

***Grk6* Cas9-KO Strategy**

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Project Overview

Project Name

Grk6

Project type

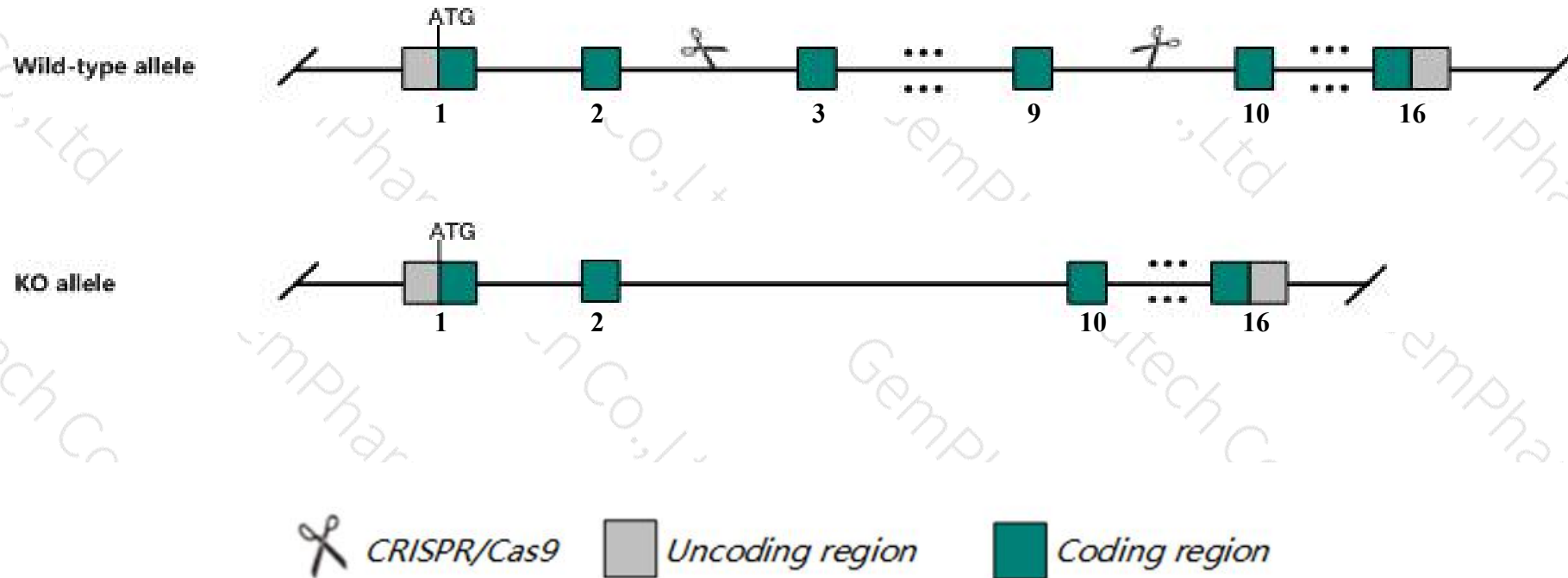
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Grk6* gene. The schematic diagram is as follows:



- The *Grk6* gene has 7 transcripts. According to the structure of *Grk6* gene, exon3-exon9 of *Grk6-201* (ENSMUST00000001115.15) transcript is recommended as the knockout region. The region contains 781bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Grk6* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Whereas, homozygous mutant mice are viable and show no gross anatomical or behavioral abnormalities under normal physiological conditions, they exhibit locomotor supersensitivity to psychostimulants including cocaine and amphetamine.
- The knockout region is near to the N-terminal of *Mir6943* gene, this strategy may influence the regulatory function of the N-terminal of *Mir6943* gene.
- Transcript *Grk6*-204 may be not affected.
- The *Grk6* 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)

Grk6 G protein-coupled receptor kinase 6 [*Mus musculus* (house mouse)]

Gene ID: 26385, updated on 13-Dec-2019

Summary

Official Symbol Grk6 provided by [MGI](#)
Official Full Name G protein-coupled receptor kinase 6 provided by [MGI](#)
Primary source [MGI:MGI:1347078](#)
See related [Ensembl:ENSMUSG00000074886](#)
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 Gprk6
Expression Ubiquitous expression in spleen adult (RPKM 77.5), thymus adult (RPKM 59.5) and 27 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 13 B1; 13 30.06 cM

