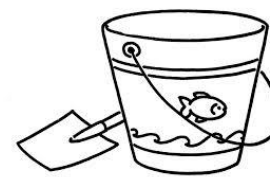


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Tetrahedron	<b>MOOK</b>	Ryan Quiroz
Tetrahedron Letters	<b>MOOK</b>	Matt Stevens

**Next Due Date:** Thursday, September 15, 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.

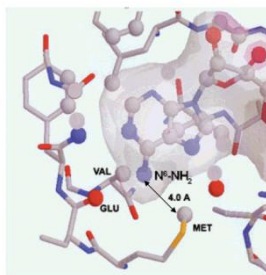
Include a brief textual summary of the article; an example of a completed abstract is shown below. The list of topics and subgroups on the right is useful to highlight which subgroups should pay attention to your abstract and roughly what kind of chemistry the article contains.

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. *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 (1- $\beta$ -<sup>32</sup>P-*N*-6-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, <sup>32</sup>P-labeled products were the direct result of the mutant PKCR.



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Drug Deliv.

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.

*methods*  
synthesis

### DON'T BE A MOOK!

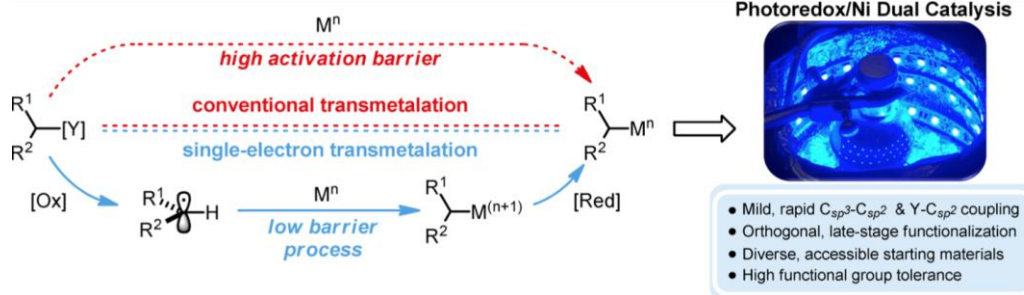
Lit Review MOOKS include those who:

- 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.

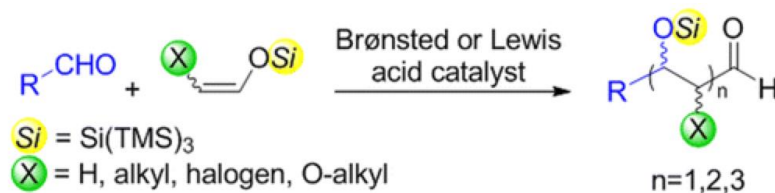
## Single-electron Transmetalation via Photoredox/Nickel Dual Catalysis: Unlocking a New Paradigm for $sp^3$ - $sp^2$ Cross Coupling



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## Second Generation of Aldol Reaction

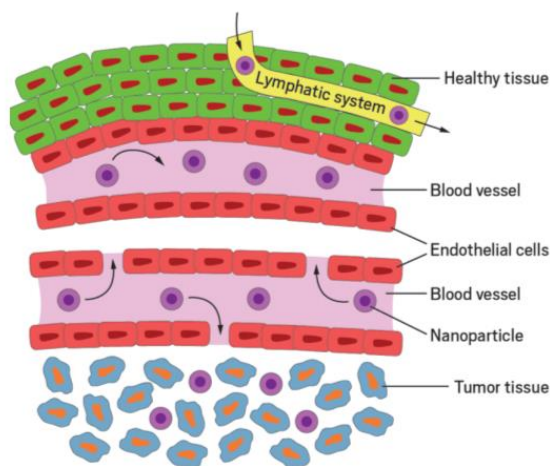


- ✓ **Highly stereoselective**
- ✓ **Broad substrate scope**
- ✓ **One-pot Aldol cascades**
- ✓ **Straightforward C-C bond formation**
- ✓ **Flexible construction of valuable frameworks**

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Does  
Nanomedicine  
Have a Delivery  
Problem?

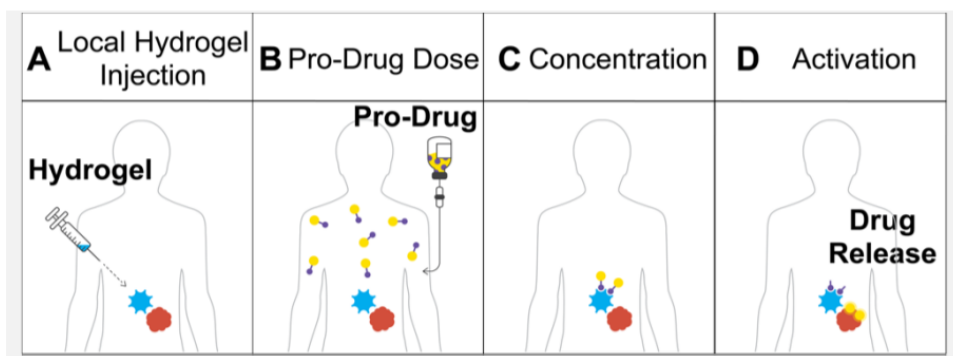


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Prostratin

Citation: ACS Central Science 2016, 2 (7), 476–482.

## In Vivo Bioorthogonal Chemistry Enables Local Hydrogel and Systemic Pro-Drug To Treat Soft Tissue Sarcoma

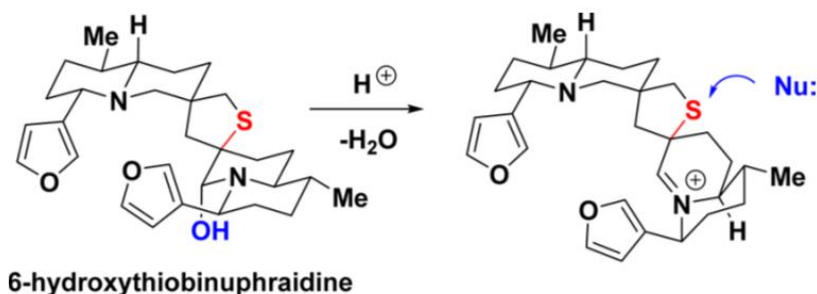


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Citation: ACS Central Science 2016, 2 (6), 367–369.

## Nuphar Dimers: Crouching Sulfur, Hidden Reactivity

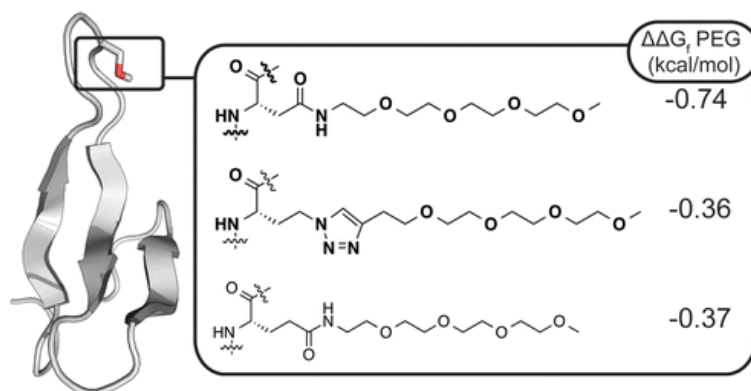


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Citation: Lawrence, P.; Billings, W.; Miller, M.; Pandey, B.; Stephens, A.; Langlois, M.; Price, J. *ACS Chem. Biol.* **2016**, *11*, 1805-1809.

## Conjugation Strategy Strongly Impacts The Conformational Stability Of A PEG-Protein Conjugate.

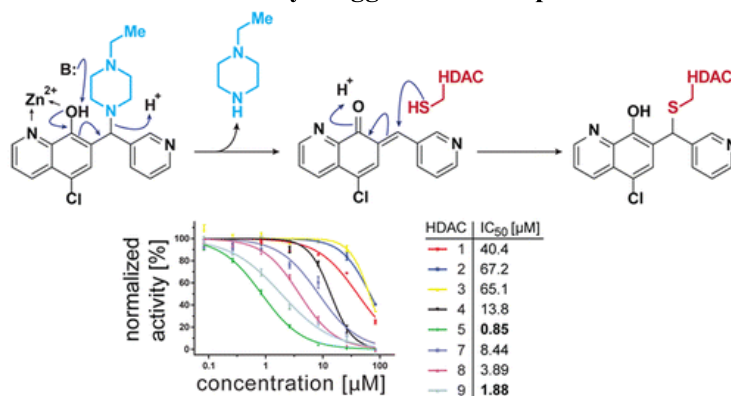


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Citation: Boskovic, Z.; Kemp, M.; Freedy, A.; Viswanathan, V.; Pop, M.; Fuller, J.; Martinez, N.; Figueroa Lazú, S.; Hong, J.; Lewis, T. et al. *ACS Chem. Biol.* **2016**, *11*, 1844-1851.

