Myo10 Cas9-CKO Strategy

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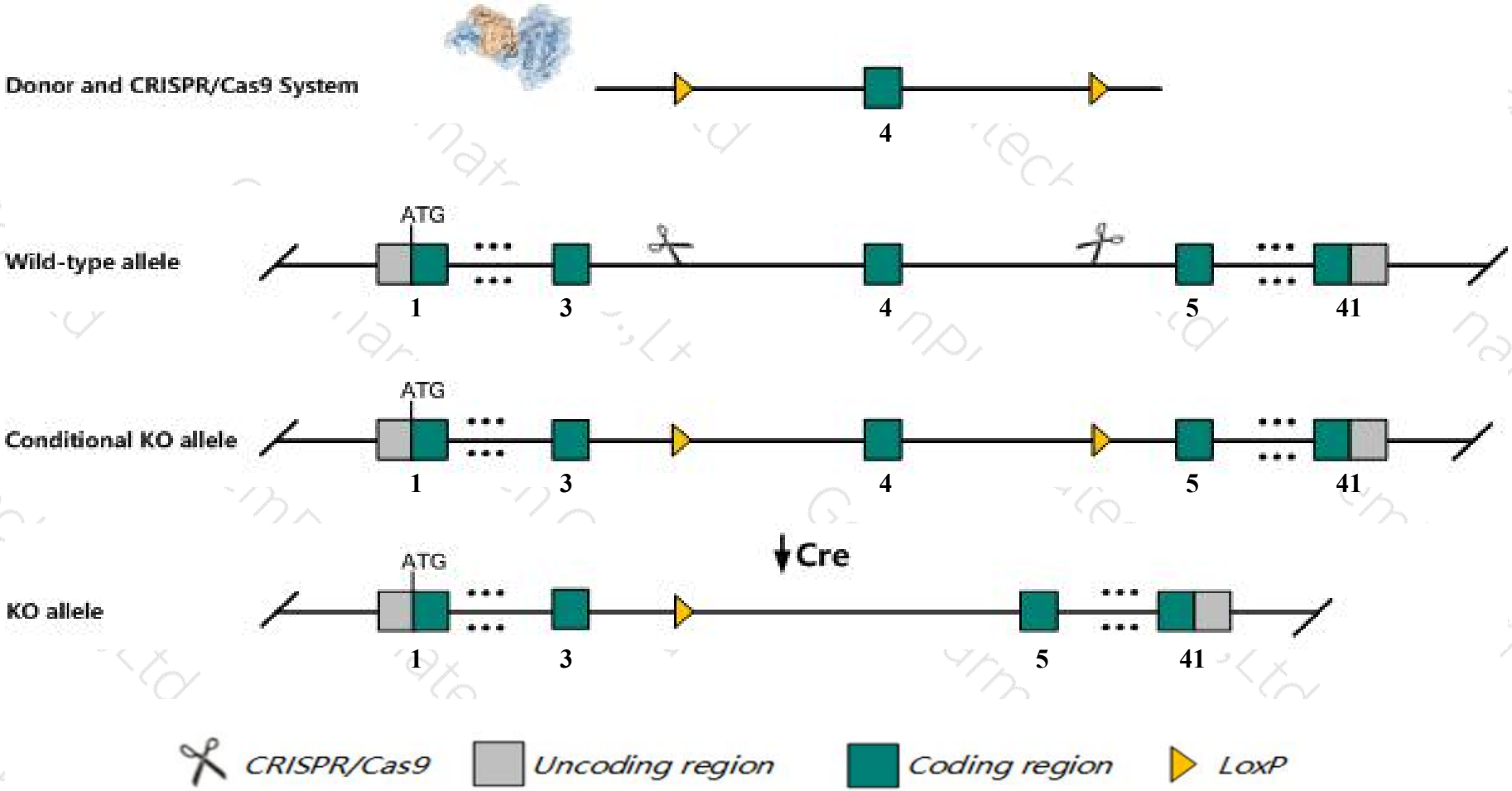
Project Overview

Project Name	***Myo10***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Myo10* gene. The schematic diagram is as follows:



Technical routes

- The *Myo10* gene has 13 transcripts. According to the structure of *Myo10* gene, exon4 of *Myo10-202* (ENSMUST00000110457.7) transcript is recommended as the knockout region.The region contains 188bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Myo10* 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,Homozygous null mutations are semi-lethal with over half of homozygous embryos exhibiting exencephaly. Surviving mutants show decreased body weight, white spotting, syndactyly, persistence of hyaloid vascular system and other eye defects.

