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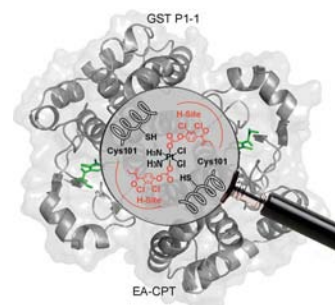


Antitumor Agents

L. J. Parker, L. C. Italiano, C. J. Morton, N. C. Hancock, D. B. Ascher, J. B. Aitken, H. H. Harris, P. Campomanes, U. Rothlisberger, A. De Luca, M. Lo Bello, W. H. Ang, P. J. Dyson, M. W. Parker*

Studies of Glutathione Transferase P1-1 Bound to a Platinum(IV)-Based Anticancer Compound Reveal the Molecular Basis of its Activation

Understanding interactions: The synthesized platinum cancer metallodrug ethacraplatin (EA-CPT) is known to interact with the pi class glutathione S-transferase (GST P1-1), an enzyme the overexpression of which, in some cases, limits the effectiveness of other platinum-based cancer drugs. To understand the nature of the EA-CPT–GST P1-1 interactions (see figure) and to obtain mechanistic insights at the molecular level, structural and biochemical investigations were performed.



Chem. Eur. J.
DOI: 10.1002/chem.201100586



DNA Structures

R. Pathak, A. Marx*

An Adamantane-Based Building Block for DNA Networks

The social network? A three-way branched adamantane building block that is capable of forming stable DNA networks has been synthesized (see picture). This rigid three-way organic framework could serve as a useful building block for DNA-based nanoconstructions.



Chem. Asian J.
DOI: 10.1002/asia.201000887

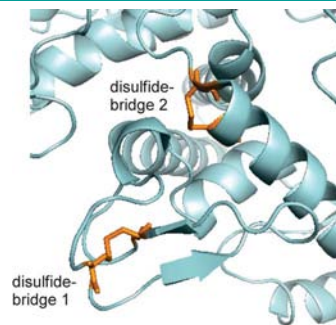


DNA Polymerases

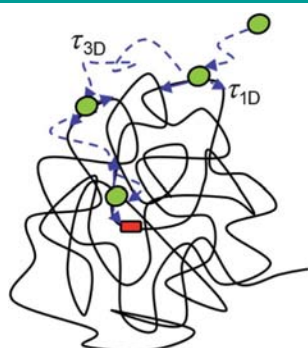
T. Killelea, B. A. Connolly*

Role of Disulfide Bridges in Archaeal Family-B DNA Polymerases

Some like it hot: The family-B DNA polymerases from the *Thermococcales* are extensively used in PCR. They usually contain two disulfide bridges (see figure), the role of which in thermostability has been probed with site directed mutagenesis. The disulfides play a role in stability but even deletion of both does not compromise PCR performance. This opens the way to single cysteine variants, amenable to useful chemical modification.



ChemBioChem
DOI: 10.1002/cbic.201100145



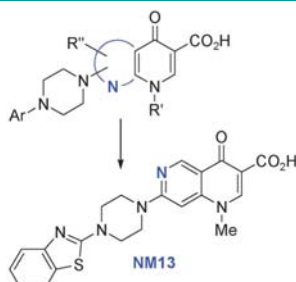
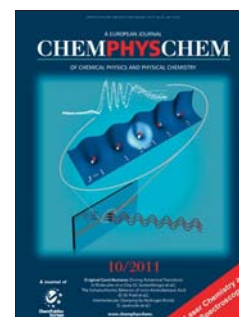
ChemPhysChem
DOI: 10.1002/cphc.201100112

Protein-DNA Interactions

A. Tafvizi, L. A. Mirny, A. M. v. Oijen*

Dancing on DNA: Kinetic Aspects of Search Processes on DNA

Let's tango: Recognition and binding of specific sites on DNA by proteins is central for many cellular functions. In the search for its target site, the DNA-associated protein is facing both thermodynamic and kinetic difficulties. Herein, the history of the DNA search problem, the theoretical background and the various experimental methods used to study the kinetics of protein searching for target sites on DNA are discussed (see picture).



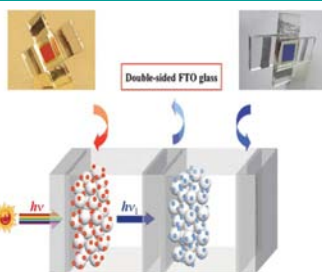
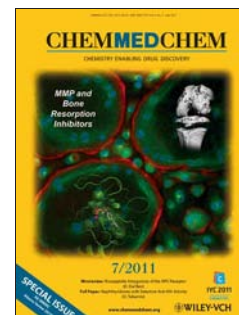
ChemMedChem
DOI: 10.1002/cmdc.201100073

Antiviral Agents

O. Tabarrini,* S. Massari, L. Sancineto, D. Daelemans, S. Sabatini, G. Manfroni, V. Cecchetti, C. Pannecouque

Structural Investigation of the Naphthyridone Scaffold: Identification of a 1,6-Naphthyridone Derivative with Potent and Selective Anti-HIV Activity

Best in class: The naphthyridone scaffold was investigated in depth by synthesizing various analogues that were tested for their anti-HIV activity. This led to the identification of a very potent and nontoxic compound, NM13, as the most selective anti-HIV derivative ever obtained in the quinolone class of transcription inhibitors. It is the result of a powerful combination of the 1,6-naphthyridone nucleus and the C7 benzothiazolpiperazine group.



