

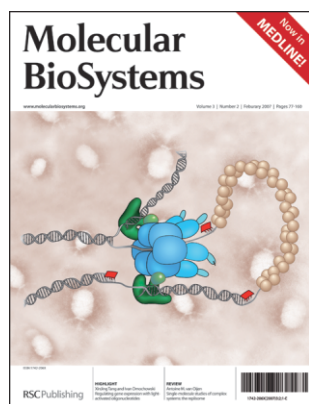
# Molecular BioSystems

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## IN THIS ISSUE

ISSN 1742-206X CODEN MBOIBW 3(2) 77–160 (2007)



### Cover

See Antoine M. van Oijen, page 117. Single-molecule studies of complex systems: the replisome. Image created by Steve Moskowitz and reproduced with permission of Antoine M. van Oijen, from *Mol. BioSyst.*, 2007, 3, 117.

## CHEMICAL BIOLOGY

B9

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

February 2007/Volume 2/Issue 2

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

## HOT OFF THE PRESS

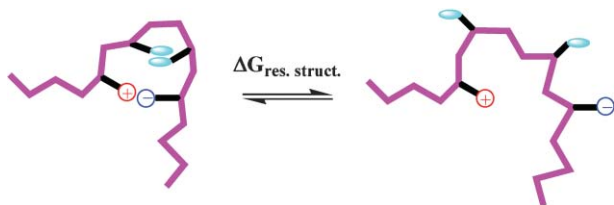
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### Hot off the Press

Topics highlighted in this month's *Hot off the Press*: small molecule mimics of the IL-2R $\alpha$  receptor, a high yielding protein modification which could be used in protein coupling and an item published recently in one of the RSC's journals.

# HOT OFF THE PRESS

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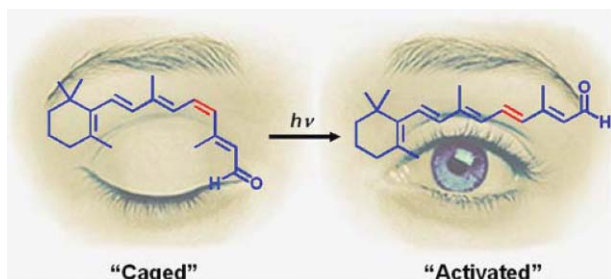


### Thermodynamics of protein denatured states

Bruce E. Bowler\*

Recent advances in the thermodynamic measurements of the stability of residual structures and the conformational constraints operating on protein denatured states are leading to new insights into protein folding and novel methods to modulate protein stability.

100

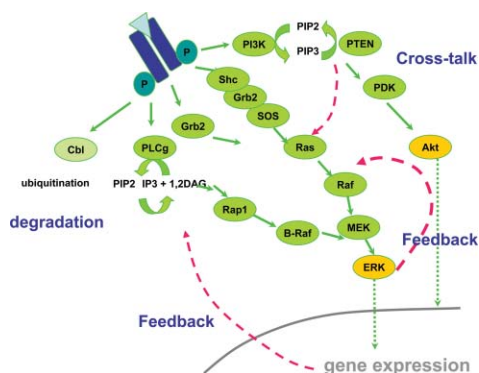


### Regulating gene expression with light-activated oligonucleotides

XinJing Tang and Ivan J. Dmochowski\*

Light-activated oligonucleotides create opportunities to regulate cell signaling pathways with high spatial and temporal resolution. This mimics nature's strategy by which 11-*cis*-retinal absorbs a photon to initiate the visual signaling cascade.

111



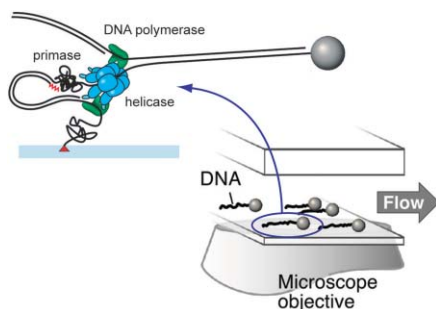
### System properties of ErbB receptor signaling for the understanding of cancer progression

Mariko Hatakeyama

Systems biology intensively tries to resolve complexity of ErbB receptor signaling for cancer progression. The article highlights dynamic properties of the ErbB receptors and its functions in cellular network.

## REVIEWS

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### Single-molecule studies of complex systems: the replisome

Antoine M. van Oijen

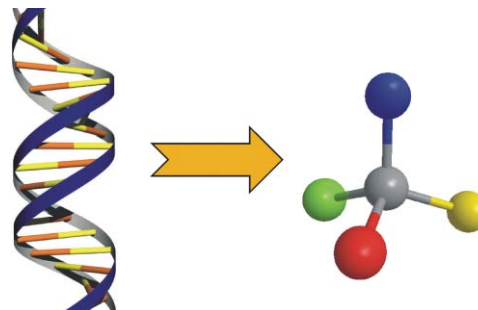
Single-molecule methods represent a powerful set of tools to obtain dynamic information from complex biochemical reactions. By using the DNA replication machinery as an example, this review will discuss the use of single-molecule methods to study the dynamics of large multi-enzyme machineries.

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### DNA and RNA induced enantioselectivity in chemical synthesis

Gerard Roelfes\*

The elegant chirality of DNA and RNA can be transferred to chemical reactions, leading to high enantioselectivities.

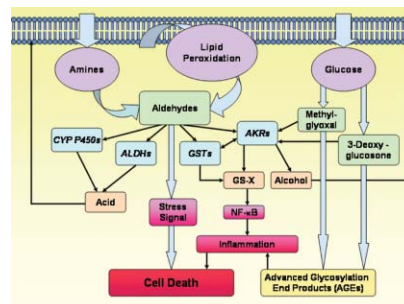


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### Aldehyde metabolism in the cardiovascular system

Daniel Conklin, Russell Prough and Aruni Bhatnagar\*

Aldehydes from oxidation of glucose, intermediates of glycolysis, amine deamination, and lipid peroxidation of membranes are metabolized by aldo-keto reductases (AKRs), glutathione S-transferases (GSTs), aldehyde dehydrogenases (ALDHs), and cytochromes P450 (CYP P450) to alcohols, glutathione conjugates (GS-X), and to acids, and excreted. Aldehydes, GS-X metabolites, or AGEs can trigger stress signaling, inflammation, and cell death.



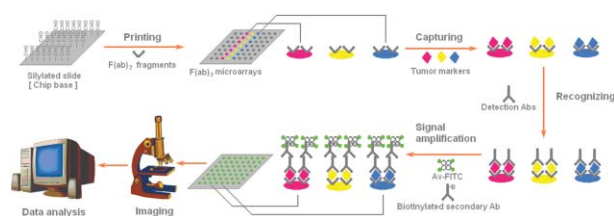
## PAPER

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### A cancer protein microarray platform using antibody fragments and its clinical applications

Shiping Song,\* Bin Li, Lihua Wang, Haiping Wu, Jun Hu, Minqian Li and Chunhai Fan\*

An F(ab')<sub>2</sub> microarray platform for serum tumor markers was developed. Its clinical applications showed that such F(ab')<sub>2</sub> microarrays exhibited both higher sensitivity and higher specificity than full-sized monoclonal antibody microarrays.







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