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**Next Due Date:** Wednesday, 15 February 2012

## Instructions for Authors (Volume 37)

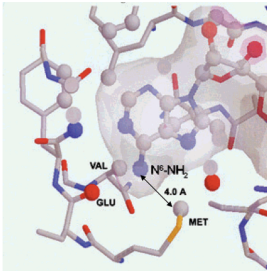
Identify articles to abstract in the journals you have been assigned. Try to pick things that the group (or specific subgroups) would like to read or should be aware of. This does not need to be limited to chemistry! If you encounter interesting pieces of media elsewhere (The Economist being a recent 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 [Imieuli@stanford.edu](mailto:Imieuli@stanford.edu). Late abstracts will be included in the Lit Review for the following month. **PC Users should submit their abstracts as PDFs** or purchase a Mac.

Citation: Abeyweera, T.P.; Rotenberg, S.A. <i>Biochemistry</i> 2007, 46, 2364-2370	
<p><b>Design and Characterization of a Traceable Protein Kinase C-alpha</b></p> <p>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 (1-c-32P1-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.</p>	
	<p><b>bioorganic</b> asymmetric methods synthesis mechanism review other</p> <p>OM Bryo Apop Hybrid Gnid/ Kirk Laulimalide Drug Deliv.</p>

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

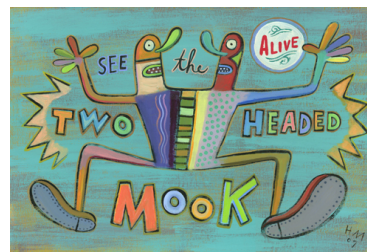
### DON'T BE A MOOK!

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:

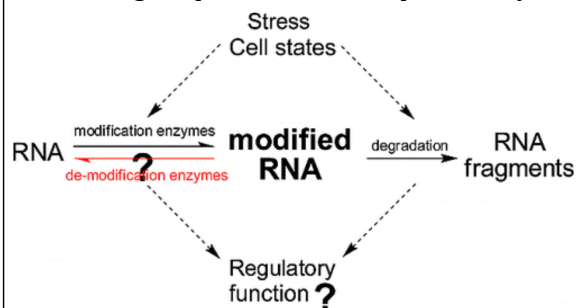
- You will not receive a printed copy of the Lit Review.
- You will get last choice when it's time to pick new journals.
- We will crack your corn (clean in half)



Citation: Yi, C.; Pan, T. *Acc. Chem. Res.* **2011**, *44*, 1380-1388.

### Cellular Dynamics of RNA Modification.

This paper focuses on discussing the role of RNA modification, specifically highlighting four main areas: 4-thio uridine and its role as a cellular sensor of near-UV light; queuosine which potentially functions as a biological malignancy marker; N6-methyl adenine which functions in mRNA; and pseudouridine which has a role in nutrient deprivation.

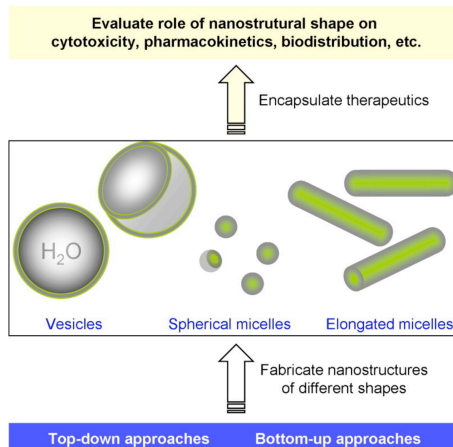


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Citation: Venkataraman, S.; Hedrick, J.L.; Ong, Z.Y.; Yang, C.; Ee, P.L.; Hammond, P.T.; Yang, Y.Y. *Adv. Drug Deliv. Rev.* **2011**, *63*, 1228-1246.

### The Effects of Polymeric Nanostructure Shape on Drug Delivery

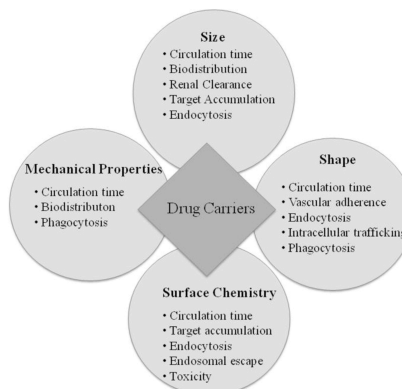


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Citation: Yoo, J.W.; Doshi, N.; Mitragotri, S. *Adv. Drug Deliv. Rev.* **2011**, *63*, 1247-1256.

### Adaptive Micro and Nanoparticles: Temporal Control over Carrier Properties to Facilitate Drug Delivery

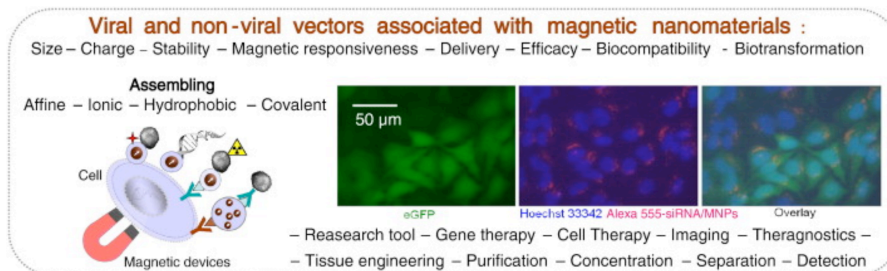


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Citation: Plank, C.; Zelphati, O.; Mykhaylyk, O. *Adv. Drug Deliv. Rev.* **2011**, *63*, 1300-1331.

### Magnetically Enhanced Nucleic Acid Delivery. Ten Years of Magnetofection - Progress and Prospects



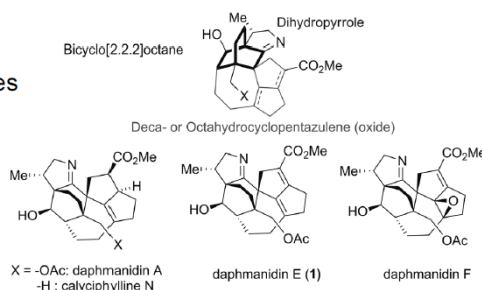
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Citation: *Angew. Chem. Int. Ed.* **2011**, *50*, 11501-11505

### Total Synthesis of (+)-Daphmanidin E

The first total synthesis of a type A daphmanidin alkaloid includes as key features rapid access to an enantiomerically pure bicyclo-[2.2.2]octadione and elaboration around its periphery through the implementation of two Claisen rearrangements, a diastereoselective hydroboration, and a cobalt-catalyzed alkyl-Heck cyclization.



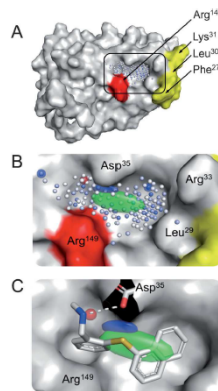
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Citation: *Angew. Chem. Int. Ed.* **2012**, *51*, 258 –261

### Immunosuppressive Small Molecule Discovered by Structure-Based Virtual Screening for Inhibitors of Protein–Protein Interactions

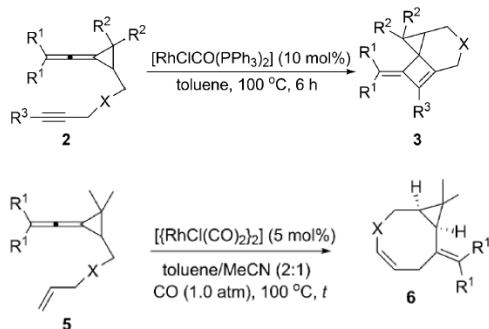
No.	Structure	Inhibition (% $\pm$ standard deviation)	GoldScore
1		99 $\pm$ 2	54
2		14 $\pm$ 35	35
3		12 $\pm$ 25	43
4		1 $\pm$ 33	34
5		insoluble in DMSO	50
6		insoluble in DMSO	53



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Citation: *Angew. Chem. Int. Ed.* **2011**, 50, 12027 - 12031



Two interesting rhodium(I)-catalyzed intramolecular [2+2] cycloadditions of yne and ene vinylidene cyclopropanes (VDCPs) were developed which provide various functionalized polycyclic systems containing either a cyclobutene or an azacyclooctene in moderate to good yields and with high region and diastereoselectivity under mild reaction conditions.

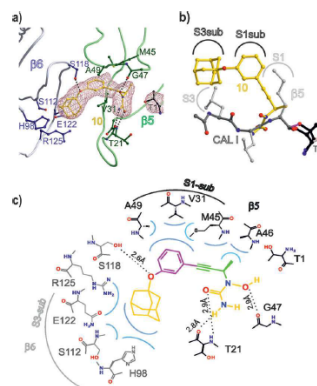
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Citation: *Angew. Chem. Int. Ed.* **2012**, 51, 247 – 249

### Hydroxyureas as Noncovalent Proteasome Inhibitors

To date, all core protein (CP) inhibitors are known to have either a peptidic structure, which forms an antiparallel sheet with the substrate e-binding channel of the active sites, and/or reactive head groups which covalently bind to the threonine residue Thr10g. Hydroxyureas constitute a new class of small, reversibly and noncovalently bound, active-site-specific 20S proteasome inhibitors that are characterized by a novel mode of ligand binding and proteasome inhibition.

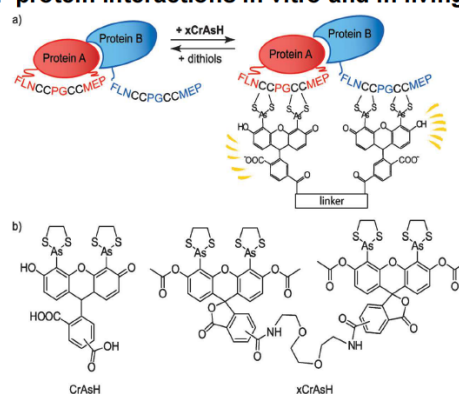


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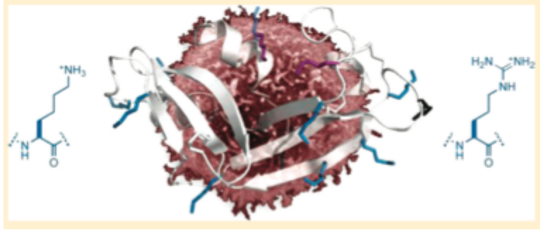
Citation: *Angew. Chem. Int. Ed.* **2011**, 50, 12655 - 12658

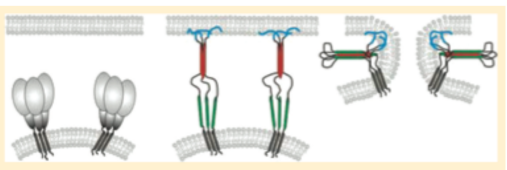
### Novel membrane-permeable chemical cross-linker for studying protein-protein interactions in vitro and in living cells

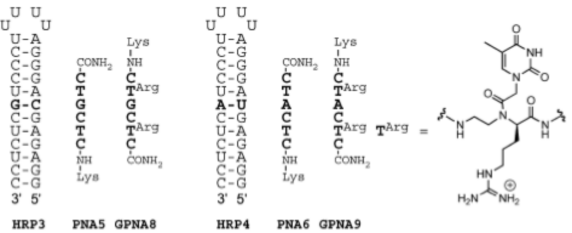


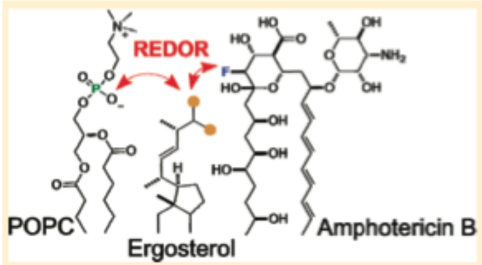
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Citation: Sundlass, N.K. and Raines, R.T. <i>Biochemistry</i> , <b>2011</b> , <i>50</i> , 10293-10299.		
<h3>Arginine Residues Are More Effective than Lysine Residues in Eliciting the Cellular Uptake of Onconase</h3> <p>Onconase is an amphibian member of the pancreatic ribonuclease family of enzymes that is in clinical trials for the treatment of cancer. It has an abundance of lysine residues, and is internalized by cancer cells through endocytosis in a mechanism similar to that of cell-penetrating peptides. As previous results within our own group suggest, replacing 10 of the 12 lysine residues with arginines resulted in a dramatic increase in cellular uptake.</p>		<b>bioorganic</b> methods synthesis <b>mechanism</b> review other
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Citation: Vogel, E.P., Curtis-Fisk, J., Young, K.M., Weliky, D.P. <i>Biochemistry</i> , <b>2011</b> , <i>50</i> , 10013-10026.			
<h3>Solid-State Nuclear Magnetic Resonance (NMR) Spectroscopy of Human Immunodeficiency Virus gp41 Protein That Includes the Fusion Peptide: NMR Detection of Recombinant Fgp41 in Inclusion Bodies in Whole Bacterial Cells and Structural Characterization of Purified and Membrane-Associated Fgp41</h3>		<p>This work describes a potentially generalizable way to get at the structure of recombinant protein using SSNMR. No protein solubilization or purification was required.</p>	<b>bioorganic</b> methods synthesis mechanism review other
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Citation: Gupta, P., Oluwatoyosi, M., Rozners, E. <i>Biochemistry</i> , <b>2012</b> , <i>51</i> , 63-73.		
<h3>Recognition of Double-Stranded RNA by Guanidine-Modified Peptide Nucleic Acids</h3> <p>Double-helical RNA has become an attractive target for molecular recognition because many noncoding RNAs play important roles in the control of gene expression. The molecular recognition of RNA was found to be enhanced by guanidine modification of PNA (GPNA). Promising results were obtained for recognition of biologically relevant double-helical RNA: GPNA derived from D-arginine recognized the transactivation response element of HIV-1 with high affinity and sequence selectivity.</p>		<b>bioorganic</b> methods <b>synthesis</b> mechanism review other
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Citation: Umegawa, Y., Nakagawa, Y., Tahara, K., Tsuchikawa, H., Matsumari, N., Oishi, T., Murata, M. <i>Biochemistry</i> , <b>2012</b> , <i>51</i> , 83-89.	
<p><b>Head-to-Tail Interaction between Amphotericin B and Ergosterol Occurs in Hydrated Phospholipid Membrane</b></p> <p>Structural information about the interaction between amphotericin B and ergosterol in a membrane-bound environment is studied using solid-state NMR REDOR analysis. The work was able to show that the "head-to-tail" pairing between ergosterol and amphotericin B (as opposed to "head-to-head") was the correct membrane-bound interaction.</p>	
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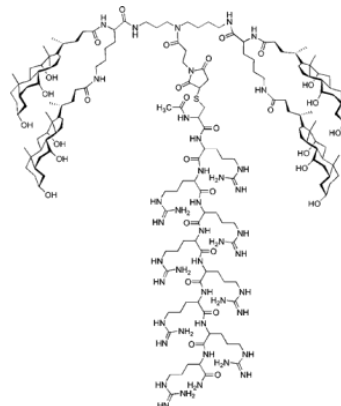
Citation: Dmitriev, R.I. et al. <i>Bioconjugate Chemistry</i> <b>2011</b> <i>22</i> (12), 2507-2518.	
<p><b>Cell-Penetrating Conjugates of Coproporphyrins with Oligoarginine Peptides: Rational Design and Application for Sensing Intracellular O<sub>2</sub></b></p> <p>A panel of phosphorescent oligoarginine conjugates of tetracarboxylic Pt(II)-coproporphyrin I dye (PtCP), monosubstituted with long peptides or tetra-substituted with short peptides and having different linkers and peripheral groups, is described. The conjugates were seen to rely on endocytotic mechanisms of cell entry, which are different from that of the unconjugated oligoarginine peptide, and show diverse patterns of intracellular distribution. The results produced and the structure-activity relationships determined can facilitate the rational design of new bioconjugates of porphyrin dyes tailored to specific applications.</p>	<p>bioorganic methods synthesis mechanism review other</p>
	<p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Citation: Jin, J. et al. <i>Bioconjugate Chemistry</i> <b>2011</b> <i>22</i> (12), 2568-2572.	
<p><b>In Vivo Specific Delivery of c-Met siRNA to Glioblastoma Using Cationic Solid Lipid Nanoparticles</b></p> <p>Cationic solid lipid nanoparticles (SLN), reconstituted from natural components of protein-free low-density lipoprotein, was conjugated to PEGylated c-Met siRNA. The c-Met siRNA-PEG/SLN complex efficiently down-regulated c-Met expression level, as well as decreased cell proliferation in U-87MG in vitro. In orthotopic U-87MG xenograft tumor model, intravenous administration of the complex significantly inhibited c-Met expression at the tumor tissue and suppressed tumor growth without showing any systemic toxicity in mice. Our data demonstrates the feasibility of using siRNA-PEG/SLN complexes as a potential carrier of therapeutic siRNAs for the systemic treatment of GBM in the clinic.</p>	<p>bioorganic methods synthesis mechanism review other</p>
	<p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Citation: Cline, L.L. et al. *Bioconjugate Chemistry* **2011** 22 (11), 2210-2216.

