**On the Cover:** Epifluorescence image of *Ostreococcus tauri* cells. Blue reflects the nucleus stained with the DNA-specific dye DAPI, and red is the natural chlorophyll autofluorescence derived from the chloroplast. *O. tauri* is the smallest free-living eukaryote known on the planet and falls within the Prasinophyceae, at the base of the green lineage. This prasinophyte and its relative *Micromonas pusilla* are emerging as important models not only for plant systems biology, but also for study of primary production, or CO₂ fixation, in the world’s oceans. *Ostreococcus* is known as a bloomer, sporadically reaching high biomass especially in coastal settings, whereas *Micromonas* has a broader range, extending from tropical waters into the Arctic Ocean. These organisms have been an international priority for genome sequencing; two complete sequences are available for *Ostreococcus* and two *Micromonas* genomes are in progress. Comparative genomics are facilitating rapid progress in understanding the evolutionary and ecological biology of these widespread marine “picoeukaryotes.” Each cell harbors a single Golgi apparatus, nucleus, chloroplast, and mitochondrion. Epifluorescence image by Alexandra Z. Worden and Augustin Engman.

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