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Angewandte Chemie International Edition	264	Daryl Staveness
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Next Due Date: October 15th 2014

Instructions for Authors (*Volume 39)*

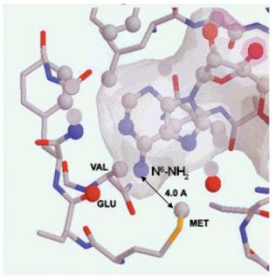
Identify articles to abstract in the journals you have been assigned. Try to pick things that the group (or specific subgroups) would like to read or should be aware of. This does not need to be limited to chemistry! If you encounter interesting pieces of media elsewhere (The Economist being a recent example) don't hesitate to let the group know. If you are splitting a journal with another group member, talk with him/her to be sure you are not reviewing redundantly. If you are not able to cover your journal for some reason, get someone to cover it for you—as if it were your group job.

Create an Abstract

Abstract submissions are usually prepared using ChemDraw. The editors of the *Lit Review* strongly encourage the copying of graphical material from PDF files and wish to point out the following. Graphics stored in PDF files are typically of postscript or >300 dpi quality. When an image is copied into a ChemDraw document, a screen snapshot is taken, and the image is captured at the present screen resolution. If the PDF file is being viewed zoomed-in, this typically results in the transfer of a high quality image. If the PDF is being viewed zoomed-out, a low quality image typically results. Text can be copied from a PDF file and pasted as text using the text select or column select tool. Once pasted, this text behaves as if it were input from the keyboard.

Include a brief textual summary of the article; an example of a completed abstract is shown below. The list of topics and subgroups on the right is useful to highlight which subgroups should pay attention to your abstract and roughly what kind of chemistry the article contains.

Please email the files to sryckbos@stanford.edu. Late abstracts will be included in the Lit Review for the following month**. PCs please send .pdf and macs please send .cdx files.**

<table>
<tr><td colspan="2">Citation: Abeyweera, T.P.; Rotenberg, S.A. Biochemistry 2007, 46, 2364-2370</td></tr>
<tr><td>Design and Characterization of a Traceable Protein Kinase C-alpha
Protein kinase CR (PKCR) is a critical component of pathways that govern cancer-related phenotypes such as invasion and proliferation. Proteins that serve as immediate substrates for PKCR offer potential targets for anticancer drug design. To identify specific substrates, a mutant of PKCR (M417A) was constructed at the ATP binding site such that it could bind a sterically large ATP analogue derivatized through the N6 amino group of adenosine (1ç-32Pl-N6-phenyl-ATP). Because this analogue could be utilized by the mutant kinase but not by wild-type PKCR (or presumably other protein kinase) to phosphorylate peptide or protein substrates, 32P-labeled products were the direct result of the mutant PKCR.
  </td><td>bioorganic
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Drug Deliv.</td></tr>
</table>

<table>
<tr><td colspan="2">Citation: Dictionary.com (search term = "mook")</td></tr>
<tr><td>For those of you who always wanted to know what it meant....
mook Pronunciation Key (mk) n. Slang
An insignificant or contemptible person.</td><td>methods
synthesis</td></tr>
</table>

DON'T BE A MOOK!

Lit Review MOOKS include those who:

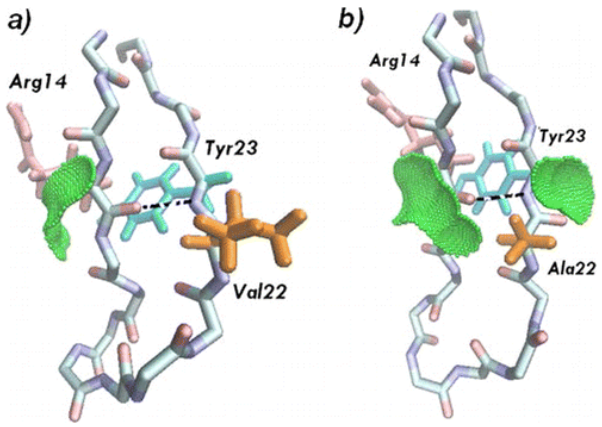
- fail to submit their abstracts in a timely fashion (or at all), or
- claim there was nothing to abstract in *JACS*, *JOC*, *Org. Lett.*, etc.

Penalties for being a Lit Review MOOK:

- You will get last choice when it's time to pick new journals.

Citation: Ji, C., et. al. Acc. Chem. Res., 2014, 47 (9), pp 2795–2803

Some Practical Approaches to Treating Electrostatic Polarization of Proteins



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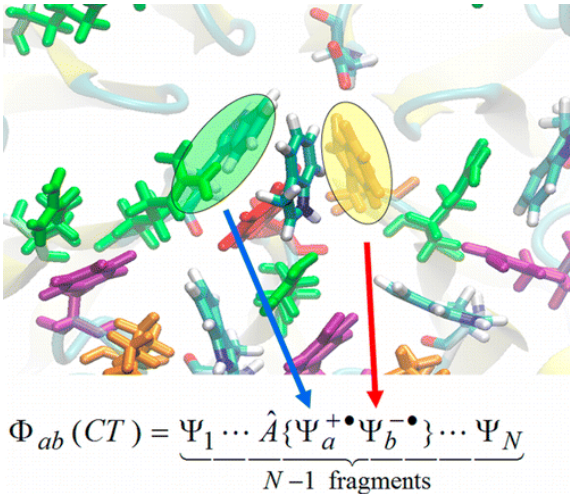
Drug Deliv.
Prostratin

Citation: Gao, J., et. al. Acc. Chem. Res., 2014, 47 (9), pp 2837–2845

Explicit Polarization: A Quantum Mechanical Framework for Developing Next Generation Force Fields



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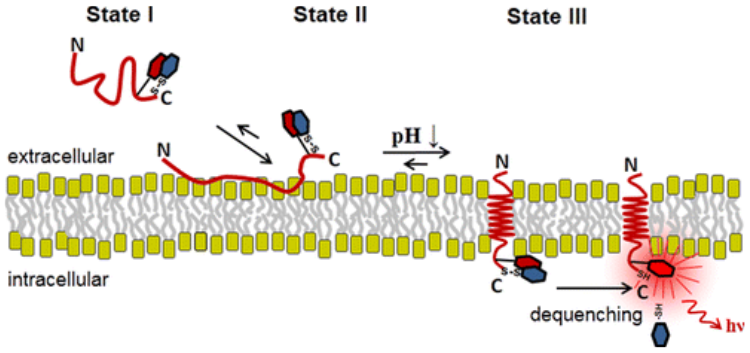
Citation: Karabadzhak, A.G.; *et al. ACS Chem. Biol.* **2014,** *Article ASAP.*

pHLIP-FIRE, a Cell Insertion-Triggered Fluorescent Probe for Imaging Tumors Demonstrates Targeted Cargo Delivery *In Vivo*



pHLIP peptides with a fluorophore-quencher pair insert across cell membranes in acidic tissues. A pair member is release by disulfide cleavage after insertion, resulting in dequenching of the probe.

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Citation: Vickers, C.J.; Gonzalez-Paez, G.E.; Wolan, D.W. *ACS Chem. Biol.,* **2014,** *Article ASAP.*

Discover of a Highly Selective Caspase-3 Substrate for Imaging Live Cells

Aberrant caspase activity has been implicated in the progression of several diseases, including neurodegenerative disorders, cancer, cardiovascular disease, and sepsis. Unfortunately, the existence of 11 functional human caspases, with overlapping substrate specificities, confounds the ability to confidently assign one or more isoforms to biological phenomena. Herein the authors characterize a first-in-class FRET substrate that is selectively recognized by active caspase-3 over other initiator and executioner caspases. We further apply this substrate to specifically image caspase-3 activity in live cells undergoing apoptosis.

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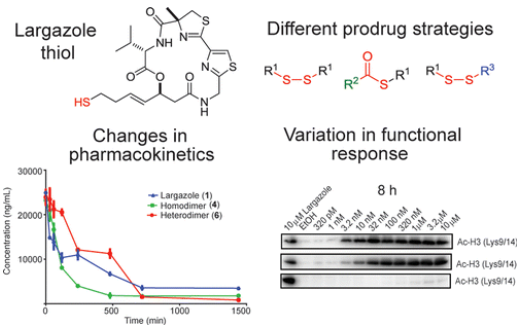
Citation: Salvador, *et al. ACS. Med. Chem. Lett.* **2014,** *5,* 905-910.

Modulation of Activity Profiles for Largazole-Based HDAC Inhibitors through Alteration of Prodrug Properties



Largazole employs a unique prodrug strategy, via a thioester moiety, to liberate the bioactive species largazole thiol. This paper reports alternative prodrug strategies to modulate the pharmacokinetic and pharmacodynamics profiles of new largazole-based compounds. The in vitro effects of largazole analogues on cancer cell proliferation and enzymatic activities of purified HDACs were comparable to the natural product. However, in vitro and in vivo histone hyperacetylation in HCT116 cells and implanted tumors, respectively, showed differences, particularly in the onset of action and oral bioavailability. These results indicate that, by employing a different approach to disguise the ¡°warhead¡± moiety, the functional consequence of these prodrugs can be significantly modulated

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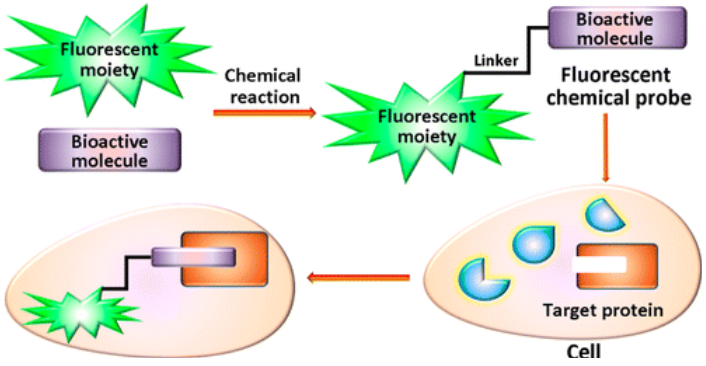
Citation: Wu, *et al. ACS. Med. Chem. Lett.* **2014,** *5,* 911-914.

Fluorescent Probes for Subcellular Localization during Osteclast Formation

Labeling of a small bioactive molecule with fluorescent probe has been becoming an essential tool in cell biology to reveal the subcellular distribution and the location of a molecular target.



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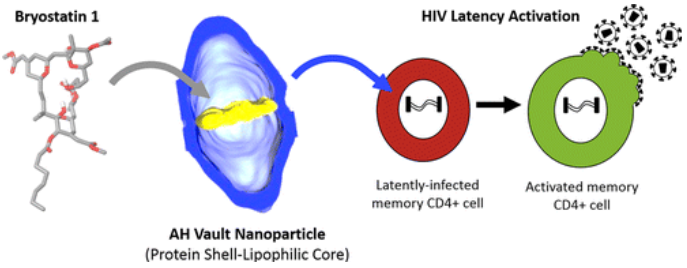
Citation: Buehler, D., et. al. ACS Nano, 2014, 8 (8), pp 7723–7732

Bioengineered Vaults: Self-Assembling Protein Shell–Lipophilic Core Nanoparticles for Drug Delivery



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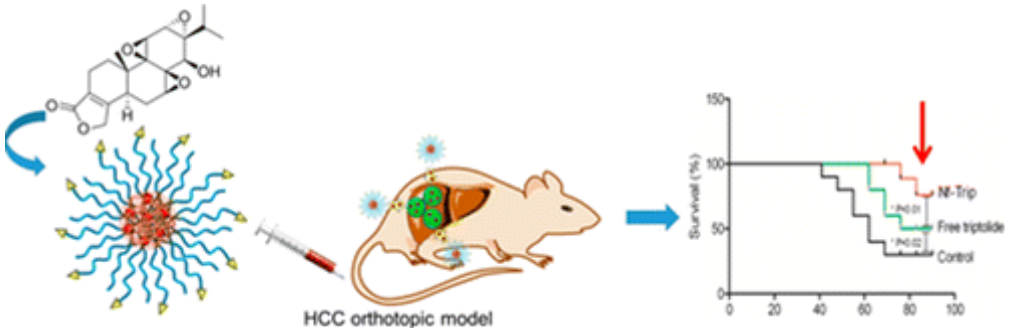
Citation: Ling, D., et. al. ACS Nano, 2014, 8 (8), pp 8027–8039

pH-Sensitive Nanoformulated Triptolide as a Targeted Therapeutic Strategy for Hepatocellular Carcinoma



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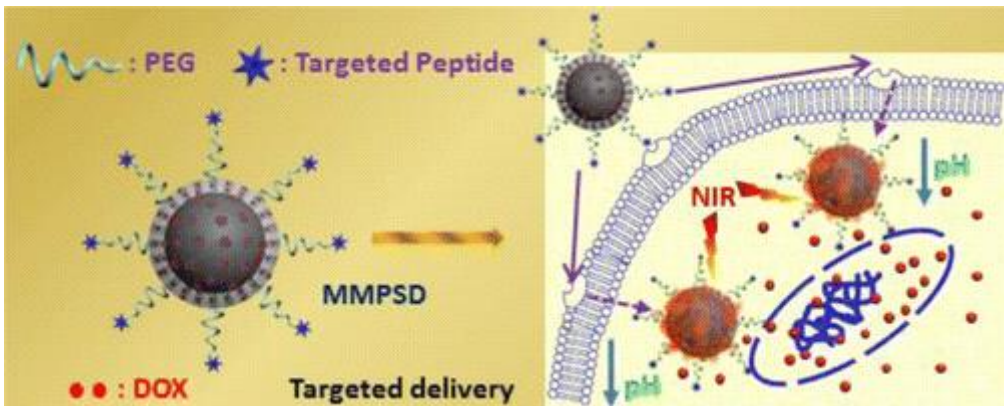
Citation: Wang, Y., et. al. ACS Nano, 2014, 8 (8), pp 7870–7879

Synthesis of Core–Shell Graphitic Carbon@Silica Nanospheres with Dual-Ordered Mesopores for Cancer-Targeted Photothermochemotherapy



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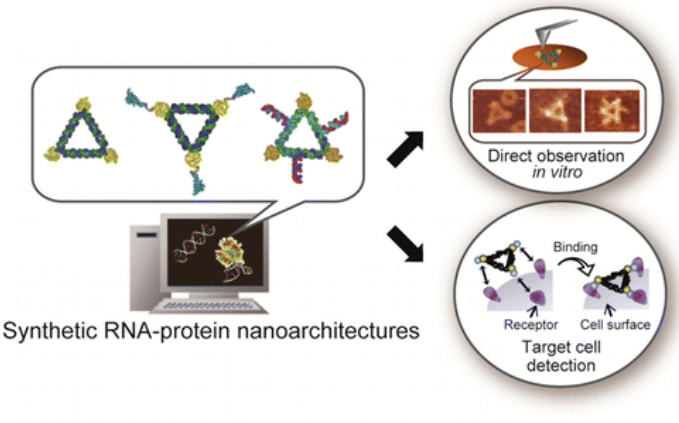
Citation: Osaka, E., ACS Nano, 2014, 8 (8), pp 8130–8140

Engineering RNA–Protein Complexes with Different Shapes for Imaging and Therapeutic Applications



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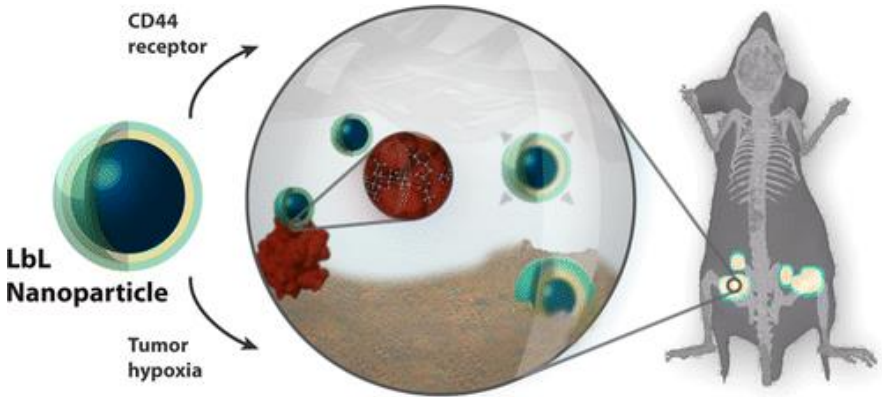
Citation: Dreaden, E.C., et. al. ACS Nano, 2014, 8 (8), pp 8374–8382

Bimodal Tumor-Targeting from Microenvironment Responsive Hyaluronan Layer-by-Layer (LbL) Nanoparticles



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Hybrid
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Citation: Weers, J. *Adv. Drug Deliv. Rev.* **2014,** *in press.*

Inhaled antimicrobial therapy - Barriers to effective treatment

Inhaled antibiotics dramatically improve targeting of drug to the site of respiratory infections, while simultaneously minimizing systemic exposure and associated toxicity. The high local concentrations of antibiotic may enable more effective treatment of multi-drug resistant pathogens. This review explores barriers to effective treatment with inhaled antibiotics. In addition, potential opportunities for improvements in treatment are reviewed.

