

The Journal of Cell Biology

Volume 156 | No. 1
January 7, 2002

– News –

In this Issue

- Sticking together a signal
- Let's make liver
- To Rb or not to Rb
- Squeezing for healing
- Polo meets the APC

W.A. Wells

Research Roundup

- Greater risk from radiation?
- Numbers game
- Waltz of the chromosomes
- Grow-your-own synapses
- The good side of a malignant protein

M. Leslie

– Reviews –

Comments

Myelination: some receptors required

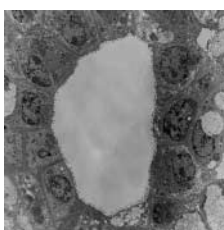
S.S. Scherer

Mini-Reviews

Micro-RNAs: small is plentiful

H. Grosshans and F.J. Slack

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On the Cover

10 The progeny of proposed hepatic stem cells can form structures resembling bile ducts (pictured) and various endodermal cell types. See page 173.

– Research Articles –

Reports

Polo boxes and Cut23 (Apc8) mediate an interaction between polo kinase and the anaphase-promoting complex for fission yeast mitosis

K.M. May, N. Reynolds, C.F. Cullen, M. Yanagida, and H. Ohkura

23

Internal Ca^{2+} release in yeast is triggered by hypertonic shock and mediated by a TRP channel homologue

V. Denis and M.S. Cyert

29

Secretory vesicle transport velocity in living cells depends on the myosin-V lever arm length

D.H. Schott, R.N. Collins, and A. Bretscher

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Articles

A predominantly nuclear protein affecting cytoplasmic localization of β -actin mRNA in fibroblasts and neurons

W. Gu, F. Pan, H. Zhang, G.J. Bassell, and R.H. Singer

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Exportin-5, a novel karyopherin, mediates nuclear export of double-stranded RNA binding proteins

A.M. Brownawell and I.G. Macara

53

Structural requirements for localization and activation of protein kinase C μ (PKC μ) at the Golgi compartment

A. Hausser, G. Link, L. Bamberg, A. Burzlaff, S. Lutz, K. Pfizenmaier, and F.-J. Johannes

65

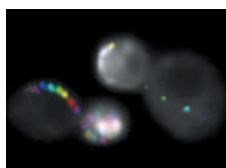
Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

Articles (cont.)

Induction of maturation-promoting factor during *Xenopus* oocyte maturation uncouples Ca^{2+} store depletion from store-operated Ca^{2+} entry

K. Machaca and S. Haun

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Characterization of Cep135, a novel coiled-coil centrosomal protein involved in microtubule organization in mammalian cells

T. Ohta, R. Essner, J.-H. Ryu, R.E. Palazzo, Y. Uetake, and R. Kuriyama

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Secretory vesicle movement to the bud is slower when directed by a short-lever-arm myosin-V mutant (lower left) as compared to movement directed by a wild-type myosin-V (upper right). See page 35.

Smitin, a novel smooth muscle titin-like protein, interacts with myosin filaments in vivo and in vitro

K. Kim and T.C.S. Keller III

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The carboxyl-terminal isoforms of smooth muscle myosin heavy chain determine thick filament assembly properties

A.S. Rovner, P.M. Fagnant, S. Lowey, and K.M. Trybus

113

Mechanisms through which Sos-1 coordinates the activation of Ras and Rac

M. Innocenti, P. Tenca, E. Frittoli, M. Fareta, A. Tocchetti, P.P. Di Fiore, and G. Scita

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Fyn tyrosine kinase is a downstream mediator of Rho/PRK2 function in keratinocyte cell-cell adhesion

E. Calautti, M. Grossi, C. Mammucari, Y. Aoyama, M. Pirro, Y. Ono, J. Li, and G.P. Dotto

137

Overexpression of Cep135, a novel centrosomal protein, results in accumulation of unique whorl-like particles. See page 87.

p38 MAP kinase negatively regulates endothelial cell survival, proliferation, and differentiation in FGF-2-stimulated angiogenesis

