Accounts of Chemical Research	175	Melanie Huttner
ACS Chemical Biology	176	Jessica Vargas
ACS Nano	176	Nancy Benner
Advanced Drug Delivery Reviews	176	Xiaoyu Zang (Janice)
Angewandte Chemie International Edition	**MOOK**	Andrew Raub
Bioconjugate Chemistry	177	Colin McKinlay
Biomacromolecules	177	Colin McKinlay
Bioorganic and Medicinal Chemistry	177	Nancy Benner
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Chemical Communications	178	Katie Near
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Chemical Reviews	**MOOK**	Ryan Quiroz
Chemical Science	181	Jack Sloane
Chemistry, A European Journal	182	Xiaoyu Zang (Janice)
European Journal of Organic Chemistry	185	Samanta Capolicchio
Journal of the American Chemical Society	185	Akira Shimizu (odd)
		Hsiao-Tieh Hsu (even)
Journal of Medicinal Chemistry	**MOOK**	Matthew Stevens
Journal of Organic Chemistry	190	Matthew Jeffreys
Molecular Pharmaceutics	191	Colin McKinlay
Natural Product Reports	192	Jack Sloane
Nature	**MOOK**	Ryan Quiroz
Nature Chemistry	**MOOK**	Andrew Raub
Nature Chemical Biology	192	Jessica Vargas
The New York Times	193	Melanie Huttner
The Onion	193	Melanie Huttner
Organic Letters	194	Jack Sloane
Organometallics	**MOOK**	Matthew Stevens
PNAS	196	Melanie Huttner
Science	196	Steven Ryckbosch
Science Translational Medicine	197	Jessica Vargas
Synlett	N/A	N/A
Synthesis	N/A	N/A
Tetrahedron	198	Samanta Capolicchio
Tetrahedron Letters	198	Katie Near

Next Due Date: Wednesday, July 15, 2015

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.

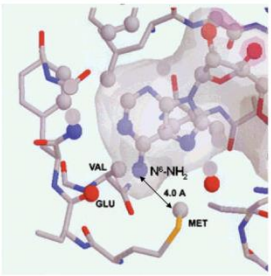
Include a brief textual summary of the article; an example of a completed abstract is shown below. The list of topics and subgroups on the right is useful to highlight which subgroups should pay attention to your abstract and roughly what kind of chemistry the article contains.

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. *Biochemistry* **2007**, *46*, 2364-2370

Design and Characterization of a Traceable Protein Kinase C-alpha

Protein kinase CR (PKCR) is a critical component of pathways that govern cancer-related phenotypes such as invasion and proliferation. Proteins that serve as immediate substrates for PKCR offer potential targets for anticancer drug design. To identify specific substrates, a mutant of PKCR (M417A) was constructed at the ATP binding site such that it could bind a sterically large ATP analogue derivatized through the N6 amino group of adenosine (1c-32Pl-N6-phenyl-ATP). Because this analogue could be utilized by the mutant kinase but not by wild-type PKCR (or presumably other protein kinase) to phosphorylate peptide or protein substrates, 32P-labeled products were the direct result of the mutant PKCR.



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Citation: Dictionary.com (search term = "mook")

For those of you who always wanted to know what it meant....
mook **Pronunciation Key** (mk) *n. Slang*
An insignificant or contemptible person.

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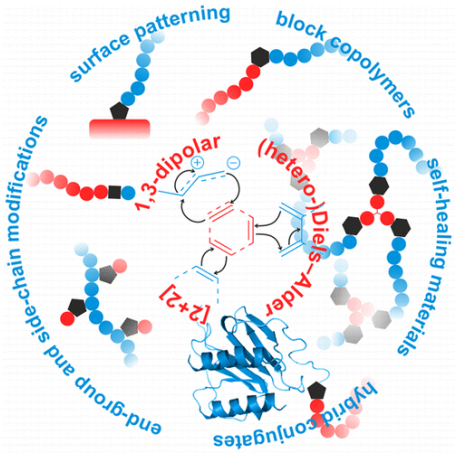
DON'T BE A MOOK!

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.

Delaittre, G.; Guimard, N. K.; Barner-Kowollik, C. *Acc. Chem. Res.*, **2015,** *48,* 1296-1307.

Cycloadditions in Modern Polymer Chemistry



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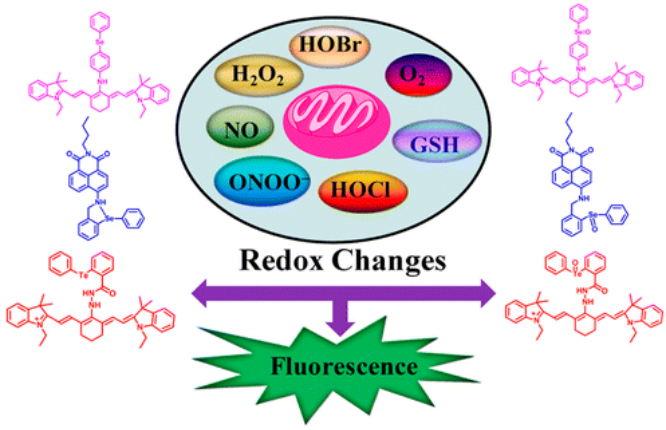
Citation: Lou, Z.; Li, P.; Han, K. *Acc.Chem. Res.*, **2015,** *48,* 1358-1368.

Redox-Responsive Fluorescent Probes with Different Design Strategies



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Citation: Field, L. D.; Delehanty, J. B.; Chen, Y.; Medintz, I. L. *Acc. Chem. Res.*, **2015,** *48,* 1380-1390.

Peptides for Specifically Targeting Nanoparticles to Cellular Organelles: *Quo Vadis?*

Because almost all materials delivered to cells by peptides utilize the endosomal system of vesicular transport and in many cases remain sequestered within the vesicles, we critically evaluate the issue of endosomal escape in the context of some recently reported successes in this regard. Following from this, peptides that have been reported to deliver nanoparticles to specific subcellular compartments are examined with a focus on what they delivered and the putative mechanisms by which they were able to accomplish this. Finally, we conclude with a brief perspective on the future evolution and broader impact of this growing area of bionanoscience.

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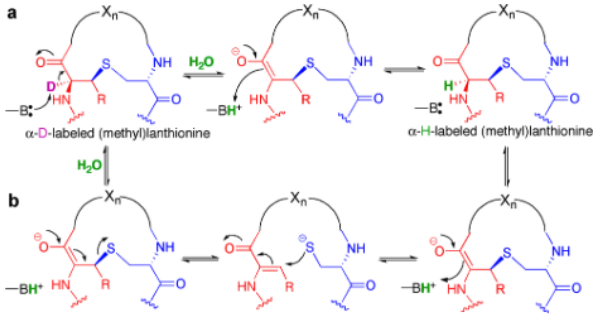
Citation: *ACS Chem. Biol.*, **2015**, *10* (5), pp 1234–1238

Michael-Type Cyclizations in Lantibiotic Biosynthesis Are Reversible

Scheme 1. Two Mechanisms for α-Proton Exchange of Deuterium-Labeled (Methyl)lanthionines by Lanthipeptide Synthetases[a]



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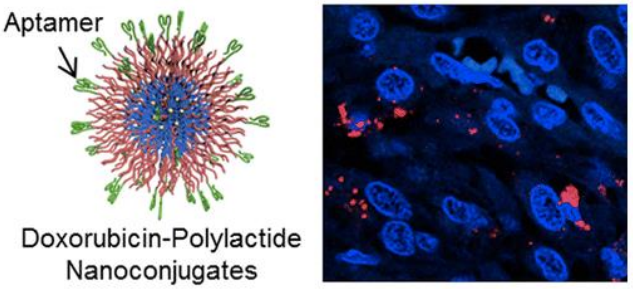
Citation: Tang, L. et. al, *ACS Nano,* **2015**, 9 (5) 5072-5081

Targeting Tumor Vasculature with Aptamer-Functionalized Doxorubicin–Polylactide Nanoconjugates for Enhanced Cancer Therapy



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Citation: Chabot, *et al. Adv Drug Deliv Rev.* **2015,** *81,* 161-168.

Targeted electro-delivery of oligonucleotides for RNA interference: siRNA and antimiRNA

For more than a decade, the understanding of RNA interference (RNAi) has been a growing field of interest. Micro-RNAs (miRNAs) are small regulatory RNAs that play an important role in disease development and progression and therefore represent a potential new class of therapeutic targets. However, delivery of RNAi-based oligonucleotides is one of the most challenging hurdles to RNAi-based drug development. Electropermeabilization (EP) is recognized as a successful non-viral method to transfer nucleic acids into living cells both in vitro and in vivo. EP is the direct application of electric pulses to cells or tissues that transiently permeabilize plasma membranes, allowing the efficient delivery of exogenous molecules. The present review focused on the mechanism of RNAi-based oligonucleotides electrotransfer, from cellular uptake to intracellular distribution. Biophysical theories on oligonucleotide electrotransfer will be also presented. The advantages and few drawbacks of EP-mediated delivery will also be discussed.

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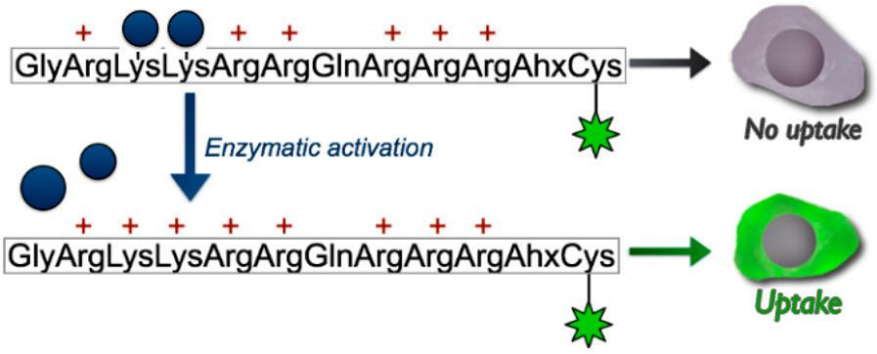
Citation: Bioconjugate Chem. 2015, 26 (5), 850–856.

Enzyme-Activatable Cell-Penetrating Peptides through a Minimal Side Chain Modification



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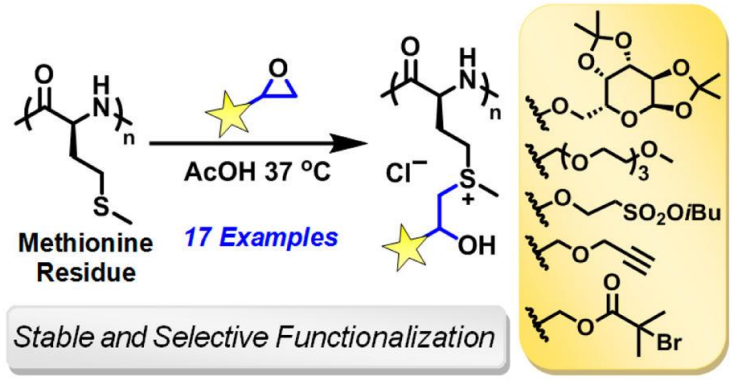
Citation: Biomacromolecules 2015, 16 (6), 1802–1806.

