

Padi4 Cas9-KO Strategy

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Project Overview

Project Name

Padi4

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Padi4* gene. The schematic diagram is as follows:



Technical routes

The *Padi4* gene has 4 transcripts. According to the structure of *Padi4* gene, exon2 of *Padi4-201* (ENSMUST00000026381.6) transcript is recommended as the knockout region. The region contains 181bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Padi4* gene. The brief process is as follows: CRISPR/Cas9 system

According to the existing MGI data, Homozygous mice are viable albeit reduced number than expected were born from heterozygous crosses, and shows decreased antibacterial immune responses. Mice homozygous for a different knock-out allele exhibit decreased weight loss in response to viral infection.

The *Padi4* gene is located on the Chr4. 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.

Padi4 peptidyl arginine deiminase, type IV [Mus musculus (house mouse)]

Gene ID: 18602, updated on 19-Feb-2019

Summary



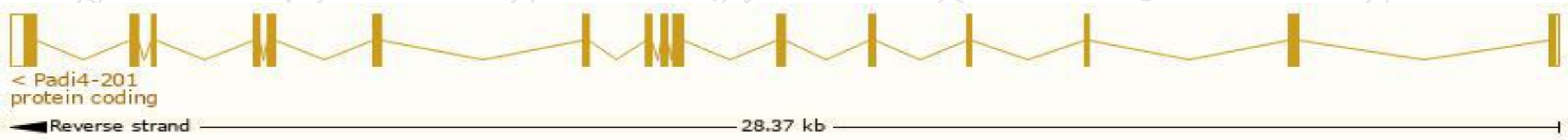
Official Symbol	Padi4 provided by MGI
Official Full Name	peptidyl arginine deiminase, type IV provided by MGI
Primary source	MGI:MGI:1338898
See related	Ensembl:ENSMUSG00000025330
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Pad4, Pdi4
Expression	Biased expression in thymus adult (RPKM 6.8), bladder adult (RPKM 5.0) and 9 other tissues See more
Orthologs	human all

Transcript information Ensembl

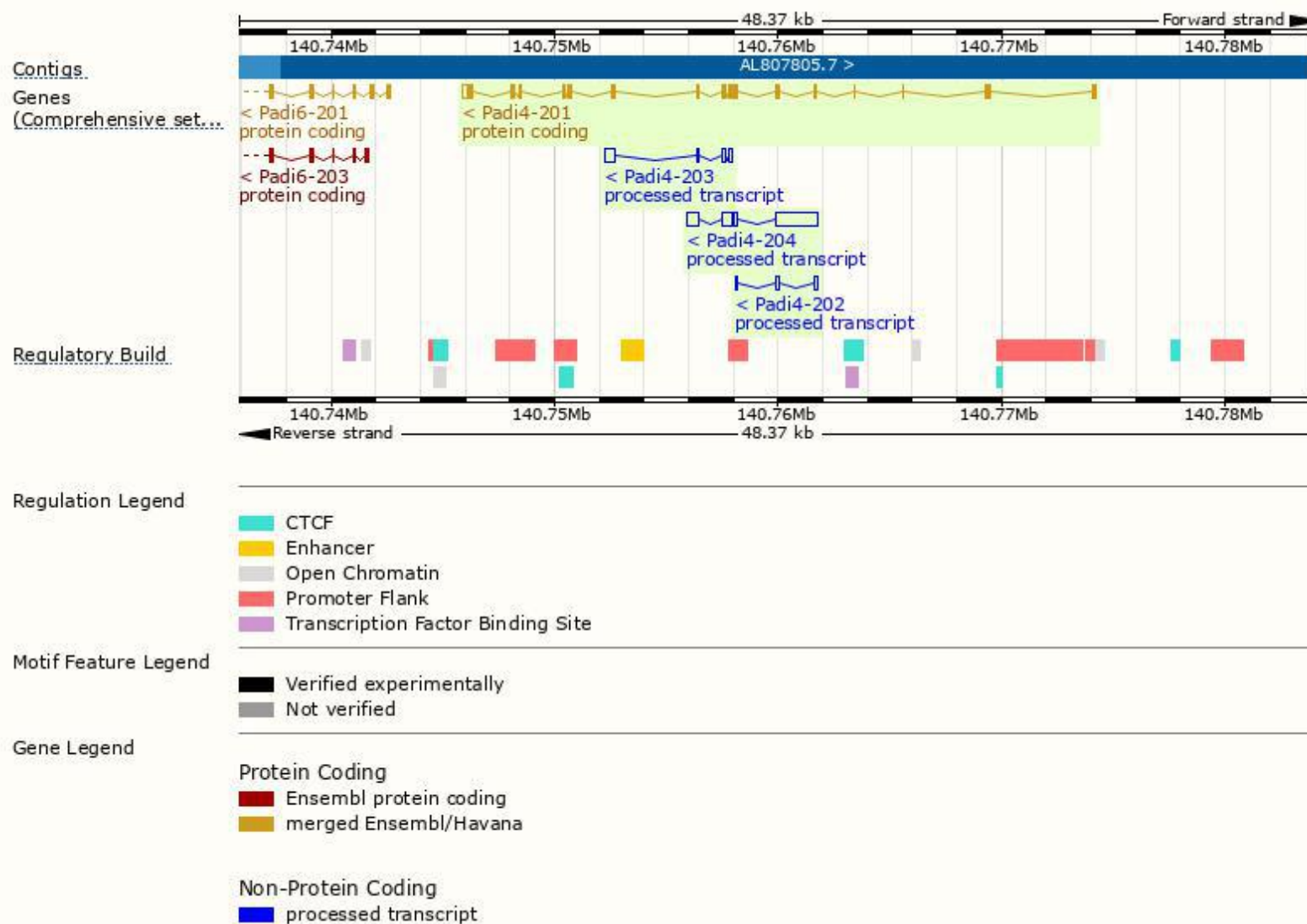
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Padi4-201	ENSMUST00000026381.6	2316	666aa	Protein coding	CCDS18854	Q9Z183	TSL:1 GENCODE basic APPRIS P1
Padi4-204	ENSMUST00000143019.1	3021	No protein	Processed transcript	-	-	TSL:1
Padi4-203	ENSMUST00000137516.1	724	No protein	Processed transcript	-	-	TSL:3
Padi4-202	ENSMUST00000137440.1	403	No protein	Processed transcript	-	-	TSL:2

