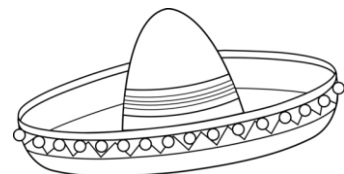


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Next Due Date: Thursday, June 16, 2016

Instructions for Authors (Volume 1)

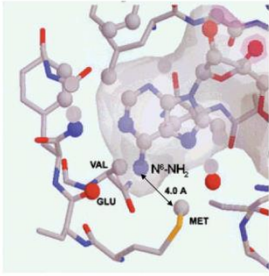
Identify articles to abstract in the journals you have been assigned. Try to pick things that the group (or specific subgroups) would like to read or should be aware of. This does not need to be limited to chemistry! If you encounter interesting pieces of media elsewhere (The Economist being a recent 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 knear@stanford.edu. Late abstracts will be included in the Lit Review for the following month. **PCs please send .cdx and macs please send .pdf files.**

Citation: Abeyweera, T.P.; Rotenberg, S.A. <i>Biochemistry</i> 2007, 46, 2364-2370	
<p>Design and Characterization of a Traceable Protein Kinase C-alpha</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 (1-³²Pi-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>bioorganic 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....</p> <p>mook Pronunciation Key (mk) <i>n. Slang</i> An insignificant or contemptible person.</p>	<p><i>methods</i> synthesis</p>

DON'T BE A MOOK!

Lit Review MOOKS include those who:

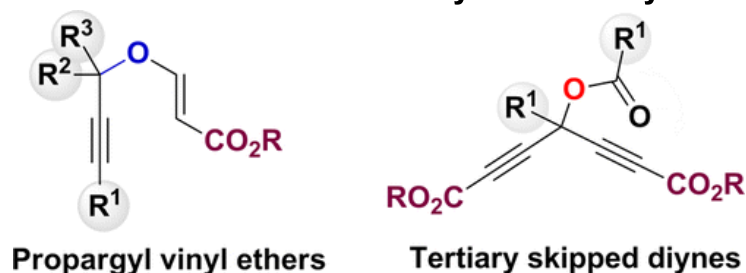
- fail to submit their abstracts in a timely fashion (or at all), or
- claim there was nothing to abstract in *JACS*, *JOC*, *Org. Lett.*, etc.

Penalties for being a Lit Review MOOK:

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

Citation: Tehedor, D. et al. *Acc. Chem. Res.* **2016**, 49, 703-713

Propargyl Vinyl Ethers and Tertiary Skipped Diynes: Two Pluripotent Molecular Platforms for Diversity-Oriented Synthesis



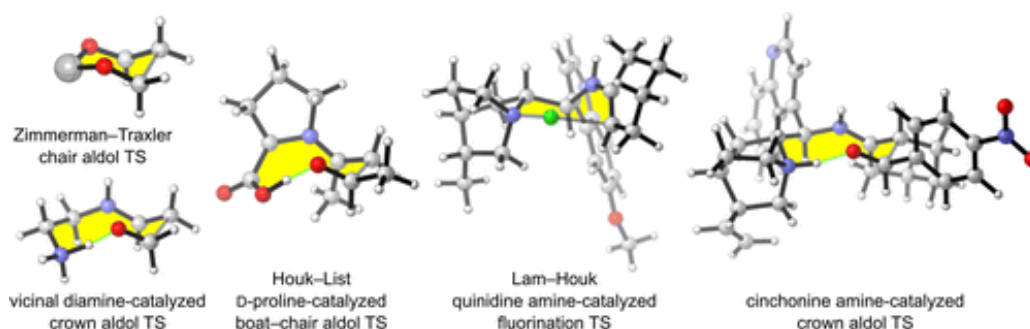
2 Linear pluripotent molecular platforms
11 Different domino reactions
16 Distinct scaffolds

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Citation: Lam, Y. et al. *Acc. Chem. Res.* **2016**, 49, 750-762

Theory and Modeling of Asymmetric Catalytic Reactions



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Citation: ACS Central Science 2, no. 4 (April 27, 2016): 181–82. doi:10.1021/acscentsci.6b00102.

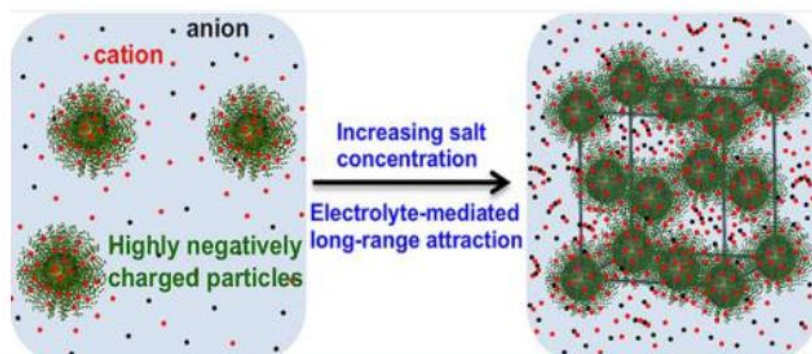
Achieving
Gender
Balance in the
Chemistry
Professoriate Is
Not Rocket
Science.



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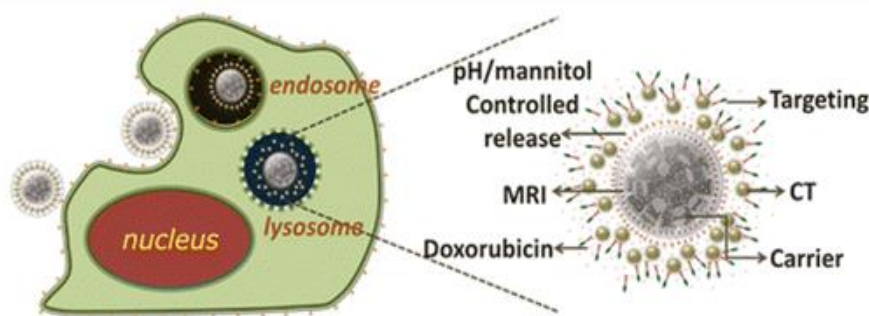
Electrolyte-Mediated Assembly of Charged Nanoparticles



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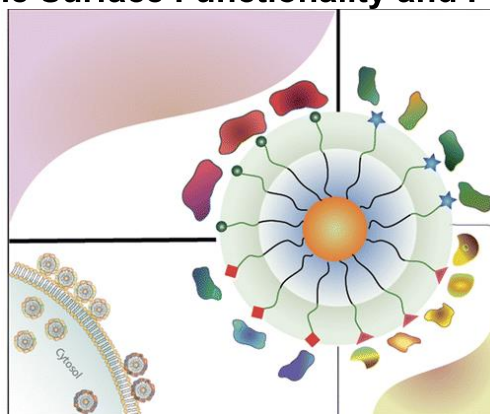
A Versatile Theranostic Delivery Platform Integrating Magnetic Resonance Imaging/Computed Tomography, pH/cis-Diol Controlled Release, and Targeted Therapy



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Regulation of Macrophage Recognition through the Interplay of Nanoparticle Surface Functionality and Protein Corona

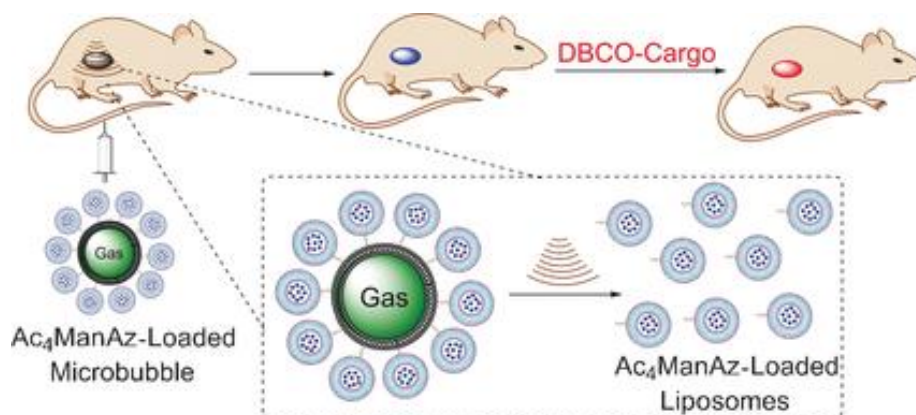


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Citation: Wang, H. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 5452-5456.

