

Hdac3 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2019-10-18

Project Overview

Project Name

Hdac3

Project type

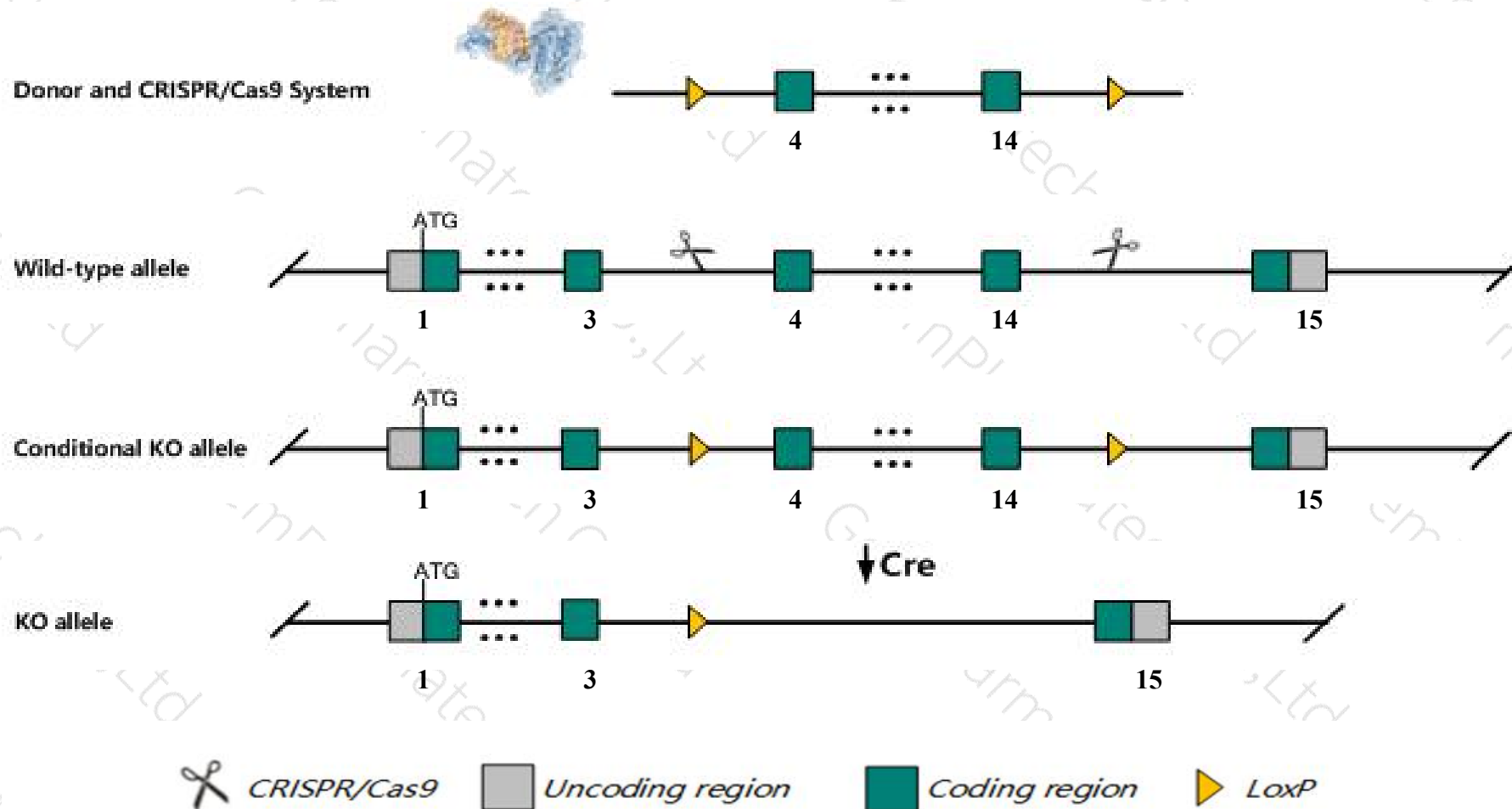
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hdac3* gene. The schematic diagram is as follows:



- The *Hdac3* gene has 6 transcripts. According to the structure of *Hdac3* gene, exon4-exon14 of *Hdac3-201* (ENSMUST00000043498.8) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hdac3* 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, Disruption of this gene results in embryonic death at or around the time of gastrulation. Structural and functional abnormalities are also reported in mitochondria.
- The *Hdac3* gene is located on the Chr18. 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)

Hdac3 histone deacetylase 3 [Mus musculus (house mouse)]