T. Matsumoto, I. Turesson, M. Book, P. Gerwins, and L. Claesson-Welsh

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The cxc chemokine cCAF stimulates differentiation of fibroblasts into myofibroblasts and accelerates wound closure

J.E. Feugate, Q. Li, L. Wong, and M. Martins-Green

161

Clonal identification and characterization of self-renewing pluripotent stem cells in the developing liver

A. Suzuki, Y.-w. Zheng, S. Kaneko, M. Onodera, K. Fukao, H. Nakauchi, and H. Taniguchi

173

Activation of retinoblastoma protein in mammary gland leads to ductal growth suppression, precocious differentiation, and adenocarcinoma

Z. Jiang and E. Zacksenhaus

185

Conditional disruption of $\beta 1$ integrin in Schwann cells impedes interactions with axons

M.L. Feltri, D.G. Porta, S.C. Previtali, A. Nodari, B. Migliavacca, A. Cassetti, A. Littlewood-Evans, L.F. Reichardt, A. Messing, A. Quattrini, U. Mueller, and L. Wrabetz

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Additions and corrections

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The Journal of Cell Biology

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January 21, 2002

– News –

In this Issue

- It's a chaperone . . . it's a gatekeeper . . . it's BiP
- Sorting out secretion
- Finding degradation at the checkpoint
- Survival gets more complicated
- A GTPase that goes both ways

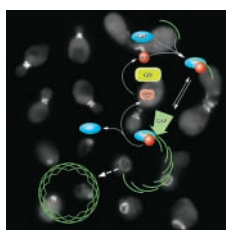
A.W. Dove

Meeting Report

Cells and More Cells: The American Society for Cell Biology Washington, DC December 8–12, 2001

R. Tuma and W.A. Wells

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On the Cover

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Normal septin ring assembly (cells on left) is disturbed in a recessive Cdc42p mutant that hydrolyzes GTP slowly (cells on right), suggesting that Cdc42p may work as both an assembly factor (schematic) and a switch. See page 315.

– Research Articles –

Reports

Bone abnormalities in latent TGF- β binding protein (Ltbp)-3-null mice indicate a role for Ltbp-3 in modulating TGF- β bioavailability

227

B. Dabovic, Y. Chen, C. Colarossi, H. Obata, L. Zambuto, M.A. Perle, and D.B. Rifkin

Analysis of retrograde transport in motor neurons reveals common endocytic carriers for tetanus toxin and neurotrophin receptor p75^{NTR}

233

G. Lalli and G. Schiavo

The conserved Pkh–Ypk kinase cascade is required for endocytosis in yeast

241

A.K.A. deHart, J.D. Schnell, D.A. Allen, and L. Hicke

Articles

The checkpoint protein Chfr is a ligase that ubiquitinates Plk1 and inhibits Cdc2 at the G2 to M transition

249

D. Kang, J. Chen, J. Wong, and G. Fang

A new role for BiP: closing the aqueous translocon pore during protein integration into the ER membrane

261

N.G. Haigh and A.E. Johnson

A subset of yeast vacuolar protein sorting mutants is blocked in one branch of the exocytic pathway

271

E. Harsay and R. Schekman

Articles (cont.)

Conditional gene ablation of Stat3 reveals differential signaling requirements for survival of motoneurons during development and after nerve injury in the adult

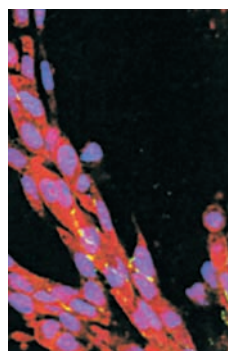
U. Schweizer, J. Gunnensen, C. Karch, S. Wiese, B. Holtmann, K. Takeda, S. Akira, and M. Sendtner

287

Ras and TGF β cooperatively regulate epithelial cell plasticity and metastasis: dissection of Ras signaling pathways

E. Janda, K. Lehmann, I. Killisch, M. Jechlinger, M. Herzig, J. Downward, H. Beug, and S. Grünert

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Activated Ras and TGF β cooperate to drive both the epithelial-mesenchymal transition and metastasis. See page 299.

