

# ***Tut7* Cas9-KO Strategy**

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Reviewer: Jia Yu

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# Project Overview

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**Project Name**

***Tut7***

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**Project type**

**Cas9-KO**

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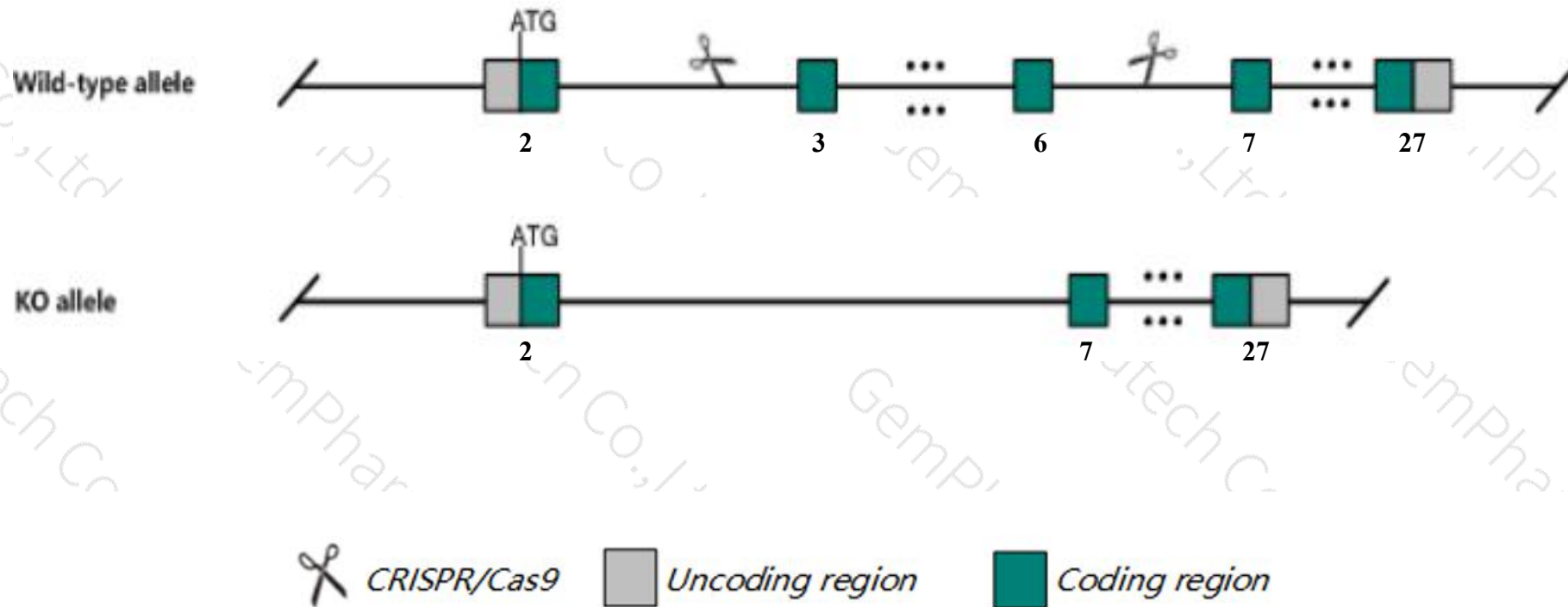
**Strain background**

**C57BL/6JGpt**

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# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tut7* gene. The schematic diagram is as follows:



- The *Tut7* gene has 10 transcripts. According to the structure of *Tut7* gene, exon3-exon6 of *Tut7-201* (ENSMUST00000071703.5) transcript is recommended as the knockout region. The region contains 566bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tut7* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, mice homozygous for conditional alleles of *tut4* and *tut7* activated in oocytes exhibit female infertility due to abnormal female meiosis I.
- The *Tut7* gene is located on the Chr13. 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)