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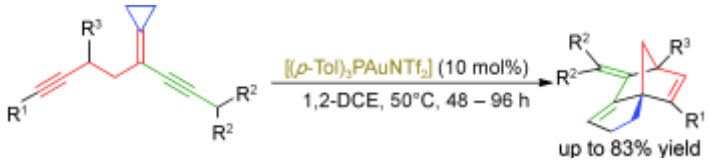
Citation: Gagne, M.; et al. *Angew. Chem. Int. Ed.* **2014**, *53 (30)*, 7904-7907.

Gold-Catalyzed Diastereoselective Cycloisomerization of Alkylidene-Cyclopropane-Bearing 1,6-Diynes

Cationic gold catalysts can mediate the highly exothermic (˜60 kcal?mol-1) cycloisomerization of 1,6-diynes bearing an alkylidene cyclopropane moiety. This diastereoselective methodology efficiently generates 1,2-trimethylenenorbornanes, an important building block for abiotic targets and sesquiterpene natural products. DCE=1,2-dichloroethane, Tf=trifluoromethanesulfonyl, Tol=Tolyl.



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Citation: Gracias, D.; et al. *Angew. Chem. Int. Ed.* **2014**, *53 (31)*, 8045-8049.

Stimuli-Responsive Theragrippers for Chemomechanical Controlled Release

Thermoresponsive polymeric grippers for controlled drug release ("theragrippers") close spontaneously above 32?°C and grip onto tissue. They were loaded with drugs mesalamine and doxorubicin, which eluted for up to 7 days. Theragrippers show improved site-specific delivery and offer a novel strategy for sustained release with immediate applicability in the gastrointestinal tract.

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Citation: Grzybowski, B.; et al. *Angew. Chem. Int. Ed.* **2014**, *53 (31)*, 8108-8112.

Organic Chemistry as a Language and the Implications of Chemical Linguistics for Structural and Retrosynthetic Analyses

Chemistry is a language: Formal analysis confirms Lehn's analogy between chemistry and a natural language. English language patterns and the structural motifs of organic molecules follow the same statistics. The methods of computational linguistics can thus be applied to organic molecules to identify characteristic, information-rich patterns defining symmetry/repeat sub-units and bonds amenable to retrosynthetic disconnections.

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Gnid/ Kirk
Laulimalide
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Citation: Feringa, B.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (33)*, 8682-8686.

Photocaging of Carboxylic Acids: A Modular Approach

The multicomponent Passerini reaction is used for the preparation of photocaged carboxylic acids, both in dichloromethane and water. Judicious choice of the aldehyde allows tuning of the deprotection wavelength and the preparation of orthogonally protected products. The isocyanide component may be used for immobilization on a solid support or introduction of either a reactive tag or a photosensitizer.

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Gnid/ Kirk
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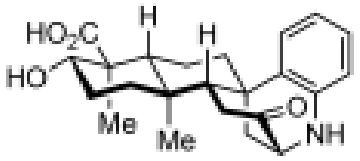
Pharma

Citation: Li, A.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (34)*, 9012-9016.

Bioinspired Total Synthesis of Sespenine

The first total synthesis of sespenine has been accomplished by using a bioinspired aza-Prins/Friedel–Crafts/retro Friedel–Crafts cascade reaction as the key step.



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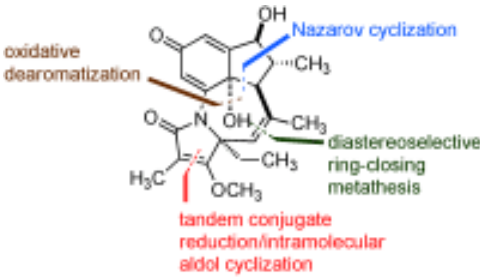
Drug Deliv.

Citation: Hoveyda, A.; Frontier, A.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (35)*, 9334-9338.

Synthesis of (±)-Tetrapetalone A-Me Aglycon

In the synthesis of (±)-tetrapetalone A-Me aglycon the key bond-forming reactions include Nazarov cyclization, a ring-closing metathesis promoted with complete diastereoselectivity by a chiral molybdenum-based complex, tandem conjugate reduction/intramolecular aldol cyclization, and oxidative dearomatization.



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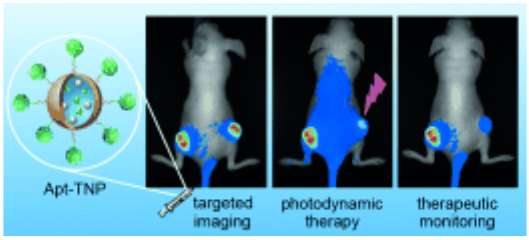
Laulimalide
Drug Deliv.

Citation: Yang, C.J.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (36)*, 9544-9549.

A Multifunctional Nanomicelle for Real-Time Targeted Imaging and Precise Near-Infrared Cancer Therapy

A lysosome-aimed multifunctional nanomicelle (Apt-TNP) was developed by integrating a target-cell-specific aptamer, a pH-activatable fluorescent probe, and a near-infrared photosensitizer. Apt-TNP enables simultaneous cancer imaging, photodynamic therapy, and real-time self-feedback of therapeutic efficacy.



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REDOR
Bryo
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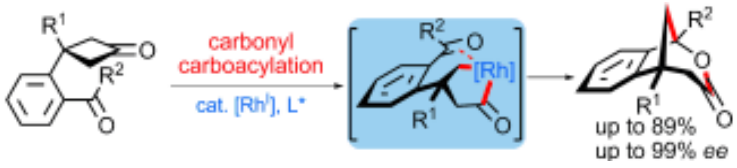
Hybrid
DD
PKC

Citation: Cramer, N.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (36)*, 9640-9644.

Highly Enantioselective Rhodium(I)-Catalyzed Carbonyl Carboacylations Initiated by C-C Bond Activation

Asymmetric carbonyl carboacylations of aldehydes and ketones provide access to functionalized bicyclic lactones. The rhodium(I)-catalyzed transformation is induced by an enantiotopic C-C bond activation of a cyclobutanone and the transient rhodacyclic adds across an appended carbonyl group to deliver the lactones in excellent enantioselectivities



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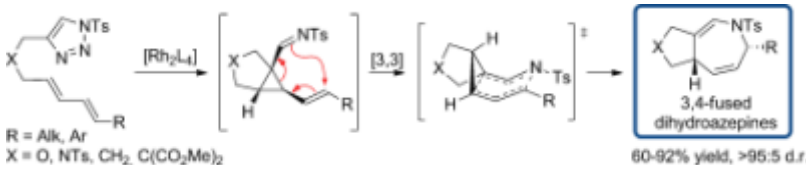
Prostratin

Citation: Sarpong, R.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (37)*, 9904-9908.

Expedient Synthesis of Fused Azepine Derivatives Using a Sequential Rhodium(II)-Catalyzed Cyclopropanation/1-Aza-Cope Rearrangement of Dienyltriazoles

A general method for the formation of fused dihydroazepines from 1-sulfonyl-1,2,3-triazoles bearing a tethered diene is reported. The process involves an intramolecular cyclopropanation of an a-imino rhodium(II) carbenoid, leading to a transient 1-imino-2-vinylcyclopropane intermediate which rapidly undergoes a 1-aza-Cope rearrangement to generate the products in moderate to excellent yields. Ts=4-toluenesulfonyl.



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Laulimalide
Drug Deliv.

Citation: Rueping, M.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (38)*, 10228-10231.

Combining Rhodium and Photoredox Catalysis for C-H Functionalizations of Arenes: Oxidative Heck Reactions with Visible Light

Much milder and environmentally friendly reaction conditions can be used for oxidative Heck reactions through the combined use of rhodium and redox catalysis. This allows the rhodium complex to be catalytically regenerated. A broad range of substrates was tolerated in the reaction and afforded different amides in good to very good yields.

bioorganic
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Bryo
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Gnid/ Kirk
Laulimalide
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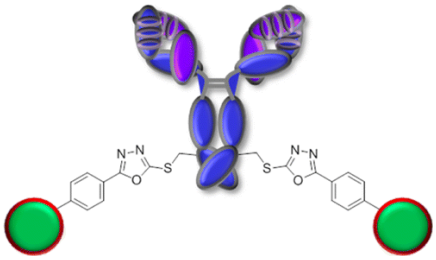
Citation: Patterson, J. T., et al. *Bioconjugate Chem*. **2014**, 25, 1402-1407

Improving the Serum Stability of Site-Specific Antibody Conjugates with Sulfone Linkers



Antibody-drug conjugates allow targeted delivery of cytotoxic drug molecules, potentially increasing drug efficacy and limiting side effects. Despite this potential advantage, the technology still requires fine-tuning. The authors here explore the use of sulfone linkers over the more conventional maleimide linkers to attach small molecules to antibodies. Using fluorescein as a model small molecule, they showed that sulfone-linked antibodies showed improved stability in human serum. Further studies will involve attaching cytotoxic drug molecules via this new strategy.

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Citation: Ma, X., et al. *Bioconjugate Chem*. **2014**, 25, 1412-1420

Intracellular Delivery of Antisense Peptide Nucleic Acid by Fluorescent Mesoporous Silica Nanoparticles

Peptide nucleic acid (PNA) molecules have shown utility in silencing key cell-surivival genes such as Bcl-2, thus enhancing the cytotoxicity effects of other drugs used synergistically. Unfortunately, antisense PNAs have poor cell permeability, necessitating the development of powerful drug delivery systems. The authors have made use of mesoporous silica nanoparticles (MSNPs) to deliver PNAs successfully into cells. PNAs were conjugated via amidation of carboxylic acid groups on the surface of the nanoparticle, in turn attached to the particle by disulfide linkages. Intracellular release of the PNA was redox-controlled via glutathione, and the authors observed successful silencing of Bcl-2.

bioorganic
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Citation: Patil, S. P., et al. *Bioconjugate Chem*. **2014**, 25, 1517-1525

Cancer-Specific Gene Silencing through Therapeutic siRNA Delivery with B Vitamin-Based Nanoassembled Low-Molecular-Weight Hydrogelators

Taking advantage of the fact that vitamins are overexpressed on the surfaces of cancer cells, the authors designed several siRNA delivery vehicles based on vitamin B scaffolds. These molecules formed hydrogels with small particles of siRNA condensed within them. Notably, one molecule/siRNA complex showed excellent transfectino ability. *Ex vivo* studies confirmed that this complex specifically delivered siRNA into cancer cells rather than healthy cells. The authors assert that this is the first instance of therapeutic siRNA delivery using vitamin-derived transporters.

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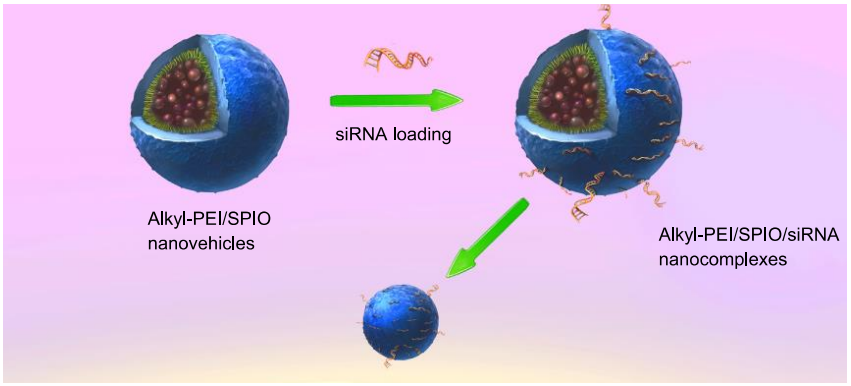
Citation: Biomaterials 2014, 35, 9495–9507.

Delivery of siRNA by MRI-visible nanovehicles to overcome drug resistance in MCF-7/ADR human breast cancer cells



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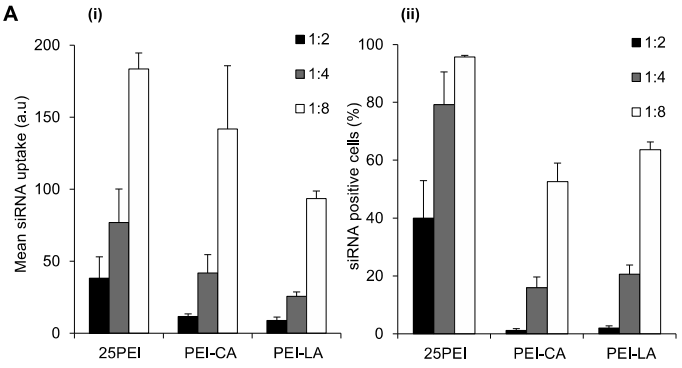
Citation: Biomaterials 2014, 35, 9382-9394.

siRNA therapy in cutaneous T-cell lymphoma cells using polymeric carriers



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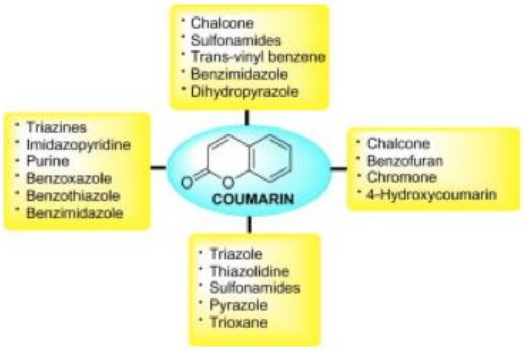
Citation: Sandhu, S.; et al. *Bioorg. Med. Chem*., 22, (2014) 3806-3814

Coumarin hybrids as novel therapeutic agents



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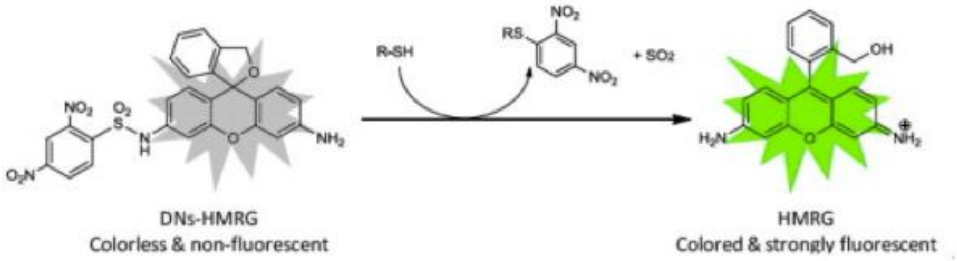
Citation: Yoshida, M.; et al. *Bioorg. Med. Chem. Lett*., 24, (2014) 4363-4366

A highly sensitive, cell-membrane-permeable fluorescent probe for glutathione



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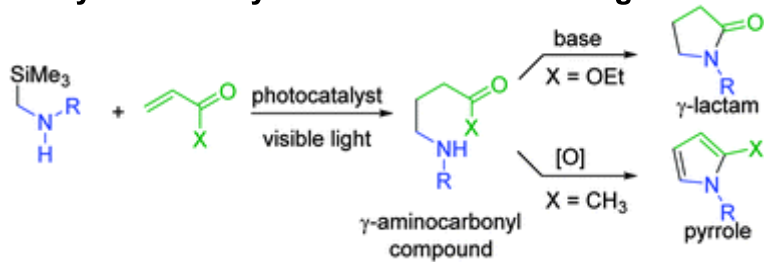
Citation: Nakajima, K; *et al. Chem. Commun.* **2014**, *50,* 8900.