### Inhibition Of Zinc-Dependent Histone Deacetylases With A Chemically Triggered Electrophile.

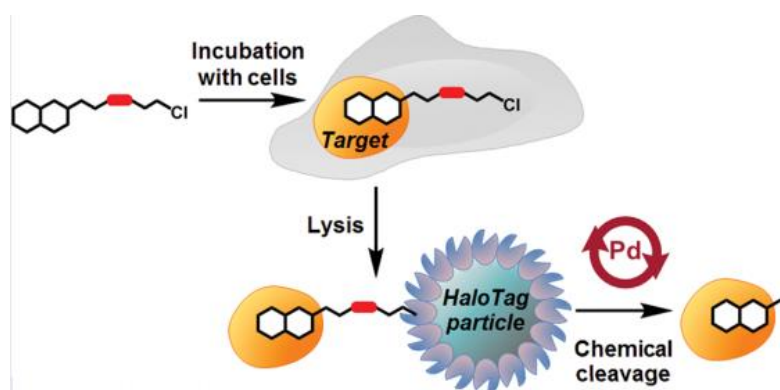


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Citation: Friedman Ohana, R.; Levin, S.; Wood, M.; Zimmerman, K.; Dart, M.; Schwinn, M.; Kirkland, T.; Hurst, R.; Uyeda, H.; Encell, L. et al. *ACS Chem. Biol.* **2016**.

### Improved Deconvolution Of Protein Targets For Bioactive Compounds Using A Palladium Cleavable Chloroalkane Capture Tag

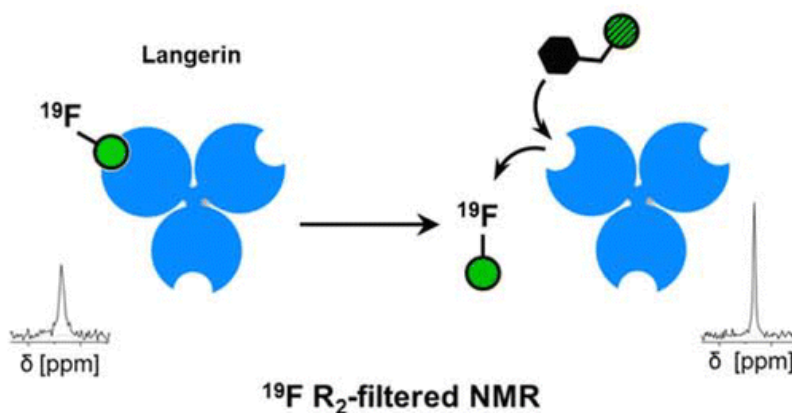


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Citation: (21) Wamhoff, E.; Hanske, J.; Schnirch, L.; Aretz, J.; Grube, M.; Varón Silva, D.; Rademacher, C. *ACS Chem. Biol.* **2016**.

### <sup>19</sup>F NMR-Guided Design Of Glycomimetic Langerin Ligands

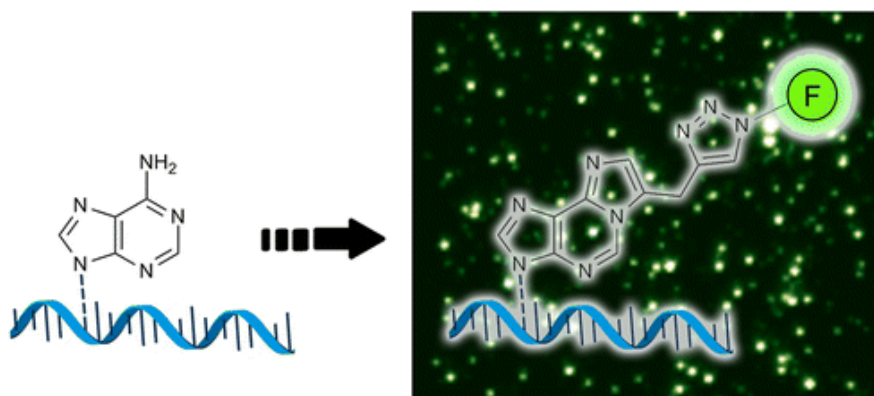


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Citation: Egloff, D.; Oleinich, I.; Zhao, M.; König, S.; Sigel, R.; Freisinger, E. *ACS Chem. Biol.* **2016**.

### Sequence-Specific Post-Synthetic Oligonucleotide Labeling For Single-Molecule Fluorescence Applications.

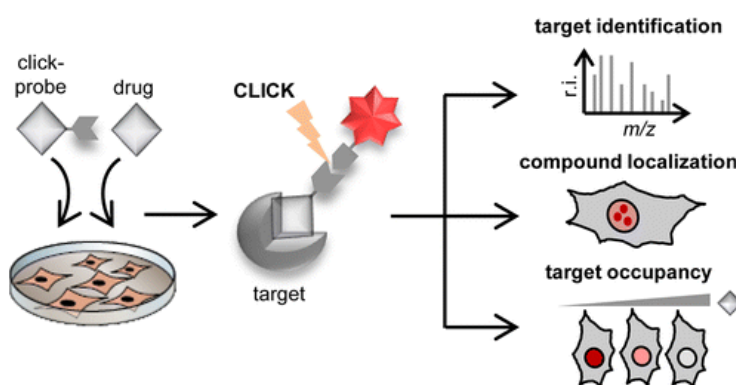


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Citation: Rutkowska, A.; Thomson, D.; Vappiani, J.; Werner, T.; Mueller, K.; Dittus, L.; Krause, J.; Muelbaier, M.; Bergamini, G.; Bantscheff, M. A. *ACS Chem. Biol.* **2016**.

### Modular Probe Strategy For Drug Localization, Target Identification And Target Occupancy Measurement On Single Cell Level

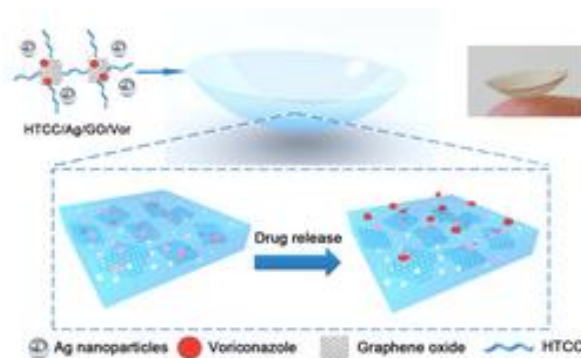


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Citation: Huang, J. et. al, *ACS Nano*, **2016**, 9 (12) 6464-6473.

### A Hydrogel-Based Hybrid Theranostic Contact Lens for Fungal Keratitis

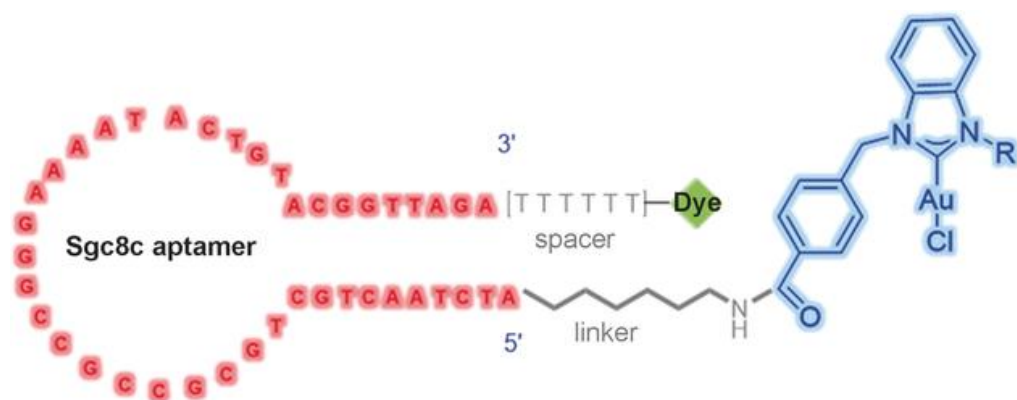


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Citation: Niu, W. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 8889-8893.