- This strategy has no effect on transcripts *Myo10*-201,203,204,208,209,210,213.

- The *Myo10* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

集萃药康 GemPharmatech

Myo10 myosin X [*Mus musculus* (house mouse)]

Gene ID: 17909, updated on 2-Nov-2019

Summary

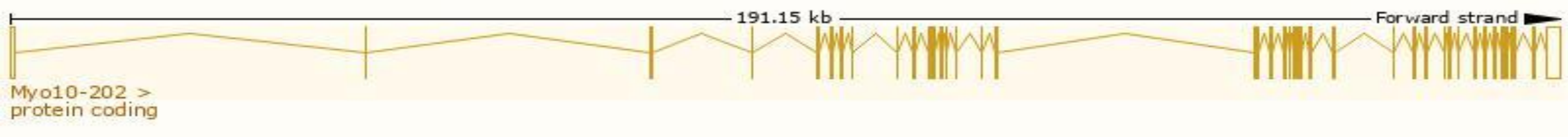
Official Symbol	Myo10 provided by MGI
Official Full Name	myosin X provided by MGI
Primary source	MGI:MGI:107716
See related	Ensembl:ENSMUSG00000022272
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW048724; myosin-X; mKIAA0799; D15Ertd600e
Expression	Ubiquitous expression in lung adult (RPKM 20.6), ovary adult (RPKM 15.7) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

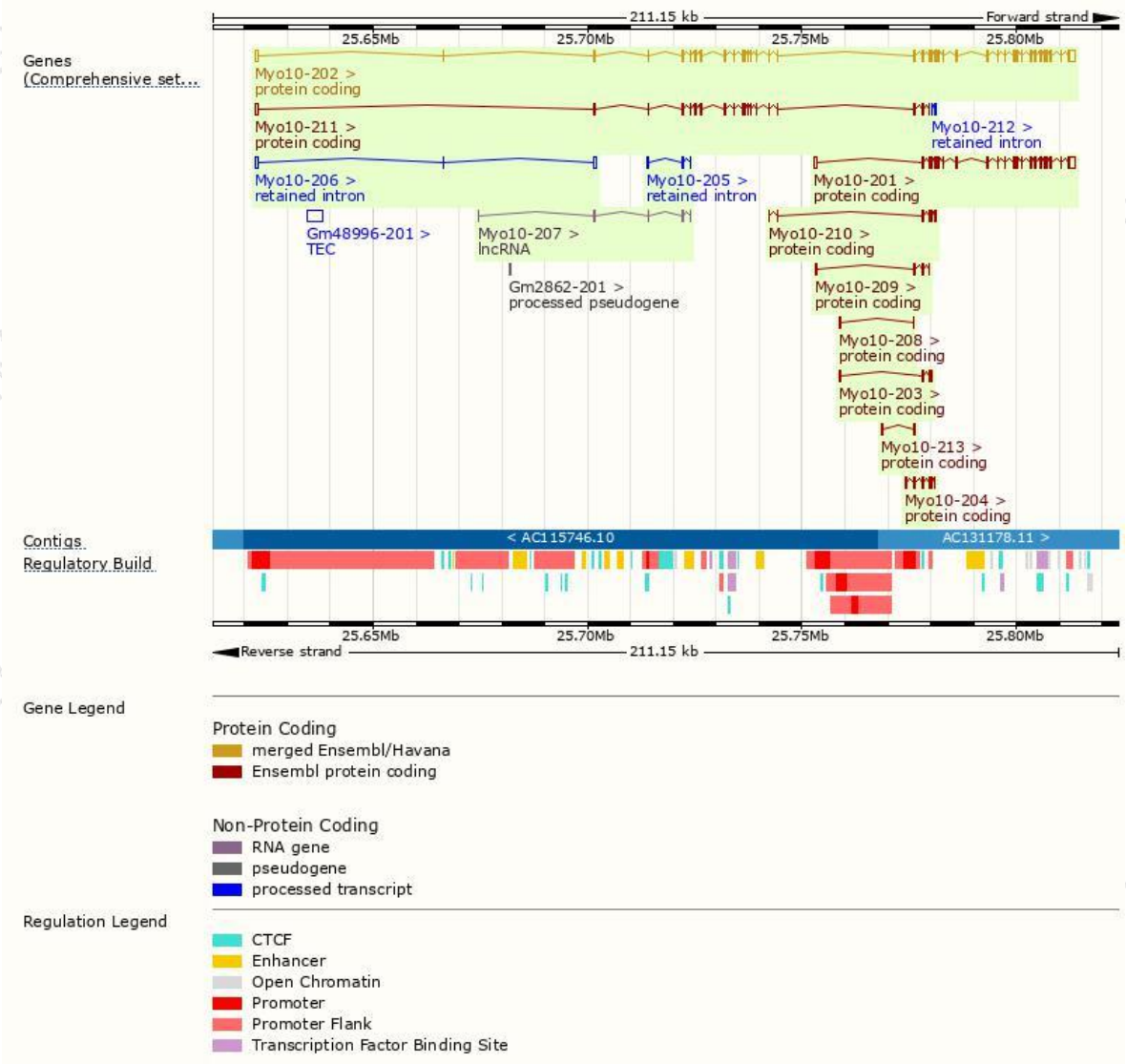
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Myo10-202	ENSMUST00000110457.7	8125	2062aa	Protein coding	CCDS37049	F8VQB6	TSL:1 GENCODE basic APPRIS P1
Myo10-201	ENSMUST00000022882.11	5880	1316aa	Protein coding	-	E9Q5G1	TSL:1 GENCODE basic
Myo10-211	ENSMUST00000137601.7	2826	786aa	Protein coding	-	D3YXU7	CDS 3' incomplete TSL:1
Myo10-204	ENSMUST00000125667.2	1030	237aa	Protein coding	-	D3YXW4	CDS 3' incomplete TSL:5
Myo10-209	ENSMUST00000135173.7	881	179aa	Protein coding	-	D3YZ13	CDS 3' incomplete TSL:2
Myo10-203	ENSMUST00000124966.7	748	104aa	Protein coding	-	D3Z0V4	CDS 3' incomplete TSL:3
Myo10-210	ENSMUST00000135981.7	727	242aa	Protein coding	-	F6UVU0	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Myo10-208	ENSMUST00000131834.1	463	25aa	Protein coding	-	D3Z2P4	CDS 3' incomplete TSL:2
Myo10-213	ENSMUST00000151360.6	376	51aa	Protein coding	-	D3Z2E0	CDS 3' incomplete TSL:5
Myo10-206	ENSMUST00000127486.1	970	No protein	Retained intron	-	-	TSL:1
Myo10-212	ENSMUST00000145587.1	618	No protein	Retained intron	-	-	TSL:2
Myo10-205	ENSMUST00000126076.1	599	No protein	Retained intron	-	-	TSL:5
Myo10-207	ENSMUST00000130517.7	641	No protein	lncRNA	-	-	TSL:5

