Syvn1 Cas9-CKO Strategy

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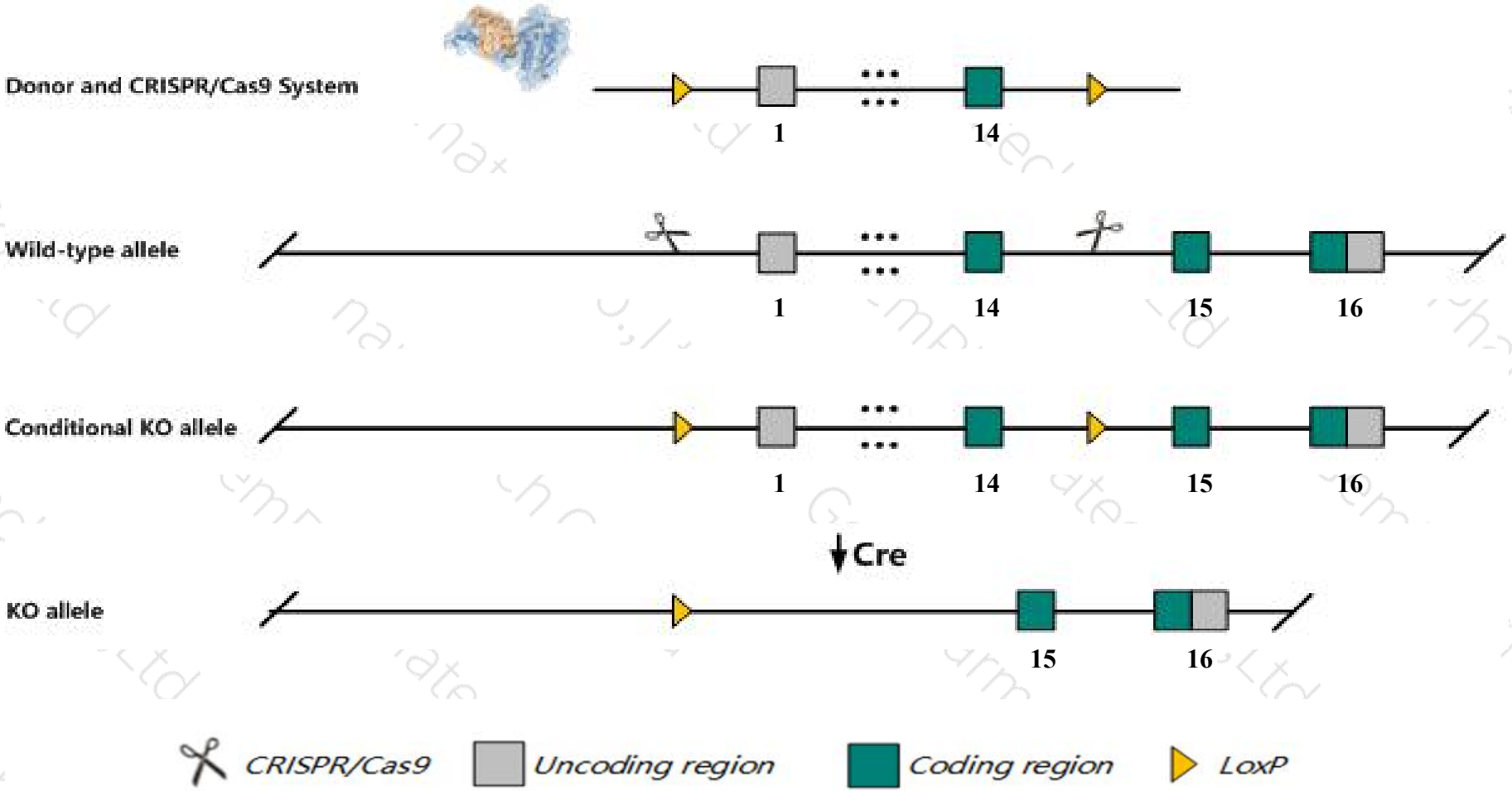
Project Overview

Project Name	***Syvn1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Syvn1* gene. The schematic diagram is as follows:



Technical routes

- The *Syvn1* gene has 8 transcripts. According to the structure of *Syvn1* gene, exon1-exon14 of *Syvn1-204* (ENSMUST00000138532.7) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Syvn1* 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,haploinsufficiency results in embryonic death due to systemic abnormal apoptosis. mice are viable when only a single copy is inactivated and they exhibit a resistance to collagen-induced arthritis due to enhanced apoptosis of synovial cells.
- The *Syvn1* gene is located on the Chr19. 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）

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Syvn1 synovial apoptosis inhibitor 1, synoviolin [Mus musculus (house mouse)]

Gene ID: 74126, updated on 2-Apr-2019

Summary

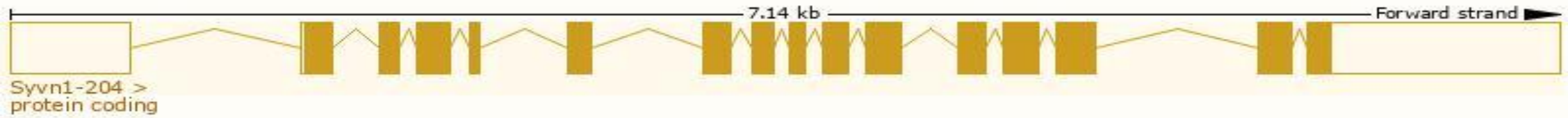
Official Symbol	Syvn1 provided by MGI
Official Full Name	synovial apoptosis inhibitor 1, synoviolin provided byMGI
Primary source	MGI:MGI:1921376
See related	Ensembl:ENSMUSG00000024807
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200010C09Rik, AW211966, C85322, D530017H19Rik, Hrd1
Expression	Ubiquitous expression in spleen adult (RPKM 49.0), adrenal adult (RPKM 42.7) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

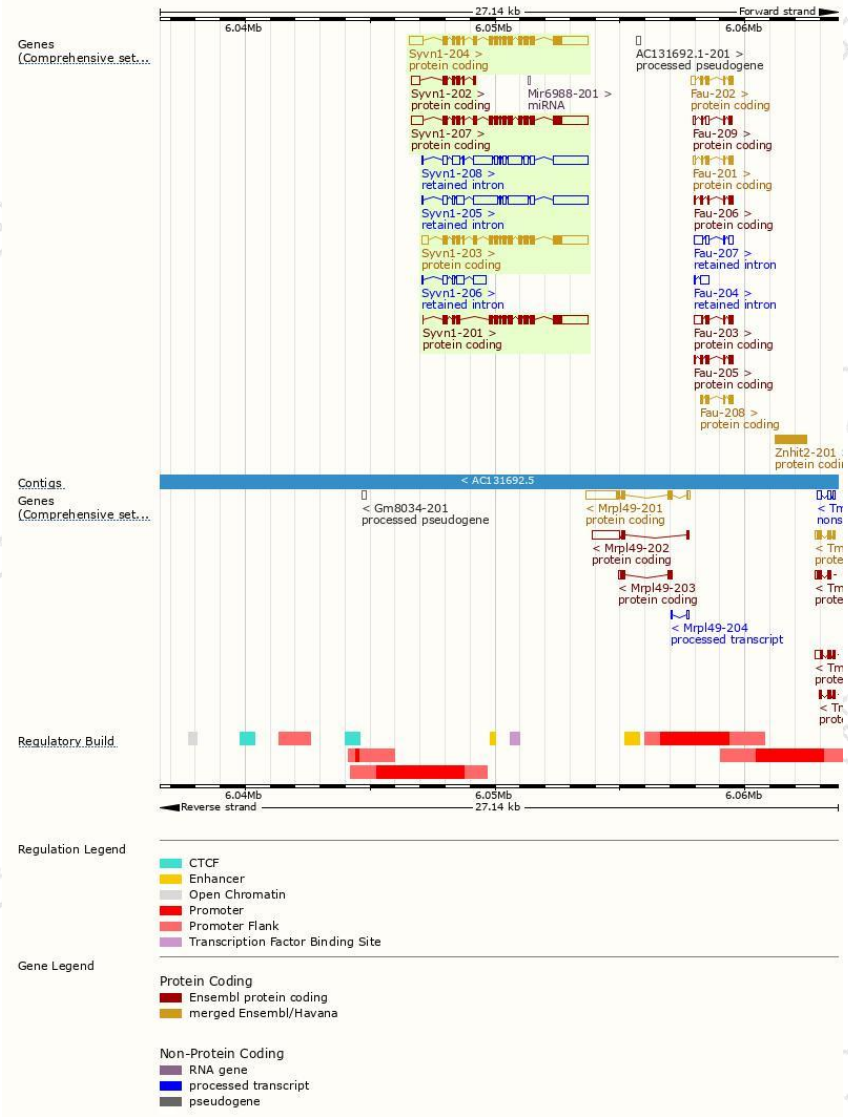
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Syvn1-204	ENSMUST00000138532.7	3464	612aa	Protein coding	CCDS29487	A0A0R4J1R1	TSL:1 GENCODE basic APPRIS P2
Syvn1-203	ENSMUST00000134667.7	3159	612aa	Protein coding	CCDS29487	A0A0R4J1R1	TSL:1 GENCODE basic APPRIS P2
Syvn1-207	ENSMUST00000156550.7	3363	608aa	Protein coding	-	D3Z1Y1	TSL:5 GENCODE basic APPRIS ALT2
Syvn1-201	ENSMUST00000025723.8	2780	561aa	Protein coding	-	E9QQ99	TSL:5 GENCODE basic APPRIS ALT2
Syvn1-202	ENSMUST00000129081.7	842	160aa	Protein coding	-	D3YZH4	CDS 3' incomplete TSL:3
Syvn1-205	ENSMUST00000142101.7	4080	No protein	Retained intron	-	-	TSL:2
Syvn1-208	ENSMUST00000235478.1	3905	No protein	Retained intron	-	-	
Syvn1-206	ENSMUST00000144328.1	1077	No protein	Retained intron	-	-	TSL:5

