

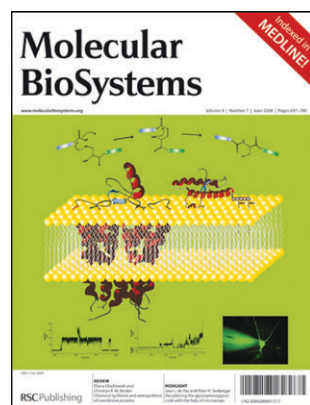
# Molecular BioSystems

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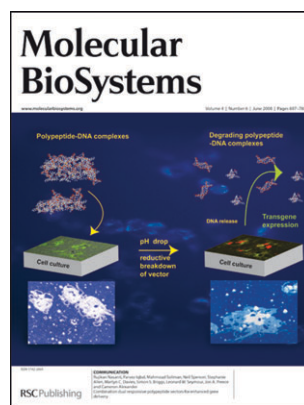
## IN THIS ISSUE

ISSN 1742-206X CODEN MBOIBW 4(7) 697-780 (2008)



### Cover

See Becker *et al.*, pp. 733–740. Chemical synthesis of membrane (-associated) proteins can be achieved by native chemical ligation of peptide segments. The assembled proteins integrate into lipid bilayers where electrophysiological and fluorescence analysis can take place. Image reproduced by permission of Diana Olschewski and Christian F. W. Becker from *Mol. BioSyst.*, 2008, **4**, 733.



### Inside cover

See Alexander *et al.*, pp. 741–745. Schematic of polypeptide–DNA complexes entering cells where they are reduced to liberate the DNA payload. AFM of polypeptide–DNA complexes before (left-hand side) and after (right-hand side) reduction are shown below. Image reproduced by permission of Leonard W. Seymour, Jon A. Preece, Cameron Alexander *et al.* from *Mol. BioSyst.*, 2008, **4**, 741.

## CHEMICAL BIOLOGY

B49

Drawing together the 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

July 2008/Volume 3/Issue 7

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

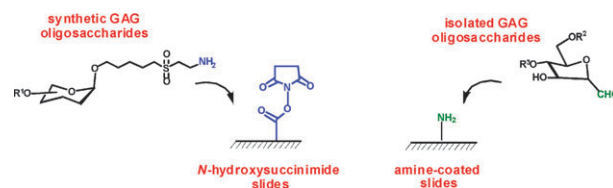
## HIGHLIGHTS

707

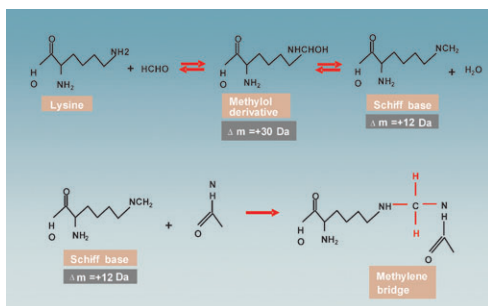
### Deciphering the glycosaminoglycan code with the help of microarrays

Jose L. de Paz and Peter H. Seeberger\*

This highlight summarizes the most recent approaches to immobilize synthetic or isolated glycosaminoglycan oligosaccharides on surfaces and create microarrays that help to elucidate the role of these biopolymers in nature.



712

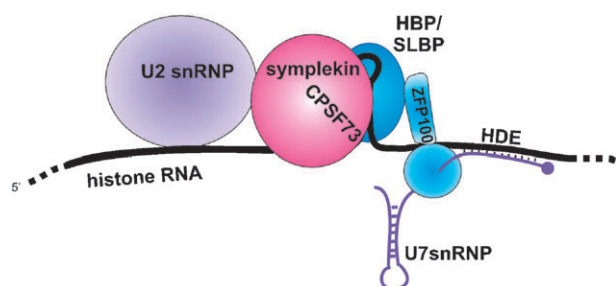


### Mining the archival formalin-fixed paraffin-embedded tissue proteome: opportunities and challenges

Niroshini J. Nirmalan, Patricia Harnden, Peter J. Selby and Rosamonde E. Banks\*

Formalin-fixed tissue archives are an alternative resource to fresh-frozen tissues for proteomic biomarker-driven translational research. We critically appraise the current status of research, highlighting challenges for a robust quantitative application.

721

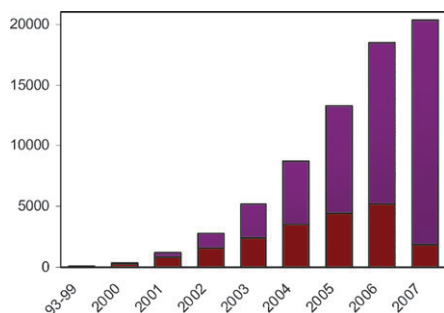


### Post-transcriptional control of animal histone gene expression—not so different after all . . .

Pamela Nicholson and Berndt Müller

Post-transcriptional control of expression of animal histone genes, which produce mRNAs lacking a poly(A) tail, was thought to be a special case. Recent observations now reveal that many of the factors involved are shared with processing, translation and degradation of poly(A) mRNA.

