

# ***Fndc3b* Cas9-KO Strategy**

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# Project Overview

**Project Name**

***Fndc3b***

**Project type**

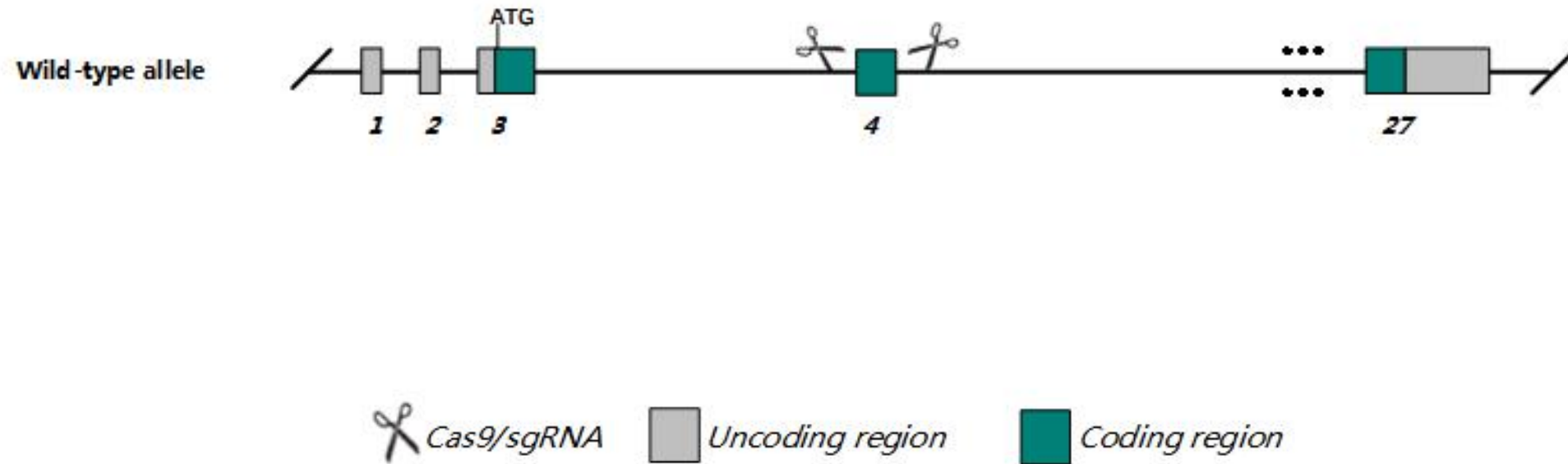
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fndc3b* gene. The schematic diagram is as follows:



- The *Fndc3b* gene has 4 transcripts. According to the structure of *Fndc3b* gene, exon4 of *Fndc3b-204* (ENSMUST00000195008.5) transcript is recommended as the knockout region. The region contains 76bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fndc3b* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele die shortly after birth despite normal energy homeostasis. Mouse embryonic fibroblasts homozygous for a knock-out allele exhibit impaired adipogenesis and enhanced osteogenesis.
- The *Fndc3b* gene is located on the Chr3. 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)

## Fndc3b fibronectin type III domain containing 3B [Mus musculus (house mouse)]

Gene ID: 72007, updated on 31-Jan-2019

### Summary



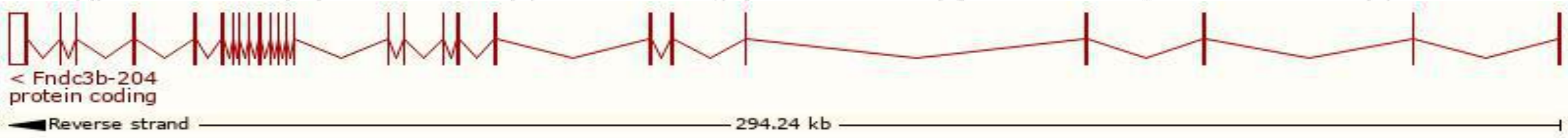
<b>Official Symbol</b>	Fndc3b provided by <a href="#">MGI</a>
<b>Official Full Name</b>	fibronectin type III domain containing 3B provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1919257</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000039286</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<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>	1600019O04Rik, AW550168, Fad104, mKIAA4164
<b>Expression</b>	Ubiquitous expression in placenta adult (RPKM 16.1), limb E14.5 (RPKM 9.8) and 27 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