### N-Heterocyclic Carbene–Gold(I) Complexes Conjugated to a Leukemia-Specific DNA Aptamer for Targeted Drug Delivery

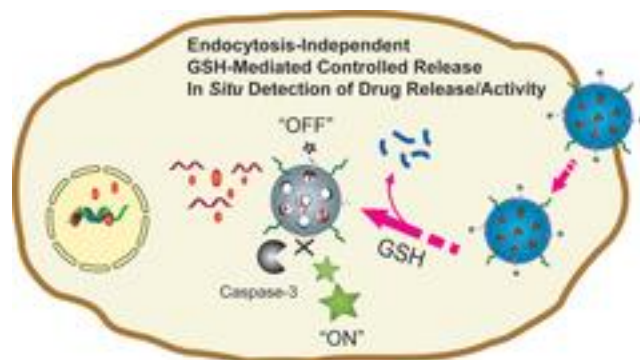


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Citation: Yu, C. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 9272-9276.

### Cell-Penetrating Poly(disulfide) Assisted Intracellular Delivery of Mesoporous Silica Nanoparticles for Inhibition of miR-21 Function and Detection of Subsequent Therapeutic Effects

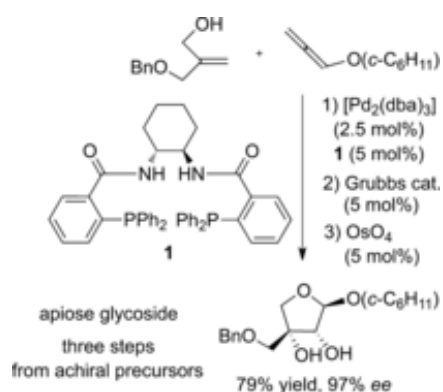


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Citation: Kim, M. et al. *Angew. Chem Int. Ed.* **2016**, *55*, 9733-9737.

### De Novo Synthesis of Furanose Sugars: Catalytic Asymmetric Synthesis of Apiose and Apiose-Containing Oligosaccharides

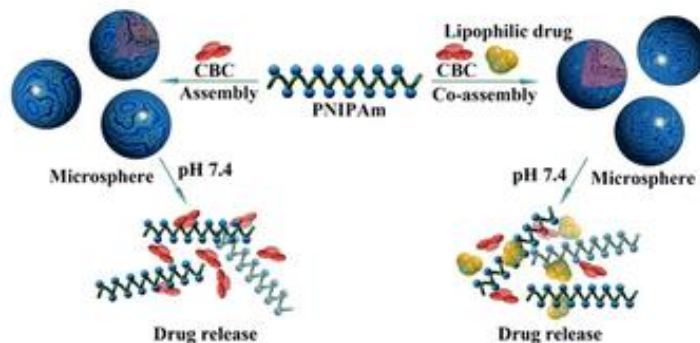


**Special sugars** call for special measures: In a concise synthetic approach to apiose, a structurally unusual furanose, the palladium-catalyzed asymmetric intermolecular hydroalkoxylation of an alkoxyallene was followed by ring-closing metathesis and dihydroxylation (see scheme). This strategy enabled the efficient synthesis of various apiose-containing disaccharides and was used in a unique convergent synthesis of trisaccharides.

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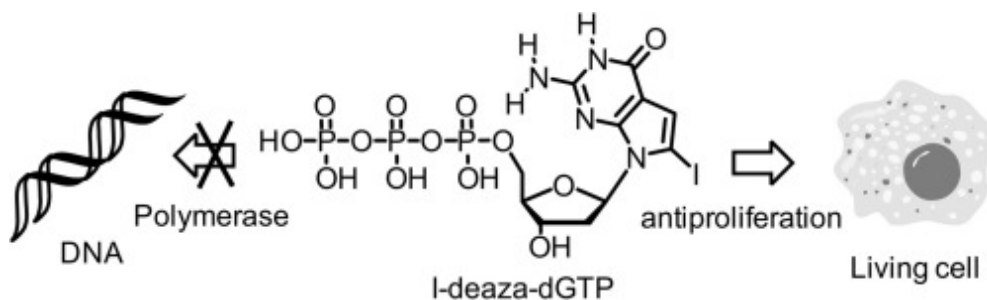
### Self-Assembly of pH-Responsive Microspheres for Intestinal Delivery of Diverse Lipophilic Therapeutics



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### Effects of 8-halo-7-deaza-2'-deoxyguanosine triphosphate on DNA synthesis by DNA polymerases and cell proliferation



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### Synthesis and evaluation of Cy5.5-Rituximab tracer for specific near-infrared fluorescence imaging of sentinel lymph node

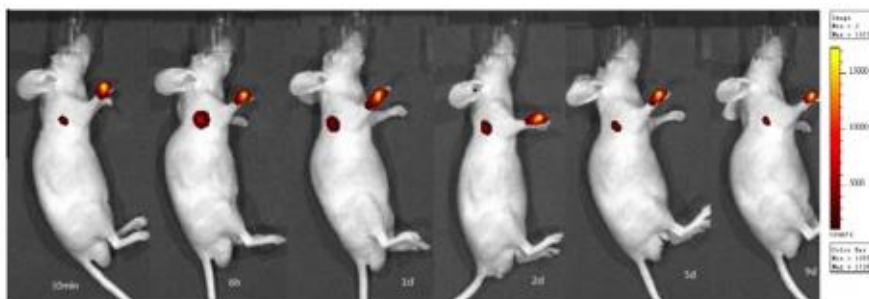


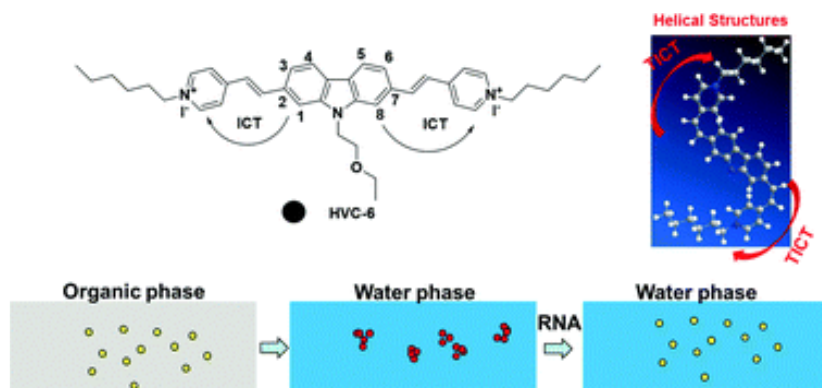
Figure 4. Optical imaging of nude mice injected with Cy5.5-Rit.

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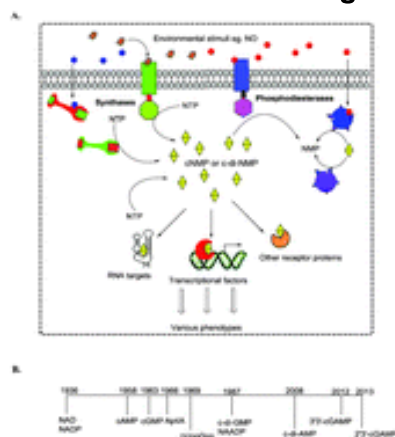
Citation: Liu, Y.; *et al. Chem. Commun.* **2016**, 52, 8838.

### Fluorescence behavior of a unique two-photon fluorescent probe in aggregate and solution states and highly sensitive detection of RNA in water solution and living systems



Citation: Opoku-Temeng, C.; *et al. Chem. Commun.* **2016**, 52, 9327.

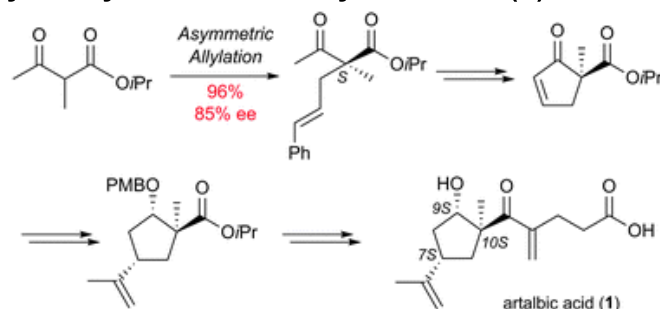
### Cyclic dinucleotide (c-di-GMP, c-di-AMP, and cGAMP) signalings have come of age to be inhibited by small molecules



Bacteria utilize nucleotide-based second messengers to regulate a myriad of physiological processes. Cyclic dinucleotides have emerged as central regulators of bacterial physiology, controlling processes ranging from cell wall homeostasis to virulence production, and so far over thousands of manuscripts have provided biological insights into c-di-NMP signaling. The authors review c-di-NMP signaling and small molecules that have been developed to inhibit cyclic dinucleotide-related enzymes.

