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On the Cover: Diatoms constitute a major phylum of phytoplankton biodiversity in ocean and freshwater ecosystems. They are known to respond to variations of the environment, in particular to nutrient shortage, by the accumulation of triacylglycerol (or oil). Oil is considered a plausible alternative resource to fossil hydrocarbons; therefore, its accumulation in diatoms has become a critical question in the current decade. Triacylglycerol biosynthesis is connected with membrane glycerolipids, but the fine remodeling of membrane glycerolipids and the balance with storage glycerolipids upon nutrient shortage have not yet been characterized in a model organism. Abida et al. provide a reference for the diatom *Phaeodactylum tricornutum* and an in-depth comparison of glycerolipid changes occurring after variations of nitrogen and phosphate, and they describe two distinct glycerolipid remodeling programs. The cover shows a confocal microscopy image of *P. tricornutum* cells, with both triradiate and fusiform morphotypes, grown in artificial seawater lacking nitrogen. Chloroplasts appear in red (chlorophyll autofluorescence), and triacylglycerol droplets appear in yellow (Nile Red staining). Cover image credits: Coline Meï (Laboratoire de Physiologie Cellulaire et Végétale, Grenoble).

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