Septin ring assembly involves cycles of GTP loading and hydrolysis by Cdc42p

A.S. Gladfelter, I. Bose, T.R. Zyla, E.S.G. Bardes, and D.J. Lew

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Assembly and function of AP-3 complexes in cells expressing mutant subunits

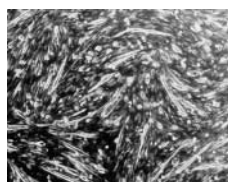
A.A. Peden, R.E. Rudge, W.W.Y. Lui, and M.S. Robinson

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β IV-spectrin regulates sodium channel clustering through ankyrin-G at axon initial segments and nodes of Ranvier

M. Komada and P. Soriano

337



A novel splice variant of filamin, a filamentous actin cross-linking protein, affects the speed of myogenesis and the morphology of the differentiated cells. See page 361.

Modulation of substrate adhesion dynamics via microtubule targeting requires kinesin-1

O. Krylyshkina, I. Kaverina, W. Kranewitter, W. Steffen, M.C. Alonso, R.A. Cross, and J.V. Small

349

Different splice variants of filamin-B affect myogenesis, subcellular distribution, and determine binding to integrin β subunits

A. van der Flier, I. Kuikman, D. Kramer, D. Geerts, M. Kreft, T. Takafuta, S.S. Shapiro, and A. Sonnenberg

361

The integrin cytoplasmic domain-associated protein ICAP-1 binds and regulates Rho family GTPases during cell spreading

S. Degani, F. Balzac, M. Brancaccio, S. Guazzone, S.F. Retta, L. Silengo, A. Eva, and G. Tarone

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Cadherin-mediated cell sorting not determined by binding or adhesion specificity

C.M. Niessen and B.M. Gumbiner

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– News –

In this Issue

- Visualizing vesicles
- Monitoring MLCK
- With A β , the danger lies within
- GRASP65 gets the chop
- Building a spindle pole

W.A. Wells

Research Roundup

- Cloning confusion
- What makes Ran run?
- A JAK/STAT invasion
- Crossed TRAILS
- The Hippi did it

W.A. Wells

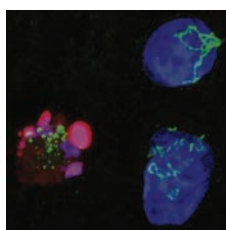
– Reviews –

Comments

Hitchhiking fads en route to peroxisomes

S. Subramani

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On the Cover

412 GRASP65 cleavage during apoptosis helps fragment the Golgi apparatus (green). See page 495.

– Research Articles –

Reports

Condensin and cohesin display different arm conformations with characteristic hinge angles

D.E. Anderson, A. Losada, H.P. Erickson, and T. Hirano

419

Articles

Disassembly of interchromatin granule clusters alters the coordination of transcription and pre-mRNA splicing

P. Sacco-Bubulya and D.L. Spector

425

Drosophila Aurora A kinase is required to localize D-TACC to centrosomes and to regulate astral microtubules

R. Giet, D. McLean, S. Descamps, M.J. Lee, J.W. Raff, C. Prigent, and D.M. Glover

437

The yeast protein kinase Mps1p is required for assembly of the integral spindle pole body component Spc42p

A.R. Castillo, J.B. Meehl, G. Morgan, A. Schutz-Geschwender, and Mark Winey

453

The importin- β binding domain of snurportin1 is responsible for the Ran- and energy-independent nuclear import of spliceosomal U snRNPs in vitro

J. Huber, A. Dickmanns, and R. Lührmann

467

Acyl-CoA oxidase is imported as a heteropentameric, cofactor-containing complex into peroxisomes of *Yarrowia lipolytica*

V.I. Titorenko, J.-M. Nicaud, H. Wang, H. Chan, and R.A. Rachubinski

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Caspase-mediated cleavage of the stacking protein GRASP65 is required for Golgi fragmentation during apoptosis