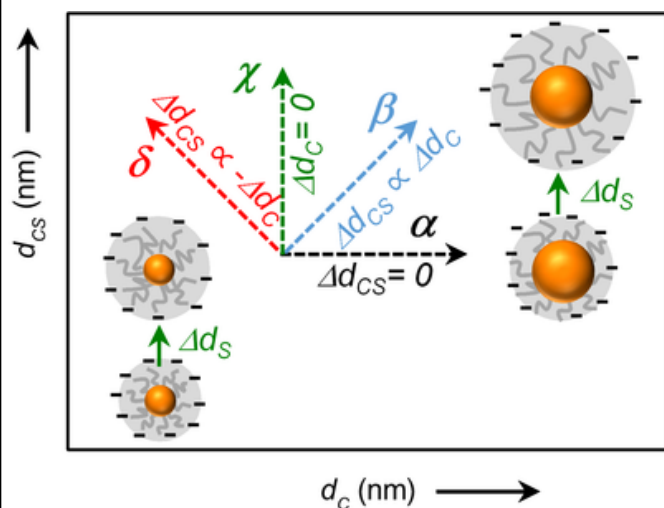
Targeted Ultrasound-Assisted Cancer-Selective Chemical Labeling and Subsequent Cancer Imaging using Click Chemistry



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Citation: del Pino, P. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 5483-5487.

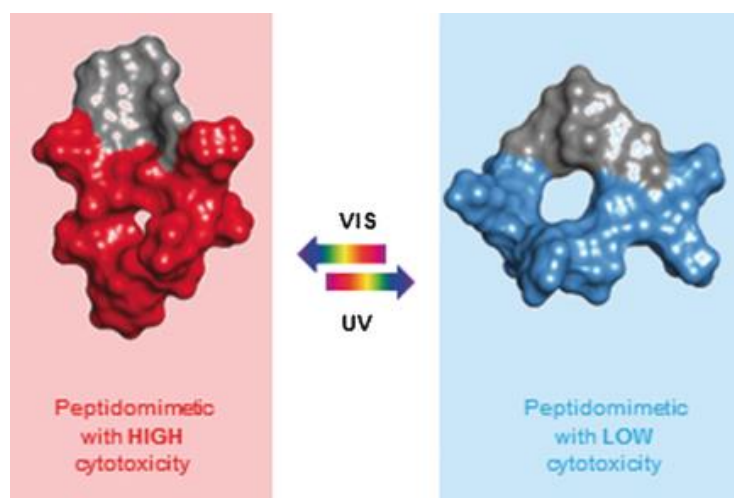


Basic Physicochemical Properties of Polyethylene Glycol Coated Gold Nanoparticles that Determine Their Interaction with Cells

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Citation: Babii, O. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 5493-5496.

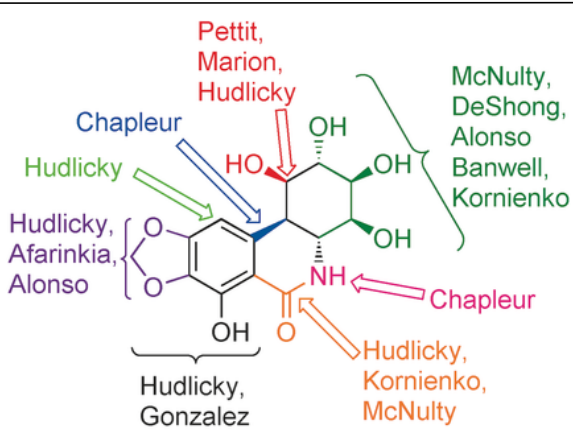


Direct Photocontrol of Peptidomimetics: An Alternative to Oxygen-Dependent Photodynamic Cancer Therapy

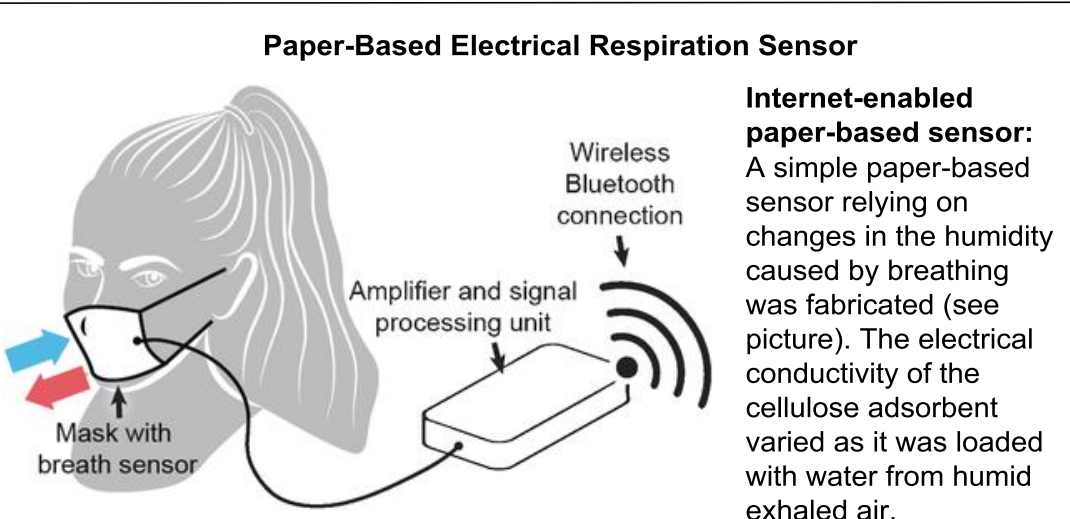
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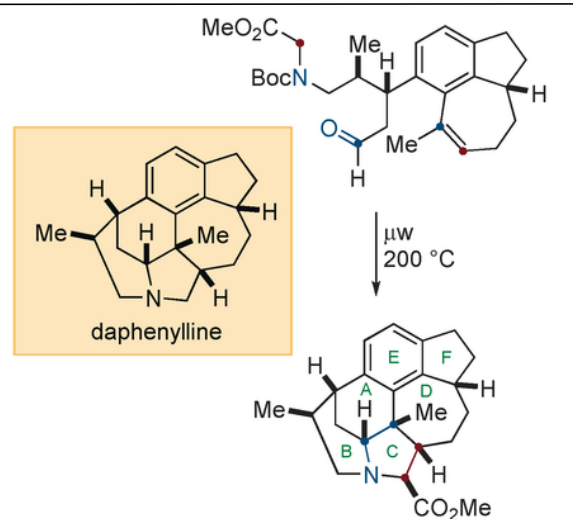
Citation: Ghavre, M. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 5642-5691.

 <p>Structural modifications in the pharmacophore of (+)-pancratistatin</p>	<p>Synthesis of Amaryllidaceae Constituents and Unnatural Derivatives</p> <p>The extracts of plants of the Amaryllidaceae family contain a class of isocarbostryril natural products that are well known to have potent anti-cancer activity (see for example, (+)-pancratistatin). Recent total syntheses of these natural products and their derivatives are summarized. The structure–activity relationships are also discussed and guidelines for the future modifications are formulated.</p>	<p>bioorganic methods synthesis mechanism review other</p> <p>OM Bryo DDO Hybrid Drug Deliv. Prostratin</p>
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Citation: Güder, F. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 5727-5732.

<p>Paper-Based Electrical Respiration Sensor</p>  <p>Internet-enabled paper-based sensor: A simple paper-based sensor relying on changes in the humidity caused by breathing was fabricated (see picture). The electrical conductivity of the cellulose adsorbent varied as it was loaded with water from humid exhaled air.</p>	<p>bioorganic methods synthesis mechanism review other</p> <p>OM Bryo DDO Hybrid Drug Deliv. Prostratin</p>
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Citation: Yamada, R. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 6067–6070

 <p>daphenylline</p>	<p>Total Synthesis of (-)-Daphenylline</p> <p>Ring ring ring: Total synthesis of daphenylline, a hexacyclic Daphniphyllum alkaloid, was achieved. The synthesis features a remote stereocontrolled Claisen rearrangement that takes advantage of the characteristic conformation of the tricyclic DEF core, and intramolecular cycloaddition of a cyclic azomethine ylide to simultaneously construct the ABC ring system.</p>	<p>bioorganic methods synthesis mechanism review other</p> <p>OM Bryo DDO Hybrid Drug Deliv. Prostratin</p>
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Citation: Broichhagen, J. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 5865-5868.

