

# *Cdx2* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Cdx2*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdx2* gene. The schematic diagram is as follows:



- The *Cdx2* gene has 1 transcript. According to the structure of *Cdx2* gene, exon1-exon3 of *Cdx2-201* (ENSMUST00000031650.3) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cdx2* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Homozygotes for targeted null mutations die prior to gastrulation. Heterozygotes exhibit tail abnormalities, stunted growth, defects of the vertebrae and ribs, and multiple intestinal adenomatous polyps.
- The *Cdx2* gene is located on the Chr5. 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)

## Cdx2 caudal type homeobox 2 [Mus musculus (house mouse)]

Gene ID: 12591, updated on 6-Apr-2019

### Summary



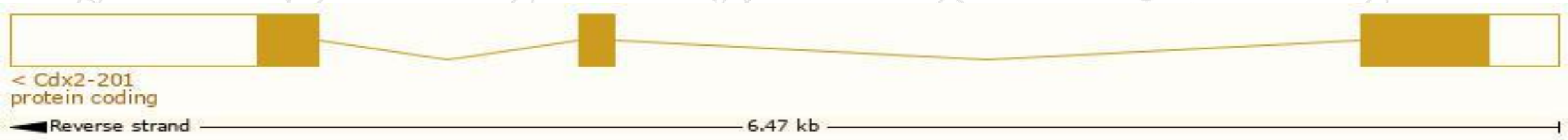
<b>Official Symbol</b>	Cdx2 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	caudal type homeobox 2 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:88361</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000029646</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	PROVISIONAL
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Cdx-2
<b>Expression</b>	Biased expression in duodenum adult (RPKM 141.5), colon adult (RPKM 135.9) and 2 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

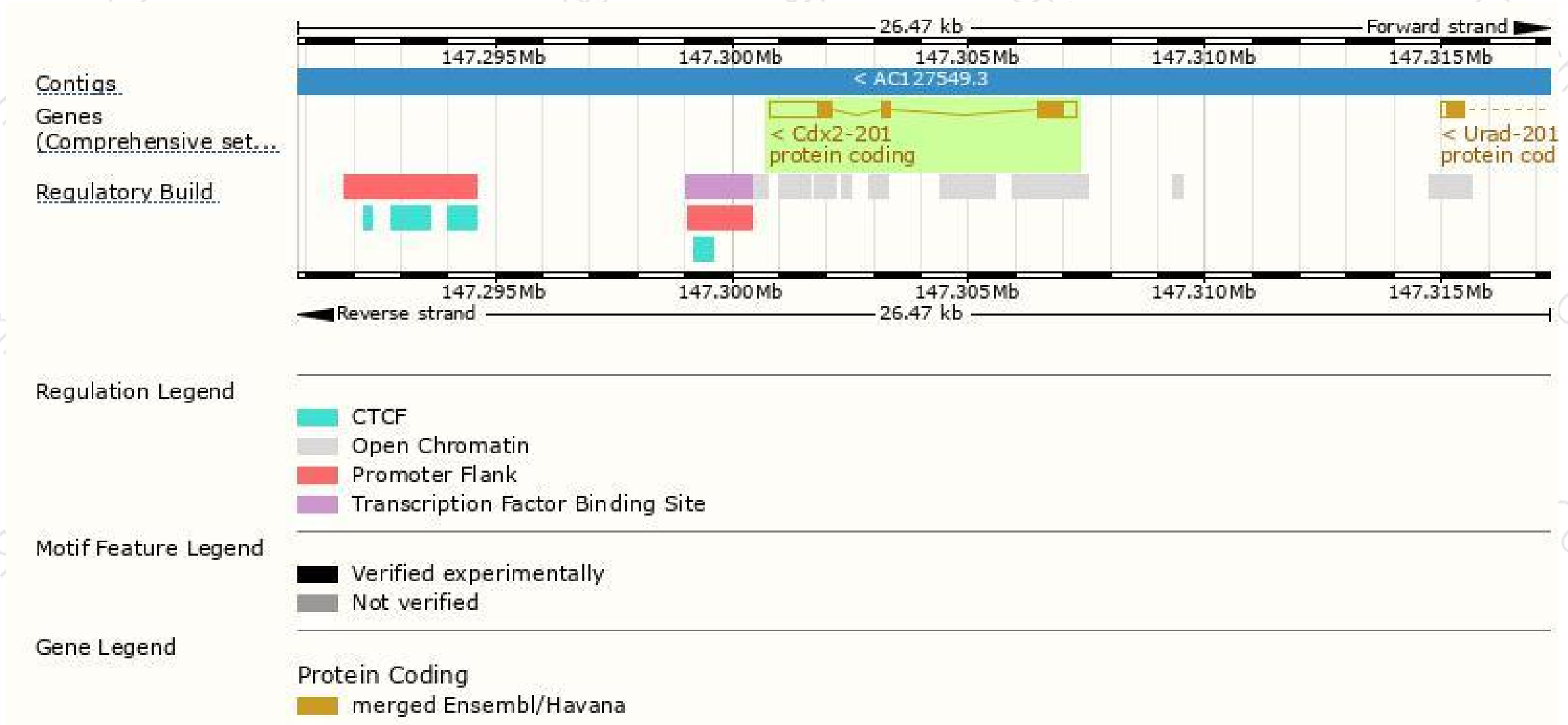
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdx2-201	<a href="#">ENSMUST00000031650.3</a>	2261	<a href="#">311aa</a>	Protein coding	<a href="#">CCDS19878</a>	<a href="#">P43241</a> <a href="#">Q543L9</a>	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Cdx2-201* transcript, The transcription is shown below