J.D. Lane, J. Lucocq, J. Pryde, F.A. Barr, P.G. Woodman, V.J. Allan, and M. Lowe

495

Visualization of Rab9-mediated vesicle transport from endosomes to the trans-Golgi in living cells

P. Barbero, L. Bittova, and S.R. Pfeffer

511

Selective cytotoxicity of intracellular amyloid β peptide₁₋₄₂ through p53 and Bax in cultured primary human neurons

Y. Zhang, R. McLaughlin, C. Goodyer, and A. LeBlanc

519

FKHR-L1 can act as a critical effector of cell death induced by cytokine withdrawal: protein kinase B-enhanced cell survival through maintenance of mitochondrial integrity

P.F. Dijkers, K.U. Birkenkamp, E.W.-F. Lam, N.S.B. Thomas, J.-W.J. Lammers, L. Koenderman, and P.J. Coffey

531

A fluorescent resonant energy transfer-based biosensor reveals transient and regional myosin light chain kinase activation in lamella and cleavage furrows

T.-L. Chew, W.A. Wolf, P.J. Gallagher, F. Matsumura, and R.L. Chisholm

543



The closed hinge of *Xenopus* condensin (top) may help hold two DNA helices close together, whereas the open hinge of cohesin (bottom) may help span the distance between sister chromatids. See page 419.

Nectin: an adhesion molecule involved in formation of synapses

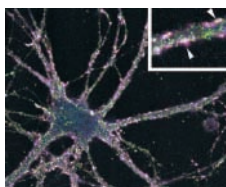
555

A. Mizoguchi, H. Nakanishi, K. Kimura, K. Matsubara, K. Ozaki-Kuroda, T. Katata, T. Honda, Y. Kiyohara, K. Heo, M. Higashi, T. Tsutsumi, S. Sonoda, C. Ide, and Y. Takai

Myelin-associated glycoprotein and myelin galactolipids stabilize developing axo-glial interactions

567

J. Marcus, J.L. Dupree, and B. Popko



Nectin-1 (green) and nectin-3 (white) colocalize at developing synapses. Inhibition of nectin-based adhesion results in impaired synapse formation. See page 555.

– News –

In this Issue

- Activating actin
- The sound of one foot walking
- Meanwhile, back at the ring canal...
- Do cells have mouths?
- If you stretch it, they will come

A.W. Dove

Research Roundup

- Sex, Sox, and splicing
- Structural Mad-ness
- Keeping the cord in place
- Swallowing pain relief
- Collagen melt-down

N. LeBrasseur

– Reviews –

Comments

Extending the Arp2/3 complex and its regulation beyond the leading edge

K.G. Miller

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On the Cover

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Arp3 (green), as part of the Arp2/3 complex, colocalizes with actin (red) in the ring canals that connect nurse cells of the *Drosophila* egg chamber. Arp2/3-driven actin polymerization drives ring canal expansion and many other actin-dependent processes. See page 703.

– Research Articles –

Reports

SUMO-1 targets RanGAP1 to kinetochores and mitotic spindles

J. Joseph, S.-H. Tan, T.S. Karpova, J.G. McNally, and M. Dasso

595

Alteration of nuclear lamin organization inhibits RNA polymerase II-dependent transcription

T.P. Spann, A.E. Goldman, C. Wang, S. Huang, and R.D. Goldman

603

Force transduction by Triton cytoskeletons

Y. Sawada and M.P. Sheetz

609

Articles

Tpr is localized within the nuclear basket of the pore complex and has a role in nuclear protein export

P. Frosst, T. Guan, C. Subauste, K. Hahn, and L. Gerace

617

CLIPR-59, a new trans-Golgi/TGN cytoplasmic linker protein belonging to the CLIP-170 family

F. Perez, K. Pernet-Gallay, C. Nizak, H.V. Goodson, T.E. Kreis, and B. Goud

631

PEX11 promotes peroxisome division independently of peroxisome metabolism

X. Li and S.J. Gould

643

Early/recycling endosomes-to-TGN transport involves two SNARE complexes and a Rab6 isoform

F. Mallard, B.L. Tang, T. Galli, D. Tenza, A. Saint-Pol, X. Yue, C. Antony, W. Hong, B. Goud, and L. Johannes

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Articles (cont.)

