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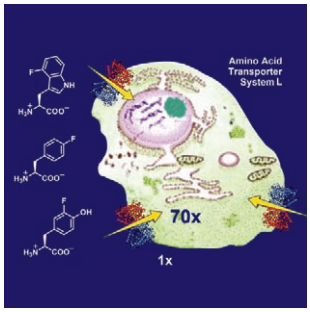
COVER PICTURE

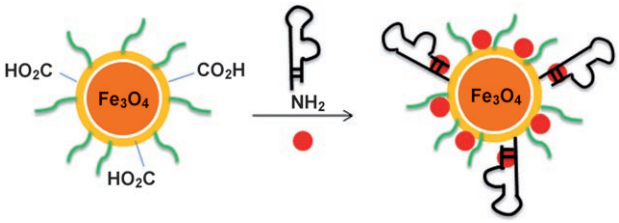


The cover picture shows fluorinated aromatic amino acids that exhibit cytostatic activity on tumor cells. These amino acid derivatives are taken up by the cells via the amino acid transport system L. This active process results in a 70-fold accumulation of the fluorinated aromatic amino acids within the cell relative to the surrounding media, which explains why they are biologically active with quite low EC_{50} values. For details, see the Full Paper by N. Budisa, H. Lilie, et al. on p. 1449 ff.

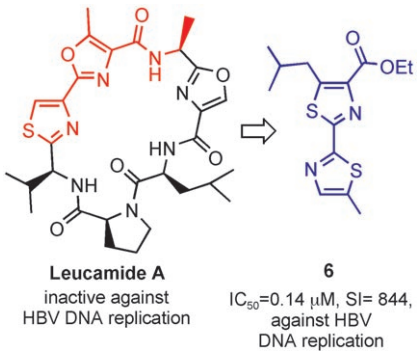
NEWS

MINIREVIEWS

COMMUNICATIONS

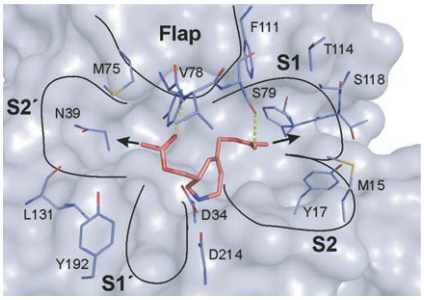


Multifunctional superparamagnetic iron oxide nanoparticles: Herein we report a novel, targeted, iron oxide nanoparticle for combined prostate cancer imaging and therapy. By conjugating an aptamer to a thermally stable iron oxide nanoparticle, we have demonstrated that bioconjugates can detect prostate cancer cells with high sensitivity and specificity. Furthermore, the bioconjugates can be used to deliver targeted chemotherapy.

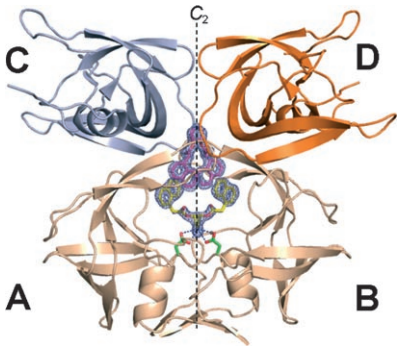


Non-nucleoside tandem derivatives: Potent hepatitis B antiviral activity is established for 2,2′-bisthiazole heterocyclic derivatives. The core structure of these compounds differs from those of known non-nucleoside hepatitis B antiviral agents, constituting a new direction in hepatitis B virus drug development.

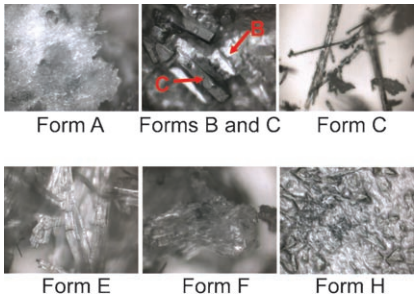
FULL PAPERS



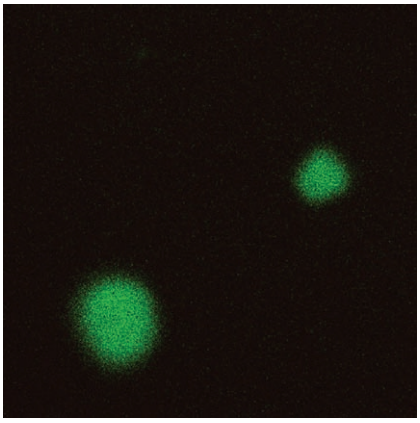
Computer-aided inhibitor design: Nonpeptidic inhibitors of the aspartic proteases plasmepsin II and IV were developed that bear a tetrahydro-1*H*-azepine scaffold. Structural modifications of the initial lead in a consecutive design cycle led to inhibitors with affinities in the nanomolar range. The K_i values are generally in good agreement with the design hypothesis, thus supporting the predicted binding mode for both plasmepsins.



