Cenpm Cas9-KO Strategy

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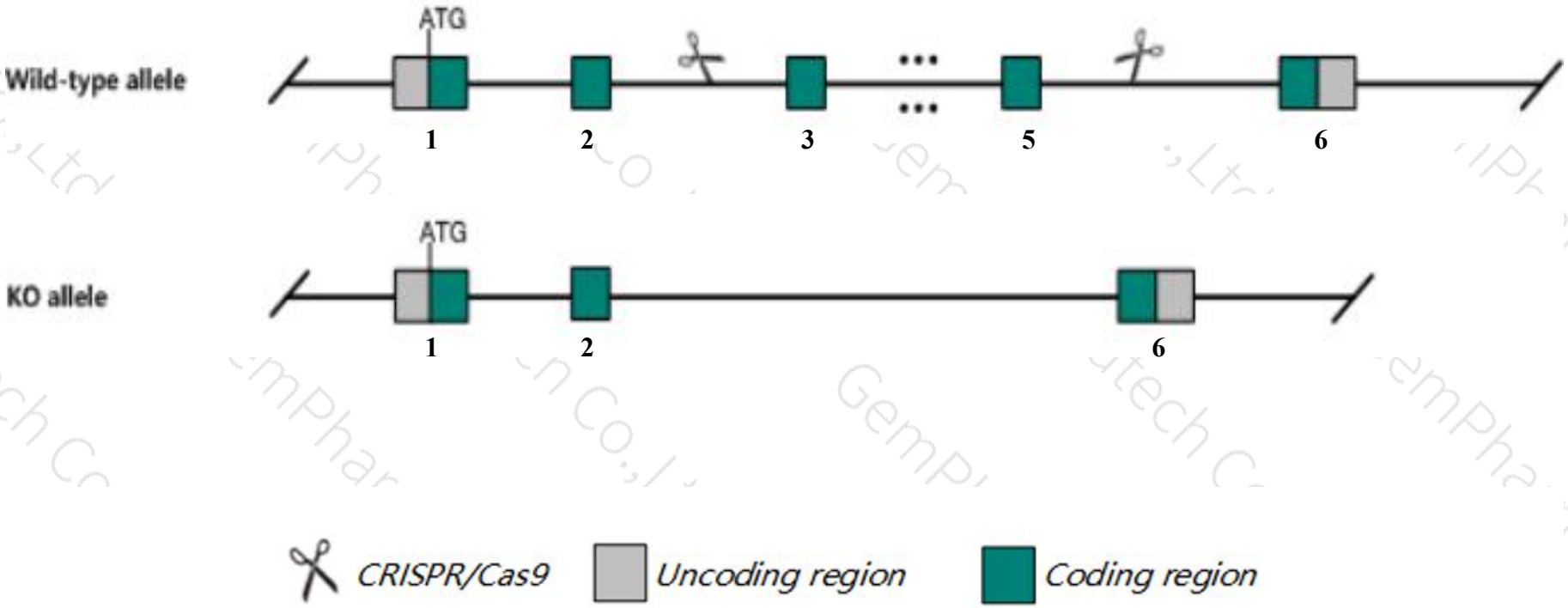
Design Date: 2020-8-28

Project Overview

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

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: CRISPR/Cas9 system 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.

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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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

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

Summary

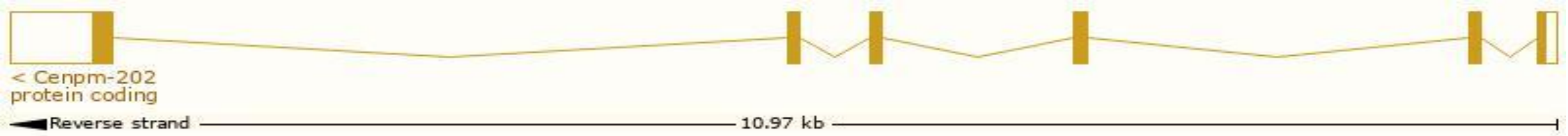
Official Symbol	Cenpm provided by MGI
Official Full Name	centromere protein M provided byMGI
Primary source	MGI:MGI:1913820
See related	Ensembl:ENSMUSG00000068101
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; 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）

