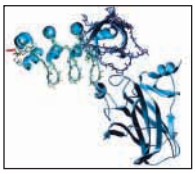
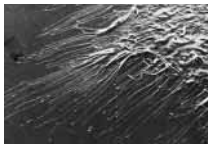


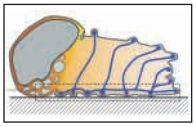
PP1 regulation and targeting (p. 241) Commentary

Protein phosphatase 1 (PP1) is a major Ser/Thr phosphatase that participates in a wide variety of cellular processes, including control of glycogen metabolism, centrosome separation, and p53/Rb-mediated growth suppression. Recent work has uncovered >50 different PP1 regulatory subunits, which allow independent regulation of PP1 in a diverse range of processes. Patricia Cohen reviews our understanding of the modes of action of these subunits. Most of these target the PP1 catalytic subunit (PP1c) to specific subcellular locations through interactions between a conserved RVxF motif in the regulatory subunit and a hydrophobic groove near the C-terminus of PP1c; the subunits G_M and M_{110}, for example, target PP1c to glycogen and muscle, respectively. Cohen also examines how signals that regulate distinct functions of PP1 are able to modulate the expression levels, conformation and phosphorylation status of PP1c regulatory subunits. She proposes that a greater understanding of these mechanisms could allow development of therapies for conditions such as diabetes, in which changes in activity of PP1 towards particular substrates would be beneficial.



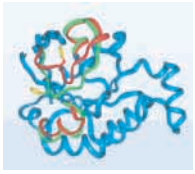
Protrusive and contractile cell-matrix contacts (p. 257) Commentary

The multiprotein complexes that comprise cell-matrix contacts play critical roles in cell adhesion and motility, matrix assembly, and localization and activation of signalling molecules that regulate cell proliferation and survival. Several forms of matrix contact have been described, and it is important to establish how these are defined, assembled and regulated. Josephine Adams surveys the different types of cell-matrix contact, defining three classes: protrusive contacts that dynamically associate with the matrix; contractile contacts responsible for more stable adhesion; and mechanically supportive contacts that stabilize the membrane against mechanical load. Adams goes on to discuss studies that have provided insight into how these contact sites are coordinated and regulated. Studies of fibroblasts attaching to surfaces coated with matrix molecules, for example, have revealed a sequential conversion of protrusive contacts to contractile adhesions, which probably reflects the ability of cells to coordinate reorganization of matrix contacts during locomotion. Moreover, recent work has shed light on the roles of molecular components of cell-matrix contacts (especially integrins, proteoglycans and paxillin) in the control of their dynamics



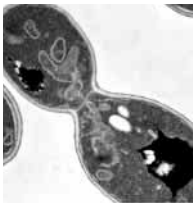
How nematode sperm crawl (p. 367)

Amoeboid cells crawl by simultaneously extending lamellipodia and retracting their cell bodies. A precise mechanical analysis of this process has been difficult because, in most cases, locomotion is generated by the actin cytoskeleton, which is also involved in many other processes. George Oster and co-workers have approached the problem by analyzing a 'stripped down' version of a crawling cell: sperm from the nematode *Ascaris suum*. These cells crawl using a unique cytoskeletal filament system based on the major sperm protein (MSP), which is dedicated to locomotion and requires few accessory proteins. The authors have developed a computational model that accounts for the principal features of crawling in terms of vectorial filament assembly and bundling without a major contribution from motor proteins. In the model, localized filament polymerization/bundling at the leading edge of lamellipodia generates protrusive force; this is coupled to localized contraction at the cell body, which is generated by relief of tensile stress through pH-dependent filament depolymerization. Oster and co-workers show that their model accurately simulates key aspects of sperm motility, such as velocity and cell shape, thus providing a theoretical framework for understanding the molecular basis of cell motility.



Rho GTPases (p. 239 & poster) Cell Science at a Glance

Rho family GTPases have a range of signalling functions. In particular, they play critical roles in regulation of the actin cytoskeleton. The best-known members of the family are Rho, Rac and Cdc42; however, at least 23 Rho-related proteins are present in humans. Mathew Wherlock and Harry Mellor survey the known members of the Rho family, providing Rho phylogenetic trees for six species and detailing the members of the various Rho subfamilies.



Interdependence of actomyosin ring contraction and septum formation in budding yeast (p. 293)

During cytokinesis in budding yeast, invagination of the plasma membrane is accompanied by formation of a chitin-based septum separating mother and daughter cells. This invagination is driven by constriction of an actomyosin ring at the bud neck; however, the relationship between septum synthesis and ring constriction is unclear. Enrico Cabib and co-workers have examined these two processes genetically. They show that mutations in Myo1p (a type II myosin responsible for contractile ring function) and Chs2p (chitin synthase II - an enzyme required for primary septum formation) produce similar phenotypes: plasma membrane invagination and primary septum formation do not occur, instead cells produce a remedial septum and undergo abnormal budding. Significantly, these defects are not more pronounced in *myo1 chs2* double mutants. They are, by contrast, exacerbated in the presence of mutations in chitin synthase III. The authors conclude that actomyosin ring constriction and primary septum formation are interdependent aspects of the same process and that an alternative Ch3p-dependent salvage pathway forms a remedial septum if this process is compromised.

Sticky Wicket - feelings of rejection (p. 237)

Supremely confident about your work at submission, less so as you wait for the reviews, and utterly humiliated when it is rejected? And do you then relish the opportunity to take it all out on the next paper you are asked to referee? Caveman admits to having such feelings occasionally; nevertheless, he urges us to be more critical of our own work and remember what it is like to be an author when we referee the work of others.

In the next issue of JCS

Sticky Wicket

How to impress without even trying. Caveman

Commentaries

The COP9 signalosome and the ubiquitin system. D. Bech-Otschir et al.

TRAF signaling. J. Y. Chung et al.

Research articles

Integrin-induced E-cadherin–actin complexes. C. Schreider et al.

Fibrinogen assembly in extracellular matrix. M. Pereira et al.

Human p63RhoGEF. M. Souchet et al.

Gelsolin in Sertoli cells. J. A. Guttman et al.

FGF targets cell cycle and cytoskeleton. O. Rozenblatt-Rosen et al.

Merotelic orientation versus mono-orientation. D. Cimini et al.

Actin bundle breakdown in *Drosophila* bristles. G. M. Guild et al.

Multiple subcellular topography of survivin. P. Fortugno et al.

Mechanism of apoptosis induction by menadione. J. V. Gerasimenko et al.

A family of escorters in *Toxoplasma gondii*. M. Meissner et al.

Role of Vid22p in fbpase degradation pathway. C. R. Brown et al.

ER-export motifs in membrane proteins. O. Nufer et al.

pH-dependent regulation of lysosomal calcium. K. A. Christensen et al.

Polarization of caveolae and signal transduction. M. Isshiki et al.

Pax3 induces cell aggregation. O. Wiggan et al.

Pax3 regulates morphogenetic cell behavior. O. Wiggan and P. A. Hamel

SNARE complexes and exocytosis. G. W. Lawrence and J. O. Dolly

***S. pombe* Pds5.** S.-W. Wang et al.