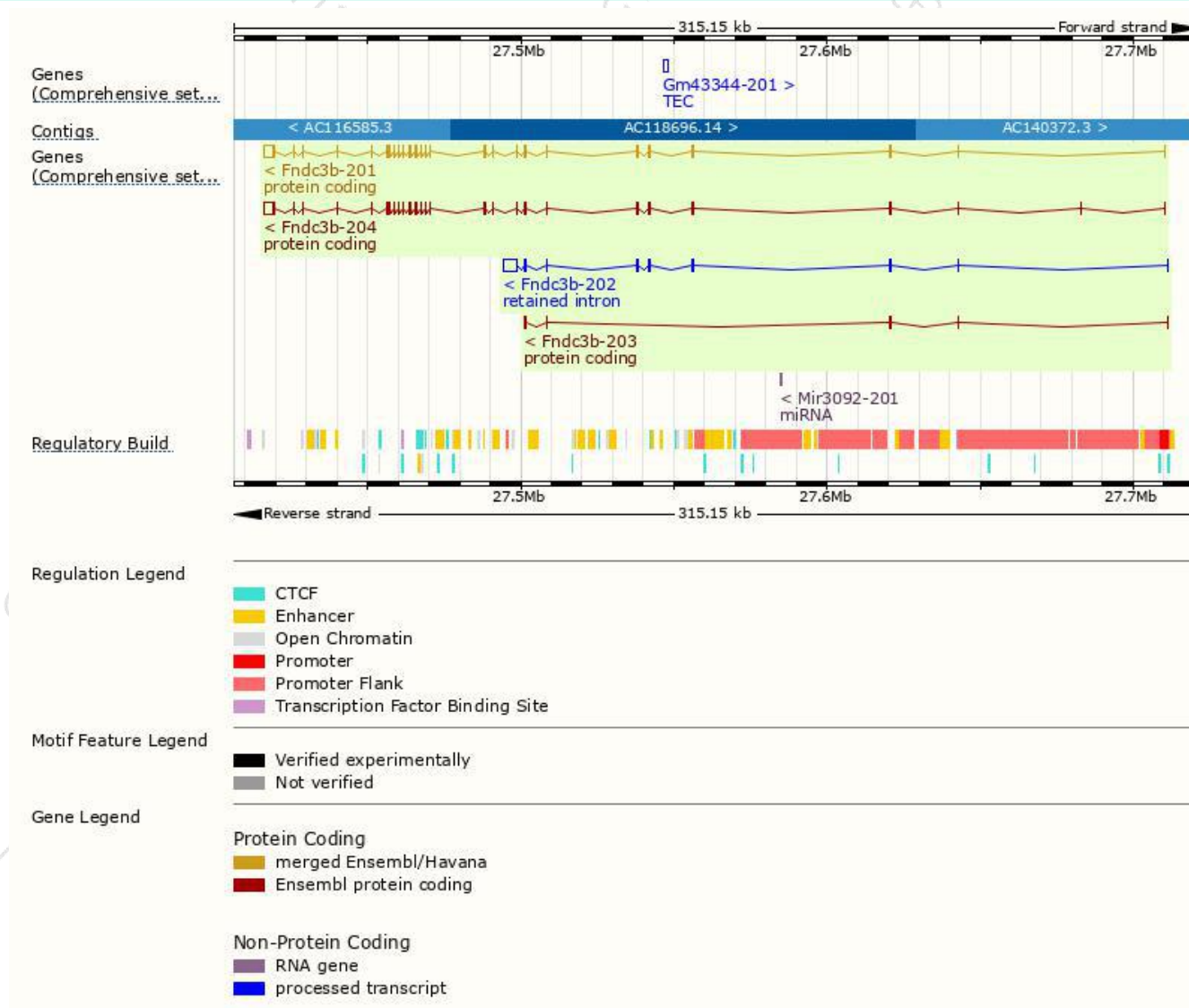
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fndc3b-204	<a href="#">ENSMUST00000195008.5</a>	6886	<a href="#">1207aa</a>	Protein coding	<a href="#">CCDS17274</a>	<a href="#">A0A0R4J0H8</a>	TSL:1 GENCODE basic APPRIS P1
Fndc3b-201	<a href="#">ENSMUST00000046157.9</a>	6875	<a href="#">1207aa</a>	Protein coding	<a href="#">CCDS17274</a>	<a href="#">A0A0R4J0H8</a>	TSL:1 GENCODE basic APPRIS P1
Fndc3b-203	<a href="#">ENSMUST00000193779.1</a>	505	<a href="#">119aa</a>	Protein coding	-	<a href="#">A0A0A6YX88</a>	CDS 3' incomplete TSL:2
Fndc3b-202	<a href="#">ENSMUST00000191684.1</a>	5631	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Fndc3b-204* transcript,The transcription is shown below