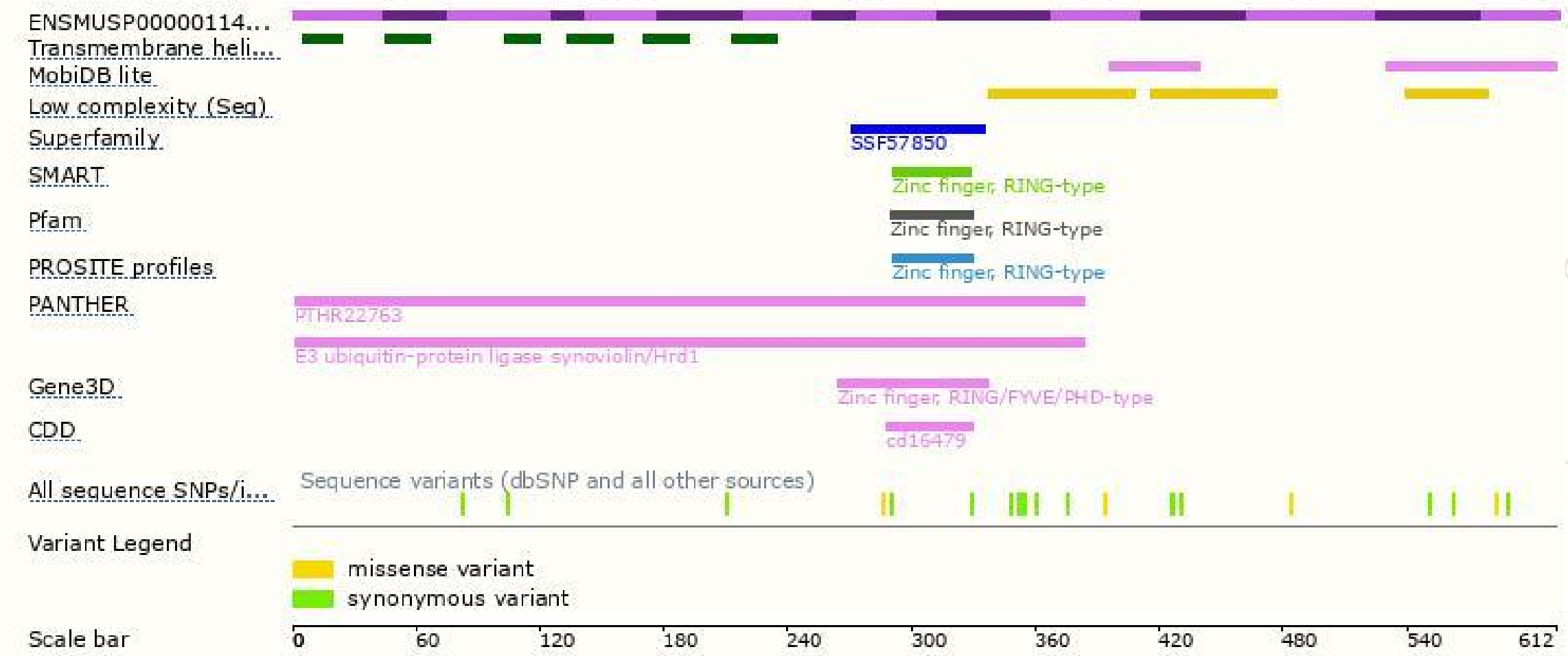
The strategy is based on the design of *Syvn1-204* transcript,The transcription is shown below



