

# ***Hdac11*** Cas9-KO Strategy

**Designer:**

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**Design Date:**

**2019-8-8**

# Project Overview

**Project Name**

*Hdac11*

**Project type**

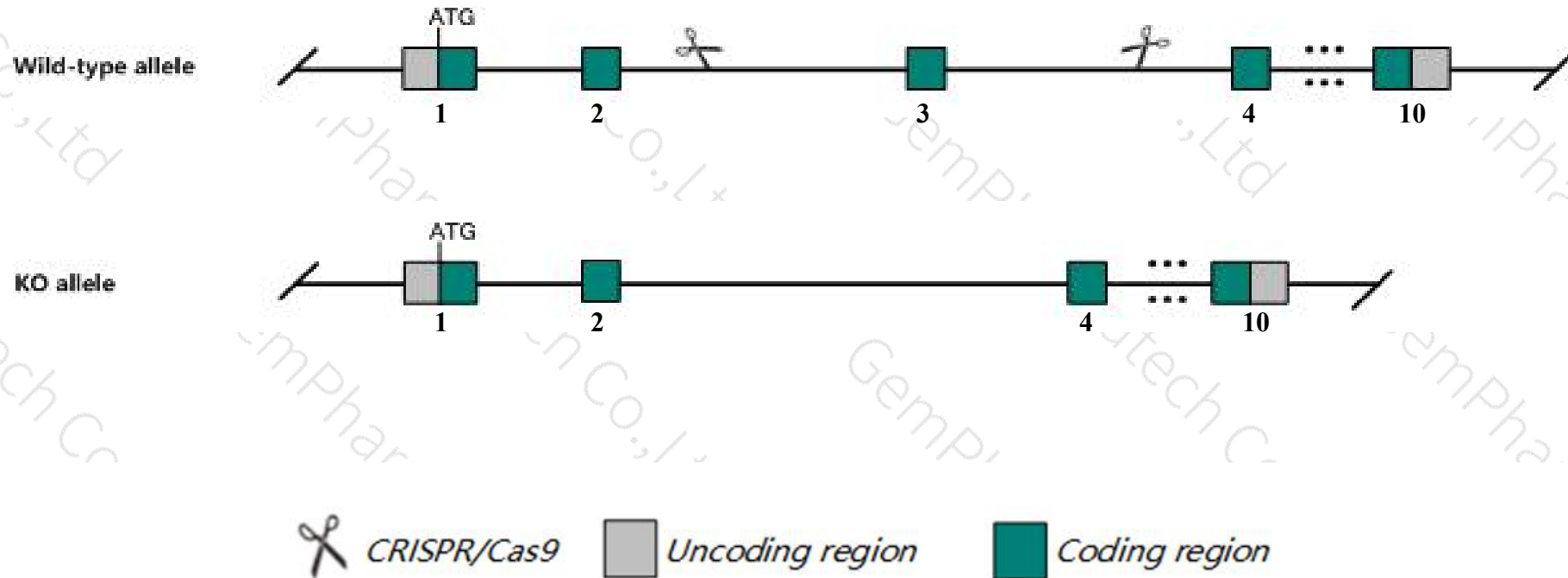
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hdac11* gene. The schematic diagram is as follows:



- The *Hdac11* gene has 7 transcripts. According to the structure of *Hdac11* gene, exon3 of *Hdac11-201* (ENSMUST00000041736.10) transcript is recommended as the knockout region. The region contains 101bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hdac11* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knockout allele exhibit increased IL10 secretion from peritoneal elicited macrophages stimulated with LPS, more suppressive myeloid-derived suppressive cell population and enhanced tumor growth of injected tumor cells.
- The *Hdac11* gene is located on the Chr6. 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)