Gene ID: 15183, updated on 19-Mar-2019

Summary



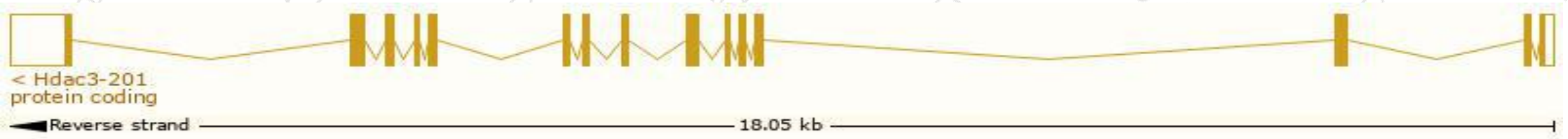
Official Symbol	Hdac3 provided by MGI
Official Full Name	histone deacetylase 3 provided by MGI
Primary source	MGI:MGI:1343091
See related	Ensembl:ENSMUSG00000024454
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW537363
Expression	Ubiquitous expression in CNS E14 (RPKM 54.1), limb E14.5 (RPKM 54.1) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

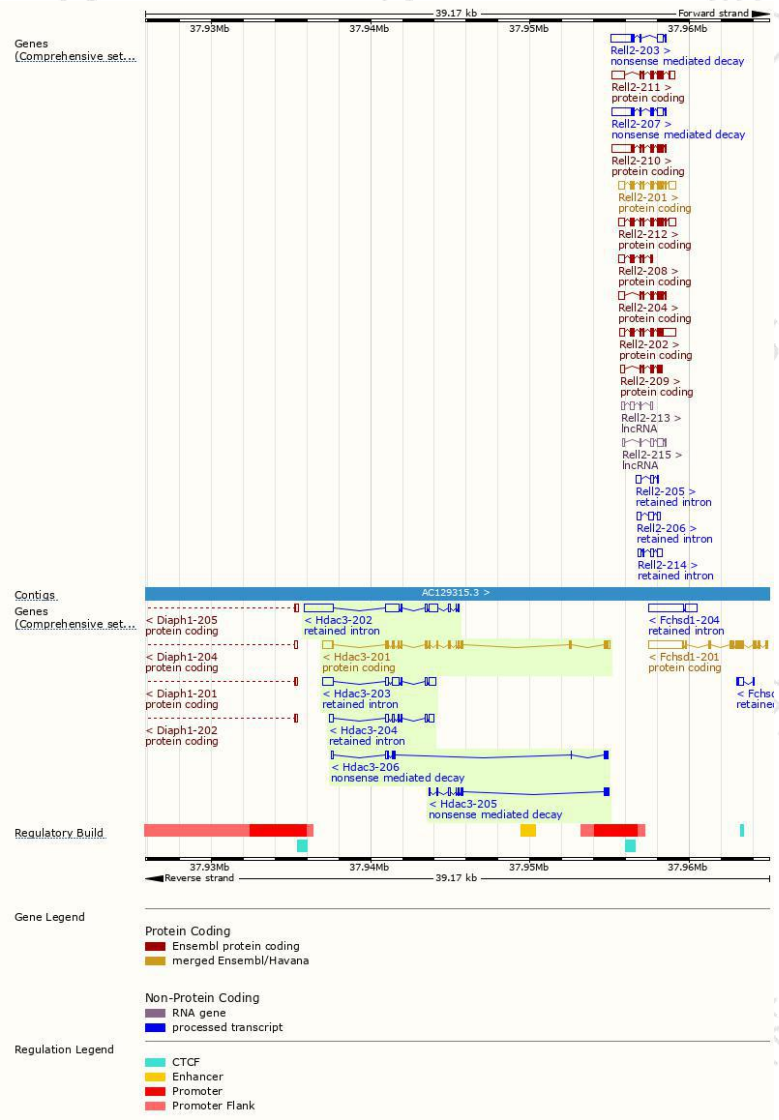
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hdac3-201	ENSMUST00000043498.8	2032	428aa	Protein coding	CCDS37785	Q3UM33	TSL:1 GENCODE basic APPRIS P1
Hdac3-205	ENSMUST00000235700.1	683	75aa	Nonsense mediated decay	-	-	
Hdac3-206	ENSMUST00000236756.1	615	120aa	Nonsense mediated decay	-	H6UK62	
Hdac3-202	ENSMUST00000143660.7	3585	No protein	Retained intron	-	-	TSL:5
Hdac3-203	ENSMUST00000144471.7	1811	No protein	Retained intron	-	-	TSL:3
Hdac3-204	ENSMUST00000153945.2	1040	No protein	Retained intron	-	-	TSL:5

