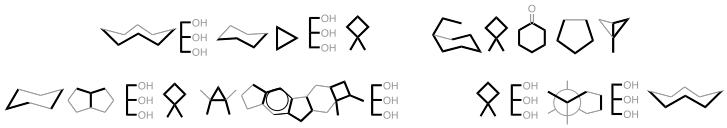


Volume 40 / Issue 1 19 January 2015

Accounts of Chemical Research	N/A	N/A
ACS Chemical Biology	3	Melanie Huttner
ACS Medicinal Chemistry Letters	3	Xiaoyu Zang (Janice)
ACS Nano	4	Andreas Steib
Advanced Drug Delivery Reviews	5	Melanie Huttner
Angewandte Chemie International Edition	6	Daryl Staveness
Bioconjugate Chemistry	11	Jack Sloane
Biomaterials	12	Colin McKinlay
Bioorganic and Medicinal Chemistry	14	Nancy Benner
Bioorganic and Medicinal Chemistry Letters	14	Nancy Benner
Chemical Communications	15	Katie Near
Chemical & Engineering News	16	Matthew Stevens
Chemical Reviews	N/A	N/A
Chemical Science	N/A	N/A
Chemistry, A European Journal	18	Xiaoyu Zang (Janice)
European Journal of Organic Chemistry	21	Filip Hessler
Journal of the American Chemical Society	23	Steven Ryckbosch (odd)
		Hsiao-Tieh Hsu (even)
Journal of Medicinal Chemistry	32	Katie Near
Journal of Organic Chemistry	33	Matthew Jeffreys
Molecular Pharmaceutics	36	Colin McKinlay
Natural Product Reports	37	Nancy Benner
Nature	38	Ryan Quiroz
Nature Chemistry	N/A	N/A
Nature Chemical Biology	41	Jack Sloane
The New York Times	41	Melanie Huttner
The Onion	N/A	Steven Ryckbosch
Organic Letters	42	Matthew Stevens
Organometallics	44	Ryan Quiroz
PNAS	44	Jessica Vargas
Science	45	Steffen Gressies
Science Translational Medicine	46	Jessica Vargas
Synlett	47	Andrew Raub
Synthesis	48	Andrew Raub
Tetrahedron	49	Akira Shimizu
Tetrahedron Letters	50	Akira Shimizu

Next Due Date: Monday, February 16, 2015

Instructions for Authors (*Volume 1)*

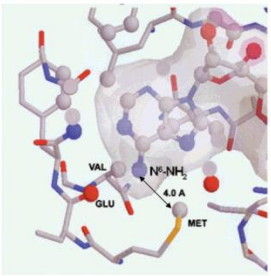
Identify articles to abstract in the journals you have been assigned. Try to pick things that the group (or specific subgroups) would like to read or should be aware of. This does not need to be limited to chemistry! If you encounter interesting pieces of media elsewhere (The Economist being a recent 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 (1ç-32Pl-N6-phenyl-ATP). Because this analogue could be utilized by the mutant kinase but not by wild-type PKCR (or presumably other protein kinase) to phosphorylate peptide or protein substrates, 32P-labeled products were the direct result of the mutant PKCR. 	**bioorganic** asymmetric methods synthesis mechanism review other OM **Bryo** Apop Hybrid Gnid/ Kirk Laulimalide 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.

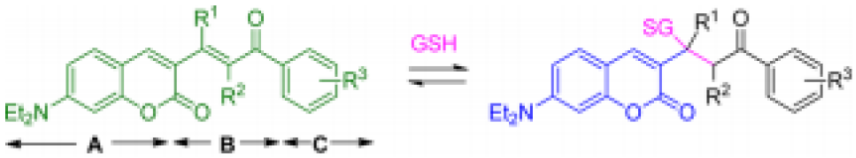
Penalties for being a Lit Review MOOK:

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

Citation: Jiang, X.; *et al. ACS Chem. Bio.* **2014,** *ASAP.*

Quantitative Imaging of Glutathione in Live Cells Using a Reversible Reaction-Based Ratiomeric Fluorescent Probe

Variations in intracellular glutathione (GSH) concentration have been linked to many pathological processes including cancer, aging and diabetes. In order to understand the influence of GSH in these processes, is is necessary to precisely measure the GSH concentration in live cells. In this contribution, the authors report the first quantitative fluorescent probe for determination of GSH levels in live cells.