Versatile Synthesis of Stable, Functional Polypeptides via Reaction with Epoxides.



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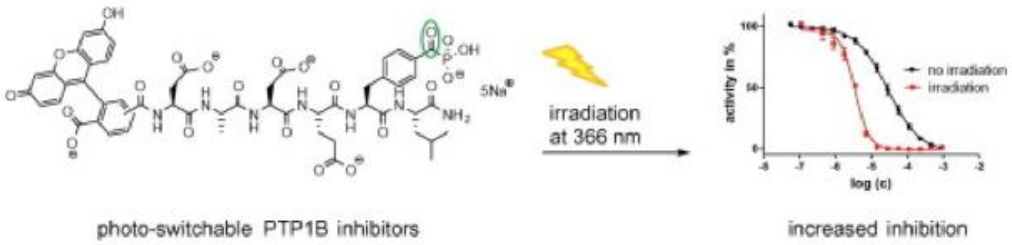
Citation:Wagner, S. et al. *Bioorg. Med. Chem.*, 23, (2015) 2839-2847

Light-switched inhibitors of protein tyrosine phosphatase PTP1B based on phosphonocarbonyl phenylalanine as photoactive phosphotyrosine mimetic



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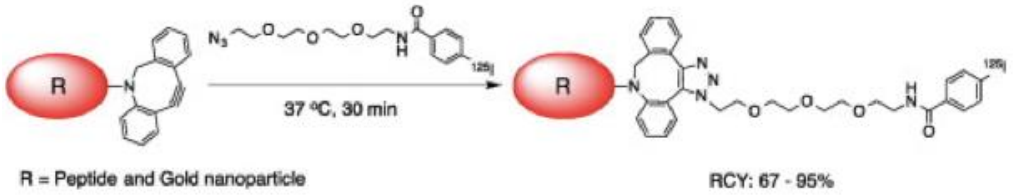
Citation: Jeon, J. et al. *Bioorg. Med. Chem*., 23, (2015)3303-3308

Efficient method for iodine radioisotope labeling of cyclooctyne-containing molecules using strain-promoted copper-free click reaction



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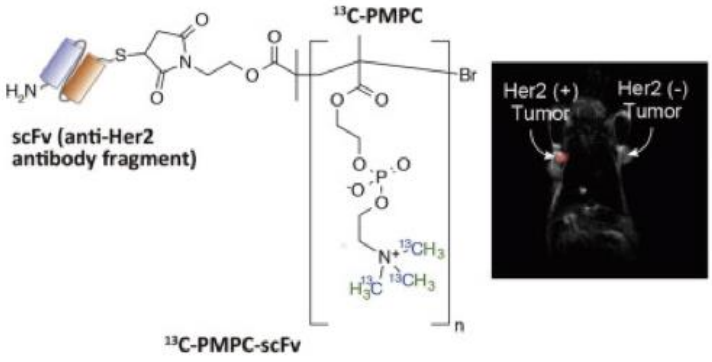
Citation: Yamada, H. et al. *Bioorg. Med. Chem. Lett*., 25, (2015) 2675-2678

Magnetic resonance imaging of tumor with a self-traceable polymer conjugated with an antibody fragment



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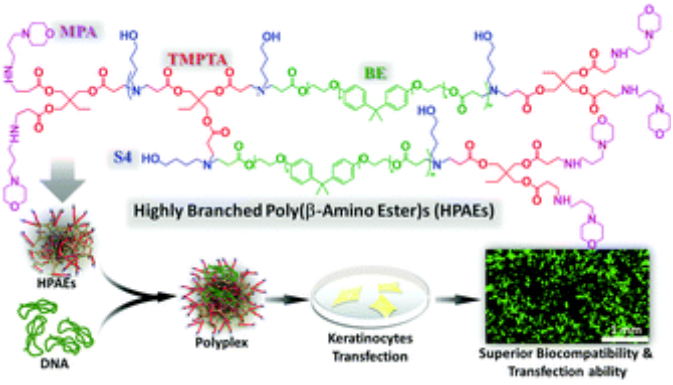
Citation: Huang, J.-Y. *et al. Chem. Commun.* **2015**, *51,* 8473.

Tailoring highly branched poly(ß-amino ester)s: a synthetic platform for epidermal gene therapy



Highly branched poly(ß-amino ester)s (HPAEs) were designed and synthesised for safe and efficient gene delivery to human keratinocytes. HPAEs outperformed commercial transfection reagents: PEI and SuperFect®, for both transfection efficiency and biocompatibility. A 22 and 3.4 fold enhancement of gene transfection was seen coupled with superior biocompatibility.

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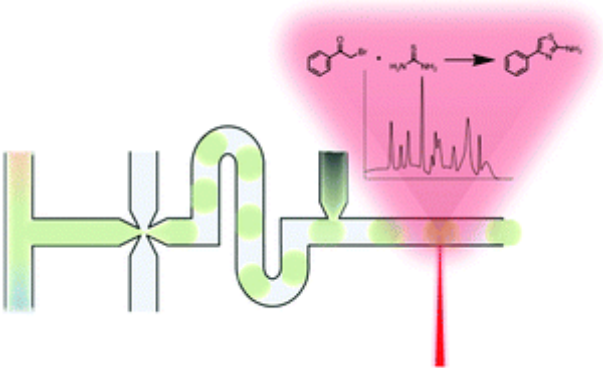
Citation: Meier, T.-A. *et al. Chem. Commun.* **2015**, *51,* 8588.

On-chip monitoring of chemical syntheses in microdroplets via surface-enhanced Raman spectroscopy



The authors describe a multi-channel microdroplet chip, which allows fast and directed dispensing of reactants into individual droplets in a segmented flow. This gives access to study the reaction progress in situ via surface-enhanced Raman spectroscopic monitoring of fast moving individual droplets. This opens up new avenues for high-throughput screening of organic reactions at the micro- and nano-scale.

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Citation: Dias, G. G. *et al. Chem. Commun.* **2015**, *51,* 9141.

Selective endocytic trafficking in live cells with fluorescent naphthoxazoles and their boron complexes

Fluorescent naphthoxazoles and their boron derivatives have been synthesized and applied as superior and selective probes for endocytic pathway tracking in live cancer cells. The best fluorophores were compared with the commercially available acridine orange (co-staining experiments), showing far better selectivity.

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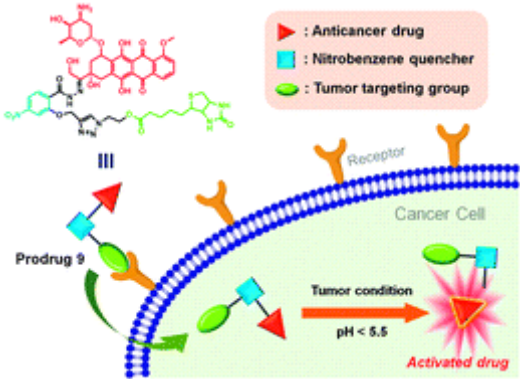
Citation: Park, S. *et al. Chem. Commun.* **2015**, *51,* 9343.

Biotin-guided anticancer drug delivery with acidity-triggered drug release



A novel biotin-guided anticancer drug delivery system, prodrug 9, consisting of biotin, nitrobenzene, and doxorubicin, with acid-triggered drug releasing capability was synthesized. Its cellular uptake and anticancer activity are selective to the HepG2 cell line over the WI-38 cell line, as revealed by fluorescence confocal microscopic experiments and MTT assay.

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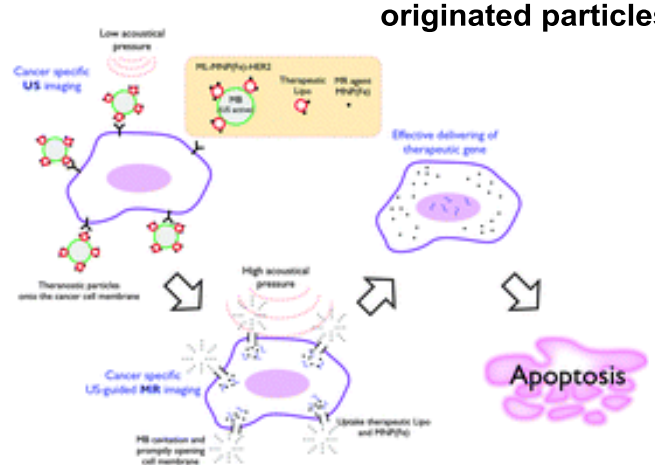
Citation: Yoon, Y. I.; *et al. Chem. Commun.* **2015**, *51,* 9455.

Enhancement of cancer specific delivery using ultrasound active bio-originated particles



A hybrid multifunctional particle comprising of a microbbule (MB), liposome (Lipo), and an Fe ion chelated melanin nanoparticle (MNP(Fe)) was applied for ultrasound mediated cancer targeting as a theranostic agent.

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Citation: *C&E News*, http://goo.gl/3LFxI2

Drugmaker, University Join To Find A Cure for HIV

In the latest twist on industry-academic collaboration, GlaxoSmithKline and the University of North Carolina, Chapel Hill, have teamed up with the ambitious goal of finding a cure for HIV. Together they will establish the HIV Cure center, a research facility on the UNC campus, and launch Qura Therapeutics, a jointly owned firm that will house any intellectual property they generate.

GSK is committing $20 million in research support over five years. Ten of its scientists will work at the Cure center. Some 40 UNC researchers, including ones from the labs of HIV expert David Margolis, will also be there.

The unusual setup was three years in the making, according to Zhi Hong, head of GSK's infectious diseases therapy unit. He expects the partners to spend five to 10 years conducting basic research before turning to drug development.

GSK is already involved in HIV drugs through ViiV Healthcare, a joint venture with Pfizer and Shionogi. ViiV has a portfolio of drugs that work by suppressing viral replication. Although antivirals have mostly turned HIV into a disease that people live with, rather than die from, they aren't a cure. The new venture hopes to completely eliminate the reservoir of viral DNA that hides out in cells.