Citation: Kobayashi, T.; *et al. Chem. Commun.* **2016**, 52, 9391.

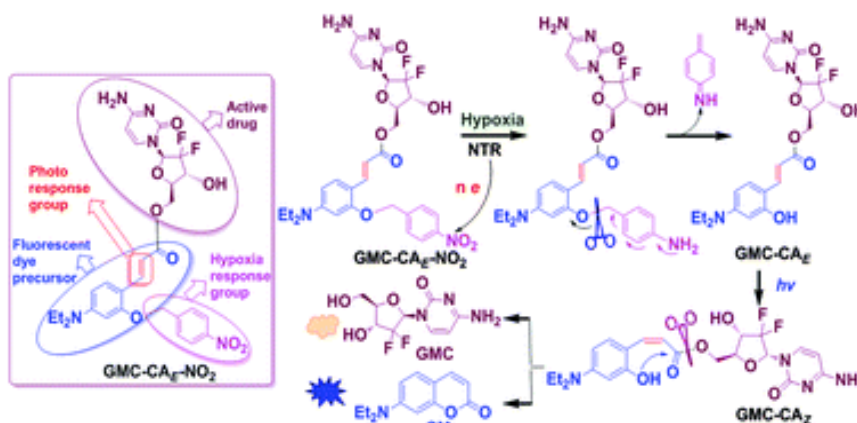
### Catalytic asymmetric total synthesis of (+)-artalbic acid



The first total synthesis of (+)-artalbic acid has been accomplished using asymmetric allylation of an acetoacetate derivative with a phase-transfer catalyst. This synthetic work was completed in 12 steps from isopropyl acetoacetate with high stereocontrol. In addition, the absolute configuration of naturally occurring artalbic acid was determined to be 7S, 9S, and 10S.

Citation: Feng, W.; *et al. Chem. Commun.* **2016**, 52, 9434.

### A novel anticancer theranostic pro-prodrug based on hypoxia and photo sequential control

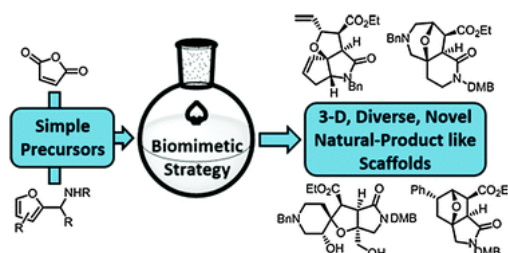


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Citation: Firth, J. D.; *et al. Chem. Commun.* **2016**, 52, 9837.

### A biosynthesis-inspired approach to over twenty diverse natural product-like scaffolds



A synthetic approach to diverse scaffolds was developed that was inspired by diterpene biosynthesis. Initial scaffolds, generated using Diels–Alder reactions of furyl-functionalised amines, were transformed into alternative scaffolds using cleavage, ring expansion, annulation and rearrangement reactions.

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Citation: August 2, 2016 Issue - Vol. 94 Issue 32 | Chemical & Engineering News

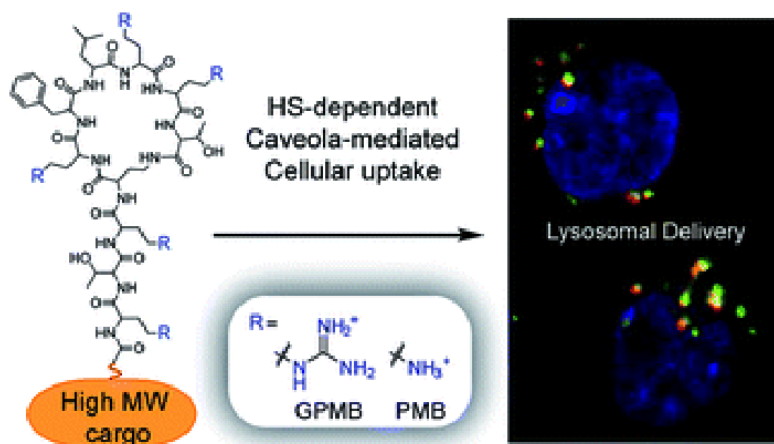
### Periodic Graphics: The Russian doping scandal

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Citation: Hamill, K. M.; et al. *Chem. Sci.* 2016, 7, 5059

### Polymyxins facilitate entry into mammalian cells

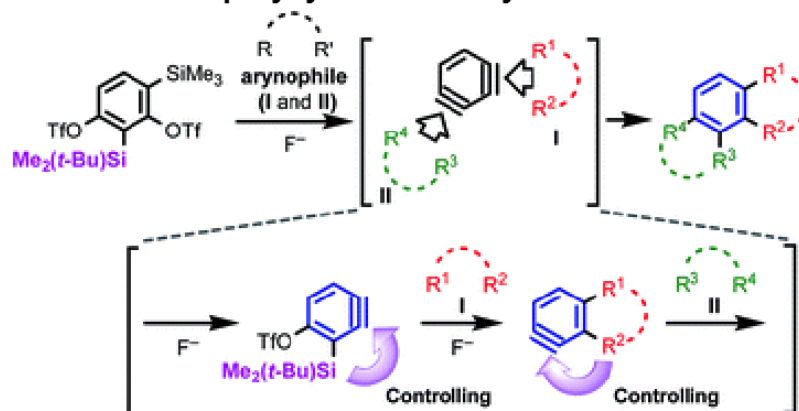


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Citation: Ikawa, K.; et al. *Chem. Sci.* 2016, 7, 5206

### 1,3- and 1,4-Benzdiyne equivalents for regioselective synthesis of polycyclic heterocycles

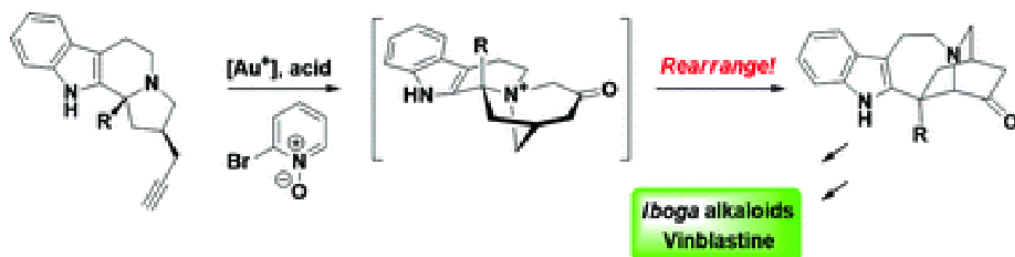


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Citation: Zhang, Y.; et al. *Chem. Sci.* 2016, 7, 5530

### Enantioselective synthesis of *iboga* alkaloids and vinblastine via rearrangements of quaternary ammoniums

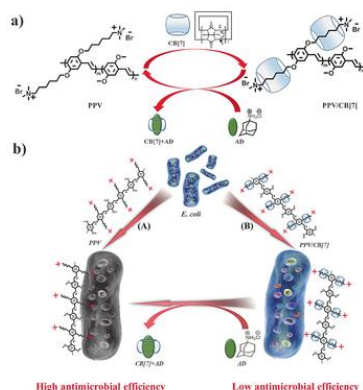


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Citation: Bai, H.; Lv, F.; Liu, L.; Wang, S. *Chemistry - A European Journal* **2016**, *22*, 11114-11121.

### Supramolecular Antibiotic Switches: A Potential Strategy For Combating Drug Resistance.

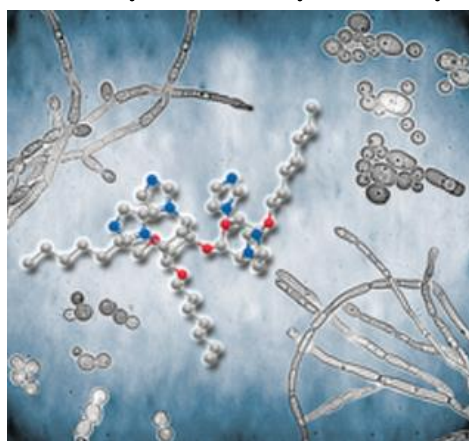


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Citation: Benhamou, R.; Steinbuch, K.; Fridman, M. *Chem. Eur. J.* **2016**, *22*, 11148-11151.