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DDO
Hybrid
Drug Deliv.
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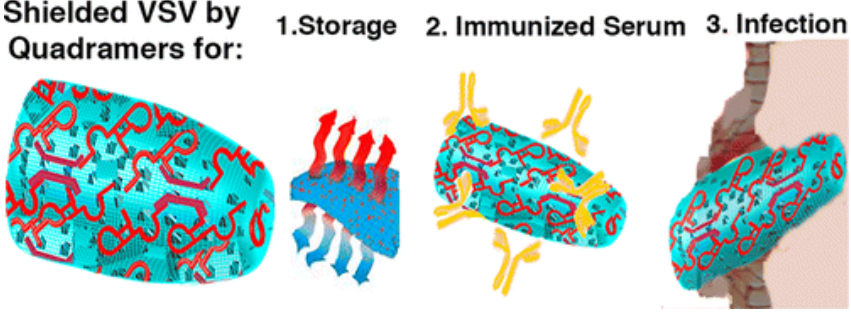
Citation: Shahrokh, *et al. ACS Med. Chem Lett.* 2014, *5,* 1240-1244.

Aptamer-Facilitated Cryoprotection of Viruses



Global vaccination and gene therapy programs have an urgent demand for stabilization of viral vectors at low temperature. We used a quadramer, a bridge-connected DNA tetra-aptamer to antivesicular stomatitis virus (VSV), as a viral cryoprotectant. Results showed that the tetravalent antivirus DNA aptamers protect viral activity during multiple freeze¨Cthaw cycles, shield from neutralizing antibodies, and decrease aggregation of viral particles.

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review
other

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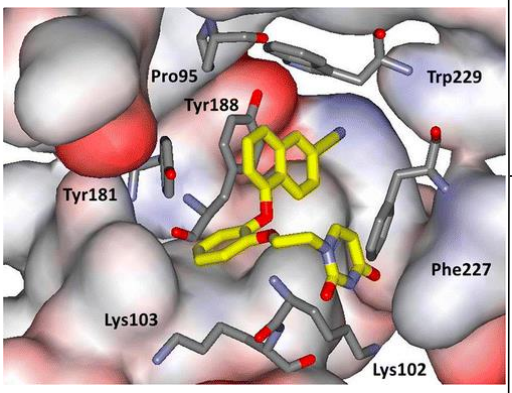
Citation: Lee, *et al. ACS Med. Chem Lett.* 2014, *5,* 1259-1262.

Picomolar Inhibitors of HIV-1 Reverse Transcriptase: Design and Crystallography of Naphthyl Phenyl Ethers

Catechol diethers that incorporate a 6-cyano-1-naphthyl substituent have been explored as non-nucleoside inhibitors of HIV-1 reverse transcriptase (NNRTIs). Promising compounds are reported that show midpicomolar activity against the wild-type virus and sub-20 nM activity against viral variants bearing Tyr181Cys and Lys103Asn mutations in HIV-RT. An X-ray crystal structure at 2.49 0‡3 resolution is also reported for the key compound 6e with HIV-RT.



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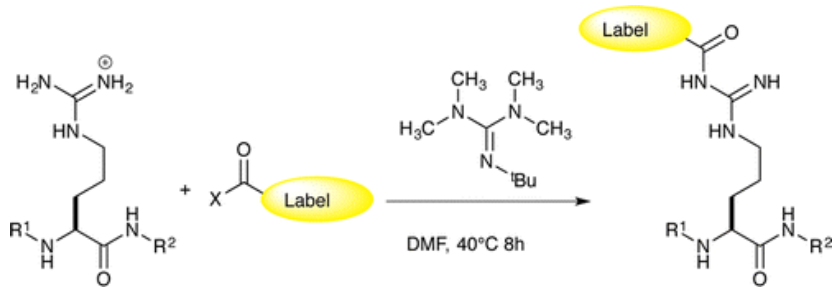
Citation: Grundler, *et al. ACS Med. Chem Lett.* 2014, *5,* 1290-1295.

Direct Arginine Modification in Native Peptides and Application to Chemical Probe Development



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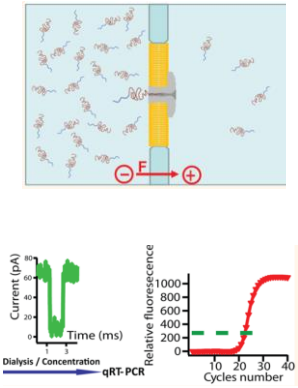
Hybrid
Drug Deliv.
Prostratin

Citation: Pastoriza -Gallego, M.; Breton M.-F.; Discala, F.; Auvray, L.; Betton, J.-M.; Pelta, J.; ACS Nano, 8, 11350–11360 (2014)

Evidence of Unfolded Protein Translocation through a Protein Nanopore

The authors report the translocation of a chimera molecule through the aerolysin nanopore in the presence of a denaturing agent, guanidium chloride and KCl. The chimera molecule is composed of the recombinant MalE protein with a unique cysteine residue at the C-terminal position covalently linked to a single-stranded DNA oligonucleotide. Real-time polymerase chain reaction (PCR) was used to detect the presence of chimera molecules that have been effectively translocated from the cis to trans chamber of the set up. Comparing the electrical signature of the chimera related to the protein or oligonucleotide alone demonstrates that each type of molecule displays different dynamics in term of transport time, event frequency, and current blockade. This original approach provides the possibility to study protein translocation through different biological, artificial, and biomimetic nanopores or nanotubes.