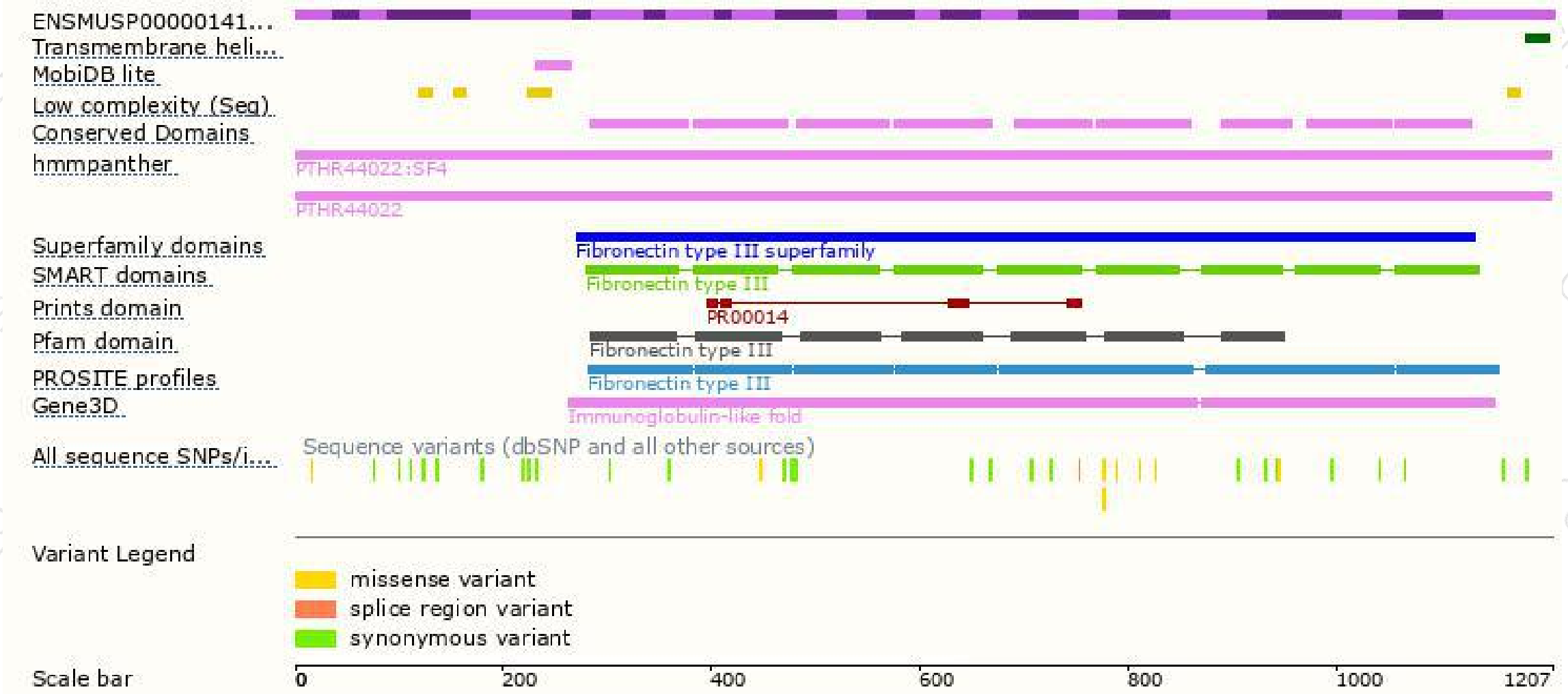


# Genomic location distribution

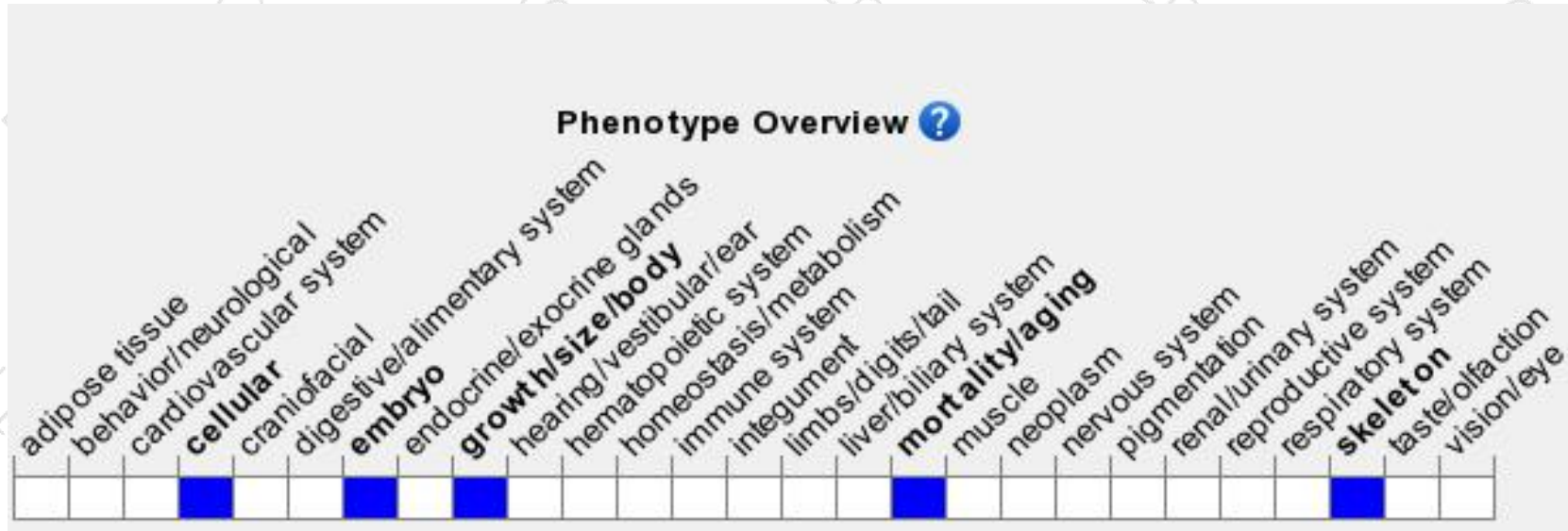




# Protein domain



# 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 knock-out allele die shortly after birth despite normal energy homeostasis. Mouse embryonic fibroblasts homozygous for a knock-out allele exhibit impaired adipogenesis and enhanced osteogenesis.

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

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