Allosteric Optical Control of a Class B G-Protein-Coupled Receptor

Blues and twos: An “azologue” of BETP, a ligand-dependent allosteric activator of the glucagon-like peptide-1 receptor, acts as a synthetic photoswitch. This allows the levels of cAMP, Ca²⁺, and insulin to be optically controlled in living cells by using blue light.

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Citation: Landesman-Milo, D. et al. *Bioconjugate chemistry* **2016**, *27* (4) 855-862

Transforming Nanomedicines From Lab Scale Production to Novel Clinical Modality

Clinical translation
from challenges to clinical outlook

Future outlook

Reasons for failure

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Citation: *Biomacromolecules* **17**, no. 4 (April 11, 2016): 1425–36. doi:10.1021/acs.biomac.6b00040.

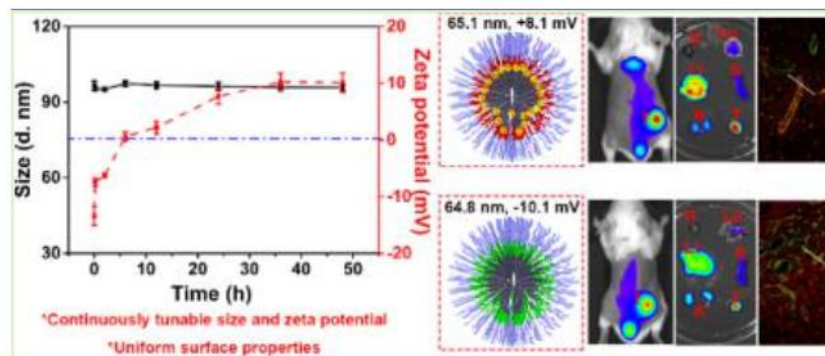
pH-Triggered Release of Hydrophobic Molecules from Self-Assembling Hybrid Nanoscaffolds

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Citation: Biomacromolecules 17, no. 5 (May 9, 2016): 1801–10. doi:10.1021/acs.biomac.6b00234.

Polymeric Micelles with Uniform Surface Properties and Tunable Size and Charge: Positive Charges Improve Tumor Accumulation

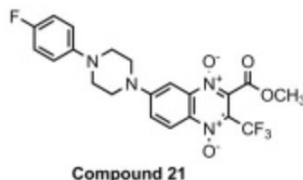
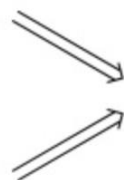
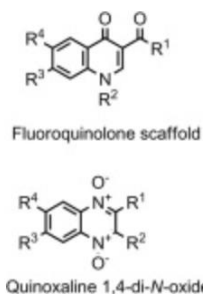


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Citation: Santivanez-Veliz, M.; *et al. Bioorg. Med. Chem. Lett.* **2016**, 26 (9), 2188-2193

Design and synthesis of novel quinoxaline derivatives as potential candidates for treatment of multidrug-resistant and latent tuberculosis



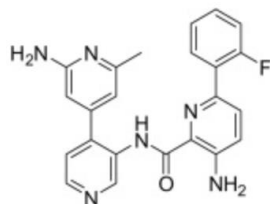
MIC (H37Rv): 1.5 µg/mL
 MIC (INH-R): 0.2 µg/mL
 MIC (RIF-R): 0.2 µg/mL
 MIC (OFX-R): 0.2 µg/mL
 MBC: 4.0 µg/mL
 LORA: 0.4 µg/mL

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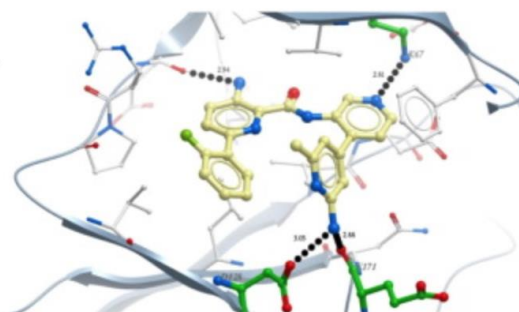
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Citation: Nishiguchi, G. A.; *et al. Bioorg. Med. Chem. Lett.* **2016**, 26 (9), 2328-2332

Design, synthesis and structure activity relationship of potent pan-PIM kinase inhibitors derived from the pyridyl carboxamide scaffold



Pim-1 Ki: <0.001 µM
 Pim-2 Ki: 0.004 µM
 Pim-3 Ki: <0.003 µM

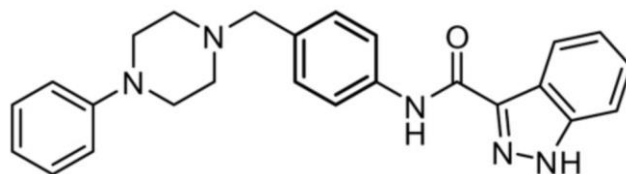


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Citation: Nakano, H.; *et al. Bioorg. Med. Chem. Lett.* **2016**, 26 (9), 2370-2374

Development of a potent and selective FLT3 kinase inhibitor by systematic expansion of a non-selective fragment-screening hit

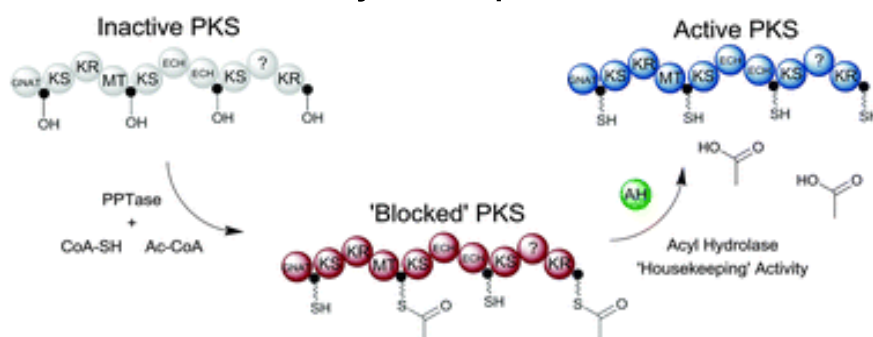


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Citation: Jenner, M. *et al. Chem. Commun.* **2016**, 52, 5262.

Acyl hydrolases from trans-AT polyketide synthases target acetyl units on acyl carrier proteins



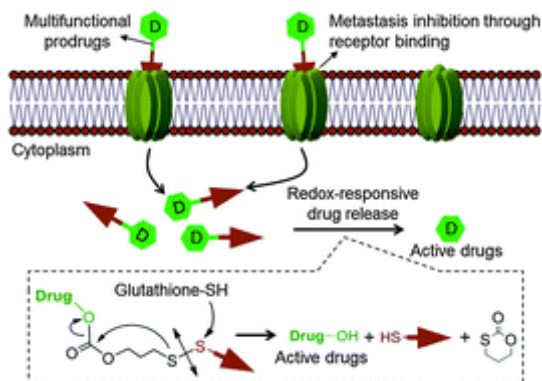
Biosynthesis of bryo is via trans-AT polyketide synthases

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Citation: Xie, H.; *et al. Chem. Commun.* **2016**, 52, 5601.

Rational design of multifunctional small-molecule prodrugs for simultaneous suppression of cancer cell growth and metastasis in vitro and in vivo



The authors present a design concept for multifunctional prodrugs that simultaneously induce apoptosis and suppress cancer cell metastasis in vitro and in vivo. These “all-in-one” prodrug constructs possess therapeutic potential as novel “integrative” platforms for metastatic cancer treatment.

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Citation: C&EN, April 18, 2016, p. 30.



Tracking everyday chemical exposures

Simple, lightweight silicone wristbands are giving researchers a new window on people's environmental exposures to toxic organic chemicals. They sequester and concentrate organic compounds, with a chemical absorption profile similar to that of human cells. Scientists are using them to explore links between disease and exposure to pesticides, flame retardants, fragrances, and endocrine disruptors.

