

Usp3 Cas9-KO Strategy

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Project Overview

Project Name

Usp3

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp3* gene. The schematic diagram is as follows:



- The *Usp3* gene has 11 transcripts. According to the structure of *Usp3* gene, exon2 of *Usp3-205* (ENSMUST00000127569.7) transcript is recommended as the knockout region. The region contains 61bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Usp3* gene. The brief process is as follows: CRISPR/Cas9 system v

- The *Usp3* gene is located on the Chr9. 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)

Usp3 ubiquitin specific peptidase 3 [Mus musculus (house mouse)]

Gene ID: 235441, updated on 31-Jan-2019

Summary



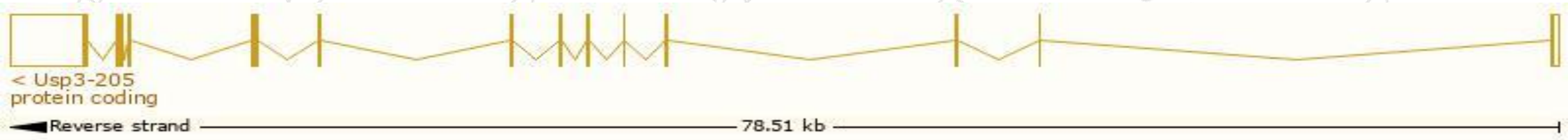
Official Symbol	Usp3 provided by MGI
Official Full Name	ubiquitin specific peptidase 3 provided by MGI
Primary source	MGI:MGI:2152450
See related	Ensembl:ENSMUSG000000032376
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA409661, BC017156
Summary	The protein encoded by this gene is a chromatin-associated histone 2A and 2B deubiquitinating enzyme that negatively regulates the DNA damage response. Mice deficient for this enzyme have reduced hematopoietic stem cell reserves, demonstrating a requirement in hematopoietic stem cell homeostasis. In addition, knock down of protein levels results in spontaneous tumor development and shortened lifespan, consistent with a function in preserving chromosomal integrity. Alternative splicing results in multiple transcript variants encoding different isoforms. [provided by RefSeq, Oct 2014]
Expression	Ubiquitous expression in thymus adult (RPKM 7.4), cerebellum adult (RPKM 5.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

