

# Molecular BioSystems

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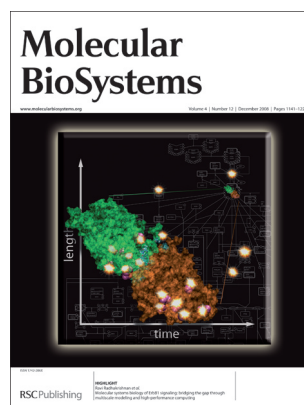
## IN THIS ISSUE

ISSN 1742-206X CODEN MBOIBW 4(12) 1141-1224 (2008)



### Cover

See H. Bayley *et al.*, pp. 1191–1208.  
Droplet interface bilayers (DIBs) provide a superior platform for the biophysical analysis of membrane proteins. The versatile DIBs can also form networks, with features that include built-in batteries and sensors.  
Image reproduced by permission of Hagan Bayley, Brid Cronin, Andrew Heron, Matthew A. Holden, William Hwang, Ruhma Syeda, James Thompson and Mark Wallace from *Mol. BioSyst.*, 2008, **4**, 1191.



### Inside cover

See R. Radhakrishnan *et al.*, pp. 1151–1159.  
Molecular systems biology of ErbB1 receptor-mediated signaling: multiscale model treats processes with disparate length and time-scales in order to predict the effect of somatic mutations on signaling characteristics.  
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## CHEMICAL BIOLOGY

B89

Drawing together research highlights and news from all RSC publications, *Chemical Biology* provides a 'snapshot' of the latest developments in chemical biology, showcasing newsworthy articles and significant scientific advances.

# Chemical Biology

December 2008/Volume 3/Issue 12

[www.rsc.org/chembiology](http://www.rsc.org/chembiology)

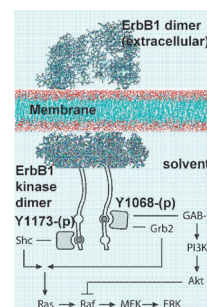
## HIGHLIGHTS

1151

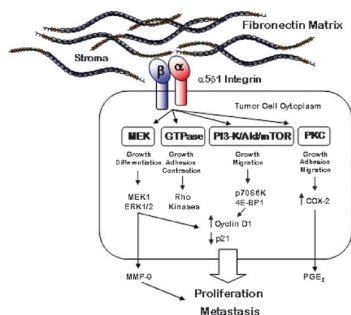
### Molecular systems biology of ErbB1 signaling: bridging the gap through multiscale modeling and high-performance computing

Andrew J. Shih, Jeremy Purvis and Ravi Radhakrishnan\*

Molecular systems biology of ErbB1 receptor-mediated signaling: multiscale model treats processes with disparate length and time-scales in order to predict the effect of somatic mutations on signaling characteristics.



1160

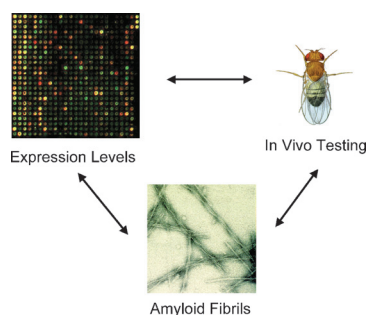


### Stimulation of lung carcinoma cell growth by fibronectin–integrin signalling

Jeffrey D. Ritzenthaler, ShouWei Han and Jesse Roman\*

We review the role of fibronectin–integrin signaling in the stimulation of lung carcinoma cell growth, one of the most common malignant tumors in the world.

1170

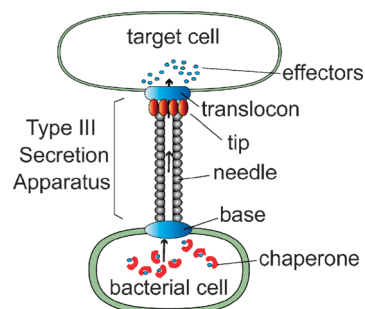


### Towards quantitative predictions in cell biology using chemical properties of proteins

Michele Vendruscolo and Gian Gaetano Tartaglia\*

We discuss here how a link between the upper levels of *in vivo* abundances and critical concentrations of proteins offers an opportunity to make quantitative predictions in cell biology based on the chemical properties of proteins.

