HIGHLIGHTS from *MBoC*

The Editorial Board of *Molecular Biology of the Cell* has highlighted the following articles from the June 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.

Regulation of Wnt signaling by the tumor suppressor adenomatous polyposis coli does not require the ability to enter the nucleus or a particular cytoplasmic localization
D. M. Roberts, M. I. Pronobis, J. S. Poulton, E. G. Kane, and M. Peifer

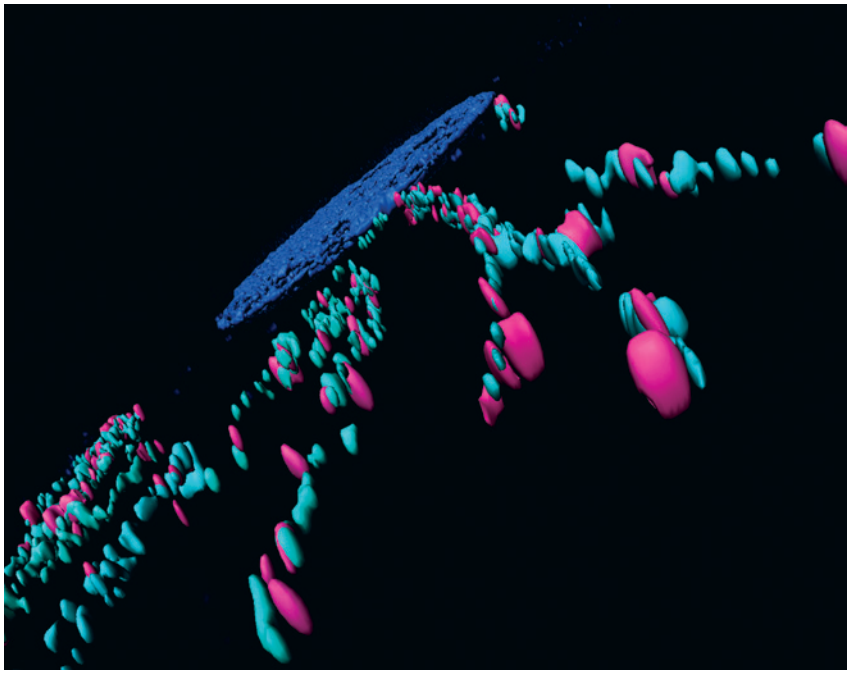
In this study, we test two current models for the function of the tumor suppressor adenomatous polyposis coli (APC). We find that APC can regulate Wnt signaling from diverse cytoplasmic locations, suggesting that its roles in the nucleus or in localizing the β-catenin destruction complex are not essential.
Mol. Biol. Cell 23 (11), 2041–2056

Regulation of myosin activation during cell–cell contact formation by Par3-Lgl antagonism: entosis without matrix detachment
Q. Wan, J. Liu, Z. Zheng, H. Zhu, X. Chu, Z. Dong, S. Huang, and Q. Du

Two polarity proteins, partitioning defective 3 homologue (Par3) and mammalian homologues of *Drosophila* lethal(2)giant larvae (Lgl1/2), antagonize each other in modulating myosin II activation during cell–cell contact formation in Madin-Darby canine kidney cells. Altering the counteraction between Par3 and Lgl1/2 leads to entosis without matrix detachment.
Mol. Biol. Cell 23 (11), 2076–2091

Phosphatidylserine dynamics in cellular membranes
J. G. Kay, M. Koivusalo, X. Ma, T. Wohland, and S. Grinstein

The distribution and dynamics of phosphatidylserine are studied in the plasma membrane and in organellar membranes of live cells using two novel fluorescent probes in combination with various biophysical techniques, including fluorescence correlation spectroscopy and single-particle tracking.
Mol. Biol. Cell 23 (11), 2198–2212



A 3D surface representation from a structured illumination microscopy image of a HeLa cell co-expressing the HIV-1 Nef mutant NefE4AW$_{113}$A-eYFP (cyan), which fails to bind the PACS-1 or PACS-2 membrane traffic proteins, and the early endosome marker mCherry-Rab5 (magenta). NefE4AW$_{113}$A-eYFP localized to mCherry-Rab5–positive tubulated endosomes and to donut-shaped structures surrounding the late endosome marker mCherry-Rab7. See Mol. Biol. Cell 23, 2184–2197. (Image: Laurel Thomas*, Oregon Health & Science University, Portland, OR)*

