Molecular analysis of *RGP1*, a new yeast gene required for proper mitotic growth

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We report the sequence and deletion analysis of a new single copy gene from *S. cerevisiae* that maps on chromosome IV closely linked to *HPR1* and *ARO1*. This new gene, *RGP1* (Reduced Growth Phenotype) was originally identified as a 3 kb transcript that hybridized to a region immediately to the *HPR1* gene (Aguilera and Klein, submitted). Sequence analysis shows that *RGP1* codes for a putative protein of 661 amino acids (Fig. 1), with no homology to any known protein. Gene replacement of *RGP1* by the *HIS3* gene (Fig. 2A) shows that *RGP1*

is essential for proper mitotic growth. Tetrad analysis of diploids *rgp1Δ1::HIS3/RGP1* shows that all spores that carry the null mutation *rgp1Δ1::HIS3* grow very poorly as compared to wild type spores (Fig. 2B). Sporulation and other cellular parameters such as sensitivity to DNA damage agents are unaffected.

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I L F H S K E N L E G E E F T C Y V P I P I L C T S E D F M G W *
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ATGCATATTGCTT
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Figure 1. DNA and deduced amino acid sequence of *RGP1*.

Figure 2. A: Restriction map of the *RGP* region (top). The *HIS3* fragment used for replacement of the *RGP1* gene in *rgp1Δ1::HIS3* strains is shown (bottom). B: Tetrad analysis of a diploid *RGP1/rgp1Δ1::HIS3*. All *rgp1Δ* strains show small colony size.

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