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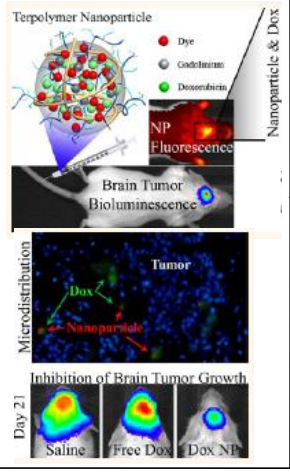
Citation: Li, J.; Cai, P.; Shalviri, A.; Henderson, J. T.; He, C.; Foltz, W. D.; Prasad, P.; Brodersen, P. M.; Chen, Y.; DaCosta, R.; Rauth, A. M.; Wu, X. Y.; ACS Nano, 8, 9925–9940 (2014)

A Multifunctional Polymeric Nanotheranostic System Delivers Doxorubicin and Imaging Agents across the Blood Brain Barrier Targeting Brain Metastases of Breast Cancer

The authors designed a multifunctional nanotheranostic system based on poly(methacrylic acid) polysorbate 80-grafted-starch for the delivery of blood brain barrier-impermeable imaging and therapeutic agents to brain metastases of breast cancer. The targetability of doxorubicin (Dox)-loaded nanoparticles to intracranially established brain metastases of breast cancer was evaluated using whole body and *ex vivo* fluorescence imaging of the brain. Immuno-histochemical staining for caspase-3 and terminal-deoxynucleotidyl transferase dUTP nick end labeling for DNA fragmentation in tumor-bearing brain sections revealed that Dox-loaded nanoparticles selectively induced cancer cell apoptosis 24 h post-injection, while sparing normal brain cells from harm. Such effects were not observed in the mice treated with free Dox. Treatment with Dox-loaded nanoparticles significantly inhibited brain tumor growth compared to free Dox at the same dose as assessed by in vivo bioluminescence imaging of the brain metastases.



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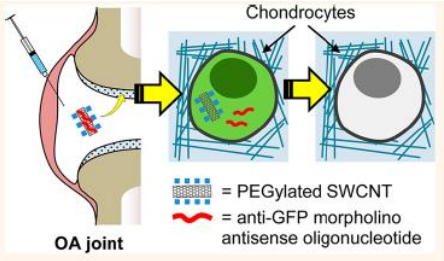
Citation: Sacchetti, C.; Liu-Bryan, R.; Magrini, A.; Rosato, N.; Bottini, N.; Bottini, M.; ACS Nano, 8, 12280–12291 (2014)

Polyethylene-Glycol-Modified Single-Walled Carbon Nanotubes for Intra-Articular Delivery to Chondrocytes

The authors describe an efficient intra-articular delivery nanosystem based on single-walled carbon nanotubes (SWCNTs) modified with polyethylene glycol (PEG) chains (PEG-SWCNTs). It was shown that PEG-SWCNTs are capable to persist in the joint cavity for a prolonged time, enter the cartilage matrix, and deliver gene inhibitors intochondrocytes of both healthy and Osteoarthritis mice. PEG-SWCNT nanoparticles did not elicit systemic or local side effects. These data suggest that PEG-SWCNTs represent a biocompatible and effective nanocarrier for intra-articular delivery of agents to chondrocytes.



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Citation: Maeda, H. *Adv. Drug Deliv. Rev.* **2015,** *ASAP.*

Toward a full understanding of the EPR effect in primary and metastatic tumors as well as issues related to its heterogeneity

The enhanced permeability and retention (EPR) effect of solid tumors as seen with nanomedicines and macromolecular drugs is well known. However, many researchers appear to lack a full understanding of this effect. The effect varies depending on a patient's pathological and physiological characteristics and clinical condition. Herein is described the background of the EPR effect, heterogeneity of this effect, physiological and pathological factors affecting the effect, the EPR effect in metastatic tumors, artifacts of the EPR effect with micellar and liposomal drugs, problems of macromolecular drug stability and drug release, and access to target sites.

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Citation: Rewatkar, P. V.; *et al. Adv. Drug. Deliv. Rev.* **2015,** *ASAP.*

Are vaeolae a cellular entry route for non-viral therapeutic delivery systems?