### Antifungal Imidazole-Decorated Cationic Amphiphiles With Markedly Low Hemolytic Activity.



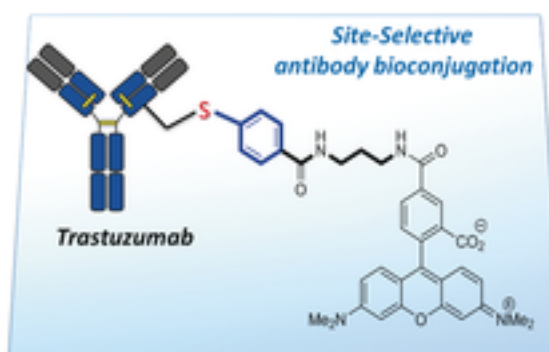
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Citation: Al-Shuaeeb, R.; Kolodych, S.; Koniev, O.; Delacroix, S.; Erb, S.; Nicolaÿ, S.; Cintrat, J.; Brion, J.; Cianfèrani, S.; Alami, M. et al. *Chemistry - A European Journal* **2016**, *22*, 11365-11370.

### Palladium-Catalyzed Chemoselective And Biocompatible Functionalization Of Cysteine-Containing Molecules At Room Temperature.

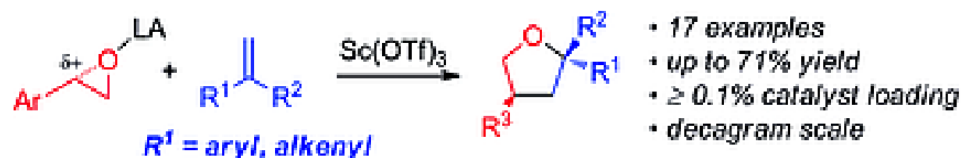
- ✓ Fast
- ✓ In water
- ✓ At Room temperature
- ✓ High yielding
- ✓ Chemoselective
- ✓ Applicable to the antibody



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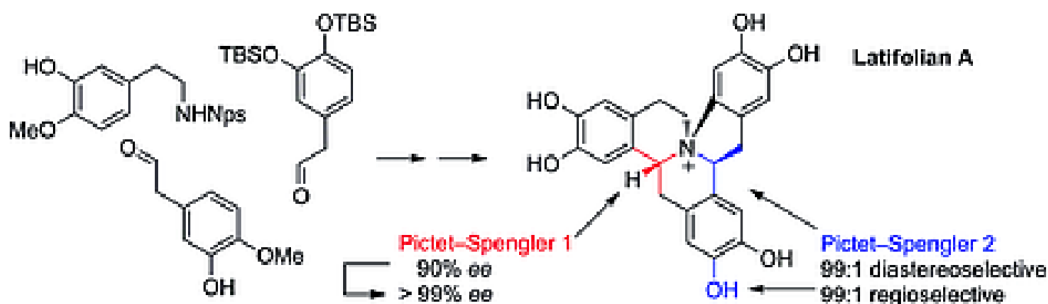
### Intermolecular Electrophilic Addition of Epoxides to Alkenes: [3+2] Cycloadditions Catalyzed by Lewis Acids



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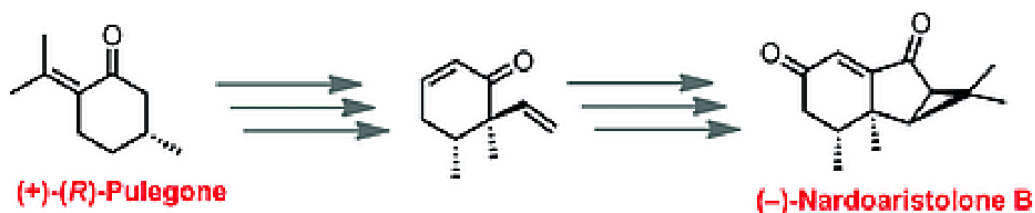
### Consecutive Pictet-Spengler Condensations toward Bioactive 8-Benzylprotoberberines: Highly Selective Total Syntheses of (+)-Javaberine A, (+)-Javaberine B, and (-)-Latifolian A



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### A Total Synthesis of (-)-Nardoaristolone B

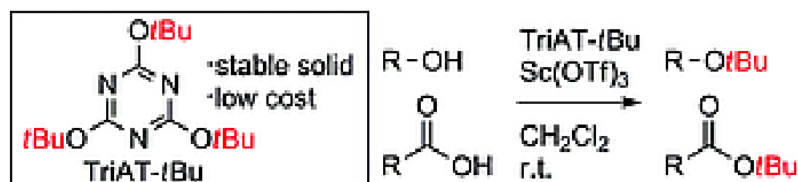


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Citation: Yamada, K. et al. *Eur. J. Org. Chem.* **2016**, 23, 4093-4098

### Development of a Triazine-Based *tert*-Butylating Reagent, TriAT-*t*Bu

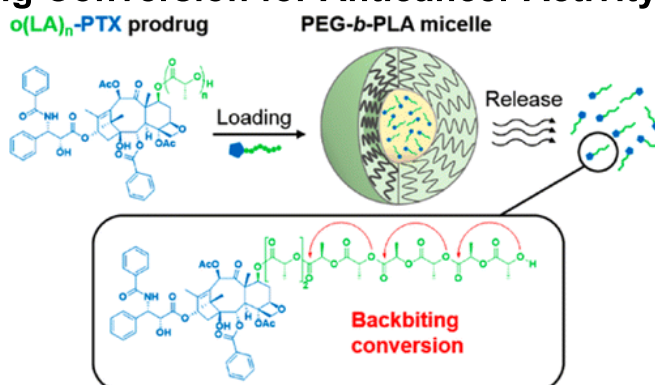


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Prostratin

Citation: Yu Tong Tam, Jieming Gao, and Glen S. Kwon  
*Journal of the American Chemical Society* **2016** 138 (28), 8674-8677

### Oligo(lactic acid)<sub>n</sub>-Paclitaxel Prodrugs for Poly(ethylene glycol)-block-poly(lactic acid) Micelles: Loading, Release, and Backbiting Conversion for Anticancer Activity

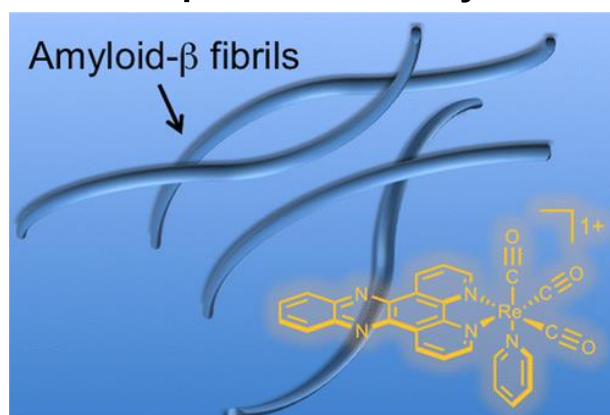


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Hybrid  
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Citation: Amir Aliyan, Benjamin Kirby, Christopher Pennington, and Angel A. Martí  
*Journal of the American Chemical Society* **2016** 138 (28), 8686-8689

### Unprecedented Dual Light-Switching Response of a Metal Dipyridophenazine Complex toward Amyloid- $\beta$ Aggregation



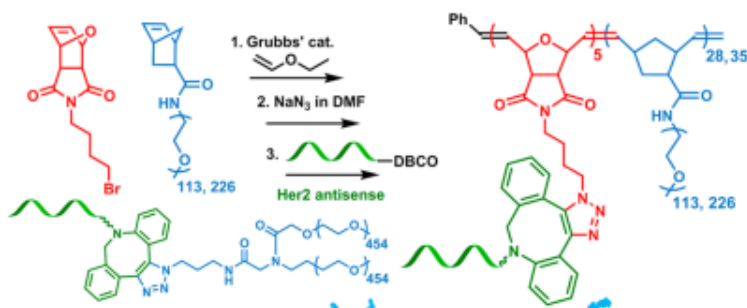
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Prostratin  
Alzheimer's

Citation: *JACS*, **2016**, *138*, 9097.