See Grk6 in [Genome Data Viewer](#)

Exon count: 19

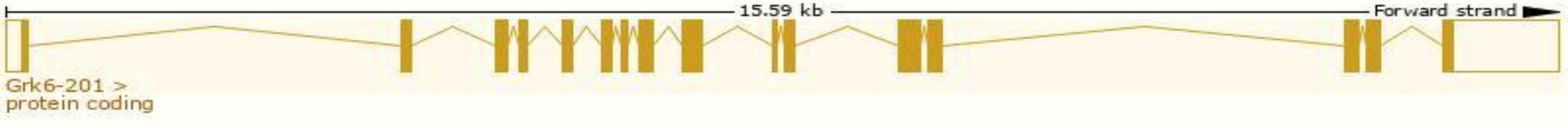
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	13	NC_000079.6 (55445072..55460927)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	13	NC_000079.5 (55546695..55562288)

Transcript information (Ensembl)

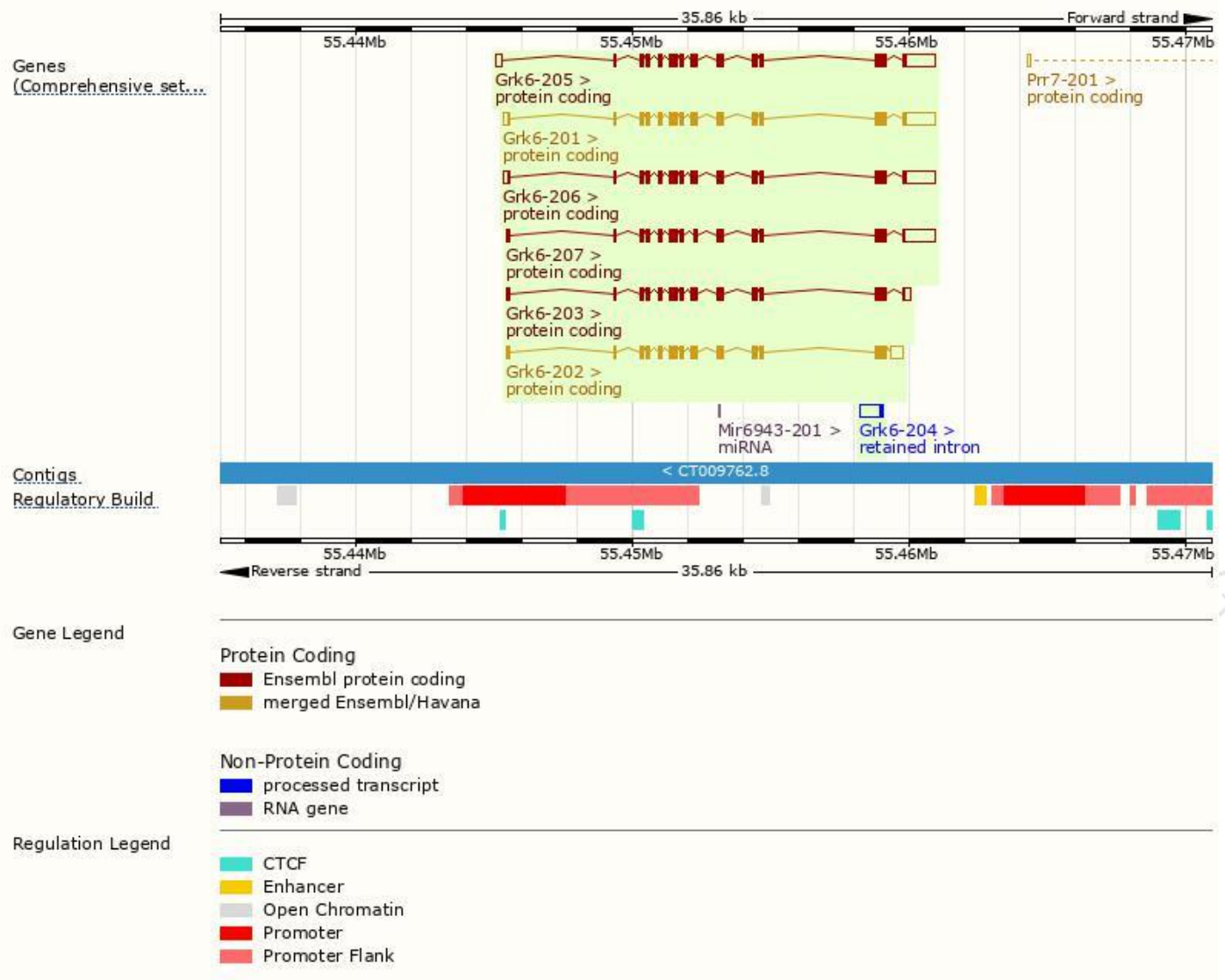
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Grk6-201	ENSMUST00000001115.15	2994	589aa	Protein coding	CCDS49272	O70293	TSL:1 GENCODE basic
Grk6-202	ENSMUST00000099482.4	2169	560aa	Protein coding	CCDS36676	Q9EP84	TSL:1 GENCODE basic APPRIS P2
Grk6-205	ENSMUST00000224653.1	2976	557aa	Protein coding	-	A0A286YDZ5	GENCODE basic
Grk6-206	ENSMUST00000224995.1	2971	584aa	Protein coding	-	A0A286YDA5	GENCODE basic
Grk6-207	ENSMUST00000225925.1	2769	542aa	Protein coding	-	A0A286YE10	GENCODE basic
Grk6-203	ENSMUST00000224118.1	1997	576aa	Protein coding	-	O70293	GENCODE basic APPRIS ALT2
Grk6-204	ENSMUST00000224532.1	753	No protein	Retained intron	-	-	