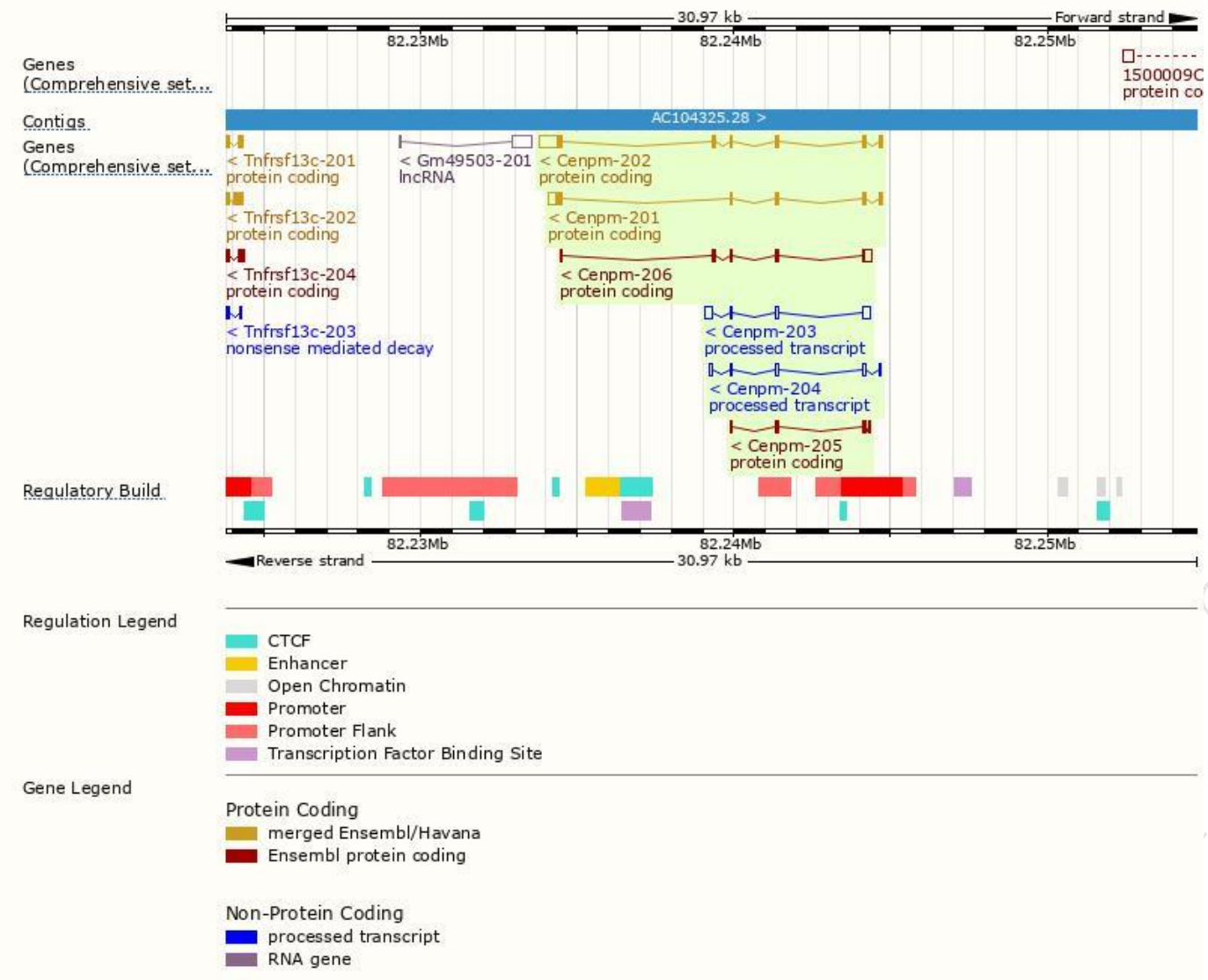
The gene has 6 transcripts,all transcripts are shown below:

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	-	-	

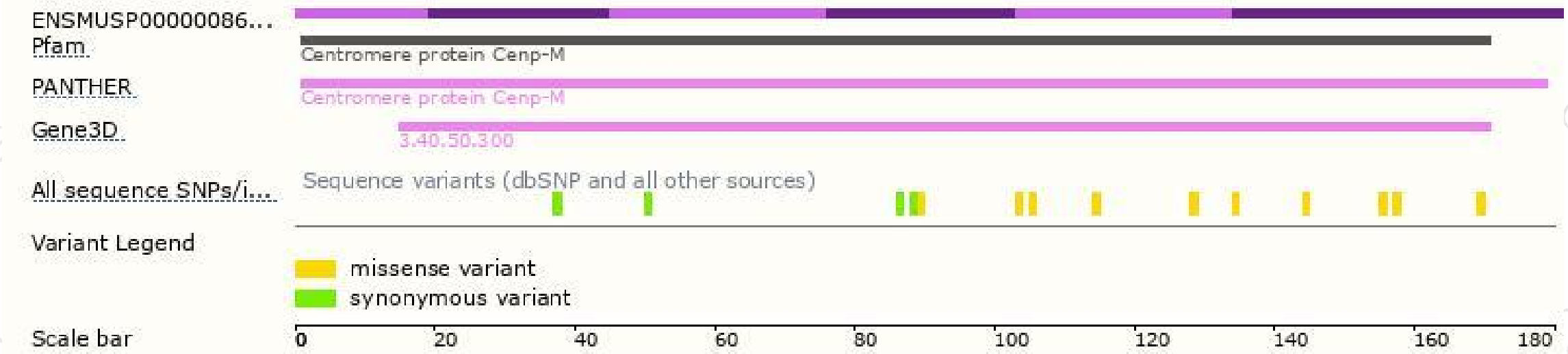
The strategy is based on the design of *Cenpm-202* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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