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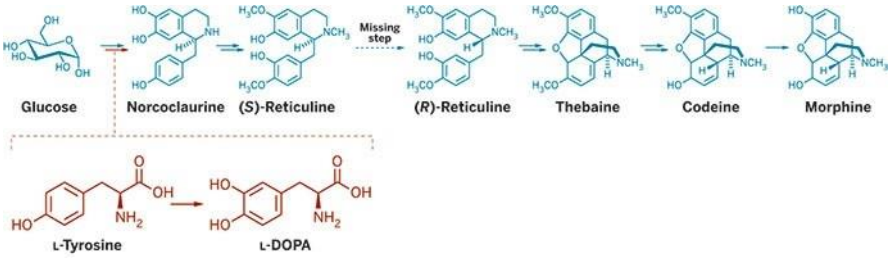
Citation: *C&E News*, http://goo.gl/Zvt1Xd

Programming Yeast To Make Opiates



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Citation: *C&E News*, http://goo.gl/6Wsq2p

Chemistry Papers Rank High Among Once-Obscure Studies That Recently Racked Up Citations

It's the dream of the underappreciated scientist. A research paper that barely made a blip soon after its publication is rediscovered decades later and recognized with citations in thousands of other published science studies.

A new analysis of these so-called sleeping beauty publications by researchers at Indiana University, Bloomington, has found that they are not as rare as once thought (Proc. Natl. Acad. Sci. USA 2015, DOI: 10.1073/pnas.1424329112). And chemistry is a top producer of this type of paper. Seven of the top 15 sleeping beauty studies identified were published in chemistry journals.

The number of citations a paper gets has risen in importance as research institutions, individuals, and publishers increasingly use them to appraise the quality of science. They rarely look for citations beyond the first few years after a paper's publication, however. In contrast, sleeping beauties go decades with little recognition before they are "awakened" with a wave of citations. The phenomenon of a long-dormant paper reemerging has long been considered rare.

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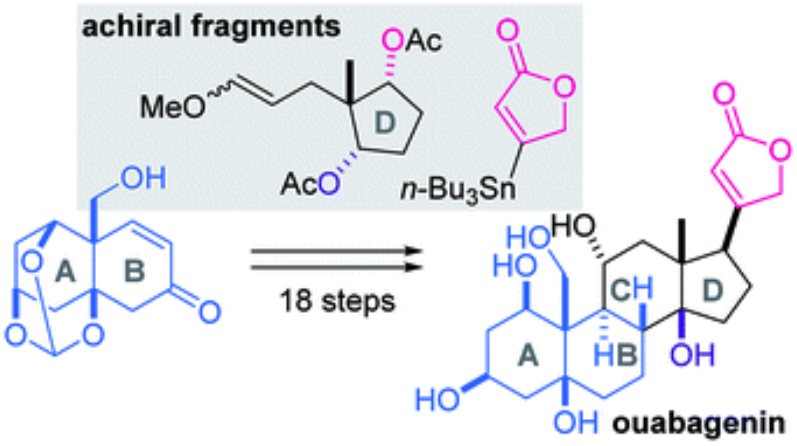
Citation: Mukai, K., et al. *Chem. Sci.* **2015**, 6, 3383-3387

A convergent total synthesis of ouabagenin



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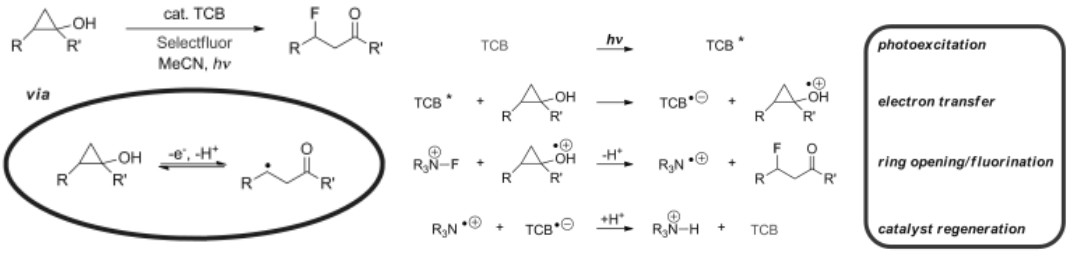
Citation: Bloom, *et al.* *Chem. Eur. J.* **2015,** 21, 8060-8063

Site-Selective Approach to beta-Fluorination: Photocatalyzed Ring Opening of Cyclopropanols



This group recently unveiled a photocatalyzed procedure for the monofluorination of aliphatic and benzylic substrates by using the inexpensive photosensitizer 1,2,4,5-tetracyanobenzene (TCB) along with Selectfluor as a source of atomic fluorine. This work was accompanied by a number of alternative sp3 C--H fluorination methods by using photosensitizers, such as fluorenone, acetophenone,anthraquinone, and decatungstate ions.

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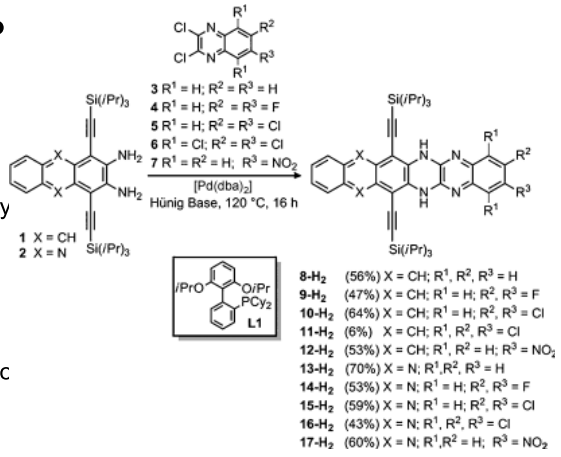
Citation: Engelhart, *et al.* *Chem. Eur. J.* **2015,** 21, 8121-8129.

Substituted Tetraaza- and Hexaazahexacenes and their N'-Dihydro Derivatives: Syntheses, Properties, and Structures

The palladium-catalyzed coupling of a substituted o-diaminoanthracene and a substituted o-diaminophenazine to substituted 2,3-dichloroquinoxalines furnishes 10 differently substituted N,N'-dihydrotetraaza- or -hexaazahexacenes with the quinoxaline group of the azaacenes carrying fluorine, chlorine, or nitro groups. The N,N'-dihydrotetraazahexacenes with hydrogen, chlorine, and fluorine subtituents are oxidized tc azaacenes, whereas only the parent N,N'-dihydrohexaazahexacenes, with hydrogen substituents, are oxidized by MnO2.



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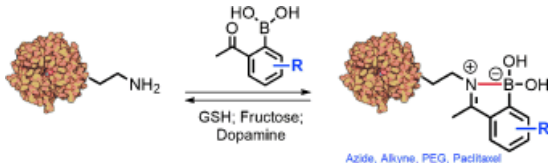
Citation: Pedro, *et al.* *Chem. Eur. J.* **2015,** *21*, 8182-8187

Reversible Lysine Modification on Proteins by Using Functionalized Boronic Acids



Iminoboronates have been utilized to successfully install azide and alkyne bioorthogonal functions on proteins, which may then be further reacted with their bioorthogonal counterparts. These constructs were also used to add polyethylene glycol (PEG) to insulin, a modification which has been shown to be reversible in the presence of fructose. Finally, iminoboronates were used to assemble a folic acid/paclitaxel small-molecule/drug conjugate in situ with an IC50 value of 20.7?nM against NCI-H460 cancer cells and negligible cytotoxicity against the CRL-1502 noncancer cells.

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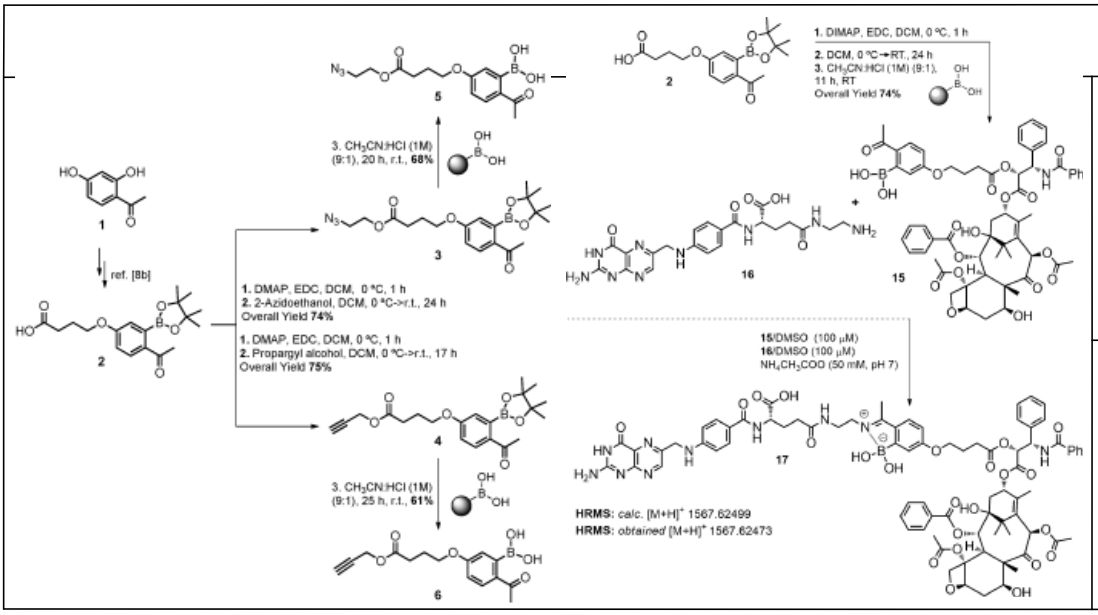
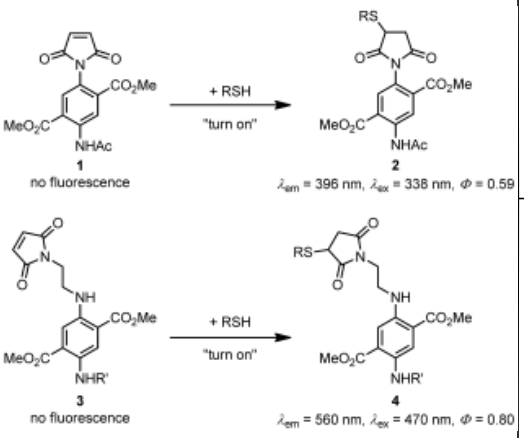


continued

Citation: Christoffers, *et al. Chem. Eur. J.* **2015,** 21, 8214-8221.

Bifunctional Diaminoterephthalate Scaffolds as Fluorescence Turn-On Probes for Thiols

The fluorescent diaminoterephthalate scaffold was equipped by amidation with three types of reactive functions: thiols for metal-surface binding, alkynes for click reactions, and maleimides for ligation with proteins. Starting from a succinyl succinate derivative with two orthogonally cleavable ester functions, three monoamides (38-57% yield over three steps) and two bisamides (19 and 25% yield over five steps) were prepared. Although alkyne and thiol derivatized compounds showed reasonable luminescence behavior, the fluorescence was quenched by the maleimide moiety. It was turned on (10- to 20-fold increase of fluorescence quantum yield) by conjugate addition of thiols.