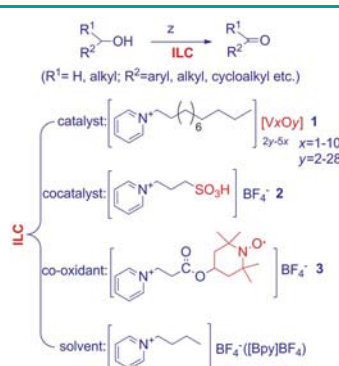
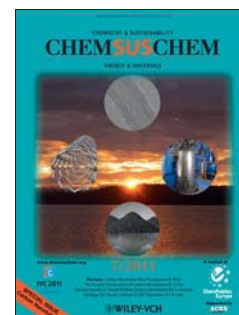
ChemSusChem
DOI: 10.1002/cssc.201100002

Solar Cells

L. Li, Y. Hao, X. Yang,* J. Zhao, H. Tian, C. Teng, A. Hagfeldt, L. Sun*

A Double-Band Tandem Organic Dye-sensitized Solar Cell with an Efficiency of 11.5 %

Illustrious pair: A tandem solar cell employs a front sub-cell with a ZrO₂-doped nanostructured TiO₂ and an organic dye to harvest 400–750 nm sunlight and a back sub-cell with another organic dye and a normal TiO₂ electrode to capture 500–800 nm sunlight. A high *V*_{OC} and *J*_{SC} are achieved in the visible region of the solar spectrum, and at the same time to near-IR light is harvested.



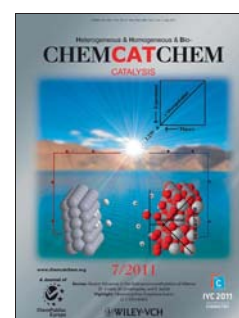
ChemCatChem
DOI: 10.1002/cctc.201000401

Ionic Liquids

S.-S. Wang, Z. Popović, H.-H. Wu,* Y. Liu*

A Homogeneous Mixture Composed of Vanadate, Acid, and TEMPO Functionalized Ionic Liquids for Alcohol Oxidation by H₂O₂

It's cocktail hour: The ionic liquid compositions (ILCs) composed of **1**, **2**, **3**, and [Bpy]BF₄ proved to be an efficient catalytic system for the oxidation of a wide range of alcohols by H₂O₂. With the aid of **2** and **3**, **1** in [Bpy]BF₄ could be recycled for six runs without loss in activity. The role of **2** was to promote the formation of the active peroxo V^V species, which are responsible for substrate activation. The role of **3** was in the regeneration of **1**.



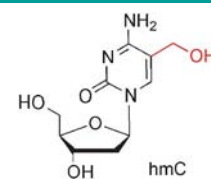


Epigenetics

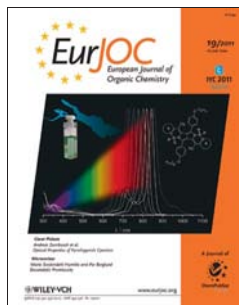
M. Münzel, D. Globisch, T. Carell*

5-Hydroxymethylcytosine, the Sixth Base of the Genome

The sixth sense: 5-Hydroxymethylcytosine (hmc) was recently recently discovered as a new constituent of mammalian DNA, and besides 5-methylcytosine it is the only other modified base in higher organisms. This discovery shows that methylation of cytosine is not a final step in gene silencing, but that further functionalization of the methyl group occurs.



Angew. Chem. Int. Ed.
DOI: [10.1002/anie.201101547](https://doi.org/10.1002/anie.201101547)

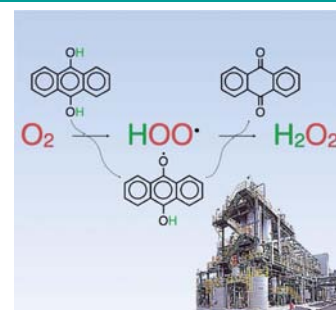


Anthraquinone Process

T. Nishimi, T. Kamachi, K. Kato, T. Kato, K. Yoshizawa*

Mechanistic Study on the Production of Hydrogen Peroxide in the Anthraquinone Process

Reaction mechanisms for the autoxidation step of the anthraquinone process have been studied. The proposed mechanism is that the hydrogen atom of anthrahydroquinone is abstracted by dioxygen to produce a hydroperoxide radical, followed by subsequent hydrogen atom abstraction, leading to the formation of hydrogen peroxide and anthraquinone.



Eur. J. Org. Chem.
DOI: [10.1002/ejoc.201100300](https://doi.org/10.1002/ejoc.201100300)

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