## Tut7 terminal uridylyl transferase 7 [Mus musculus (house mouse)]

Gene ID: 214290, updated on 13-Mar-2020

### Summary



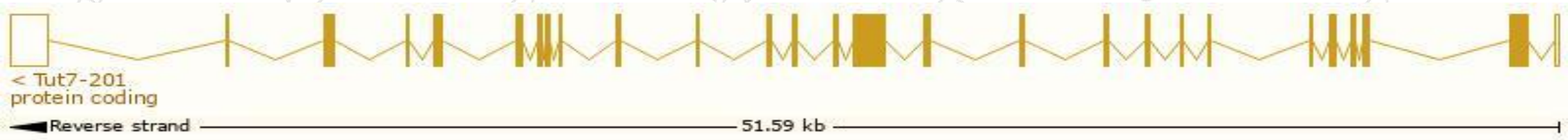
|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Tut7 provided by <a href="#">MGI</a>                                                                                                                                      |
| <b>Official Full Name</b> | terminal uridylyl transferase 7 provided by <a href="#">MGI</a>                                                                                                           |
| <b>Primary source</b>     | <a href="#">MGI:MGI:2387179</a>                                                                                                                                           |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG00000035248</a>                                                                                                                                |
| <b>Gene type</b>          | protein coding                                                                                                                                                            |
| <b>RefSeq status</b>      | VALIDATED                                                                                                                                                                 |
| <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>Also known as</b>      | 6030448M23Rik, AA420405, Tent3b, Zcchc6                                                                                                                                   |
| <b>Expression</b>         | Ubiquitous expression in liver E14 (RPKM 11.4), liver E14.5 (RPKM 9.7) and 28 other tissues <a href="#">See more</a>                                                      |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

# Transcript information (Ensembl)

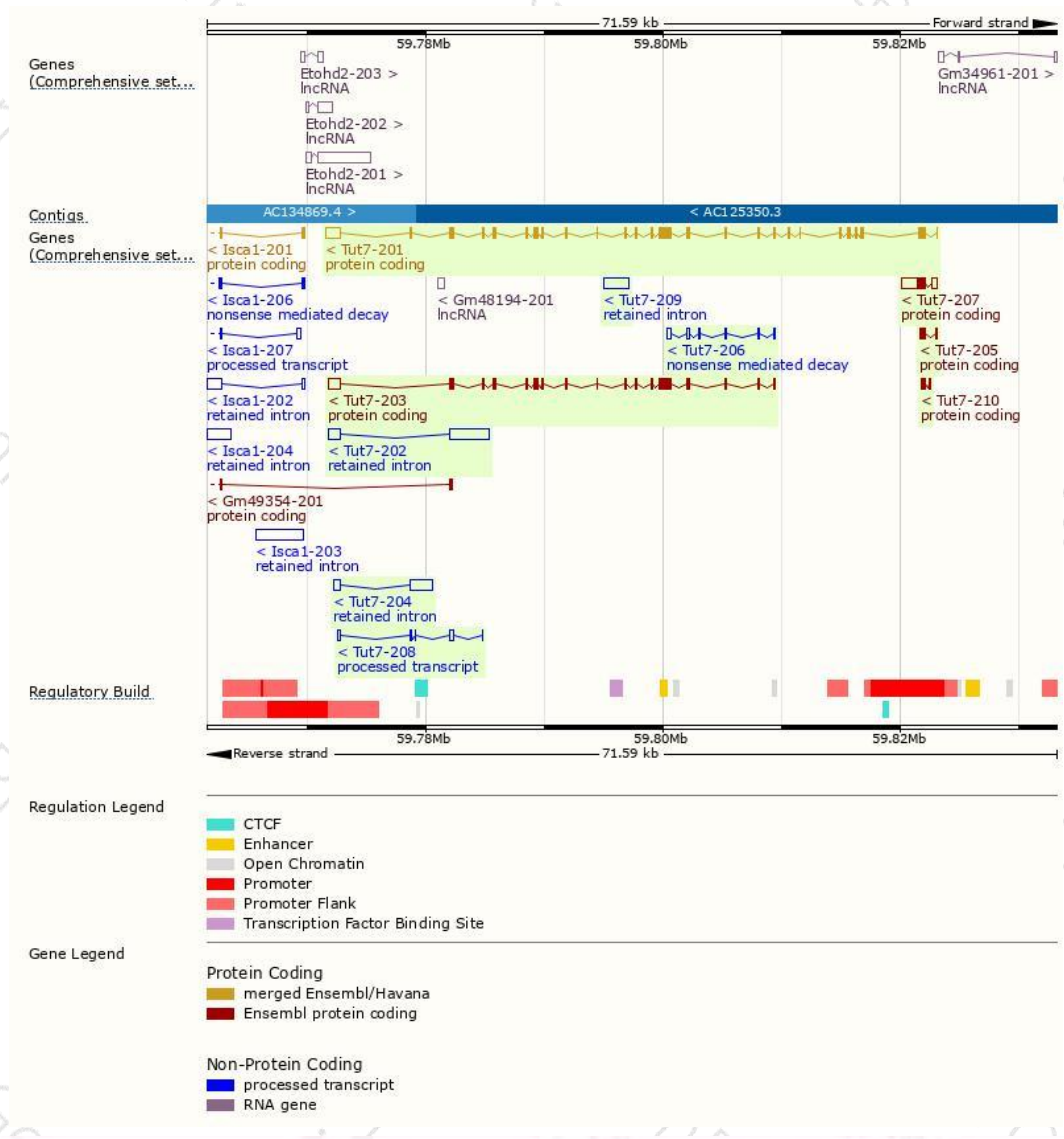
The gene has 10 transcripts,all transcripts are shown below:

| Name ▲   | Transcript ID ▲                      | bp ▲ | Protein ▲              | Biotype ▲               | CCDS ▲                    | UniProt ▲                  | Flags ▲                       |
|----------|--------------------------------------|------|------------------------|-------------------------|---------------------------|----------------------------|-------------------------------|
| Tut7-201 | <a href="#">ENSMUST00000071703.5</a> | 5869 | <a href="#">1474aa</a> | Protein coding          | <a href="#">CCDS36689</a> | <a href="#">E9PUA2</a>     | TSL:1 Gencode basic APPRIS P1 |
| Tut7-202 | <a href="#">ENSMUST00000224320.1</a> | 4337 | No protein             | Retained intron         | -                         | -                          | -                             |
| Tut7-203 | <a href="#">ENSMUST00000224480.1</a> | 4186 | <a href="#">1089aa</a> | Protein coding          | -                         | <a href="#">A0A286YDD7</a> | CDS 5' incomplete             |
| Tut7-204 | <a href="#">ENSMUST00000224845.1</a> | 2452 | No protein             | Retained intron         | -                         | -                          | -                             |
| Tut7-205 | <a href="#">ENSMUST00000225179.1</a> | 619  | <a href="#">149aa</a>  | Protein coding          | -                         | <a href="#">A0A286YDR9</a> | CDS 3' incomplete             |
| Tut7-206 | <a href="#">ENSMUST00000225241.1</a> | 1056 | <a href="#">148aa</a>  | Nonsense mediated decay | -                         | <a href="#">A0A286YDH2</a> | CDS 5' incomplete             |
| Tut7-207 | <a href="#">ENSMUST00000225576.1</a> | 2499 | <a href="#">210aa</a>  | Protein coding          | -                         | <a href="#">A0A286YD79</a> | Gencode basic                 |
| Tut7-208 | <a href="#">ENSMUST00000225607.1</a> | 757  | No protein             | Processed transcript    | -                         | -                          | -                             |
| Tut7-209 | <a href="#">ENSMUST00000225944.1</a> | 2095 | No protein             | Retained intron         | -                         | -                          | -                             |
| Tut7-210 | <a href="#">ENSMUST00000225987.1</a> | 435  | <a href="#">90aa</a>   | Protein coding          | -                         | <a href="#">A0A286YCY9</a> | CDS 3' incomplete             |

The strategy is based on the design of *Tut7-201* transcript,The transcription is shown below