## Hdac11 histone deacetylase 11 [Mus musculus (house mouse)]

Gene ID: 232232, updated on 30-Mar-2019

### Summary



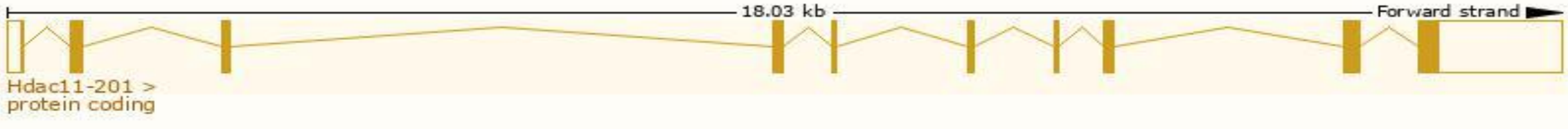
|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Hdac11 provided by <a href="#">MGI</a>                                                                                                                                    |
| <b>Official Full Name</b> | histone deacetylase 11 provided by <a href="#">MGI</a>                                                                                                                    |
| <b>Primary source</b>     | <a href="#">MGI:MGI:2385252</a>                                                                                                                                           |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG000000034245</a>                                                                                                                               |
| <b>Gene type</b>          | protein coding                                                                                                                                                            |
| <b>RefSeq status</b>      | PROVISIONAL                                                                                                                                                               |
| <b>Organism</b>           | <a href="#">Mus musculus</a>                                                                                                                                              |
| <b>Lineage</b>            | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| <b>Expression</b>         | Ubiquitous expression in testis adult (RPKM 59.4), cerebellum adult (RPKM 42.4) and 27 other tissues <a href="#">See more</a>                                             |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

# Transcript information (Ensembl)

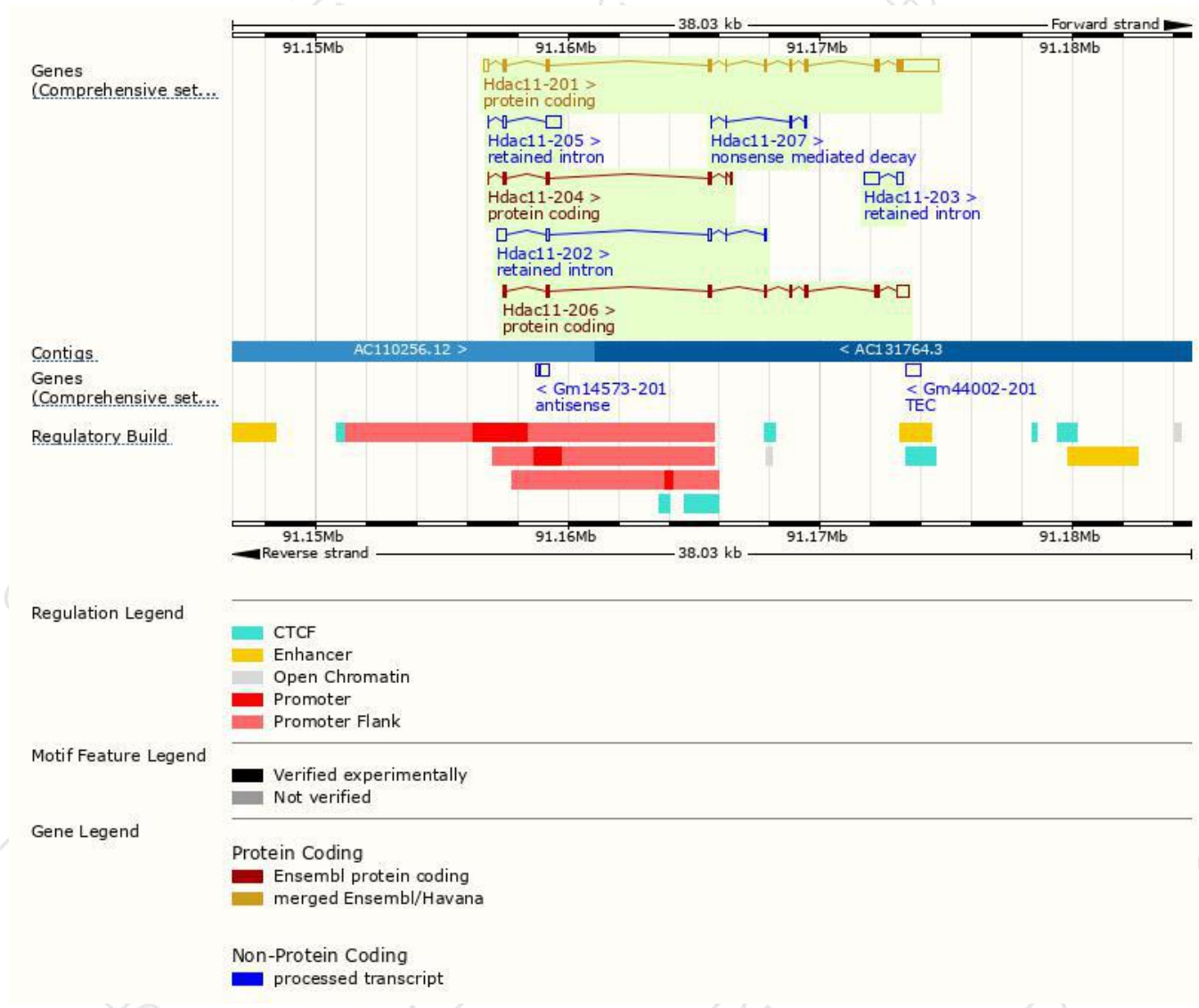
The gene has 7 transcripts,all transcripts are shown below:

| Name       | Transcript ID                         | bp   | Protein               | Biotype                 | CCDS                      | UniProt                                       | Flags                         |
|------------|---------------------------------------|------|-----------------------|-------------------------|---------------------------|-----------------------------------------------|-------------------------------|
| Hdac11-201 | <a href="#">ENSMUST00000041736.10</a> | 2653 | <a href="#">347aa</a> | Protein coding          | <a href="#">CCDS20366</a> | <a href="#">Q543U1</a> <a href="#">Q91WA3</a> | TSL:1 GENCODE basic APPRIS P1 |
| Hdac11-206 | <a href="#">ENSMUST00000155007.1</a>  | 1251 | <a href="#">264aa</a> | Protein coding          | -                         | <a href="#">F6UL83</a>                        | CDS 5' incomplete TSL:5       |
| Hdac11-204 | <a href="#">ENSMUST00000143621.7</a>  | 536  | <a href="#">172aa</a> | Protein coding          | -                         | <a href="#">D3Z2G7</a>                        | CDS 3' incomplete TSL:5       |
| Hdac11-207 | <a href="#">ENSMUST00000204776.1</a>  | 198  | <a href="#">26aa</a>  | Nonsense mediated decay | -                         | <a href="#">A0A0N4SVA2</a>                    | CDS 5' incomplete TSL:1       |
| Hdac11-203 | <a href="#">ENSMUST00000134154.1</a>  | 815  | No protein            | Retained intron         | -                         | -                                             | TSL:2                         |
| Hdac11-205 | <a href="#">ENSMUST00000154389.1</a>  | 738  | No protein            | Retained intron         | -                         | -                                             | TSL:2                         |
| Hdac11-202 | <a href="#">ENSMUST00000127768.1</a>  | 688  | No protein            | Retained intron         | -                         | -                                             | TSL:3                         |

The strategy is based on the design of *Hdac11-201* transcript,The transcription is shown below