G protein–coupled receptor/arrestin3 modulation of the endocytic machinery

F. Santini, I. Gaidarov, and J.H. Keen

665

A subset of dynamic actin rearrangements in *Drosophila* requires the Arp2/3 complex

A.M. Hudson and L. Cooley

677

SCAR is a primary regulator of Arp2/3-dependent morphological events in *Drosophila*

J.A. Zallen, Y. Cohen, A.M. Hudson, L. Cooley, E. Wieschaus, and E.D. Schejter

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Drosophila Kelch regulates actin organization via Src64-dependent tyrosine phosphorylation

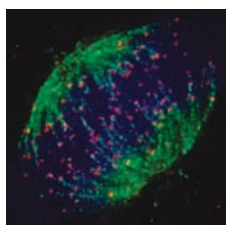
R.J. Kelso, A.M. Hudson, and L. Cooley

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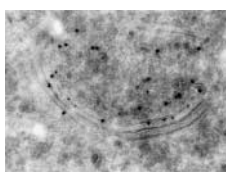
Coordination of opposite-polarity microtubule motors

S.P. Gross, M.A. Welte, S.M. Block, and E.F. Wieschaus

715



RanGAP1 (red) concentrates near kinetochores of mitotic cells due to conjugation by the ubiquitin-like protein SUMO-1. See page 595.



CLIPR-59 (large gold particles), a CLIP-170-related protein, colocalizes with a marker for the trans-Golgi (small gold particles), where it regulates endosome trafficking. See page 631.

Purification of pseudopodia from polarized cells reveals redistribution and activation of Rac through assembly of a CAS/Crk scaffold

S.Y. Cho and R.L. Klemke

725

Serum response factor is crucial for actin cytoskeletal organization and focal adhesion assembly in embryonic stem cells

G. Schrätt, U. Philippart, J. Berger, H. Schwarz, O. Heidenreich, and A. Nordheim

737

Different modes of hypertrophy in skeletal muscle fibers

A.C. Paul and N. Rosenthal

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– News –

In this Issue

- Shocking localization
- Actin to completion
- The bud is all in the timing
- Enabling actin
- A kinase kick for endocytosis

N. LeBrasseur

Research Roundup

- Getting biorientated
- One brain fits all
- Put that hunchback over here
- Cristae in crisis
- Systemic destruction

W.A. Wells

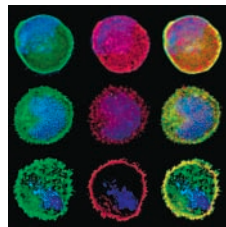
– Reviews –

Mini-Reviews

NFAT: ubiquitous regulator of cell differentiation and adaptation

V. Horsley and G.K. Pavlath

766



On the Cover

768

c-Abl (red, upper right hand corner) and actin (green) colocalize and regulate each other reciprocally such that actin-based protrusion is subject to a form of feedback control. The other panels show variable localization of other signaling proteins with actin. See page 879.

– Research Articles –

Reports

In vivo binding of active heat shock transcription factor 1 to human chromosome 9 heterochromatin during stress

775

C. Jolly, L. Konecny, D.L. Grady, Y.A. Kutsikova, J.J. Cotto, R.I. Morimoto, and C. Vourc'h

CHO1, a mammalian kinesin-like protein, interacts with F-actin and is involved in the terminal phase of cytokinesis

783

R. Kuriyama, C. Gustus, Y. Terada, Y. Uetake, and J. Matulienė

Phosphorylation of the AP2 μ subunit by AAK1 mediates high affinity binding to membrane protein sorting signals

791

D. Ricotta, S.D. Conner, S.L. Schmid, K. von Figura, and S. Höning

Transferrin receptor recycling in the absence of perinuclear recycling endosomes

797

D. Sheff, L. Pelletier, C.B. O'Connell, G. Warren, and I. Mellman

Articles

In vivo dissection of the chromosome condensation machinery: reversibility of condensation distinguishes contributions of condensin and cohesin

805

B.D. Lavoie, E. Hogan, and D. Koshland

Articles (cont.)