Synthesis of nitrogen heterocycles via a-aminoalkyl radicals generated from a-silyl secondary amines under visible light irradiation



The authors utilized a-aminoalkyl radicals derived from a-silyl secondary amines in the light-mediated addition to a,ß-unsaturated carbonyl compounds. The resulting γ-aminocarbonyl compounds can then be converted into γ-lactams and pyrroles in a one-flask process

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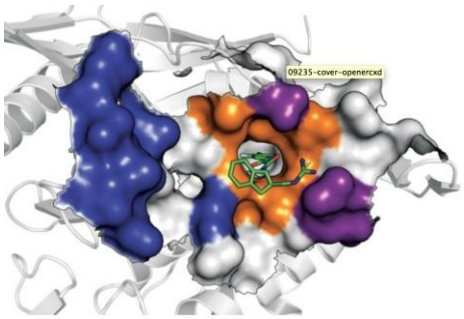
Citation: Halford, B. *C&EN.* **2014**, 92(35), 14-21.

Aiming For HIV's Weak Spot



Scientists seek ways to block the virus before it can infect a single cell

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Citation: Reisch, M. *C&EN.* **2014**, 92(37), 23-25.

Growing Profits With Microbes

Agriculture industry seizes on beneficial fungi and bacteria to help thwart disease and increase productivity

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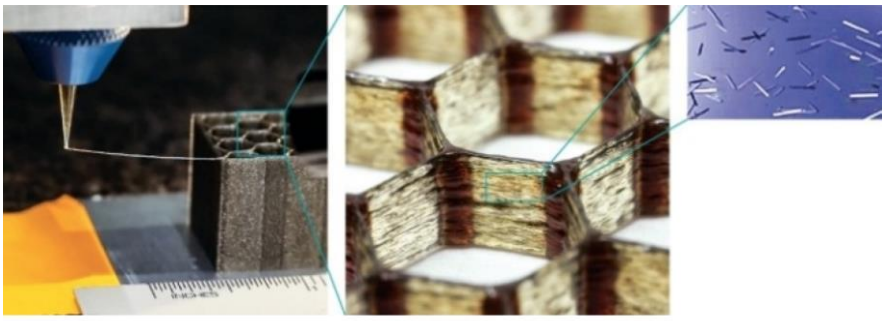
Citation: Davenport, M. *C&EN.* **2014**, 92(37), 32-34

The Case Against Sugar



ACS Meeting News: New materials are needed to bolster America's manufacturing portfolio

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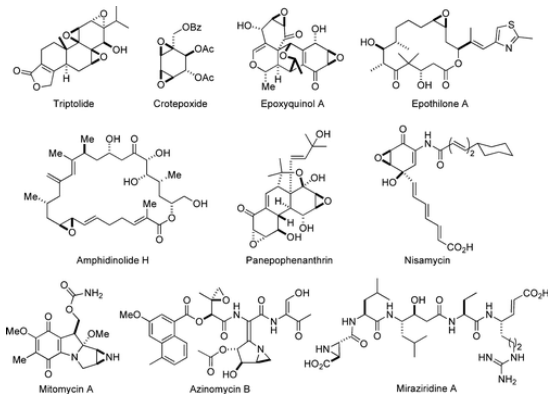
Citation: Zhu, Y.; Wang, Q.; Cornwall, R.G. Shi, Y.* Chem. Rev., 2014, 114 (16), pp 8199–8256

Organocatalytic Asymmetric Epoxidation and Aziridination of Olefins and Their Synthetic Applications



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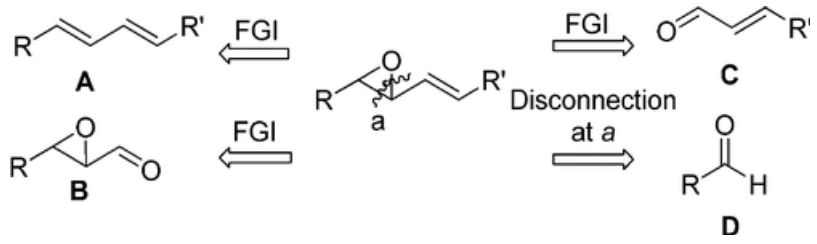
Citation: He, J.; Ling, J.; Chiu, P.* Chem. Rev., 2014, 114 (16), pp 8037–8128

Vinyl Epoxides in Organic Synthesis



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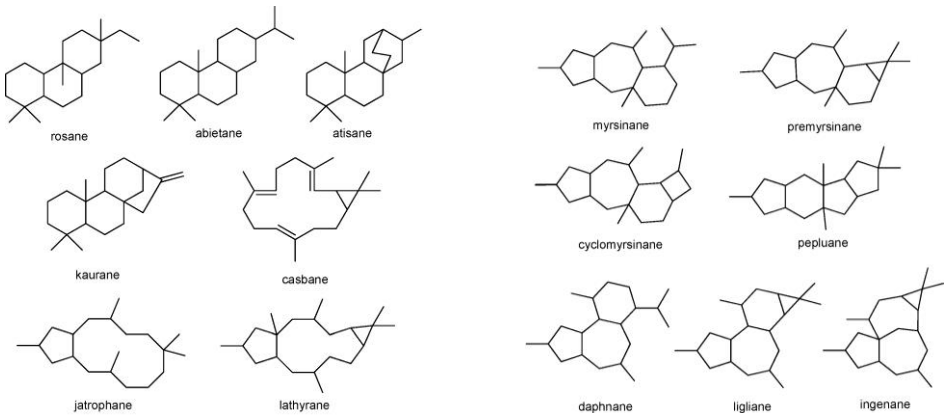
Citation: Vasas, A.; Hohmann, J.* Chem. Rev., 2014, 114 (17), pp 8579–8612

Euphorbia Diterpenes: Isolation, Structure, Biological Activity, and Synthesis (2008–2012)



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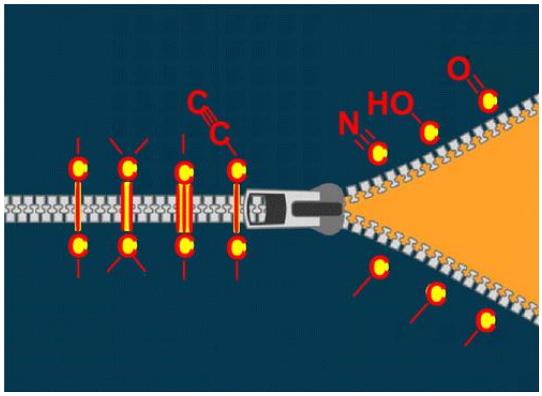
Citation: Chen, F.; Wang, T.; Jiao, N.* Chem. Rev., 2014, 114 (17), pp 8613–8661

Recent Advances in Transition-Metal-Catalyzed Functionalization of Unstrained Carbon–Carbon Bonds



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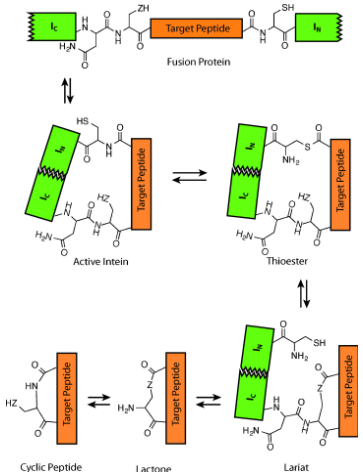
Citation: Lennard, *et al.* *Chem. Eur. J.* **2014,** 20, 10608-10614

Peptides Come Round: Using SICLOPPS Libraries for Early Stage Drug Discovery

Cyclic peptides are an emerging class of molecular therapeutics that are increasingly viewed as ideal backbones for modulation of protein¨Cprotein interactions. A split-intein based method, termed SICLOPPS, enables the rapid generation of genetically encoded cyclic peptide libraries of around a hundred million members. Here we review recent approaches using SICLOPPS for the discovery of bioactive compounds

SICLOPPS mechanism: The expressed fusion protein folds to form an active intein. An N-to-S acyl shift at the N-terminal intein junction produces a thioester that undergoes transesterification with a cysteine or serine side chain (Z=S or O) at the C-terminal intein junction to form a lariat intermediate. Further rearrangement of the lariat intermediate via an asparagine side chain liberates the cyclic product as a lactone, and an X-to-N acyl shift generates the thermodynamically favored lactam product.



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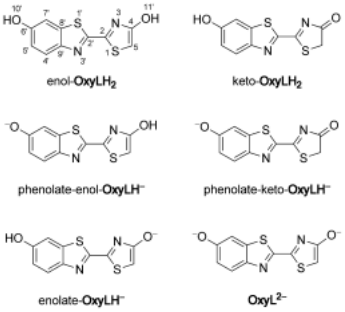
Citation: Maltsev, *et al.* *Chem. Eur. J.* **2014,** 20, 10782-10790

Vibrational Spectra of Chemical and Isotopic Variants of Oxyluciferin, the Light Emitter of Firefly Bioluminescence

The chemical complexity of oxyluciferin (OxyLH2), the light-emitting molecule in the bioluminescence of fireflies, originates from the possibility of keto/enol tautomerism and single or double deprotonation. This paper present detailed infrared spectroscopic analysis of OxyLH2 and several of its chemical isomers and isotopomers. It also provides accurate assignments of the solid-state and solution FTIR spectra of OxyLH2 based on comparison to six isotopically labeled variants ([2-13C]-OxyLH2, [3-15N]-OxyLH2, [4-13C]-OxyLH2, [5-13C]-OxyLH2, [2-13C]-OxyLH2, [3-15N]-OxyLH2), five closely related structural analogues, and theoretically computed spectra. The computed DFT harmonic vibrational force fields (B3LYP and M06 functionals with basis sets of varying flexibility up to 6-311++G**) reproduce well the observed shifts in the IR spectra of both isotopically labeled and structurally related analogues.



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Citation: Ceballo-Torres, *et al. Chem. Eur. J.* **2014,** 20, 10811-10828.

Anti-cancer Applications of Titanocene-Functionalised Nanostructured Systems: An Insight into Cell Death Mechanisms

A series of alkenyl-substituted titanocene compounds have been supported on the mesoporous silica-based material KIT-6. Both the titanocene compounds and the materials were tested in vitro against a wide variety of human cancer and normal cell lines. A very high cytotoxicity of the synthesised titanocene derivatives (IC50 values in the range of those described in the literature for the most active cytotoxic titanocene compounds), with selectivity towards cancer cell lines was observed. The cytotoxic activity of the materials is the highest reported to date for titanocene-functionalised materials. In addition, higher Ti uptake (from 4 to 23% of the initial amount of Ti) of the cells treated with materials was observed with respect to those treated with "free" titanocene derivatives (which gave Ti uptake values from 0.4 to 4.6% of the initial amount of Ti). Additional experiments with the titanocene derivatives and the functionalised materials revealed that changes to the morphological and functional dynamics of apoptosis occurred when the active titanocene species were incorporated into mesoporous materials. Also, these materials could induce programmed cell death in tumour cell populations by impairing the damaged DNA repair mechanisms and by upregulation of intrinsic and extrinsic apoptotic signalling pathways.

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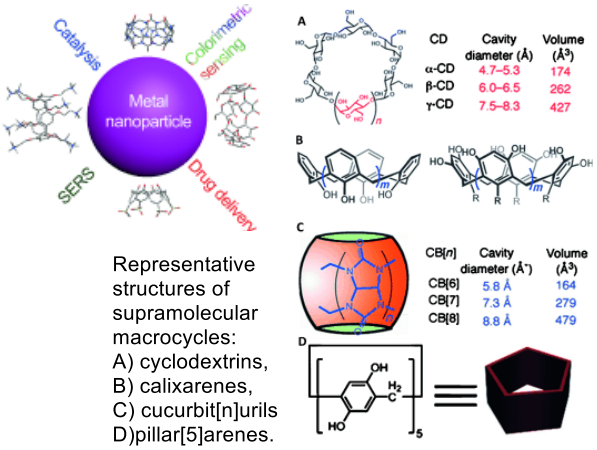
Citation: Montes-Garcia, *et al. Chem. Eur. J.* **2014,** 20, 10874-10883

Metal Nanoparticles and Supramolecular Macrocycles: A Tale of Synergy

This minireview summarizes current research on the combination of noble-metal nanoparticles and different families of supramolecular macrocycles (cyclodextrins, cucurbit[n]urils, calixarenes, and pillar[n]arenes), including synthesis of noble-metal nanoparticles with macrocycles acting as capping agents or/and reducing agents, as well as on the post-synthetic metal-nanoparticle modification with macrocycles. The strategies in which supramolecular chemistry is applied to direct the self-assembly of nanopaticles and formation of polymer composites.



Representative structures of supramolecular macrocycles: A) cyclodextrins, B) calixarenes, C) cucurbit[n]urils D)pillar[5]arenes.

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Citation: Tan, *et al. Chem. Eur. J.* **2014,** 20, 11276-11282.

Drug Encapsulation and Release by Mesoporous Silica Nanoparticles: The Effect of Surface Functional Groups

Mesoporous silica nanoparticles (MSNPs) have been widely used as drug carriers for stimuli-responsive drug delivery. Herein, a catalysis screening technique was adopted for analyzing the effects of chain length, terminal group, and density of disulfide-appended functional ligands on the surface of MSNPs on drug-loading capacity and glutathione-triggered drug-release kinetics. The ligand with an intermediate length (56¤1carbon atoms) and a bulky terminal group (cyclohexyl) that complexes with the¦Â-cyclodextrin ring showed the highest drug loading capacity as well as good release kinetics. In addition, decreasing the surface coverage of the functional ligands led to an enhancement in drug release. In vitro drug-delivery experiments on a melanoma cell line (B16-F10) by using the functionalized MSNPs further supported the conclusion. The results obtained may serve as a general guide for developing more effective MSNP systems for drug delivery.

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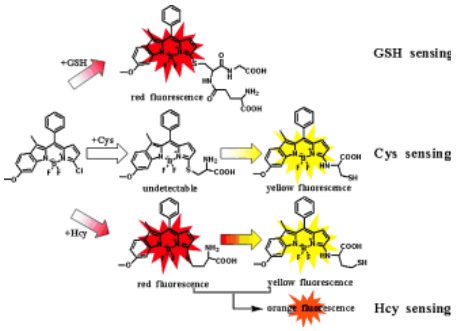
Citation: Wang, et *al. Chem. Eur. J.* **2014,** 20, 11471-11478.

