

Arl6 Cas9-KO Strategy

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Project Overview

Project Name

Arl6

Project type

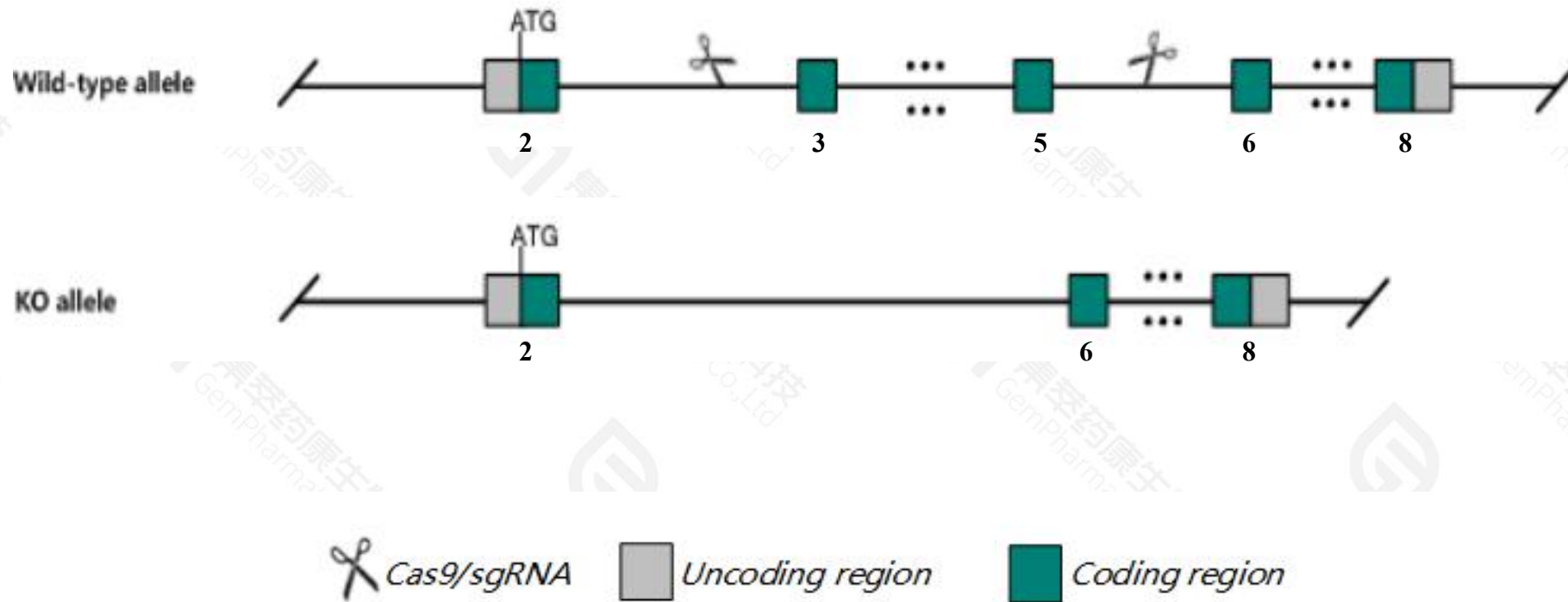
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arl6* gene. The schematic diagram is as follows:



- The *Arl6* gene has 4 transcripts. According to the structure of *Arl6* gene, exon3-exon5 of *Arl6-201*(ENSMUST00000023405.16) transcript is recommended as the knockout region. The region contains 226bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Arl6* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, mice homozygous for a targeted allele exhibit a disorganized photoreceptor inner segment and craniofacial abnormalities. Male mice are sterile.
- The *Arl6* gene is located on the Chr16. 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.

