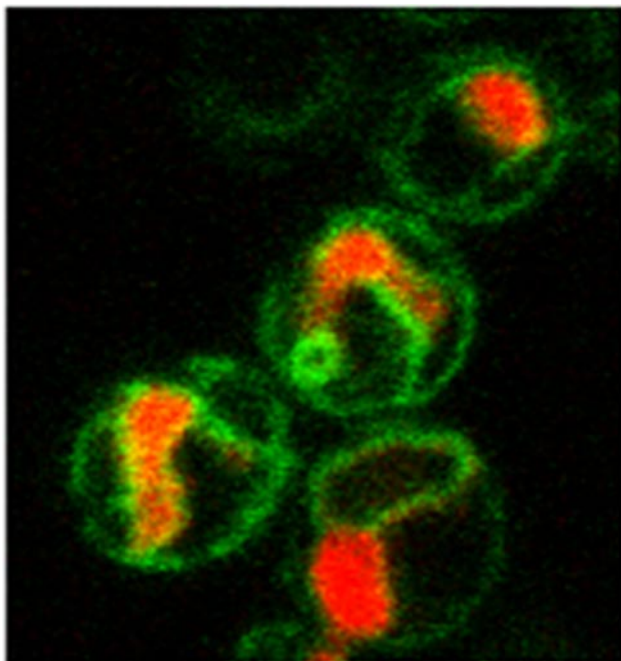


Papers of the Week

Expand Your Nuclear Horizons ♦



Overexpressing the diacylglycerol kinase in yeast leads to an expansion of the nuclear membrane.

resulted in membranes enriched in phosphatidic acid and an expansion of the nuclear envelope; this phenotype was directly related to diacylglycerol kinase activity, and mutations that abolished activity caused reduced phosphatidic acid levels and nuclear membrane growth. The nuclear expansion phenotype was similar to that observed in mutants defective in *PAH1*-encoded phosphatidic acid phosphatase activity, and mutations in both *DGK1* and *PAH1* restored a normal phosphatidic acid content and nuclear membrane structure. This suggests that there is coordinate regulation of diacylglycerol kinase and phosphatidic acid phosphatase activities in regulating nuclear membrane remodeling.

♦ See referenced articles, *J. Biol. Chem.* 2008, **283**, 20433–20442, 20443–20453

A cell nucleus undergoes dramatic structural changes during the cell cycle, which require extensive remodeling of the nuclear membrane. How this remodeling is coordinated remains a mystery, although some of the changes are likely coupled to phospholipid biosynthesis. In a pair of related Papers of the Week, the laboratories of Symeon Siniosoglou and George Carman have identified and characterized an unusual type of diacylglycerol kinase that helps regulate nuclear membrane growth in yeast. This enzyme, which is encoded by the *DGK1* gene, contains a CTP transferase domain that it uses to transfer phosphate from CTP to diacylglycerol to generate phosphatidic acid. In contrast, all other known diacylglycerol kinase enzymes use ATP as the phosphate donor. This may explain why a diacylglycerol kinase gene has not been identified in yeast until now. Gil-Soo Han and colleagues found that overexpressing *DKG1* re-

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