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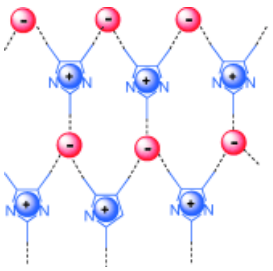
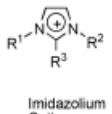
Citation: Stassen, *et al. Chem. Eur. J.* **2015,** 21, 8324-8335.

Imidazolium Salt Ion Pairs in Solution





BMI, R^1= Me, R^2= *n*Bu, R^3= H,
EMI, R^1= Me, R^2= Et, R^3= H,
BMMI, R^1= Me, R^2= *n*Bu, R^3= Me
DMBI, R^1=R^2= Ph(Me)CH, R^3=H

The presence of larger imidazolium supramolecular aggregates is favoured at higher salt concentrations in solvents of low dielectric constant for ILs that contain shorter N-alkyl side chains associated with anions of low coordination ability. The stability and reactivity of neutral contact species are also dependent on the nature of the anion, imidazolium substituents, and are more abundant in ILs containing strong coordinating anions, in particular those that can form charge transfer complexes with the imidazolium cation. Finally, some ILs display reactivities as contact ion pairs rather than solvent-separated ions.

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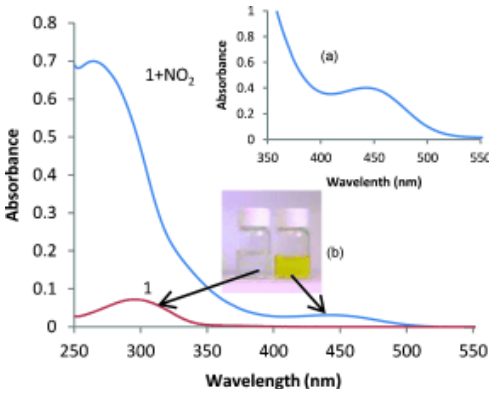
Citation: Alberto Juarez, *et al. Chem. Eur. J.* **2015,** 21, 8720-8722.

A New Simple Chromo-fluorogenic Probe for NO2 Detection in Air

A new chromo-fluorogenic probe, consisting of a biphenyl derivative containing both a silylbenzyl ether and a N,N-dimethylamino group, for NO2 detection in the gas phase has been developed. A clear colour change from colourless to yellow together with an emission quenching was observed when the probe reacted with NO2. A limit of detection to the naked eye of about 0.1 ppm was determined and the system was successfully applied to the detection of NO2 in realistic atmospheric conditions.



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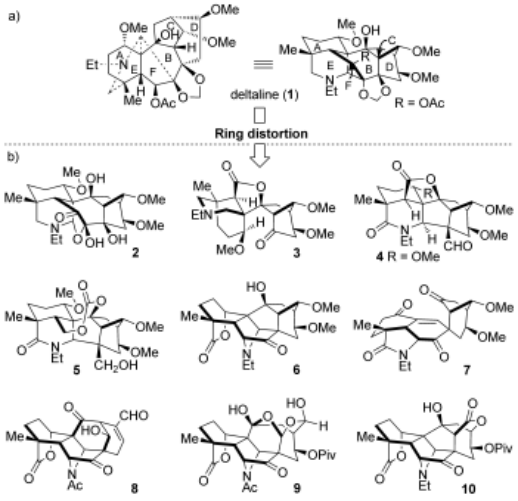
Citation: Chen, *et al. Chem. Eur. J.* **2015,** 21, 8946-8950.

Generating Skeletal Diversity from the C19-Diterpenoid Alkaloid Deltaline: A Ring-Distortion Approach

Ring distortion of natural products provides an efficient and facile approach to access new architectures with intriguing biological activities, by harnessing their inherent complexity. In this study, such a strategy has been explored on an abundant C19-diterpenoid alkaloid, deltaline, enabling the synthesis of 32 new derivatives bearing a broad spectrum of unique scaffolds.



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Citation: Ye, *et al. Chem. Eur. J.* **2015,** 21, 8686-8690.

Labeling Strategy and Signal Broadening Mechanism of Protein NMR Spectroscopy in Xenopus laevis Oocytes

The small globular protein GB1 was one of the first studied in Xenopus oocytes, but there have been few reports since then of high-resolution spectra in oocytes. The scarcity of data is at least partly due to the lack of good labeling strategies and the paucity of information on resonance broadening mechanisms.Isotope enrichment and labeling methods were evaluated in oocytes injected with five differentproteins with molecular masses of 6 to 54kDa. 19F labeling is more promising than 15N, 13C, and 2H enrichment. They also used 19FNMR spectroscopy to quantify the contribution of viscosity, weak interactions, and sample inhomogeneity to resonance broadening in cells. We found that the viscosity in oocytes is only about 1.2?times that of water, and that inhomogeneous broadening is a major factor in determining line width in these cells.

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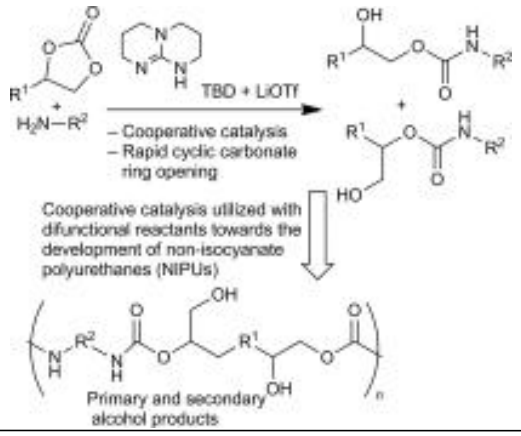
Citation: Lombardo, V. M. et al. *Eur. J. Org. Chem.* **2015**, 2791-2795.

Cooperative Catalysis of Cyclic Carbonate Ring Opening: Application Towards Non-Isocyanate Polyurethane Materials



Efficient ring opening of cyclic carbonates with amines is achieved by cooperative catalysis. A new Lewis acid/Lewis base combination accelerates this challenging and potentially industrially useful process. Its application towards the syntheses of non-isocyanate polyurethanes (NIPUs) achieves rapid conversion of bis-cyclic carbonate and diamine precursors vs. the uncatalyzed reaction.

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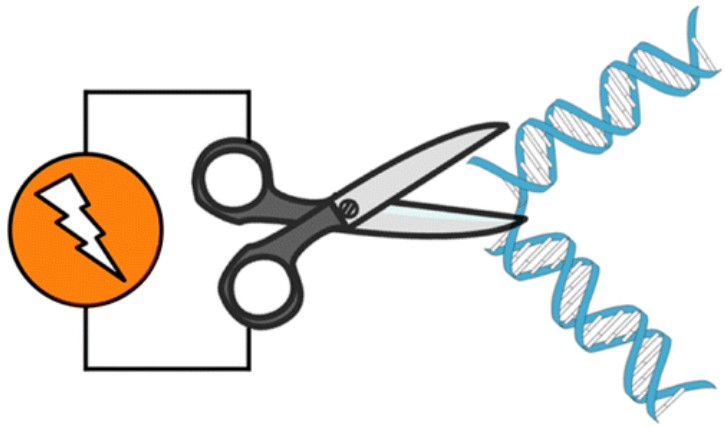
Citation: James Hemphill, Erin K. Borchardt, Kalyn Brown, Aravind Asokan, and Alexander Deiters
Journal of the American Chemical Society 2015 137 (17), 5642-5645

Optical Control of CRISPR/Cas9 Gene Editing



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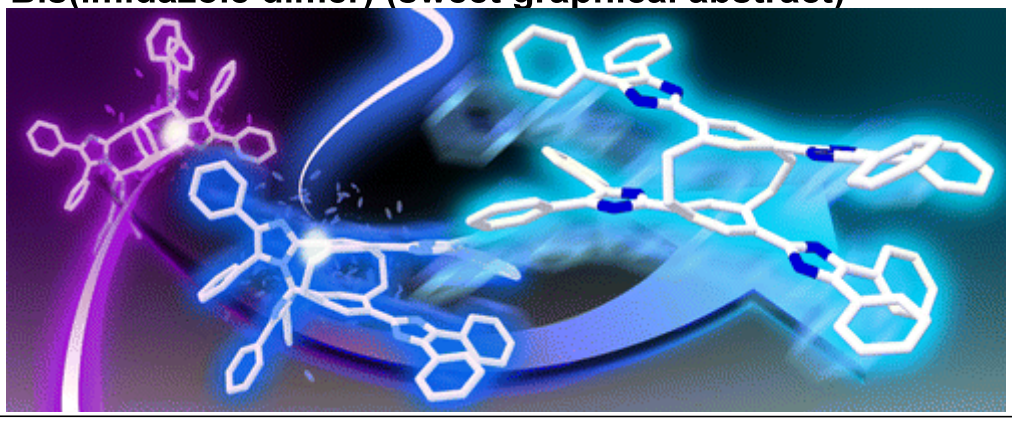
Citation: Katsuya Mutoh, Yuki Nakagawa, Akira Sakamoto, Yoichi Kobayashi, and Jiro Abe
Journal of the American Chemical Society 2015 137 (17), 5674-5677

Stepwise Two-Photon-Gated Photochemical Reaction in Photochromic [2.2]Paracyclophane-Bridged Bis(imidazole dimer) (sweet graphical abstract)



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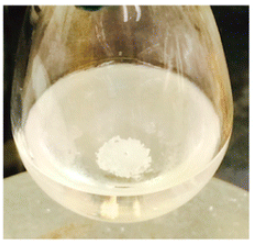
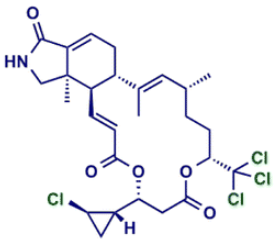
Citation: Xiao, Q. et al. J. Am. Chem. Soc., 2015, 137 (18), pp 5907–5910

Total Synthesis and Structural Revision of (+)-Muironolide A





Muironolide A is a fascinating tetrachlorinated marine polyketide isolated from the sponge of Phorbus sp. Only 90 ug had been isolated, and the structure was established by nanoscale NMR techniques. Herein we report the total synthesis of the substance with the assigned structure of muironolide A, propose a revised structure based on NMR data, and complete the enantioselective total synthesis of muironolide A.

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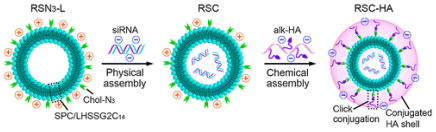
Citation: Sun, Q. et al. J. Am. Chem. Soc., 2015, 137 (18), pp 6000–6010

A Collaborative Assembly Strategy for Tumor-Targeted siRNA Delivery



A novel “collaborative assembly” approach was reported for the synthesis of an siRNA delivery system via a combination of an electrostatically driven physical assembly and a facile click reaction-mediated chemical assembly, which showed various advantages of more safety, efficiency, and flexibility over the conventional approach that is only based on the physical assembly. This strategy remained a high cationic property of lipid-based complex for high siRNA loading capacity. The direct chemical modification of a model polyanion, hyaluronic acid (HA) on the cationic complex via click chemistry shielded the positive charge of complex without affecting the siRNA binding, which reduced the toxicity and enhanced the blood stability of the complex. In addition, the incorporated polyanion might be prefunctionalized, which endued the carrier with better biological characteristics such as long circulating or tumor targeting.

