



Cover: On page 489 of this issue Trevor Jackson and colleagues discuss the centaurin and cytohesin protein families, many of which have been identified as $\text{PtdIns}(3,4,5)\text{P}_3$ targets that regulate and interact with Arf GTPases. Both cytohesin and centaurin proteins are recruited to actin-rich membrane ruffles in response to PI 3-kinase activation by growth factors. The confocal microcosmic image show the accumulation of eGFP-centaurin $\beta 1$ (green) at the edge of ruffles (actin was stained with TRITC phalloidin red) in insulin-stimulated (5 min.) COS7 cells. Image kindly supplied by Baggi Somasundaram and Trevor Jackson.

Cover image from 'Scene With Centaurs' from the room of King Ruggero, Palazzo dei Normanni, Plaermo, Italy, courtesy of The Bridgeman Art Library.

Cover design by Geraldine Woods.

REVIEWS

489 **Cytohesins and centaurins: mediators of PI 3-kinase-regulated Arf signaling**

Trevor R. Jackson, Brian G. Kearns and Anne B. Theibert

496 **TRANSCRIPTION FACTOR SERIES**

STAT proteins and transcriptional responses to extracellular signals

Curt M. Horvath

502 **MITOCHONDRIAL FUNCTION SERIES**

Mitochondria, oxygen free radicals, disease and ageing

Sandeep Raha and Brian H. Robinson

509 **When protein folding is simplified to protein coiling: the continuum of solenoid protein structures**

Bostjan Kobe and Andrey V. Kajava

TECHNIQUES

462 **TROSY and CRINEPT: NMR with large molecular and supra-molecular structures in solution**

Roland Riek, Konstantin Pervushin and Kurt Wüthrich

TALKING POINTS

469 **BRCA1: exploring the links to transcription**

Alvaro N.A. Monteiro

474 **Gene context conservation of a higher order than operons**

Warren C. Lathe III, Berend Snel and Peer Bork

FRONTLINES

459 **Novel homologs of gp91 phox** J. David Lambeth, Guangjie Cheng, Rebecca S. Arnold and William A. Edens

PROTEIN SEQUENCE MOTIFS

481 **Domains in gene silencing and cell differentiation proteins: the novel PAZ domain and redefinition of the Piwi domain**

Lorenzo Cerutti, Nina Mian and Alex Bateman

483 **GRAM, a novel domain in glucosyltransferases, myotubularins and other putative membrane-associated proteins**

Tobias Doerks, Martin Strauss, Martin Brendel and Peer Bork

MEETING REPORT

487 **Looking forward, looking backward** Peter Nicholls

COMPUTER CORNER

515 **The REPRO server: finding protein internal sequence repeats through the Web**

Richard A. George and Jaap Heringa

LETTERS

479 **Mitochondria and chloroplasts: localized and delocalized bioenergetic transduction** R.J.P. Williams

480 **Copper chaperones in bacteria: association with copper-transporting ATPases**

I. King Jordan, Darren A. Natale and Michael Y. Galperin

JOURNAL CLUB

485 **Condensing the RNA world; Fringe give a saccharine to Notch; Joining tethers and SNAREs**

BOOK REVIEWS

518 **MITOCHONDRIAL FUNCTION SERIES** The Mitochondrial Free Radical Theory of Aging (by A.D.N.J. de Grey) Richard G. Hansford

519 **Crystallization of Nucleic Acids and Proteins – A Practical Approach (2nd edn)** (by A. Ducruix and R. Giegé) Simon E.V. Phillips

468 ERRATUM

XII CALENDAR/CLASSIFIED

FORTHCOMING ARTICLES

• **Ubiquitin in chains**

Cecile M. Pickart

• **Translational termination comes of age**

Lev L. Kisselev and Richard H. Buckingham

• **Elastomeric proteins: biological roles, structures and mechanisms**

Arthur S. Tatham and Peter R. Shewry

• **Eukaryotic DNA primase**

Bahram Arezi and Robert D. Kuchta

Editor: Emma K. Wilson **Assistant Editor:** Arianne Heinrichs

Editorial Administrator: John Acland-Hood **Production:** Hannah Ruczaj **Publishing Manager:** Rob Brines

Editorial Enquiries: trends in BIOCHEMICAL SCIENCES, Elsevier Science London, 84 Theobald's Road, London
Tel: +44 (0)20 7611 4400 Fax: +44 (0)20 7611 4470 E-mail: tibs@current-trends.com

Editorial Board

TIM HUNT (Editor in Chief)
(ICRF Clare Hall Laboratories, UK)
JACK DIXON
(University of Michigan, USA)
TOBY GIBSON
(EMBL, Heidelberg, Germany)
CARL-HENRIK HELDIN
(Ludwig Institute for Cancer Research, Uppsala, Sweden)

MATTHIAS HENTZE
(EMBL, Heidelberg, Germany)
ROGER KORNBERG
(Stanford University, USA)
TITIA DE LANGE
(Rockefeller University, New York, USA)
ANGUS LAMOND
(University of Dundee, UK)
GREG PETSKO
(Brandeis University,

Waltham, USA)
THOMAS POLLARD
(Salk Institute, La Jolla, USA)
SHEENA RADFORD
(University of Leeds, UK)
PAUL SCHIMMEL
(The Scripps Research Institute, La Jolla, USA)
PETER H. VON HIPPEL
(University of Oregon,

Eugene, USA)
GRAHAM WARREN
(Yale University School of Medicine, New Haven, USA)
JAN WITKOWSKI
(Banbury Center, Cold Spring Harbor Laboratory, New York, USA)
MITSUHIRO YANAGIDA
(Kyoto University, Japan)



253A035040

Advertising, Subscription & Rates Enquiries: See page IV

Subscribe at:

TRENDS
www.trends.com