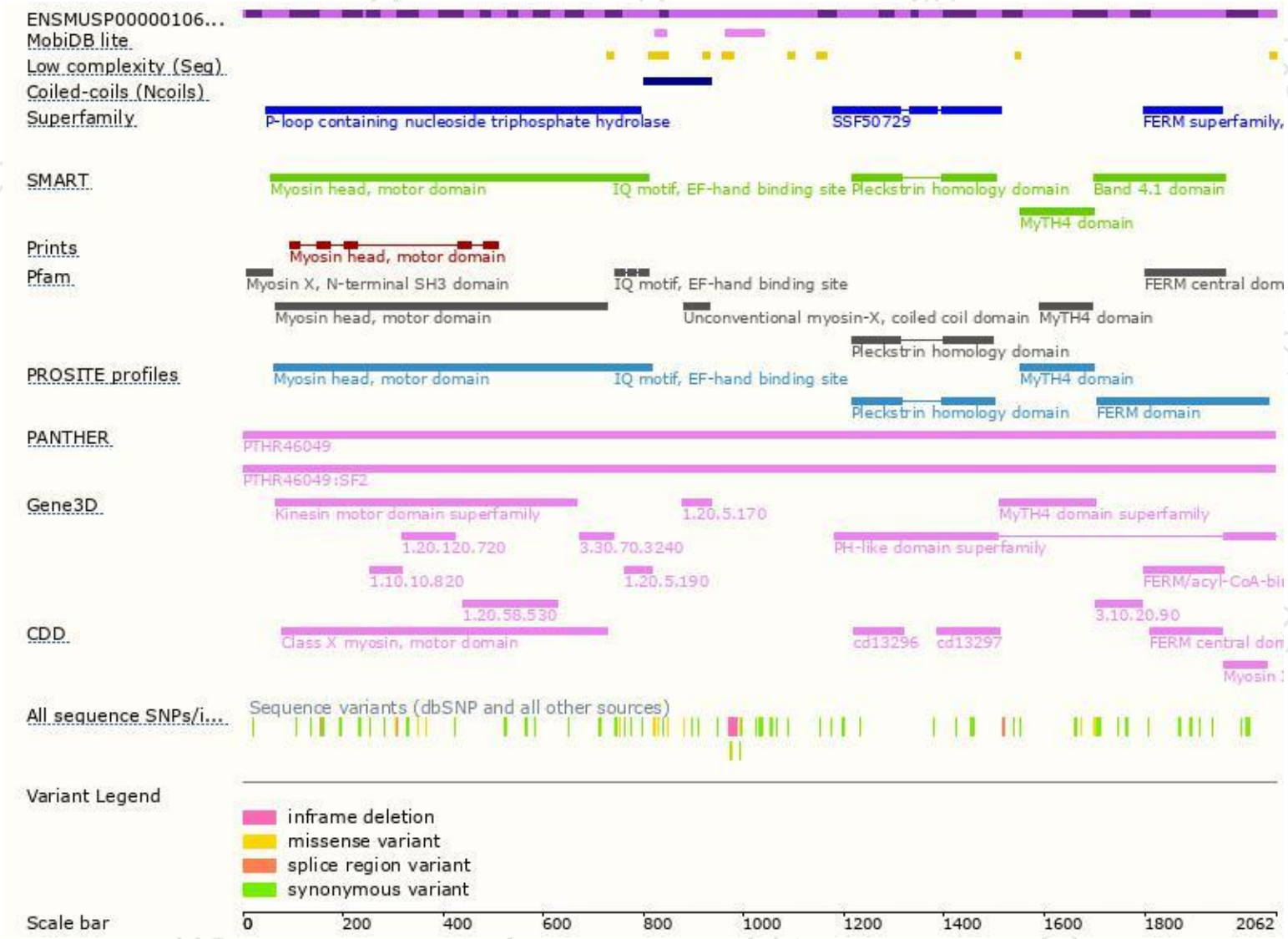
The strategy is based on the design of *Myo10-202* transcript,The transcription is shown below



