Mymk Cas9-CKO Strategy

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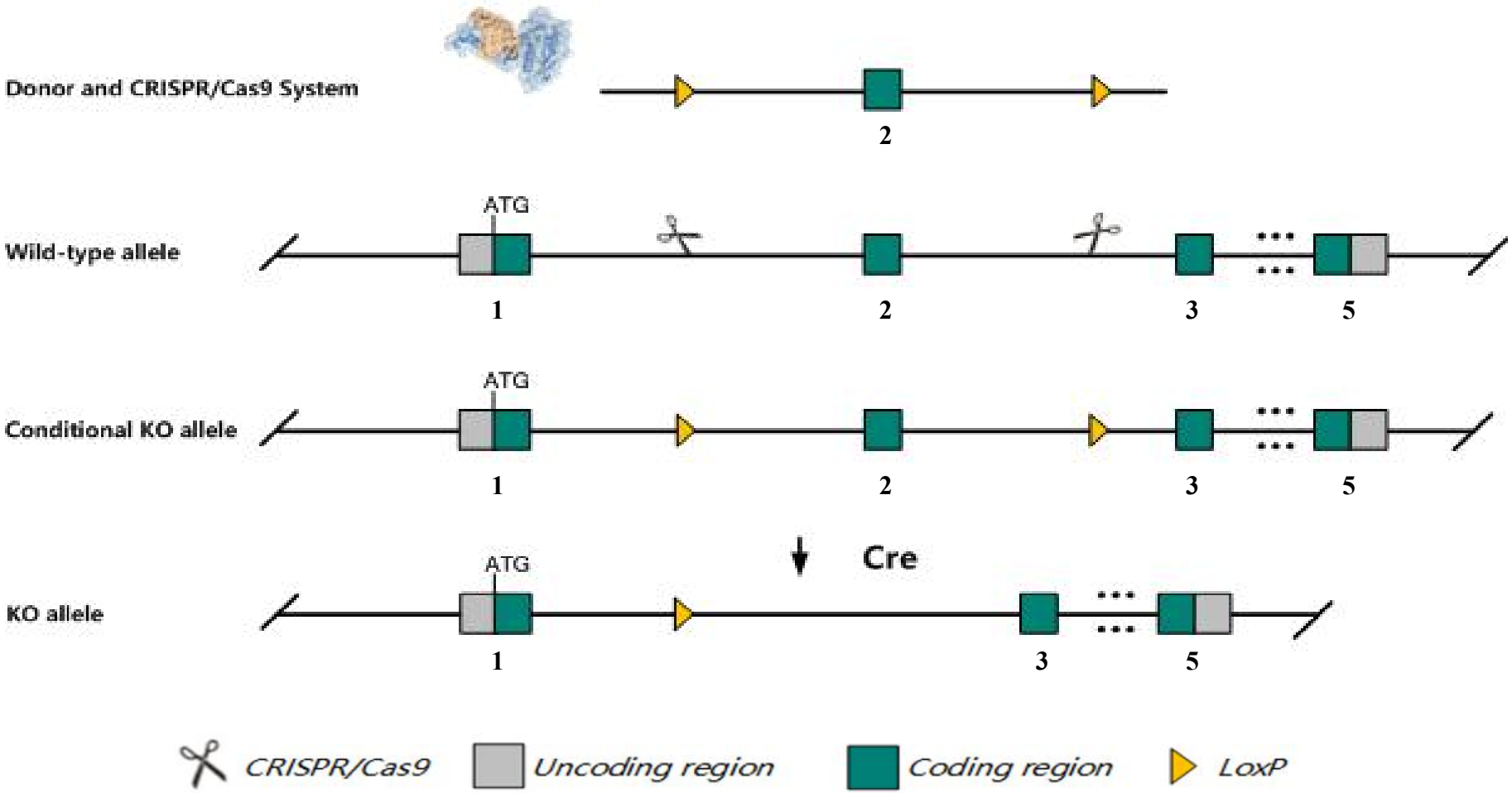
Project Overview

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

Conditional Knockout strategy

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



Technical routes

The *Mymk* gene has 2 transcripts. According to the structure of *Mymk* gene, exon2 of *Mymk-201*(ENSMUST00000009358.8) transcript is recommended as the knockout region.The region contains 115bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Mymk* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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

According to the existing MGI data,mice homozygous for a knock-out allele exhibit early postnatal lethality, paralysis, kyphosis and defective myoblast fusion and survival leading to the absence of differentiated muscle in the trunk, limb and head.