14-3-3 transits to the nucleus and participates in dynamic nucleocytoplasmic transport

A. Brunet, F. Kanai, J. Stehn, J. Xu, D. Sarbassova, J.V. Frangioni, S.N. Dalal, J.A. DeCaprio, M.E. Greenberg, and M.B. Yaffe

The role of cell cycle-regulated expression in the localization of spatial landmark proteins in yeast

L.R. Schenkman, C. Caruso, N. Pagé, and J.R. Pringle

Ubiquitination and proteasomal activity is required for transport of the EGF receptor to inner membranes of multivesicular bodies

K.E. Longva, F.D. Blystad, E. Stang, A.M. Larsen, L.E. Johannessen, and I.H. Madshus

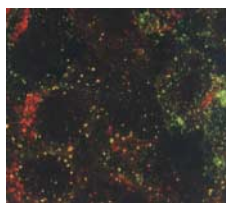
Interactions and regulation of molecular motors in *Xenopus* melanophores

S.P. Gross, M.C. Tuma, S.W. Deacon, A.S. Serpinskaya, A.R. Reilein, and V.I. Gelfand

Trypanin is a cytoskeletal linker protein and is required for cell motility in African trypanosomes

N.R. Hutchings, J.E. Donelson, and K.L. Hill

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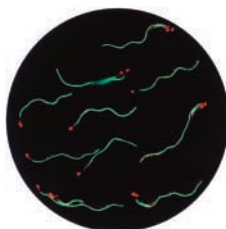


829

Binding of EGF to EGFR (green) leads to colocalization with the ubiquitin ligase c-Abl (red) in vesicular compartments. Sustained ubiquitination is important for sorting of EGFR to degrading compartments. See page 843.

843

855



867

Trypanin (red) is a cytoskeletal linker required in the flagella of *Trypanosoma brucei* for directional cell motility. See page 867.

Modulation of the F-actin cytoskeleton by c-Abl tyrosine kinase in cell spreading and neurite extension

P.J. Woodring, E.D. Litwack, D.D.M. O'Leary, G.R. Lucero, J.Y.J. Wang, and T. Hunter

879

High RhoA activity maintains the undifferentiated mesenchymal cell phenotype, whereas RhoA down-regulation by laminin-2 induces smooth muscle myogenesis

S. Beqaj, S. Jakkaraju, R.R. Mattingly, D. Pan, and L. Schuger

893

PKC α regulates the hypertrophic growth of cardiomyocytes through extracellular signal-regulated kinase1/2 (ERK1/2)

J.C. Braz, O.F. Bueno, L.J. De Windt, and J.D. Molkentin

905

Identification of an adaptor-associated kinase, AAK1, as a regulator of clathrin-mediated endocytosis

S.D. Conner and S.L. Schmid

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The Journal of Cell Biology

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March 18, 2002

– News –

In this Issue

- Finding the dark side of tau
- Tubulin but not microtubule
- Only one way to skin a mouse
- An acid invasion
- Tropomyosin keeps actin tough

A.W. Dove

Research Roundup

- Coming undone at the seams
- Anticancer lubrication
- A trip to the ER
- Crumbs turns the corner
- A dual purpose antideath agent

N. LeBrasseur

– Reviews –

Comments

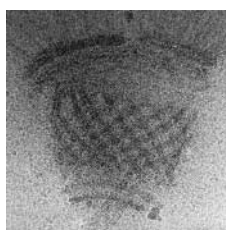
Listeriolysin O: a genuine cytolysin optimized for an intracellular parasite

S. Dramsi and P. Cossart

Keratinocyte junctions and the epidermal barrier: how to make a skin-tight dress

G. Bazzoni and E. Dejana

938



On the Cover

940

The conoid of *Toxoplasma gondii* is a novel tubulin-based structure that is wound into a spiral like a compressed spring. Extension of this structure (as in the figure) may help the parasite move into and out of host cells. See page 1039.