The strategy is based on the design of *Grk6-201* transcript,The transcription is shown below



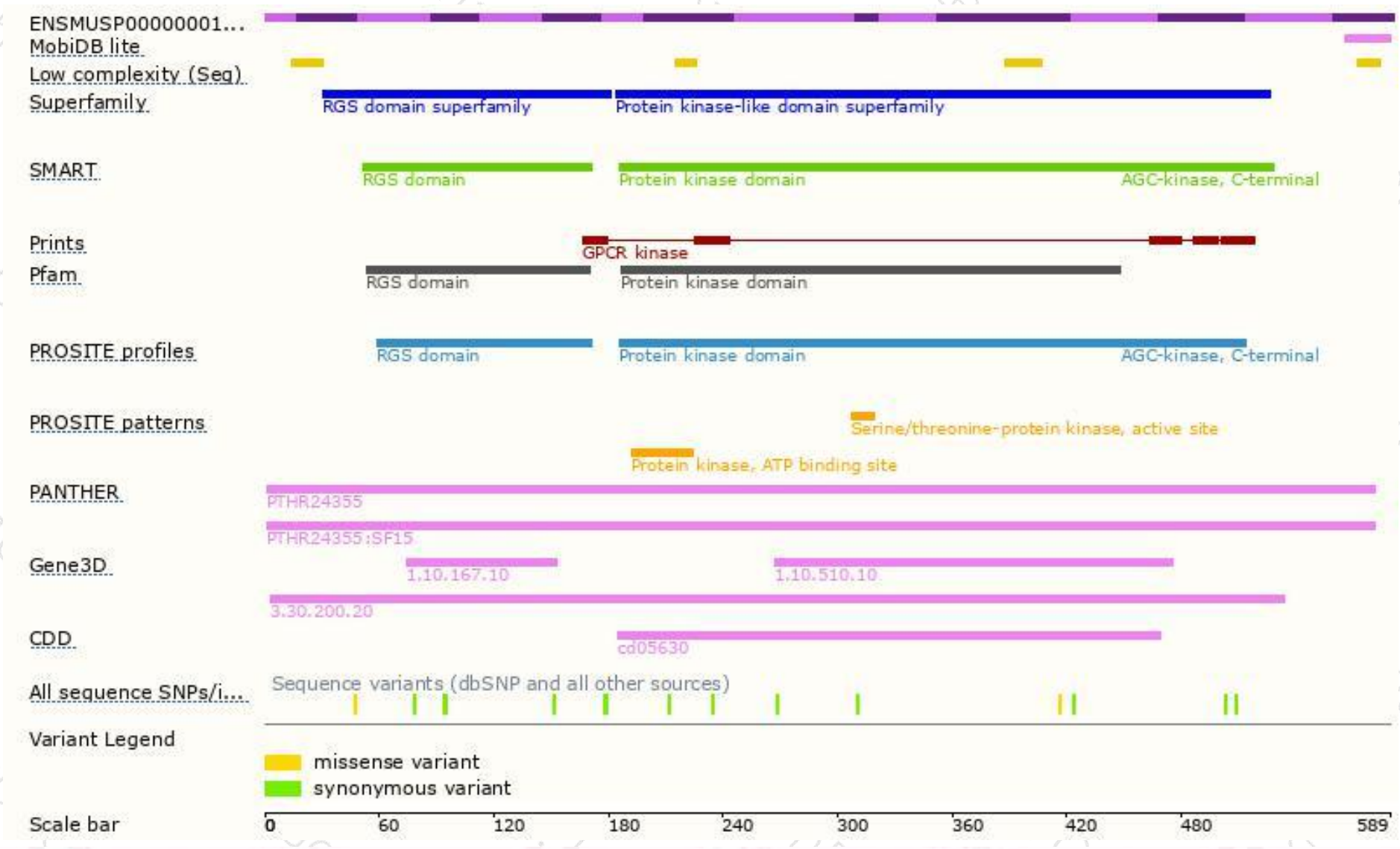
Genomic location distribution



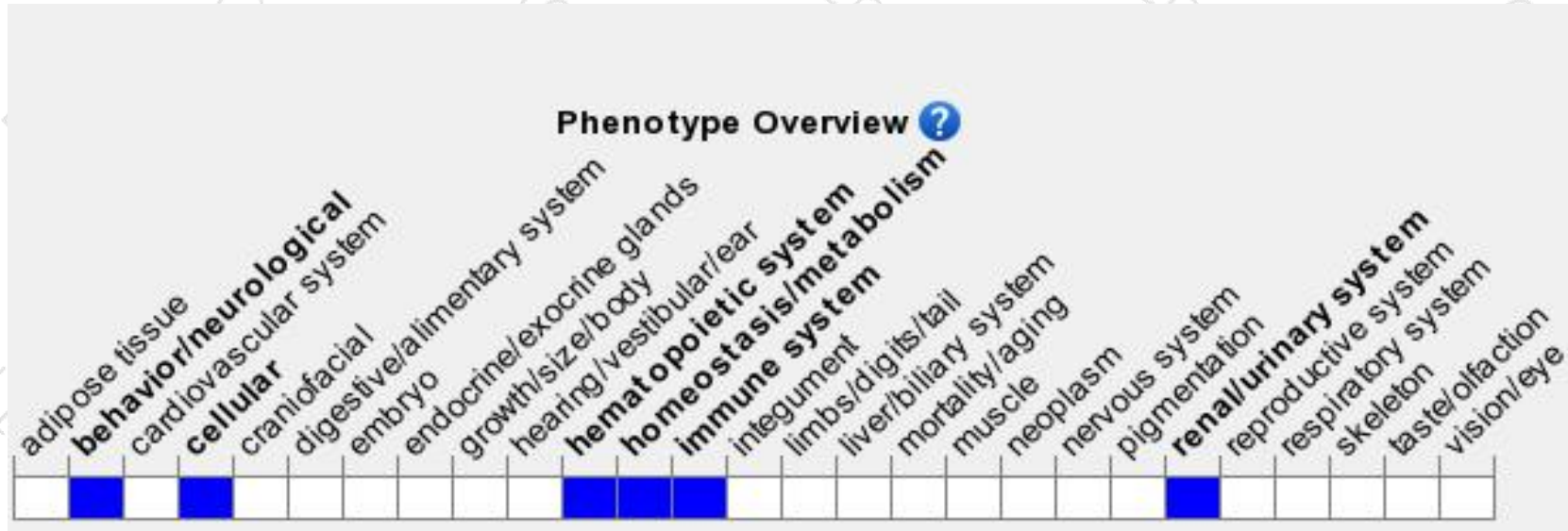
Protein domain



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, Whereas, homozygous mutant mice are viable and show no gross anatomical or behavioral abnormalities under normal physiological conditions, they exhibit locomotor supersensitivity to psychostimulants including cocaine and amphetamine.

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

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