HIGHLIGHTS from *MBoC*

The Editorial Board of *Molecular Biology of the Cell* has highlighted the following articles from the September 1 and September 15, 2010, 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.

Cdc42 Regulates Apical Junction Formation in Human Bronchial Epithelial Cells through PAK4 and Par6B

S. W. Wallace, J. Durgan, D. Jin, and A. Hall

A systematic screen of Cdc42 targets was carried out in human bronchial epithelial cells. Two kinases, PAK4 and Par6B/aPKC, were identified and are required for maturation of primordial junctions into apical junctions. PAK4 recruitment to primordial junctions is Cdc42-dependent, but maintenance at junctions during maturation is Par6B-dependent.

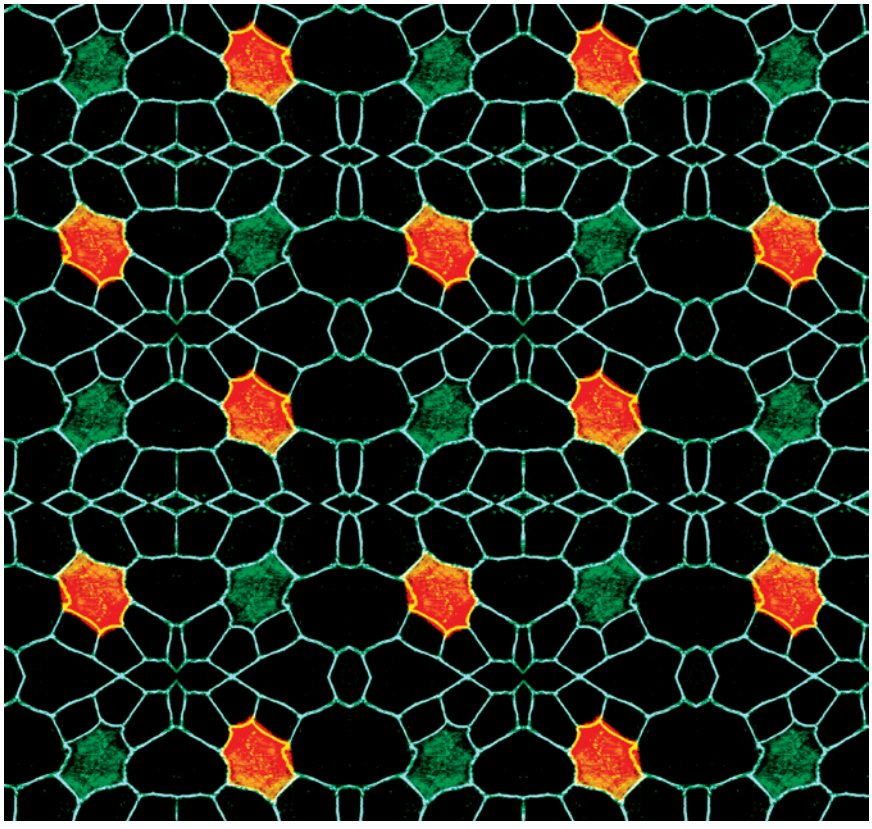
Mol. Biol. Cell 21 (17), 2996–3006

Chloride Intracellular Channel 4 Is Critical for the Epithelial Morphogenesis of RPE Cells and Retinal Attachment

J.-Z. Chuang, S.-Y. Chou, and C.-H. Sung

A plasmid-based transfection method was used to cell-autonomously silence chloride intracellular channel 4 (CLIC4) in RPE in situ. These results show that CLIC4 is critical for epithelial morphogenesis and retinal attachment. Novel candidate targets for retinal detachment therapy have also been identified.