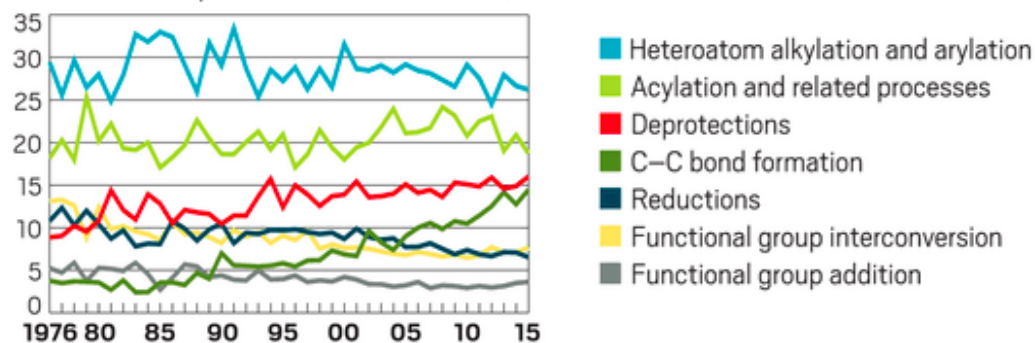
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Citation: C&EN, April 25, 2016, p. 7..

Big data reveal pharma reaction trends

Distribution of top reaction classes over time, %



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Citation: C&EN, April 25, 2016, p. 40.



Tuberculosis-sniffing rats save time, work for peanuts

In cities that do not have modern lab equipment and instead rely on traditional smear tests, 50% or more of positive TB cases are not caught. Apopo-trained rats have a success rate closer to 80%. The rats take 9 months to fully train.

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Citation: C&EN, May 2, 2016, p. 8.



U.S. senators push for ban on pure caffeine

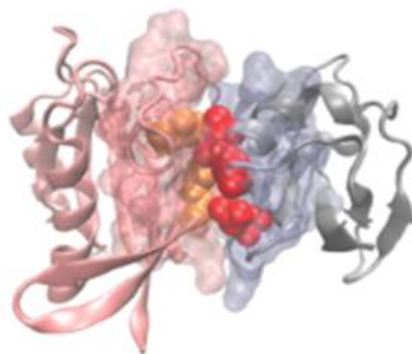
Five U.S. senators are urging FDA to ban retail sales and marketing of bulk powdered caffeine after the 2014 deaths of two men (aged 18 and 24) who consumed too much of the substance. The deaths of the men prompted FDA to send warning letters last year to five distributors of powdered caffeine, claiming that the dietary supplements present "a significant or unreasonable risk of illness or injury." Those companies are no longer marketing the substance directly to consumers, but at least 19 other ares.

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Citation: Keskin, O.; Tuncbag, N.; Gursoy, A. *Chem. Rev.* **2016**, *116*, 4884.

Predicting Protein-Protein Interactions from the Molecular to the Proteome Level



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Citation: Ulbrich, K.; Hola, K.; Subr, V.; Bakandritsos, A.; Tucek, J.; Zboril, R. *Chem. Rev.* **2016**, *116*, 5338.

Targeted Drug Delivery with Polymers and Magnetic Nanoparticles: Covalent and Noncovalent Approaches, Release Control, and Clinical Studies



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Targeted Drug Delivery with Polymers and Magnetic Nanoparticles: Covalent and Noncovalent Approaches, Release Control, and Clinical Studies

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Total Synthesis, Stereochemical Assignment, and Field-Testing of the Sex Pheromone of the Strepsipteran *Xenos peckii*



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Catalytic Asymmetric Prins Bicyclization for the *endo*-Selective Formation of 2,6-dioxabicyclo[2.2.2]octanes

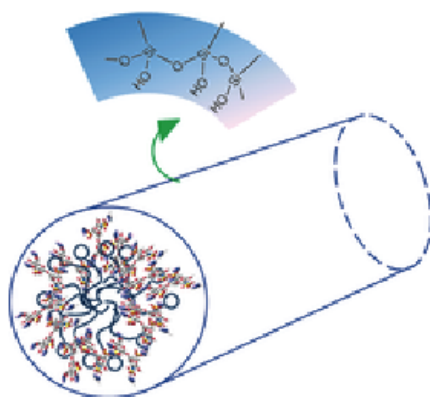


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Citation: Wan, M. M. et al. *Chem. Eur. J.* **2016**, *22*, 6294-6301

In Situ Loading of Drugs into Mesoporous Silica SBA-15

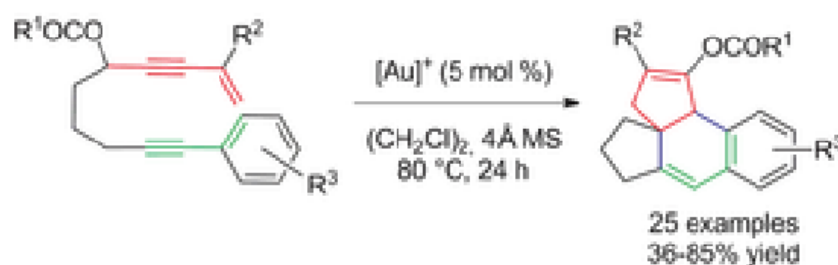


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Citation: Rao, W. J. et al. *Chem. Eur. J.* **2016**, *22*, 6532-6536

Gold-Catalyzed Sequential Cyclization of 1-En-3,9-Diynes to Partially Hydrogenated 3H-Dicyclopenta[*a,b*]naphthalenes

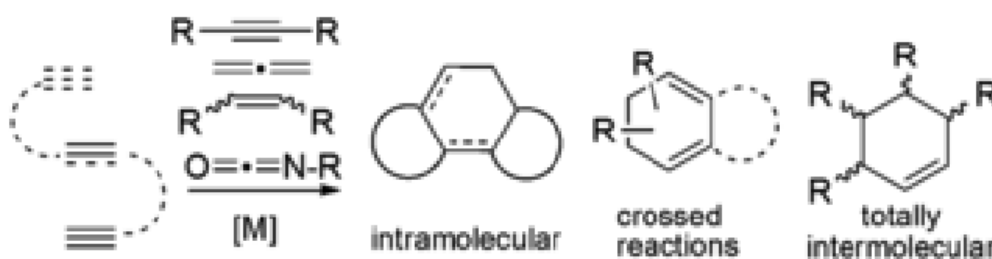


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Citation: Dominguez, G. et al. *Chem. Eur. J.* **2016**, *22*, 6720-6739

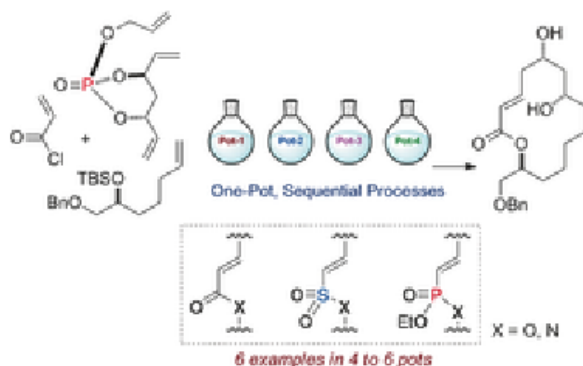
Alkenes in [2+2+2] Cycloadditions



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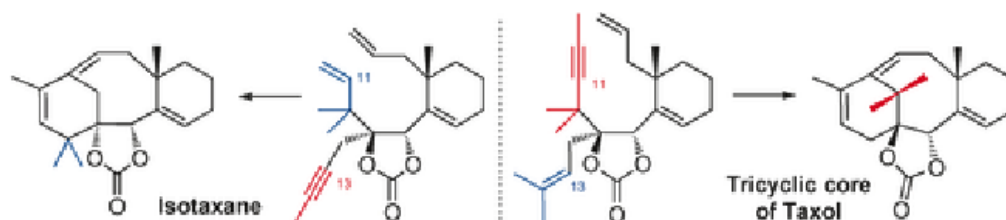
Modular Synthesis of Novel Macrocycles Bearing α,β -Unsaturated Chemotypes through a Series of One-Pot, Sequential Protocols



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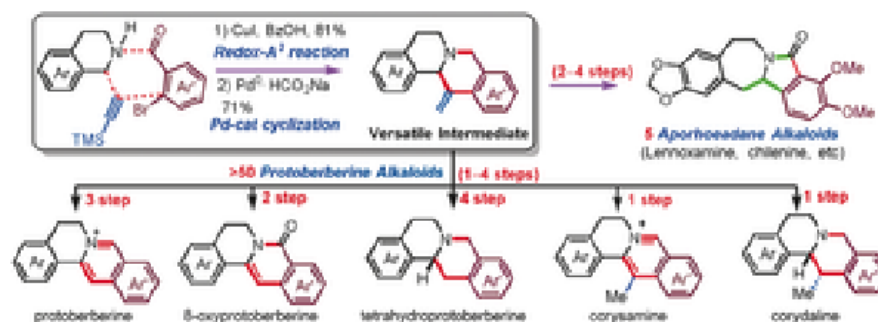
Cascade Metathesis Reactions for the Synthesis of Taxane and Isotaxane Derivatives