726



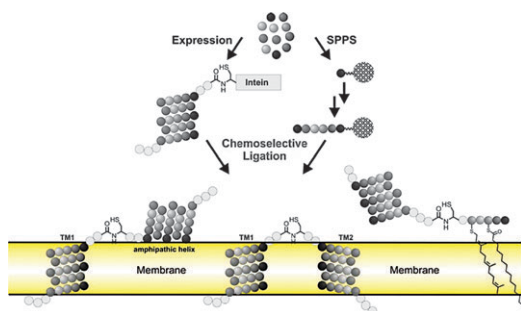
### The incredible shrinking world of DNA microarrays

Sarah J. Wheelan, Francisco Martínez Murillo and Jef D. Boeke

Many advances have recently expanded the power and utility of microarrays; among them is the development by the authors of a new array tiling technique.

## REVIEW ARTICLE

733



### Chemical synthesis and semisynthesis of membrane proteins

Diana Olschewski and Christian F. W. Becker\*

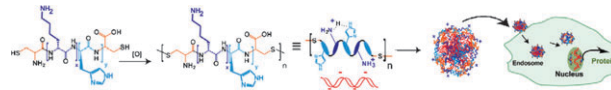
Challenges and recent developments in the chemical synthesis and semisynthesis of membrane proteins as well as of membrane associated proteins are reviewed here.

741

### Combination dual responsive polypeptide vectors for enhanced gene delivery

Rujikan Nasanit, Parvez Iqbal, Mahmoud Soliman, Neil Spencer, Stephanie Allen, Martyn C. Davies, Simon S. Briggs, Leonard W. Seymour,\* Jon A. Preece\* and Cameron Alexander\*

“Dual-responsive” gene delivery vectors containing varying sequences of lysine and histidine residues linked by disulfides display high cell transfection activity without compromising cell viability.



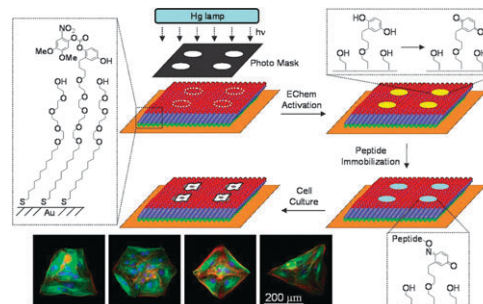
## PAPERS

746

### A photo-electroactive surface strategy for immobilizing ligands in patterns and gradients for studies of cell polarization

Eugene W. L. Chan and Muhammad N. Yousaf\*

A combined photochemical and electrochemical methodology to precisely control the amount of ligands immobilized in patterns and gradients on a surface. Photochemical unveiling of redox active quinone groups and subsequent selective coupling with soluble aminoxy ligands generates surfaces for studies of cell adhesion and cell polarity.

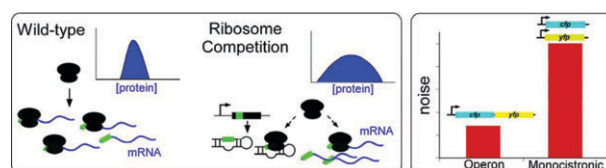


754

### Engineering stochasticity in gene expression

Jeffrey J. Tabor, Travis S. Bayer, Zachary B. Simpson, Matthew Levy and Andrew D. Ellington\*

Stochastic fluctuations (noise) in gene expression can cause members of otherwise genetically identical populations to display drastically different phenotypes. Here, we demonstrate that noise is strongly sensitive to the expression of heterologous (synthetic) genetic elements and that the noise is naturally buffered when genes are organized into operons.

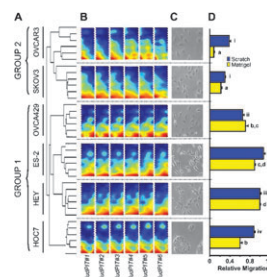


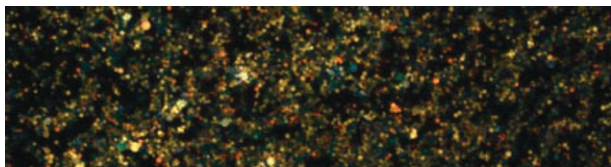
762

### Identification of pathways associated with invasive behavior by ovarian cancer cells using multidimensional protein identification technology (MudPIT)

Katharine L. Sodek, Andreas I. Evangelou, Alex Ignatchenko, Mahima Agochiya, Theodore J. Brown, Maurice J. Ringuette, Igor Jurisica and Thomas Kislinger\*

Six ovarian cancer cell lines were subjected to proteomic characterization using multidimensional protein identification technology (MudPIT), and evaluated for their motile/invasive behavior, so that these parameters could be compared.





### Flow cytometric detection of proteolysis in peptide libraries synthesised on optically encoded supports

Peter P. T. Surawski, Bronwyn J. Battersby, Gwendolyn A. Lawrie, Kym Ford, Andreas Rühmann, Lionel Marcon, Darby Kozak and Matt Trau\*

Optically encoded organosilica support particles are used for the synthesis of focused peptide libraries and multiplexed detection of trypsin proteolysis by flow cytometry. The ability of a protease to bind and cleave particle-based peptides can be significantly altered, depending on the structure of residues placed between two potentially cleavable sites.