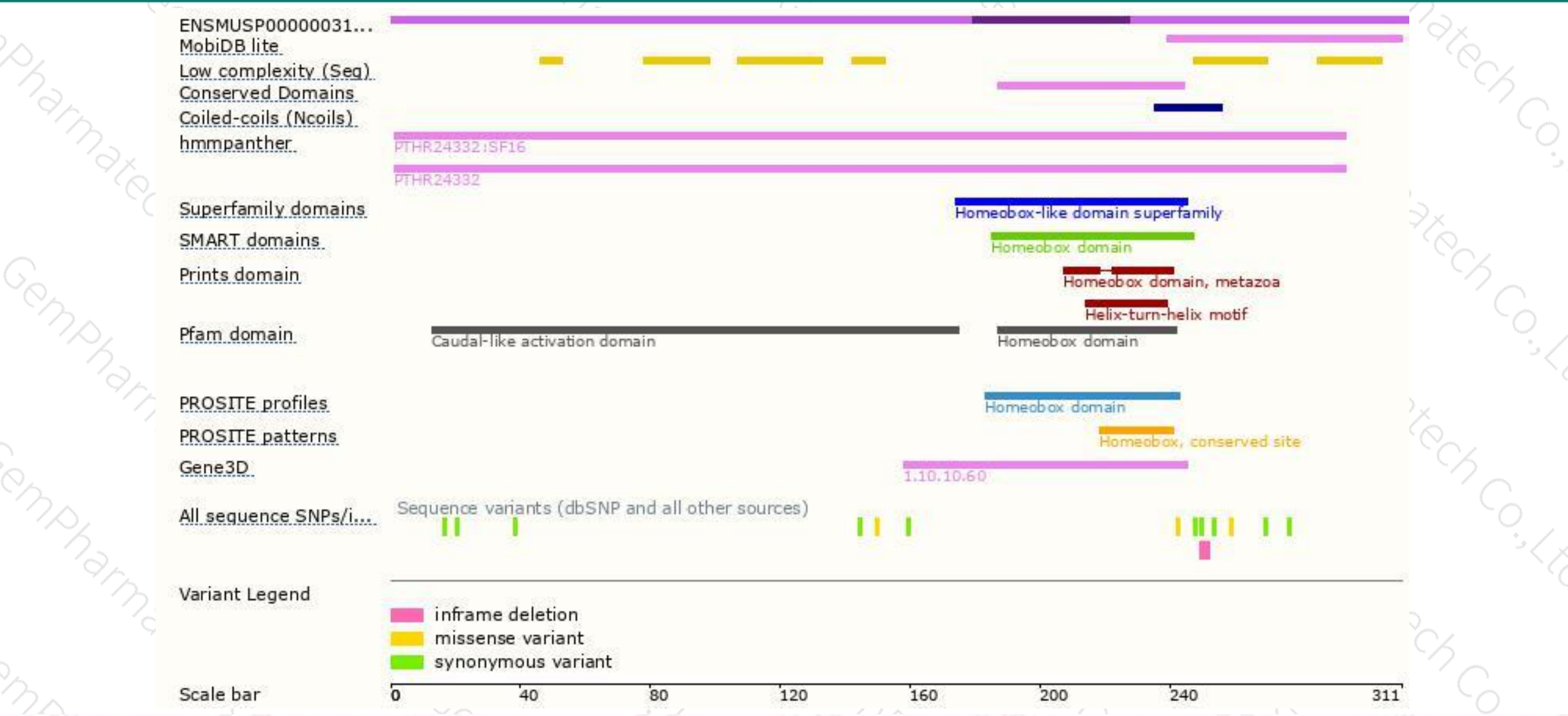


# Genomic location distribution

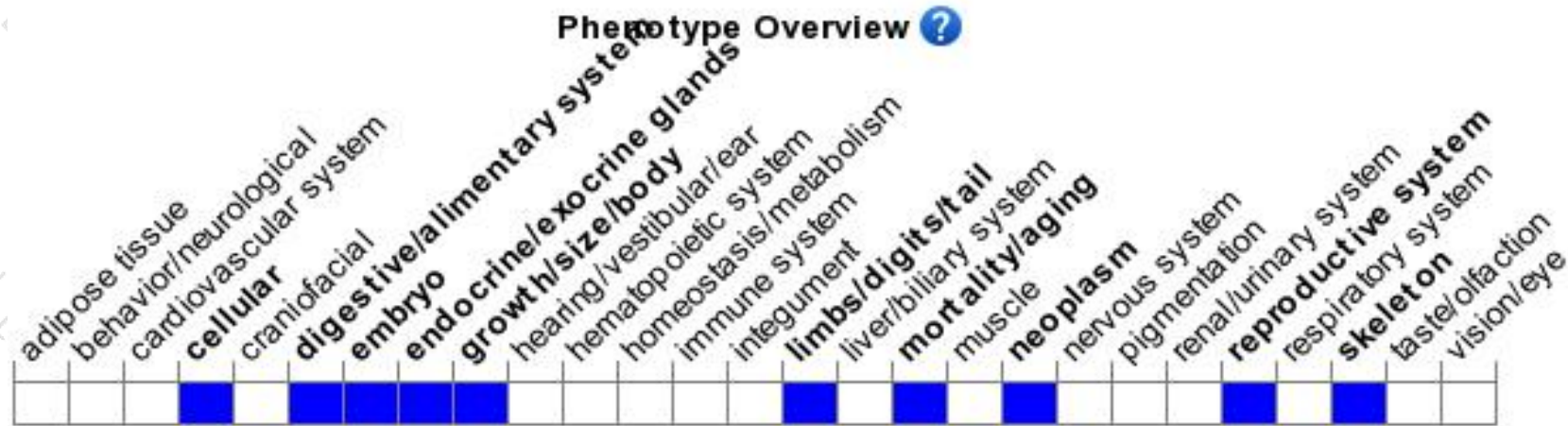




# Protein domain



# Mouse phenotype description(MGI )



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

According to the existing MGI data, Homozygotes for targeted null mutations die prior to gastrulation. Heterozygotes exhibit tail abnormalities, stunted growth, defects of the vertebrae and ribs, and multiple intestinal adenomatous polyps.

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

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