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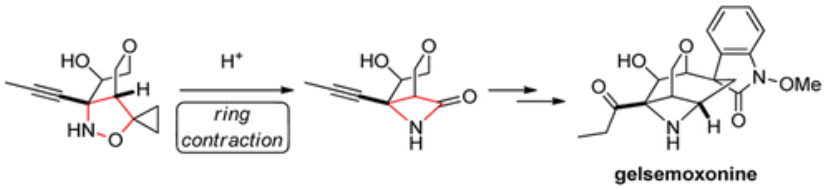
Citation: Diethelm, S. et al. J. Am. Chem. Soc., 2015, 137 (18), pp 6084–6096

Total Synthesis of Gelsemoxonine through a Spirocyclopropane Isoxazolidine Ring Contraction



gelsemoxonine

Plants of the species Gelsemium have found application in traditional Asian medicine for over a thousand years. Gelsemoxonine represents a novel constituent of this plant incorporating a highly functionalized azetidine at its core. A full account toward the total synthesis of gelsemoxonine that relies on a conceptually new approach for the construction of the central azacyclobutane was reported. A spirocyclopropane isoxazolidine ring contraction was employed to access a key beta--lactam intermediate, which could be further elaborated to the azetidine of the natural product.

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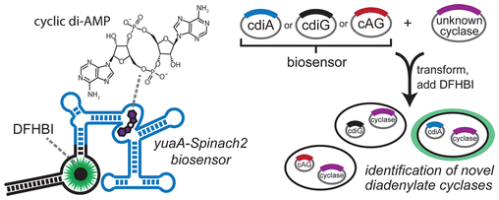
Citation: Kellenberger, C. A. et. al. J. Am. Chem. Soc., 2015, 137 (20), pp 6432–6435

RNA-Based Fluorescent Biosensors for Live Cell Imaging of Second Messenger Cyclic di-AMP



Cyclic di-AMP (cdiA) is a second messenger predicted to be widespread in Gram-positive bacteria, some Gram-negative bacteria, and Archaea. Fluorescent biosensors for cdiA through fusion of the Spinach2 aptamer to ligand-binding domains of cdiA riboswitches were generated. The biosensor was used to visualize intracellular cdiA levels in live L. monocytogenes strains and to determine the catalytic domain of the phosphodiesterase PdeA. Furthermore, a flow cytometry assay based on this biosensor was used to screen for diadenylate cyclase activity and confirmed the enzymatic activity of DisA-like proteins from Clostridium difficile and Methanocaldococcus jannaschii.

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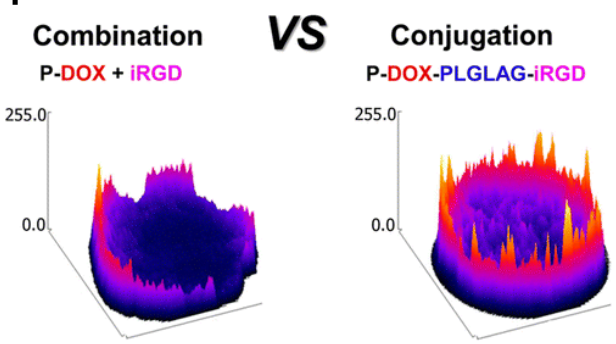
Citation: Zheng-Hong Peng and Jindrich Kopecek
Journal of the American Chemical Society 2015 137 (21), 6726-6729

Enhancing Accumulation and Penetration of HPMA Copolymer–Doxorubicin Conjugates in 2D and 3D Prostate Cancer Cells via iRGD Conjugation with an MMP-2 Cleavable Spacer



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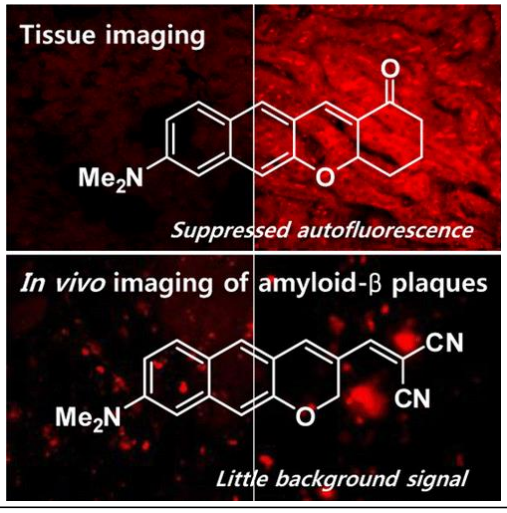
Citation: Dokyoung Kim, Kyo Han Ahn, et al
Journal of the American Chemical Society 2015 137 (21), 6781-6789

Two-Photon Absorbing Dyes with Minimal Autofluorescence in Tissue Imaging: Application to in Vivo Imaging of Amyloid-ß Plaques with a Negligible Background Signal



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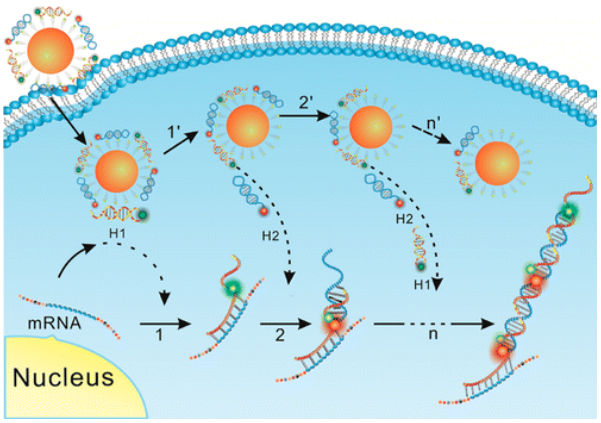
Citation: Zhan Wu, Gao-Qin Liu, Xiao-Li Yang, and Jian-Hui Jiang
Journal of the American Chemical Society 2015 137 (21), 6829-6836

Electrostatic Nucleic Acid Nanoassembly Enables Hybridization Chain Reaction in Living Cells for Ultrasensitive mRNA Imaging



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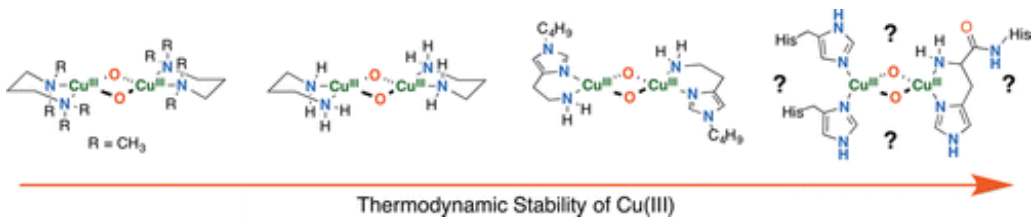
Citation: Citek, C. et al. J. Am. Chem. Soc., 2015, 137 (22), pp 6991–6994

Chemical Plausibility of Cu(III) with Biological Ligation in pMMO
(Congratulations to our friends in the Stack group!)



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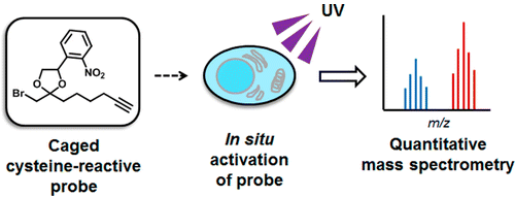
Citation: Abo, M. et al. J. Am. Chem. Soc., 2015, 137 (22), pp 7087–7090

A Caged Electrophilic Probe for Global Analysis of Cysteine Reactivity in Living Cells



Cysteine residues are subject to diverse modifications, such as oxidation, nitrosation, and lipidation. The resulting loss in cysteine reactivity can be measured using electrophilic chemical probes, which importantly provide the stoichiometry of modification. An iodoacetamide (IA)-based chemical probe has been used to concurrently quantify reactivity changes in hundreds of cysteines within cell lysates. However, the cytotoxicity of the IA group precludes efficient live-cell labeling, which is important for preserving transient cysteine modifications. To overcome this limitation, a caged bromomethyl ketone (BK) electrophile was developed, which shows minimal cytotoxicity and provides spatial and temporal control of electrophile activation through irradiation.

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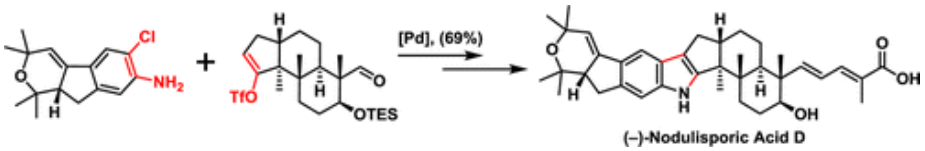
Citation: Zou, Y. et al. J. Am. Chem. Soc., 2015, 137 (22), pp 7095–7098

Total Synthesis of (-)-Nodulisporic Acid D



A convergent total synthesis of the architecturally complex indole diterpenoid (-)--nodulisporic acid D has been achieved. Key synthetic transformations include vicinal difunctionalization of an advanced a,b-unsaturated aldehyde to form the E,F-trans-fused 5,6-ring system of the eastern hemisphere and a cascade cross-coupling/indolization protocol leading to the CDE multisubstituted indole core.

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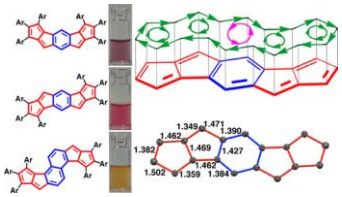
Citation: Cao, J. et al. J. Am. Chem. Soc., 2015, 137 (22), pp 7178–7188

The Impact of Antiaromatic Subunits in [4n+2] -Systems: Bispentalenes with [4n+2] -Electron Perimeters and Antiaromatic Character



Three series of stable, neutral, -extended bispentalene derivatives, with two pentalenes fused to a central benzene or naphthalene moiety, have been prepared through a modified double carbopalladation cascade reaction. While these chromophores feature skeletons with [4n+2] -electron perimeters, the two 8 -electron pentalene subunits strongly influence bonding and spectral properties. Further investigations on magnetic ring currents through NICS-XY-scans suggest a global paratropic current and a local diatropic current at the central benzene ring in two of the series, while the third series, with a central naphthalene ring, showed more localized ring currents, with stronger paratropic ring currents on the pentalene moieties. Both experimental and computational results suggest that the molecular properties of the presented bispentalenes are dominated by the antiaromatic pentalene-subunits despite the [4n+2] -electron perimeter of the skeletons.