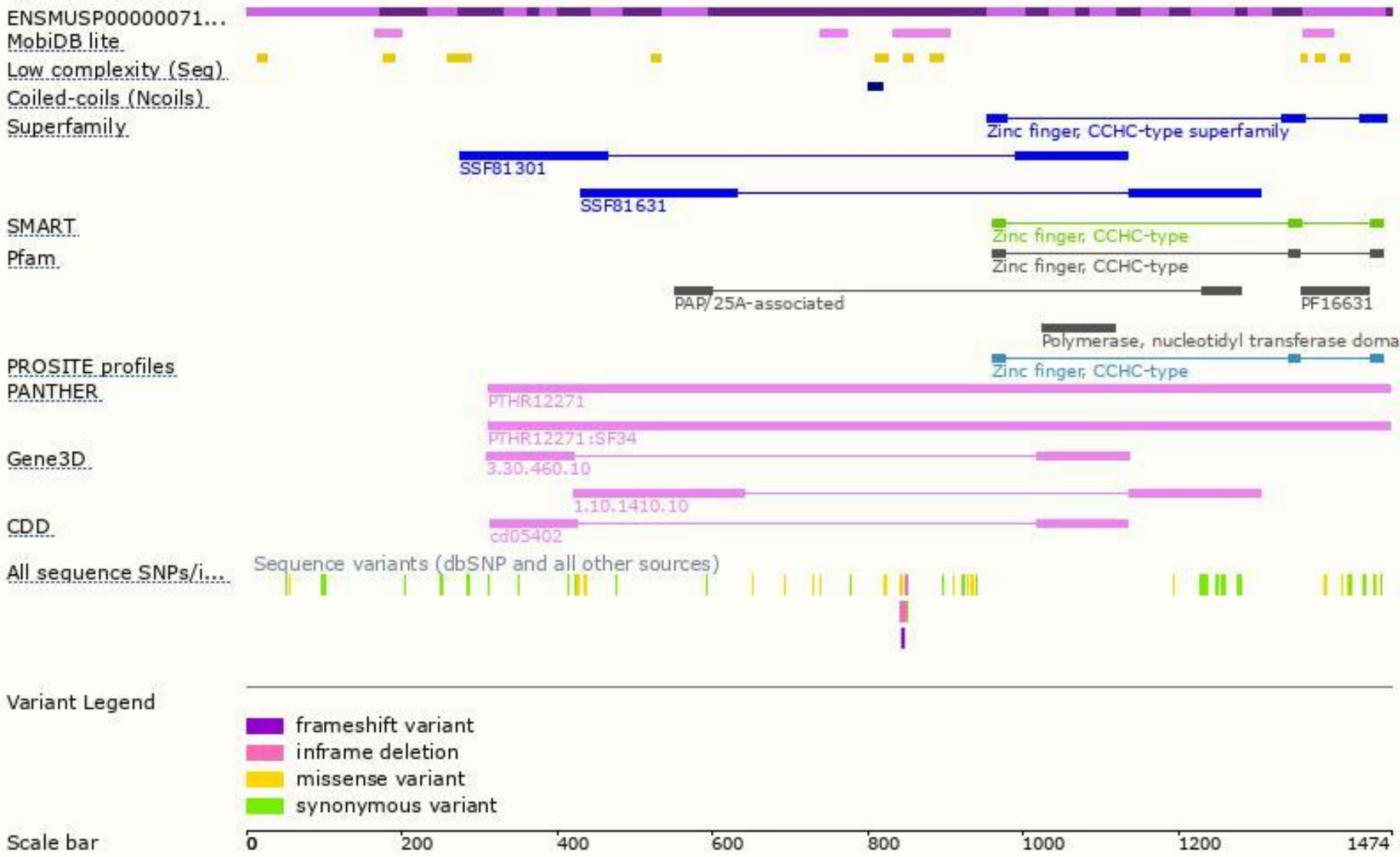
# Genomic location distribution



# Protein domain



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GemPharmatech



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

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