Development of a Small Molecule Probe Capable of Discriminating Cysteine, Homocysteine, and Glutathione with Three Distinct Turn-On Fluorescent Outputs

The simultaneous discrimination of Cys, Hcy, and GSH by a single probe is still an unmet challenge. The design and synthesis of a small molecule probe MeO-BODIPY-Cl (BODIPY=boron dipyrromethene) is presented, which can allow Cys, Hcy, and GSH to be simultaneously discriminated on the basis of three distinct fluorescence turn-on responses. The probe reacts with these thiols to form sulfenyl-substituted BODIPY, which is followed by intramolecular displacement to yield amino-substituted BODIPY. The kinetic rate of the intramolecular displacement reaction determines the observed different sensing behavior. Therefore, the probe responds to Cys, Hcy, and GSH with fluorescence turn-on colors of yellow, yellow and red, and red, respectively. With this promising feature in hand, the probe was successfully used in imaging of Cys, Hcy and GSH in living cells.



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Citation: Wang, *et al. Chem. Eur. J.* **2014,** 20, 11826-11834.

Spindle-Like Polypyrrole Hollow Nanocapsules as Multifunctional Platforms for Highly Effective Chemo¨CPhotothermal Combination Therapy of Cancer Cells in Vivo

The monodispersed spindle-like polypyrrole hollow nanocapsules (PPy HNCs) as the multifunctional platforms for combining chemotherapy with photothermal therapy for cancer cells are reported. Whereas the hollow cavity of nanocapsules can be used to load the anticancer drug (i.e., doxorubicin) for chemotherapy, the PPy shells can convert NIR light into heat for photothermal therapy. The release of the drug from the spindle-like PPy HNCs is pH-sensitive and near-infrared (NIR) light-enhanced. More importantly, the spindle-like PPy HNCs can penetrate cells more rapidly and efficiently in comparison with the spherical PPy HNCs. Both in vitro and in vivo experiments demonstrated that the combination of DOX-loaded spindle-like PPy HNCs and NIR light provide a highly effective and feasible chemo-photothermal therapy cancer method with a synergistic effect. Owing to their high photothermal conversion efficiency, large hollow cavity, and good biocompatibility, the spindle-like PPy HNCs could be used as a promising new cancer drug-nanocarrier and photothermal agent for localized tumorous chemo-photothermal therapy.

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Citation: Wu, *et al. Chem. Eur. J.* **2014,** 20, 12114-12122.

Synthesis of Site-Specifically Phosphate-Caged siRNAs and Evaluation of Their RNAi Activity and Stability

A complete set of new photolabile nucleoside phosphoramidites were synthesized, then site-specifically incorporated into sense or antisense strands of **siRNA for phosphate caging**. Single caging modification was made along siRNA strands and their photomodulation of gene silencing were examined by using the **firefly luciferase reporter** gene. Several key phosphate positions were then identified.

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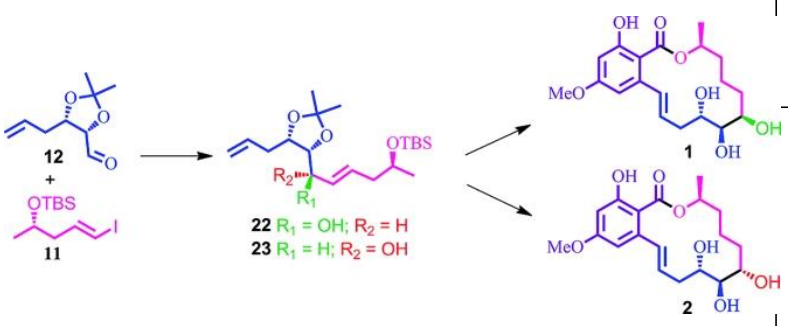
Citation: Mohapatra, D. K. et. al. *Eur. J. Org. Chem.* **2014**, 5023–5032.

Stereoselective Total Syntheses of Paecilomycins E and F through a Protecting Group Directed Diastereoselective Intermolecular Nozaki–Hiyama–Kishi (NHK) Reaction

An efficient and concise approach to the total syntheses of paecilomycins E (1) and F (2) is described. A protecting group directed intermolecular diastereoselective Nozaki–Hiyama–Kishi (NHK) reaction, a Julia–Kocienski olefination, a Sharpless asymmetric dihydroxylation, and De Brabander's lactonization protocol are used as the key steps.



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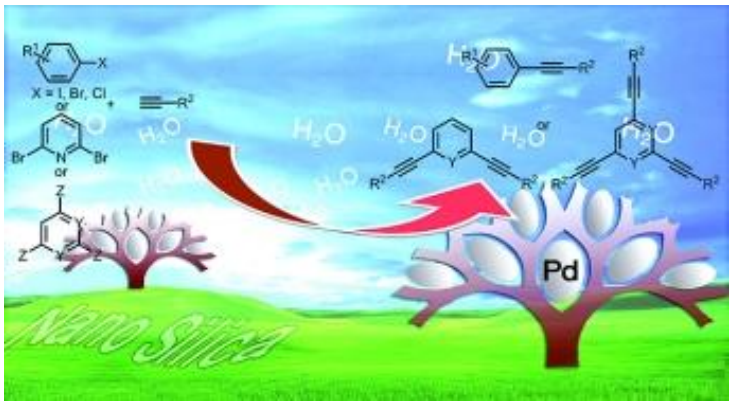
Citation: Mirkhani, V. et. al. *Eur. J. Org. Chem.* **2014**, 5603–5609.

Kinetic Data on the Synergetic Role of Amines and Water in the Reduction of Phosphine-Ligated Palladium(II) to Palladium(0)

Palladium nanoparticles immobilized on nano-silica triazine dendritic polymer was found to be a highly effective catalyst for the Sonogashira cross-coupling of aryl halides with aromatic and aliphatic terminal alkynes in water at room temperature. Only 0.01 mol-% of the catalyst was used.



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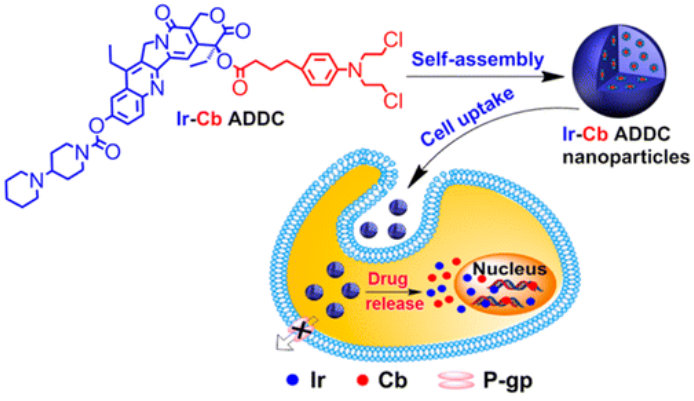
Citation: Huang, P.; Wang, D.; Su, Y.; Huang, W.; Zhou, Y.; Cui, D.; Zhu, X.; Yan, D. *J. Am. Chem. Soc.*, **2014**, *136* (33), 11748-11756.

Combination of Small Molecule Prodrug and Nanodrug Delivery: Amphiphilic Drug-Drug Conjugate for Cancer Therapy



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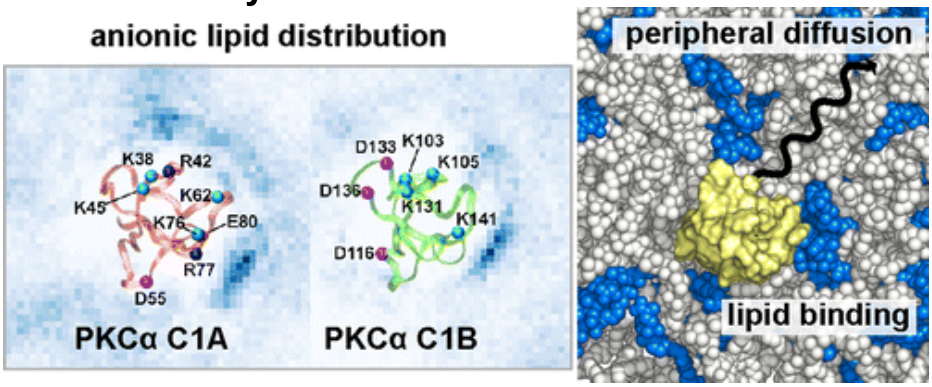
Citation: Li, J.; Ziemba, B.P.; Falke, J.J.; Voth, G.A., *J. Am. Chem. Soc.*, **2014**, *136* (33), 11757-11766.

Interactions of Protein Kinase C-a C1A and C1B Domains with Membranes: A Combined Computational and Experimental Study



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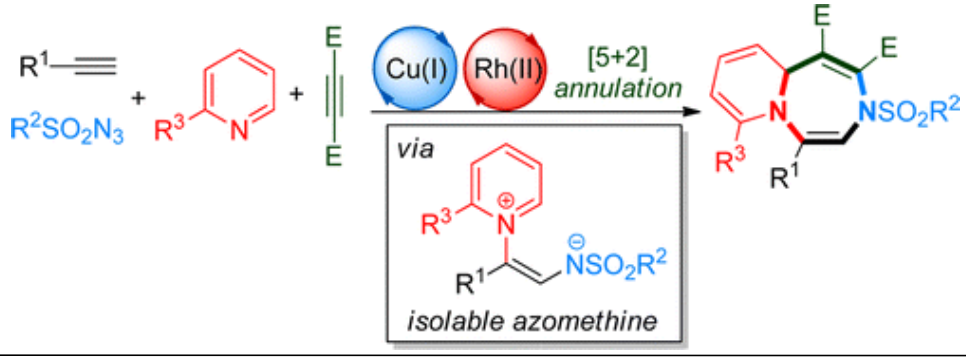
Citation: Lee, D.J.; Han, H.S.; Shin, J.; Yoo, E.J. *J. Am. Chem. Soc.*, **2014**, *136* (33), 11606-11609.

Multicomponent [5+2] Cycloaddition Reaction for the Synthesis of Diazepines: Isolation an dReactivity of Azomethine Ylides



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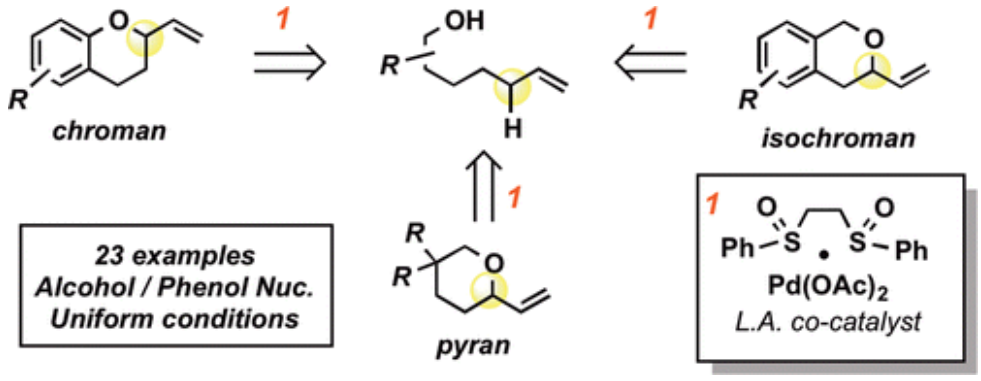
Citation: Ammann, S.E.; Rice, G.T.; White, M.C. *J. Am. Chem. Soc.*, **2014**, *136* (31), 10834-10837.

Terminal Olefins to Chromans, Isochromans, and Pyrans via Allylic C-H Oxidation



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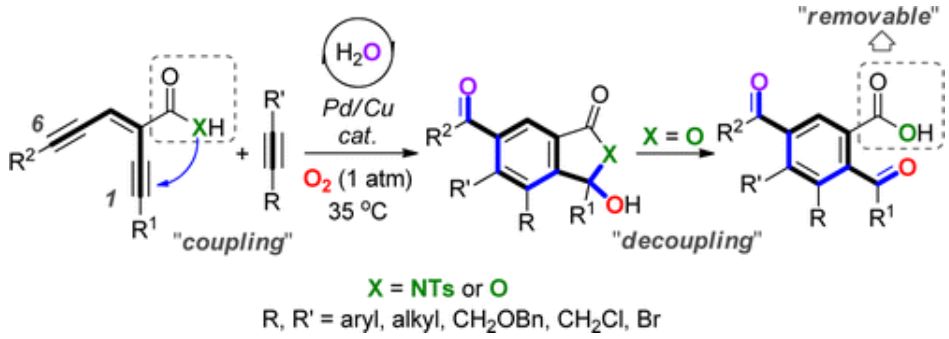
Citation: Ling, F.; Li, Z.; Zheng, C.; Liu, X.; Ma, C. *J. Am. Chem. Soc.*, **2014**, *136* (31), 10914-10917.

Palladium/Copper-Catalyzed Aerobic Intermolecular Cyclization of Enediyne Compounds and Alkynes: Interrupting Cycloaromatization for (4 + 2) Cross-Benzannulation



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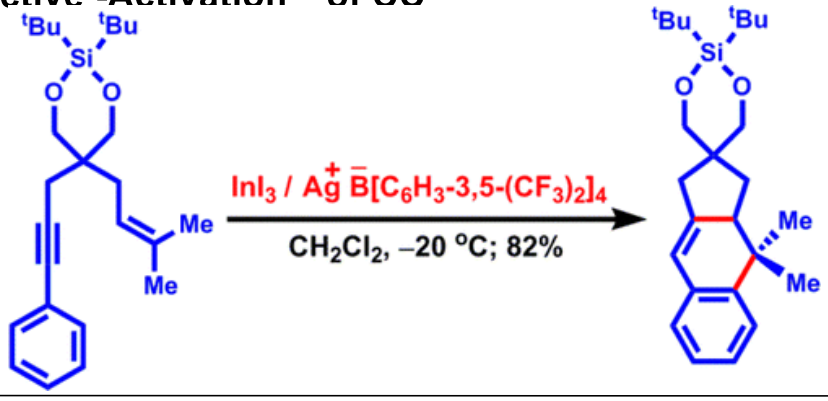
Citation: Ling, F.; Li, Z.; Zheng, C.; Liu, X.; Ma, C. *J. Am. Chem. Soc.*, **2014**, *136* (31), 10914-10917.

Diiodonium(III) Cation, InI_2^+, a Potent Yneophile. Generation and Application to Cationic Cyclization by Selective -Activation of CC



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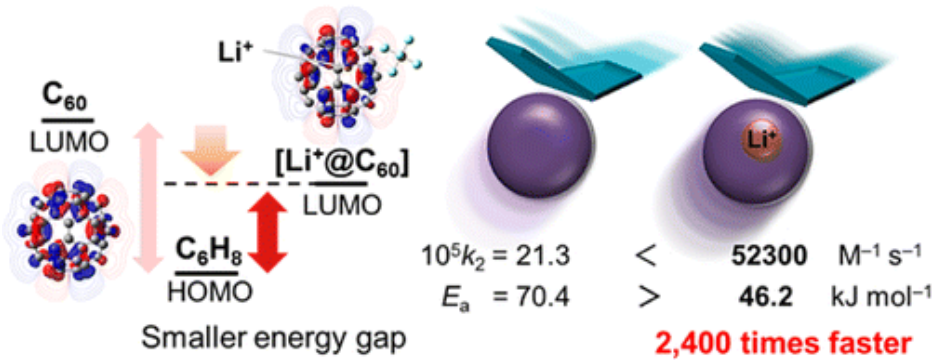
Citation: Ueno, H.; Kawakami, H.; Nakagawa, K.; Okada, H.; Ikuma, N.; Aoyagi, S.; Kokubo, K.; Matsuo, Y.; Oshima, T. *J. Am. Chem. Soc.*, **2014**, *136* (31), 11162-11167.