1176

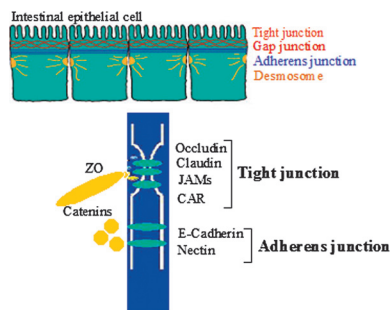


### Structural dissection of the extracellular moieties of the type III secretion apparatus

Yu Wang, Lingling Zhang, Wendy L. Picking, William D. Picking and Roberto N. De Guzman\*

Recently solved structures of the extracellular proteins of the type III secretion apparatus used by Gram-negative pathogens to inject virulence factors into their hosts have advanced our knowledge of the assembly and function of this bacterial nanoinjector.

1181



### Molecular mechanism of intestinal permeability: interaction at tight junctions

Zakir Hossain and Takashi Hirata

The tight junction (TJ) is an essential component of the intestinal barrier. Occludin, claudin, junctional adhesion molecules, and the coxsackie virus and adenovirus receptor (CAR) are the major components of TJs. Polyunsaturated fatty acids may regulate occludin mRNA in TJs. CAR expression could be considered of possible clinical importance for application in gene therapy.

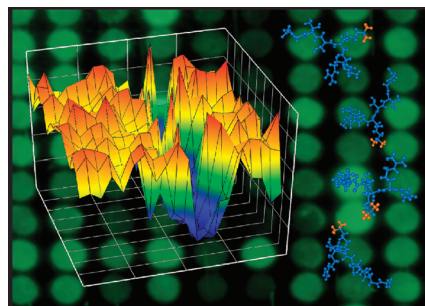
## HIGHLIGHTS

1186

### Specificity of protein lysine methyltransferases and methods for detection of lysine methylation of non-histone proteins

Philipp Rathert, Arunkumar Dhayalan, Huimin Ma and Albert Jeltsch\*

Methylation of non-histone proteins appears to be a widespread biological signal for regulation of protein activity. SPOT peptide arrays have been introduced for specificity analysis of protein lysine methyltransferases and for the detection of new substrates of these enzymes.



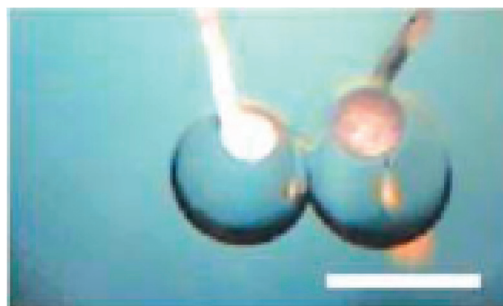
## REVIEW

1191

### Droplet interface bilayers

Hagan Bayley,\* Brid Cronin, Andrew Heron, Matthew A. Holden, William L. Hwang, Ruhma Syeda, James Thompson and Mark Wallace

Droplet interface bilayers (DIBs) provide a superior platform for the biophysical analysis of membrane proteins. The versatile DIBs can also form networks, with features that include built-in batteries and sensors. Scale bar = 1 mm.



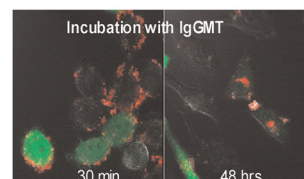
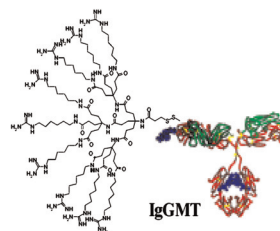
## COMMUNICATION

1209

### Effective delivery of IgG-antibodies into infected cells via dendritic molecular transporter conjugate IgGMT

Sharon K. Hamilton, Mine R. Ikizler, Christian Wallen, Peter F. Wright\* and Eva Harth\*

IgG antibody–transporter conjugates enable intracellular uptake of biologically active IgG antibodies that inhibit viral mediated syncytia formation in respiratory syncytial virus green fluorescent protein (RSV-GFP) infected human epithelial cells (HEp-2).



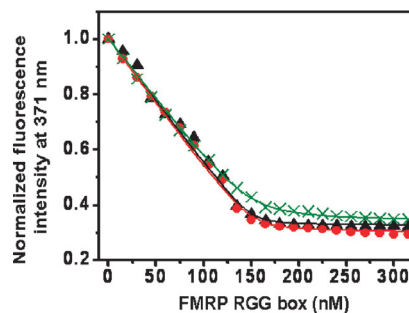
## PAPER

1212

### Fragile X mental retardation protein recognition of G quadruplex structure *per se* is sufficient for high affinity binding to RNA

Medhavi Bole, Lakshmi Menon and Mihaela-Rita Mihailescu\*

Recognition of the RNA G quadruplex structure *per se*, in the absence of a stem region, is sufficient for fragile X mental retardation protein high affinity and specific binding.



1220

**Additions and corrections published in 2008**