A Molecular Umbrella Approach to the Intracellular Delivery of Small Interfering RNA

Molecular umbrellas have been synthesized using cholic acid, spermidine, and lysine as starting materials. Coupling of these molecular umbrellas to an octaarginine peptide afforded agents that were capable of promoting the transport of small interfering RNA to HeLa cells. The knockdown efficiency that was observed for one tetrawalled molecular umbrella–octaarginine conjugate was comparable to that observed with a commercially available transfection agent, Lipofectamine 2000, but the conjugate showed less cytotoxicity



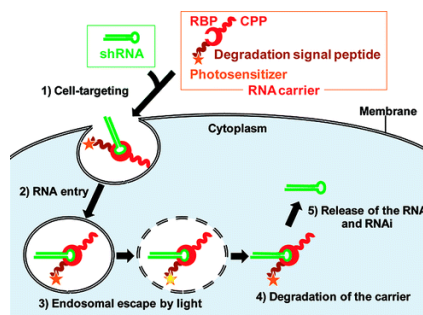
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Citation: Matsushita-Ishiodori, Y. et al. *Bioconjugate Chemistry* **2011** 22 (11), 2222-2226.

Photosensitizing Carrier Proteins for Photoinducible RNA Interference

Researchers developed a photoinducible RNAi method using photosensitizing carrier proteins, named CLIP-RNAi (CPP-linked RBP-mediated RNA internalization and photoinduced RNAi). Novel carrier proteins were designed for this study to establish a highly efficient delivery system for small interfering RNA (siRNA) or short hairpin RNA (shRNA) and to demonstrate light-dependent gene silencing

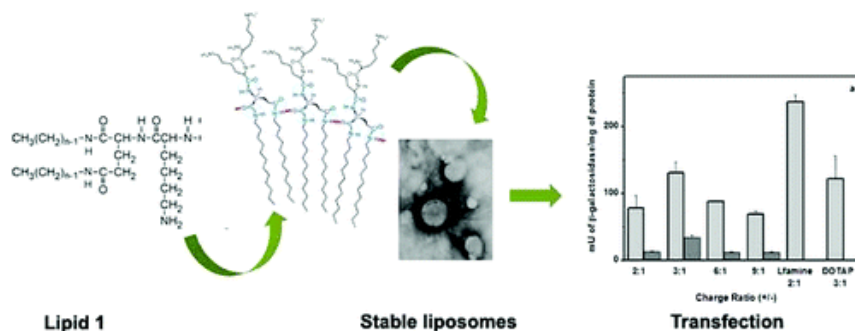


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Citation: Gopa, V. et al. *Bioconjugate Chemistry* **2011** 22 (11), 2244-2254.

Synthesis and Transfection Efficiency of Cationic Oligopeptide Lipids: Role of Linker



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Citation: <i>Bioorg. Med. Chem.</i> <b>2011</b> , 19 (22).	
<p><b>Current perspectives in Marine Bioorganic Chemistry: Harnessing the biosynthetic capacity of marine-derived organisms</b></p> <p>This issue focuses on marine-derived natural products.</p>	<p><b>bioorganic</b> methods synthesis mechanism review other</p> <p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

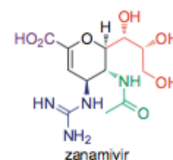
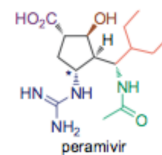
Citation: Takaya, D. <i>et al. Bioorg. Med. Chem.</i> <b>2011</b> , 19 (22), 6892.	
<p><b>A new method for induced fit docking (GENIUS) and its application to virtual screening of novel HCV NS3-4A protease inhibitors</b></p>	<p>bioorganic methods synthesis mechanism review other</p> <p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Citation: Wada, K., Ohkoshi, E., Morris-Natschkes, S., Bastow, K.F., Lee, K.H. <i>Bioorg. Med. Chem. Lett.</i> <b>2012</b> , 22, 249-252.	
<p><b>Cytotoxic esterified diterpenoid alkaloid derivatives with increased selectivity against a drug-resistant cancer cell line</b></p>	<p>bioorganic methods <b>synthesis</b> mechanism review other</p> <p>OM Bryo <b>DDOs</b> Hybrid Drug Deliv. Prostratin</p>
<p>C-6 Esterifications of delpheline were carried out to provide 20 new diterpenoid alkaloid derivatives. Three natural alkaloids and all synthesized compounds were evaluated for cytotoxic activity against lung (A549), prostate (DU145), nasopharyngeal (KB), and vincristine-resistant nasopharyngeal (KB-VIN) cancer cell lines and interestingly, showed an improved drug resistance profile compared to paclitaxel. 6-Acylation appears to be critical for producing cytotoxic activity in this alkaloid class and a means to provide promising new leads for further development into antitumor agents.</p>	

Citation: Bromba, C.M., et al.  
*Bioorg. Med. Chem. Lett.*, **2011**, 21, 7137-7141.

### The de-guanidinylated derivative of peramivir remains a potent inhibitor of influenza neuraminidase

The guanidine function in the potent neuraminidase inhibitor peramivir was included early on in the drug design process. However, this functional group may also contribute to the poor oral availability of the drug. Given that the relative stereochemistry on the guanidine-bearing carbon in peramivir is opposite to that in zanamivir (a related neuraminidase inhibitor), we sought to determine the importance of the guanidine group to peramivir's overall potency. Here we report that the de-guanidinylated analogue of peramivir is only ca. 1-order of magnitude less potent than peramivir itself in two in vitro inhibition assays. This suggests that next-generation inhibitors designed to improve on peramivir's properties might profitably dispense with the guanidine function.

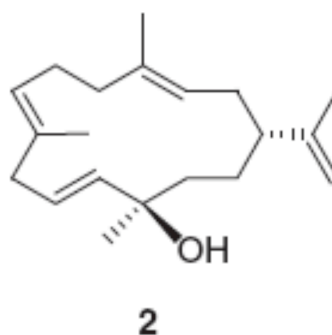
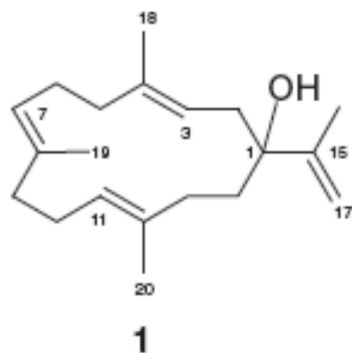


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Citation: Chen, B.-W. et al *Bull. Chem. Soc. Japan* 84 (2011), 12, 1371-1373

### Two New Cembranes from a Formosan Soft Coral *Sinularia facile*

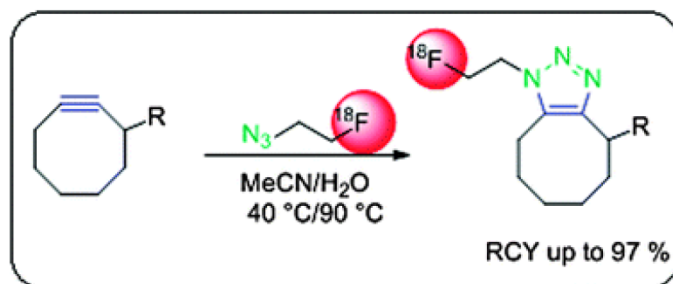


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Citation: Evans, H. L. et al. *Chem. Commun.* **2012**, 48 (7), 991-933.

### Copper-free click - a promising tool for pre-targeted PET imaging

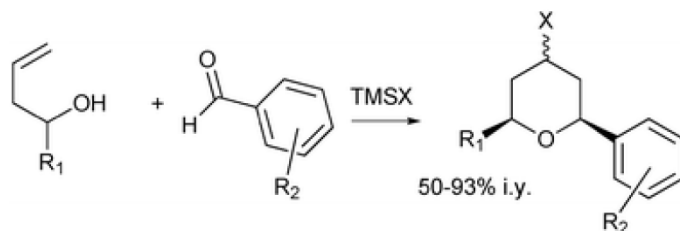


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Citation: Clarisse, D.; Pelotier, B.; Piva, O.; Fache, F. *Chem. Commun.* **2012**, 48 (1), 157-159.

**Green chemistry: solvent- and metal-free Prins cyclization.  
Application to sequential reactions**

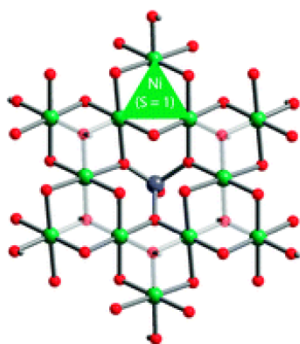


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Citation: Freedman, D. E. *et al. Chem. Commun.* **2012**, 48 (1), 64-66.

**Frustrated magnetism in the  $S = 1$  kagome lattice  $\text{BaNi}_3(\text{OH})_2(\text{VO}_4)_2$**



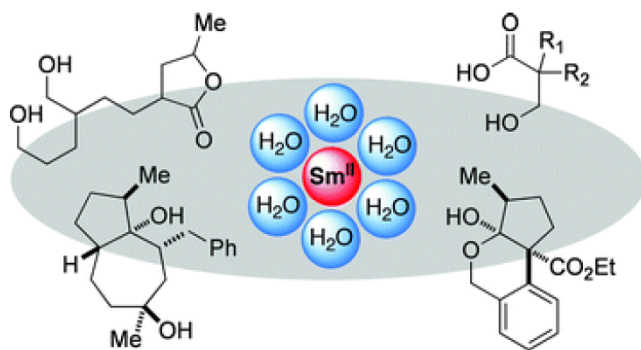
Recent paper by Danna Freedman,  
one of the visiting faculty candidates.

bioorganic  
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synthesis  
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OM  
Bryo  
Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Szostak, M. *et al. Chem. Commun.* **2012**, 48 (3), 330-346.

**Selective reductive transformations using samarium-diodide water**



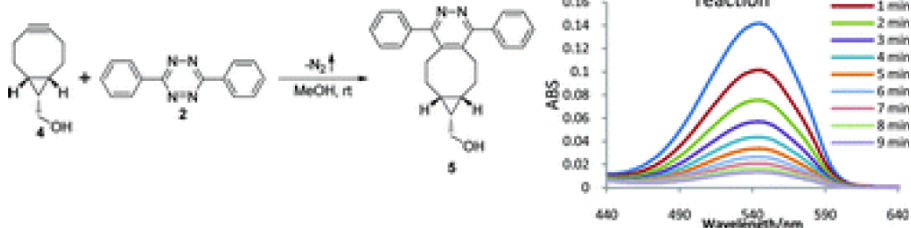
bioorganic  
methods  
synthesis  
mechanism  
review  
other

OM  
Bryo  
Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Chen, W. *et al. Chem. Commun.* **2012**, 48 (12), 1736-1738.

### Clicking 1,2,4,5-tetrazine and cyclooctynes with tunable reaction rates

Substituted tetrazines have been found to undergo facile inverse electron demand Diels-Alder reactions.



bioorganic  
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Kemsley, J. *Chemical & Engineering News.* **2012**, 90 (1), 7.

### Charges Brought in UCLA Lab Death

The Los Angeles County District Attorney's Office filed charges against the University of California and UC Los Angeles chemistry professor Patrick Harran on Dec. 27, 2011, for felony violations of California labor laws in the death of a staff research assistant three years ago.

Sheharbano (Sheri) Sangji, 23, died on Jan. 16, 2009, from injuries sustained in a fire 18 days earlier in a UCLA chemistry laboratory. Working with tert-butyl lithium, which ignites spontaneously in air, she was drawing the chemical from a bottle into a syringe when the plunger came out of the syringe barrel (C&EN, Aug. 3, 2009, page 29). Sangji was not wearing a lab coat, and the chemical splashed onto her clothes and set them on fire. Sangji was burned on her torso, arms, and hands.

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Hogue, C. *Chemical & Engineering News.* **2011**, 89 (48), 7.

### Forging Ahead on Climate Change



Negotiators from around the world today begin two weeks of United Nations talks in Durban, South Africa, on curbing greenhouse gas emissions. They will also be bracing the world for the worsening impacts of climate change, which are detailed in a recently released UN report.

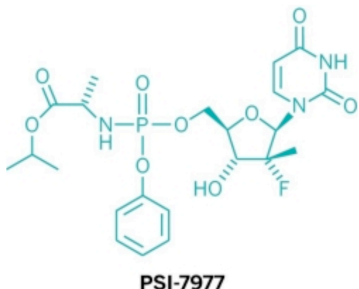
The negotiators' agenda includes two intertwined items. The first is extending portions of the Kyoto protocol that require 37 industrialized countries to ratchet down their greenhouse gas emissions. The second is considering the possibility of negotiating a new global climate pact that includes emission controls for the U.S. and China.

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McCoy, M. *Chemical & Engineering News*. 2011, 89 (48), 8.

### Gilead Places a Huge Bet



PSI-7977

Gilead Sciences is making a big wager on the hepatitis C market, agreeing to pay roughly \$11 billion for Pharmasset, a New Jersey-based firm with only 82 employees and no products on the market.

What Pharmasset does have is PSI-7977, a uracil nucleotide analog that recently began Phase III clinical studies as a treatment for people with the hepatitis C virus (HCV). If the compound is approved in 2014, as Gilead hopes, it will be part of the first all-oral treatment for HCV.

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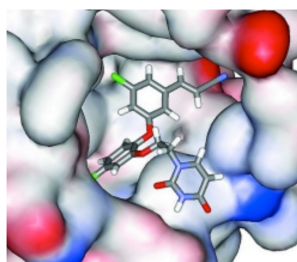
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Drug Deliv.  
Prostratin

Wilson, E. *Chemical & Engineering News*. 2011, 89 (49), 10.