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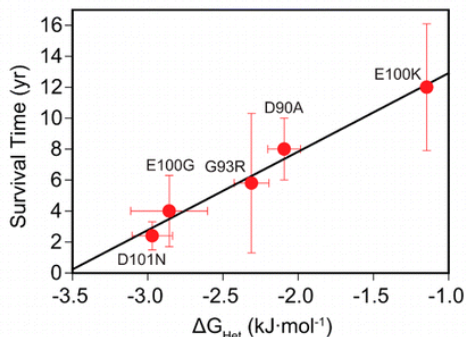
A General, Concise Strategy that Enables Collective Total Syntheses of over 50 Protoberberine and Five Aporphoeadane Alkaloids within Four to Eight Steps



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Citation: Yunhua Shi, Mark J. Acerson, Alireza Abdolvahabi, Richard A. Mowery, and Bryan F. Shaw
Journal of the American Chemical Society 2016 138 (16), 5351-5362



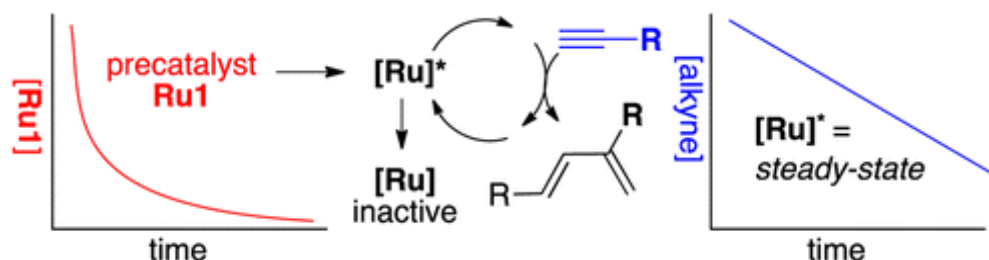
Gibbs Energy of Superoxide Dismutase Heterodimerization Accounts for Variable Survival in Amyotrophic Lateral Sclerosis

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Citation: Justin R. Griffiths, Jerome B. Keister, and Steven T. Diver
Journal of the American Chemical Society 2016 138 (16), 5380-5391

From Resting State to the Steady State: Mechanistic Studies of Ene–Yne Metathesis Promoted by the Hoveyda Complex

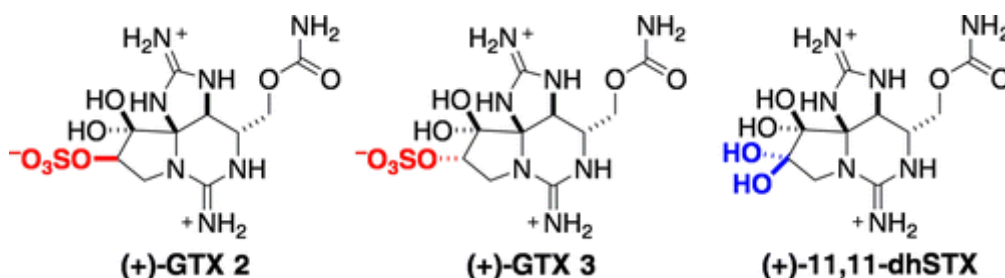


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Citation: John V. Mulcahy, James R. Walker, Jeffrey E. Merit, Alan Whitehead, and J. Du Bois
Journal of the American Chemical Society 2016 138 (18), 5994-6001

Synthesis of the Paralytic Shellfish Poisons (+)-Gonyautoxin 2, (+)-Gonyautoxin 3, and (+)-11,11-Dihydroxysaxitoxin

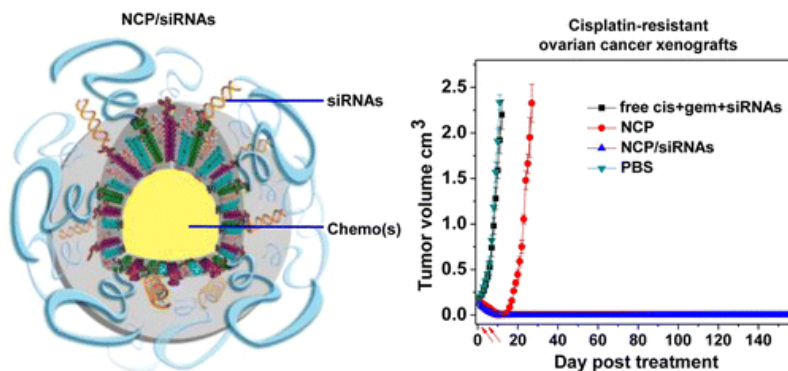


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Citation: Chunbai He, Christopher Poon, Christina Chan, S. Diane Yamada, and Wenbin Lin
Journal of the American Chemical Society 2016 138 (18), 6010-6019

Nanoscale Coordination Polymers Codeliver Chemotherapeutics and siRNAs to Eradicate Tumors of Cisplatin-Resistant Ovarian Cancer



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Citation: *JAMA*. 2016;315(17):1825

Tracy Hampton, PhD

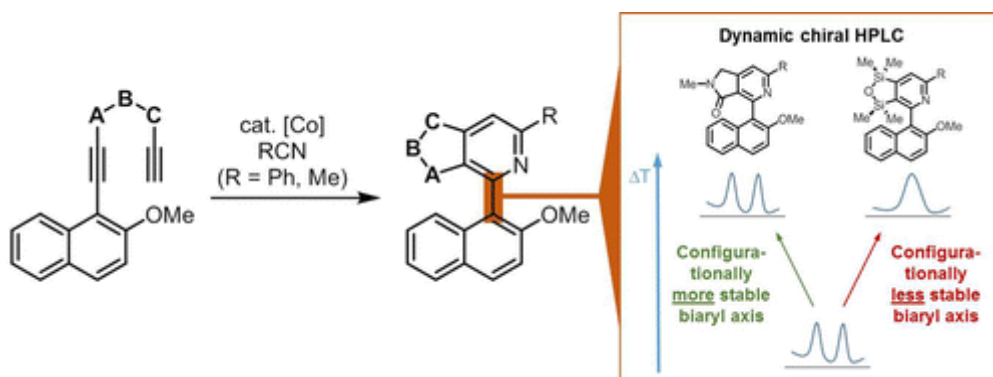
Nanoparticle Strategy Enhances Delivery of Cancer Drugs

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Citation: Fischer, F.; *et al. JOC*, 2016, 81, 3087-3102.

Synthesis of Naphthylpyridines from Unsymmetrical Naphthylheptadiynes and the Configurational Stability of the Biaryl Axis

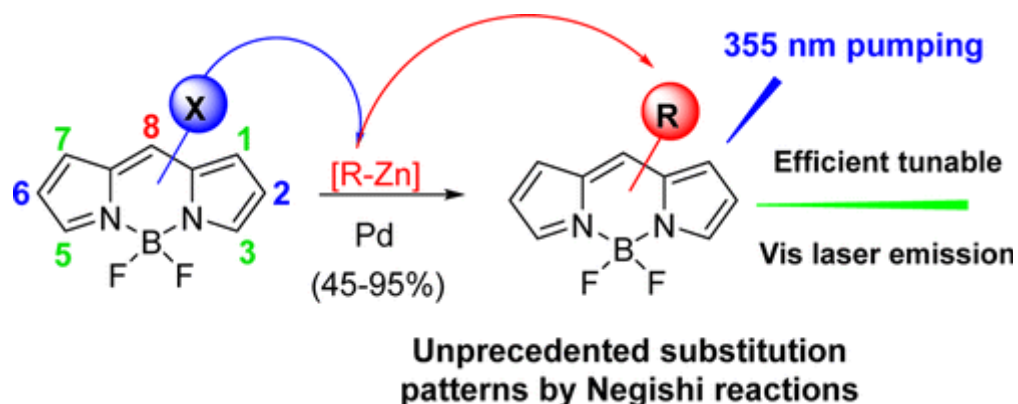


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Citation: Palao, E.; *et al. JOC*, 2016, 81, 3700-3710.