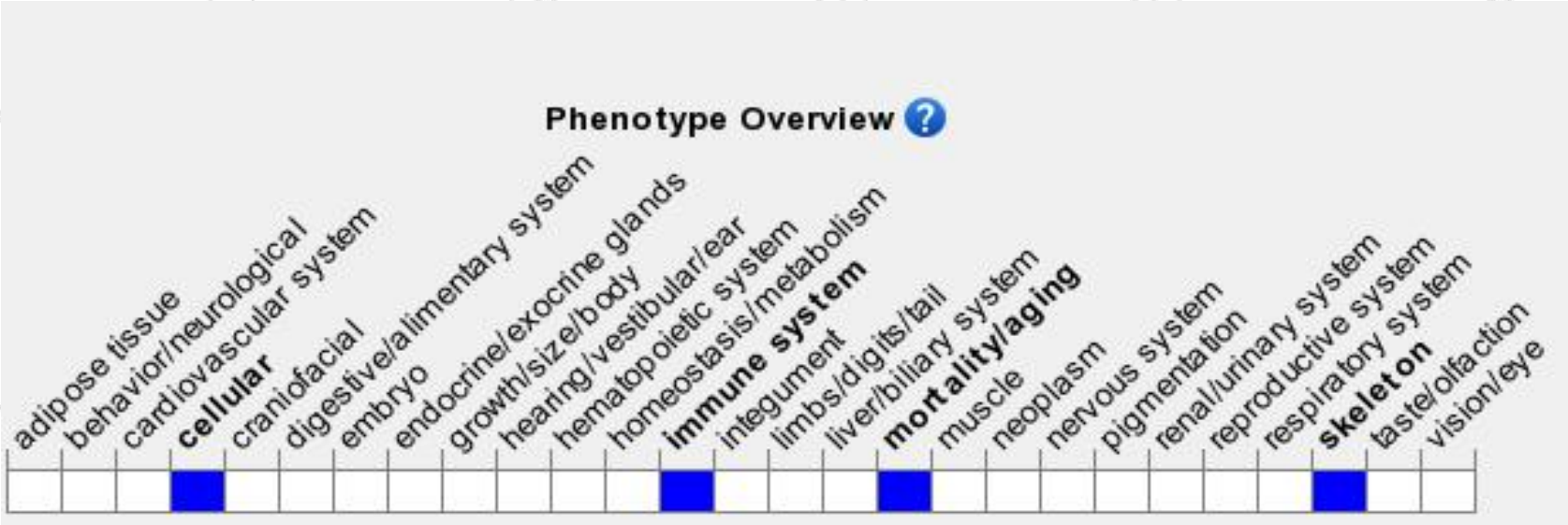
Genomic location distribution



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/).

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

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