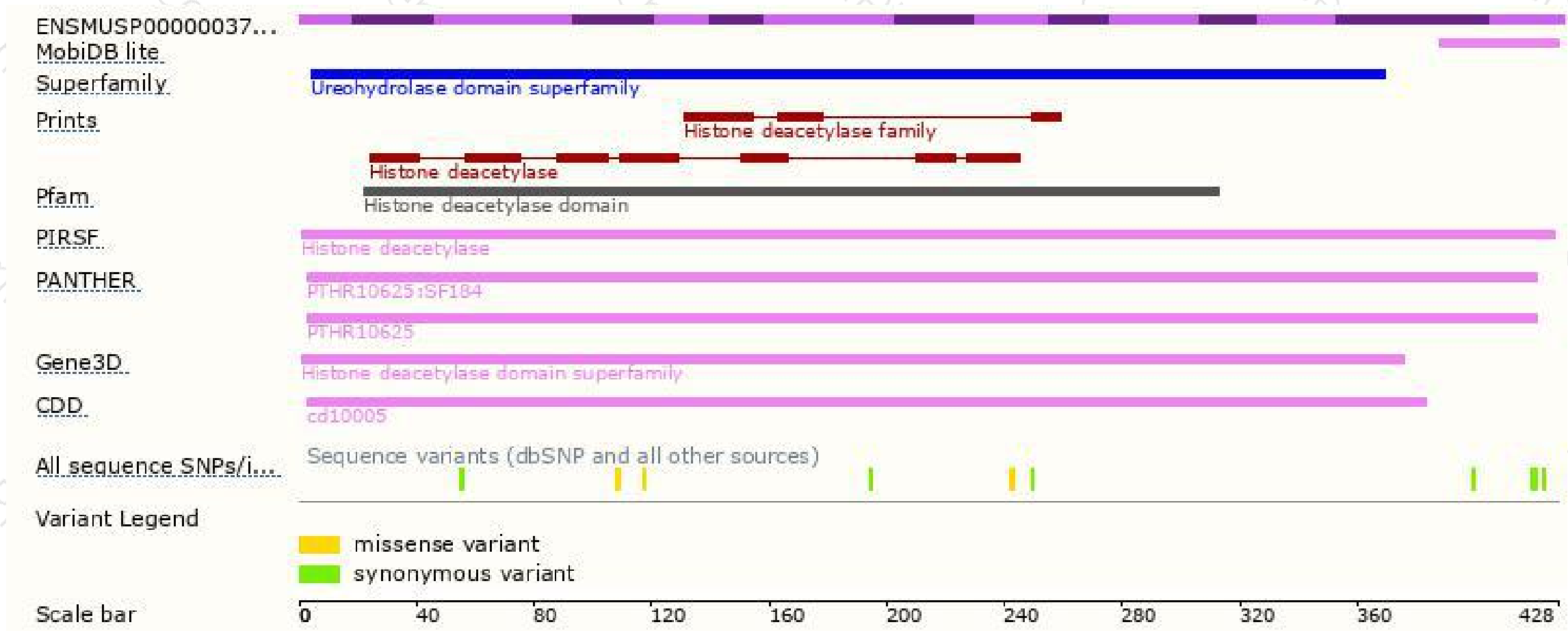
The strategy is based on the design of *Hdac3-201* transcript,The transcription is shown below



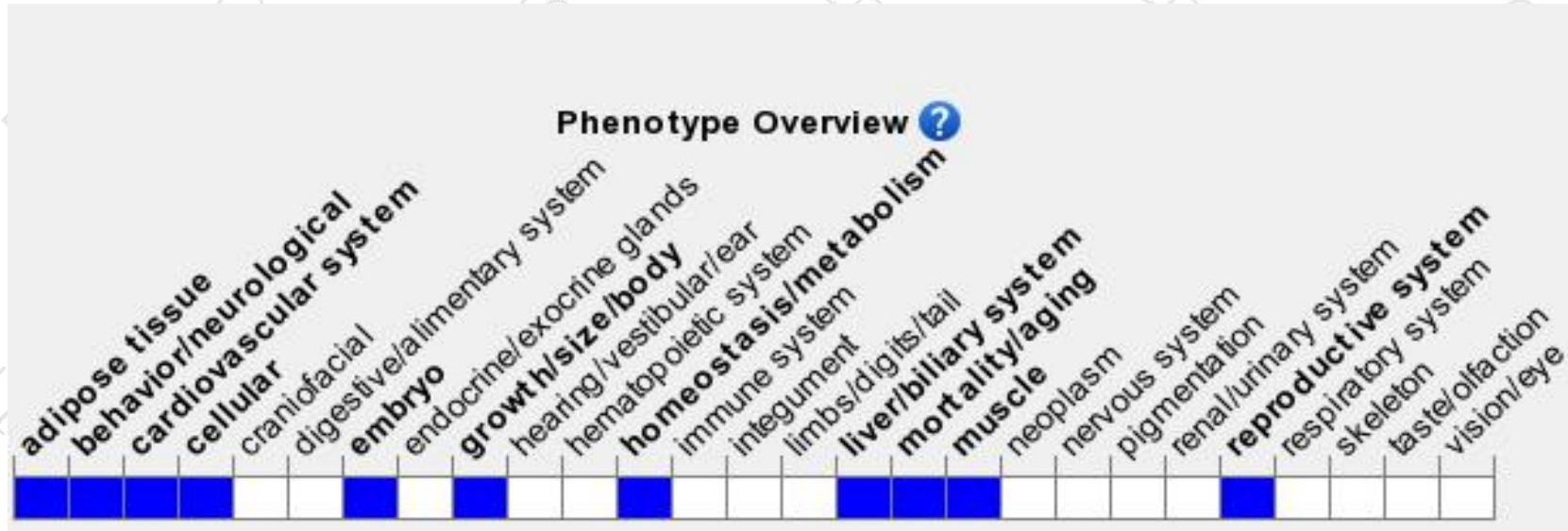
Genomic location distribution



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/>).

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

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