Kinetic Study of the Diels-Alder Reaction of $Li^+@C_{60}$ with Cyclohexadiene: Greatly Increased Reaction Rate by Encapsulated Li^+



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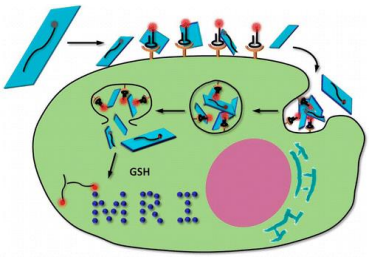
Citation: Tan, W. et al. J. Am. Chem. Soc., 2014, 136 (32), pp 11220–11223

Activatable Fluorescence/MRI Bimodal Platform for Tumor Cell Imaging via MnO2 Nanosheet–Aptamer Nanoprobe



A novel dual-activatable fluorescence/MRI bimodal platform is designed for tumor cell imaging by using a redoxable manganese dioxide (MnO2) nanosheet–aptamer nanoprobe. The redoxable MnO2 nanosheet acts as a DNA nanocarrier, fluorescence quencher, and intracellular glutathione (GSH)-activated MRI contrast agent. After endocytosis, the reduction of MnO2 nanosheets by GSH further activates the fluorescence signals and generates large amounts of Mn2+ ions suitable for MRI. This platform should facilitate the development of various dual-activatable fluorescence/MRI bimodalities for use in cells or in vivo.

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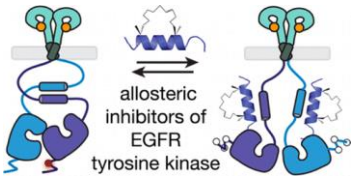
Citation: Sinclair, J. K. -L. et al. J. Am. Chem. Soc., 2014, 136 (32), pp 11232–11235

Inhibiting Epidermal Growth Factor Receptor at a Distance



The epidermal growth factor receptor (EGFR) tyrosine kinase is implicated in a large number of human cancers. Most EGFR inhibitors target the extracellular, growth factor-binding domain or the intracellular, ATP-binding domain. Molecules that inhibit the kinase activity of EGFR in a new way, by competing with formation of an essential intradimer coiled coil containing the juxtamembrane segment from each member of the receptor partnership, are reported. The most potent molecules bind EGFR directly, decrease the proliferation of wild-type and mutant EGFR-dependent cells lines, inhibit phosphorylation of EGFR and downstream targets, and block coiled coil formation as judged by bipartite tetracysteine display. Potency is directly correlated with the ability to block coiled coil formation within full-length EGFR in cells.

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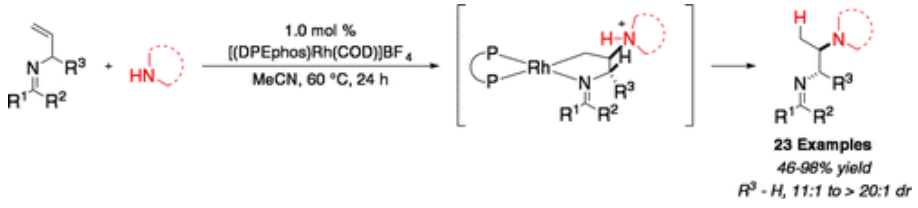
Citation: Ickes, A. R. et al. J. Am. Chem. Soc., 2014, 136 (32), pp 11256–11259

Regio- and Chemoselective Intermolecular Hydroamination of Allyl Imines for the Synthesis of 1,2-Diamines



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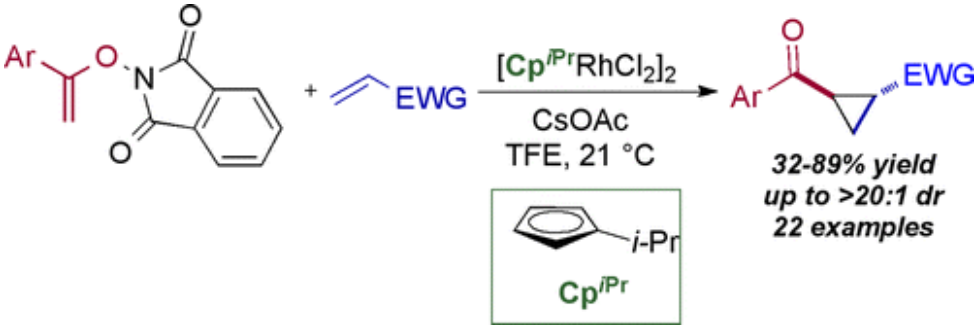
Citation: Piou, T. et al. J. Am. Chem. Soc., 2014, 136 (32), pp 11292–11295

Rh(III)-Catalyzed Cyclopropanation Initiated by C–H Activation: Ligand Development Enables a Diastereoselective [2 + 1] Annulation of N-Enoxyphthalimides and Alkenes



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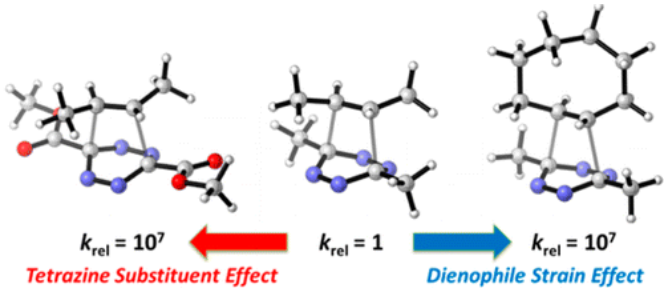
Citation: Liu, F. et al. J. Am. Chem. Soc., 2014, 136 (32), pp 11483–11493

Theoretical Elucidation of the Origins of Substituent and Strain Effects on the Rates of Diels–Alder Reactions of 1,2,4,5-Tetrazines



The Diels–Alder reactions of seven 1,2,4,5-tetrazines with unstrained and strained alkenes and alkynes were studied with quantum mechanical calculations (M06-2X density functional theory) and analyzed with the distortion/interaction model. The higher reactivities of alkenes compared to alkynes in the Diels–Alder reactions with tetrazines arise from the differences in both interaction and distortion energies.

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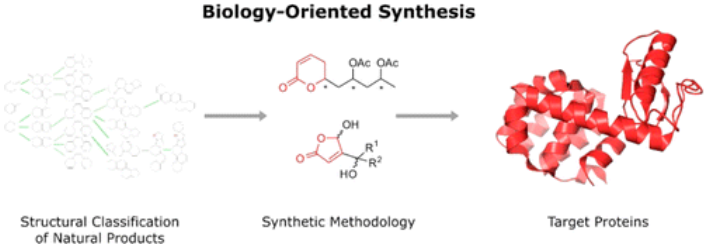
Citation: van Hattum, H. et al. J. Am. Chem. Soc., 2014, 136 (34), pp 11853–11859

Biology-Oriented Synthesis: Harnessing the Power of Evolution



Known natural products are structurally classified on the basis of their core scaffolds and hierarchically arranged in the “natural product tree”, which can be annotated for bioactivity and intuitively navigated with currently available software. Biologically relevant scaffolds inspire the synthesis of compound libraries enriched in biological activity. This Perspective describes the development of “biology-oriented synthesis” as a guiding principle to harness the power of evolution in the quest for novel bioactive small molecules for chemical biology research and drug discovery.

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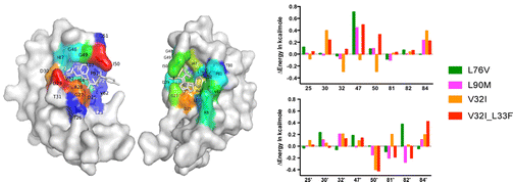
Citation: Ragland, D. A. et al. J. Am. Chem. Soc., 2014, 136 (34), pp 11956–11963

Drug Resistance Conferred by Mutations Outside the Active Site through Alterations in the Dynamic and Structural Ensemble of HIV-1 Protease



Darunavir (DRV) is the most potent of HIV-1 protease inhibitors, soliciting drug resistance only when a complex combination of mutations occur both inside and outside the protease active site. Through a series of DRV–protease complex crystal structures, inhibition assays, and molecular dynamics simulations, we find that single and double site mutations outside the active site often associated with DRV resistance alter the structure and dynamic ensemble of HIV-1 protease active site. These alterations suggest a network hypothesis on how the effect of distal mutations are propagated to pivotal residues at the active site and may contribute to conferring drug resistance.

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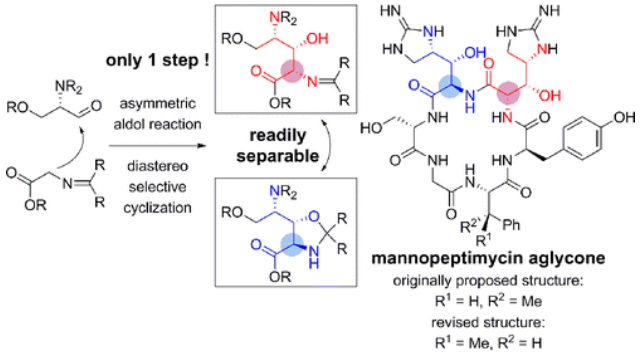
Citation: Fuse, S. et al. J. Am. Chem. Soc., 2014, 136 (34), pp 12011–12017

Total Synthesis and Stereochemistry Revision of Mannopeptimycin Aglycone



The facile preparation of the key amino acids and the synthesis of the aglycone pave the way for further studies on this class of antibiotics and the development of new lead compounds with therapeutic potential

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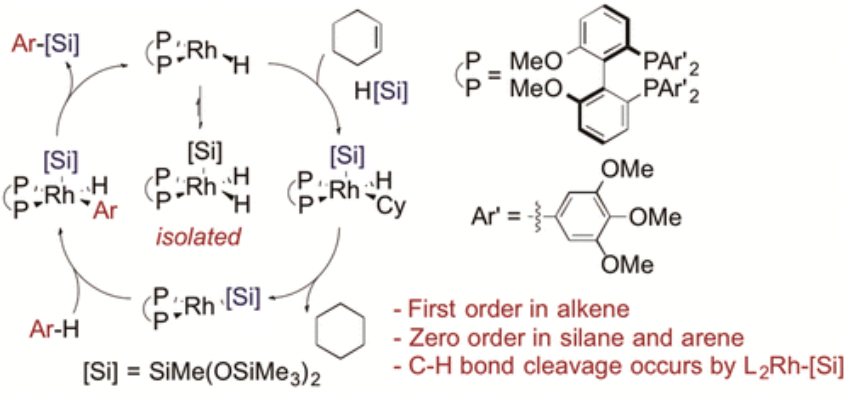
Citation: Cheng, C. et al. J. Am. Chem. Soc., 2014, 136 (34), pp 12064–12072

Mechanism of the Rhodium-Catalyzed Silylation of Arene C–H Bonds



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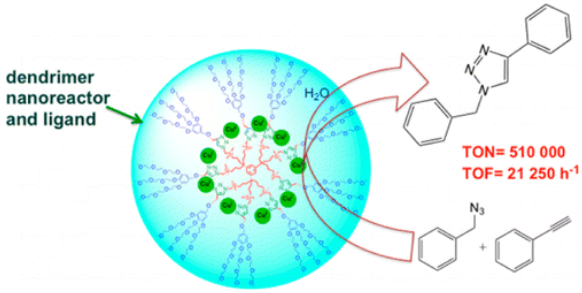
Citation: Deraedt, C. et al. J. Am. Chem. Soc., 2014, 136 (34), pp 12092–12098

Recyclable Catalytic Dendrimer Nanoreactor for Part-Per-Million Cu(I) Catalysis of "Click" Chemistry in Water



Upon catalyst and substrate encapsulation, an amphiphilic dendrimer containing 27 triethylene glycol termini and 9 intradendritic triazole rings serves as a catalytic nanoreactor by considerably accelerating the CuI-catalyzed alkyne–azide cycloaddition (CuAAC) "click" reactions of various substrates in water using the catalyst Cu(hexabenzyltren)Br (tren = triaminoethylamine).

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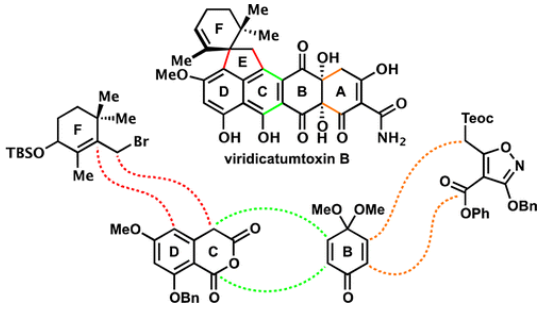
Citation: Nicolaou, K. C. et al. J. Am. Chem. Soc., 2014, 136 (34), pp 12137–12160

Total Synthesis of Viridicatumtoxin B and Analogues Thereof: Strategy Evolution, Structural Revision, and Biological Evaluation



The details of the total synthesis of viridicatumtoxin B (1) are described. Initial synthetic strategies toward this intriguing tetracycline antibiotic resulted in the development of key alkylation and Lewis acid-mediated spirocyclization reactions to form the hindered EF spirojunction, as well as Michael–Dieckmann reactions to set the A and C rings.

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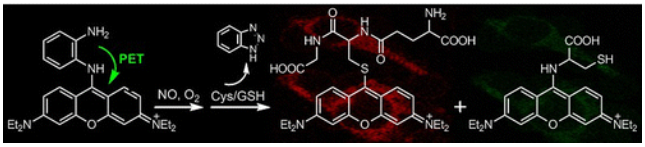
Citation: Sun, Y. -Q. et al. J. Am. Chem. Soc., 2014, 136 (36), pp 12520–12523

A Mitochondria-Targetable Fluorescent Probe for Dual-Channel NO Imaging Assisted by Intracellular Cysteine and Glutathione



A mitochondria-specific fluorescent probe for NO (1) was synthesized by the direct conjugation of a pyronin dye with one of the amino groups of o-phenylenediamino (OPD). The probe could selectively detect NO over dehydroascorbic acid (DHA), ascorbic acid (AA), and methylglyoxal (MGO) as well as the reactive oxygen/nitrogen species (ROS/RNS) with the significant off–on response due to the production of a red-emission triazole 2. In the presence of cysteine/glutathione (Cys/GSH), 2 could be further transformed into a green-emission aminopyronin 4 and a red-emission thiopyronin 5, respectively. Assisted by intracellular Cys and GSH, the probe demonstrated its potential to monitor mitochondrial NO in a dual-channel mode.

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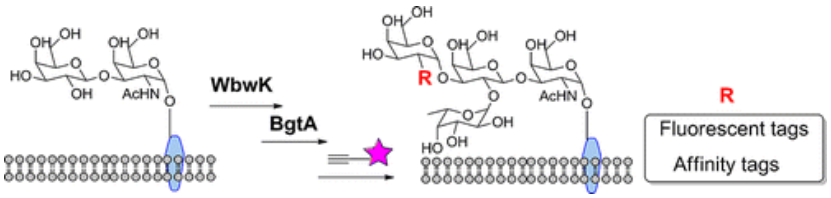
Citation: Li, Q. et al. J. Am. Chem. Soc., 2014, 136 (36), pp 12536–12539

A Tandem Enzymatic Approach for Detecting and Imaging Tumor-Associated Thomsen–Friedenreich Antigen Disaccharide



The Thomsen–Friedenreich (TF) antigen is highly expressed in various types of human carcinomas. It has been shown to contribute to tumor development, progression, and metastasis. Here a tandem enzymatic strategy to detect and label TF antigen disaccharide with high sensitivity and selectivity is described. This strategy enables detection of TF antigens on proteins, profiling and identification of unknown TF antigen-modified glycoproteins, and simultaneous labeling of multiple forms of complex glycan motifs on the same cell. This approach expands the capability of glycan labeling to probe the functional role of TF antigens in cancer biology.