Computer-assisted design has made possible the synthesis of a reverse transcriptase inhibitor with unprecedented potency against HIV-1 activity in human T cells (J. Med. Chem., DOI: 10.1021/jm201134m). The work helps validate computational design as a route to promising drug candidates.

Chemistry professor William Jorgensen and pharmacology professor Karen S. Anderson, both at Yale University, and their colleagues set out to develop a nonnucleoside reverse transcriptase inhibitor (NNRTI)...The group used computational design to tweak an original computer-docking hit.

### A Hit In Silico

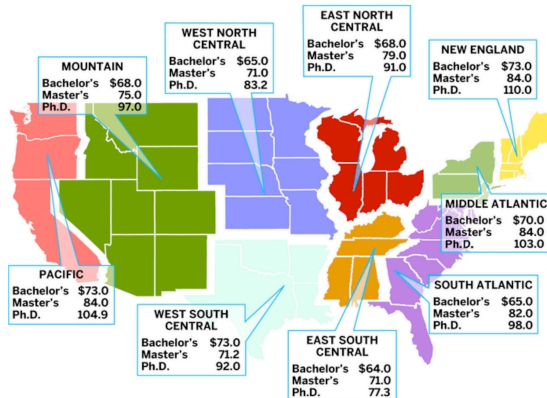


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Prostratin

Hanson, D. J. *Chemical & Engineering News*. 2011, 89 (50), 33-38.

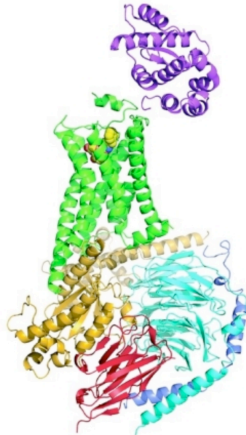
### Employment & Salary Survey



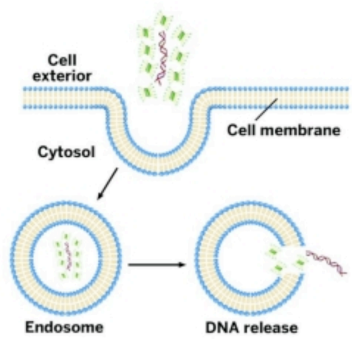
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review  
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OM  
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Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Drahl, C. *Chemical & Engineering News*. **2011**, 89 (51), 16.


	<p style="text-align: center;"><b>Signaling Sighted</b></p> <p>For the first time, researchers this year obtained an atomic-resolution crystal structure of a G protein-coupled receptor (GPCR) together with its G protein partner (C&amp;EN, Aug. 1, page 9; <i>Nature</i>, DOI: 10.1038/nature10361). Given the central role of GPCRs in molecular signaling, the new view showing how a receptor activates a G protein has implications for both fundamental biochemistry and drug design. Stanford University's Brian K. Kobilka and the University of Michigan's Roger K. Sunahara led the effort to solve the X-ray structure of the <math>\alpha_2</math> adrenergic receptor with its G protein.</p>	<p>bioorganic methods synthesis mechanism review other</p>
		<p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Borman, S. *Chemical & Engineering News*. **2011**, 89 (51), 10.

	<p style="text-align: center;"><b>Promising Agents for Gene Delivery</b></p> <p>A new class of helical charged peptides could make it easy to deliver modified genes to cells for research and gene therapy.</p> <p>Bionanomaterials specialist Jianjun Cheng of the University of Illinois, Urbana-Champaign, and coworkers designed and synthesized the peptides and show that they deliver genes to cells more efficiently than do other nonviral agents (<i>Angew. Chem. Int. Ed.</i>, DOI: 10.1002/anie.201104262). They believe the peptides will also prove to be safer than viruses.</p>	<p>bioorganic methods synthesis mechanism review other</p>
		<p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Drahl, C. *Chemical & Engineering News*. **2012**, 90 (1), 9.

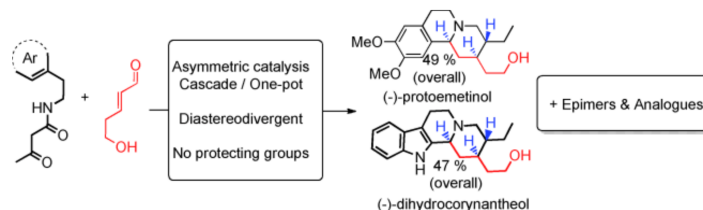
<p style="text-align: center;"><b>Bird Flu Studies Stir Controversy</b></p> <p>Two independent research teams have developed strains of avian influenza so potentially deadly that they've prompted an unprecedented response from the U.S. government. A federal advisory board has asked the journals <i>Science</i> and <i>Nature</i> not to publish details of the teams' controversial research, so as to hide it from would-be bioterrorists.</p> <p>In the not-yet-published work, scientists at the University of Wisconsin, Madison, and Erasmus Medical Center, in Rotterdam, the Netherlands, reportedly made mutant versions of the H5N1 avian flu virus that are highly contagious among ferrets, the lab animal that is most like humans in flu susceptibility. More than half of the people infected with real-world variants of H5N1 have died from it, but those viruses didn't spread from person to person easily....</p>	<p>bioorganic methods synthesis mechanism review other</p>
	<p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Borman, S. <i>Chemical &amp; Engineering News</i> . <b>2012</b> , 90 (2), 7.	
<p style="text-align: center;"><b>Cascade Beats Previous Record</b></p> <p><b>A cascade of reactions consisting of 12 steps</b> has produced complex natural-product-like molecules, some of which have promising biological activities. The achievement could lead to new drug discovery programs based on the class of molecules produced, according to a Nature Chemical Biology report (DOI:10.1038/nchembio.758 )...</p> <p>Cascade processes with as many as eight steps were developed previously. Now, a group led by synthetic chemist Kamal Kumar and chemical biologist Herbert Waldmann of the Max Planck Institute for Molecular Physiology, in Dortmund, Germany, and Dortmund University of Technology has created a reaction cascade of unprecedented length.</p>	<p>bioorganic methods synthesis mechanism review other</p> <p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>
Hogue, C. <i>Chemical &amp; Engineering News</i> . <b>2012</b> , 90 (3), 24-25.	
<p style="text-align: center;"><b>E-Mail Cases Stir Debate</b></p> <p><b>A public record</b> request last month seeking a university climate researcher's e-mails for use as political campaign fodder continues a trend that is inhibiting the free exchange of ideas by public university faculty, say organizations concerned about academic freedom.</p> <p>Those groups are the <a href="#">American Association of University Professors</a> (AAUP) and the <a href="#">Union of Concerned Scientists</a> (UCS). Both groups support public record laws and are not seeking changes to them. But they are concerned that allowing public university researchers' e-mails discussing or critiquing scientific ideas to be made public—especially when taken out of context for political purposes—is putting a damper on scientific inquiry.</p>	<p>bioorganic methods synthesis mechanism review other</p> <p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>
Citation: Wang, Y-F.; Shi, Q-W, Dong, M.; Kiyota, H.; Gu, Y-C.; Cong, B., <i>Chem. Rev.</i> <b>2011</b> , 111, 7652-7709.	
<p style="text-align: center;"><b>Natural Taxanes: Developments Since 1828</b></p> <div style="text-align: center;">  </div>	<p>bioorganic methods synthesis mechanism <b>review</b> other</p> <p>OM Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Citation: Chemistry - A European Journal, Volume 17, Issue 49, pages 13814–13824

**A Stereodivergent Strategy for the Preparation of Corynantheine and Ipecac Alkaloids, Their Epimers, and Analogues: Efficient Total Synthesis of (-)-Dihydrocorynantheol, (-)-Corynantheol, (-)-Protoemetinol, (-)-Corynantheal, (-)-Protoemetine, and Related Natural and Nonnatural Compounds**

Dr. Wei Zhang,  
Juho Bah,  
Andreas  
Wohlfarth, Dr.  
Johan Franzén



"Efficient and diverse, a general and common synthetic strategy for the preparation of the title alkaloids and related natural products, their epimers, and several nonnatural analogues has been developed to give excellent overall yields on a multigram scale (see scheme)."

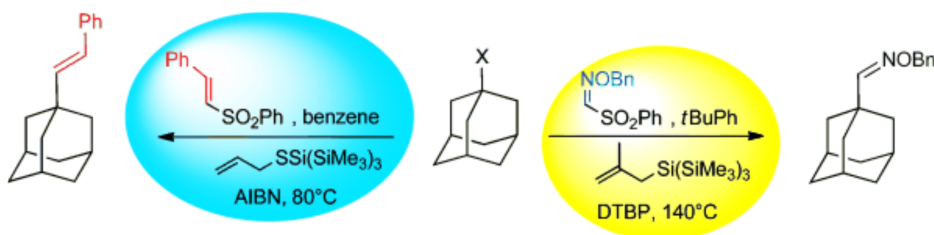
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Bryo  
DDO  
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Prostratin

Citation: Chemistry - A European Journal, Volume 17, Issue 49, pages 13904–13911

**Allylsilanes in "Tin-free" Oximation, Alkenylation, and Allylation of Alkyl Halides**

Dr. Guy Rouquet, Dr. Frédéric Robert, Dr. Raphaël Méreau, Dr. Frédéric Castet, Prof. Yannick Landais



"The supersilyl radical is generated through addition of a sulfonyl radical species onto readily available allylsilanes. This silyl radical is then used as a radical chain carrier in oximation, alkenylation, and allylation of alkyl halides (see scheme). This silicon group efficiently replaces tributyltin, which is generally used for such group transfer processes."

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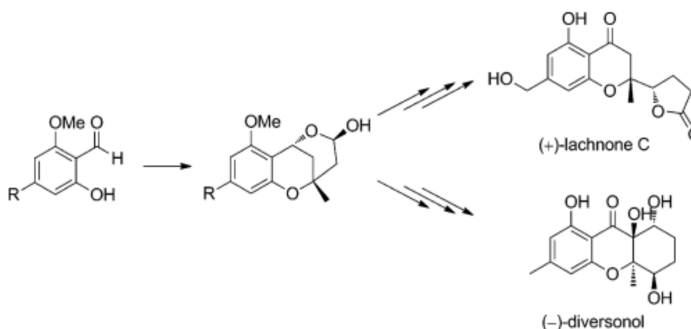
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Hybrid  
Drug Deliv.  
Prostratin

Citation: Chemistry - A European Journal, Volume 17, Issue 49, pages 13706–13711

**A Unified Strategy for the Asymmetric Total Syntheses of Diversonol and Lachnone C**

Manuel C. Bröhmer, Dr. Emmanuel Bourcet, Dr. Martin Nieger, Prof., Dr. Stefan Bräse

"The first asymmetric total syntheses of mycotoxins (+)-lachnone C and (-)-diversonol were achieved with the enantioselective domino vinyllogous aldol-oxa-Michael reaction as the key step (see scheme)."



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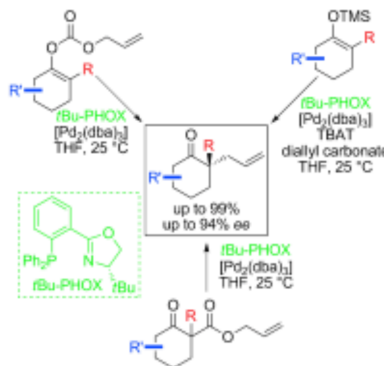
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Hybrid  
Drug Deliv.  
Prostratin

Citation: Chemistry - A European Journal, Volume 17, Issue 50, pages 14199–14223

**Enantioselective Decarboxylative Alkylation Reactions: Catalyst Development, Substrate Scope, and Mechanistic Studies**

Dr. Douglas C. Behenna, Dr. Justin T. Mohr...Prof. Brian M. Stoltz

"The development of an enantioselective decarboxylative palladium-catalyzed allylic alkylation reaction, utilizing phosphinooxazoline ligands, is described. The catalyst is applied to a range of allyl enol carbonate, silyl enol ether, and allyl  $\beta$ -ketoester substrates to provide alkylated ketone products in excellent yield and good ee (see scheme). The utility of these products is demonstrated by their use in several asymmetric syntheses. Mechanistic studies are reported suggesting an unusual inner-sphere mechanism."



bioorganic  
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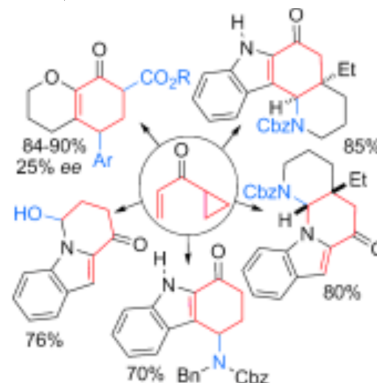
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DDO  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Chemistry - A European Journal, Volume 17, Issue 51, pages 14527–14538

**Formal Homo-Nazarov and Other Cyclization Reactions of Activated Cyclopropanes**

Filippo De Simone, Tanguy Saget, Dr. Fides Benfatti, Sofia Almeida and Prof. Dr. Jérôme Waser

"The extension of the scope of cyclization reactions of donor-acceptor cyclopropanes with particular focus on the catalytic formal homo-Nazarov process is reported (see scheme). An ester group or a heteroatom was introduced on the cyclopropane to enhance its acceptor- or donor-mediated polarization. Control over regio- and diastereoselectivity was achieved, and a first proof of principle for asymmetric induction is described."



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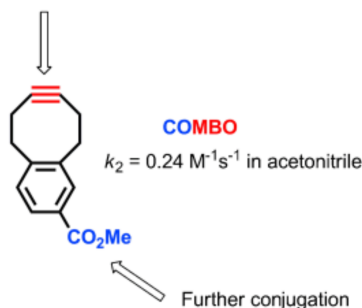
Citation: Chemistry - A European Journal, Volume 18, Issue 3, pages 822–828

**A Non-Fluorinated Monobenzocyclooctyne for Rapid Copper-Free Click Reactions**

Balázs R. Varga, Prof. Dr. Mihály Kállay, Dr. Krisztina Hegyi, Dr. Szabolcs Béni and Dr. Péter Kele

"The preparation of carboxymethylmonobenzocyclooctyne (COMBO) was carried out in four synthetic steps. This simple, non-fluorinated, copper-free click reagent showed excellent stability and reaction kinetics (see scheme). A COMBO-modified fluorescent label was employed in glycan imaging of metabolically modified HeLa cells."

Rapid copper-free click reaction



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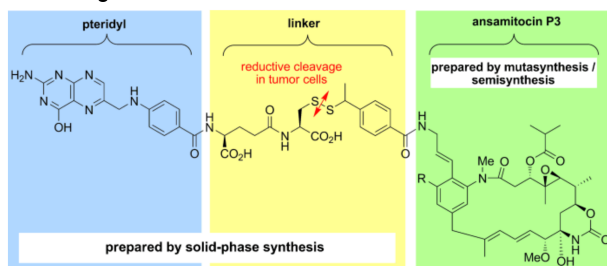
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DDO  
Hybrid  
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Prostratin

Citation: Chemistry - A European Journal, Volume 18, Issue 3, pages 880–886

**Combined Muta- and Semisynthesis: A Powerful Synthetic Hybrid Approach to Access Target Specific Antitumor Agents Based on Ansamitocin P3**

Dr. Florian Taft, Dr. Kirsten Harmrolfs, Dr. Irinia Nicleleit, Anja Heutling, Miriam Kiene, Prof. Dr. Nisar Malek, Dr. Florenz Sasse and Prof. Dr. Andreas Kirschning

"Four novel folate–ansamitocin conjugates were prepared by a combined muta-/semisynthetic approach. They exert strong selectivity between cell lines that have expressed and that are devoid of folate receptors (FR). The study demonstrates both the power of target-specific chemotherapy with ansamitocins and reveals the diverse options mutasynthesis combined with semisynthesis provides."

