

A Special Issue for the ASCB Annual Meeting

The November 1, 2011, issue of *Molecular Biology of the Cell (MBoC)* features essays by 2011 ASCB Award recipients, as well as specially commissioned Retrospective and Perspective essays.

The Editorial Board of *MBoC* has highlighted the following articles from the November 2011 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.

Bypass of glycan-dependent glycoprotein delivery to ERAD by up-regulated EDEM1

E. Ron, M. Shenkman, B. Groisman, Y. Izenshtein, J. Leitman, and G. Z. Lederkremer

Extensive trimming of mannose residues targets a misfolded glycoprotein for endoplasmic reticulum-associated degradation (ERAD). Surprisingly, overexpression of EDEM1 or its up-regulation by the unfolded protein response bypasses this requirement. Delivery to OS9 in the ER-derived quality control compartment and ERAD become mannose trimming-independent, accelerating glycoprotein disposal.

Mol. Biol. Cell 22 (21), 3945–3954

The tumor suppressor adenomatous polyposis coli controls the direction in which a cell extrudes from an epithelium

T. W. Marshall, I. E. Lloyd, J. M. Delalande, I. Näthke, and J. Rosenblatt

Adenomatous polyposis coli (APC) controls the direction in which cells extrude from epithelia. APC acts in the dying cell to control where microtubules target actomyosin contraction in neighboring cells that squeeze out the dying cell. APC mutations that frequently occur in colon cancer cause cells to extrude aberrantly beneath epithelia, which could enable tumor cell invasion.

Mol. Biol. Cell 22 (21), 3962–3970

The SCAR/WAVE complex is necessary for proper regulation of traction stresses during amoeboid motility

E. Bastounis, R. Meili, B. Alonso-Latorre, J. C. del Álamo, J. C. Lasheras, and R. A. Firtel

A combination of traction force and F-actin measurements shows that cells lacking either of the SCAR/WAVE complex proteins SCAR and PIR121 exhibit an altered cell motility cycle and spatiotemporal distribution of traction stresses, which correlate in magnitude with F-actin levels.

Mol. Biol. Cell 22 (21), 3995–4003

STARD4 abundance regulates sterol transport and sensing

B. Mesmin, N. H. Pipalia, F. W. Lund, T. F. Ramlall, A. Sokolov, D. Eliezer, and F. R. Maxfield

The expression of a small sterol transport protein, STARD4, is regulated by cholesterol levels. We show that the abundance of STARD4 regulates the sensitivity of the SREBP-2 system to changes in cholesterol, providing an additional layer of regulation in the cholesterol homeostatic mechanism.

Mol. Biol. Cell 22 (21), 4004–4015

β -Actin specifically controls cell growth, migration, and the G-actin pool

T. M. Bunnell, B. J. Burbach, Y. Shimizu, and J. M. Ervasti

Targeted deletion of *Actb* demonstrates that the β -actin gene, in contrast to the γ -actin gene, is an essential gene uniquely required for cell growth and migration. Cell motility and growth defects in β -actin-knockout primary cells are due to a specific role for β -actin in regulating gene expression through control of the cellular G-actin pool.

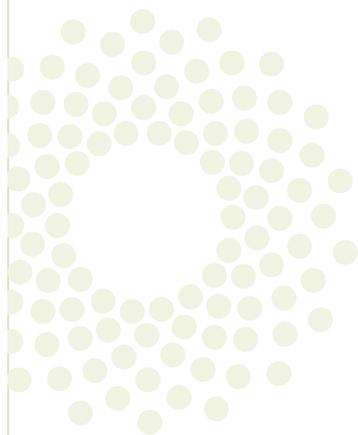
Mol. Biol. Cell 22 (21), 4047–4058

The filament-forming protein Pil1 assembles linear eisosomes in fission yeast

R. Kabeche, S. Baldissard, J. Hammond, L. Howard, and J. B. Moseley

Eisosomes generate spatial domains in the plasma membrane of yeast cells. The core eisosome protein Pil1 is shown to form filaments in vitro and in cells. Pil1 filaments are stable at the cell cortex, and cytoplasmic Pil1 filament rods appear upon overexpression. This shows a role for self-assembly in organizing cortical domains.

Mol. Biol. Cell 22 (21), 4059–4067



Membrane-targeted WAVE mediates photoreceptor axon targeting in the absence of the WAVE complex in *Drosophila*

R. Stephan, C. Gohl, A. Fleige, C. Klämbt, and S. Bogdan

The Abelson interactor (Abi) has a conserved role in Arp2/3-dependent actin polymerization, regulating WASP and WAVE. In this study, the function of Abi was analyzed in the context of the developing fly visual system, and the steps in the molecular regulation of WAVE activity by its regulatory complex *in vivo* were identified.