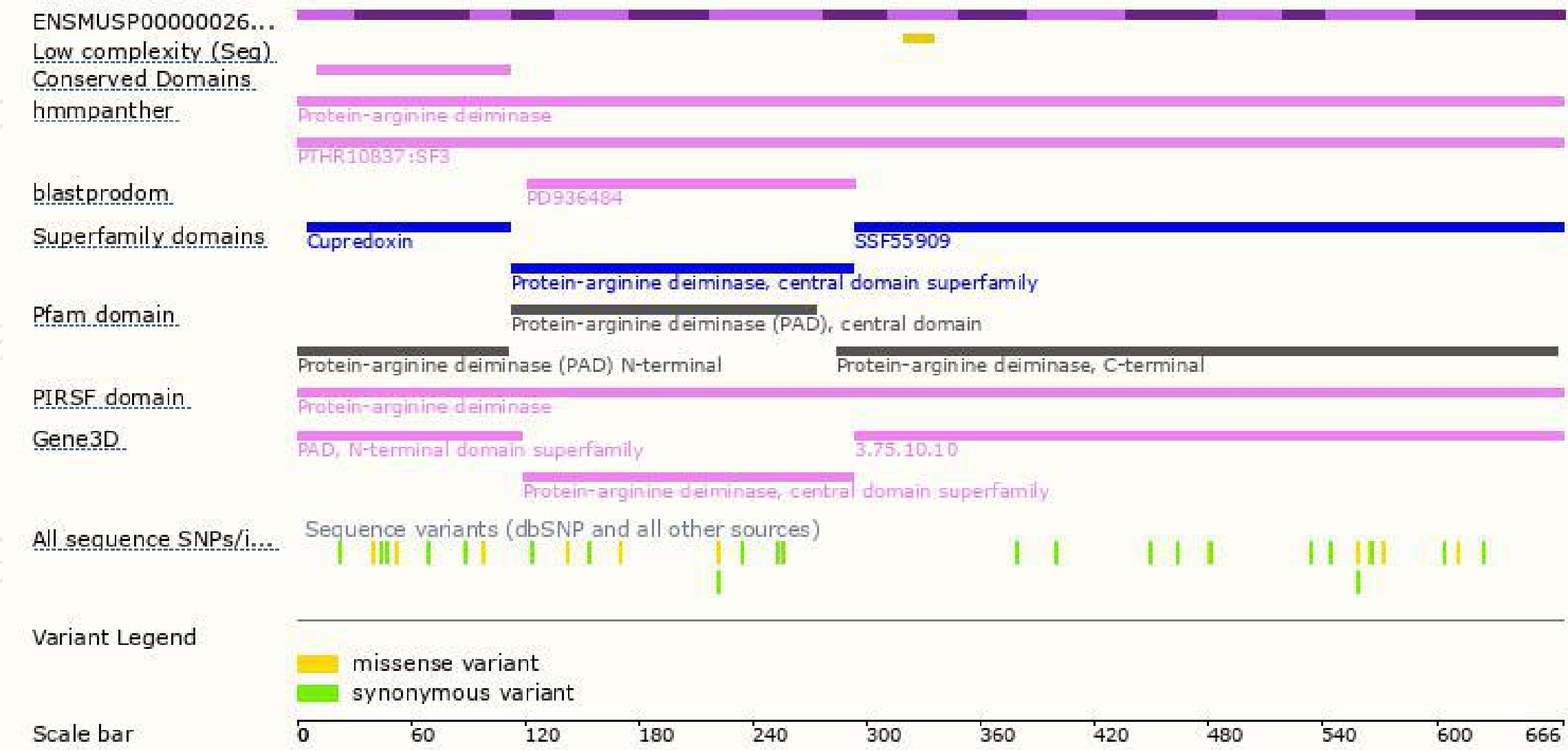
The strategy is based on the design of *Padi4-201* transcript,The transcription is shown below