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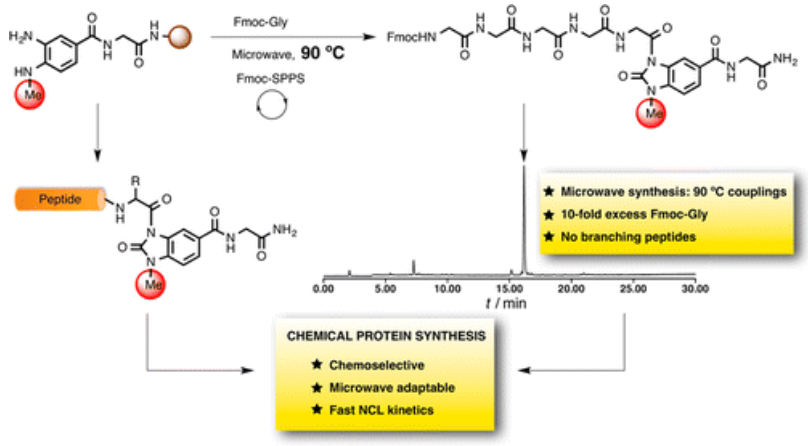
Citation: Blanco-Canosa, J. B. et al. J. Am. Chem. Soc., 2015, 137 (22), pp 7197–7209

Chemical Protein Synthesis Using a Second-Generation N-Acylurea Linker for the Preparation of Peptide-Thioester Precursors



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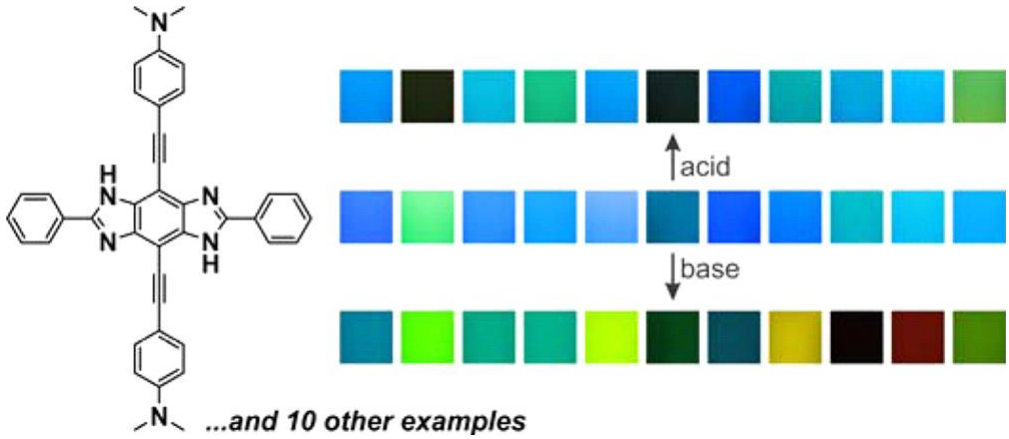
Citation: Le, H.T.M.; El-Hamdi, N.S.; Miljanic, O.S. *JOC,* **2015**, *80,* 5210-5217.

Benzobisimidazole Cruciform Fluorophores



pH sensitive fluorophores are synthesized and characterized.

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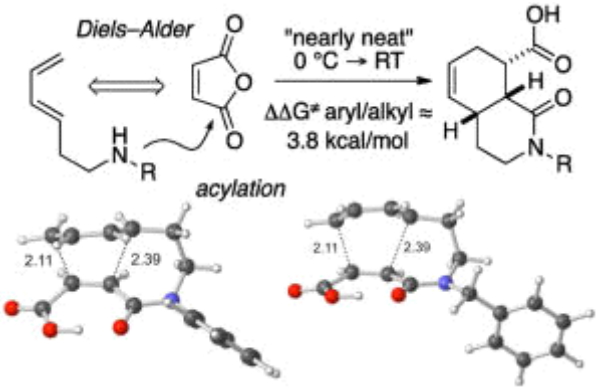
Citation: Aube, J.; *et al*. *JOC,* **2015**, *80*, 5260-5271.

Domino Acylation/Diels.Alder Synthesis of N.Alkyloctahydroisoquinolin-1-one-8-carboxylic Acids under Low-Solvent Conditions



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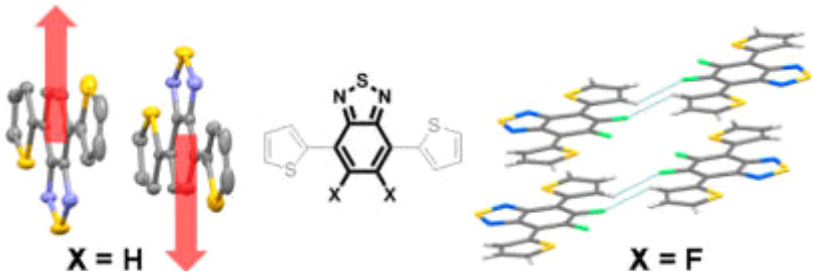
Citation: Nielsen, C.B.; White, A.J.P.; McCulloch, I. *JOC,* **2015**, *80,* 5045-5048.

Effect of Fluorination of 2,1,3-Benzothiadiazole



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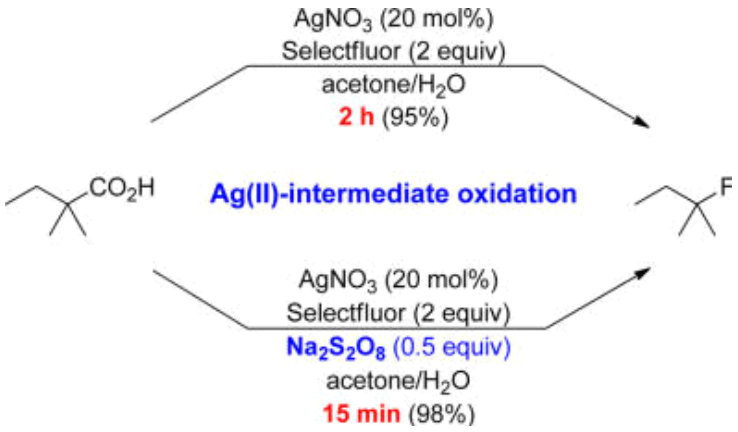
Citation: Patel, N.R.; Flowers, R.A., II. *JOC,* **2015**, *80,* 5834-5841.

Mechanistic Study of Silver-Catalyzed Decarboxylative Fluorination



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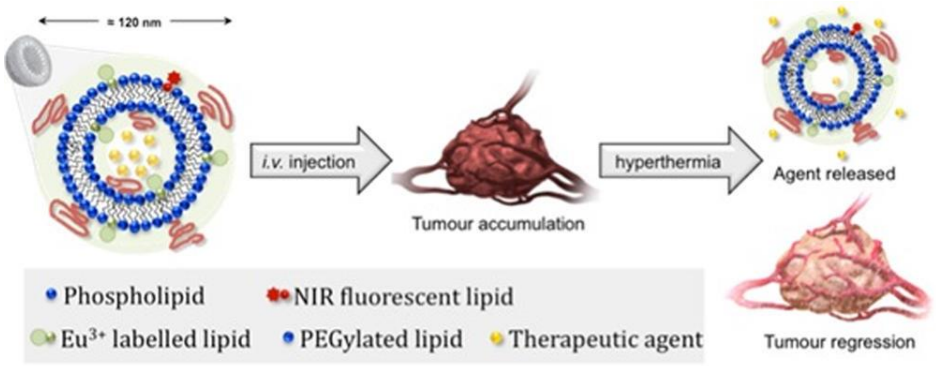
Citation: Mol. Pharmaceutics 2015, 12 (5), 1335–1346.

Thermosensitive, Near-Infrared-Labeled Nanoparticles for Topotecan Delivery to Tumors.



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Citation: Mol. Pharmaceutics 2015, 12 (6), 1701–1702.

Antibody–Drug Conjugates (ADCs): Magic Bullets at Last!

A very interesting editorial (sorry no pictures) about the state of antibody-drug conjugates as clinically relevant therapeutics

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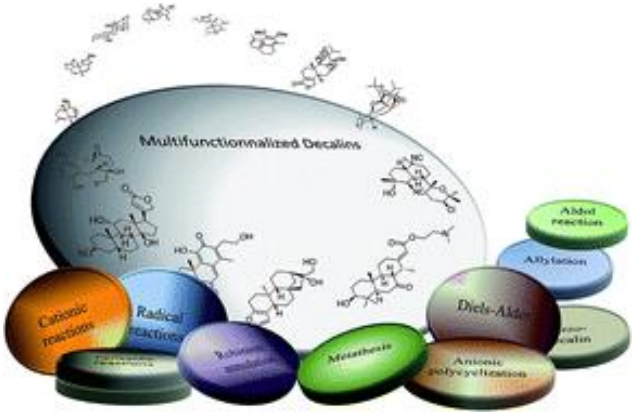
Citation: Dhambri, S. et al. *Nat. Prod. Rep.* **2015**, 32, 841-864

Recent advances in the synthesis of natural multifunctionalized decalins



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Citation: Francis, M. et al. *Nature Chemical Biology* **11**, 326–331 (2015)

One-step site-specific modification of native proteins with 2-pyridinecarboxyaldehydes

New N-terminus-selective protein modification reagent:

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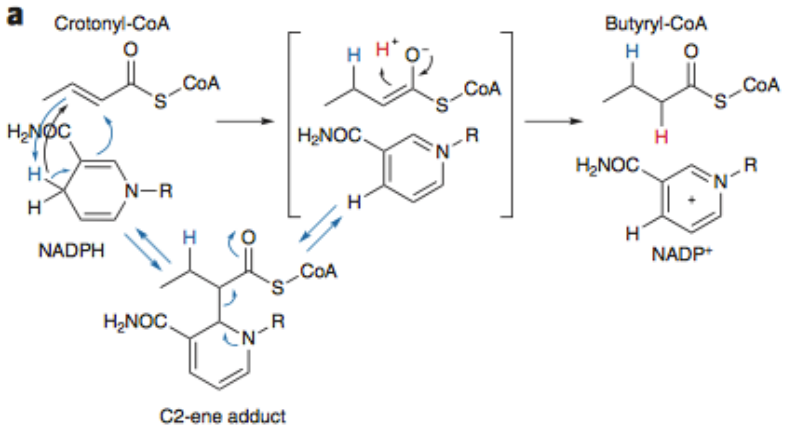
Citation: *Nature Chemical Biology* **11**, 398–400 (2015)

The use of ene adducts to study and engineer enoyl-thioester reductases

Black arrows = classical mechanism
Blue arrows = ene!



