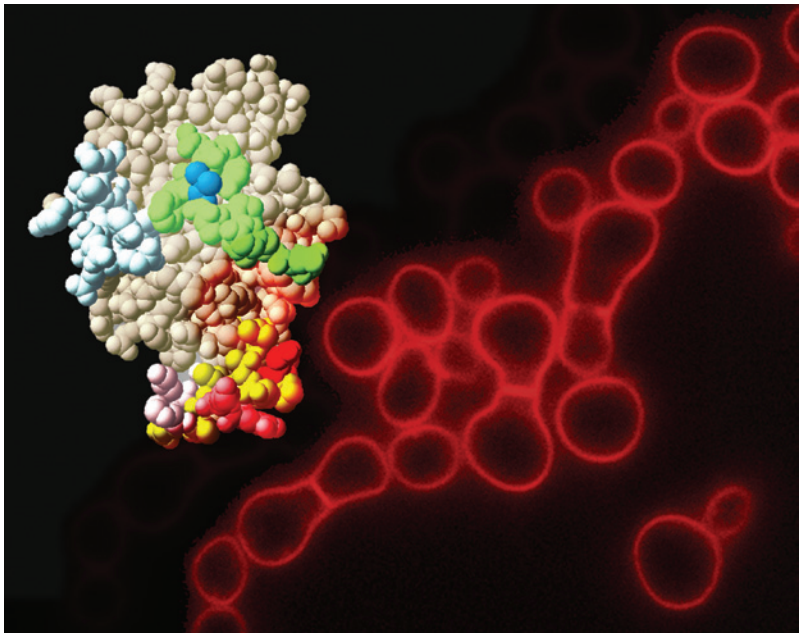
# HIGHLIGHTS from *MBoC*

The Editorial Board of *Molecular Biology of the Cell* has highlighted the following articles from the April 2012 issues. From among the many fine articles in the journal, the Board selects for these Highlights articles that are of broad interest and significantly advance knowledge or provide new concepts or approaches that extend our understanding.



*Yeast Cdc42p mutations that affect cell fusion are mapped on a space-filling model of human Cdc42p. The Switch I domain is shown in green with the V36M mutation in dark blue. The Switch II domain is in light blue. The Rho insert domain is shown in yellow with mutations indicated in shades of red that are correlated with the severity of the defect. Also shown are fluorescence micrographs of mating yeast cells, including three zygotes blocked in cell fusion. See Mol. Biol. Cell 23, 1208–1218. (Image:* Casey Ydenberg *and* Mark Rose*, Princeton University)*

**The human mitochondrial ISCA1, ISCA2, and IBA57 proteins are required for [4Fe-4S] protein maturation**
*A. D. Sheftel, C. Wilbrecht, O. Stehling, B. Niggemeyer, H.-P. Elsässer, U. Mühlenhoff, and R. Lill*

The human mitochondrial proteins ISCA1, ISCA2, and IBA57 are essential for the generation of mitochondrial [4Fe-4S] proteins in a late step of Fe/S protein biogenesis. This process is important for mitochondrial physiology, as documented by drastic enlargement of the organelles and the loss of cristae membranes in the absence of these proteins.
**Mol. Biol. Cell 23 (7), 1157–1166**

**PRC1 controls spindle polarization and recruitment of cytokinetic factors during monopolar cytokinesis**
*S. Shrestha, L. J. Wilmeth, J. Eyer, and C. B. Shuster*

PRC1 and KIF4A are believed to play a critical role in organizing antiparallel microtubules of the central spindle. Separable and nonredundant roles for these proteins were uncovered using cells with compromised spindle bipolarity, in which cytokinesis can be induced by bypassing the spindle assembly checkpoint.
**Mol. Biol. Cell 23 (7), 1196–1207**

**Cdc42p and Fus2p act together late in yeast cell fusion**
*C. A. Ydenberg, R. A. Stein, and M. D. Rose*

Cdc42p is the master regulator of morphogenesis in eukaryotic cells. It has an additional role in cell fusion, acting later in the pathway, after cells have undergone the changes in polarization and growth required for fusion. Cdc42p acts in concert with Fus2p to allow cell fusion.
**Mol. Biol. Cell 23 (7), 1208–1218**

**Dynamic reorganization of Eg5 in the mammalian spindle throughout mitosis requires dynein and TPX2**
*A. Gable, M. Qiu, J. Titus, S. Balchand, N. P. Ferenz, N. Ma, E. S. Collins, C. Fagerstrom, J. L. Ross, G. Yang, and P. Wadsworth*

The kinesin Eg5 moves toward minus ends of astral microtubules in early mitosis, switching to plus-end motion in anaphase. Dynein is required for minus-end motion; depletion of TPX2 results in a switch to plus-end motion. On midzone microtubules, Eg5 moves in both directions. Our results explain the redistribution of Eg5 throughout mitosis.
**Mol. Biol. Cell 23 (7), 1254–1266**

**Rab8a regulates the exocyst-mediated kiss-and-run discharge of the *Dictyostelium* contractile vacuole**
*M. Essid, N. Gopaldass, K. Yoshida, C. Merrifield, and T. Soldati*