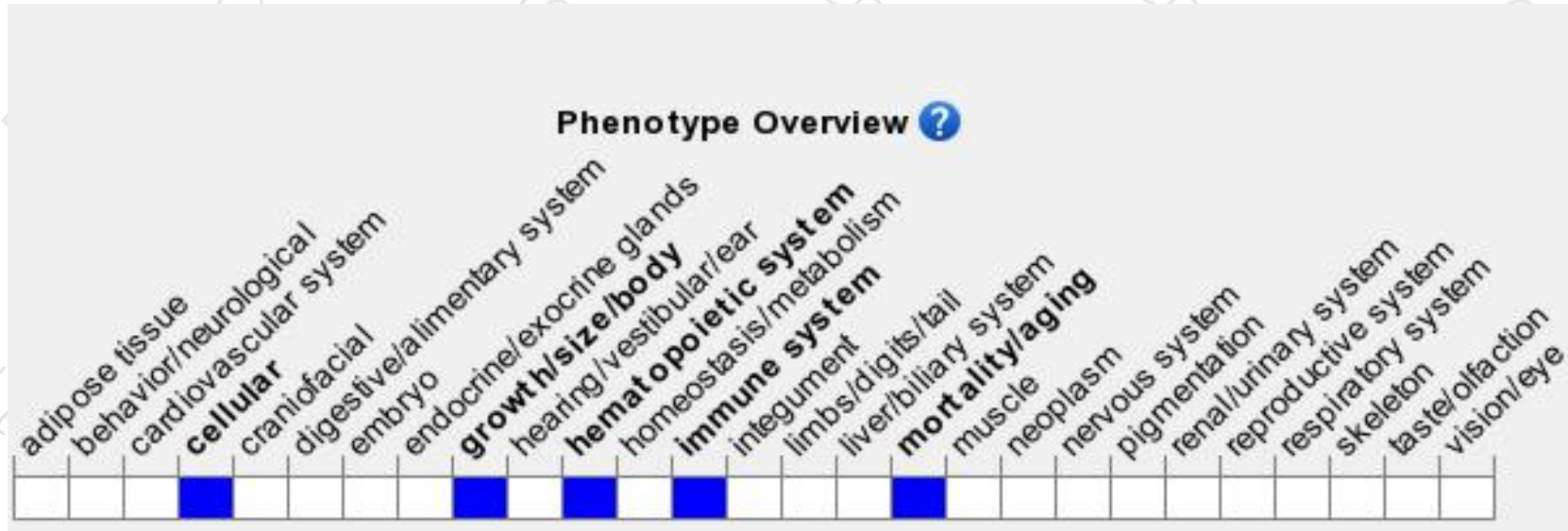
Genomic location distribution



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, Homozygous mice are viable albeit reduced number than expected were born from heterozygous crosses, and shows decreased antibacterial immune responses. Mice homozygous for a different knock-out allele exhibit decreased weight loss in response to viral infection.

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

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