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Citation: http://www.nytimes.com/2015/05/30/business/new-class-of-drugs-shows-more-promise-in-treating-cancer.html

New Class of Drugs Shows More Promise in Treating Cancer

A new drug that unleashes the body's immune system to attack tumors can prolong the lives of people with the most common form of lung cancer, doctors reported on Friday, the latest example of the significant results being achieved by this new class of medicines. In a separate study, researchers said they had found that a particular genetic signature in the tumor can help predict which patients could benefit from the immune-boosting drugs.

The drugs being used are pembrolizumab and nivolumab.

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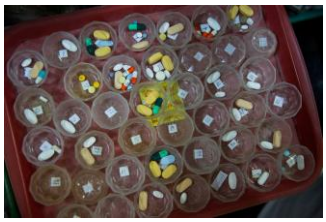
Citation: http://www.nytimes.com/2015/05/28/health/hiv-treatment-should-start-with-diagnosis-us-health-officials-say.html

H.I.V. Treatment Should Start at Diagnosis, U.S. Health Officials Say



Federal health officials announced that they were haltin the largest ever clinical trial of early treatment because its benefits were already so clear. Preliminary data already showed that those who got treatment immediately were 53% less likely to die during the trial or develop AIDS than those who waited.

Unfortunately, only 37% of infected Americans have prescriptions for the drugs and internationally there is not nearly enough money even to put those who are already sick on antiretroviral medicines, much less those not yet showing symptoms.

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Citation: http://www.theonion.com/article/coworker-who-just-threw-fit-and-stormed-out-room-l-50657

Coworker Who Just Threw Fit and Stormed Out of Room Looked Like Total Badass

HARTFORD, CT—Noting that they had never seen such a bold and impressive show of dominance, Burkart Industries employees confirmed Monday that account analyst Ken Perlis just looked like a total badass when he threw a fit and stormed out of the room during a meeting. "He closed his laptop right in the middle of Dave's presentation, whined for a little while that he was tired of no one listening to his ideas, and walked right out—it was the most epic thing I've ever seen," said awestruck witness Jessica Gelber, adding that the complete rebel had raised his voice to such a volume during his tantrum that people could hear him through the conference room wall. "He paused in the doorway as if he was about to say something, but instead just rolled his eyes and sighed really loud. Then he slammed the door behind him—actually slammed it on the rest of us. Just a beast." At press time, the most undeniably hardcore employee the company had ever seen was carefully composing an apology email to his supervisor.

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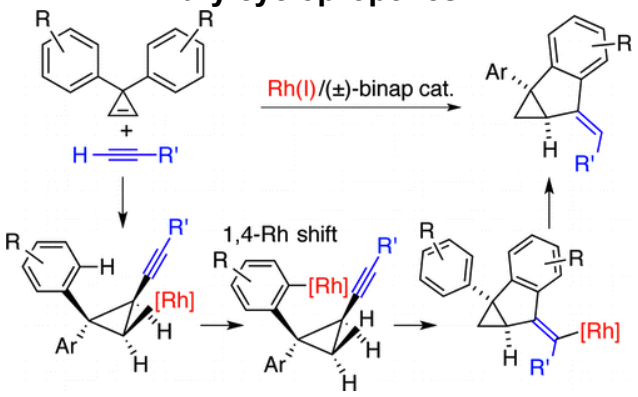
Citation: Sawano, T., et al. *Organic Letters* **2015**, 17, 2630-2633

Formation of Carbocycles via a 1,4-Rh Shift Triggered by a Rhodium-Catalyzed Addition of Terminal Alkynes to 3,3-Diarylcyclopropenes



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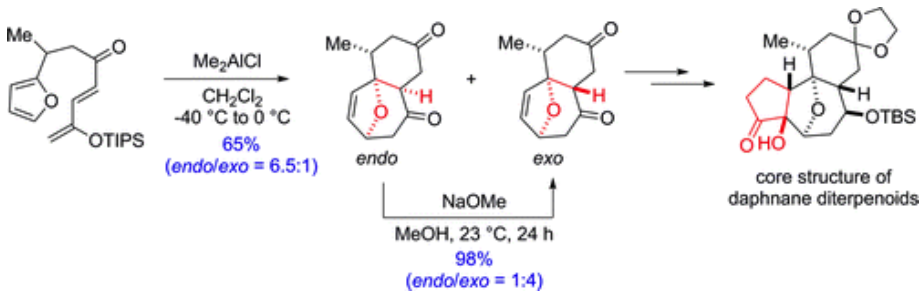
Citation: Hassan, A. H. E., et al. *Organic Letters* **2015**, 17, 2672-2675

Synthesis of the Tricyclic Ring Structure of Daphnanes via Intramolecular [4 + 3] Cycloaddition/SmI$_2$-Pinacol Coupling



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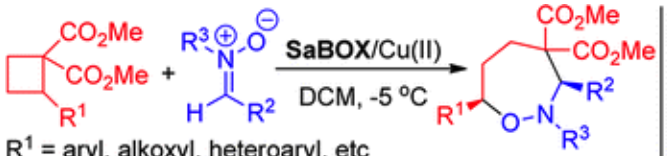
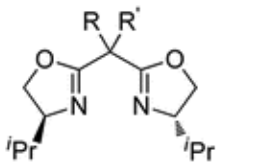
Citation: Hu, J., et al. *Organic Letters* **2015**, 17, 2680-2683

Highly Diastereoselective and Enantioselective Formal [4 + 3] Cycloaddition of Donor-Acceptor Cyclobutanes with Nitrones



R^1 = aryl, alkoxyl, heteroaryl, etc
R^2 = Ph, PMP; R^3 = aryl, alkyl, heteroaryl
22 examples; up to 96% yield; up to >99/1 dr and 97% ee



R = R' = 3,5-^{t}Bu$_2$C$_6$H$_3$CH$_2$

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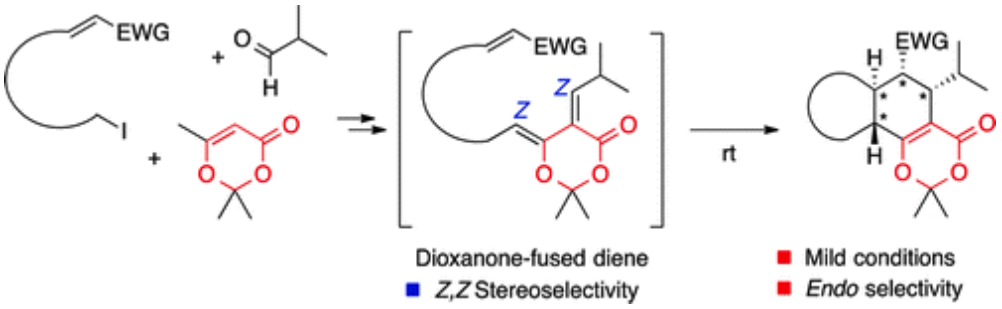
Citation: Aoki, Y., et al. *Organic Letters*. **2015**, 17, 2756-2759

Dioxanone-Fused Dienes Enable Highly *Endo*-Selective Intramolecular Diels-Alder Reactions



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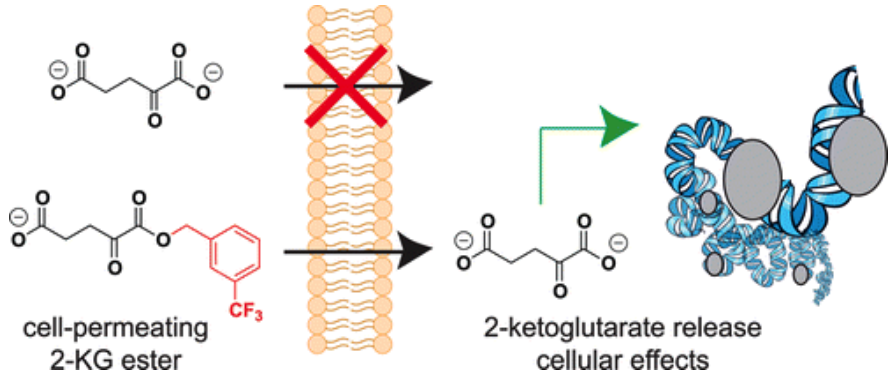
Citation: Zengeya, T. T., et al. *Organic Letters*. **2015**, 17, 2326-2329

Modular Synthesis of Cell-Permeating 2-Ketoglutarate Esters



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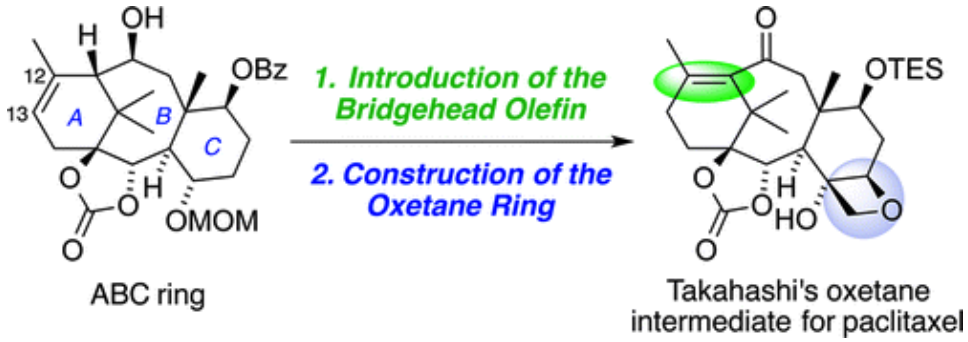
Citation: Fukaya, K., et al. *Organic Letters*. **2015**, 17, 2574-2577

Synthesis of Paclitaxel. 2. Construction of the ABCD Ring and Formal Synthesis



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Citation: Moreno-Gamez, S.; *et al. Proc. Natl. Acad. Sci. U.S.A.,* **2015,** E2874-E2883.

Imperfect drug penetration leads to spatial monotherapy and rapid evolution of multidrug resistance

Infections with rapidly evolving pathogens are often treated using combinations of drugs with different mechanisms of action. One of the major goal of combination therapy is to reduce the risk of drug resistance emerging during a patient's treatment. Although this strategy generally has significant benefits over monotherapy, it may also select for multidrug-resistant strains, particularly during long-term treatment for chronic infections. Additionally, for many antimicrobial treatment regimes, individual drugs have imperfect penetration throughout the body, so there may be regions where only one drug reaches an effective concentration. Herein the authors propose that mismatched drug coverage can greatly speed up the evolution of multidrug resistance by allowing mutations to accumulate in a stepwise fashion. They find that it is often better to use drug combinations with matched penetration profiles, although there may be a trade-off between preventing eventual treatment failure due to resistance and temporarily reducing pathogen levels systemically.