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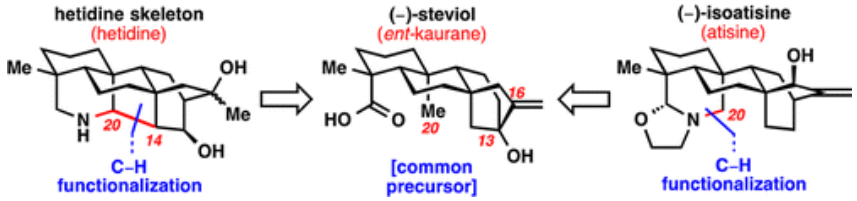
Citation: Cherney, E. C. et al. J. Am. Chem. Soc., 2014, 136 (36), pp 12592–12595

A Unified Approach to ent-Atisane Diterpenes and Related Alkaloids: Synthesis of (-)-Methyl Atisenoate, (-)-Isoatisine, and the Hetidine Skeleton



The conversion of the ent-kaurane skeleton to the ent-atisane skeleton features a Mukaiyama peroxygenation with concomitant cleavage of the C13–C16 bond. Conversion to the atisine skeleton features a C20-selective C–H activation using a Suárez modification of the Hofmann–Löffler–Freytag (HLF) reaction. A cascade sequence involving azomethine ylide isomerization followed by Mannich cyclization forms the C14–C20 bond in the hetidine skeleton (8). Finally, attempts to form the N–C6 bond of the hetisine skeleton with a late-stage HLF reaction are discussed. The synthesis of these skeletons has enabled the completion of (-)-Methyl Atisenoate and (-)-Isoatisine.

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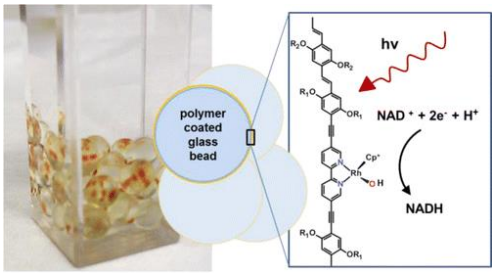
Citation: Oppelt, K. T. et al. J. Am. Chem. Soc., 2014, 136 (36), pp 12721–12729

Rhodium-Coordinated Poly(arylene-ethynylene)-alt-Poly(arylene-vinylene) Copolymer Acting as Photocatalyst for Visible-Light-Powered NAD+/NADH Reduction



A 2, 2'-bipyridyl-containing poly(arylene-ethynylene)-alt-poly(arylene-vinylene) polymer, acting as a light-harvesting ligand system, was synthesized and coupled to an organometallic rhodium complex designed for photocatalytic NAD+/NADH reduction. With this concept, enzymatic, photo-biocatalytic systems for solar energy conversion can be facilitated, and the precious metal catalyst can be recycled.

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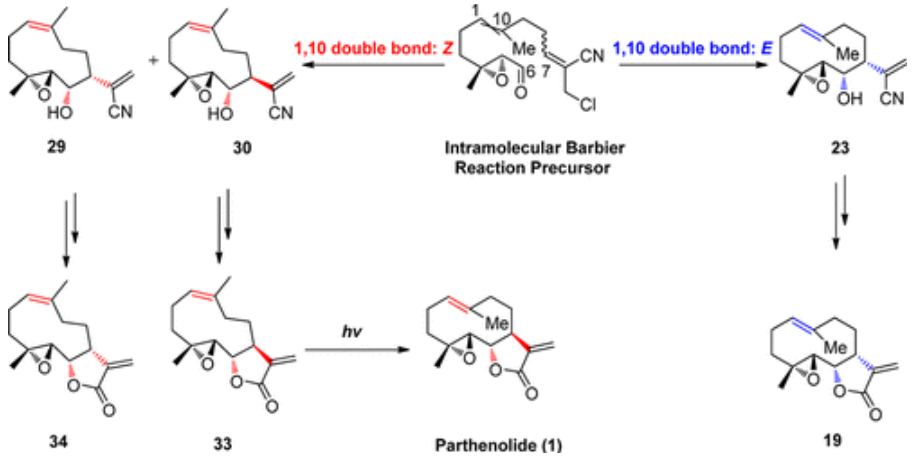
Citation: Long, J.; *et al. J. Med. Chem.* **2014**, *57* (16), 7098.

Total Syntheses of Parthenolide and Its Analogues with Macrocyclic Stereocontrol



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Gnid/Kirk
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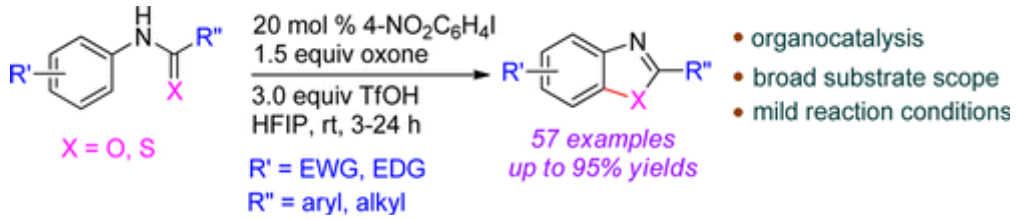
Citation: Alla, S.K.; Sadhu, P.; Punniyamurthy, T. *JOC,* **2014**, *79,* 7502-7511.

Organocatalytic Syntheses of Benzoxazoles and Benzothiazoles using Aryl Iodide and Oxone via C–H Functionalization and C–O/S Bond Formation



When I first saw this, I thought it may have been an effective strategy towards substituted luciferin derivatives; however, R" is fairly limited. Most of the examples are of aryl substituents. Yields are moderate to good.

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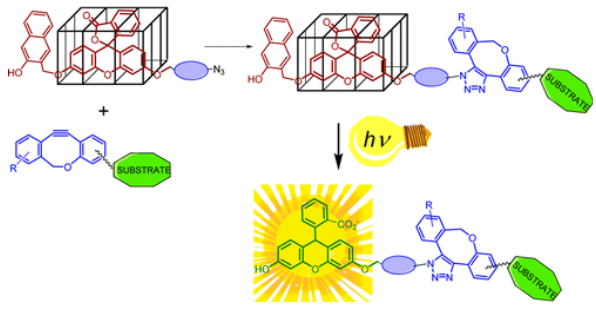
Citation: Nekongo, E.E.; Popik, V.V. *JOC,* **2014**, *79*, 7665-7671.

Photoactivatable Fluorescein Derivatives Caged with a (3-Hydroxy-2-naphthalenyl)methyl Group



"The (3-hydroxy-2-naphthalenyl)methyl (NQMP) group represents an efficient photocage for fluorescein-based dyes. Thus, irradiation of the 6-NQMP ether of 2'-hydroxymethylfluorescein with low-intensity UVA light results in a 4-fold increase in emission intensity. Photoactivation of nonfluorescent NQMP-caged 3-allyloxyfluorescein produces a highly emissive fluorescein monoether. To facilitate conjugation of the caged dye to the substrate of interest via click chemistry, the allyloxy appendage was functionalized with an azide moiety."

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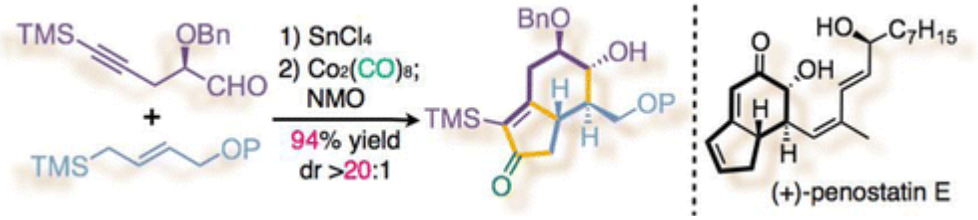
Citation: Fujioka, K.; Yokoe, H.; Inoue, A.; Soga, K.; Tsubuki, M.; Shishido, K. *JOC,* **2014**, *79*, 7512-7519.

Enantioselective Synthesis of (+)-Penostatin E



Yields are not fantastic, but the molecule was successfully synthesized and the group's strategy allowed them to appropriately assign the stereochemistry of the allylic alcohol on the carbon chain.

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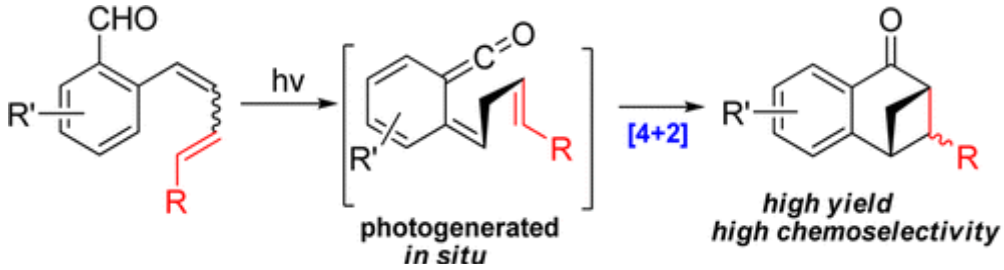
Citation: Liu, Q.; Meng, J.; Liu, Y.; Yang, C.; Xia, W. *JOC,* **2014**, *79*, 8143-8155.

Synthesis of Benzobicycloheptanones via the Trap of Photogenerated Ketene Methide Intermediate with Olefins



Diastereomeric ratio at R is poor, but yields are good to great. This is a pretty cool transformation, although it takes them quite a few steps (6) to just get to their starting materials. This does not count the synthesis of their Wittig reagents.

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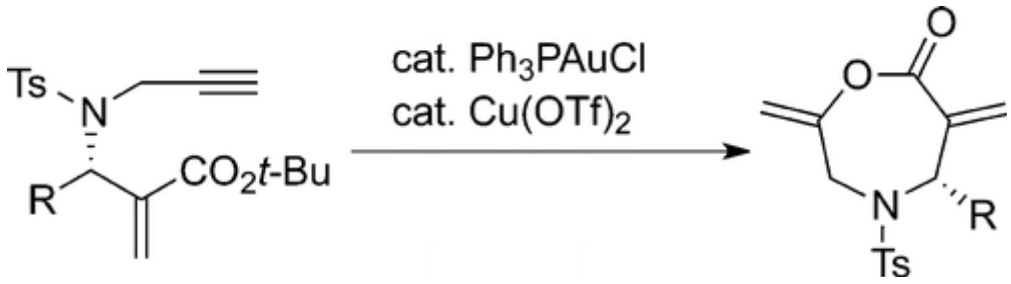
Citation: Kamimura, A.; Yamane, Y.; Yo, R.; Tanaka, T.; Uno, H. *JOC,* **2014**, *79,* 7696-7702.

Gold(I)-Catalyzed Synthesis of Optically Active 1,4-Oxazepan-7-ones



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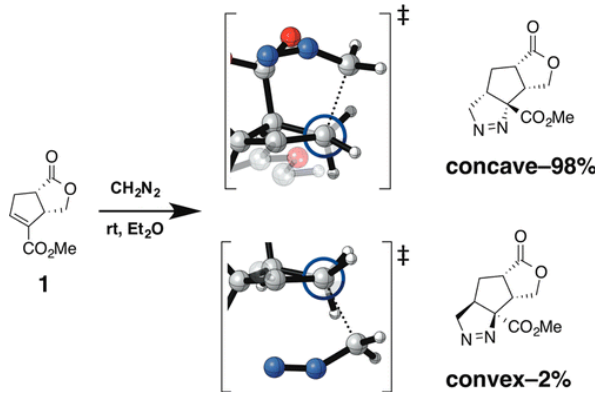
Citation: Lopez, S.A.; Pourati, M.; Gais, H.-J.; Houk, K.N. *JOC*, **2014**, *79*, 8304-8312.

How Torsional Effects Cause Attack at Sterically Crowded Concave Faces of Bicyclic Alkenes



A tough read, but interesting.

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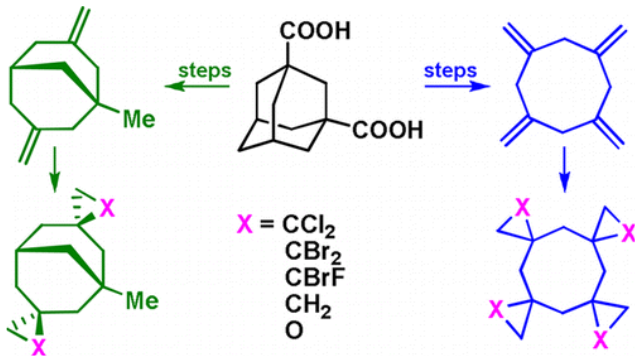
Citation: Averina, E.B.; *et al*. *JOC,* **2014**, *79*, 8163-8170.

symm-Tetramethylenecyclooctane: En Route to Polyspirocycles



Their title compound is effectively a tetramerization of allene. There should be a way to get this compound to form from allene and an appropriate metal (or a radical cascade from a C2 allyl radical using an allyl stannane and palladium).

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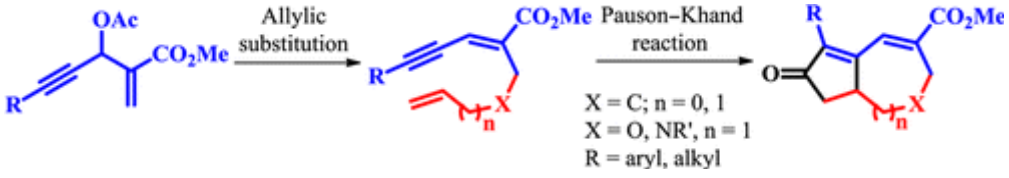
Citation: Reddy, C.R.; Kumaraswamy, P.; Singarapu, K.K. *JOC*, **2014**, *79*, 7880-7888.

Sequential Allylic Substitution/Pauson–Khand Reaction: A Strategy to Bicyclic Fused Cyclopentenones from MBH-Acetates of Acetylenic Aldehydes



A short and efficient method of synthesizing 5,7-bicycles. This is pretty good work. Time will tell how it is utilized.