Arl6 ADP-ribosylation factor-like 6 [Mus musculus (house mouse)]

Gene ID: 56297, updated on 3-Jan-2021

Summary



Official Symbol Arl6 provided by [MGI](#)

Official Full Name ADP-ribosylation factor-like 6 provided by [MGI](#)

Primary source [MGI:MGI:1927136](#)

See related [Ensembl:ENSMUSG00000022722](#)

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 1110018H24Rik, 2210411E14Rik, BBS, BBS3

Expression Broad expression in CNS E18 (RPKM 9.1), CNS E14 (RPKM 7.1) and 21 other tissues [See more](#)

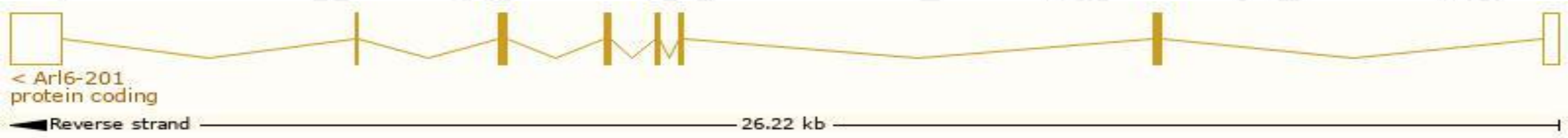
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

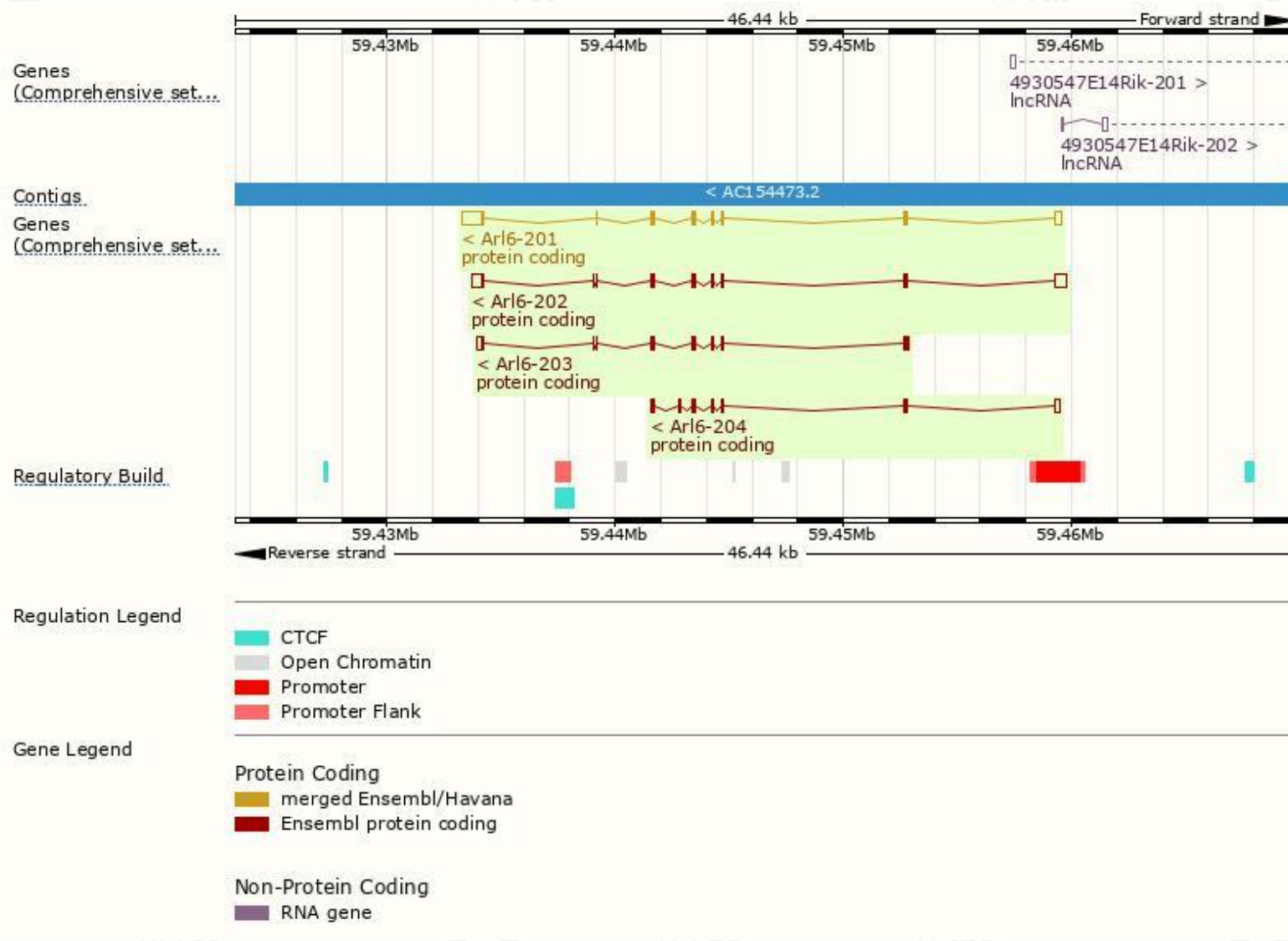
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arl6-201	ENSMUST00000023405.16	1696	186aa	Protein coding	CCDS28259		TSL:1 , GENCODE basic , APPRIS P1 ,
Arl6-202	ENSMUST00000099646.10	1554	193aa	Protein coding	CCDS84248		TSL:1 , GENCODE basic ,
Arl6-203	ENSMUST00000118438.8	875	193aa	Protein coding	CCDS84248		TSL:3 , GENCODE basic ,
Arl6-204	ENSMUST00000149797.3	811	194aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,