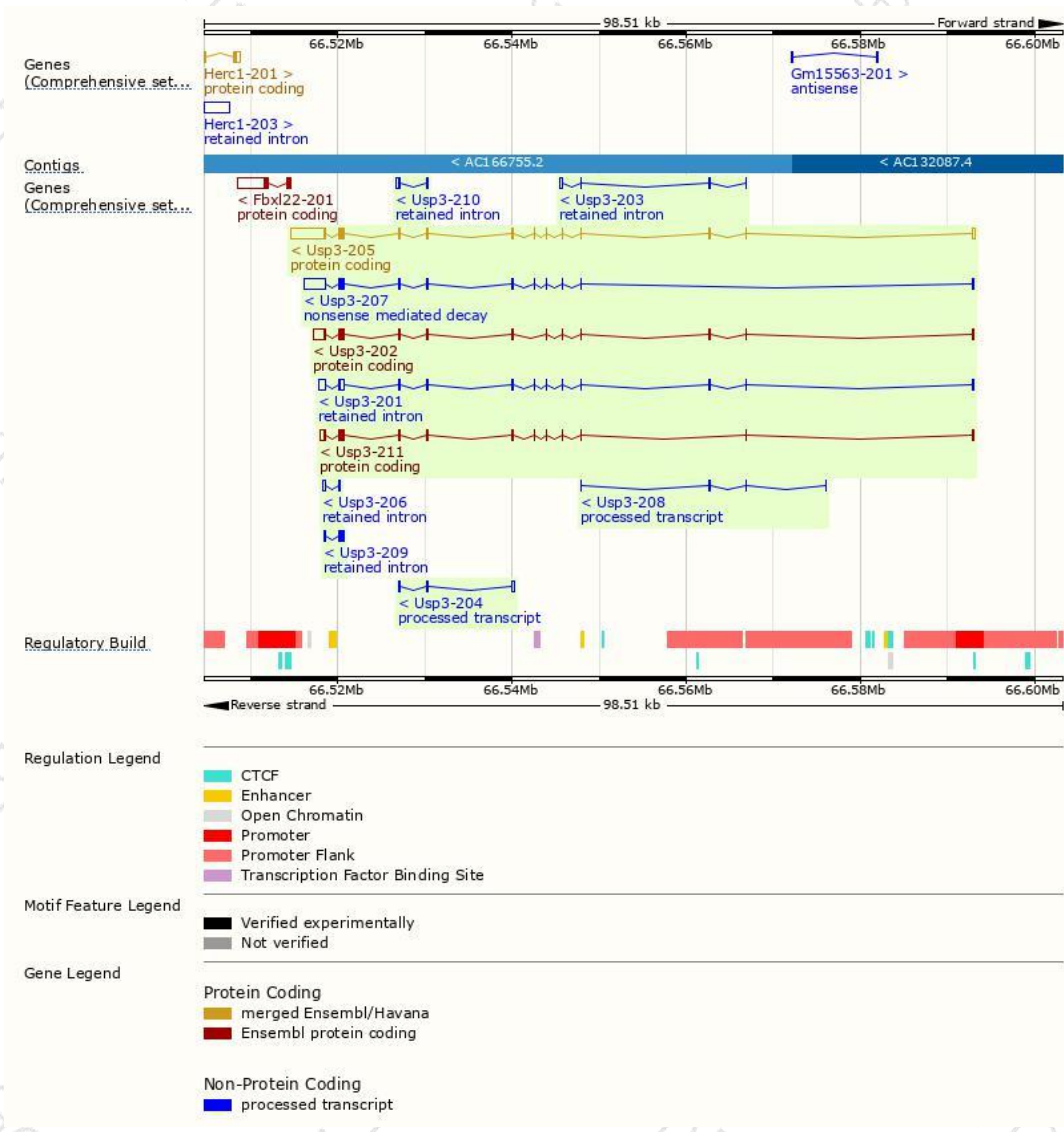
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp3-205	ENSMUST00000127569.7	5607	520aa	Protein coding	CCDS23305	Q91W36	TSL:1 GENCODE basic APPRIS P1
Usp3-202	ENSMUST00000098613.8	2797	482aa	Protein coding	CCDS81025	E9Q8W9	TSL:1 GENCODE basic
Usp3-211	ENSMUST00000174387.1	1901	476aa	Protein coding	-	G3UZFO	TSL:5 GENCODE basic
Usp3-207	ENSMUST00000139547.7	3662	49aa	Nonsense mediated decay	-	D6RG67	TSL:1
Usp3-204	ENSMUST00000124694.1	588	No protein	Processed transcript	-	-	TSL:2
Usp3-208	ENSMUST00000139952.1	324	No protein	Processed transcript	-	-	TSL:5
Usp3-201	ENSMUST00000034940.10	2405	No protein	Retained intron	-	-	TSL:5
Usp3-203	ENSMUST00000124519.7	664	No protein	Retained intron	-	-	TSL:3
Usp3-210	ENSMUST00000154476.7	625	No protein	Retained intron	-	-	TSL:2
Usp3-206	ENSMUST00000132255.1	573	No protein	Retained intron	-	-	TSL:2
Usp3-209	ENSMUST00000150840.1	565	No protein	Retained intron	-	-	TSL:2

