Localization of GFP-JMY (green) in HeLa cells after DNA damage by neocarzinostatin. Nuclei are labeled with DAPI (blue). JMY regulates actin assembly while in the cytoplasm, but following DNA damage it accumulates in the nucleus and promotes p53-mediated apoptosis. What signal drives JMY to the nucleus? DNA damage induces polymerization of actin filaments (red). This exposes a nuclear localization signal embedded within JMY’s WH2 domains, normally blocked by actin monomers. Competition between importins and actin monomers for binding to this region allows localization of JMY to be dependent on the cytoplasmic concentration of actin monomer, so JMY moves to the nucleus after DNA damage–induced actin polymerization. See the article by Zuchero et al. on p. 853 of this issue of MBoC. (Image: J. Bradley Zuchero, University of California, San Francisco)