A molecular dissection of contractile vacuole (CV) discharge shows that Rab8a is recruited to the CV a few seconds before the exocyst. Together they tether it to the plasma membrane and commit it to fusion. GTP hydrolysis is necessary for vacuole detethering, a process in which LvsA, a protein of the Chédiak–Higashi family, plays a crucial role.
**Mol. Biol. Cell 23 (7), 1267–1282**

**A negative feedback loop at the nuclear periphery regulates GAL gene expression**
*E. M. Green, Y. Jiang, R. Joyner, and K. Weis*

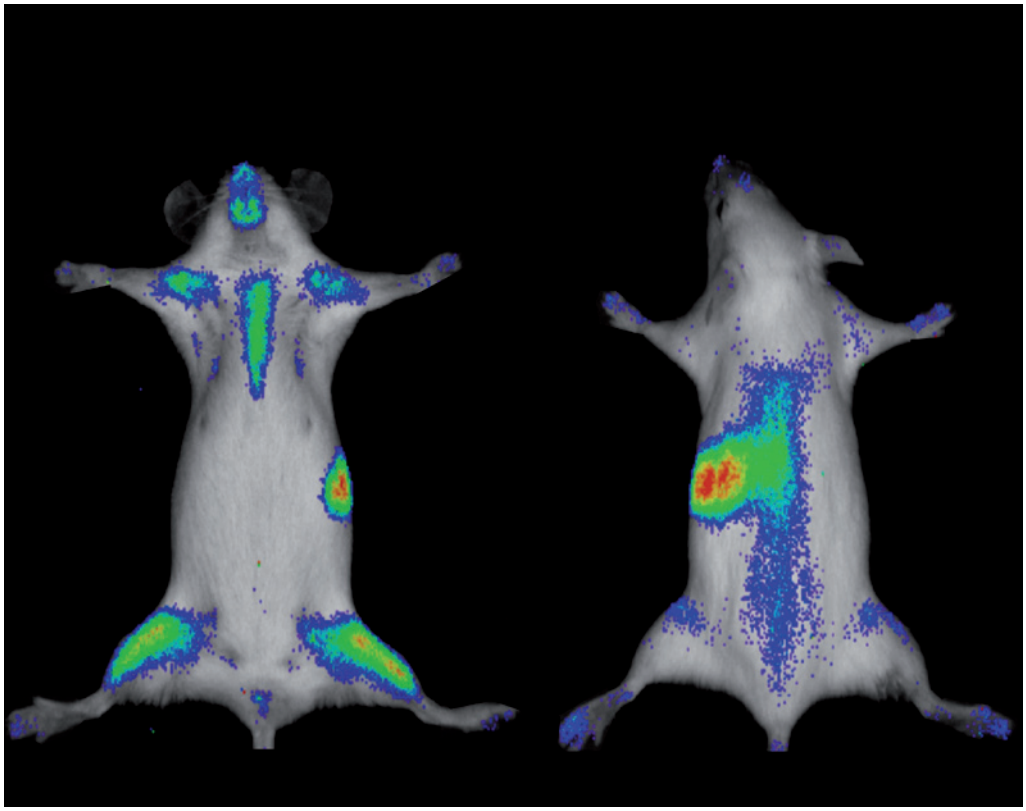
Examination of the role of the nuclear localization of the GAL gene locus shows that localization to the periphery upon induction dampens gene expression and is required for rapid repression after inactivation. Thus GAL gene movement to the nuclear periphery is part of a negative feedback loop enabling a rapid response to changes in the environment.
**Mol. Biol. Cell 23 (7), 1367–1375**

**Molecular basis for phosphospecific recognition of histone H3 tails by Survivin paralogues at inner centromeres**
*E. Niedzialkowska, F. Wang, P. J. Porebski, W. Minor, J. M. G. Higgins, and P. T. Stukenberg*

The structure of hSurvivin bound to the histone H3 tail phosphorylated on Thr-3 was solved to determine how the CPC reads the histone code. Many eukaryotes have two Survivin paralogues. A major difference between them is that class A is pH sensitive in H3T3ph binding, whereas class B is relatively pH insensitive but has lower affinity for H3T3ph.
**Mol. Biol. Cell 23 (8), 1457–1466**

**Molecular imaging of nuclear factor-Y transcriptional activity maps proliferation sites in live animals**
*F. Goeman, I. Manni, S. Artuso, B. Ramachandran, G. Toietta, G. Bossi, G. Rando, C. Cencioni, S. Germoni, S. Straino, M. C. Capogrossi, S. Bacchetti, A. Maggi, A. Sacchi, P. Ciana, and G. Piaggio*

The activity of the nuclear factor-Y (NF-Y) transcription factor is restricted to proliferating cells in vitro. We engineered transgenic mice that enabled bioluminescence imaging of NF-Y activity in every area of the body. We visualized areas of proliferation, and we highlight for the first time a role of NF-Y activity in hepatocyte proliferation during liver regeneration.
**Mol. Biol. Cell 23 (8), 1467–1474** ■



*Bioluminescence imaging of a MITO-Luc reporter mouse in which a nuclear factor-Y–dependent promoter that controls luciferase expression reveals areas of physiological cell proliferation. See Mol. Biol. Cell 23, 1467–1474. (Image:* Isabella Manni *and* Gabriele Toietta*, Experimental Oncology Department, Regina Elena Istitute, Rome, Italy)*