The *Mymk* gene is located on the Chr2. 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

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Mymk myomaker, myoblast fusion factor [Mus musculus (house mouse)]

Gene ID: 66139, updated on 13-Mar-2020

Summary

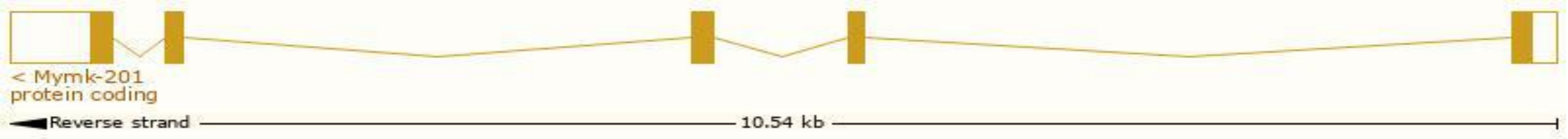
Official Symbol	Mymk provided by MGI
Official Full Name	myomaker, myoblast fusion factor provided by MGI
Primary source	MGI:MGI:1913389
See related	Ensembl:ENSMUSG00000009214
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110002H13Rik, AI131587, Tmem8c, myomaker
Expression	Biased expression in limb E14.5 (RPKM 15.9) and CNS E11.5 (RPKM 1.1) See more
Orthologs	human all

Transcript information Ensembl

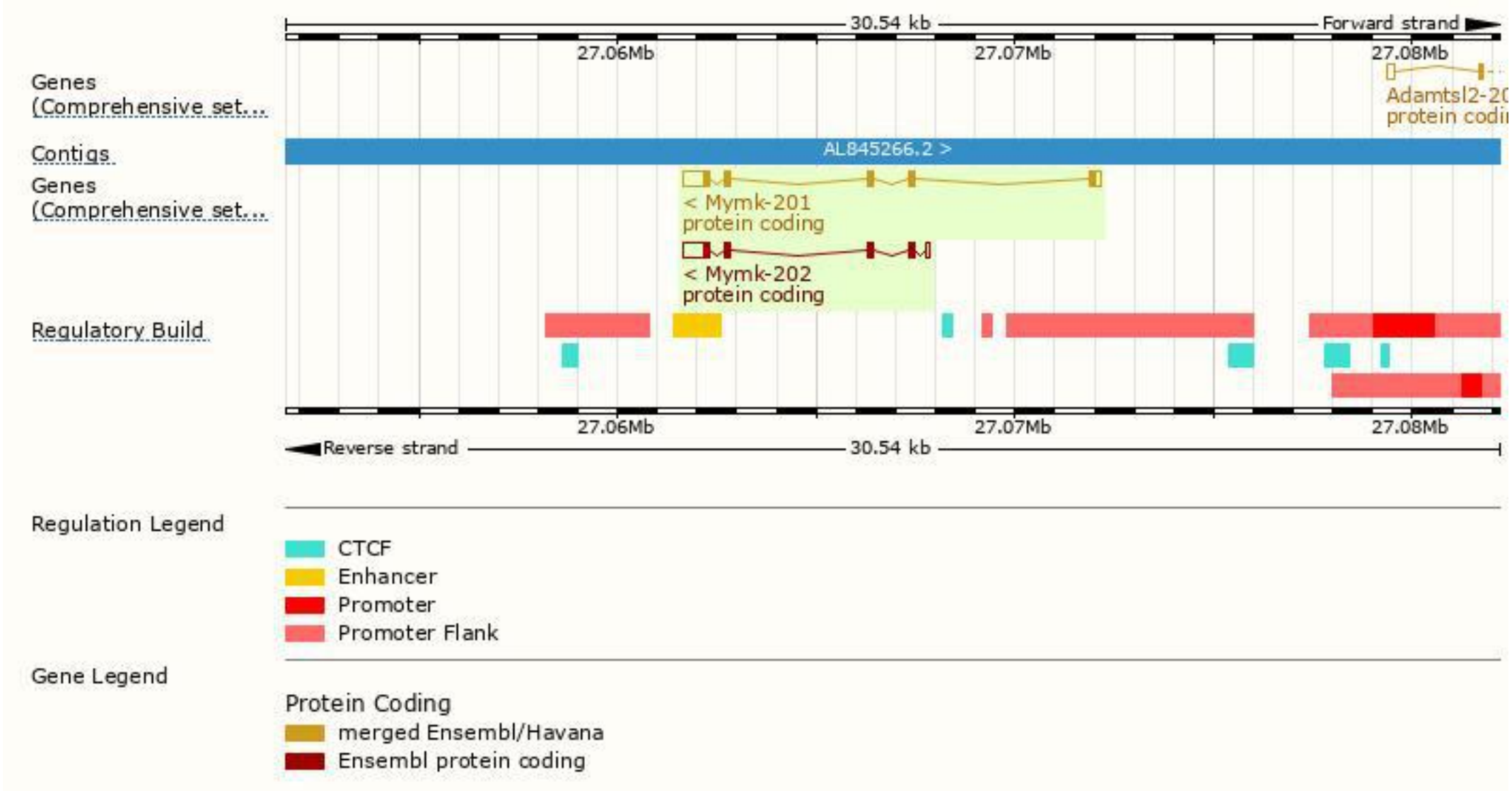
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mymk-201	ENSMUST00000009358.8	1382	221aa	Protein coding	CCDS15823	Q9D1N4	TSL:1 GENCODE basic APPRIS P1
Mymk-202	ENSMUST00000163967.1	1210	180aa	Protein coding	CCDS50545	E9QA72	TSL:3 GENCODE basic