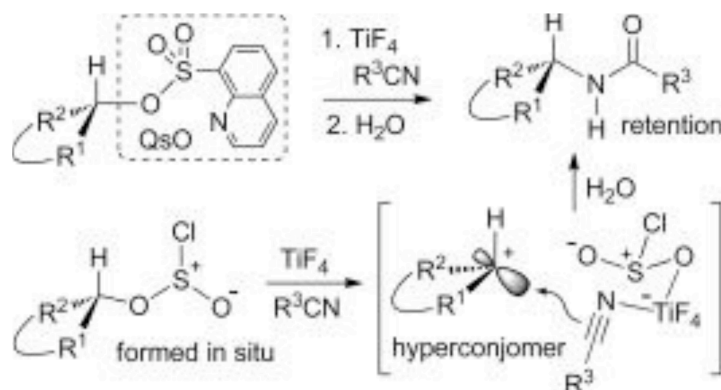


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mechanism  
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other

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Bryo  
DDO  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Mondal, D., et al, *Eur. J. Org. Chem.* 2011: 7057–7061.

**A Direct and Stereoretentive Synthesis of Amides from Cyclic Alcohols**

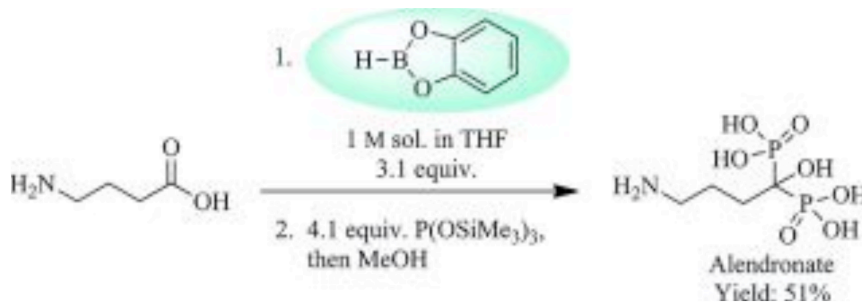


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Bryo  
Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Egorov, M., et al., *Eur. J. Org. Chem.*, 2011: 7148–7154.

**A One-Pot Synthesis of 1-Hydroxy-1,1-bis(phosphonic acid)s Starting from the Corresponding Carboxylic Acids.**

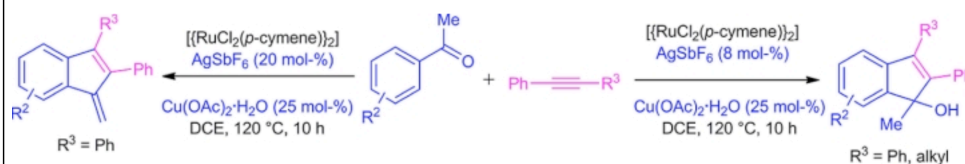


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OM  
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Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Chinnagolla, R. K. and Jeganmohan, M. *Eur. J. Org. Chem.*, 2012: 417–423

### Ruthenium-Catalyzed Regioselective Cyclization of Aromatic Ketones with Alkynes: An Efficient Route to Indenols and Benzofulvenes.

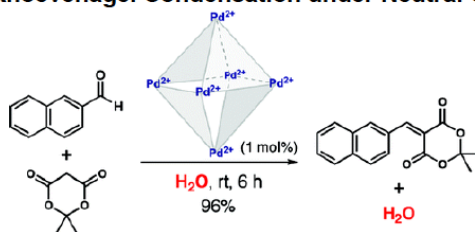


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OM  
Bryo  
Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Murase, T.; Nishijima, Y.; Fujita, M. *J. Am. Chem. Soc.*, 2012, 134 (1), pp 162–164

### Cage-Catalyzed Knoevenagel Condensation under Neutral Conditions in Water



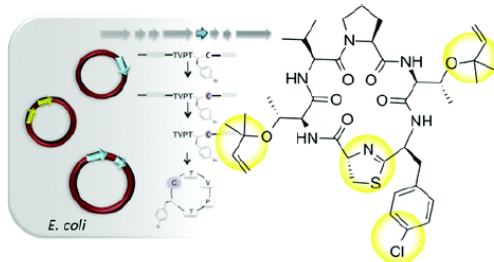
A cationic coordination cage dramatically accelerates the Knoevenagel condensation of aromatic aldehydes in water under neutral conditions. The addition of a nucleophile to the aldehyde to generate anionic intermediates seems to be facilitated by the cationic environment of the cavity. The products are ejected from the cage as a result of the host-guest size discrepancy.

bioorganic  
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mechanism  
review  
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OM  
Bryo  
Apop  
Hybrid  
Gnid/ Kirk  
Laulimalide  
Drug Deliv.

Citation: Tianero, M.D.B.; Donia, M.S.; Young, T.S.; Schultz, P.G.; Schmidt, E.W. *J. Am. Chem. Soc.*, 2012, 134 (1), pp 418–425

### Ribosomal Route to Small-Molecule Diversity



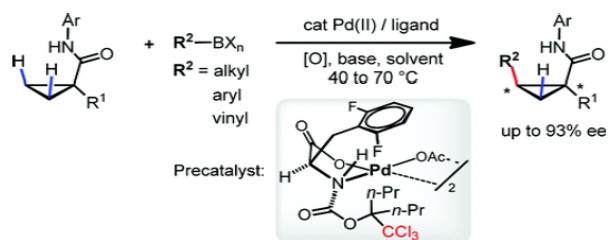
The cyanobactin ribosomal peptide (RP) natural product pathway was manipulated to incorporate multiple tandem mutations and non-proteinogenic amino acids, using eight heterologous components simultaneously expressed in *Escherichia coli*. These studies reveal the potential of RPs for the rational synthesis of complex, new small molecules over multiple-step biosynthetic pathways using simple genetic engineering.

bioorganic  
asymmetric  
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mechanism  
review  
other

OM  
Bryo  
Apop  
Hybrid  
Gnid/ Kirk  
Laulimalide  
Drug Deliv.

Citation: Wasa, M.; Engle, K.M.; Lin, D.W.; Yoo, E.J.; Yu, J.-Q. J. Am. Chem. Soc., 2011, 133 (49), pp 19598–19601

### Pd(II)-Catalyzed Enantioselective C–H Activation of Cyclopropanes



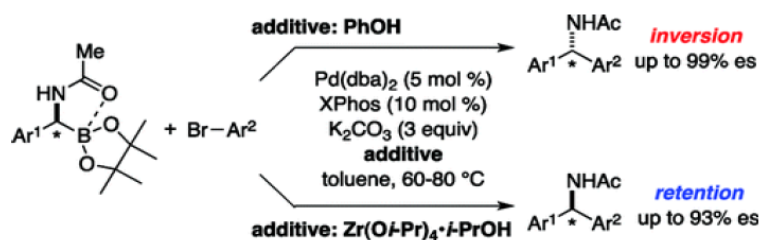
Systematic ligand development has led to the identification of novel mono-N-protected amino acid ligands for Pd(II)-catalyzed enantioselective C–H activation of cyclopropanes. A diverse range of organoboron reagents can be used as coupling partners, and the reaction proceeds under mild conditions. These results provide a new retrosynthetic disconnection for the construction of enantioenriched cis-substituted cyclopropanecarboxylic acids.

bioorganic  
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mechanism  
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Bryo  
Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Awano, T.; Ohmura, T.; Suginome, M. J. Am. Chem. Soc., 2011, 133 (51), pp 20738–20741

### Inversion or Retention? Effects of Acidic Additives on the Stereochemical Course in Enantiospecific Suzuki–Miyaura Coupling of $\alpha$ -(Acetylamino)benzylboronic Esters



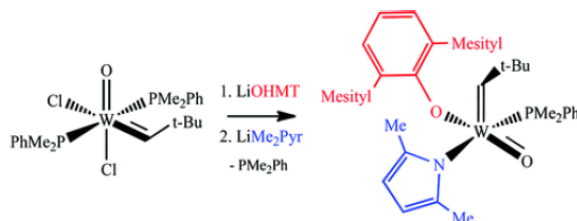
Highly enantiospecific, invertive C–C bond formation takes place with the use of phenol as an additive. In contrast, high enantiospecificity for retention of configuration is attained in the presence of  $\text{Zr(Oi-Pr)}_4 \cdot i\text{-PrOH}$  as an additive.

bioorganic  
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Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Peryshkov, D.V.; Schrock, R.R.; Takase, M.K.; Müller, P.; Hoveyda, A.H. J. Am. Chem. Soc., 2011, 133 (51), pp 20754–20757

### Z-Selective Olefin Metathesis Reactions Promoted by Tungsten Oxo Alkylidene Complexes



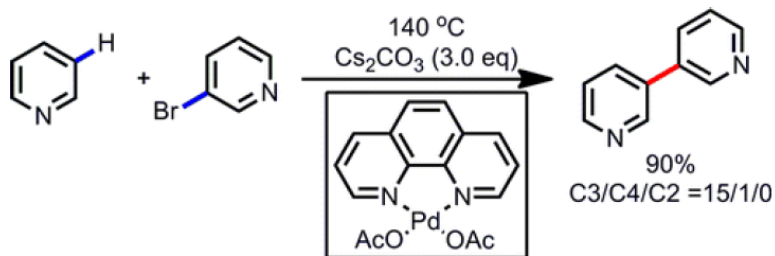
Compound 5 is a highly effective catalyst for the Z-selective coupling of selected terminal olefins (at 0.2% loading) to give product in >75% yield with >99% Z configuration.

bioorganic  
methods  
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OM  
Bryo  
Gnid/Kirk  
Hybrid  
Drug Deliv.  
Prostratin

Citation: Ye, M.; Gao, G.-L.; Edmunds, A.J.F.; Worthington, P.A.; Morris, J.A.; Yu, J.-Q. J. Am. Chem. Soc., 2011, 133 (47), pp 19090–19093

**Ligand-Promoted C3-Selective Arylation of Pyridines with Pd Catalysts: Gram-Scale Synthesis of (±)-Preclamol**



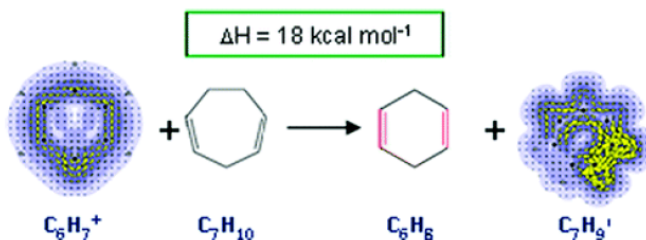
The first example of Pd-catalyzed, C3-selective arylation of unprotected pyridines has been developed by employing a catalytic system consisting of Pd(OAc)<sub>2</sub> and 1,10-phenanthroline.

bioorganic  
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OM  
Bryo  
Apop  
Hybrid  
Gnid/ Kirk  
Laulimalide  
Drug Deliv.

Citation: Lawlor, D.A.; Bean, D.E.; Fowler, P.W.; Keeffe, J.R.; Kudavalli, J.S.; O'Ferrall, R.A.M.; Rao, S.N. J. Am. Chem. Soc., 2011, 133 (49), pp 19729–19742

**Hyperaromatic Stabilization of Arenium Ions: Cyclohexa- and Cycloheptadienyl Cations—Experimental and Calculated Stabilities and Ring Currents**



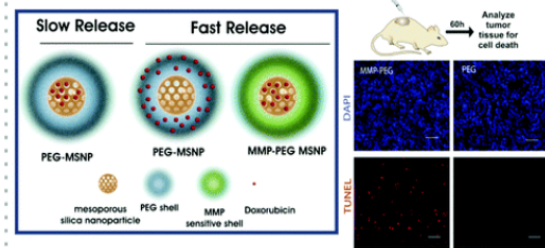
Measurements of pKR show that the cycloheptadienyl cation is less stable than the cyclohexadienyl (benzenium) cation by 18 kcal mol<sup>-1</sup>. This difference is ascribed here to “hyperaromaticity” of the latter.

bioorganic  
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Bryo  
Apop  
Hybrid  
Gnid/ Kirk  
Laulimalide  
Drug Deliv.

Citation: Singh, N.; Karambelkar, A.; Gu, L.; Lin, K.; Miller, J.S.; Chen, C.S.; Sailor, M.J.; Bhatia, S.N. J. Am. Chem. Soc., 2011, 133 (49), pp 19582–19585

**Bioresponsive Mesoporous Silica Nanoparticles for Triggered Drug Release**



Here, we describe the synthesis of stimulus-responsive polymer-coated MSNPs and the loading of therapeutics into both the core and shell domains. We characterize MSNP drug-eluting properties in vitro and demonstrate that the polymer-coated MSNPs release doxorubicin in response to proteases present at a tumor site in vivo, resulting in cellular apoptosis.

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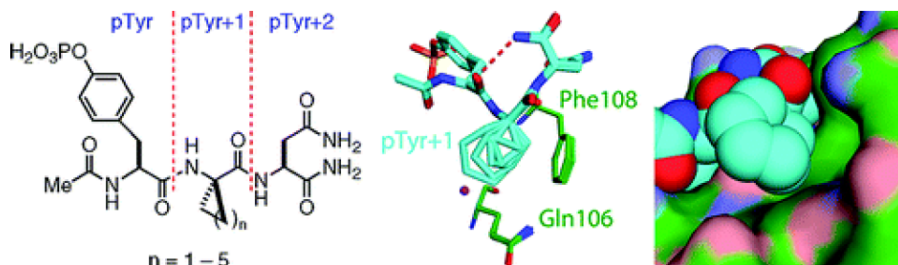
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Hybrid  
Gnid/ Kirk  
Laulimalide  
Drug Deliv.

