# *Cenpm* Cas9-CKO Strategy

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# Project Overview

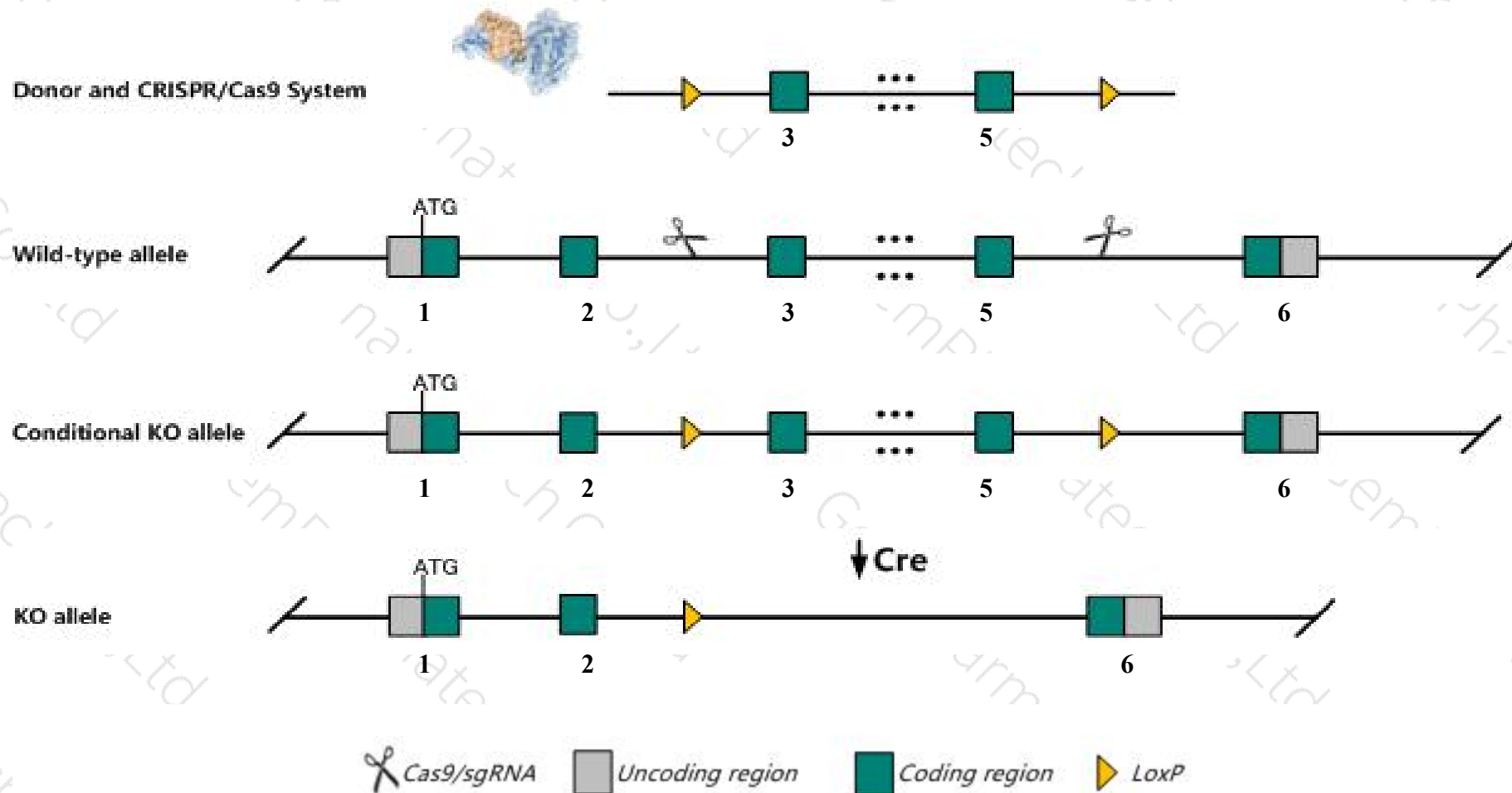| | |
|---|---|
| **Project Name** | *Cenpm* |
| **Project type** | **Cas9-CKO** |
| **Strain background** | **C57BL/6JGpt** |

# Conditional Knockout strategy

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

# Technical routes

➢ The *Cenpm* gene has 6 transcripts. According to the structure of *Cenpm* gene, exon3-exon5 of *Cenpm-202*(ENSMUST00000089157.10) transcript is recommended as the knockout region.The region contains 265bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cenpm* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was 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.

