

Hdac1 Cas9-CKO Strategy

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Project Overview

Project Name

Hdac1

Project type

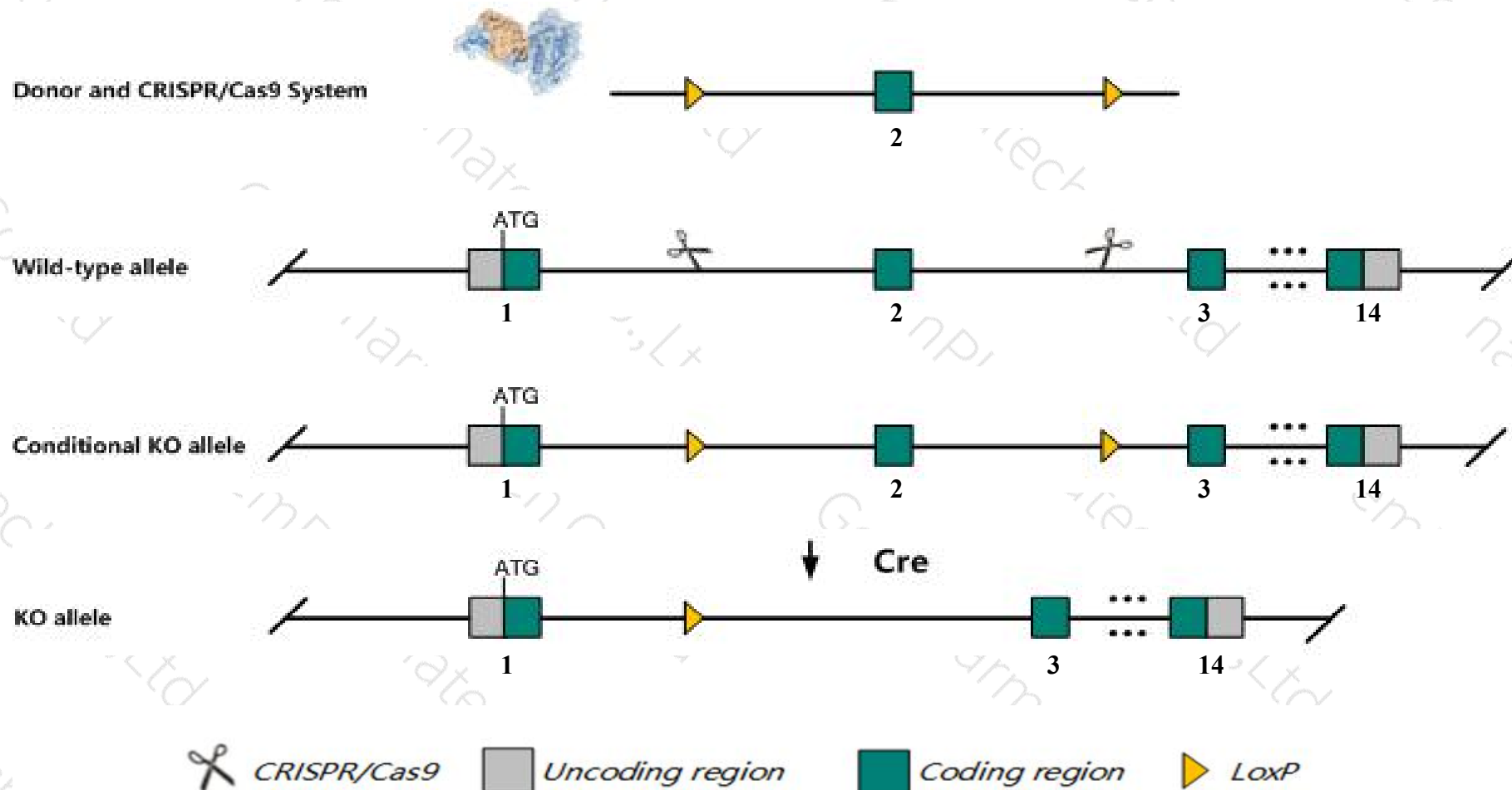
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hdac1* gene. The schematic diagram is as follows:



- The *Hdac1* gene has 7 transcripts. According to the structure of *Hdac1* gene, exon2 of *Hdac1-201* (ENSMUST00000102597.4) transcript is recommended as the knockout region. The region contains 113bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hdac1* 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, Mice homozygous for disruptions in this gene die as embryos between E9.5 and E10.5.
- The *Hdac1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Hdac1 histone deacetylase 1 [Mus musculus (house mouse)]