Citation: Matsubara, R.; Gutierrez, A.C.; Jamison, T.F. J. Am. Chem. Soc., 2011, 133 (47), pp 19020–19023	
<p style="text-align: center;"><b>Nickel-Catalyzed Heck-Type Reactions of Benzyl Chlorides and Simple Olefins</b></p> <p style="text-align: center;"> <math>\text{Ar-CH}_2\text{-Cl} + \text{R-CH=CH}_2 \xrightarrow[\text{Et}_3\text{SiOTf, Et}_3\text{N}]{\text{Ni(cod)}_2, \text{PCy}_2\text{Ph or PCyPh}_2}</math> <math>\text{Ar-CH=CH-R}</math> </p> <p style="text-align: center;"> <i>Ar = aryl, heteroaryl</i>  <i>R = H, alkyl</i> </p> <p style="text-align: center;"> <i>33 examples</i>  <i>up to 99% yield</i>  <i>single observable regisomer</i> </p> <p>Nickel-catalyzed intermolecular benzylation and heterobenzylation of unactivated alkenes to provide functionalized allylbenzene derivatives are described. A wide range of both the benzyl chloride and alkene coupling partners are tolerated. All reactions described herein employ electronically unbiased aliphatic olefins (including ethylene), proceed at room temperature, and provide 1,1-disubstituted olefins over the more commonly observed 1,2-disubstituted olefins with very high selectivity.</p>	<p>bioorganic methods synthesis mechanism review other</p> <hr/> <p><b>OM</b> Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>
Citation: Wang, X.; Buchwald, S.L. J. Am. Chem. Soc., 2011, 133 (47), pp 19080–19083	
<p style="text-align: center;"><b>Rh-Catalyzed Asymmetric Hydroformylation of Functionalized 1,1-Disubstituted Olefins</b></p> <p style="text-align: center;"> <math>\text{R}'\text{-CH=C(COOR}')_2 \xrightarrow[\text{dodecane, 100 }^\circ\text{C, 4-8 h}]{\text{CO/H}_2 \text{ (10 bar, 1:5), Rh(acac)(CO)}_2 \text{ (1.0\%), L}^* \text{ (1.2\%)}}</math> <math>\text{R}'\text{-CH}_2\text{-CH}_2\text{-CHO}</math> </p> <p style="text-align: center;"> <i>(R' = Me or Et)</i> </p> <p style="text-align: center;"> <i>up to 94% ee</i>  <i>up to 91% yield</i> </p> <p style="text-align: center;"> <math>\text{L}^* = \text{(R,R)-BenzP}^*</math> </p> <p>The first method for the highly enantioselective rhodium-catalyzed hydroformylation of 1,1-disubstituted olefins has been developed. By employing either of the P-chirogenic phosphine ligands BenzP* and QuinoxP*, linear aldehydes with β-chirality can be prepared in a highly enantioselective fashion with good chemo- and regioselectivities.</p>	<p>bioorganic methods synthesis mechanism review other</p> <hr/> <p><b>OM</b> Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>
Citation: Reggie, L.; Lopez, J.J.; Collinson, I.; Glaubitz, C.; Lorch, M. J. Am. Chem. Soc., 2011, 133 (47), pp 19084–19086	
<p style="text-align: center;"><b>Dynamic Nuclear Polarization-Enhanced Solid-State NMR of a <sup>13</sup>C-Labeled Signal Peptide Bound to Lipid-Reconstituted Sec Translocon</b></p> <p>The small quantity of peptide in the sample (40 nmol) normally prohibits multidimensional ssNMR experiments. Such small amounts are not the exception, because for samples involving membrane proteins, most of the limited sample space is occupied by lipids. As a consequence, a conventional 2D DQF ssNMR spectrum with the sample used here would require many weeks if not months of measurement time. With the help of DNP, however, we were <b>able to acquire such a 2D spectrum within 20 h</b>. This development opens up <b>new possibilities for membrane protein studies</b>, particularly in the exploitation of high-resolution spectroscopy and the assignment of individual amino acid signals, in this case for a signal peptide bound to the translocon complex.</p>	<p>bioorganic methods synthesis mechanism review other</p> <hr/> <p><b>OM</b> Bryo Gnid/Kirk Hybrid Drug Deliv. Prostratin</p>

Citation: Martin, S.; et al. *JACS.* **2011**, *133* (46), 18518-18521.

**Protein–Ligand Interactions: Thermodynamic Effects Associated with Increasing Nonpolar Surface Area**

...increasingly more favorable binding enthalpies dominate increasingly less favorable binding entropies, a finding consistent with an enthalpy-driven hydrophobic effect.



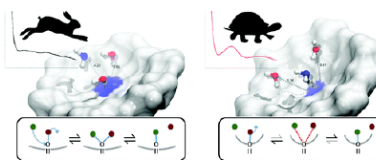
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Drug Deliv.  
Prostratin

Citation: Barrill, X.; et al. *JACS.* **2011**, *133* (46), 18903-18910.

**Shielded Hydrogen Bonds as Structural Determinants of Binding Kinetics: Application in Drug Design**

Here we show that almost buried polar atoms, a common feature on protein binding sites, tend to form hydrogen bonds that are shielded from water. Formation and rupture of this type of hydrogen bonds involves an energetically penalized transition state because it occurs asynchronously with dehydration/rehydration. In consequence, watershielded hydrogen bonds are exchanged at slower rates. The agreement between macroscopic observables and molecular simulations confirms the role of water-shielded hydrogen bonds as kinetic traps and illustrates how our finding could be used as an aid in structure-based drug discovery.



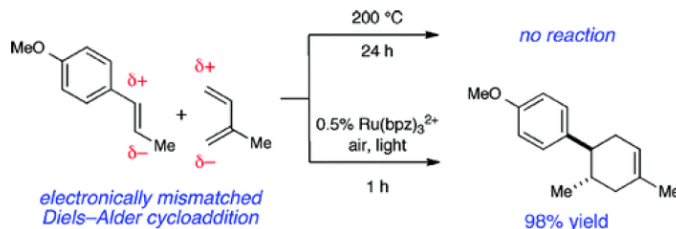
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**Hybrid**  
Drug Deliv.  
Prostratin

Citation: Yoon, T.; et al. *JACS.* **2011**, *133* (48), 19350-19353.

**Radical Cation Diels–Alder Cycloadditions by Visible Light Photocatalysis**

Ruthenium(II) polypyridyl complexes promote the efficient radical cation Diels–Alder cycloaddition of electron-rich dienophiles upon irradiation with visible light. These reactions enable facile [4 + 2] cycloadditions that would be electronically mismatched under thermal conditions. Key to the success of this methodology is the availability of ligand-modified ruthenium complexes that enable rational tuning of the electrochemical properties of the catalyst without significantly perturbing the overall photophysical properties of the system.



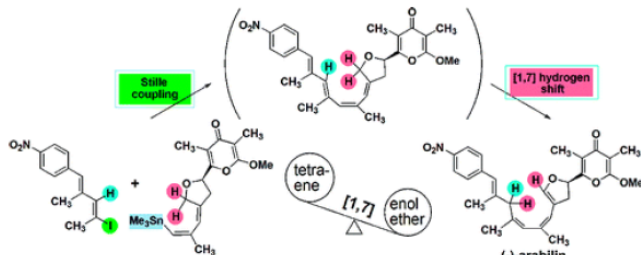
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Apop  
Hybrid  
Gnid/ Kirk  
Laulimalide  
Drug Deliv.

Citation: Kim, S.; Parker, K. *JACS*. **2011**, *133* (50), 20149-20151.

### Total Synthesis of the Potent Androgen Receptor Antagonist (-)-Arabilin: A Strategic, Biomimetic [1,7]-Hydrogen Shift

The first total synthesis of arabilin, a *Streptomyces* metabolite that inhibits hormone activation of the androgen receptor, has been completed. The key step, a [1,7]-hydrogen shift, establishes the enol ether-containing skipped-tetraene substructure. This nonenzymatic pericyclic reaction is considered to be biomimetic.



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Laulimalide  
Drug Deliv.

Citation: Bhone, V.; Looper, R. *JACS*. **2011**, *133* (50), 20172-20174.

### A Stereocontrolled Synthesis of (+)-Saxitoxin

A concise stereoselective total synthesis of (+)-saxitoxin is described. A silver(I)-initiated hydroamination cascade constructs the bicyclic guanidinium ion core from an alkynyl bisguanidine. This sequence creates two CN bonds, one CO bond, and three rings and forms a single stereoisomer in a single synthetic transformation. This process enabled us to complete the synthesis of (+)-saxitoxin in 14 steps from N-Boc-L-serine methyl ester.



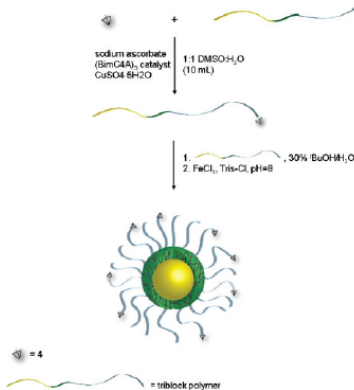
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Gnid/ Kirk  
Laulimalide  
Drug Deliv.

Citation: Barkey, N.M.; Tafreshi, N.M.; et al. *J. Med. Chem* **2011**, *54*, 8078-8084

### Development of Melanoma-Targeted Polymer Micelles by Conjugation of a Melanocortin 1 Receptor (MC1R) Specific Ligand

Cu-catalyzed click chemistry was used to conjugate 4-phenylbutyryl-His-DPhe-Arg-Trp-NH<sub>2</sub> to a polymer micelle (~100nm) with low nanomolar binding affinity for MC1R.

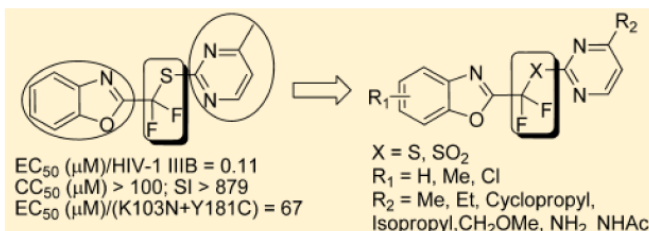


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Citation: Boyer, J.; Arnoult, E.; et al. *J. Med. Chem.* **2011**, *54*, 7974-7985

### Difluoromethylbenzoxazole Pyrimidine Thioether Derivatives: A Novel Class of Potent Non-Nucleoside HIV-1 Reverse Transcriptase Inhibitors



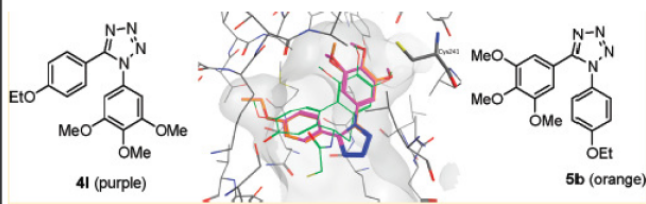
A single electron transfer chain process -  $S_{RN}1$  - was employed to synthesize DFMB pyrimidine thioether derivatives. Structural biology analysis helped to guide the design of potent anti HIV-1 agents.

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Citation: Romagnoli, R.; Baraldi, P. G.; *J. Med. Chem.* **2011**, *55*, 475-488.

### Synthesis and Evaluation of 1,5-Disubstituted Tetrazoles as Rigid Analogues of Combretastatin A-4 with Potent Antiproliferative and Antitumor Activity



Using a palladium-catalyzed cross-coupling reaction, two series of 1,5-diaryl substituted 1,2,3,4-tetrazoles were synthesized, some of which may be antimitotic agents with potential clinical applications.

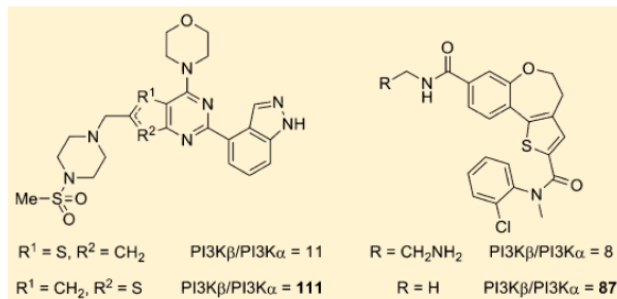
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Drug Deliv.  
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Citation: Heffron, T. P.; Wei, B.; et al. *J. Med. Chem.* **2011**, *54*, 7815-7833.

### Rational Design of Phosphoinositide 3-Kinase alpha Inhibitors That Exhibit Selectivity over the Phosphoinositide 3-Kinase beta Isoform

Thienopyrimidine and benzoxepin based PI3K inhibitors were designed inhibit the alpha isoform selectively over the beta. PI3K-alpha has potential in cancer therapy.

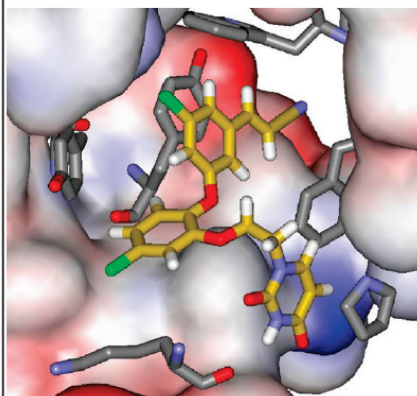


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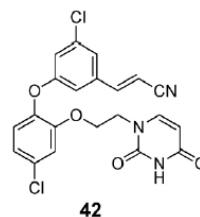
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Prostratin

Citation: Bollini, M.; Domaoal, R. A.; et al. *J. Med. Chem.* **2011**, 54, 8582-8591

### Computationally-Guided Optimization of a Docking Hit to Yield Catechol Diethers as Potent Anti-HIV Agents



A non-nucleoside 55-pM inhibitor of HIV reverse transcriptase has been optimized from a 5- $\mu$ M docking hit with the help of computational analyses.

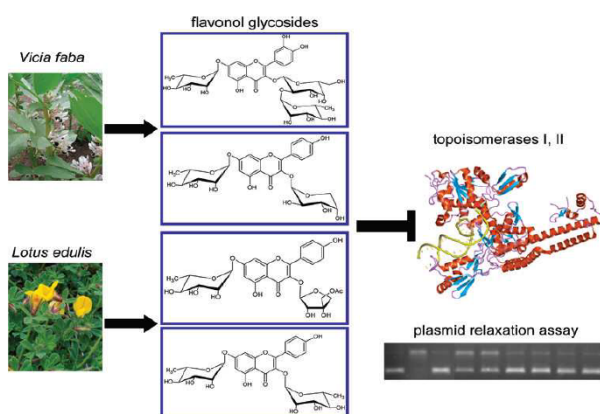


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Citation: *J. Nat. Prod.* **2011**, 74, 2362-2370

### Catalytic Inhibition of Eukaryotic Topoisomerases I and II by Flavonol Glycosides



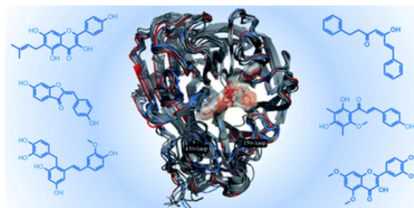
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Citation: Grienke, U.; Schmidtke, M.; von Grafenstein, S. Kirchmair, J.; Liedl, K. R.; Rollinger, J. M. *Nat. Prod. Rep.* **2012**, 29, 11-36.

### Influenza neuraminidase: A druggable target for natural products

The imminent threat of influenza pandemics and repeatedly reported emergence of new drug-resistant influenza virus strains demonstrate the urgent need for developing innovative and effective antiviral agents for prevention and treatment. At present, influenza neuraminidase (NA), a key enzyme in viral replication, spread, and pathogenesis, is considered to be one of the most promising targets for combating influenza. This work addresses the latest developments in theoretical and experimental research on properties of NA that are and will be driving anti-influenza drug development now and in the near future.

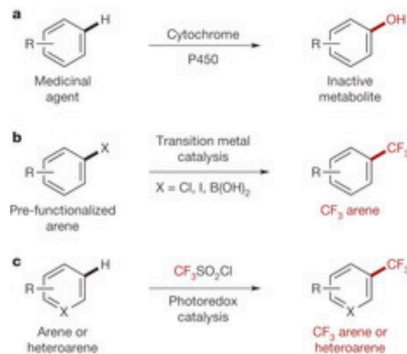


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Drug Deliv.  
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Citation: Nagib, D.A.; MacMillan, D.W. *Nature* **2011**, *480*, 224-228.

### Trifluoromethylation of Arenes and Heteroarenes by Means of Photoredox Catalysis



bioorganic  
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Hybrid  
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Citation: Pattabiraman, V.R.; Bode, J.W. *Nature* **2011**, *480*, 471-479.