Exploring the Application of the Negishi Reaction of HaloBODIPYs: Generality, Regioselectivity, and Synthetic Utility in the Development of BODIPY Laser Dyes

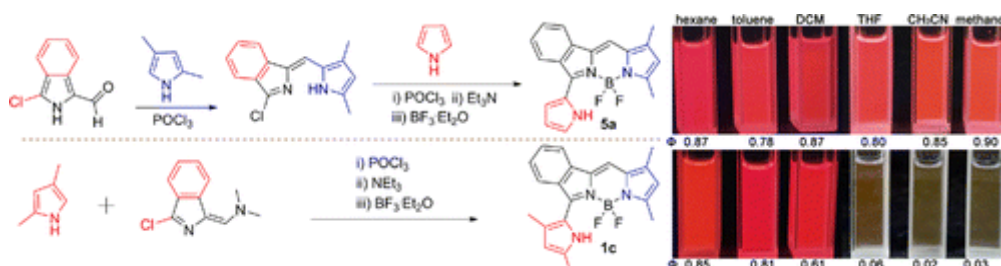


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Citation: Yu, C.; Wu, Q.; Wang, J.; Wei, Y.; Hao, E.; Jiao, L. *JOC*, 2016, 81, 3761-3770.

Red to Near-Infrared Isoindole BODIPY Fluorophores: Synthesis, Crystal Structures, and Spectroscopic and Electrochemical Properties

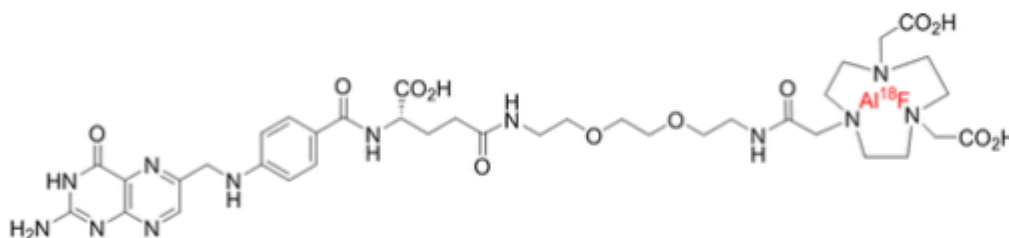


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Citation: Chen, Q.; *et al. Mol Pharm.* 2016, 13, 1520-1527.

Synthesis and Preclinical Evaluation of Folate-NOTA-AI18F for PET Imaging of Folate-Receptor-Positive Tumors



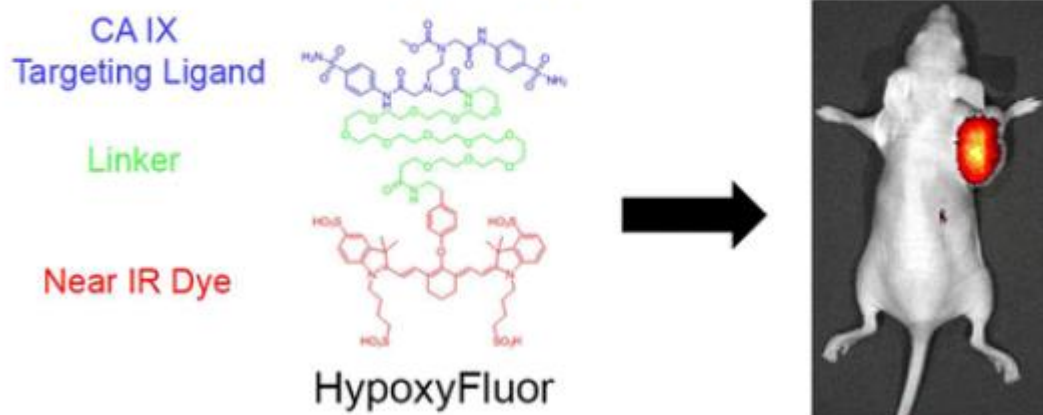
Folate-NOTA-AI18F constitutes an easily prepared FR-targeted PET imaging agent with improved radiopharmaceutical properties and high specificity for folate receptor expressing tumors.

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Citation: Lv, P.-C.; et al. *Mol Pharm.*; 2016, 13, 1618-1625.

Evaluation of Carbonic Anhydrase IX-Targeted Near Infrared Dye for Fluorescence-Guided Surgery of Hypoxic Tumors

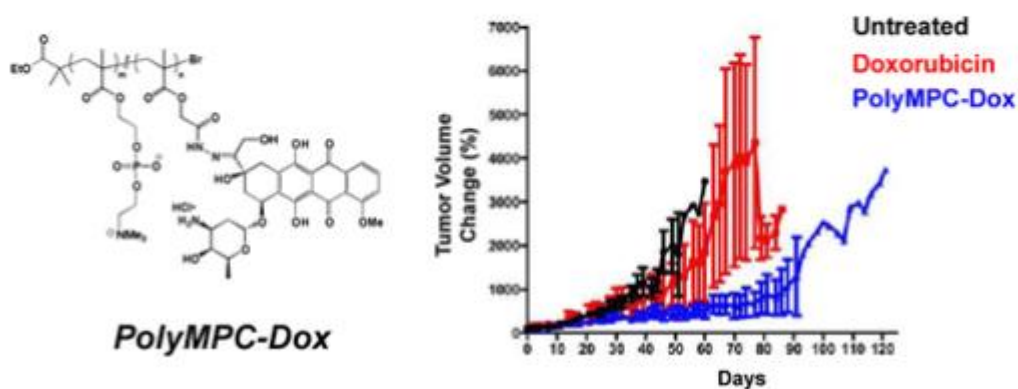


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Citation: Wong, K. E.; et al. *Mol. Pharm.* 2016, 13, 1679-1687.

Evaluation of PolyMPC-Dox Prodrugs in a Human Ovarian Tumor Model

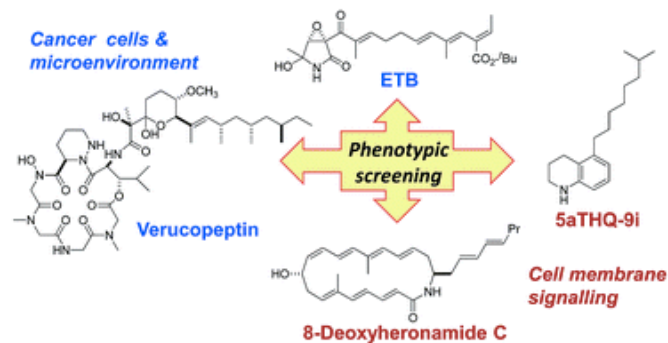


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Citation: Kakeya, H. et al. *Nat. Prod. Rep.*, 2016, 33, 648-654

Natural products-prompted chemical biology: phenotypic screening and a new platform for target identification



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Citation: Nature News April 27, 2016

Scientists worry as cancer moonshots multiply

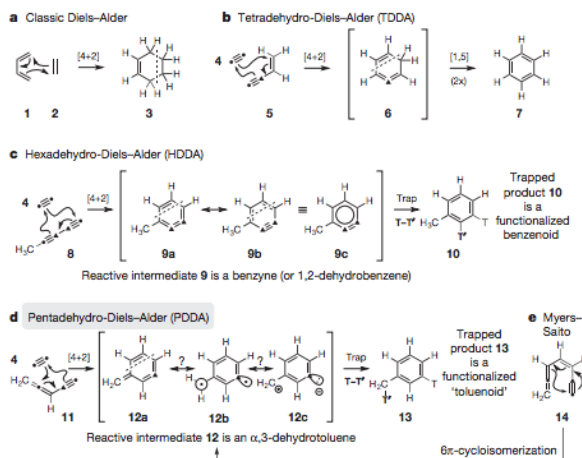
Excerpt: "There's a lack of overt leadership, and in the absence of a logical strategy we have a tendency to throw plates of spaghetti against the wall and hope it sticks," says Ira Mellman, vice-president of cancer immunology at the biotechnology company Genentech in South San Francisco, California.