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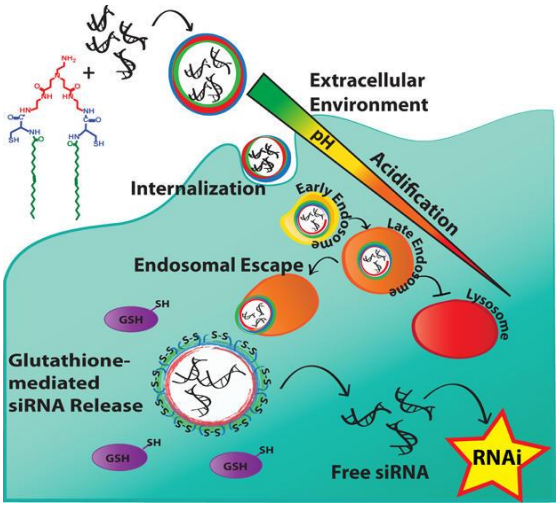
Citation: Mol. Pharmaceutics 2014, 11, 2734

Multifunctional Cationic Lipid-Based Nanoparticles Facilitate Endosomal Escape and Reduction-Triggered Cytosolic siRNA Release



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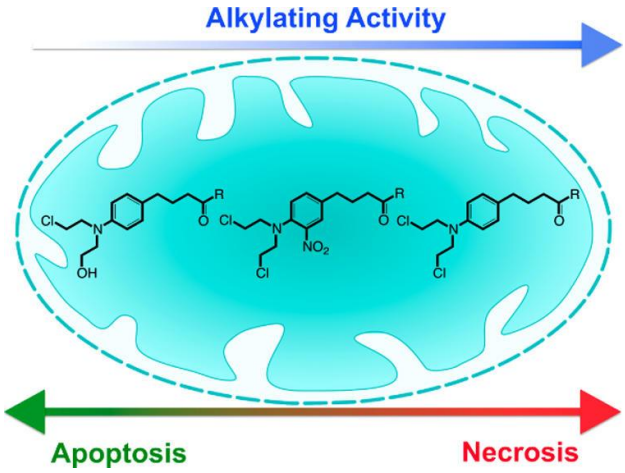
Citation: Mol. Pharmaceutics 2014, 11, 2675

Structural Modifications of Mitochondria-Targeted Chlorambucil Alter Cell Death Mechanism but Preserve MDR Evasion



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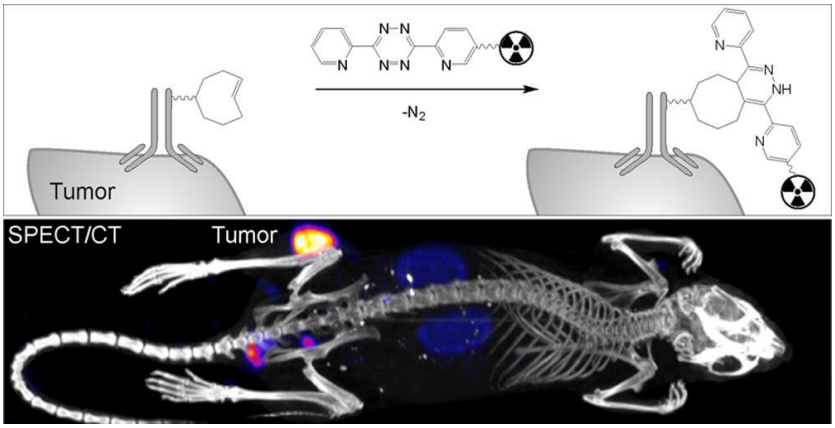
Citation: Mol. Pharmaceutics 2014, 11, 3090

Trans-Cyclooctene Tag with Improved Properties for Tumor Pretargeting with the Diels,àíAlder Reaction



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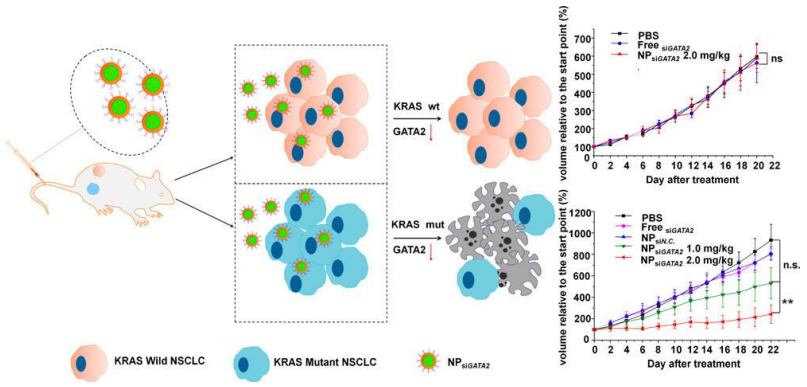
Citation: Mol. Pharmaceutics 2014, 11, 2612

Cationic Lipid-Assisted Polymeric Nanoparticle Mediated GATA2 siRNA Delivery for Synthetic Lethal Therapy of KRAS Mutant Non- Small-Cell Lung Carcinoma



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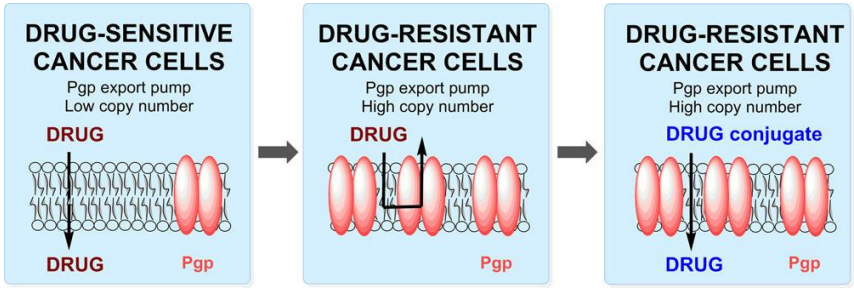
Citation: Mol. Pharmaceutics 2014, 11, 2553

Cell-Penetrating, Guanidinium-Rich Molecular Transporters for Overcoming Efflux-Mediated Multidrug Resistance

Good Work Jessica!!



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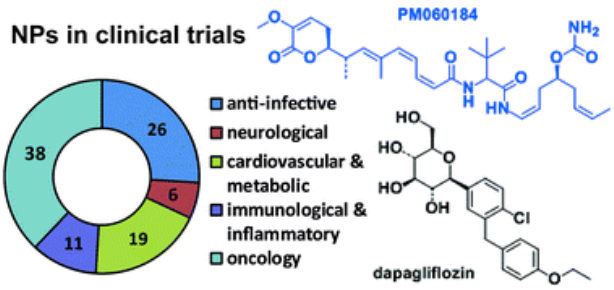
Citation: Buttler, M. S.; et al. *Nat. Prod. Rep.* (2014) Advance Article

Natural product and natural product derived drugs in clinical trials



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Citation: Boussemart, L. et al. *Nature*. **2014**, *513*, 105.

eIF4F is a nexus of resistance to anti-BRAF and anti-MEK cancer therapies

In BRAF(V600)-mutant tumours, most mechanisms of resistance to drugs that target the BRAF and/or MEK kinases rely on reactivation of the RAS–RAF–MEK–ERK mitogen-activated protein kinase (MAPK) signal transduction pathway, on activation of the alternative, PI(3)K–AKT–mTOR, pathway (which is ERK independent) or on modulation of the caspase-dependent apoptotic cascade1, 2, 3. All three pathways converge to regulate the formation of the eIF4F eukaryotic translation initiation complex, which binds to the 7-methylguanylate cap (m^7G) at the 5,Ä≤ end of messenger RNA, thereby modulating the translation of specific mRNAs4, 5. Here we show that the persistent formation of the eIF4F complex, comprising the eIF4E cap-binding protein, the eIF4G scaffolding protein and the eIF4A RNA helicase, is associated with resistance to anti-BRAF, anti-MEK and anti-BRAF plus anti-MEK drug combinations in BRAF(V600)-mutant melanoma, colon and thyroid cancer cell lines. Strikingly, inhibiting the eIF4F complex, either by blocking the eIF4E–eIF4G interaction or by targeting eIF4A, synergizes with inhibiting BRAF(V600) to kill the cancer cells. eIF4F not only appears to be an indicator of both innate and acquired resistance but also is a promising therapeutic target. Combinations of drugs targeting BRAF (and/or MEK) and eIF4F may overcome most of the resistance mechanisms arising in BRAF(V600)-mutant cancers.

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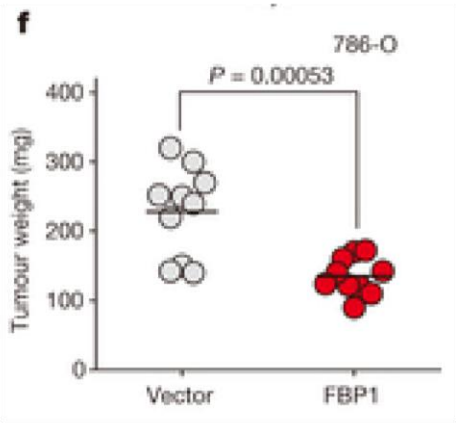
Citation: Li, B. et al. *Nature*. **2014**, *513*, 251.

Fructose-1,6-bisphosphatase opposes renal carcinoma progression



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Citation: Studer, A.; Curran, D.P. Nature Chemistry 6, 765–773 (2014)

The electron is a catalyst

The electron is an efficient catalyst for conducting various types of radical cascade reaction that proceed by way of radical and radical ion intermediates. But because electrons are omnipresent, catalysis by electrons often passes unnoticed. In this Review, a simple analogy between acid/base catalysis and redox catalysis is presented. Conceptually, the electron is a catalyst in much the same way that a proton is a catalyst. The 'electron is a catalyst' paradigm unifies mechanistically an assortment of synthetic transformations that otherwise have little or no apparent relationship. Diverse radical cascades, including unimolecular radical substitution reactions (SRN1-type chemistry), base-promoted homolytic aromatic substitutions (BHAS), radical Heck-type reactions, radical cross-dehydrogenative couplings (CDC), direct arene trifluoromethylations and radical alkoxycarbonylations, can all be viewed as electron-catalysed reactions.

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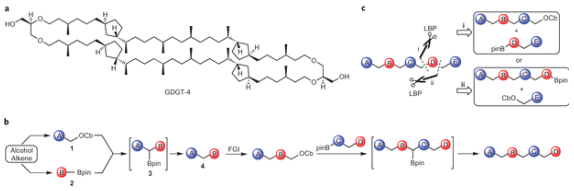
Citation: Rasappan, R.; Aggarwal, V.K. Nature Chemistry 6, 810–814 (2014)

Synthesis of hydroxyphthioceranic acid using a traceless lithiation–borylation–protodeboronation strategy



Here we present a traceless strategy for organic synthesis that uses a boronic ester as such a group in a one-pot lithiation–borylation–protodeboronation sequence. To realize this strategy, we developed a methodology for the protodeboronation of alkyl pinacol boronic esters that involves the formation of a boronate complex with a nucleophile followed by oxidation. We employed this strategy in the synthesis of ?hydroxyphthioceranic acid, a key component of the cell-wall lipid of the virulent Mycobacterium tuberculosis, in just 14 steps (longest linear sequence) with full stereocontrol.

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Citation: http://www.nytimes.com/2014/09/05/business/merck-wins-approval-of-novel-immune-system-drug-for-cancer.html

F.D.A. Allows First Use of a Novel Cancer Drug

The Food and Drug Administration on Thursday approved the first of an eagerly awaited new class of cancer drugs that unleashes the body's immune system to fight tumors.

The drug, which Merck will sell under the name Keytruda, was approved for patients with advanced melanoma who have exhausted other therapies.

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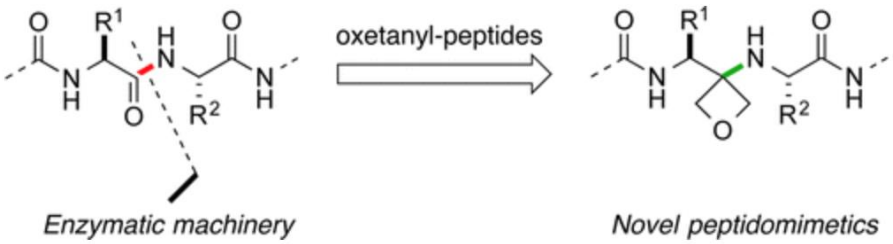
Citation: McLaughlin, M.; *et al. Org. Lett.* **2014**, 16 (16), 4070-4073

Oxetanyl Peptides: Novel Peptidomimetic Modules for Medicinal Chemistry



The synthesis of novel oxetanyl peptides, where the amide bond is replaced by a non-hydrolyzable oxetanylamine fragment, is reported. This new class of pseudo-dipeptides with the same H-bond donor/acceptor pattern found in proteins expands the repertoire of peptidomimetics.

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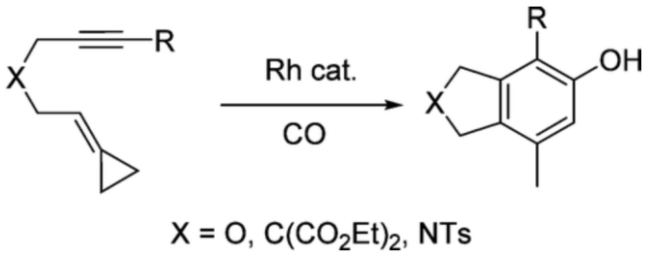
Citation: Kim, S.; Chung, Y. K. *Org. Lett.* **2014**, 16 (17), 4352-4355

Rhodium-Catalyzed Carbonylative [3 + 2 + 1] Cycloaddition of Alkyne-Tethered Alkylidenecyclopropanes to Phenols in the Presence of Carbon Monoxide



X = O, $C(CO_2Et)_2$, NTs

A novel Rh-catalyzed carbonylative [3 + 2 + 1] cycloaddition of alkyne-tethered alkylidenecyclopropanes for the facile synthesis of bicyclic phenols in high yields has been developed. The reaction tolerated carbon and heteroatoms in the tether.

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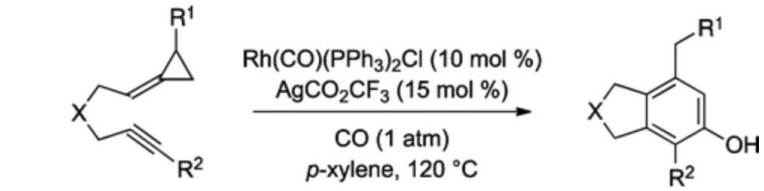
Citation: Evans, P. A.; *et al*. *Org. Lett.* **2014**, 16 (17), 4356-4359

Rhodium-Catalyzed [(3+2)+1] Carbocyclization Reactions of Alkynylidenecyclopropanes with Carbon Monoxide: Regiospecific Construction of Polysubstituted Phenols



X = $C(CO_2Me)_2$, NTs, O
R^1/R^2 = H, Alk *etc.*

13 Examples

up to 85%

The development of the rhodium-catalyzed [(3+2)+1] carbocyclization reaction of alkynylidenecyclopropanes with carbon monoxide to construct polysubstituted phenols is described. This work offers a convenient method for the selective formation of tetra- and pentasubstituted phenols, which provide important intermediates for target directed synthesis. Finally, the ability to regiospecifically functionalize the phenols using conventional methods further illustrates the utility of this process.

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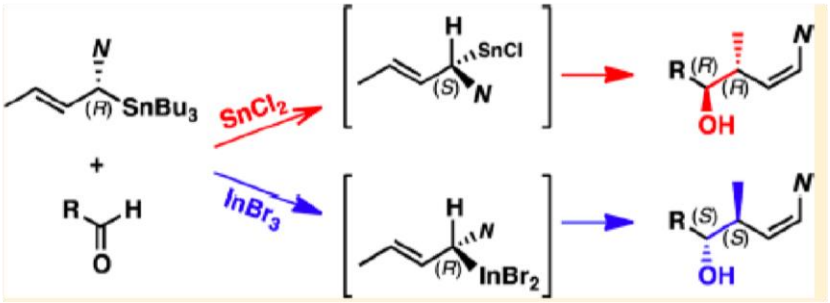
Citation: Yasuda, M.; Nagano, Y.; Yunoki, H.; Tsuruwa, K.; Baba, A. *Organometallics*. **2014**, *33*, 3924.

Chiral Transfer in the Reaction of Aminoallylic Stannanes with Carbonyls in Two Different Modes using Tin(II) and Indium(III) Halides for the Synthesis of Each Enantiomer



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Citation: 12684–12688 | PNAS | September 2, 2014 | vol. 111 | no. 35

Label-free probe of HIV-1 TAT peptide binding to mimetic membranes

The authors used a technique called surface potential-sensitive second harmonic generation (SHG) to study TAT binding to anionic and neutral liposomes. SHG is senstive to the electric field generated by a chaged interface, from which electric potential can be derived. K_d for TAT binding was determined to be ~7 uM for neutral and 29 uM for anionic liposomes. The authors postulate that this technique can be utilized to determine Kd values for other charged biological interfaces.

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Citation: 12722–12727 | PNAS | September 2, 2014 | vol. 111 | no. 35

Refilling drug delivery depots through the blood (cool!!)