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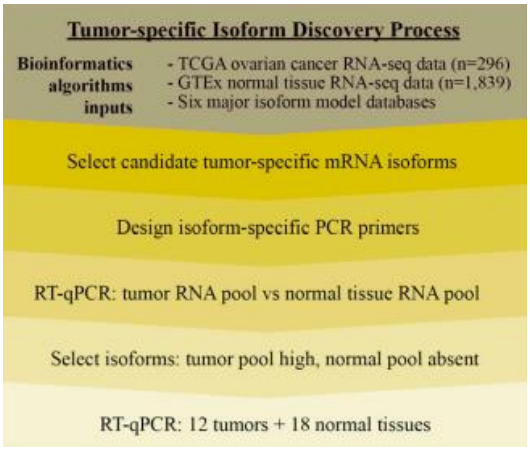
Citation: Barrett, C. L.; *et al. Proc. Natl. Acad. Sci. U.S.A.,* **2015, E3050-E3057.**

Systematic transcriptome analysis reveals tumor-specific isoforms for ovarian cancer diagnosis and therapy



Custom bioinformatics algorithms were applied to large public databases of tumor and normal tissue RNA-seq data to rank-prioritize mRNA isoforms by likelihood of being tumor-specific. RT-qPCR was used to confirm tumor-specific expression.

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Citation: Keane, S.C., et al. *Science*, **2015**, *348* (6237), 917-921.

Structure of the HIV-1 RNA packaging signal

The 5' leader of the HIV-1 genome contains conserved elements that direct selective packaging of the unspliced, dimeric viral RNA into assembling particles. By using a 2H-edited nuclear magnetic resonance (NMR) approach, we determined the structure of a 155-nucleotide region of the leader that is independently capable of directing packaging (core encapsidation signal; Œ®CES). The RNA adopts an unexpected tandem three-way junction structure, in which residues of the major splice donor and translation initiation sites are sequestered by long-range base pairing and guanosines essential for both packaging and high-affinity binding to the cognate Gag protein are exposed in helical junctions. The structure reveals how translation is attenuated, Gag binding promoted, and unspliced dimeric genomes selected, by the RNA conformer that directs packaging.

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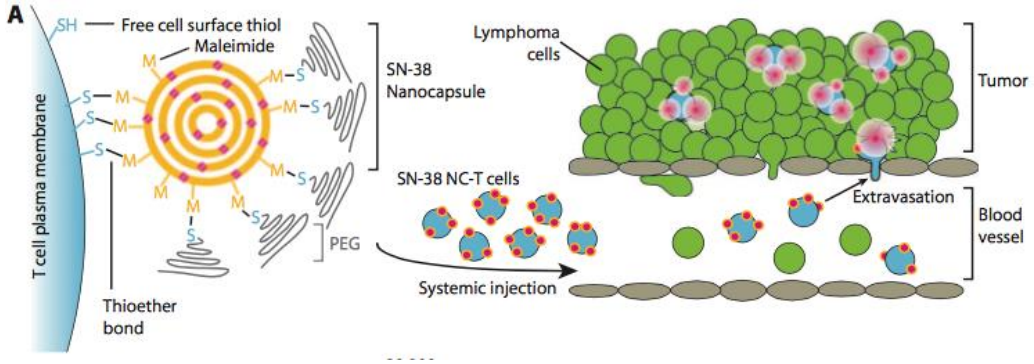
Citation: Irving, et al. Science Translational Medicine Vol 7 Issue 291 291ra94

Active targeting of chemotherapy to disseminated tumors using nanoparticle-carrying T cells



Lymphocytes as drug carriers = "pharmacytes'

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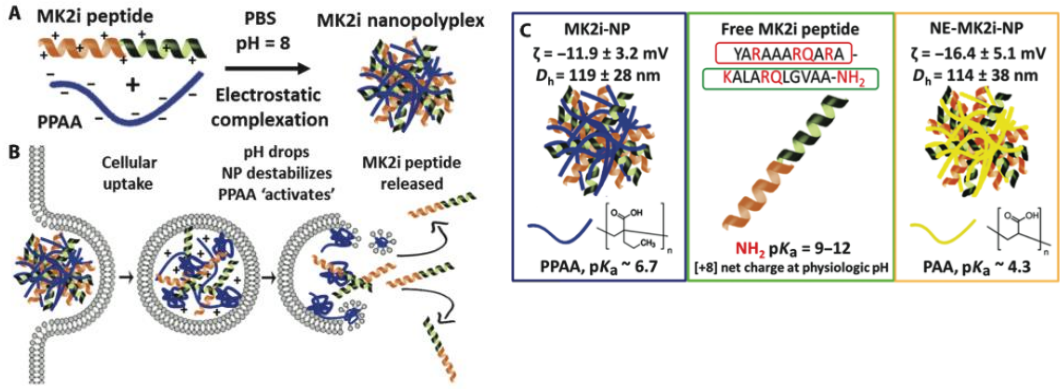
Citation: Science Translational Medicine Vol 7 Issue 291 291ra95

MK2 inhibitory peptide delivered in nanopolyplexes prevents vascular graft intimal hyperplasia



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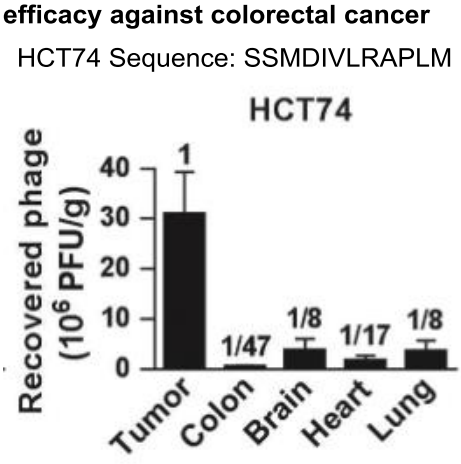
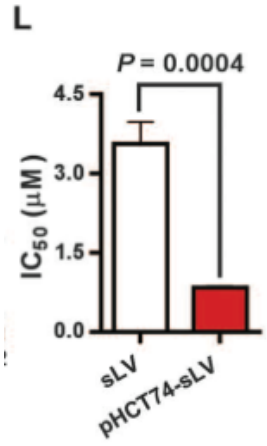
Citation: Science Translational Medicine Vol 7 Issue 290 290ra91

a-Enolase–binding peptide enhances drug delivery efficiency and therapeutic efficacy against colorectal cancer

HCT74 Sequence: SSMDIVLRAPLM





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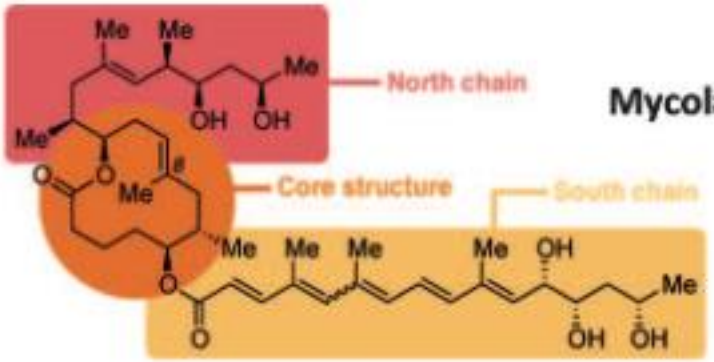
Citation: Sci. Trans Med Vol 7 Issue 289 289ra85

Shaping mycolactone for therapeutic use against inflammatory disorders



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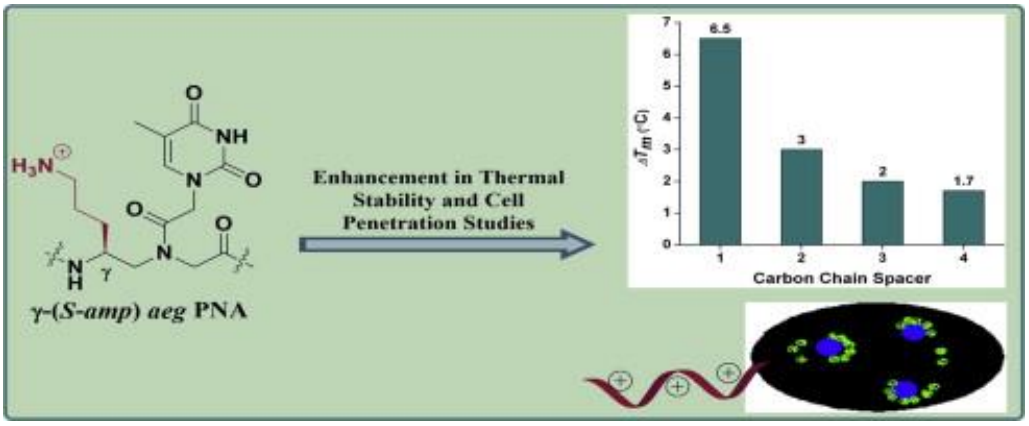
Citation: Kumar, P. et al. *Tetrahedron* **2015**, *71*, 3378-3384.

C$^{\gamma}$-Aminopropylene peptide nucleic acid (amp-PNA): chiral cationic PNAs with superior PNA:DNA/RNA duplex stability and cellular uptake



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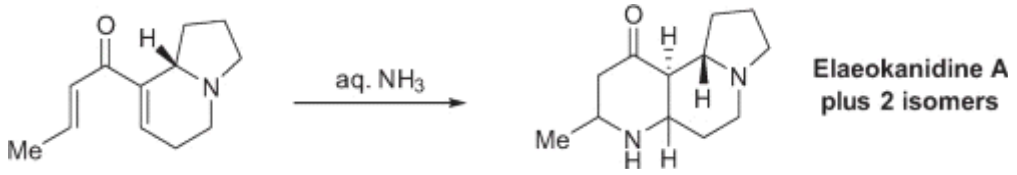
Citation: Cutherbertson, J. D.; *et al. Tet. Lett.* **2015**, *56,* 3123.

The total synthesis of (+)-elaeokanidine A: natural product or isolation artefact?



The first total synthesis of (+)-elaeokanidine A is reported. Two isomeric species were also formed during the piperidone ring construction, which are potentially elaeokanidines B and C, although their structures could not be assigned unambiguously. The synthetic transformations used to prepare these products are analogous to conditions employed during the extraction procedure, raising questions about the true origins of these compounds.

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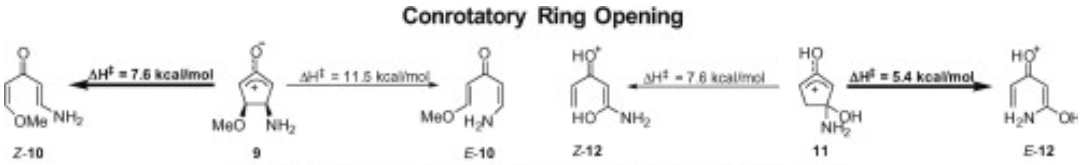
Citation: Naruse, Y.; Tokunaga, M. *Tet. Lett.* **2015**, *56,* 3813.

Geminal bond participation is essential for the contradictory torquoselectivities in retro-Nazarov reactions



Calculations by Harmata et al.: Inconsistency with a substituent effect.

The contradictory substituent effect on torquoselectivity resulted from the geminal bond participation.

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