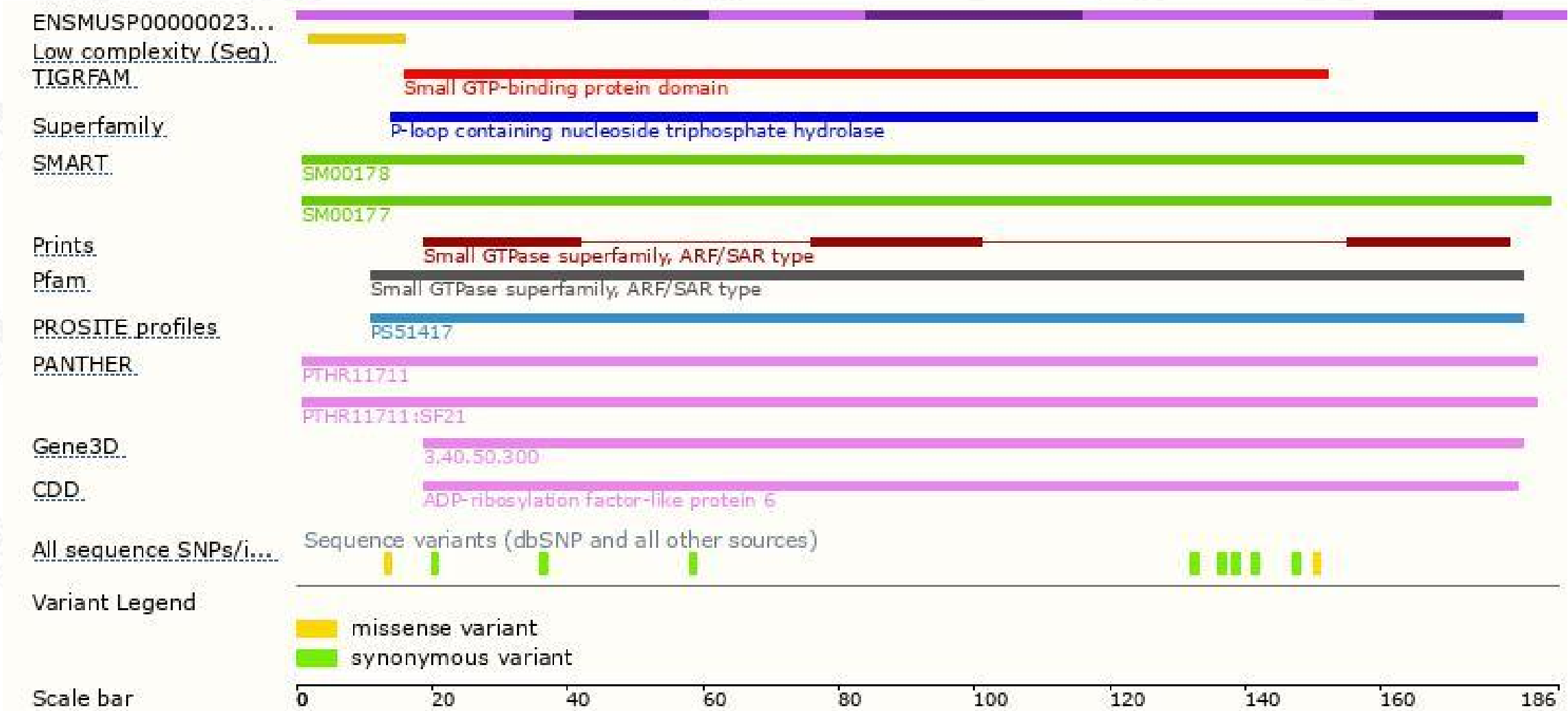
The strategy is based on the design of *Arl6-201* transcript,the transcription is shown below:



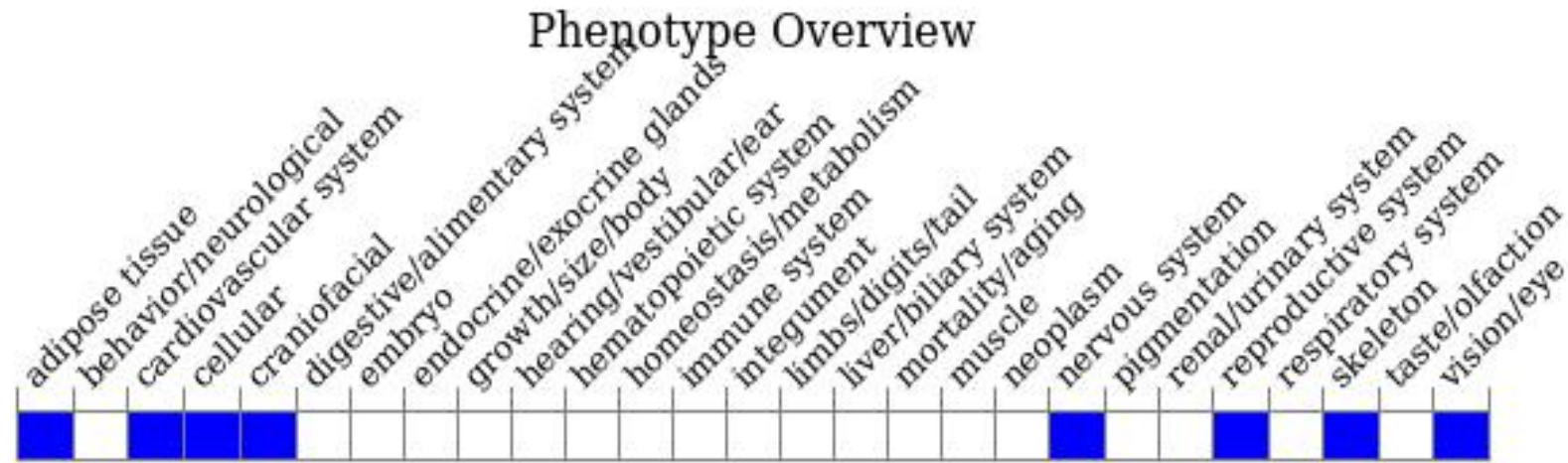
Genomic location distribution



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, mice homozygous for a targeted allele exhibit a disorganized photoreceptor inner segment and craniofacial abnormalities. Male mice are sterile.

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

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