### Rethinking Amide Bond Synthesis

"One of the most important reactions in organic chemistry—amide bond formation—is often overlooked as a contemporary challenge because of the widespread occurrence of amides in modern pharmaceuticals and biologically active compounds. But existing methods are reaching their inherent limits, and concerns about their waste and expense are becoming sharper. Novel chemical approaches to amide formation are therefore being developed. Here we review and summarize a new generation of amide-forming reactions that may contribute to solving these problems. We also consider their potential application to current synthetic challenges, including the development of catalytic amide formation, the synthesis of therapeutic peptides and the preparation of modified peptides and proteins."

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Hybrid  
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Citation: Malanchi, I. *et al. Nature* **2012**, *481*, 85-89.

### Interactions between Cancer Stem Cells and their Niche Govern Metastatic Colonization

"Metastatic growth in distant organs is the major cause of cancer mortality. The development of metastasis is a multistage process with several rate-limiting steps1... Here we show that a small population of cancer stem cells is critical for metastatic colonization, that is, the initial expansion of cancer cells at the secondary site, and that stromal niche signals are crucial to this expansion process. We find that periostin (POSTN), a component of the extracellular matrix, is expressed by fibroblasts in the normal tissue and in the stroma of the primary tumour. Infiltrating tumour cells need to induce stromal POSTN expression in the secondary target organ (in this case lung) to initiate colonization. POSTN is required to allow cancer stem cell maintenance, and blocking its function prevents metastasis. POSTN recruits Wnt ligands and thereby increases Wnt signalling in cancer stem cells. We suggest that the education of stromal cells by infiltrating tumour cells is an important step in metastatic colonization and that preventing de novo niche formation may be a novel strategy for the treatment of metastatic disease."

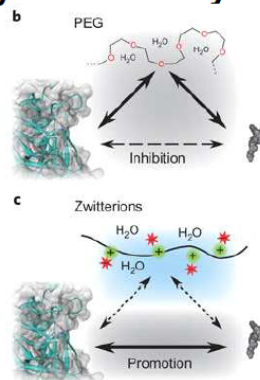
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Drug Deliv.  
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Citation: Keefe, A.J.; Jiang, S. *Nature Chem.*, **2012**, *4*, 59-63.

### Poly(zwitterionic)protein conjugates offer increased stability without sacrificing binding affinity or bioactivity

Treatment with therapeutic proteins is an attractive approach to targeting a number of challenging diseases. Unfortunately, the native proteins themselves are often unstable in physiological conditions, reducing bioavailability and therefore increasing the dose that is required. Conjugation with poly(ethylene glycol) (PEG) is often used to increase stability, but this has a detrimental effect on bioactivity. Here, we introduce conjugation with zwitterionic polymers such as poly(carboxybetaine). We show that poly(carboxybetaine) conjugation improves stability in a manner similar to PEGylation, but that the new conjugates retain or even improve the binding affinity as a result of enhanced protein-substrate hydrophobic interactions.

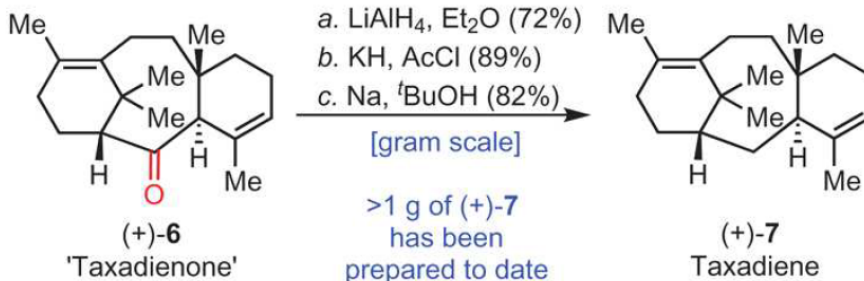


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**Drug Deliv.**  
Prostratin

Citation: Mendoza, A.; Ishihara, Y.; Baran, P.S. *Nature Chem.*, **2012**, *4*, 21-25.

### Scalable enantioselective total synthesis of taxanes



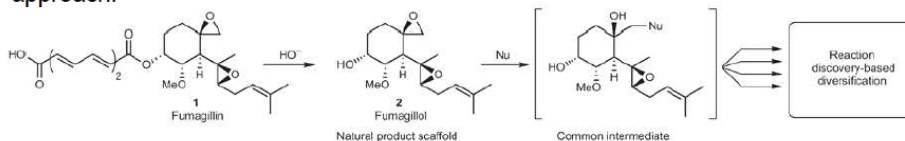
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**Drug Deliv.**  
Prostratin

Citation: Balthaser, B.R.; Maloney, M.C.; Beeler, A.B.; Porco Jr., J.A.; Snyder, J.K. *Nature Chem.*, **2011**, *3*, 969-973.

### Remodelling of the natural product fumagillol employing a reaction discovery approach

Many natural products can be regarded as intriguing starting points for diversity-oriented synthesis, wherein stereochemically rich core structures may be reorganized into chemotypes that are distinctly different from the parent structure. Ideally, to be suited to library applications, such transformations should be general and involve few steps. With this objective in mind, the highly oxygenated natural product fumagillol has been successfully remodelled in several ways using a reaction-discovery-based approach.

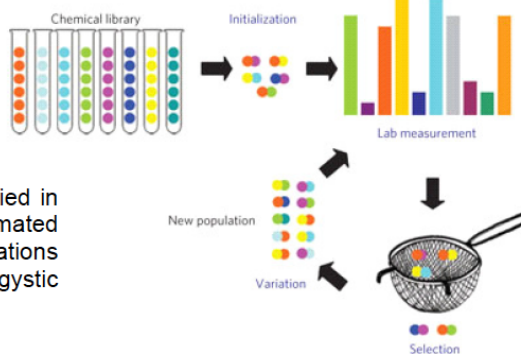


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**Drug Deliv.**  
Prostratin

Citation: Small, B.G.; McColl, B.W. et al. *Nature Chemical Biology* 2011, 7, 902-908

### Efficient discovery of anti-inflammatory small-molecule combinations using evolutionary computing



An evolutionary algorithm is applied in conjunction with a semiautomated assay to efficiently reveal combinations of small molecules with synergistic effects. A generic approach.

bioorganic  
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Citation: [http://www.nytimes.com/2012/01/17/science/open-science-challenges-journal-tradition-with-web-collaboration.html?pagewanted=1&\\_r=1&ref=science](http://www.nytimes.com/2012/01/17/science/open-science-challenges-journal-tradition-with-web-collaboration.html?pagewanted=1&_r=1&ref=science)

### Cracking Open the Scientific Process

For centuries, this is how science has operated — through research done in private, then submitted to science and medical journals to be reviewed by peers and published for the benefit of other researchers and the public at large. But to many scientists, the longevity of that process is nothing to celebrate. The system is hidebound, expensive and elitist, they say. Peer review can take months, journal subscriptions can be prohibitively costly, and a handful of gatekeepers limit the flow of information. It is an ideal system for sharing knowledge, said the quantum physicist Michael Nielsen, only “if you’re stuck with 17th-century technology.”

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Citation: <http://www.nytimes.com/2012/01/17/science/countering-climate-change-without-waiting-for-a-payoff.html?ref=science>

### Climate Proposal Puts Practicality Ahead of Sacrifice

The current issue of the journal *Science* contains a proposal to slow global warming that is extraordinary for a couple of reasons:

1. In theory, it would help people living in poor countries now, instead of mainly benefiting their descendants.
2. In practice, it might actually work.

This proposal comes from an international team of researchers — in climate modeling, atmospheric chemistry, economics, agriculture and public health — who started off with a question that borders on heresy in some green circles: Could something be done about global warming besides forcing everyone around the world to use less fossil fuel?

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Hybrid  
Drug Deliv.  
Prostratin

Citation: *The Onion*, <http://www.theonion.com/articles/new-study-going-to-take-another-week-or-so-report,26938/>

### New Study Going To Take Another Week Or So, Report Scientists Who Look As If They've Been Crying

CAMBRIDGE, MA—A new study scheduled to be released today by the cognitive sciences department at MIT is going to have to be delayed at least another week or so, confirmed a group of red-eyed scientists who looked as though they might burst into tears at any moment. "For the past year and three months, our team has been compiling data related to what will eventually be groundbreaking new findings in the field of neuroscience, but unfortunately...excuse me...unfortunately, we're going through some pretty tough stuff at the moment, and it's just...it's just not ready yet," said Professor Michael Frazier, his voice trembling. "I know you all came here today expecting a study, and we let you down. But given the circumstances, I'm sorry, there's just no way it was going to happen. Not after this. No way. Please don't yell at us." Asked whether they were okay and if they needed anything, the researchers attempted to utter a response and then quickly ran out of the room

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Citation: *The Onion*, <http://www.theonion.com/articles/report-global-warming-may-be-irreversible-by-2006,26808/>

### Report: Global Warming May Be Irreversible By 2006

GENEVA—A new report from the U.N. Intergovernmental Panel on Climate Change warned Monday that global warming is likely to become completely irreversible if no successful effort is made to slow down the trend before 2006.

Unless greenhouse-gas emissions are drastically reduced by then, the report concludes, it will be too late to avoid inflicting a grave environmental catastrophe upon future generations.

"We have absolutely no time to waste," said Dr. William Tumminelli, lead author of the report, which stresses it is utterly crucial the world cut its carbon footprint in half by the year 2000. "If we wait until 1998 or even 1995 to really start doing something about climate change, our planet's rising temperature will already have set in motion a series of devastating and irreparable long-term consequences. We need to have strict international rules in place well ahead of 2006 or, to be blunt, many of the earth's inhabitants will be doomed."

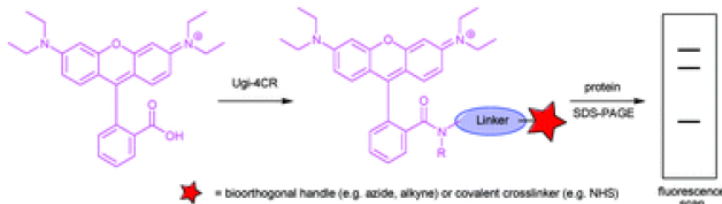
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Hybrid  
Drug Deliv.  
Prostratin

Citation: Brauch, S., Westermann, B., et. al. *Org. Biomol. Chem.*, 2012, 10, 958

### Fast and efficient MCR-based synthesis of clickable rhodamine tags for protein profiling

A one-pot protocol for the synthesis of activated fluorescent labels (i.e. azide, alkynyl or NHS), based on the Ugi-4-component reaction (Ugi-4CR), is presented. As a result of the peptidic structure formed, the fluorescent properties of the products are pH insensitive.

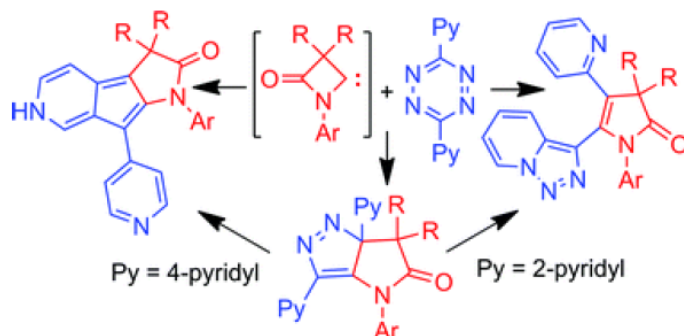


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Citation: Wang X., Xing J., Yan C., Cheng, Y. *Org. Biomol. Chem.*, 2012, 10, 970

**The reaction of  $\beta$ -lactam carbenes with 3,6-dipyridyltetrazines: switch of reaction pathways by 2-pyridyl and 4-pyridyl substituents of tetrazines**



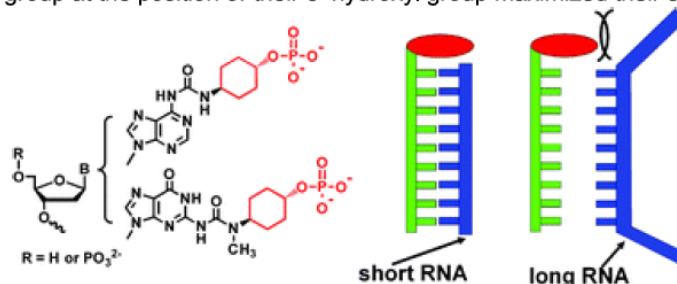
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Citation: Seio, K. et. al. *Org. Biomol. Chem.*, 2012, 10, 994.

**Short-RNA selective binding of oligonucleotides modified using adenosine and guanosine derivatives that possess cyclohexyl phosphates as substituents**

We have developed new artificial oligonucleotides which distinguish short RNA targets from long ones. The modification of the 5' termini of oligonucleotides by using adenosine derivatives that possess a bulky cyclohexyl phosphate moiety at their base moiety and a phosphate group at the position of their 5'-hydroxyl group maximized their short RNA selectivity.

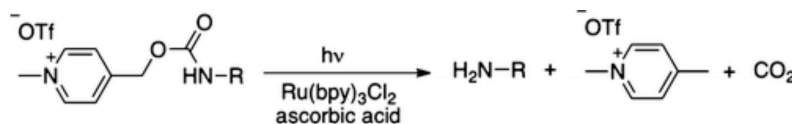


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Edson, J. B.; Spencer, L. P.; Boncella, J. M. *Org. Lett.* 2011, 13, 6156-6159.

**Photorelease of Primary Aliphatic and Aromatic Amines by Visible-Light-Induced Electron Transfer**



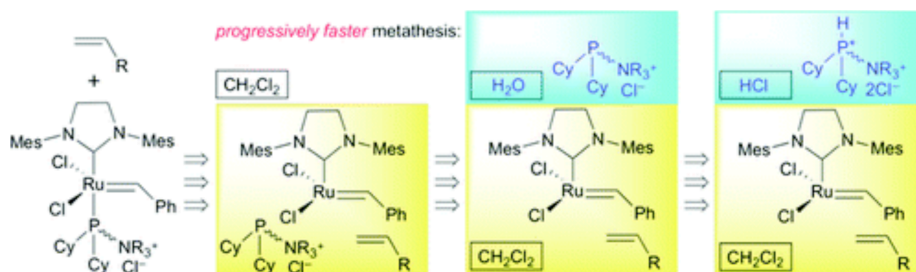
Visible-light-absorbing tris(bipyridyl)ruthenium(II) has been used to mediate electron transfer to N-methylpicolinium carbamates that undergo C-O bond fragmentation followed by spontaneous carbon dioxide release to give free amines. Release of several aliphatic and aromatic primary amines has been demonstrated under mild conditions using visible light.

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Xi, Z.; Bazzi, H. S.; Gladysz, J. A. *Org. Lett.* **2011**, *13*, 6188-6191.

**Analogs of Grubbs' Second Generation Catalyst with Hydrophilic Phosphine Ligands: Phase Transfer Activation of Ring Closing Akene Metathesis**

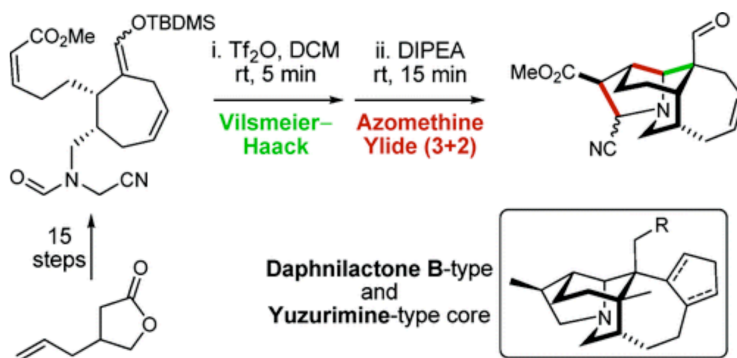


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Bélanger, G.; Boudreault, J.; Lévesque, F. *Org. Lett.* **2011**, *13*, 6204-6207.