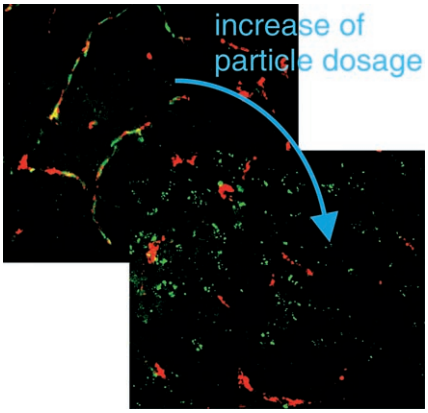
Although HIV-1 protease exhibits high flexibility, all approved drugs target virtually the same protein conformation. Herein we report novel symmetric pyrrolidine-based inhibitors addressing the open-flap conformation of the protease. The co-crystal structure of one derivative provides a valuable starting point for further development of HIV protease inhibitors.



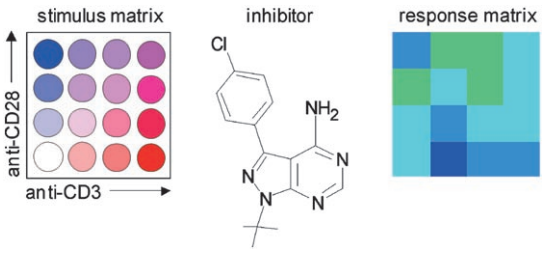
Sodium valproate, the active ingredient of a group of valproate-based anticonvulsants, can be present in eight forms in the solid state, including four solvates with valproic acid. The pronounced hygroscopicity of some of the forms is inherent to the loose crystal packing, which is directed by the symmetric shape of the compound. Partial or complete stabilization can be achieved by thermal/evacuation treatment and crystallization with valproic acid.



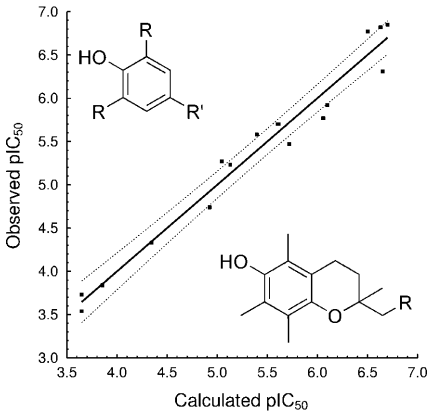
Lighting the way: A new folic acid based bioconjugate selectively delivers Re^{I} to the folate-receptor-positive ovarian tumor cell line A2780/AD (shown). The compounds have significant cytotoxicity, and this is explored in terms of DNA interactions and is contrasted with cisplatin controls.



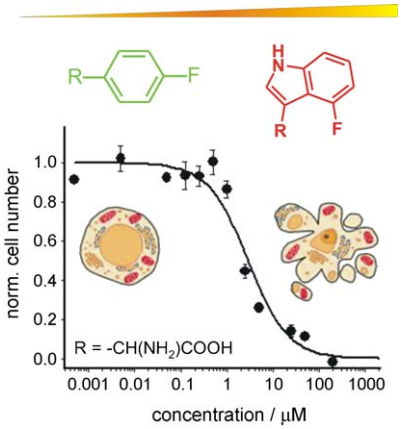
Enter the brain. Fluorescent polysorbate 80 coated PBCA nanoparticles, prepared in miniemulsion, were investigated for their capacity to permeate blood–tissue barriers in vivo and in vitro. Direct evidence for a concentration-dependent permeation of the blood–brain barrier as well as the blood–retina barrier was obtained.



2+2≠4. Inside the body, cells are simultaneously exposed to a multitude of various stimuli. To address the relevance of cellular signalling networks for drug design, cells were exposed to a matrix of combinations of two stimuli, and the cellular responses were recorded in the absence and presence of pharmacological inhibitors.



Antioxidants have attracted a great deal of attention as therapeutic agents for a number of pathologies. The relationships between reactivity descriptors, lipophilicity, and antioxidant activity have been explored on a recently reported series of NO-donor phenols. QSAR equations have been derived which shed light on the possible mechanisms of reaction with radicals in different environments.



Fluorinated aromatic amino acids as antitumor agents: The cellular uptake of fluorinated derivatives of tryptophan, tyrosine and phenylalanine via the active amino acid transport system L resulted in a 70-fold intracellular accumulation. These analogues effectively and irreversibly inhibited MCF-7 tumor cell culture growth with IC_{50} values in the low micromolar range, indicating that these substances might represent new cytostatic drugs for certain tumor types.

Supporting information on the WWW (see article for access details).

A video clip is available as Supporting Information on the WWW (see article for access details).

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BOOKS

SERVICE

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