## Effective Antisense Gene Regulation via Noncationic, Polyethylene Glycol Brushes

### Scheme 1. Structures of pacDNA and Y-Shaped PEG-DNA Conjugate



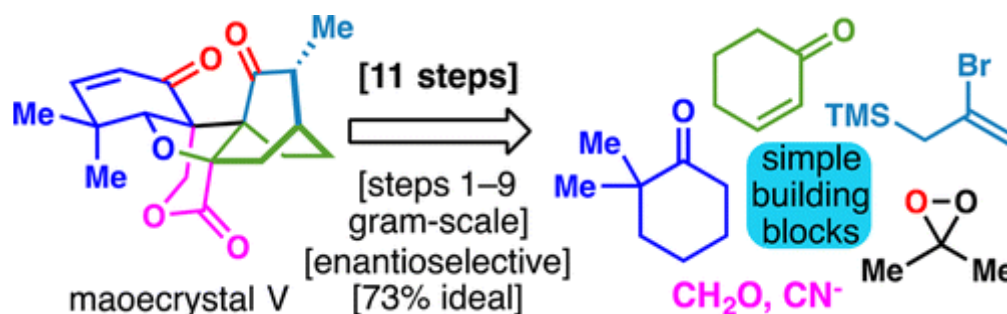
A noncationic, biocompatible polymer, PEG, can be used as a transfection vector by forming a brush polymer-DNA conjugate.

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Citation: Artiom Cernijenko, Rune Risgaard, and Phil S. Baran  
*Journal of the American Chemical Society* **2016** *138* (30), 9425-9428

## 11-Step Total Synthesis of (-)-Maoecrystal V

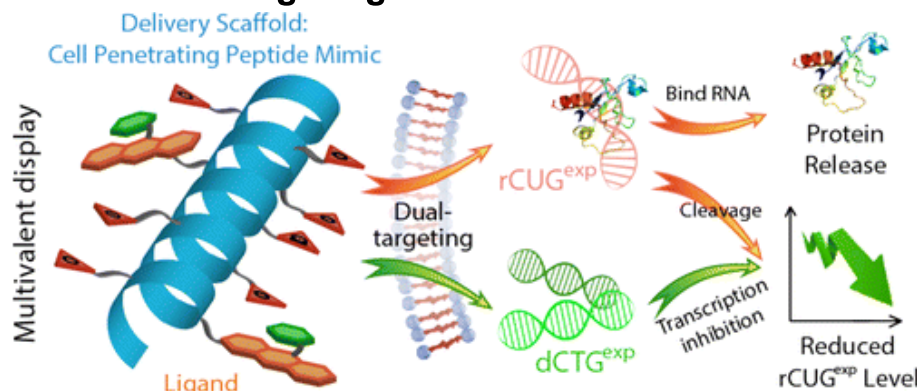


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Citation: Yugang Bai, Lien Nguyen, H. Y. Edwin Chan, and Steven C. Zimmerman, et al. *Journal of the American Chemical Society* **2016** *138* (30), 9498-9507

## Integrating Display and Delivery Functionality with a Cell Penetrating Peptide Mimic as a Scaffold for Intracellular Multivalent Multitargeting



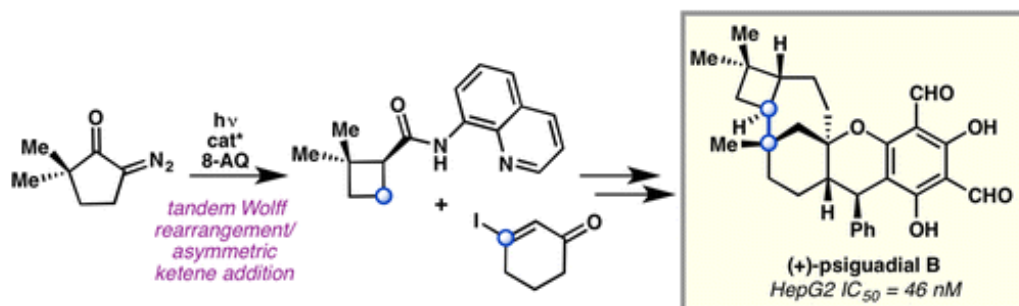
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Citation: *JACS*, **2016**, *138*, 9803.

### Enantioselective Total Synthesis of (+)-Psiguadial B

The Reisman lab's enantioselective total synthesis of a cytotoxic natural product.



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Citation: *JACS*, **2016**, *138*, 9840.

### Structural Polymorphism of Alzheimer's Beta-Amyloid Fibrils as Controlled by an E22 Switch: A Solid-State NMR Study

Labs at MIT and UCSF used solid-state NMR to investigate the structure, dynamics, hydration and morphology of mutant fibrils found in familial AD. The authors used  $^{13}C$  and  $^{15}N$  labeled peptides. The results suggest that electrostatic interactions in the center of the amyloid-beta peptide sequence play a crucial role in the 3-D fold of the fibrils, and by interference, fibril-induced neuronal toxicity and AD pathogenesis.

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Citation: *JAMA*. **2016**;316(5):492-493

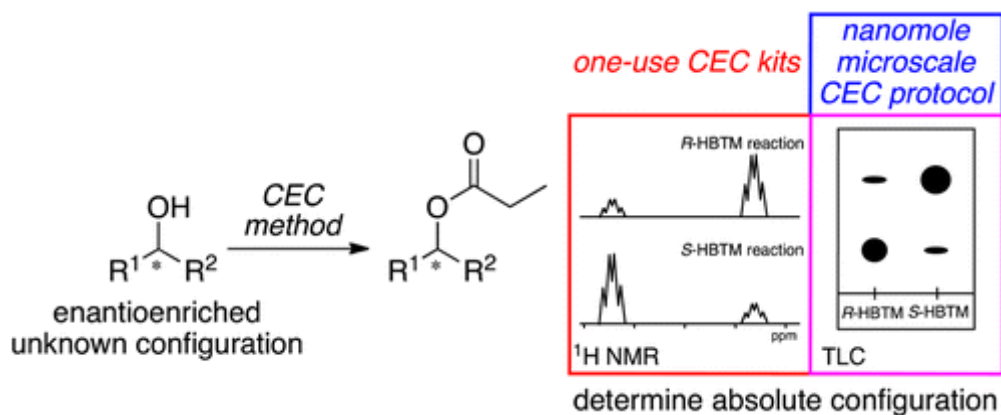
### The Affordable Care Act and the Future of US Health Care

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Citation: Wagner, A.J.; Miller, S.M.; King, R.P.; Rychnovsky, S.D. *JOC*, **2016**, *81*, 6253-6265.

**Nanomole-Scale Assignment and One-Use Kits for Determining the Absolute Configuration of Secondary Alcohols**

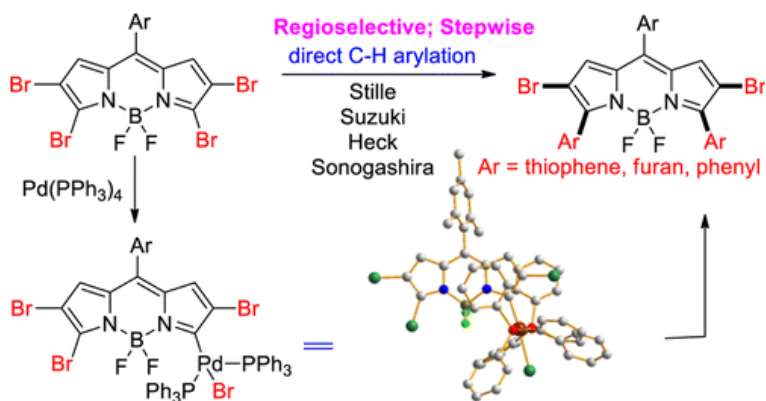


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Citation: Feng, Z.; *et al.* *JOC*, **2016**, *81*, 6281-6291.

**Regioselective and Stepwise Syntheses of Functionalized BODIPY Dyes through Palladium-Catalyzed Cross-Coupling Reactions and Direct C-H Arylations**

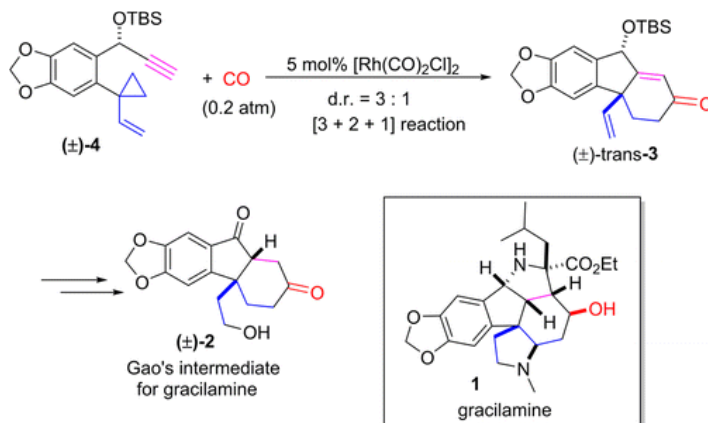


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Citation: Bose, S.; Yang, J.; Yu, Z.-X. *JOC*, **2016**, *81*, 6757-6765.