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Citation: Hoye, et al. 484 | NATURE | VOL 532 | 28 APRIL 2016

The pentadehydro-Diels-Alder reaction

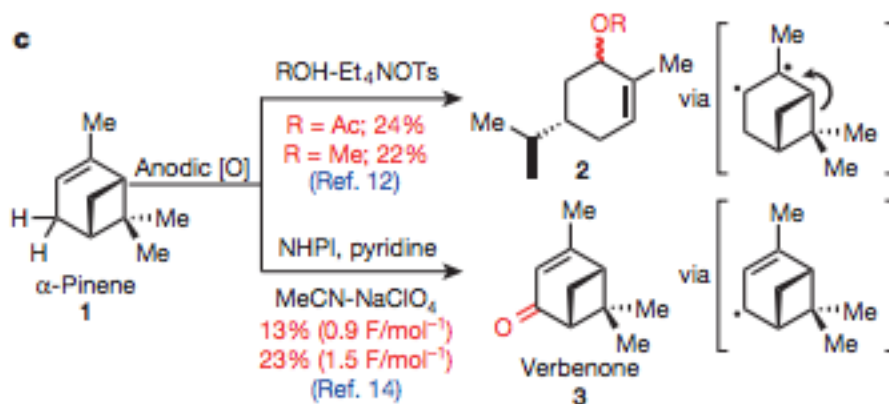


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Citation: Baran et al. Nature 533, 77–81 (05 May 2016)

Scalable and sustainable electrochemical allylic C–H oxidation



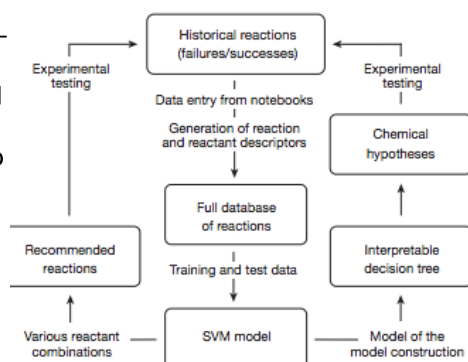
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Citation: Norquist, et al Nature 533, 73–76 (05 May 2016)

Machine-learning-assisted materials discovery using failed experiments

"We used information on 'dark' reactions—failed or unsuccessful hydrothermal syntheses—collected from archived laboratory notebooks from our laboratory, and added physicochemical property descriptions to the raw notebook information using cheminformatics techniques to train a machine-learning model to predict reaction success. When carrying out hydrothermal synthesis experiments using previously untested, commercially available organic building blocks, our machine-learning model outperformed traditional human strategies, and successfully predicted conditions for new organically templated inorganic product formation with a success rate of 89 per cent.."

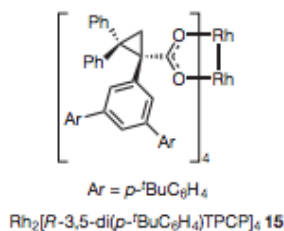
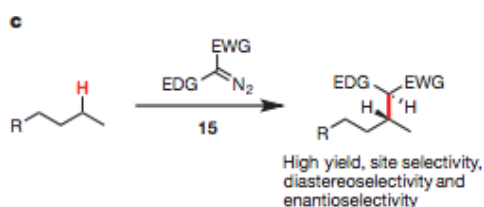


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Citation: Davies et al Nature 533, 230–234 (12 May 2016)

Site-selective and stereoselective functionalization of unactivated C–H bonds



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Citation: Yang, Y.; et al. Nature Chemistry, 2016, 8, 289-290.

Self-assembly of size-controlled liposomes on DNA nanotemplates



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Citation: Deans, *et al. Nat. Chem. Bio.* **2016**, *12*, 361-366.

Parallel shRNA and CRISPR-Cas9 screens enable antiviral drug target identification

The authors used parallel genome-wide high-coverage short hairpin RNA (shRNA) and clustered regularly interspaced short palindromic repeats (CRISPR)-Cas9 screens to identify the cellular target and mechanism of action of GSK983, a potent broad-spectrum antiviral with unexplained cytotoxicity. They found that GSK983 blocked cell proliferation and dengue virus replication by inhibiting the pyrimidine biosynthesis enzyme dihydroorotate dehydrogenase (DHODH). Guided by mechanistic insights from both genomic screens, we found that exogenous deoxycytidine markedly reduced GSK983 cytotoxicity but not antiviral activity, providing an attractive new approach to improve the therapeutic window of DHODH inhibitors against RNA viruses. The results highlight the distinct advantages and limitations of each screening method for identifying drug targets, and demonstrate the utility of parallel knockdown and knockout screens for comprehensive probing of drug activity.

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Citation: *N Engl J Med* **2016**; *374*:1684-1686

Michele P. Calos, Ph.D.

The CRISPR Way to Think about Duchenne's

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Citation: *N Engl J Med* **2016**; *374*:1864-1873

Charles Swanton, M.D., Ph.D., and Ramaswamy Govindan, M.D.

Clinical Implications of Genomic Discoveries in Lung Cancer

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Citation: http://www.nytimes.com/2016/04/19/sports/football/nfl-concussion-lawsuit.html?_r=0

Appeals Court Affirms Landmark N.F.L. Concussion Settlement

PHILADELPHIA — Nearly three years ago, the N.F.L. and lawyers for thousands of retired football players agreed on a deal to compensate all former players who had neurological diseases linked to repeated hits to the head, helping the league to move on from one of the most contentious issues facing the nation's most popular sport.

In the settlement, players can receive cash payments of up to \$5 million if they find out they have Alzheimer's, A.L.S., Parkinson's or severe dementia, or were found to have C.T.E. before the settlement was approved last year. Though the ceiling is \$5 million, the amount players are paid is based on their age and number of years in the league, and therefore is likely to be far less.

The number of players with these conditions may end up being a minority of the pool of retired players. All of them, though, can receive medical tests, paid for by the league, to monitor their conditions.

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Citation: <http://www.nytimes.com/2016/04/19/health/aids-treatment-in-haiti-promising-for-developing-nations.html>

AIDS Treatment in Haiti Promising for Developing Nations

One of the first groups of H.I.V. patients in a poor country to get free AIDS drugs has about the same survival rate as their closest counterparts in the United States, according to scientists at Weill Cornell Medical College.

Ten years after a free treatment program was introduced in Haiti's capital, Port-au-Prince, two-thirds of the first 910 patients enrolled were still alive, the researchers said in a brief report published in *The New England Journal of Medicine*.

The clinic, supported primarily by American taxpayer dollars through the National Institutes of Health and the President's Emergency Plan for AIDS Relief, achieved this success despite Haiti's political instability and grinding poverty, and sustained it through the 2010 earthquake and an ongoing cholera epidemic, Dr. McNairy said.

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Citation: *Org. Lett.*, 2016, 18 (9), pp 2098–2101

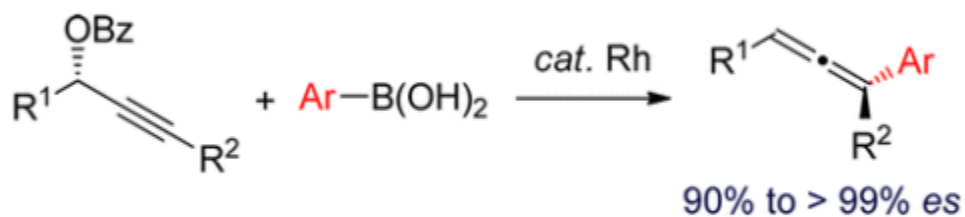
Sheng-Ying Hsieh and Jeffrey W. Bode*

Silicon Amine Reagents for the Photocatalytic Synthesis of Piperazines from Aldehydes and Ketones



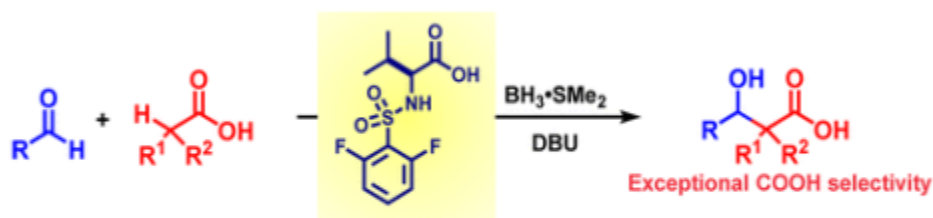
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Rh-Catalyzed Stereospecific Synthesis of Allenes from Propargylic Benzoates and Arylboronic Acids

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Ligand-Promoted, Boron-Mediated Chemoselective Carboxylic Acid Aldol Reaction

