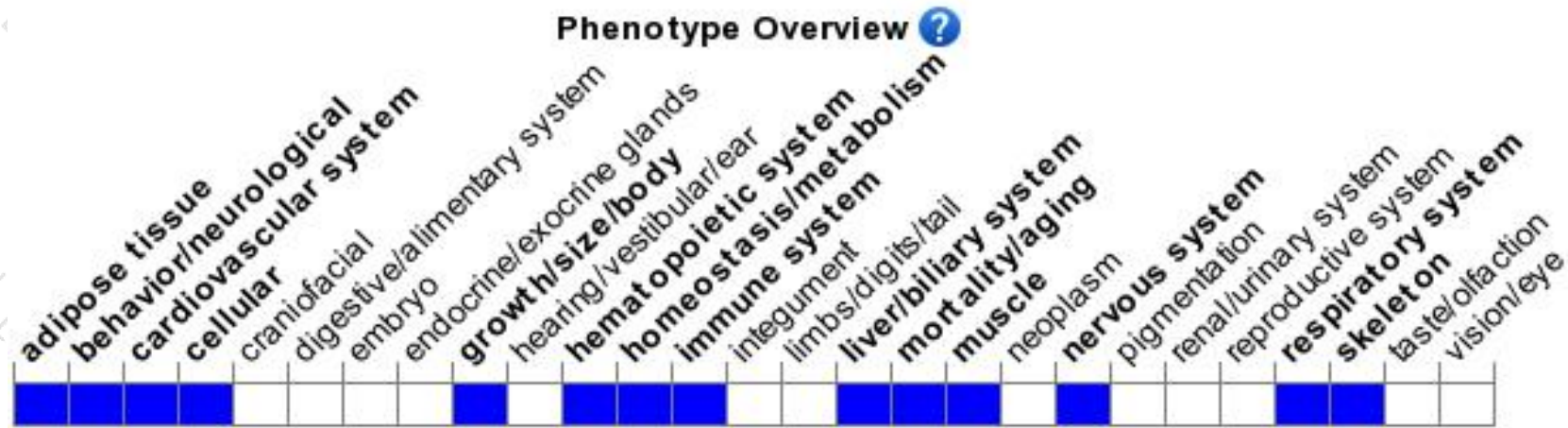
Protein domain



集萃药康
GemPharmatech



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, Homozygous mutant mice were viable, fertile, and showed no apparent morphological defects.

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

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