**Synthesis of the Tetracyclic Core of Daphnilactone B-Type and Yuzurimine-Type Alkaloids**

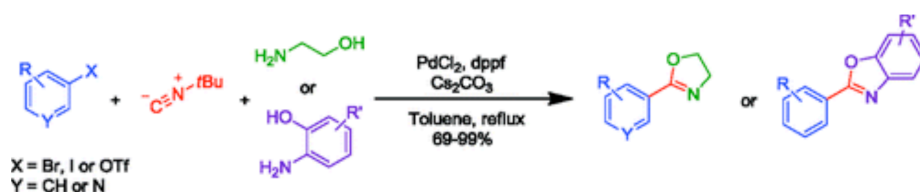


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Boissarie, P. J.; Hamilton, Z. E.; Lang, S.; Murphy, J. A.; Suckling, C. J. *Org. Lett.* **2011**, *13*, 6256-6259.

**A Powerful Palladium-Catalyzed Multicomponent Process for the Preparation of Oxazolines and Benzoxazoles**



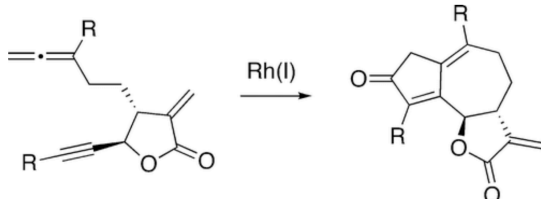
Efficient and convenient three-component couplings of an aryl halide, isocyanide, and an amino alcohol under palladium catalysis provide a range of oxazolines and benzoxazoles in excellent yield.

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Grillet, F.; Huang, C.; Brummond, K. M. *Org. Lett.* **2011**, *13*, 6304-6307.

### An Allenic Pauson-Khand Approach to 6,12-Guaianolides



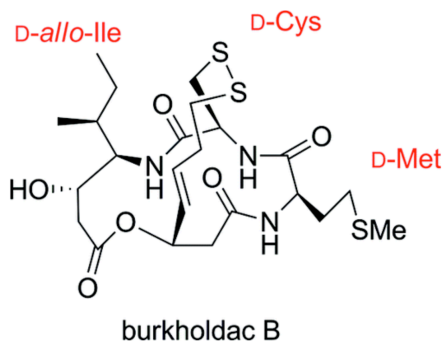
Cyclocarbonylation of  $\alpha$ -methylene butyrolactone-containing allene-yne affords 6,12-guaianolide ring systems. Incorporation of the  $\alpha$ -methylene butyrolactone early in a synthetic sequence is rare for reactivity reasons; however, this moiety proves to be beneficial to the allenic Pauson-Khand reaction. The three double bonds and the ketone in the resulting 5-7-5 ring system bear significant differences in their reactivity and are ideally positioned for synthetic application to 6,12-guaianolides and analogs.

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Benelkebir, H.; Donlevy, A. M.; Packham, G.; Ganesan, A. *Org. Lett.* **2011**, *13*, 6334-6337.

### Total Synthesis and Stereochemical Assignment of Burkholdac B, a Depsipeptide HDAC Inhibitor



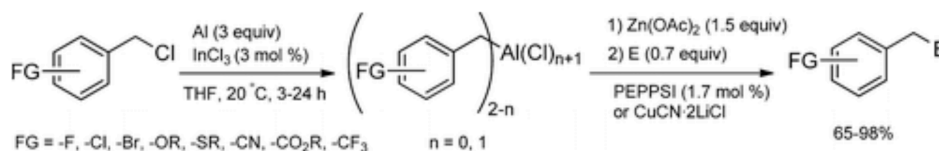
Burkholdac B is the most potent among depsipeptide histone deacetylase inhibitors in growth inhibition of the MCF7 breast cancer cell line with an IC<sub>50</sub> of 60 pM.

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Blumke, T. D.; Groll, K.; Karaghiosoff, K.; Knochel, P. *Org. Lett.* **2011**, *13*, 6440-6443.

### New Preparation of Benzylic Aluminum and Zinc Organometallics by Direct Insertion of Aluminum Powder



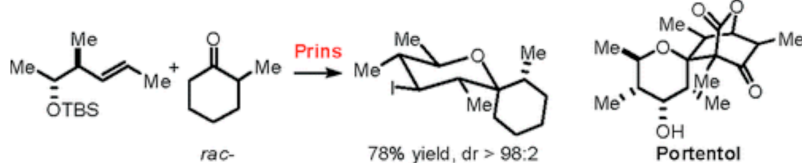
The reaction of commercial Al-powder (3 equiv) and InCl<sub>3</sub> (1–5 mol %) with benzylic chlorides provides various functionalized benzylic aluminum sesquichlorides under mild conditions (THF, 20 °C, 3–24 h) without homocoupling (<5%). These new benzylic organometallics reacted smoothly with various electrophiles (Pd-catalyzed cross-couplings, or Cu-mediated acylations, allylations, or 1,4-addition reactions).

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Jacolot, M.; Jean, M.; Levoine, N.; van de Weghe, P. *Org. Lett.* **2012**, *14*, 58-61.

### The Prins Reaction Using Ketones: Rationalization and Application toward the Synthesis of the Portentol Skeleton



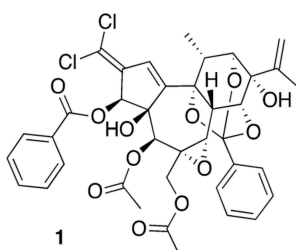
We report a TMSI-promoted Prins cyclization reaction with ketones as carbonyl partners to prepare polysubstituted chiral spirotetrahydropyrans. In the presence of racemic 2-methylcyclohexanone a dynamic kinetic resolution occurred affording one stereoisomer. The observed enantiospecificity has been rationalized by DFT calculation.

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Allard, P.-M.; Martin, M.-T.; Dau, M.-E. T. H.; Leyssen, P.; Guéritte, F.; Litaudon, M. *Org. Lett.* **2012**, *14*, 342-345.

### Trigocherrin A, the First Natural Chlorinated Daphnane Diterpene Orthoester from *Trigonostemon cherrieri*



Trigocherrin A, a chlorinated and highly oxygenated daphnane diterpenoid orthoester (DDO), was isolated from the bark of *Trigonostemon cherrieri*. Trigocherrin A is the first example of a naturally occurring halogenated DDO. Its structure was elucidated by comprehensive analysis of NMR spectroscopic data, and its absolute configuration was determined by comparison of experimental and theoretically calculated ECD spectra. Trigocherrin A exhibited a potent and selective effect against Chikungunya virus in Vero cells.

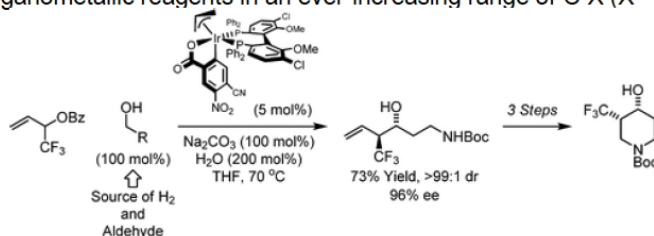
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Citation: Hassan, A.; Krische, M.J. *Org. Process Res. Dev.* **2011**, *15* (6), 1235-1242

### Unlocking Hydrogenation for C–C Bond Formation: A Brief Overview of Enantioselective Methods

Hydrogenation of  $\pi$ -unsaturated reactants in the presence of carbonyl compounds or imines promotes reductive C–C coupling, providing a byproduct-free alternative to stoichiometric organometallic reagents in an ever-increasing range of C–X (X = O, NR) additions.



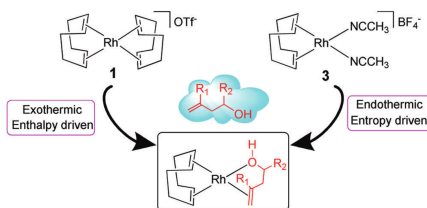
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Citation: Kang, S. O.; Lynch, V. M.; Day, V. W.; Anslyn, E. V. *Organometallics*, **2011**, *30*, 6233-6240.

### Enthalpy- vs Entropy-Driven Complexation of Homoallylic Alcohols by Rhodium(I) Complexes

The thermodynamics of binding between several homoallylic alcohols and simple olefinic Rh(I) compounds was examined with <sup>1</sup>H NMR spectroscopy and isothermal titration calorimetry (ITC). <sup>1</sup>H NMR titrations revealed moderate binding of these alcohols with [Rh<sup>+</sup>(COD)<sub>2</sub>]<sup>-</sup> (**1**) and [Rh(COD)(CH<sub>3</sub>CN)<sub>2</sub>]<sup>-</sup> (**3**), but weaker binding with [Rh(NBD)<sub>2</sub>]<sup>-</sup> (**2**). ITC indicated that the complexation with [Rh(COD)<sub>2</sub>]<sup>-</sup> is mainly governed by enthalpy, whereas binding with [Rh(COD)(CH<sub>3</sub>CN)<sub>2</sub>]<sup>-</sup> is entirely driven by entropy. The thermodynamic parameters for the homoallylic alcohol binding of Rh(I) complexes **1-3** are consistent with crystallographic data.



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Citation: Gibbs, J. et. al. *Proc. Natl. Acad. Sci.* **109**(2). 582 - 587.

### The nuclear receptor REV-ERBa mediates circadian regulation of innate immunity through selective regulation of inflammatory cytokines

Authors show that REV-ERBa acts as a nodal output of the clock, linking cellular circadian timers with innate immune responses. Using three sources of human macrophages, they show that innate immune responses are pharmacologically tractable in a REV-ERBa-dependent manner. The data reveals common and selective patterns of regulation of proinflammatory cytokines in man and mouse

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Citation: Liu, W. et. al. *Proc. Natl. Acad. Sci.* **109**(2). 490 - 494.

### Sperm-borne microRNA-34c is required for the first cleavage division in mouse

In mammals, the sperm deliver mRNA of unknown function into the oocytes during fertilization. The role of sperm microRNAs (miRNAs) in preimplantation development is unknown. miRNA profiling identified six miRNAs expressed in the sperm and the zygotes but not in the oocytes or preimplantation embryos. Sperm contained both the precursor and the mature form of one of these miRNAs, miR-34c. The absence of an increased level of miR-34c in zygotes derived from α-amanitin-treated oocytes and in parthenogenetic oocytes supported a sperm origin of zygotic miR-34c. Injection of miR-34c inhibitor into zygotes inhibited DNA synthesis and significantly suppressed first cleavage division. A 3' UTR luciferase assay and Western blotting demonstrated that miR-34c regulates B-cell leukemia/lymphoma 2 (Bcl-2) expression in the zygotes

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Citation: Bernstein, D.A., et. al. *Proc. Natl. Acad. Sci.* **109**(2) 524-528.

***Candida albicans* Dicer (CaDcr1) is required for efficient ribosomal and spliceosomal RNA maturation**

The generation of mature functional RNAs from nascent transcripts requires the precise and coordinated action of numerous RNAs and proteins. One such protein family, the ribonuclease III (RNase III) endonucleases, includes Rnt1, which functions in fungal ribosome and spliceosome biogenesis, and Dicer, which generates the siRNAs of the RNAi pathway. The recent discovery of small RNAs in *Candida albicans* led us to investigate the function of *C. albicans* Dicer (CaDcr1). CaDcr1 is capable of generating siRNAs in vitro and is required for siRNA generation in vivo. In addition, CaDCR1 complements a Dicer knockout in *Saccharomyces castellii*, restoring RNAi-mediated gene repression. Unexpectedly, deletion of the *C. albicans* CaDCR1 results in a severe slow-growth phenotype, whereas deletion of another core component of the RNAi pathway (CaAGO1) has little effect on growth, suggesting that CaDCR1 may have an essential function in addition to producing siRNAs

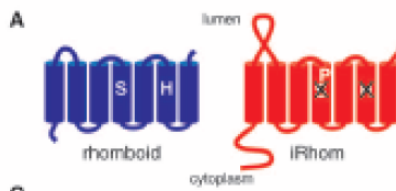
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Citation: Adrain, C; et al. *Science*, **2012**, 335, 225-228.

**Tumor Necrosis Factor Signaling Requires iRhom2 to Promote Trafficking and Activation of TACE**

TNF is the primary trigger of inflammation. This research finds that iRhom2 is required for TNF release in mice and they propose that by making iRhom2 a therapeutic target, one could reasonably target diseases such as rheumatoid arthritis, Crohn's disease, atherosclerosis, psoriasis, sepsis, diabetes, and obesity.



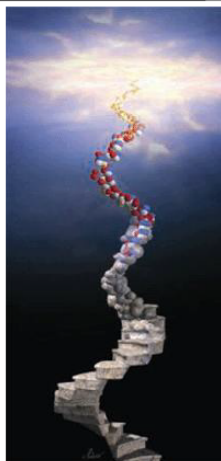
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Citation: Steitz, JA. *Science*, **2012**, 335, 39.

**RNA Rejoice!**

A book review of James Darnell's *RNA: Life's Indispensable Molecule*. Describes the book as "required reading, as well as a handy desktop reference, for everyone charged with teaching gene expression on any level." The "Controlling mRNA" chapter reportedly begins with the "factorology of transcription" and finishes with "microRNAs and small interfering RNAs."

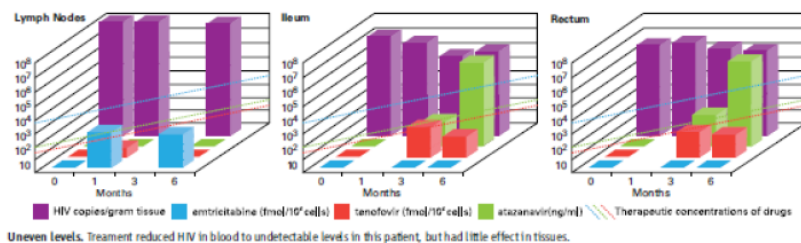


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Citation: Cohen, J. *Science*, 2011, 334, 1614.

### Tissue Says Blood is Misleading, Confusing HIV Cure Efforts



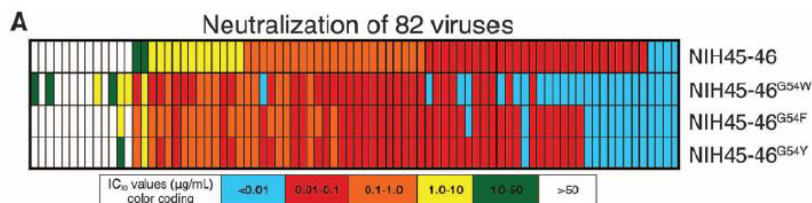
Report from *The Fifth International Workshop on HIV Persistence During Therapy* confirming that HIV remains as the active form of the virus in tissues such as the lymph nodes, ileum, and rectum despite being at undetectable levels in the blood.

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Citation: Diskin, R; *et al. Science*, 2011, 334, 1289-1293.

### Increasing the Potency and Breadth of an HIV Antibody by Using Structure-Based Rational Design



By modifying residues critical to the binding of antibodies against the CD4 binding site (CD4bs), the researchers were able to gain an order of magnitude in potency against a number of different viral copies of HIV. They have also determined the structures of both their bound and unbound antibodies, allowing for further structure based design.