Cell survival, DNA damage, and oncogenic transformation after a transient and reversible apoptotic response
H. L. Tang, H. M. Tang, K. H. Mak, S. Hu, S. S. Wang, K. M. Wong, C. S. T. Wong, H. Y. Wu, H. T. Law, K. Liu, C. C. Talbot Jr., W. K. Lau, D. J. Montell, and M. C. Fung

Dying primary liver, NIH 3T3, and HeLa cells can reverse the advanced stage of apoptosis and survive even after incurring DNA damage. Some surviving cells harbor genetic alterations that result in phenotypic diversity, including oncogenic transformation.
Mol. Biol. Cell 23 (12), 2240–2252

The PDZ-adaptor protein syntenin-1 regulates HIV-1 entry
M. Gordón-Alonso, V. Rocha-Perugini, S. Álvarez, O. Moreno-Gonzalo, Á. Ursa, S. López-Martín, N. Izquierdo-Useros, J. Martínez-Picado, M. Á. Muñoz-Fernández, M. Yáñez-Mó, and F. Sánchez-Madrid

Syntenin-1 is recruited to the human immunodeficiency virus (HIV)-induced capping area but vanishes once the viral particles have entered

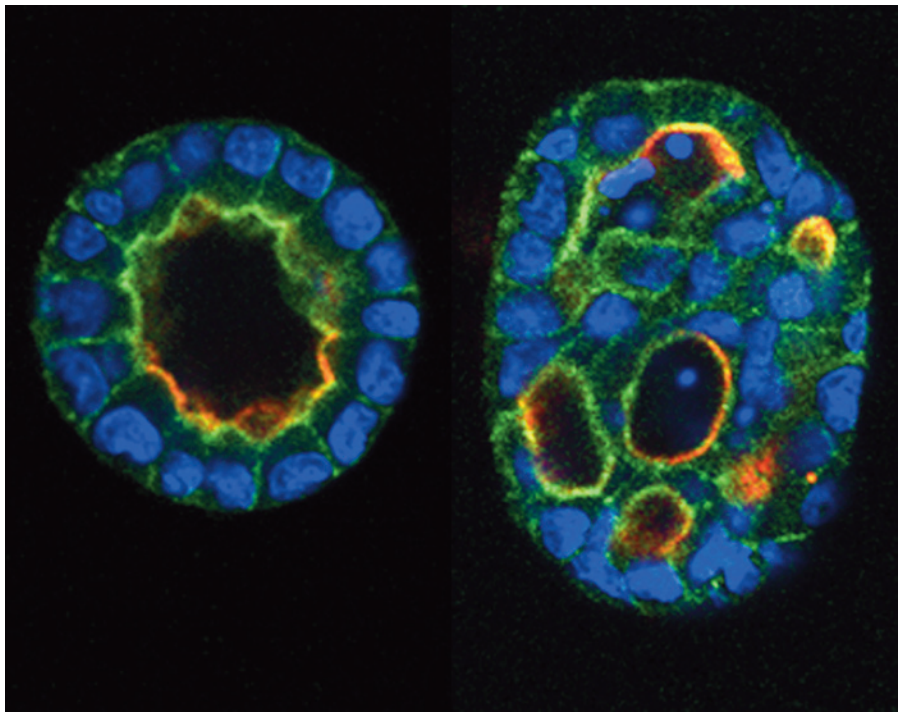
the cell. Syntenin-1 limits HIV-1 infection. Moreover, syntenin-1 depletion specifically increases the HIV-1 entry step without affecting viral attachment to the cell surface. Silencing of syntenin-1 expression blocks actin polymerization triggered by HIV-1 contact and enhances phosphatidylinositol 4,5-bisphosphate production.
Mol. Biol. Cell 23 (12), 2253–2263

Spindle checkpoint–independent inhibition of mitotic chromosome segregation by *Drosophila* Mps1
F. Althoff, R. E. Karess, and C. F. Lehner

The conserved protein kinase Mps1 is required for the spindle assembly checkpoint (SAC). It is also involved in correction of erroneous attachments of kinetochores to the mitotic spindle before anaphase onset. Characterization of *Drosophila* Mps1 reveals yet another function: SAC-independent inhibition of sister chromatid separation.
Mol. Biol. Cell 23 (12), 2275–2291