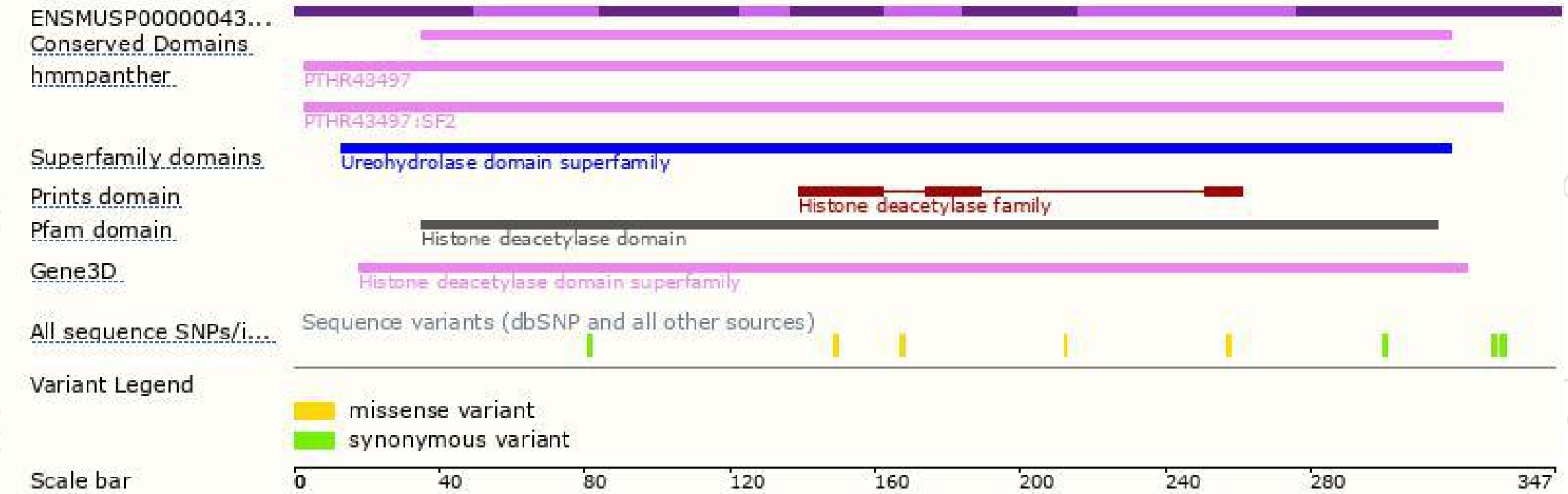


# Genomic location distribution

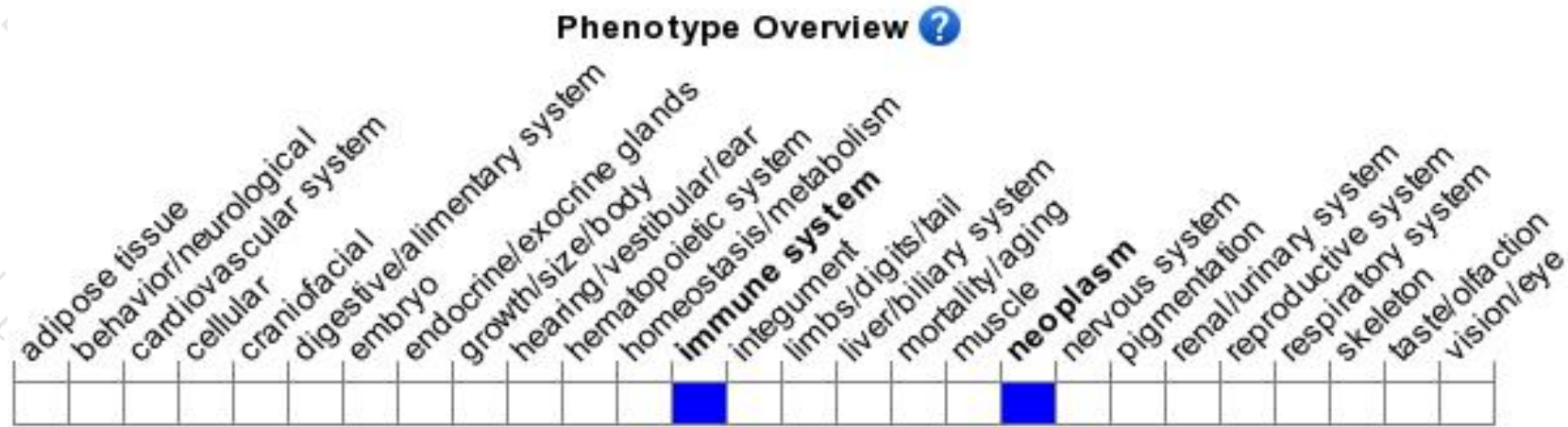




# Protein domain



# 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 a knockout allele exhibit increased IL10 secretion from peritoneal elicited macrophages stimulated with LPS, more suppressive myeloid-derived suppressive cell population and enhanced tumor growth of injected tumor cells.

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

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