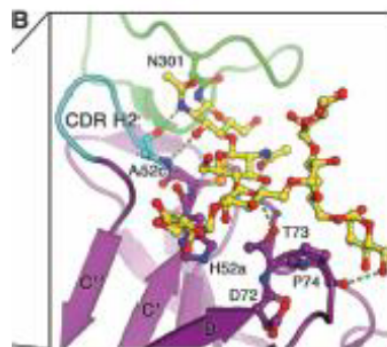
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Citation: Pejchal, R; *et al. Science*, 2011, 34, 1097-1103.

### A Potent and Broad Neutralizing Antibody Recognizes and Penetrates the HIV Glycan Shield

This research has found that several of the recently discovered PGT broadly neutralizing antibodies bind to a high-mannose binding site on the glycan coat of HIV. They provide crystal structures of this binding and show that some images reveal that the antibody penetrates the glycan shield and recognizes two conserved glycans and a portion of the beta-strand segment of the gp120 V3 loop.

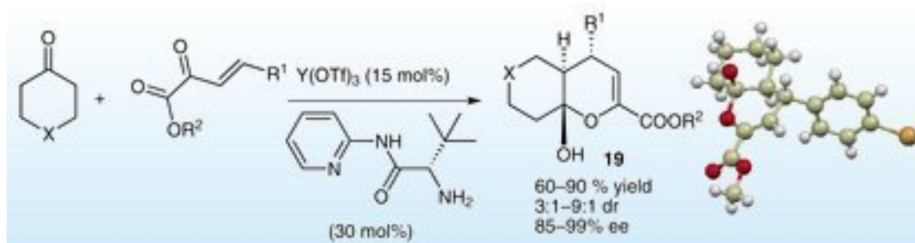


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Citation: Xu, Zhenghu; Wang, H., *Syn. Lett.* **2011**, 2907-2912.

### Asymmetric Inverse-Electron-Demand Hetero-Diels-Alder Reaction via Enamine-Metal Lewis Acid Bifunctional Catalysis

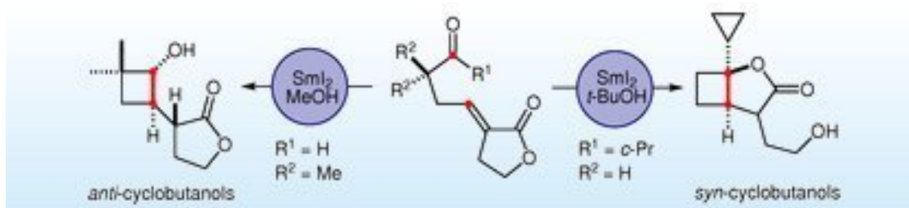


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Citation: Harb, H. Y.; Procter, D. J.; *Syn. Lett.* **2012**, 6-20.

### SmI<sub>2</sub>-Mediated Carbonyl-Alkene Couplings for the Synthesis of Small Carbocyclic Rings



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Citation: Indukuri, K.; Bondalapati, S.; Kotipalli, T.; Gogoi, P.; Saikia, A. K.; *Syn. Lett.* **2012**, 233-238.

### Stereoselective, One-Pot, Three-Component Synthesis of 4-Aryltetrahydropyrans from Epoxides via Prins Cyclization Reaction



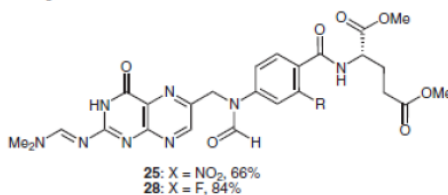
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Citation: Groehn, V; *et al. Synthesis*, 2011, 22, 3639-3648.

### Synthesis of Precursors for <sup>18</sup>F-Labeling of Folic Acid for PET Application

Group reports a concise synthesis of two folic acid derivatives with the potential for imaging folate receptor-positive cancer cells with PET. The group believes that their folic acid derivatives more closely mimic folic acid than other available folic acid PET agents.

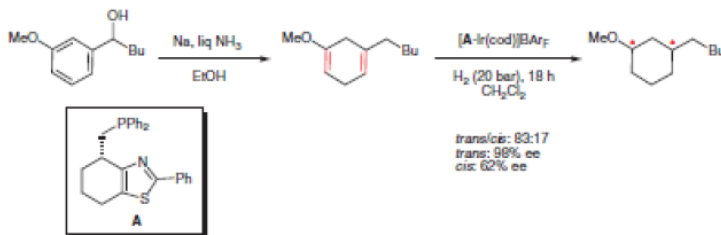


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Citation: Cadu, A; *et al. Synthesis*, 2011, 23, 3796-3800.

### Birch Reaction Followed by Asymmetric Iridium-Catalyzed Hydrogenation



Despite the relatively common use of the Birch reaction in natural product syntheses, methods of stereoselectively reducing Birch products have only been reported once previously. This paper demonstrates a way of stereoselectively reducing Birch products into di- or tri-substituted cyclohexane rings.

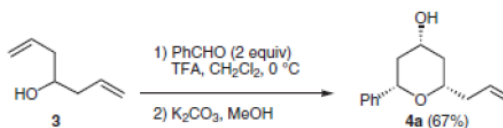
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Citation: Raffier, L; *et al. Synthesis*, 2011, 24, 4037-4044.

### Desymmetrization of Hepta-1,6-dien-4-ol by Prins Reaction and Subsequent Cross-Metathesis: Access to Diospongine A Homologues

A number of tetrahydropyransols have been synthesized in a stereo-controlled manner through atom and step economic procedures in high yield. Further functionalization of the products is done through Mitsunobu and cross-metathesis chemistry.

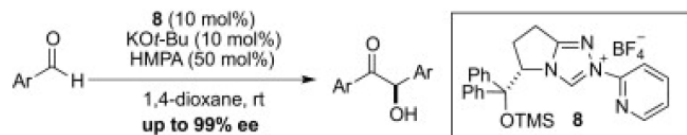


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T. Soeta et al, *Tetrahedron* **68** (2012) 894-899.

**Asymmetric benzoin condensation promoted by chiral triazolium pre-catalyst bearing a pyridine moiety**



Chiral triazolium salts bearing a pyridine ring were developed as N-heterocyclic carbene precursors. In the presence of the chiral triazolium salt and a base, the catalytic asymmetric benzoin condensation proceeded to afford the product in high level of chemical yield and enantioselectivity. A wide range of aromatic aldehydes were applicable to this reaction.

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S. Utsumi et al, *Tetrahedron* **68** (2012) 1085-1091.

**Cu-deposits on Mg metal surfaces promote electron transfer reactions**



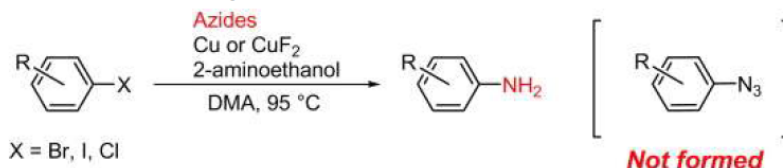
The enhancement of the electron transfer processes in the Grignard reagent formation-type ring silylation and the defluorination–silylation of perfluoroalkyl benzenes by Cu(0)-deposited Mg metal were confirmed. Microscopic analysis and substituent effects implied a different reduction process in the presence of Cu-deposited Mg metal than in the presence of bare Mg metal.

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T. Maejima et al, *Tetrahedron* **68** (2012) 1712-1722.

**One-pot aromatic amination based on carbon–nitrogen coupling reaction between aryl halides and azido compounds**



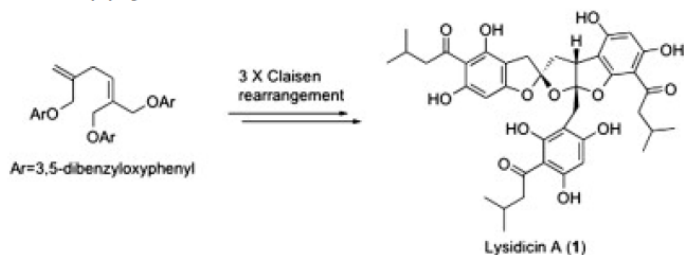
An efficient copper-mediated C–N coupling reaction between various aryl halides and azido compounds to produce the corresponding aromatic primary amines was established. The present amination is apparently involved in both the reduction of an azido functionality to the corresponding primary amino group and its cross-coupling reaction with aryl halides in a one-pot manner. The present amination could be applied to the synthesis of procaine, a local anesthetic drug. A mechanistic study indicated that 2-aminoethanol could work as a major hydrogen donor and the reaction would proceed without the formation of the intermediary aryl azide.

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Y. Ogura et al, *Tetrahedron* **68** (2012) 1723-1728.

**Total synthesis of (±)-lysidicin A**



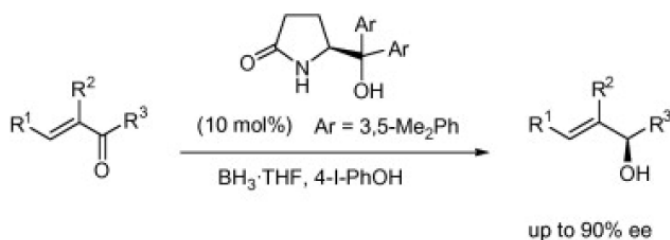
Lysidicin A, which has been isolated from *Lisidicie rhodostegia* possesses complicated structure. A total synthesis of lysidicin A has been achieved and is described herein. The key reaction is single and cascade Claisen rearrangements.

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Y.Kawanami et al, *Tetrahedron Asymmetry* **22** (2011) 1891-1894.

**Enantioselective reduction of  $\alpha,\beta$ -enones using an oxazaborolidine catalyst generated in situ from a chiral lactam alcohol**



The oxazaborolidine catalyst prepared in situ from the chiral lactam alcohol 3 and 4-iodophenoxyborane was found to catalyze the enantioselective reduction of  $\alpha,\beta$ -enones at -40 °C with a high level of enantioselectivity of up to 90% ee.

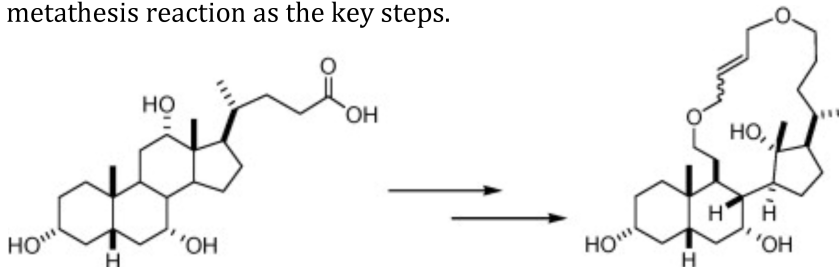
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Citation: Ibrahim-Ouali, M.; Zoubir, J.; Romero, E. *Tetrahedron Letters* **2011**, *52*, 7128-7131.

**A ring-closing metathesis approach to secosteroidal macrocycles.**

An efficient synthesis of secosteroidal macrocycles has been achieved via an oxidative ring-expansion/ring-opening sequence and a ring-closing metathesis reaction as the key steps.



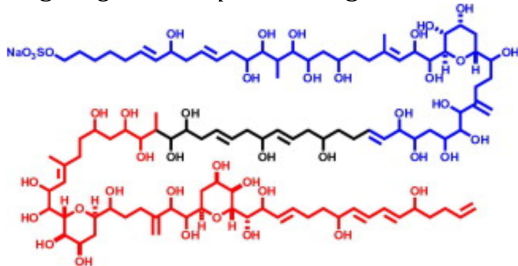
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Citation: Inuzuka, T.; Yamamoto, Y.; Yamada, K.; Uemura, D. *Tetrahedron Letters* **2012**, *53*, 239-242.

**Amdigenol A, a long carbon-backbone polyol compound, produced by the marine dinoflagellate *Amphidinium* sp**

A polyol compound, amdigenol A, was isolated from the dinoflagellate *Amphidinium* sp. that adhered to the surface of the marine alga *Digenea simplex*. Amdigenol A consists of a C<sub>98</sub>-linear carbon backbone



including two core structures of amphidinol analogs and is likely formed linearly by two amphidinol analogs. The role of this class of molecules remains relatively unknown

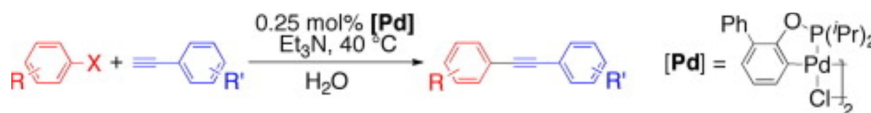
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Citation: Marziale, A. N.; Schlüter, J.; Eppinger, J. *Tetrahedron Letters* **2011**, *52*, 6355-6358.

**An efficient protocol for copper-free palladium-catalyzed Sonogashira cross-coupling in aqueous media at low temperatures.**

A thorough study on copper-free Sonogashira cross-couplings in water was carried out using the palladacycle as pre-catalyst with different bases and palladium concentrations. The highly active pre-catalyst imparts good to near quantitative yields using a concentration of 0.25 mol % at 40 °C. This broadly applicable protocol exhibits high tolerance of functional groups and substitution patterns.



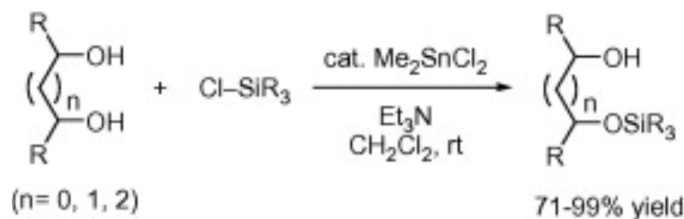
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Citation: Takeichi, T.; Kuriyama, M.; Onomura, O. *Tetrahedron Letters* **2011**, *52*, 6646-6648.

**Catalytic monosilylation of 1,2-diols.**

The selective monosilylation of 1,2-diols catalyzed by dimethyltin dichloride was successfully developed. This procedure was applied to various 1,2-diols, giving monosilylated products in good to excellent yields with high chemoselectivity.



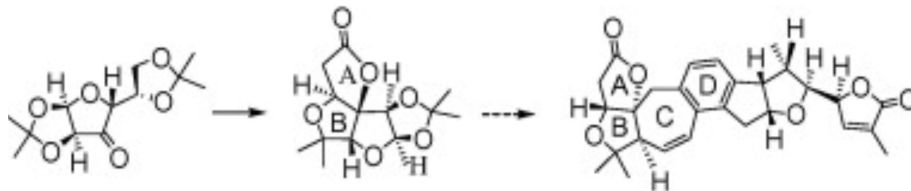
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Citation: Firoj Hossain, M.; Matcha, K.; Ghosh, S. *Tetrahedron Letters* **2011**, 52, 6473-6476.

**Synthetic studies toward nortriterpenoids of schisandraceae family.  
Approach to the construction of functionalized C/D and A/B ring units of  
micrandilactone C and rubrifloradilactone B.**

Construction of 6/7 fused bicycles featuring C/D rings of micrandilactone C and rubrifloradilactone B is reported through IMDA reaction of properly designed substrates. Also a route to the construction of a tricycle having A/B ring of nortriterpenoids of *schisandra* family is reported using RCM and a bromonium ion initiated cycloetherification reaction as the key steps.



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