

Top1mt Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Top1mt

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Top1mt* gene. The schematic diagram is as follows:



- The *Top1mt* gene has 3 transcripts. According to the structure of *Top1mt* gene, exon2-exon3 of *Top1mt-201* (ENSMUST00000000958.8) transcript is recommended as the knockout region. The region contains 235bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Top1mt* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null allele display increased oxidative stress and lipid peroxidation, enhanced glycolysis, and mitochondrial abnormalities.
- The *Top1mt* 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)

Top1mt DNA topoisomerase 1, mitochondrial [Mus musculus (house mouse)]

Gene ID: 72960, updated on 24-Feb-2019

Summary



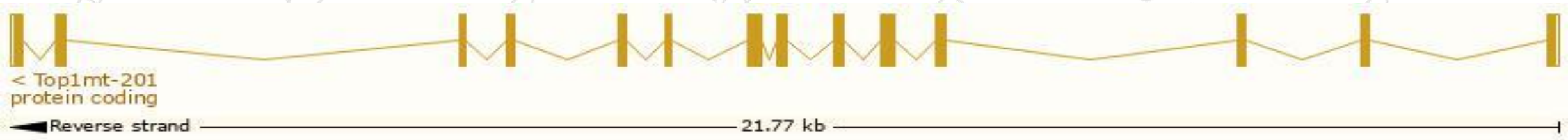
Official Symbol	Top1mt provided by MGI
Official Full Name	DNA topoisomerase 1, mitochondrial provided by MGI
Primary source	MGI:MGI:1920210
See related	Ensembl:ENSMUSG000000000934
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2900052H09Rik
Expression	Ubiquitous expression in liver E18 (RPKM 9.5), placenta adult (RPKM 8.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

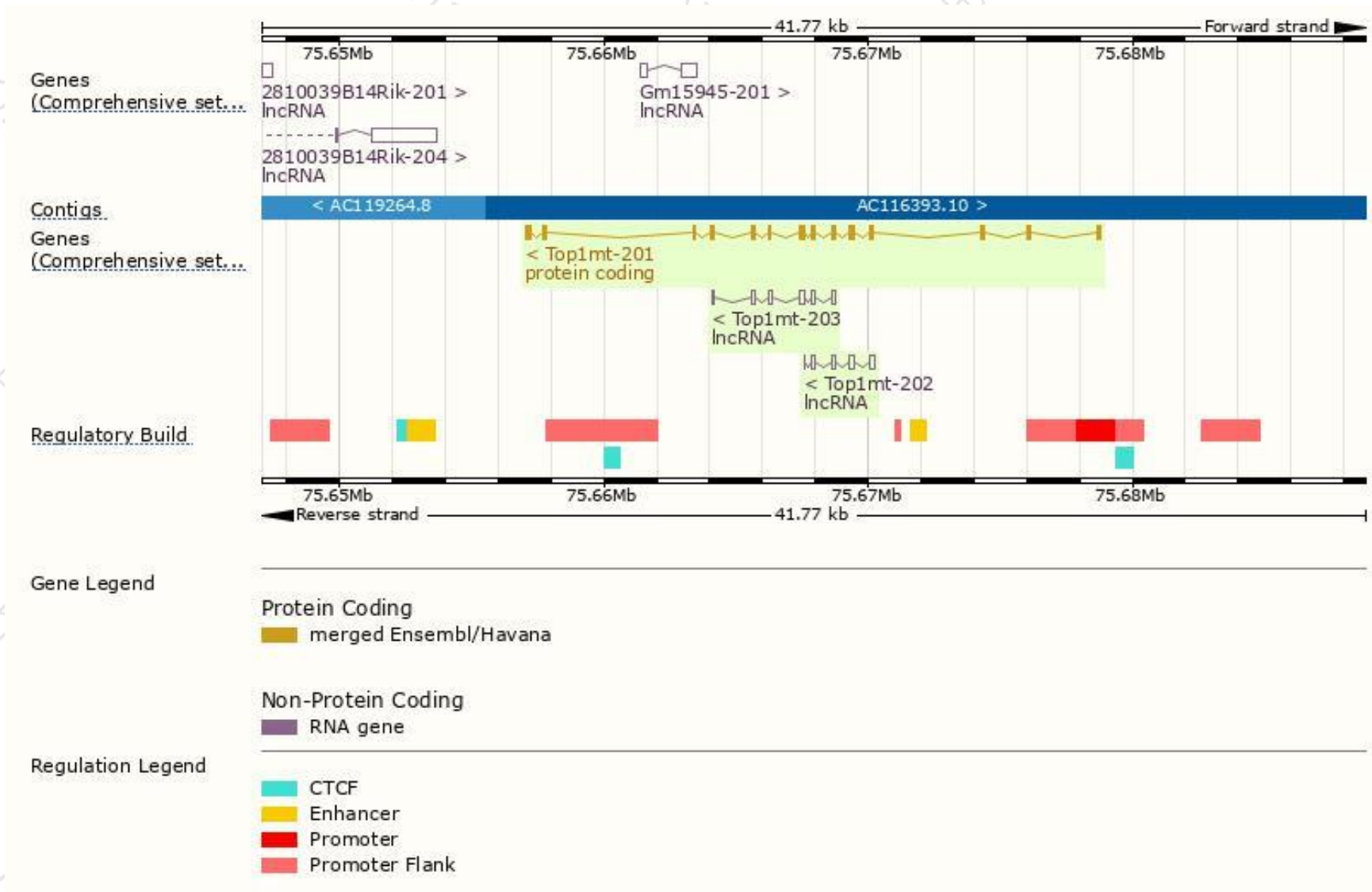
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Top1mt-201	ENSMUST00000000958.8	1903	593aa	Protein coding	CCDS27547	Q8R4U6	TSL:1 GENCODE basic APPRIS P1
Top1mt-203	ENSMUST00000230774.1	754	No protein	lncRNA	-	-	
Top1mt-202	ENSMUST00000230469.1	713	No protein	lncRNA	-	-	

