

# Molecular BioSystems

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## IN THIS ISSUE

ISSN 1742-206X CODEN MBOIBW 4(9) 873-956 (2008)



### Cover

See Dubern and Diggle pp. 882-888. The *Pseudomonas aeruginosa* strain PAO1 produces the blue/green phenazine pigment pyocyanin in response to 2-alkyl-4-quinolone (AQ) signal molecules (foreground). In contrast, a mutant unable to synthesize AQs is defective in pyocyanin production (background). Image reproduced by permission of Jean-Frédéric Dubern and Stephen P. Diggle from *Mol. BioSyst.*, 2008, **4**, 882.

## CHEMICAL BIOLOGY

B65

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

September 2008/Volume 3/Issue 9

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

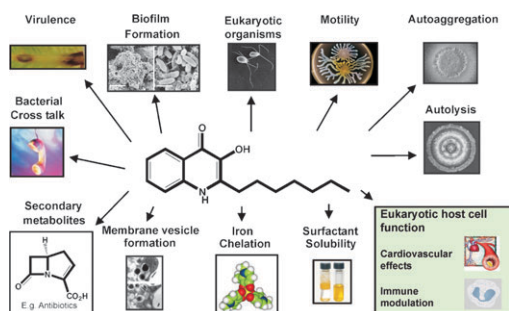
## HIGHLIGHTS

882

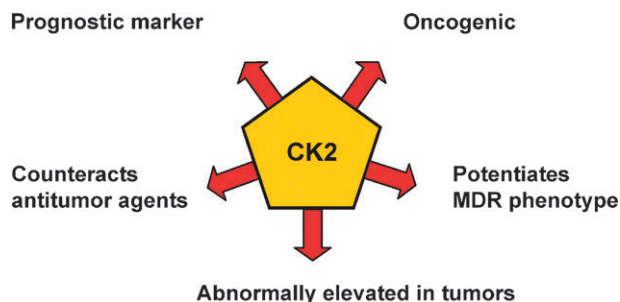
### Quorum sensing by 2-alkyl-4-quinolones in *Pseudomonas aeruginosa* and other bacterial species

Jean-Frédéric Dubern and Stephen P. Diggle\*

The biological functions of PQS produced by *Pseudomonas aeruginosa*.



889

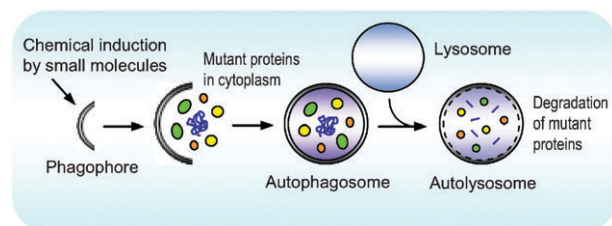


### Protein kinase CK2 as a druggable target

Stefania Sarno and Lorenzo A. Pinna\*

This contribution highlights the implication of protein kinase CK2 in creating a cellular environment favourable to the development and potentiation of the tumor phenotype. The pharmacological potential of cell permeable CK2 specific inhibitors is discussed.

895

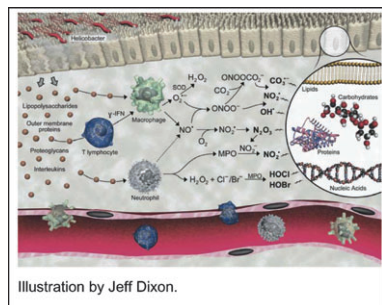


### Small molecule enhancers of autophagy for neurodegenerative diseases

Sovan Sarkar\* and David C. Rubinsztein\*

Autophagy is a major degradation pathway for various aggregate-prone proteins associated with neurodegenerative disorders. Enhancing autophagy with small molecules may be a possible therapeutic strategy for such diseases where the mutant proteins are autophagy substrates.

902



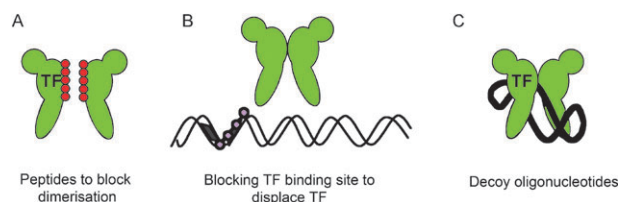
### Surveying the damage: the challenges of developing nucleic acid biomarkers of inflammation

Junghyun Son, Bo Pang, Jose L. McFaline, Koli Taghizadeh and Peter C. Dedon\*

Chronic inflammation and human disease may be linked by damage to biomolecules such as DNA and RNA, with the spectrum of products reflecting the chemistry of phagocyte-generated reactive species.