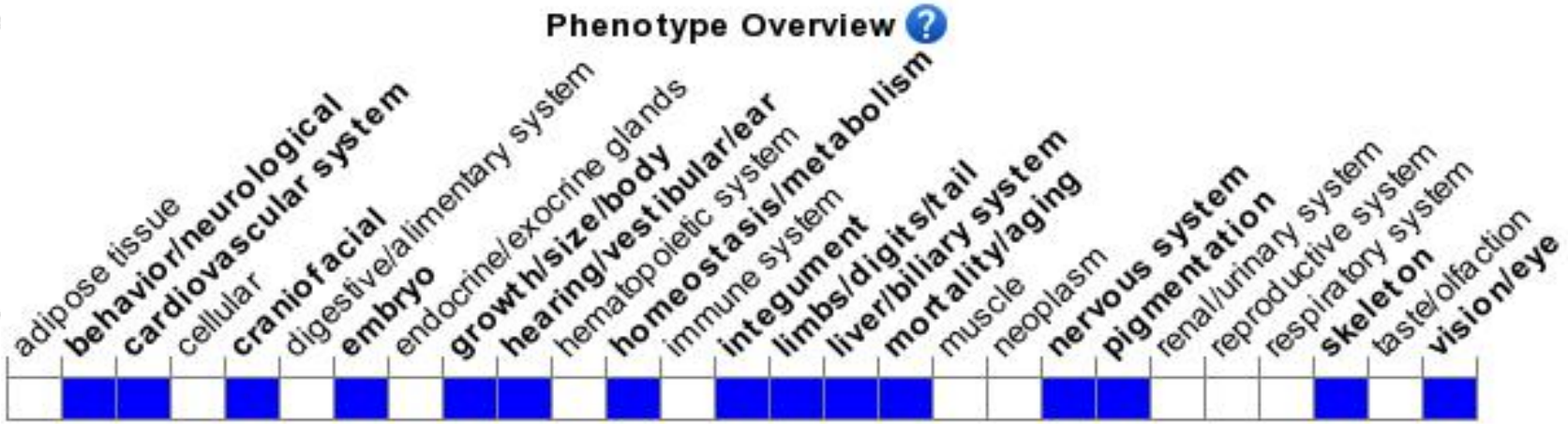
Genomic location distribution



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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