Docked regulated secretory vesicles (mucocysts) in the ciliate *Tetrahymena thermophila*. The mucocysts (red) are positioned at docking sites that lie between cilia, the positions of which are marked by rings (yellow). The mucocysts were visualized using a monoclonal antibody against a mucocyst core cargo protein, Grt1p. The positions of cilia were visualized by expressing a CFP-fusion protein that forms rings around ciliary basal bodies. A single cell is shown. In their article on p. 1551 of this issue of MBoC, Kaur et al. suggest that secretory organelles in ciliates may represent a new class of lysosome-related organelle and reveal key roles of an endosomal syntaxin and AP-3 in the assembly of this complex compartment. (Image: Daniela Sparvoli, The University of Chicago)