Mol. Biol. Cell 22 (21), 4079–4092

Two novel WD40 domain-containing proteins, Ere1 and Ere2, function in the retromer-mediated endosomal recycling pathway

Y. Shi, C. J. Stefan, S. M. Rue, D. Teis, and S. D. Emr

Regulated responses to extracellular signals depend on cell-surface proteins that are internalized and recycled back to the plasma membrane. Two novel WD40 domain proteins, Ere1 and Ere2 (endosomal recycling proteins), are found to mediate cargo-specific recognition by the retromer pathway.

Mol. Biol. Cell 22 (21), 4093–4107

Dual roles of Munc18-1 rely on distinct binding modes of the central cavity with Stx1A and SNARE complex

L. Shi, D. Kümmel, J. Coleman, T. J. Melia, and C. G. Giraudo

The Munc18 central cavity plays a major role in trafficking syntaxin 1 (Stx 1) to the plasma membrane and in activating SNARE-mediated membrane fusion. This paper provides critical insight into the mechanisms of how the Stx1A H3 domain can compete with the SNARE complex for binding the Munc18 central cavity, first inhibiting, and later assisting, SNARE-complex assembly.

Mol. Biol. Cell 22 (21), 4150–4160

α -Catenin contributes to the strength of E-cadherin-p120 interactions

R. B. Troyanovsky, J. Klingelhöfer, and S. M. Troyanovsky

Cadherin-catenin interactions play an important role in cadherin adhesion. In the cadherin complex, α -catenin contributes to the binding strength of another catenin, p120, to the same complex. The data suggest that α -catenin-p120 contact within the cadherin-catenin complex can regulate cadherin trafficking.

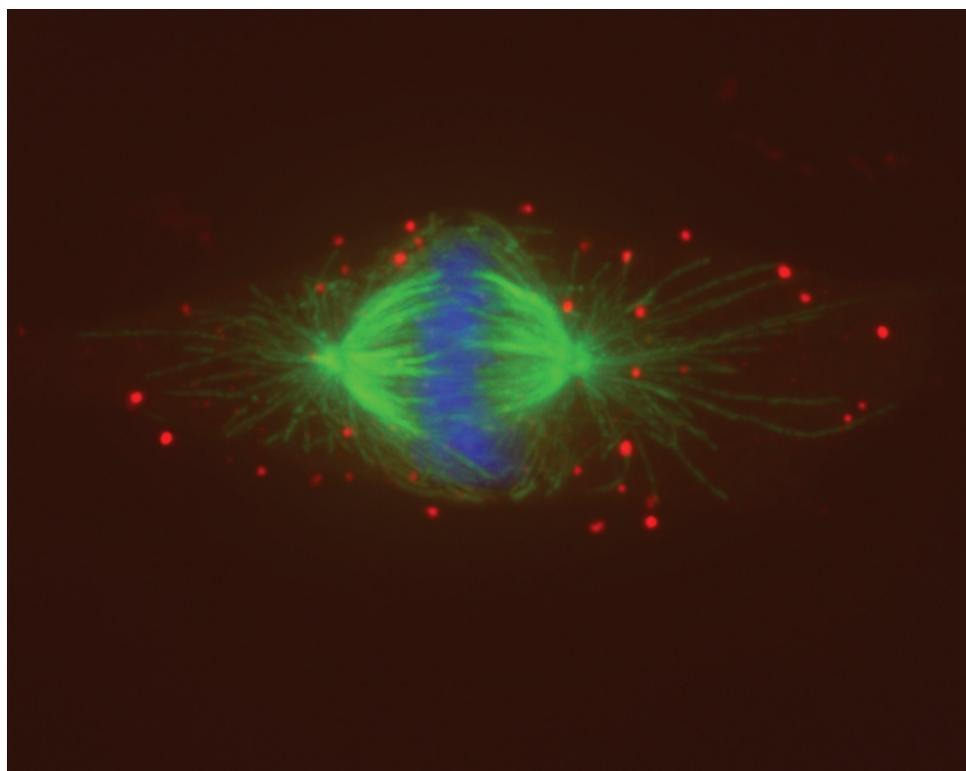
Mol. Biol. Cell 22 (22), 4247–4255

The eIF2 kinase PERK and the integrated stress response facilitate activation of ATF6 during endoplasmic reticulum stress

B. F. Teske, S. A. Wek, P. Bunpo, J. K. Cundiff, J. N. McClintick, T. G. Anthony, and R. C. Wek

This study shows that the eIF2 kinase PERK is required not only for translational control but also for activation of ATF6 and its target genes in the unfolded protein response. The PERK pathway facilitates both the synthesis of ATF6 and trafficking of ATF6 from the endoplasmic reticulum to the Golgi for intramembrane proteolysis and activation of ATF6.

Mol. Biol. Cell 22 (22), 4390–4405 ■



Fluorescent *in situ* hybridization detection of xRHAMM mRNA (red) during cell division in *Xenopus laevis*. The mRNA localizes to the microtubules (green) of the metaphase spindle, *i.e.*, near the site of action of the encoded protein. See *Mol. Biol. Cell* 22 (20), 4313–4324. (Image: Judith Sharp, Harvard Medical School and Massachusetts General Hospital)