# Notice

➢ The *Cenpm* gene is located on the Chr15. 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）

## Cenpm centromere protein M [Mus musculus (house mouse)]

Gene ID: 66570, updated on 13-Mar-2020

### ▲ Summary

| | |
|---|---|
| **Official Symbol** | Cenpm provided by MGI |
| **Official Full Name** | centromere protein M provided by MGI |
| **Primary source** | MGI:MGI:1913820 |
| **See related** | Ensembl:ENSMUSG00000068101 |
| **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** | 2610019I03Rik, AI853711, Pane1 |
| **Summary** | This gene encodes a protein that is present in the nucleus of actively growing cells but is excluded from the nucleus during cell division or during growth arrest as a result of contact inhibition. In human, this protein is a component of the CENP-A nucleosome-associated complex that regulates kinetochore protein assembly, mitotic cell-cycle progression, and chromosome segregation. Alternative splicing results in multiple transcript variants encoding different isoforms. [provided by RefSeq, Jul 2008] |
| **Expression** | Ubiquitous expression in CNS E11.5 (RPKM 8.4), thymus adult (RPKM 7.1) and 25 other tissuesSee 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 |
|------|--------------|-----|---------|---------|------|---------|-------|
| Cenpm-202 | ENSMUST00000089157.10 | 1202 | 180aa | Protein coding | CCDS27685 | Q9CQA0 | TSL:1 GENCODE basic APPRIS P1 |
| Cenpm-201 | ENSMUST00000089155.5 | 789 | 168aa | Protein coding | CCDS37156 | Q9CQA0 | TSL:1 GENCODE basic |
| Cenpm-206 | ENSMUST00000230408.1 | 593 | 116aa | Protein coding | - | A0A2R8VI75 | CDS 3' incomplete |
| Cenpm-205 | ENSMUST00000229747.1 | 286 | 69aa | Protein coding | - | A0A2R8VK17 | CDS 3' incomplete |
| Cenpm-203 | ENSMUST00000229041.1 | 590 | No protein | Processed transcript | - | - | |
| Cenpm-204 | ENSMUST00000229505.1 | 381 | No protein | Processed transcript | - | - | |

The strategy is based on the design of *Cenpm-202* transcript,the transcription is shown below:



< Cenpm-202
protein coding

◄ Reverse strand

10.97 kb
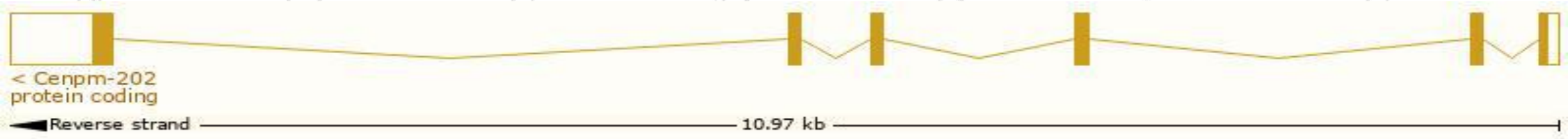
# Genomic location distribution
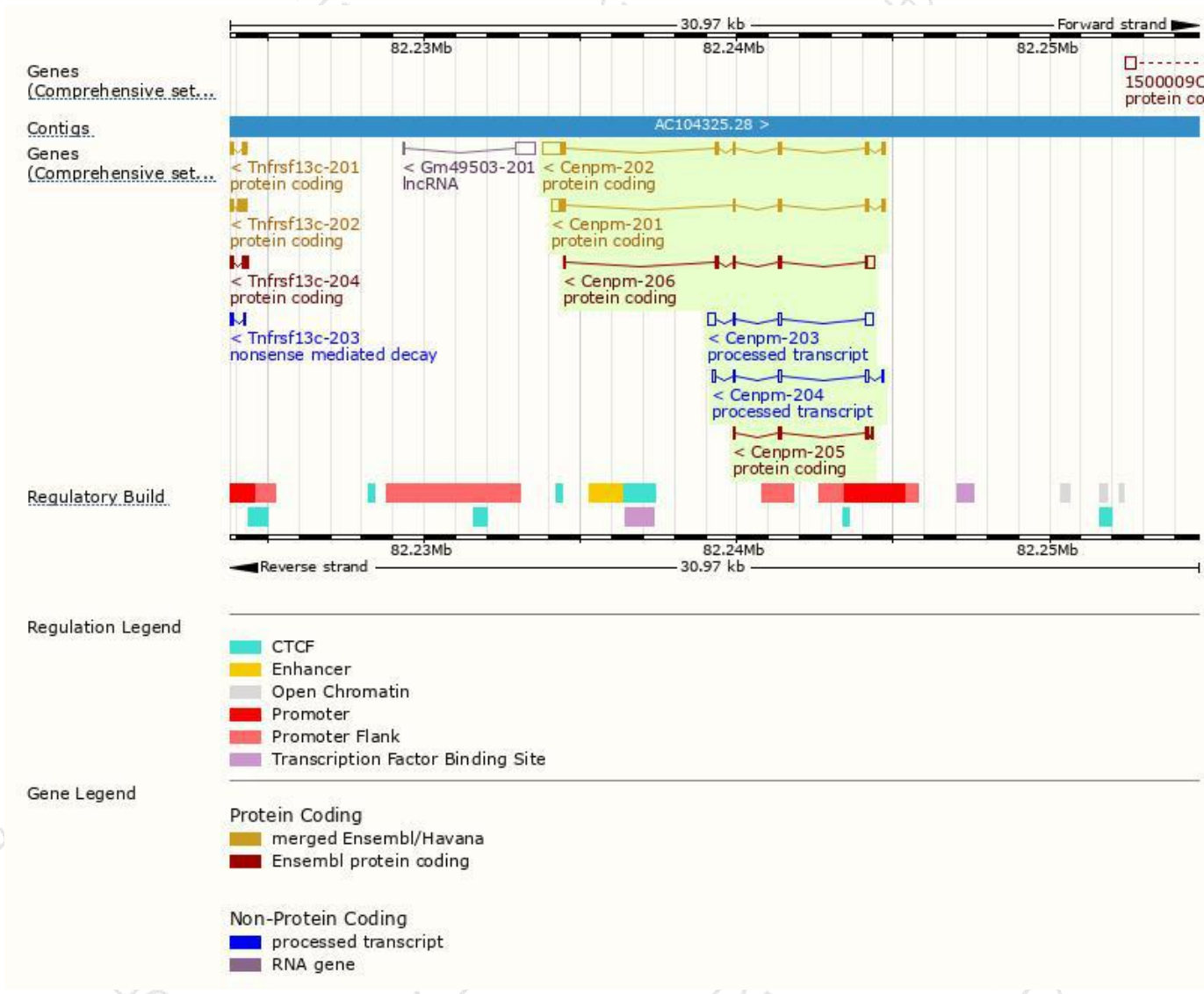
# Protein domain
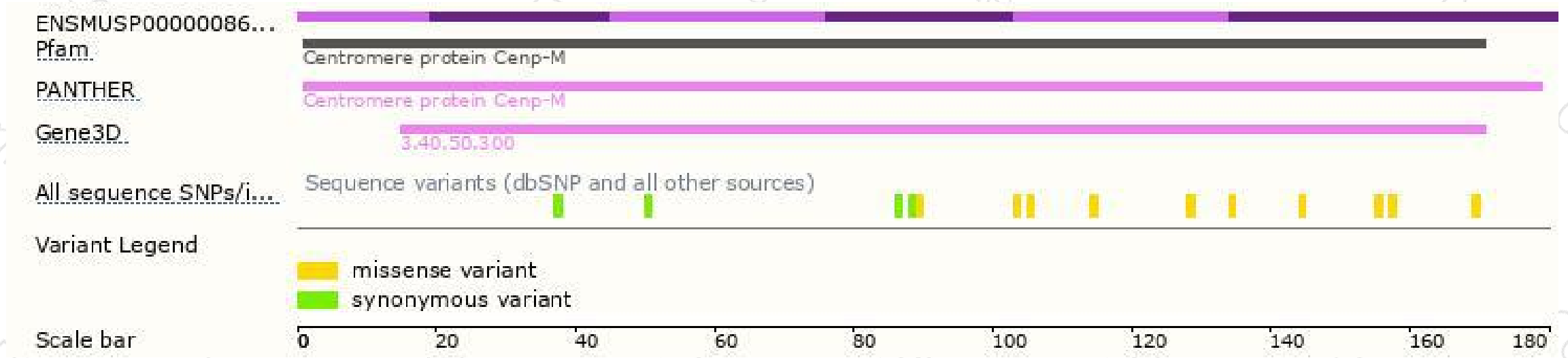
If you have any questions, you are welcome to inquire.
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