Mol. Biol. Cell 21 (17), 3017–3028



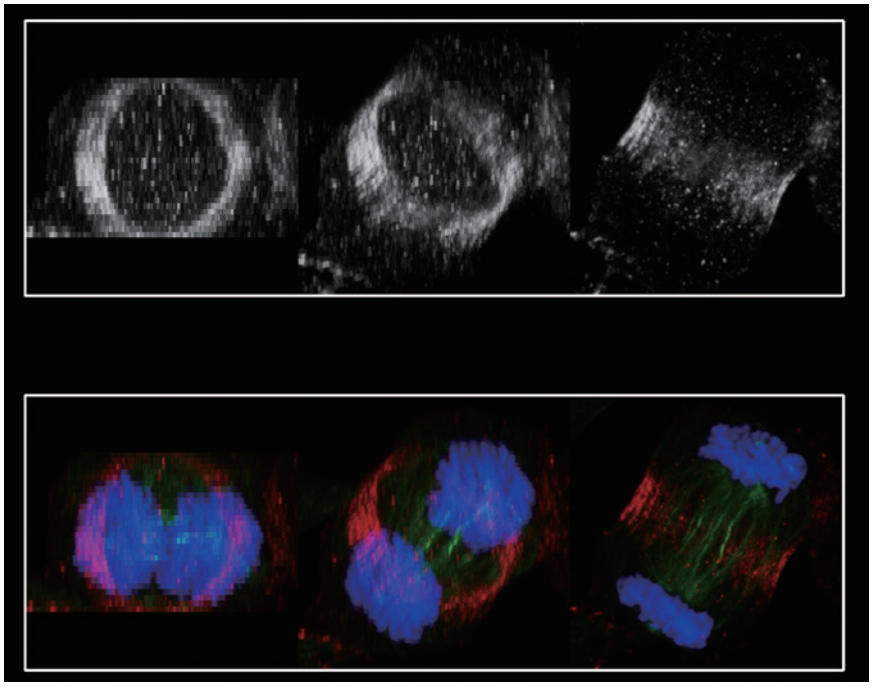
Rat retinal pigment cells transfected with a plasmid encoding both shRNA against chloride intracellular channel 4 and HcRed (red) have increased cytoplasmic F-actin labeling (green). (A patchwork was created by repeating a pair of mirror images. Image: Jen-Zen Chuang *and* Ching-Hwa Sung, *Weill Medical College of Cornell University).*

FIP1/RCP Binding to Golgin-97 Regulates Retrograde Transport from Recycling Endosomes to the *trans*-Golgi Network
J. Jing, J. R. Junutula, C. Wu, J. Burden, H. Matern, A. A. Peden, and R. Prekeris

This study shows that Rab11 and its binding protein FIP1 are required for retrograde delivery of TGN38 and Shiga toxin from early/recycling endosomes to the *trans*-Golgi Network (TGN). We also demonstrate that Golgin-97 is a FIP1-binding protein and that this binding regulates the targeting of retrograde transport vesicles to the TGN.
Mol. Biol. Cell 21 (17), 3041–3053

Assembly of the Mitochondrial Protein Import Channel: Role of Tom5 in Two-Stage Interaction of Tom40 with the SAM Complex
T. Becker, B. Guiard, N. Thornton, N. Zufall, D. A. Stroud, N. Wiedemann, and N. Pfanner

Tom40 forms the channel of the mitochondrial preprotein translocase. This β-barrel protein assembles with α-helical proteins. However, little is known about the mechanism of assembly. The authors identify a new intermediate in Tom40 assembly and show that small α-helical Tom proteins associate with Tom40 directly at the SAM complex.
Mol. Biol. Cell 21 (18), 3106–3113



Three-dimensional projection images of a telophase HeLa cell reveal that mDia2 (in upper panels and red in lower panels) forms a ring around the equatorial cortex. Microtubules and DNA are shown in green and blue in the merged images (lower panels). (Image: Sadanori Watanabe, *Kyoto University)*

Proteasome Nuclear Import Mediated by Arc3 Can Influence Efficient DNA Damage Repair and Mitosis in *Schizosaccharomyces pombe*
R. Cabrera, Z. Sha, T. J. Vadakkan, J. Otero, F. Kriegenburg, R. Hartmann-Petersen, M. E. Dickinson, and E. C. Chang

Proteasomes must efficiently remove their substrates throughout the cell in a timely manner as many of these proteins can be toxic. This study shows that proteasomes can do so efficiently because they are highly mobile. Furthermore this study uncovers that proteasome mobility requires functional Arc3, a subunit of the Arp2/3 complex.
Mol. Biol. Cell 21 (18), 3125–3136

Rho and Anillin-dependent Control of mDia2 Localization and Function in Cytokinesis
S. Watanabe, K. Okawa, T. Miki, S. Sakamoto, T. Morinaga, K. Segawa, T. Arakawa, M. Kinoshita, T. Ishizaki, and S. Narumiya

Diaphanous-related formin, mDia, is an actin nucleation/polymerization factor functioning downstream of the small GTPase Rho. We found that, in addition to the Rho GTPase-mediated activation, the interaction between mDia2 and anillin is required for the localization and function of mDia2 in cytokinesis.
Mol. Biol. Cell 21 (18), 3193–3204

A Phosphatidylinositol 3-Kinase/Protein Kinase B–independent Activation of Mammalian Target of Rapamycin Signaling Is Sufficient to Induce Skeletal Muscle Hypertrophy
C. A. Goodman, M. H. Miu, J. W. Frey, D. M. Mabrey, H. C. Lincoln, Y. Ge, J. Chen, and T. A. Hornberger

Overexpression of Rheb activates mTOR signaling via a PI3K/PKB-independent mechanism and is sufficient to induce skeletal muscle hypertrophy. The hypertrophic effects of Rheb are driven through a rapamycin-sensitive (RS) mechanism. mTOR is the RS element that confers the hypertrophy, and the kinase activity of mTOR is necessary for this event.
Mol. Biol. Cell 21 (18), 3258–3268 ■