Gene ID: 433759, updated on 3-Mar-2019

Summary



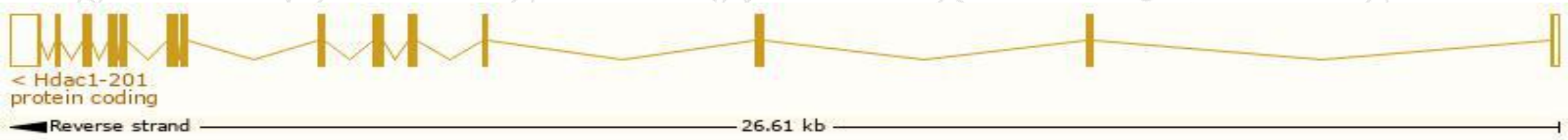
Official Symbol	Hdac1 provided by MGI
Official Full Name	histone deacetylase 1 provided by MGI
Primary source	MGI:MGI:108086
See related	Ensembl:ENSMUSG00000028800
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	HD1, Hdac1-ps, MommeD5, RPD3
Expression	Ubiquitous expression in CNS E11.5 (RPKM 54.8), placenta adult (RPKM 51.1) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

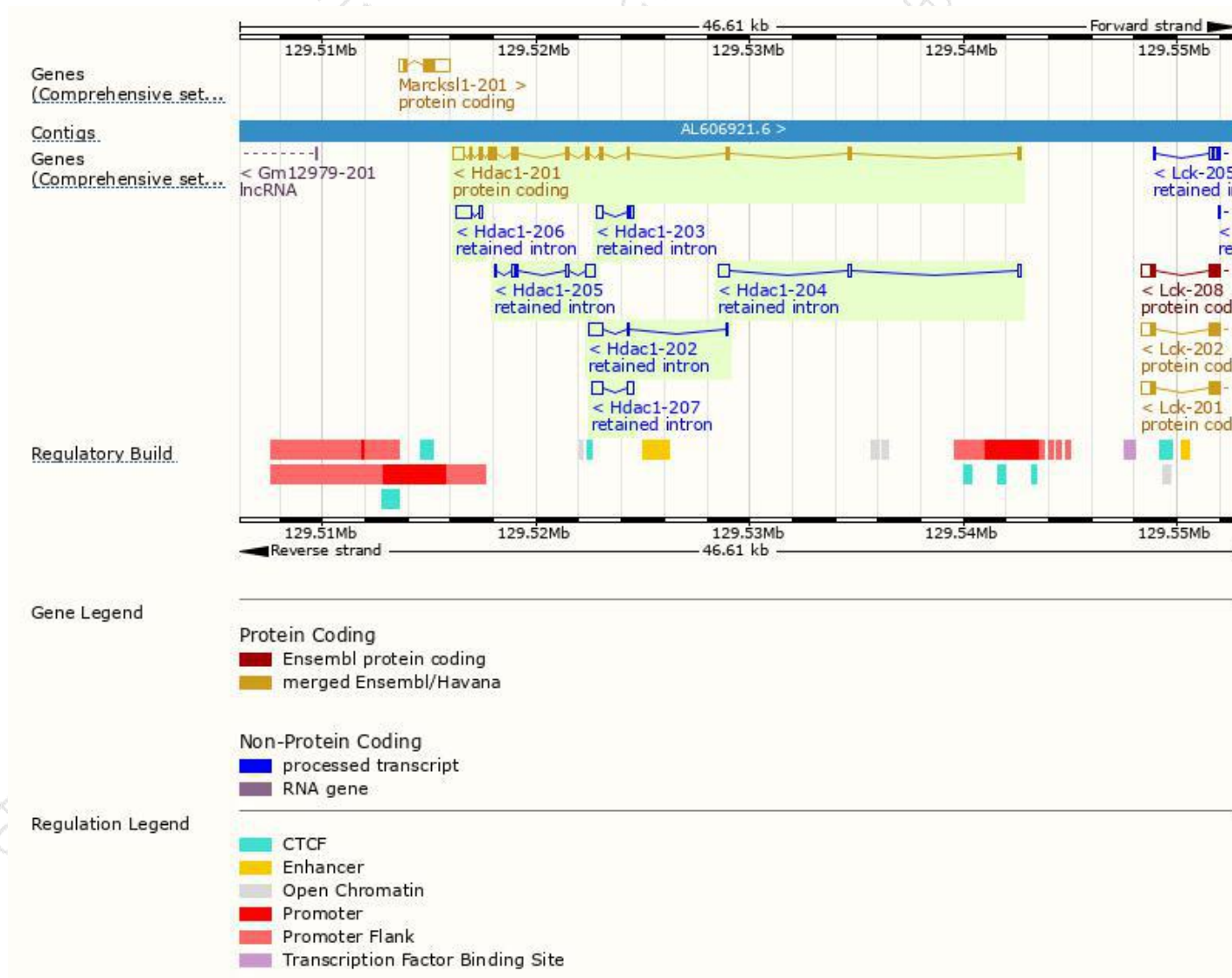
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hdac1-201	ENSMUST00000102597.4	2038	482aa	Protein coding	CCDS18696	O09106 Q58E49	TSL:1 GENCODE basic APPRIS P1
Hdac1-206	ENSMUST00000145628.1	844	No protein	Retained intron	-	-	TSL:2
Hdac1-205	ENSMUST00000142984.1	810	No protein	Retained intron	-	-	TSL:2
Hdac1-207	ENSMUST00000150105.1	803	No protein	Retained intron	-	-	TSL:2
Hdac1-202	ENSMUST00000125718.7	759	No protein	Retained intron	-	-	TSL:3
Hdac1-204	ENSMUST00000139305.1	754	No protein	Retained intron	-	-	TSL:2
Hdac1-203	ENSMUST00000132909.1	473	No protein	Retained intron	-	-	TSL:3