The strategy is based on the design of *Top1mt-201* transcript,The transcription is shown below



Genomic location distribution



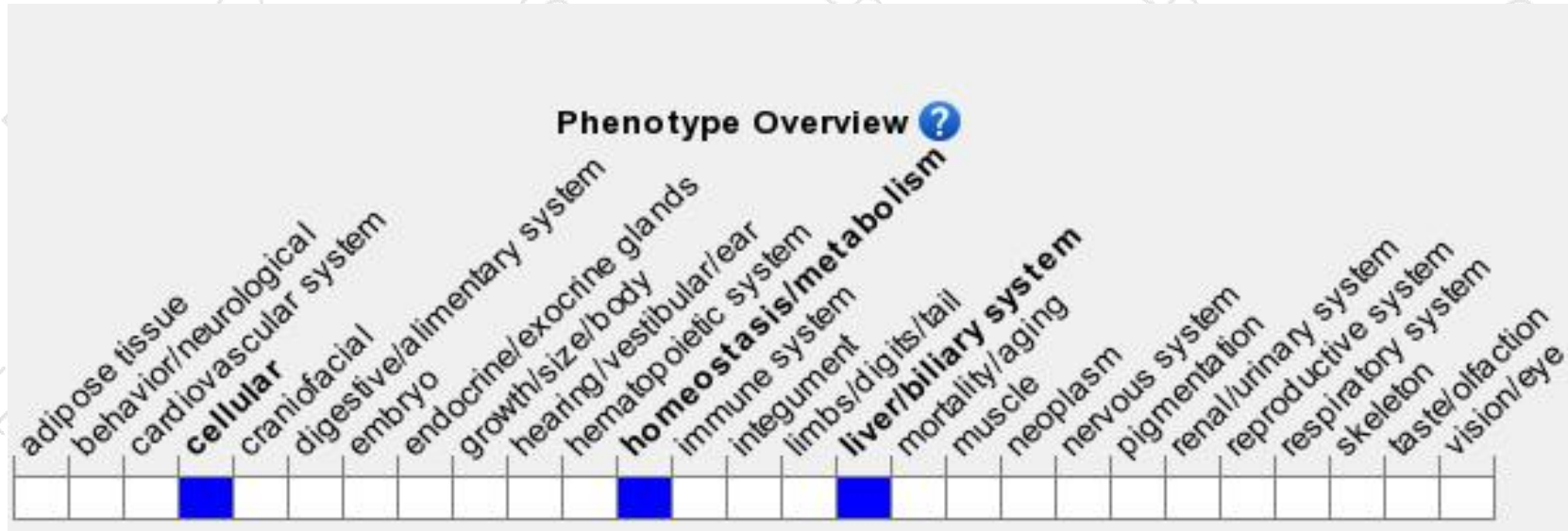
Protein domain



集萃药康
GemPharmatech



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 null allele display increased oxidative stress and lipid peroxidation, enhanced glycolysis, and mitochondrial abnormalities.

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

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