## REVIEW ARTICLE

909



### Targeting transcription factors for therapeutic benefit

Paul Brennan\*, Rossen Donev and Saman Hewamana

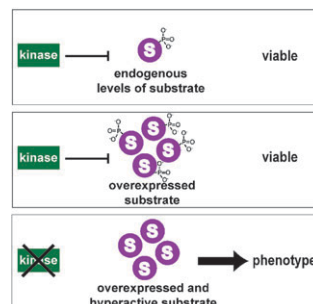
Recent developments in chemical biology and clinical medicine have led to the development of new ways of targeting transcription factors including blocking transcription factor dimerisation, targeting specific DNA sequences and DNA decoys. These agents have the potential to be valuable agents for the treatment of cancer.

920

## Linking the kinome and phosphorylome—a comprehensive review of approaches to find kinase targets

Richelle Sopko and Brenda J. Andrews\*

Conceptual basis for a genetic scenario enabling kinase substrate identification

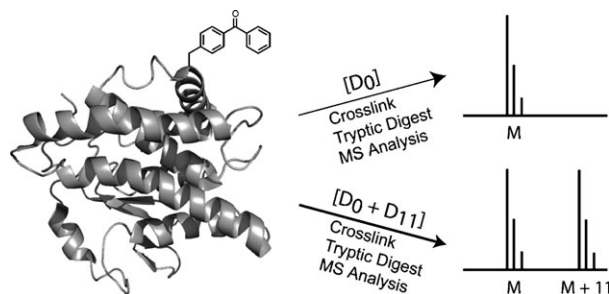


## COMMUNICATION

934

## Peptide mass fingerprinting using isotopically encoded photo-crosslinking amino acids

Bryan J. Wilkins, Kelly A. Daggett and T. Ashton Cropp\*

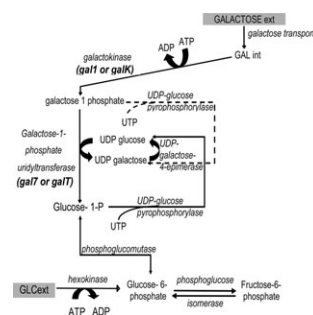
When isotopically labelled photo-crosslinking amino acids are site-specifically incorporated into proteins, in combination with the corresponding non-labeled analogue, cross-linked tryptic peptides are easily identified in mass spectra *via* characteristic “doublet” patterns.

## PAPERS

937

## Transcriptomic analysis of *Saccharomyces cerevisiae* physiology in the context of galactose assimilation perturbations

C. Syriopoulos, A. Panayotaru, K. Lai and Maria I. Klapa\*

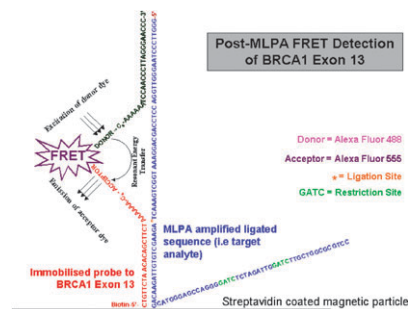
The full-genome transcriptomic study of *Saccharomyces cerevisiae*; glucose- and galactose-grown wild-type and glucose-grown *gal7*-deficient physiologies indicated the latter to be correlated to glucose derepressive conditions; galactose assimilation has to be studied within the entire carbon source sensing and regulation machinery.