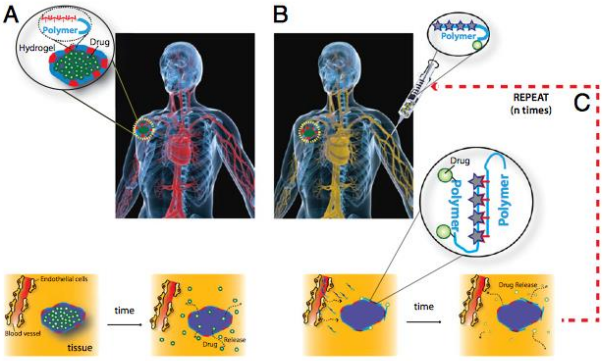

Fig. 1. Schematic for i.v. refilling of drug-delivering devices with therapeutic drugs payloads. (*A*) A drug-delivering device is implanted into a target tissue site and releases active drug (yellow) in a controlled, localized manner. (*B*) i.v. infused drug payloads home to the device site and refill the device with a fresh depot of drug. (*C*) Drug payloads release their cargo in a controlled manner over time. i.v.-mediated drug refilling can be repeated with the same or a different drug payload multiple times.

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Citation: **Christina B. Cooley** et al. 13046–13051 | PNAS | September 9, 2014 | vol. 111 | no. 36

Unfolded protein response activation reduces secretion and extracellular aggregation of amyloidogenic immunoglobulin light chain

Light-chain amyloidosis (AL) is a devastating human disease involving the clonal expansion of a plasma cell and the se- cretion of destabilized, amyloidogenic immunoglobulin light chains (LCs). Secreted amyloidogenic LCs aggregate extracel- lularly, leading to proteotoxicity on distal tissues. Here, we show that stress-independent activation of unfolded protein response-associated transcription factors selectively reduces secretion of amyloido- genic LCs and decreases extracellular soluble LC aggregates as- sociated with proteotoxicity in AL. These results identify a promising therapeutic strategy to treat AL patients unserved by current treatments.

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Citation: PNAS 2014 111 (33) 11932-11937

Duration of urination does not change with body size

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Citation: http://www.sciencemag.org/content/345/6202/1228.full.pdf

Ebola vaccines racing forward at record pace
Rushing them into widespread use without large-scale trials raises hopes and concerns

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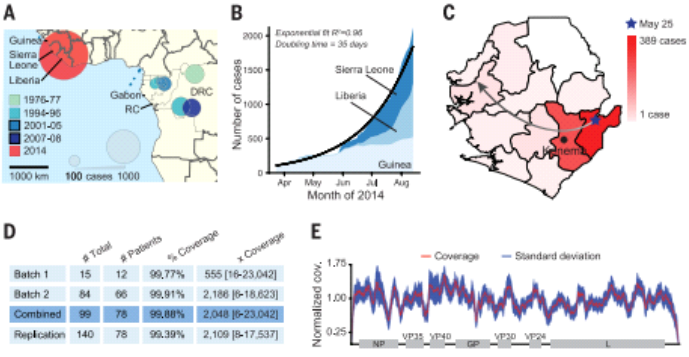
Citation: http://www.sciencemag.org/content/345/6202/1369.full.pdf

Genomic surveillance elucidates Ebola virus origin and transmission during the 2014 outbreak

Fig. 1. Ebola outbreaks, historical and current. (**A**) Historical EVD outbreaks, colored by decade. Circle area represents total number of cases (RC = Republic of the Congo; DRC = Democratic Republic of Congo). (**B**) 2014 outbreak growth (confirmed, probable, and suspected cases). (**C**) Spread of EVD in Sierra Leone by district. The gradient denotes number of cases; the arrow depicts likely direction. (**D**) EBOV samples from 78 patients were sequenced in two batches, totaling 99 viral genomes [replication = technical replicates (6)]. Mean coverage and median depth of coverage with range are shown. (**E**) Combined coverage (normalized to the sample average) across sequenced EBOV genomes.



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Citation: Sci Transl Med 6, 253rv2 (2014);

Point-of-care and point-of-procedure optical imaging technologies for primary care and global health

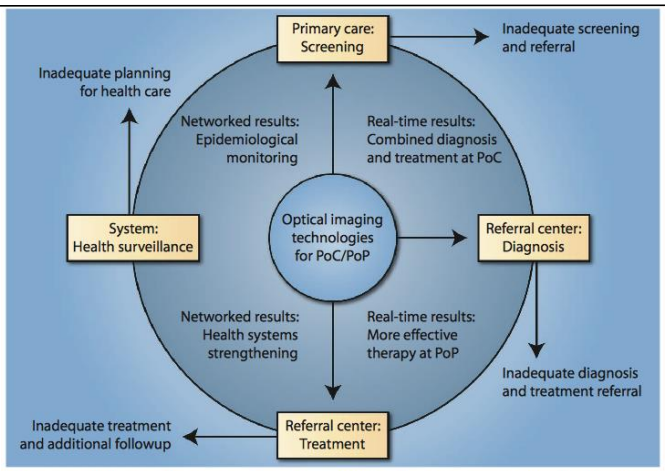

Fig. 1. Gaps in PoC and PoP that may be addressed by imaging. The outer ring illustrates current gaps at the frontline primary care, referral care, and health care system levels. The inner ring illustrates how optical imaging technologies designed to be used at the PoC/PoP can fill these gaps.

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Citation: Sci Transl Med 6, 250ra114 (2014)

IL-32 is a molecular marker of a host defense network in human tuberculosis

The authors performed gene expression profiles of human macrophages and found an association between IL-32 and the vitamin D antimicrobial pathway. Moreover, analysis of five different clinical data sets suggested that IL-32 can serve as a molecular marker of latent tuberculosis and may be activated in response to signaling by IL-15. These data suggest that IL-32 may not only serve as a putative correlate of protection but also contribute directly to host response to tuberculosis.

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Citation: Sci Transl Med 6, 250ra116 (2014)

Marburg virus infection in nonhuman primates: Therapeutic treatment by lipid-encapsulated siRNA

Marburg and closely related Ebola virus currently have no vaccine or drug approved for human use. This report details lipid NP-mediated delivery of siRNA that effectively treated MARV in primates, including those who were treated 3 days after infection, thus there may be potential for treating Ebola in humans with this strategy.

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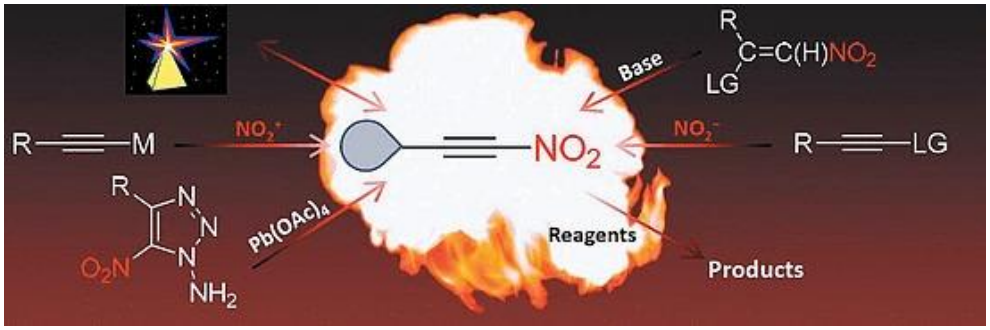
Citation: Vollhardt et. al Synthesis **2014**, *46*: 2383-2412

Nitroalkynes: A Unique Class of Energetic Materials



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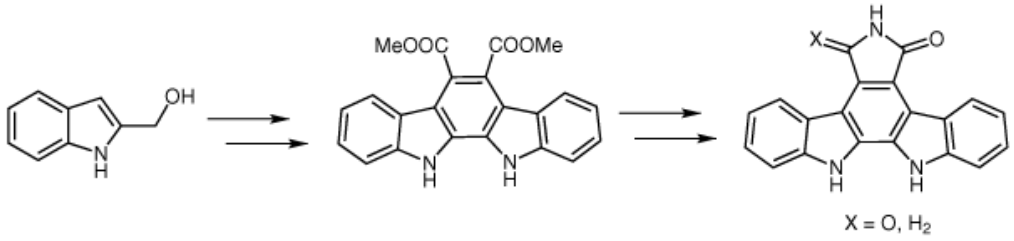
Citation: Tilve et. al *Synlett* **2014**, *25*, 2121-2126

Molecular Iodine Assisted Electrocyclisation: Synthesis of Arcyriaflavin A and Formal Synthesis of Staurosporinone



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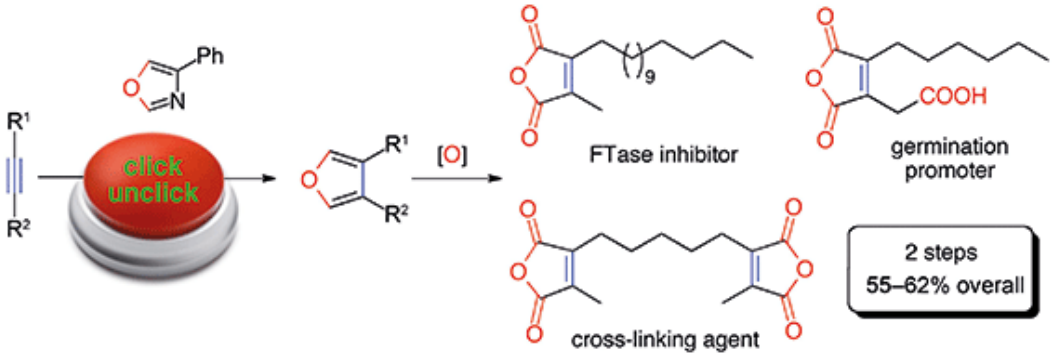
Citation: Boukouvalas et. al *Synlett* **2014**, *25*, 2139-2142

Expedient Assembly of Bioactive Maleic Anhydrides Using Click Diels–Alder Chemistry



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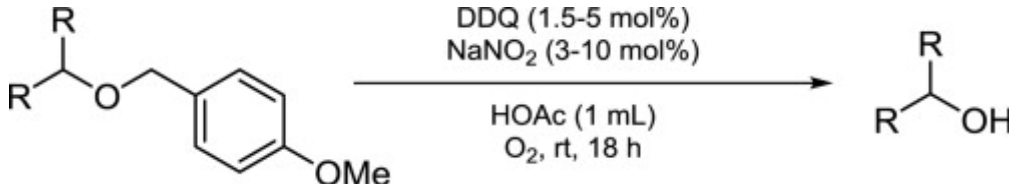
Citation: Katie Walsha, Helen F. Sneddonb, Christopher J. Moody. (**2014**) *Tetrahedron*, 70(40), 7380

Sustainable, mild and efficient p-methoxybenzyl ether deprotections utilizing catalytic DDQ



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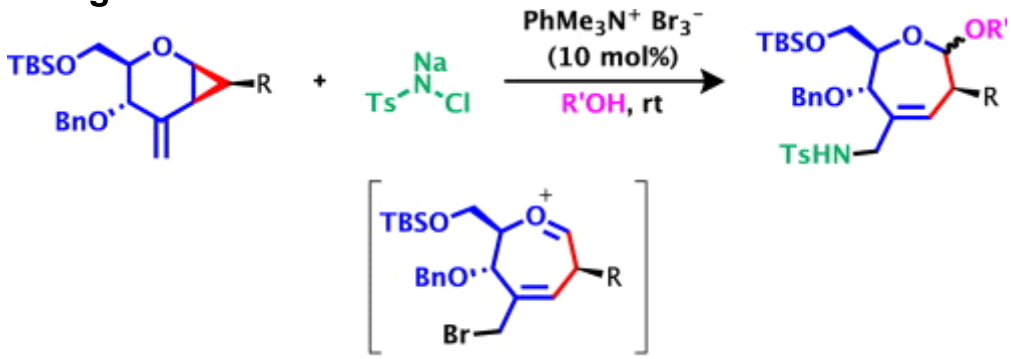
Citation: Venkataraman Ganesha, Taraknath Kundua, Srinivasan Chandrasekaran. (**2014**). *Tetrahedron*, 70(40), 7268

sigma-Ferrier rearrangement of carbohydrate derived vinylcyclopropanes: a facile approach to oxepane analogs



Intermediate - DFT calculations

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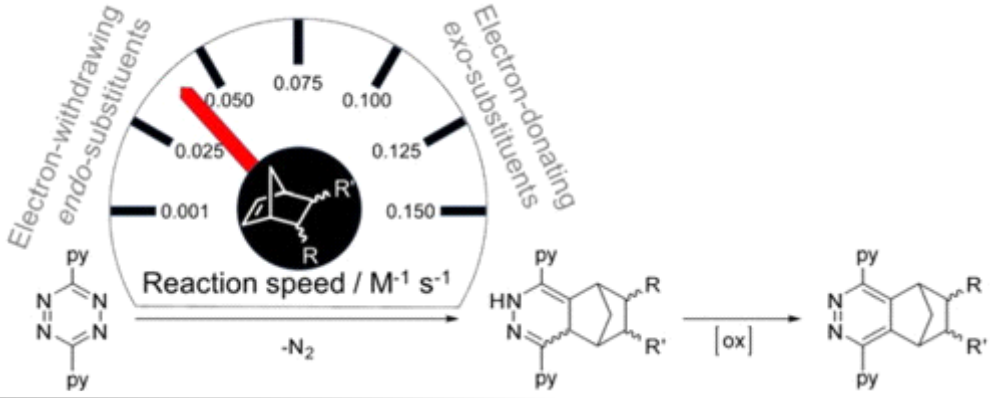
Citation: Astrid-Caroline Knall, , Manuel Hollauf, et al. (**2014**). *Tetrahedron Letters*, 55(34), 4763

Kinetic studies of inverse electron demand Diels–Alder reactions (iEDDA) of norbornenes and 3,6-dipyridin-2-yl-1,2,4,5-tetrazine



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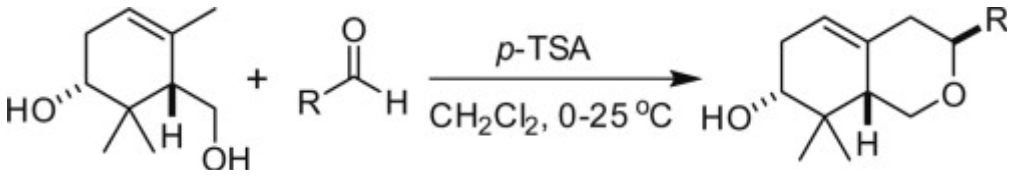
Citation: B.V. Subba Reddya, S. Rehana Anjuma, et al. (**2014**). *Tetrahedron Letters*, 55(36), 5011

A novel Prins reaction for the synthesis of hexahydro-8,8-dimethyl-1H-isochromen-7-ol derivatives



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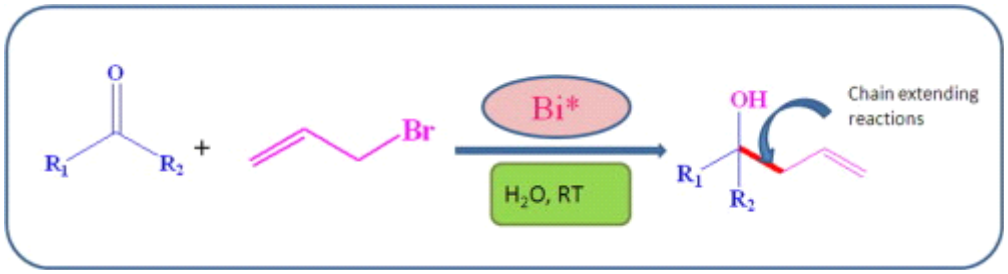
Citation: B.D. Jadhav, S.K. Pardeshi. (**2014**). *Tetrahedron Letters*, 55(35), 4948

Bismuth chloride mediated allylation of carbonyl compounds in aqueous media: a mechanistic investigation



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