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### ARTICLES

**Cell Cycle**

Sequential Counteracting Kinases Restrict an Asymmetric Gene Expression Program to early G1  
E. Mazanka and E. L. Weiss ................................................................. 2809–2820  
The activity of a daughter cell specific transcription factor is restricted to early G1 by the sequential action of opposing cell cycle–regulated kinases.

**Cell Physiology**

Regulation of Exocytosis and Fusion Pores by Synaptotagmin-Effector Interactions  
Z. Zhang, E. Hui, E. R. Chapman, and M. B. Jackson ...................................................... 2821–2831  
Synaptotagmin isoforms and mutants altered fusion event frequency and fusion pore transitions. These effects showed a strong correlation with PS binding, but not with SNARE binding. Synaptotagmin-PS interaction thus function in two distinct kinetic steps in Ca2+ triggered exocytosis, and stabilize open fusion pores.

Molecular Characterization of EG-VEGF-mediated Angiogenesis: Differential Effects on Microvascular and Macrovascular Endothelial Cells  
S. Brouillet, P. Hoffmann, M. Benharouga, A. Salomon, J.-P. Schaal, J.-J. Feige, and N. Alfaidy ............. 2832–2843  
The existence of organ-specific angiogenic factor has recently received confirmation when EG-VEGF was identified. Here we characterized its angiogenic processes in endothelial cells (ECs), compared its effects in micro- and macrovascular ECs, and differentiated the effects mediated by its two G-protein–coupled receptors within the same cell type.

**Cytoskeleton**

Plakophilin 2 Couples Actomyosin Remodeling to Desmosomal Plaque Assembly via RhoA  
The desmosomal armadillo protein plakophilin 2 (PKP2) regulates cell contact-initiated cortical actin remodeling through the regulation of RhoA localization and activity to couple adherens junction maturation with desmosomal plaque assembly.

Transgene Rescue Identifies an Essential Function for *Drosophila* Spectrin in the Nervous System and a Selective Requirement for Ankyrin-2–binding Activity  
The Gal4-UAS system was used to overexpress or knock down β spectrin with dsRNA in a variety of *Drosophila* tissues. Unexpectedly, overexpression in most tissues tested was lethal, whereas knockdown failed to produce a detectable phenotype in the same tissues. The lethality of a β spectrin mutation was rescued by expression of β spectrin in neurons.

### A Highlights from MBoC Selection

**Overlapping Roles of *Drosophila* Drak and Rok Kinases in Epithelial Tissue Morphogenesis**  
D. Neubueser and D. R. Hipfner ................................................................. 2869–2879  

Actomyosin contractility provides an essential source of tension for shaping epithelial tissues. We show that the Drosophila Death-associated protein kinase homologue Drak regulates Myosin regulatory light chain phosphorylation in a partially redundant manner with the Rho effector kinase Rok to shape developing epithelial tissues.

**WASP Family Proteins: Their Evolution and Its Physiological Implications**  
D. M. Veltman and R. H. Insall ................................................................. 2880–2893  
The WASP family control formation of actin filaments through the Arp2/3 complex. Subfamilies include WASP, SCAR/WAVE, WASH, and WHAMM. We show that the family is unexpectedly ancient and that all subfamilies are now identified. This work also identifies a subfamily-specific control mechanism, and an emerging bias towards vesicular roles of actin.

**Quantitative Analysis of the Mechanism of Endocytic Actin Patch Assembly and Disassembly in Fission Yeast**  
We report time courses of the accumulation and loss of 16 fluorescent fusion proteins at sites of clathrin-mediated endocytosis in fission yeast. Mathematical modeling shows that dendritic nucleation hypothesis can account for the kinetics of actin assembly in vivo and disassembly requires actin filament severing along with depolymerization.
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### Mathematical Modeling of Endocytic Actin Patch Kinetics in Fission Yeast: Disassembly Requires Release of Actin Filament Fragments

J. Berro, V. Sirotkin, and T. D. Pollard  ................................................................. 2905–2915

We report time courses of the accumulation and loss of 16 fluorescent fusion proteins at sites of clathrin-mediated endocytosis in fission yeast. Mathematical modeling shows that dendritic nucleation hypothesis can account for the kinetics of actin assembly in vivo and disassembly requires actin filament severing along with depolymerization.

### Membrane Trafficking

#### Phosphatidic Acid Induces Ligand-independent Epidermal Growth Factor Receptor Endocytic Traffic through PDE4 Activation

A. Norambuena, C. Metz, J. E. Jung, A. Silva, C. Otero, J. Cancino, C. Retamal, J. C. Valenzuela, A. Soza, and A. Gonzalez  ................................................................. 2916–2929

Endocytic traffic can control cell surface versus intracellular distribution of empty/inactive EGFR, an thus its accessibility to external stimuli, through a pathway involving down regulation of PKA activity mediated by PA signaling towards PDE4. This novel control mechanism can trans-modulate EGFR function by heterologous stimuli of PLD.

### Membrane Trafficking

#### EHBP-1 Functions with RAB-10 during Endocytic Recycling in Caenorhabditis elegans


*Caenorhabditis elegans* RAB-10 functions in endocytic recycling in polarized cells, regulating basolateral cargo transport in the intestinal epithelia and postsynaptic cargo transport in interneurons. Here we show binding of RAB-10 to EHBP-1, a CH-domain protein, and demonstrate a requirement for EHBP-1 in RAB-10-regulated transport in both of these tissues.

### Membrane Trafficking

#### Phosphatidic Acid Plays a Regulatory Role in Clathrin-mediated Endocytosis

C. N. Antonescu, G. Danuser, and S. L. Schmid  ................................................................. 2944–2952

We have manipulated the activities of PLD and DGK, enzymes that regulate PA biosynthesis, and directly measured their effects on cellular PA levels and on clathrin-mediated endocytosis (CME). We report a previously unappreciated complexity in PA regulation and show that PA selectively regulates CME of EGF but not transferrin.

### Nuclear Functions

#### The Closely Related RNA helicases, UAP56 and URH49, Preferentially Form Distinct mRNA Export Machineries and Coordinate to Regulate Mitotic Progression


UAP56 and URH49, closely related RNA helicases in humans, form different mRNA export machineries, the hTREX complex and the AREX complex, respectively. These helicases regulate different sets of genes, among which are mitotic factors. Consistent with their target genes, each helicase is required for a different step in the mitotic progression.

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### Signaling

#### Regulation of Genotoxic Stress Response by Homeodomain-interacting Protein Kinase 2 through Phosphorylation of Cyclic AMP Response Element-binding Protein at Serine 271


Homeodomain-interacting protein kinase 2 (HIPK2) is a new CREB kinase for phosphorylation at Ser-271 but not Ser-133 in genotoxic stress and activates CREB transactivation function including brain-derived neurotrophic factor (BDNF) mRNA expression.