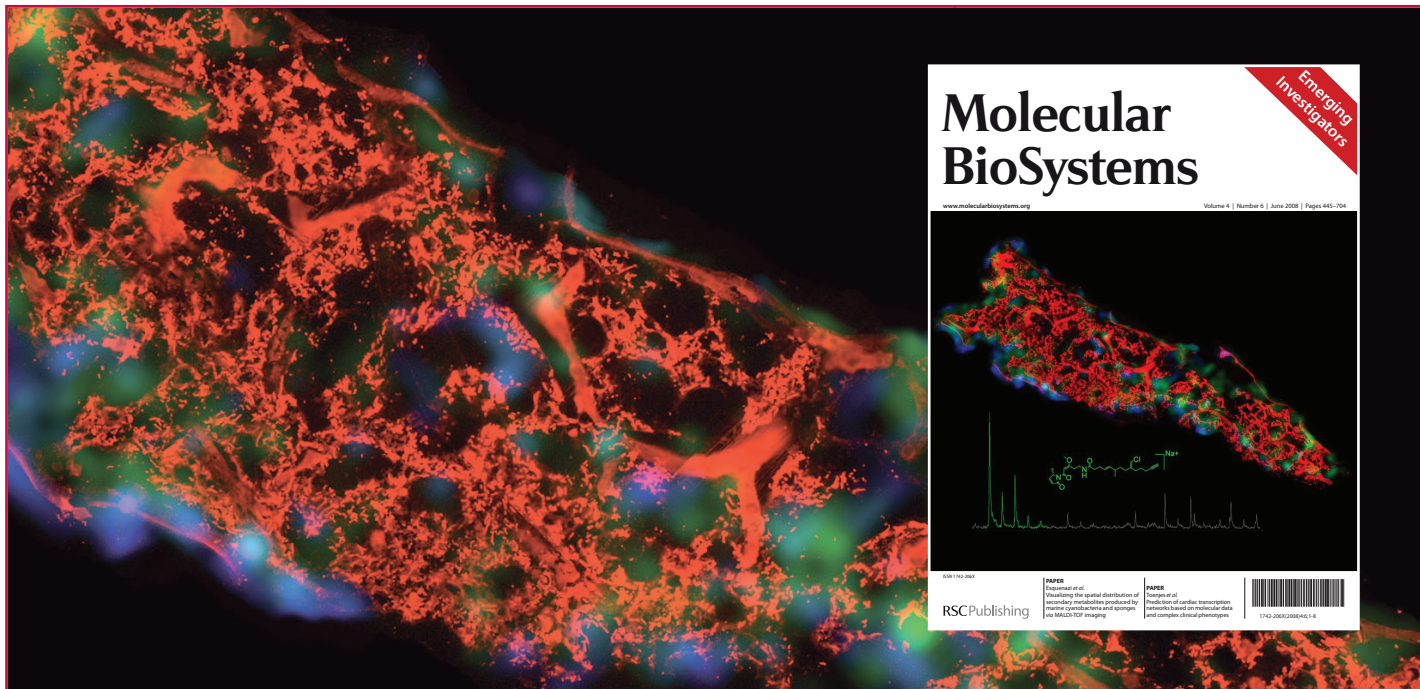
950

## Fluorescent resonance energy transfer (FRET) based detection of a multiplex ligation-dependent probe amplification (MLPA) product

V. Cengiz Ozalp, Anders O. H. Nygren and Ciara K. O'Sullivan\*

A fluorescent resonance energy transfer (FRET)-based hybridization assay for detecting multiplex ligation-dependent probe amplification (MLPA), demonstrating the possibility of combining MLPA with microarrays for the detection of multiple mutations in a single reaction tube.





## Emerging Investigators theme issue

*Molecular BioSystems* issue 6, 2008, devoted to outstanding young scientists at the chemical- and systems-biology interfaces, features novel methods to visualise and manipulate protein function in living cells, the development of chemical techniques to monitor specific protein post-translational modifications, new insights into metabolomics and much, much more!

### Papers include:

#### Visualization of phosphatase activity in living cells with a FRET-based calcineurin activity sensor

Robert H. Newman and Jin Zhang

#### Conformation and the sodium ion condensation on DNA and RNA structures in the presence of a neutral cosolute as a mimic of the intracellular media

Shu-ichi Nakano, Lei Wu, Hirohito Oka, Hisae Tateishi Karimata, Toshimasa Kirihaata, Yuichi Sato, Satoshi Fujii, Hiroshi Sakai, Masayuki Kuwahara, Hiroaki Sawai and Naoki Sugimoto

#### A quantitative study of the recruitment potential of all intracellular tyrosine residues on EGFR, FGFR1 and IGF1R

Alexis Kaushansky, Andrew Gordus, Bryan Chang, John Rush and Gavin MacBeath

#### Direct printing of trichlorosilanes on glass for selective protein adsorption and cell growth

Dawn M. Yanker and Joshua A. Maurer

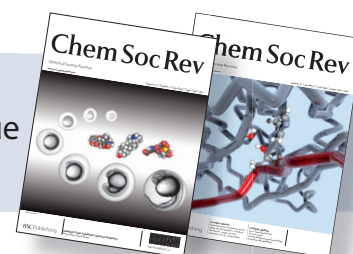
#### A chemical approach for detecting sulfenic acid-modified proteins in living cells

Khalilah G. Reddie, Young Ho Seo, Wilson B. Muse III, Stephen E. Leonard and Kate S. Carroll

### See also:

*Chem Soc Rev* issue 7, 2008 - Chemistry-Biology Interface theme issue

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