– Research Articles –

Reports

CD46 is phosphorylated at tyrosine 354 upon infection of epithelial cells by *Neisseria gonorrhoeae*

S. W. Lee, R.A. Bonnah, D.L. Higashi, J.P. Atkinson, S.L. Milgram, and M. So

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Articles

Role of dynein, dynactin, and CLIP-170 interactions in LIS1 kinetochore function

C.-Y. Tai, D.L. Dujardin, N.E. Faulkner, and R.B. Vallee

959

Cyclin-dependent kinases govern formation and maintenance of the nucleolus

V. Sirri, D. Hernandez-Verdun, and P. Roussel

969

Calcineurin-GATA-6 pathway is involved in smooth muscle-specific transcription

H. Wada, K. Hasegawa, T. Morimoto, T. Kakita, T. Yanazume, M. Abe, and S. Sasayama

983

Induction of secretory pathway components in yeast is associated with increased stability of their mRNA

M. Hyde, L. Block-Alper, J. Felix, P. Webster, and D.I. Meyer

993

α -Glucosidase I is required for cellulose biosynthesis and morphogenesis in *Arabidopsis*

C.S. Gillmor, P. Poindexter, J. Lorieau, M.M. Palcic, and C. Somerville

1003

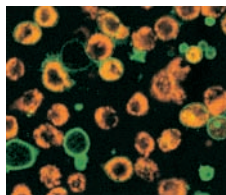
Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

Articles (cont.)

Osmotic stress–induced increase of phosphatidylinositol 3,5-bisphosphate requires Vac14p, an activator of the lipid kinase Fab1p

C.J. Bonangelino, J.J. Nau, J.E. Duex, M. Brinkman, A.E. Wurmser, J.D. Gary, S.D. Emr, and L.S. Weisman

1015



Drosophila mitochondria do not lose their membrane potential (orange) or release cytochrome c during stress-induced apoptosis. See pages 1077 and 1089.

The *Listeria monocytogenes* hemolysin has an acidic pH optimum to compartmentalize activity and prevent damage to infected host cells

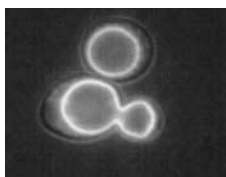
I.J. Glomski, M.M. Gedde, A.W. Tsang, J.A. Swanson, and D.A. Portnoy

1029

A novel polymer of tubulin forms the conoid of *Toxoplasma gondii*

K. Hu, D.S. Roos, and J.M. Murray

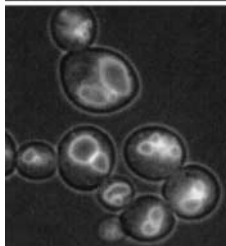
1039



Tau blocks traffic of organelles, neurofilaments, and APP vesicles in neurons and enhances oxidative stress

K. Stamer, R. Vogel, E. Thies, E. Mandelkow, and E.-M. Mandelkow

1051



Tropomyosin inhibits ADF/cofilin-dependent actin filament dynamics

S. Ono and K. Ono

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The role of ARK in stress-induced apoptosis in *Drosophila* cells

K.C. Zimmermann, J.-E. Ricci, N.M. Droin, and D.R. Green

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Vac14p is needed to trigger fragmentation of vacuoles during osmotic stress (bottom). It does so by regulating Fab1p and thus increasing the levels of phosphatidylinositol-3,5-bisphosphate. See page 1015.

The role of cytochrome c in caspase activation in *Drosophila melanogaster* cells

L. Dorstyn, S. Read, D. Cakouros, J.R. Huh, B.A. Hay, and S. Kumar

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Claudin-based tight junctions are crucial for the mammalian epidermal barrier: a lesson from claudin-1–deficient mice

M. Furuse, M. Hata, K. Furuse, Y. Yoshida, A. Haratake, Y. Sugitani, T. Noda, A. Kubo, and S. Tsukita

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