Phosphorylation of Rab11-FIP2 regulates polarity in MDCK cells
L. A. Lapierre, K. M. Avant, C. M. Caldwell, A. Oztan, G. Apodaca, B. C. Knowles, J. T. Roland, N. A. Ducharme, and J. R. Goldenring

Ser-227 phosphorylation of Rab11-FIP2 by Par1b/MARK2 regulates the establishment of polarized epithelial monolayers in three-dimensional MDCK cell cultures and has an ongoing influence on the composition of both adherens and tight junctions in polarized epithelial cells.
Mol. Biol. Cell 23 (12), 2302–2318



The Rab11 effector Rab11-FIP2 is phosphorylated on Ser-227. Mutation of this serine to a glutamic acid results in a pseudophosphorylated GFP-Rab11-FIP2(S227E). A stable cell line created from tet-off responsive MDCK cells was observed either without expression (off) or with expression (on) of the mutant construct. When grown in Matrigel to allow cyst formation, the GFP-Rab11-FIP2(S227E)-off cells (left) form typical smooth, round cysts consisting of a single layer of cells around a hollow lumen with the apical side of the cells facing into the lumen, as indicated by apical gp135/podocalyxin staining (red). In contrast, MDCK cells expressing GFP-Rab11-FIP2(S227E)-on (right) form cysts with multiple lumens. Nuclei are stained blue with DAPI; F-actin is stained green. See Mol. Biol. Cell 23, 2302–2318. (Image: Lynne A. Lapierre, *Vanderbilt University School of Medicine, Nashville, TN)*

Adaptor protein 2–mediated endocytosis of the β-secretase BACE1 is dispensable for amyloid precursor protein processing
Y. Prabhu, P. V. Burgos, C. Schindler, G. G. Farías, J. G. Magadár, and J. S. Bonifacino

An adaptor protein complex, AP-2, is involved in the endocytosis of β-secretase (BACE1) via the clathrin-dependent machinery. Endosomal targeting of either the amyloid precursor protein (APP) and/or BACE1 is expendable for the amyloidogenic processing of APP.
Mol. Biol. Cell 23 (12), 2339–2351

Orm protein phosphoregulation mediates transient sphingolipid biosynthesis response to heat stress via the Pkh-Ypk and Cdc55-PP2A pathways
Y. Sun, Y. Miao, Y. Yamane, C. Zhang, K. M. Shokat, H. Takematsu, Y. Kozutsumi, and D. G. Drubin

This study reveals the basis for how temporal phosphoregulation of Orm protein controls sphingolipid production in response to stress. Orm protein phosphorylation is highly responsive to sphingoid bases, and Ypk1 protein kinase transmits heat stress signals to the sphingolipid biosynthesis pathway via Orm phosphorylation.
Mol. Biol. Cell 23 (12), 2388–2398 ■

An *MBoC* 20th Anniversary Favorite

In celebration of the first 20 years of Molecular Biology of the Cell (MBoC)*, members of the Editorial Board, members of the ASCB Council, and others comment on their favorite* MBoC *papers from the past two decades.*
Here ***William P. Tansey****, Vanderbilt University Medical Center, comments on:*

Verma R, Chen S, Feldman R, Schieltz D, Yates J, Dohmen J, Deshaies RJ (2000). Proteasomal proteomics: identification of nucleotide-sensitive proteasome-interacting proteins by mass spectrometric analysis of affinity-purified proteasomes. Mol .Biol. Cell 11:3425–3439

The proteasome is a complex multifunctional machine that destroys proteins marked for ubiquitin-mediated proteolysis. In this 2000 paper by Verma *et al.*, the authors employ an elegant approach to isolate and define yeast proteasomes and their suite of interacting proteins. This paper has something for everyone. The method the authors developed has now become the standard in the field for rapid proteasome purification. They identified and validated a new subunit of the proteasome. And their work gave a powerful glimpse into the role of the proteasome as a node of intracellular protein interactions, with dozens of proteasome-interacting proteins (PIPs) associating with core proteasome subunits in a nucleotide-dependent manner. The technological achievement and unique biological insight provided by this study justify its place as one of *MBoC*'s most-cited articles.

This and other MBoC *20th Anniversary Favorites will appear in the journal throughout 2012.* ■