**Formal Synthesis of Gracilamine Using Rh(I)-Catalyzed [3 + 2 + 1] Cycloaddition of 1-Yne-Vinylcyclopropanes and CO**



bioorganic  
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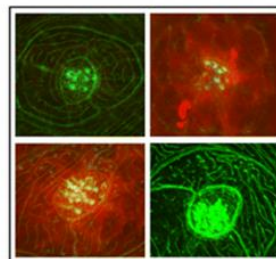
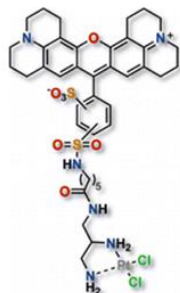
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Hybrid  
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Citation: Chu, *et al. Mor. Pharm.* **2016**, *13*, 2677-2682

### Systemic Delivery and

### Biodistribution of Cisplatin in Vivo

Cisplatin is widely used to treat a variety of cancers. However, ototoxicity and nephrotoxicity remain serious side effects of cisplatin-based chemotherapy. In order to inform the study of cisplatin's off-target effects, a new drug-fluorophore conjugate was synthesized that exhibited utility as a tracer to determine the cellular uptake and in vivo distribution of cisplatin. This probe will serve as a useful tool to facilitate investigations into the kinetics and biodistribution of cisplatin and its associated side effects in preclinical models after systemic administration.



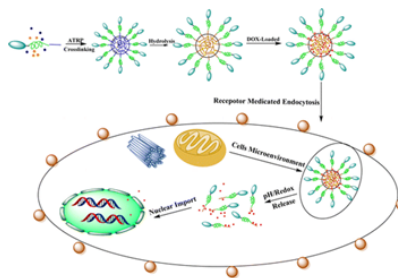
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Citation: Tian, *al. Mol. Pharm.* **2016**, *13*, 2683-2690.

### pH/Reductant Dual-Responsive Core-Cross-Linked Micelles via Facile in Situ ATRP for Tumor-Targeted Delivery of Anticancer Drug with Enhanced Anticancer Efficiency

a facile strategy was established for the pH/reductant dual-responsive core-cross-linked (CCL) micelles for tumor-targeted delivery of anticancer drug, via in situ atom transfer radical polymerization (ATRP). In the in vitro controlled release experiments with doxorubicin (DOX) as a model drug, the premature drug leakage rate was only 13.4% in the physiological medium within 36 h, while the cumulative release rate in the stimulated tumor microenvironment reached 78.7%, demonstrating the excellent tumor microenvironment responsive controlled release behavior upon acidic medium with high GSH level. As a folate receptor (FR) mediated targeting drug delivery system (DDS), the micelles showed excellent cytocompatibility, and enhanced anticancer efficiency after loading of DOX, compared with free DOX.

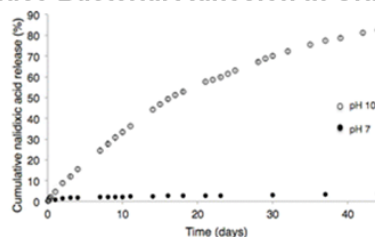
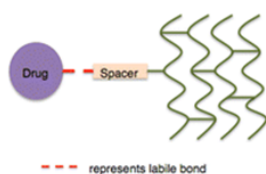


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Citation: McCoy, *et al. Mol. Pharm.* **2016**, *13*, 2817-2822.

### An Infection-Responsive Approach To Reduce Bacterial Adhesion in Urinary Biomaterials



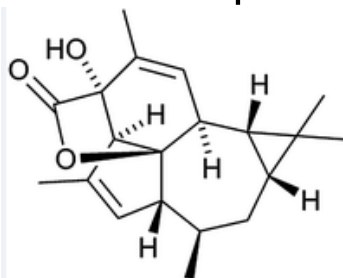
Infection is an inevitable consequence of chronic urinary catheterization with associated problems of recurrent catheter encrustation and blockage experienced by approximately 50% of all long-term catheterized patients. In this work, we have exploited, for the first time, the reported pathogen-induced elevation of urine pH as a trigger for intelligent antimicrobial release from novel hydrogel drug delivery systems of 2-hydroxyethyl methacrylate and vinyl-functionalized nalidixic acid derivatives, developed as candidate infection-resistant urinary catheter coatings.

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Citation: Hill, L. A. et al. *Nat. Prod. Rep.*, 2016, 33, 915-919

**A personal selection of 32 recent papers is presented covering various aspects of current developments in bioorganic chemistry and novel natural products such as euphorikanin A from *Euphorbia kansui*.**



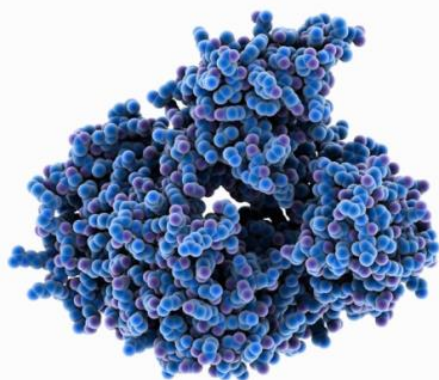
Euphorikanin A

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Citation: *Nature* doi:10.1038/536136b

**Beyond CRISPR: A guide to the many other ways to edit a genome**



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Citation: *Nature* 535, 556-560 doi:10.1038/nature18929

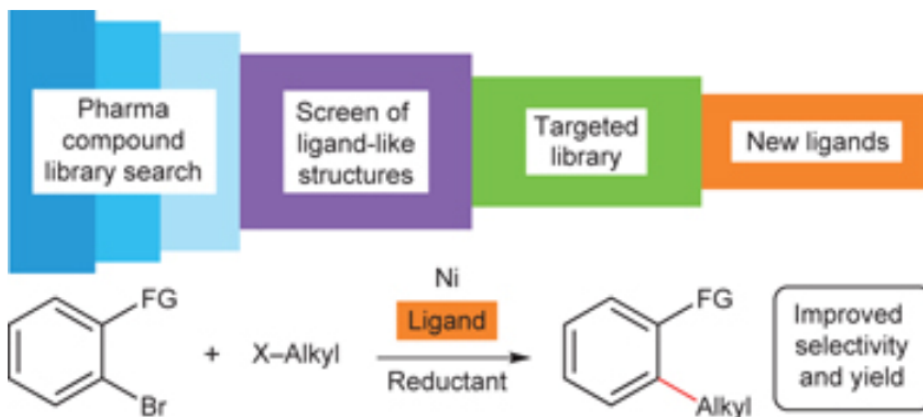
**HIV-1 antibody 3BNC117 suppresses viral rebound in humans during treatment interruption**

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Citation: *Nature Chemistry* (2016) doi:10.1038/nchem.2587

### New ligands for nickel catalysis from diverse pharmaceutical heterocycle libraries



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Citation: *Nature Chemistry* (2016) doi:10.1038/nchem.2577

### Total synthesis and structure–activity relationship studies of a series of selective G protein inhibitors



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Citation: Kocaoglu, *et al. Nat. Chem. Bio.* 2016, 12, 472-478.

### Progress and prospects for small-molecule probes of bacterial imatin

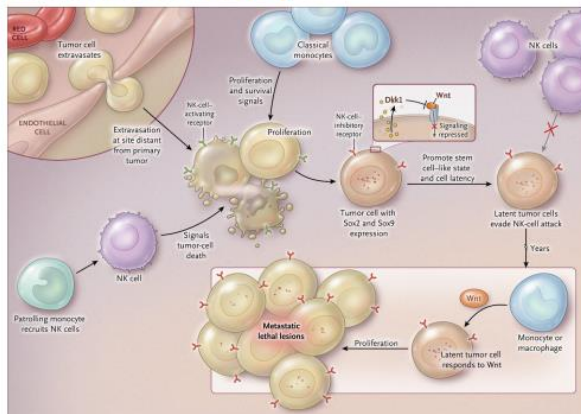
While bacteria do not have the distinct internal compartments seen in eukaryotes, these unicellular organisms possess highly organized cellular structures that are essential to orchestrating cell growth, division, motility, DNA transcription, protein translation and secretion in a well-defined synchrony. Visualization of interactions between the constituents of this organization is critical to our understanding of bacterial growth and pathogenesis, and although great progress has been made in these areas in the past decade, many questions cannot be addressed using existing techniques. Imaging-based methods are and will continue to be essential for the study of the biomolecules involved in cellular and physiological processes in their native environment, with fluorescence microscopy being particularly valuable for examination of the subcellular structures of bacteria.