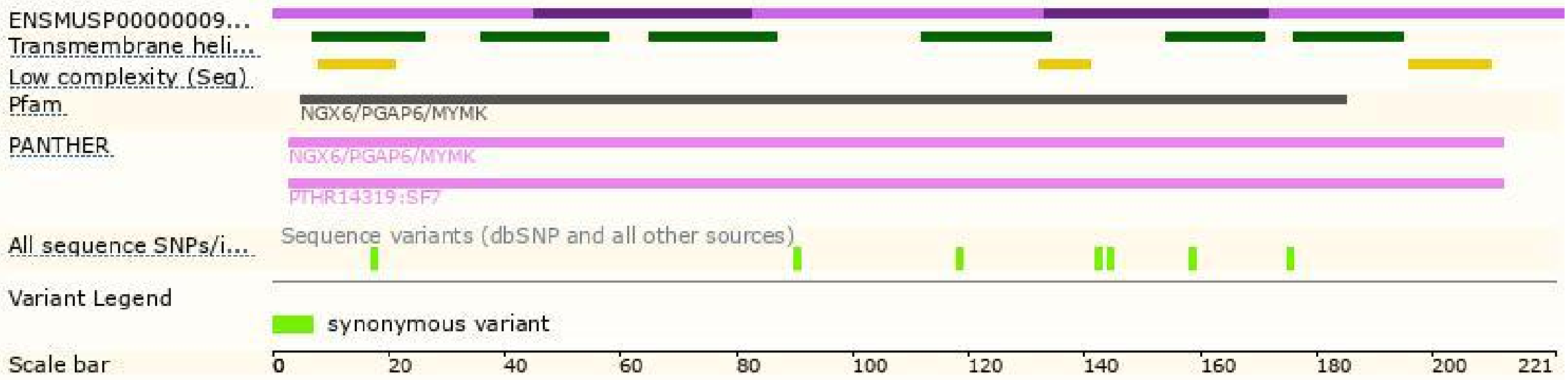
The strategy is based on the design of *Mymk-201* transcript,the transcription is shown below:



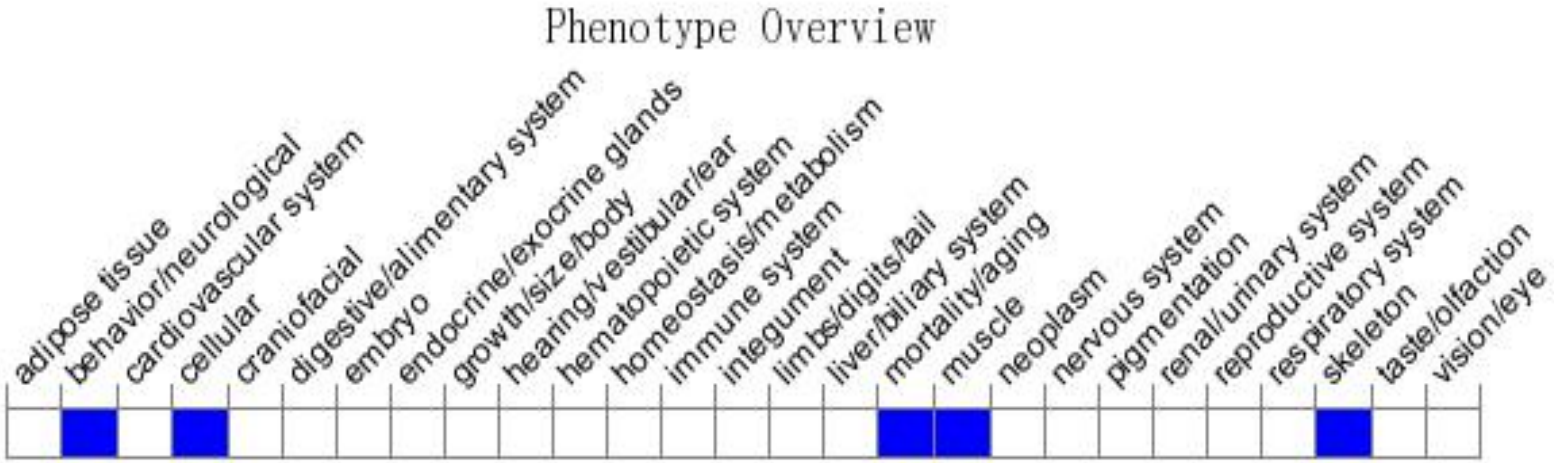
Genomic location distribution



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/).

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