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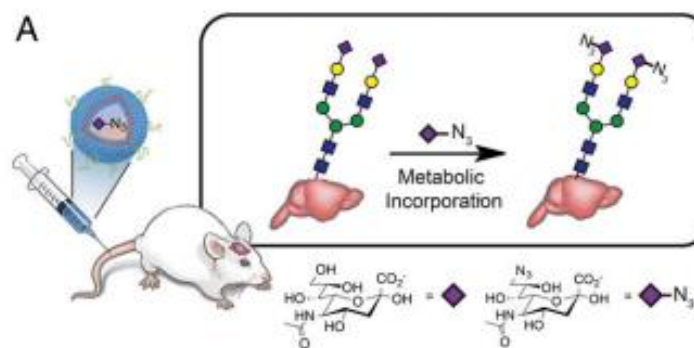
Legacy of Richard Heck

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In vivo metabolic labeling of sialoglycans in the mouse brain by using a liposome-assisted bioorthogonal reporter strategy

Sialic acid azides don't get across the BBB, so they put it in a liposome and then imaged it with Cu-free click



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Layer-by-layer assembled fluorescent probes in the second near-infrared window for systemic delivery and detection of ovarian cancer

"This work, for the first time to our knowledge, establishes a modular and versatile layer-by-layer platform for NIR-II agents and presents a head-to-head in vivo comparison of available NIR-II probes. We successfully achieve the selective, noninvasive, and safe detection of high-grade serous ovarian tumors in an orthotopic murine model. These LbL NIR-II probes promise the development of an NIR-II based theranostic platform of disease diagnosis, progression, and treatment."

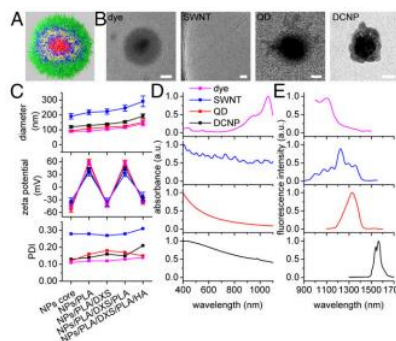
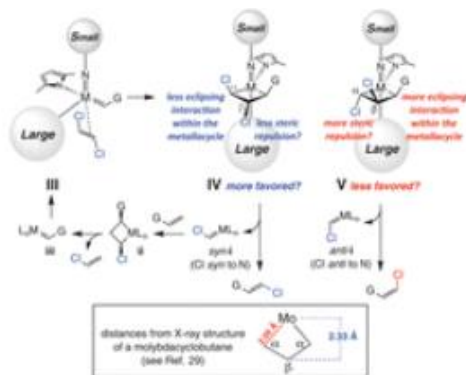


Fig. 1. Characterization of the LbL NIR-II NPs. (A) Illustration of a spherical LbL NIR-II NP. From inside to outside: NIR-II core (red), PLA (blue), DXS (yellow), PLA (blue), and HA (green). (B) TEM images of the LbL NIR-II NPs. [Scale bars: 50 nm (5 nm for SWNT).] (C) DLS characterizations of the NPs for each LbL step, including hydrodynamic diameter, zeta potential, and PDI. Data are given in mean \pm SD, n = 3. (D and E) Normalized absorption (D) and emission (E) spectra of the NPs.

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Kinetically controlled E-selective catalytic olefin metathesis



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Citation: Johnson, N. *Science* **2016**, 352 (6285), 622

The hidden perks of grad school



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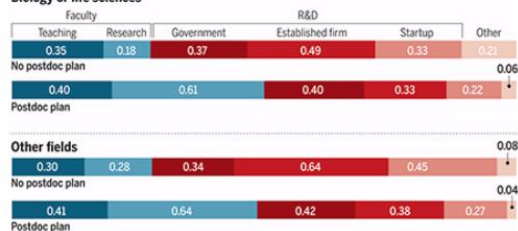
Citation: Sauermann, H.; Roach, M. *Science* **2016**, 352 (6286), 663-664

Why pursue the postdoc path?

Students' highest-rated careers

Share of students giving a particular career their highest attractiveness rating, putting job availability aside (careers rated independently, ties possible). *N* = 5911.

Biology or life sciences



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Citation: Moore, D.J. *Sci. Trans. Med.* **2016**, 8, 337ec70.

Sex (steroids) is in the AIRE

Women are more susceptible to most autoimmune diseases, and although there is a clear role for hormonal factors and environmental interactions, molecular mechanisms for this effect have not been well defined. Recently, two groups have substantially advanced our understanding of this process by identifying how sex steroids regulate immune development.

Dragin et al. and Zhu et al. independently determined that AIRE (autoimmune regulator) expression is lower in female human thymus than in male thymus. These differences were most pronounced during pubescence and during the mini-puberty of infancy, when sex steroids surge. These field-advancing studies reveal sex-associated differences in the molecular regulation of immunity. These studies help explain the sex differences in disease risk and the relation of autoimmune disease to puberty. Understanding how this interaction may be monitored and modulated could suggest new hormone-based interventions to diminish autoimmune disease risk.

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Citation: Lucey. *Sci. Trans. Med.* **2016**, *8*, 338ec75.

Sex and the night shift

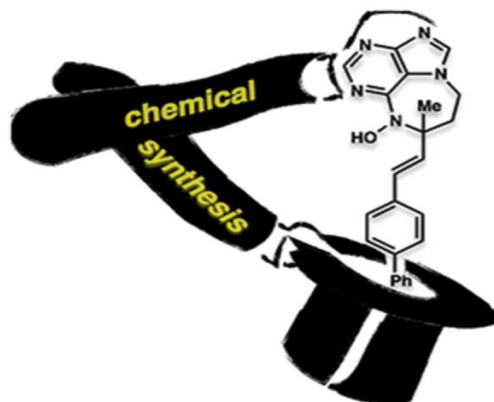
Sex differences in sleep and circadian rhythms have been reported in both animals and humans. Women are underrepresented in sleep and circadian research leading to a gap in our understanding of why certain sleep and circadian disturbances have greater effects in women compared with men. In a recent study, Santhi et al. examined circadian and sleep-wake regulation of cognitive function in men and women under conditions mimicking jet lag or shift work. Participants had multiple sleep and circadian parameters monitored throughout the study, including the concentration of melatonin in plasma, total sleep time, and slow wave activity. Cognitive assessments for attention, memory, and other functions were also performed every 3 hours. Although reported levels of sleepiness during the night did not differ between women and men, women were found to have greater impairment in thinking and memory compared with men after a long time awake combined with an adverse circadian phase (mimicking the conditions of jet lag or shift work).

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Citation: K. K. Wan *et al. Synlett* **2016**, *27*, 1145–1164

Conjuring a Supernatural Product - DelMarine

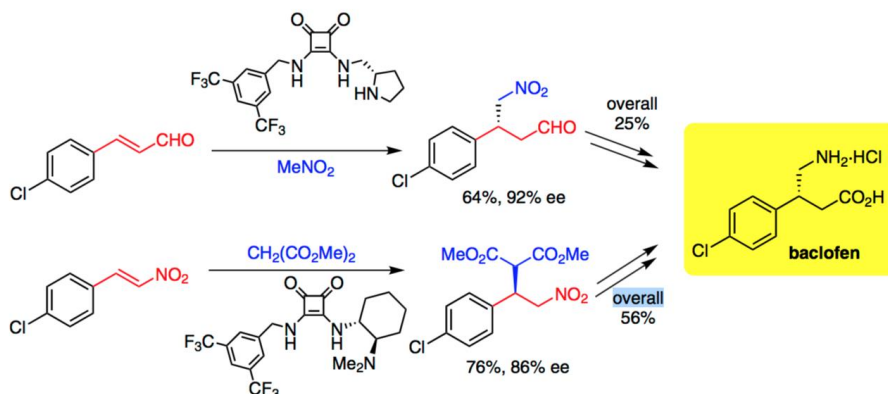


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Citation: E. Veverkova *et al. Synthesis* **2016**, *48*, 1474–1482

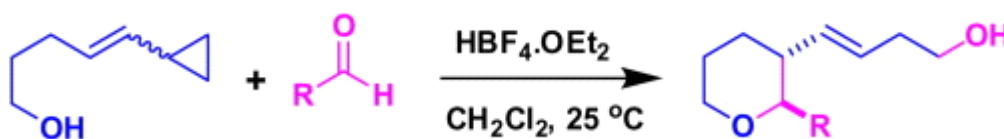
Squaramide-Catalyzed Micheal Additon as a Key Step for the Direct Synthesis of GABAergic Drugs



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Tandem vinylcyclopropane ring opening/Prins cyclization for the synthesis of 2,3-disubstituted tetrahydropyrans



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