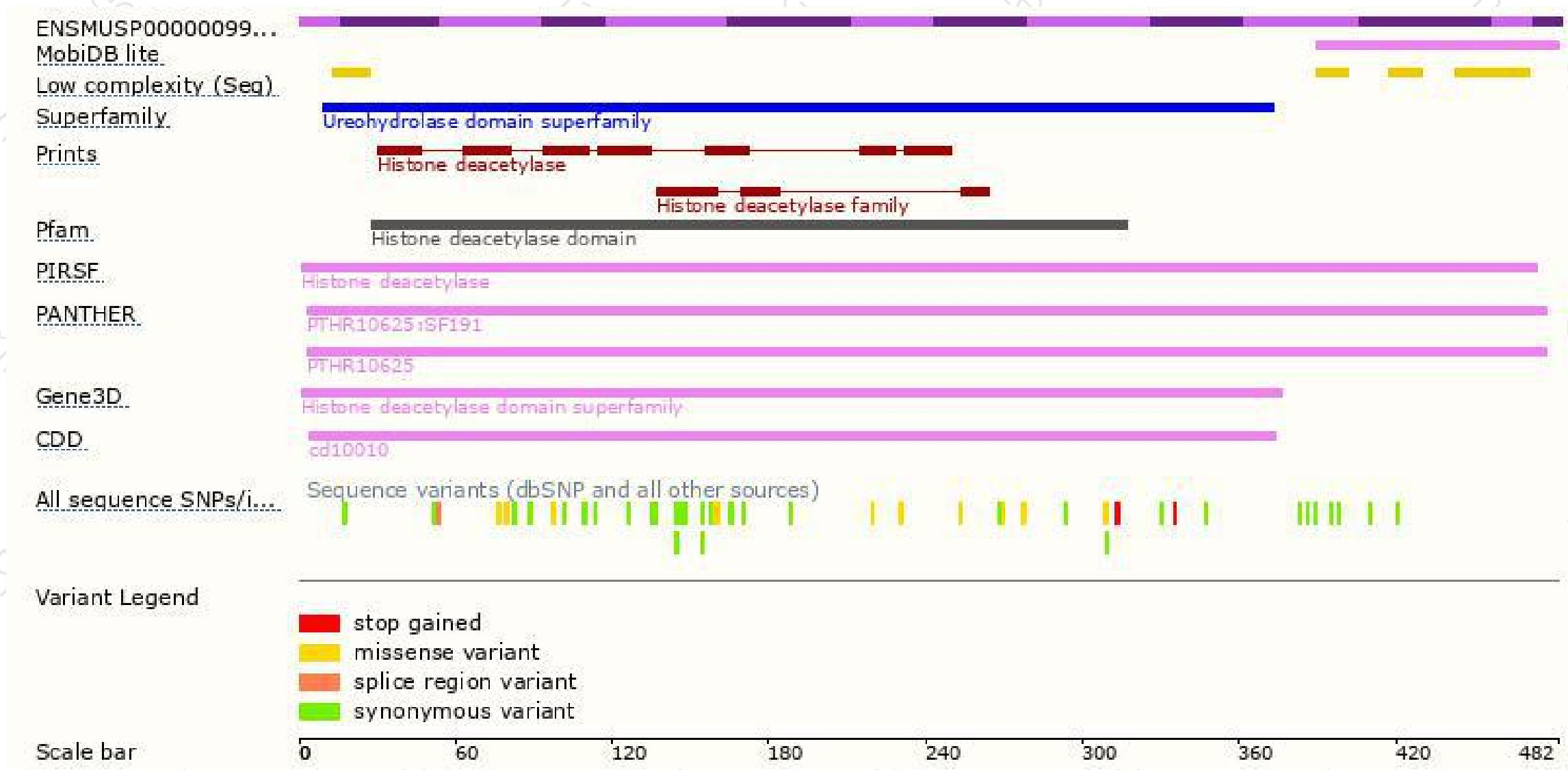
The strategy is based on the design of *Hdac1-201* transcript,The transcription is shown below



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, Mice homozygous for disruptions in this gene die as embryos between E9.5 and E10.5.

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

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