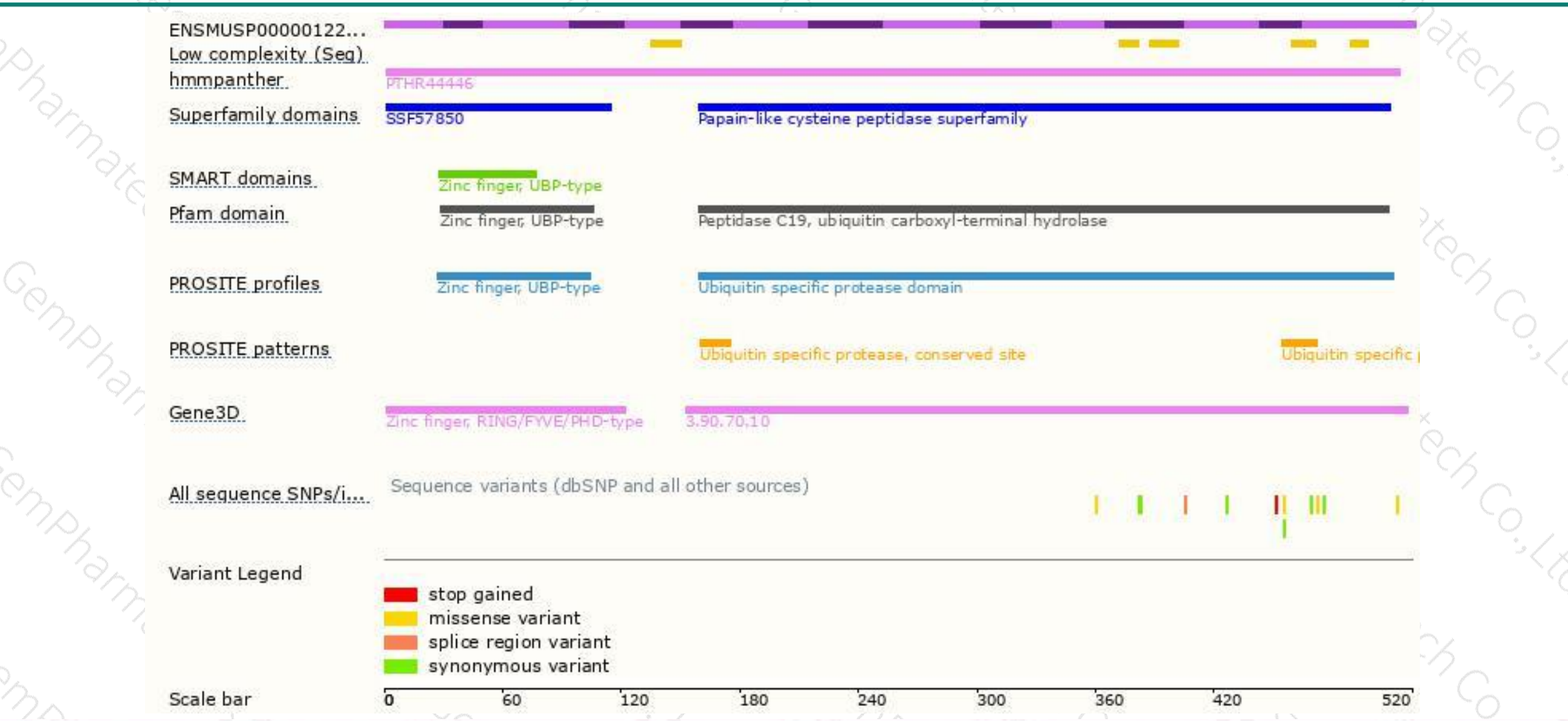
The strategy is based on the design of *Usp3-205* transcript,The transcription is shown below



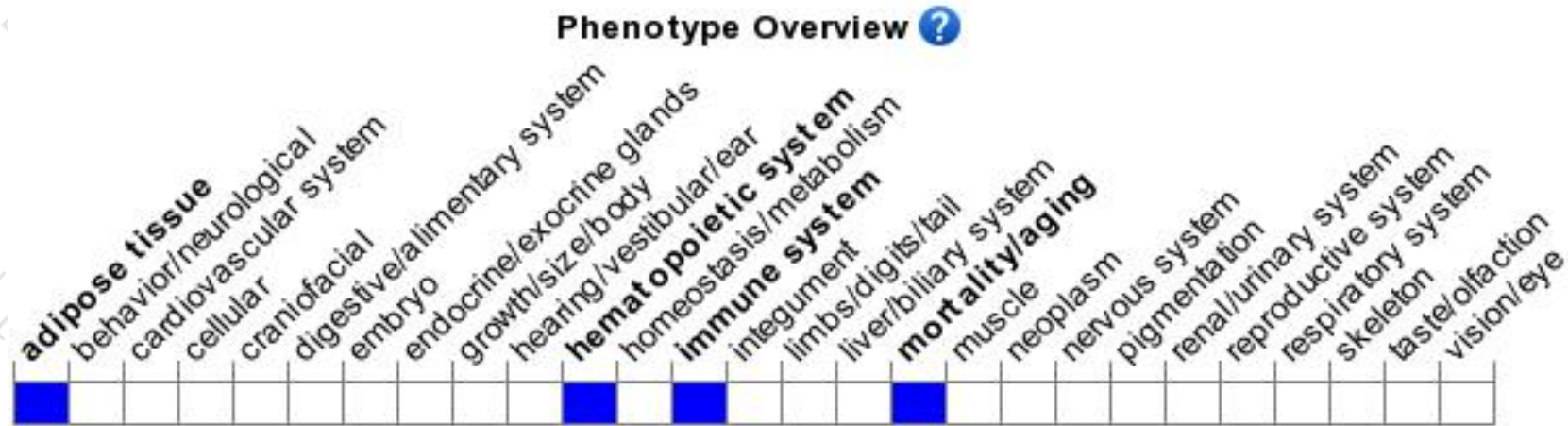
Genomic location distribution



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/>).

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

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