pRS413

4,967 base pairs
GenBank Accession #: U03447
Not currently available from NEB.

Feature	Coordinates	Source
HIS3	504-1163	*S. cerevisiae*
f1 origin	1878-1423	f1
*lacZ*α/MCS	2239-1661	pBluescript SK+
origin (*E. coli*)	3224-2637	pMB1
bla (Ap^R)	4256-3396	*Tn3*
CEN6	4397-4515	*S. cerevisiae*
ARS (Histone H4)	4528-4901	*S. cerevisiae*

ori = origin of replication
Ap = ampicillin

References

1. Sikorski, R.S. and Hieter, P. (1989) *Genetics* 122, 19–27.
2. Christianson, T.W. et al. (1992) *Gene* 110, 119–122.

The pRS4xx series of plasmids are shuttle vectors used for gene cloning in *Saccharomyces cerevisiae*, but are also capable of replication in *E. coli*.

While in *E. coli*, they replicate from the pMB1 origin of replication from pBR322 (although the *rop* gene is missing). They carry the *bla* (Ap^R) marker for selection with ampicillin and the f1 bacteriophage origin of replication for single-strand DNA production.

Three sets of 4 vectors comprise the pRS4xx series (1, 2): pRS403 through pRS406 are integrative plasmids (YIp); pRS413 through pRS416 (shown below) are centromeric plasmids (YCp), and differ from the YIp by the insertion of a centromere (CEN) and autonomously replicating sequence (ARS); pRS423 through pRS426 are episomal plasmids (YEp), and carry instead the origin of replication from the yeast 2μ circle plasmid along with *REP3* and *FRT* sequences (2). The 4 vectors in each series differ only in the yeast auxotrophic marker used: *HIS3* (pRS4x3), *TRP1* (pRS4x4), *LEU2* (pRS4x5) or *URA3* (pRS4x6).

Enzymes with unique restriction sites are shown in **bold** type. Location of sites of all NEB restriction enzymes can be found on the NEB web site (choose Technical Reference > DNA Sequences and Maps). Restriction site coordinates refer to the position of the 5´-most base on the top strand in each recognition sequence.

Open reading frame (ORF) coordinates are in the form "translational start – translational stop"; numbers refer to positions on the top (clockwise) strand, regardless of the direction of transcription and include the start and stop codons.

pMB1 (*E. coli*) origin of replication coordinates include the region from the -35 promoter sequence of the RNAII transcript to the RNA/DNA switch point. For the f1 origin, the arrow shows the direction of synthesis of the (+) strand, which gets packaged into phage particles. Yeast ARS H4 coordinates are the boundaries of the Sau3AI fragment downstream of the Histone H4 gene (*HHF1*) on *S. cerevisiae* chromosome II. *bla* (Ap^R) gene coordinates include the signal sequence.