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Citation: **N Engl J Med 2016; 375:280-282**

### Defining Metastatic Cell Latency

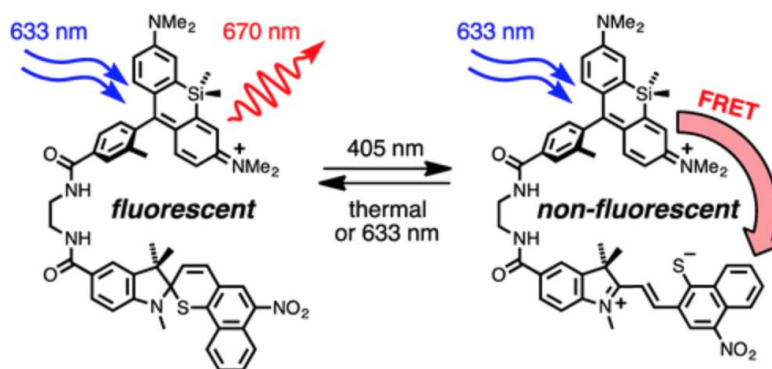


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Citation: Andersen *et al. Org. Lett.* **2016**, 18(5), 3666-3669

### Photoswitchable Spiropyran Dyads for Biological Imaging

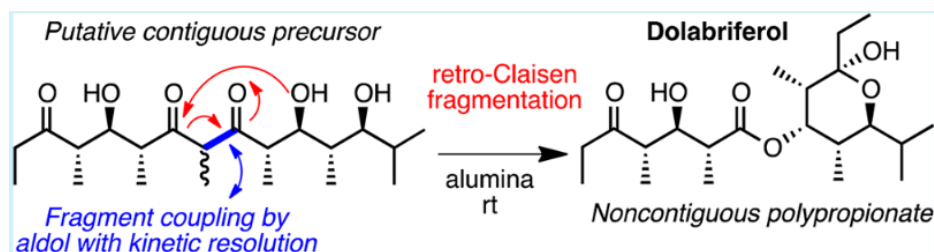


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Citation: Ward *et al. Org. Lett.* **2016**, 18, 3794-3797

### On the origin of Dolabriferol: Total Synthesis via Its Putative Contiguous Precursor



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Citation: PNAS 2016, 113 (30), 8340–8342.

## NIH must support broadly focused basic research



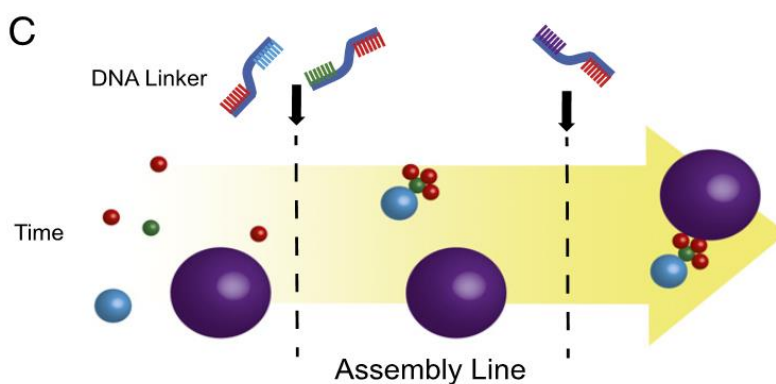
The National Institutes of Health, to its detriment and that of society at large, appears to be veering away from its traditional mission of broad, species-diverse research. Image courtesy of Carnegie Institution for Science.

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Citation: PNAS 2016, 113 (31), 8577–8582.

## Kinetically guided colloidal structure formation



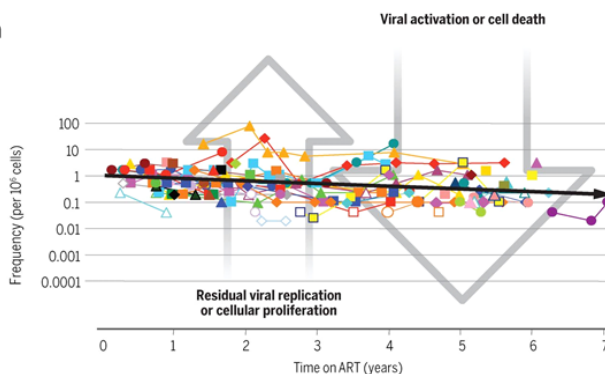
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Citation: Margolis, *et al. Science*. 2016, 353, 362

## Latency reversal and viral clearance to cure HIV-1

Since the discovery of HIV-1 more than 30 years ago, prevention and treatment strategies have dominated the research agenda. More recently, however, scientists are also focusing their efforts toward finding a cure. Margolis *et al.* review an approach that involves HIV-1 latency reversal and viral clearance. The idea is to reactivate any dormant virus and coax it to produce viral proteins that the immune system can recognize. By combining a latency reversal strategy with immunotherapies, the body might be able to rid itself of all infected cells.

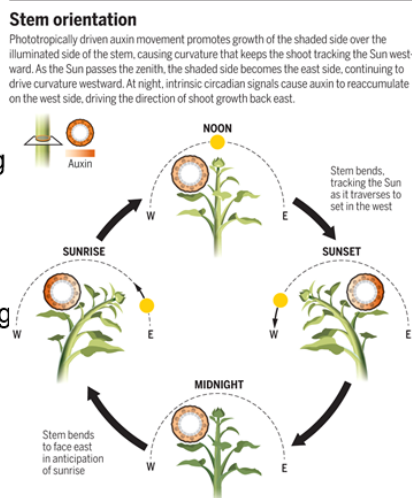


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**How do sunflowers follow the Sun and to what end?**

The large and showy flowering heads of domesticated sunflowers face east, positioned toward the rising Sun. Before floral development, however, elongating vegetative stems move their apices steadily from facing east in the morning to facing west in the afternoon or heliotropism (1). During the night, the shoots reorient their apices to face east again at sunrise (see the figure). As flower development is initiated, solar tracking diminishes and finally ceases, with the developing flowering heads at rest and facing east. Atamian *et al.* provide mechanistic insights into this tracking phenomenon and postulate an evolutionary link to pollination.

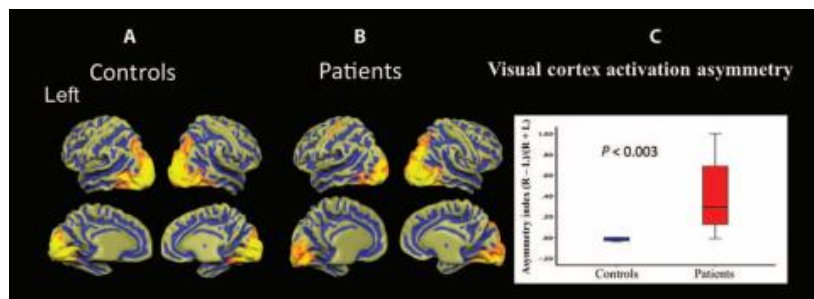


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**Plasticity of the human visual system after retinal gene therapy in patients with Leber's congenital amaurosis**

Local administration of gene therapy in the eye (adenovirus)



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**HLA class II genes modulate vaccine-induced antibody responses to affect HIV-1 acquisition**

Abstract: In the RV144 vaccine trial, two antibody responses were found to correlate with HIV-1 acquisition. Because human leukocyte antigen (HLA) class II-restricted CD4+ T cells are involved in antibody production, we tested whether HLA class II genotypes affected HIV-1-specific antibody levels and HIV-1 acquisition in 760 individuals. Indeed, antibody responses correlated with acquisition only in the presence of single host HLA alleles. Envelope (Env)-specific immunoglobulin A (IgA) antibodies were associated with increased risk of acquisition specifically in individuals with DQB1\*06. IgG antibody responses to Env amino acid positions 120 to 204 were higher and were associated with decreased risk of acquisition and increased vaccine efficacy only in the presence of DPB1\*13. Screening IgG responses to overlapping peptides spanning Env 120–204 and viral sequence analysis of infected individuals defined differences in vaccine response that were associated with the presence of DPB1\*13 and could be responsible for the protection observed. Overall, the underlying genetic findings indicate that HLA class II modulated the quantity, quality, and efficacy of antibody responses in the RV144 trial.

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