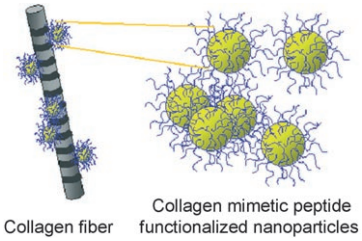
Nanobiotechnology

*X. Mo, Y. An, C.-S. Yun, S. M. Yu**

Nanoparticle-Assisted Visualization of Binding Interactions between Collagen Mimetic Peptide and Collagen Fibers



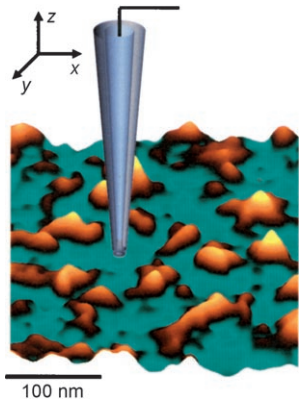
Collagen treatment: Gold nanoparticles conjugated with collagen mimetic peptide (CMP) form stable adducts with collagen fibers (see picture) that are visible by transmission electron microscopy, thereby allowing the study of binding interactions between CMPs and type I collagen fibers. This labeling technique may potentially be used to identify structural abnormalities in collagen fibers that are related to diseases.

Angew. Chem. Int. Ed.
DOI: **10.1002/anie.200504529**

Membrane Protein Imaging

A. I. Shevchuk, G. I. Frolenkov, D. Sánchez, P. S. James, N. Freedman, M. J. Lab, R. Jones, D. Klenerman, Y. E. Korchev**

Imaging Proteins in Membranes of Living Cells by High-Resolution Scanning Ion Conductance Microscopy



Do not touch! The surface of a living cell is soft and responsive and therefore high-resolution imaging of the cell membrane has not been possible to date. Now noncontact imaging of protein complexes in the plasma membrane of living cells has been demonstrated (see picture) and has been used to follow the cells' structural reorganization. This breakthrough opens up a wealth of new experiments in membrane and cell biology.

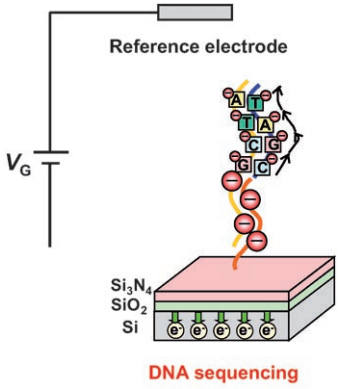
Angew. Chem. Int. Ed.
DOI: **10.1002/anie.200503915**

DNA Sequencing

*T. Sakata, Y. Miyahara**

DNA Sequencing Based on Intrinsic Molecular Charges

In charge: Label-free DNA sequencing can be performed by using a field-effect transistor to detect the intrinsic molecular charges (see picture). Oligonucleotide probes are immobilized on the Si_3N_4 gate surface, and complementary target DNA is hybridized with them. The change in charge density on the Si_3N_4/SiO_2 gate caused by each single-base extension can be measured as a shift in the threshold voltage. V_G = gate voltage.

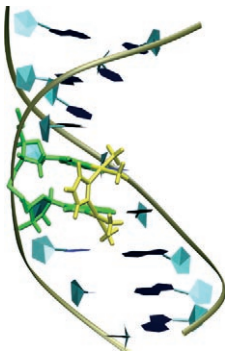


Angew. Chem. Int. Ed.
DOI: **10.1002/anie.200503154**

DNA Binding

S. Teletchéa, S. Komeda, J.-M. T'euben, M.-A. Elizondo-Riojas, J. Reedijk, J. Kozelka**

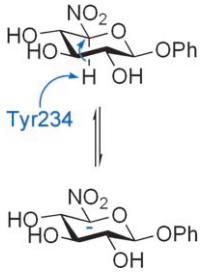
A Pyrazolato-Bridged Dinuclear Platinum(II) Complex Induces Only Minor Distortions upon DNA-Binding



Does bending or unwinding of the DNA double-helix convey activity to platinum antitumor drugs? The cytotoxic $[(cis\text{-}\{Pt(NH_3)_2\})_2(\mu\text{-}OH)(\mu\text{-}pz)]^{2+}$ dinuclear pyrazolato(pz)-bridged complex is shown here to bind to a GG sequence and cause an unwinding of about 15° but virtually no bending (see picture). This is the first cytotoxic platinum complex to be successfully designed by envisioning the structural consequences of its binding to DNA.

Chemistry: A European Journal
DOI: **10.1002/chem.200500923**

Enzyme Mechanism



Two in one: Chondroitin AC lyase from *Flavobacterium heparinum* performs a *syn* elimination in order to degrade its substrate. This enzyme also catalyses proton transfer to and from a novel 5-nitro sugar. Kinetic analysis of this process has provided evidence that a tyrosine residue acts both as the base and acid catalyst in this β-elimination mechanism (see scheme).

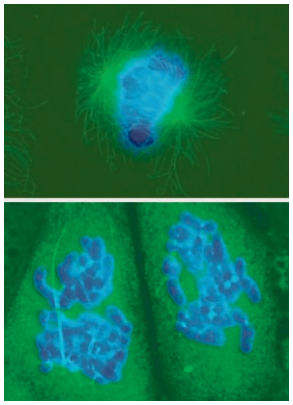
*C. S. Rye, A. Matte, M. Cygler, S. G. Withers**

An Atypical Approach Identifies TYR234 as the Key Base Catalyst in Chondroitin AC Lyase

ChemBioChem
DOI: **10.1002/cbic.200500428**

Antitumor Agent

Microtubular breakdown. The antimitotic peptide, tubulysin, induces decay of microtubules in cell-free systems and in tumor cell lines. Instead of a mitotic spindle (top) dividing cells show only residues of a microtubular network (bottom). Tubulysin could be a new antitumor drug candidate.

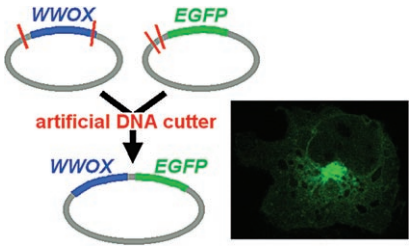


M. W. Khalil, F. Sasse, H. Lünsdorf, Y. A. Elnakady, H. Reichenbach*

Mechanism of Action of Tubulysin, an Antimitotic Peptide from Myxobacteria

ChemBioChem
DOI: **10.1002/cbic.200500421**

Molecular Biology



An artificial restriction DNA cutter (ARCUT) has been used for PCR-free construction of a fusion protein. The reading frames of two genes were adjusted with respect to each other, and all DNAs were kept intact throughout the manipulation. The constructed fusion protein was successfully expressed in mammalian cells (Cos-7).

*Y. Yamamoto, A. Uehara, A. Watanabe, H. Aburatani, M. Komiyama**

Chemical-Reaction-Based Site-Selective DNA Cutter for PCR-Free Gene Manipulation

ChemBioChem
DOI: **10.1002/cbic.200500402**

On these pages, we feature the excellent work in chemistry that has been recently reported in our sister journals *ChemBioChem*, *Angewandte Chemie*, or *Chemistry—A European Journal*.

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