The development of novel therapies increasingly relies on sophisticated delivery systems that allow the drug or gene expression-modifying agent of interest entry into cells. These systems can promote cellular targeting and/or entry, and they vary in size, charge, and functional group chemistry. Their optimization requires an in depth knowledge of the cellular routes of entry in normal and pathological states. Caveolae are plasma membrane invaginations that have the potential to undergo endocytosis. The authors review the literature exploring whether drug or nucleic acid delivery systems exploit and/or promote cellular entry via caveolae.

bioorganic
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mechanism
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other

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Drug Deliv.
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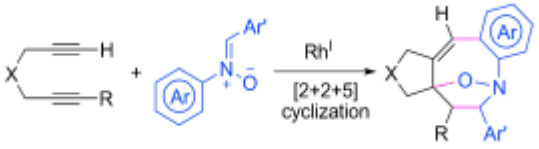
Citation: Wan, B.; et al. *Angew. Chem. Int. Ed.* **2014**, *53 (44)*, 11940-11943.

Rhodium-Catalyzed Cyclization of Diynes with Nitrones: A Formal [2+2+5] Approach to Bridged Eight-Membered Heterocycles

N-aryl-substituted nitrones were employed as five-atom coupling partners in the rhodium-catalyzed cyclization with diynes. In this reaction, the nitrone moiety served as a directing group for the catalytic C-H activation of the N-aryl ring. This formal [2+2+5] approach allows rapid access to bridged eight-membered heterocycles with broad substrate scope.



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Drug Deliv.
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Citation: Meyer, A.; Mokhir, A. *Angew. Chem. Int. Ed.* **2014**, *53 (47)*, 12840-12843.

RNA Interference Controlled by Light of Variable Wavelength

Known "caged" small interfering RNAs are activated by UV light, which is toxic to cells. The activation of siRNAs by red light under mild conditions not affecting cells is reported. The uncaging is mediated by singlet oxygen (see picture) photogenerated on a photosensitizer, which is attached to the 3'-terminus of the lagging strand.

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other

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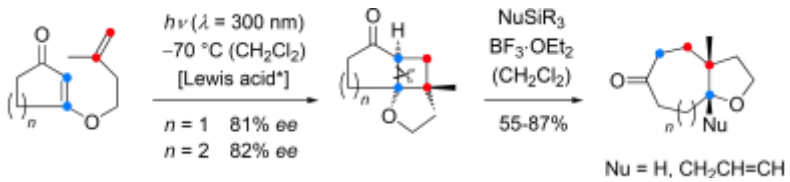
Citation: Brimioulle, R.; Bach, T. *Angew. Chem. Int. Ed.* **2014**, *53 (47)*, 12921-12924.

[2+2] Photocycloaddition of 3-Alkenyloxy-2-cycloalkenones: Enantioselective Lewis Acid Catalysis and Ring Expansion

An enantioselective, Lewis acid catalyzed [2+2] photocycloaddition (9 examples, 69–94?% yield, up to 94?% ee) leads to tricyclic products, in which the marked bond of the cyclobutane ring can be cleaved to form medium-sized rings as shown in the example above



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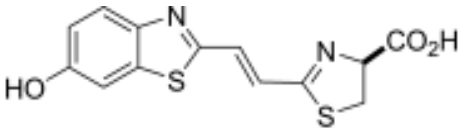
Drug Deliv.

Citation: Anderson, J.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (48)*, 13059-13063.

A Dual-Color Far-Red to Near-Infrared Firefly Luciferin Analogue Designed for Multiparametric Bioluminescence Imaging

Synthetic infra-luciferin is a dual-color, far-red to near-infrared (NIR) emitting analogue of beetle luciferin, which akin to native luciferin gives rise to different far-red to NIR emission maxima (up to λmax=706 nm) with different firefly luciferase mutants. This red-shifted bioluminescence is suitable for imaging in mammals with less attenuation than luciferin



infra-luciferin

λ_{max}= 706 nm

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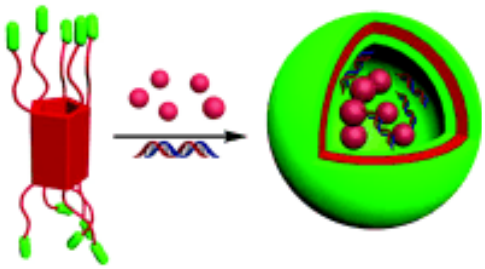
Gnid/ Kirk
Laulimalide
Pharma

Citation: Pei, Z.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (48)*, 13126-13130.

Cationic Vesicles Based on Amphiphilic Pillar[5]arene Capped with Ferrocenium: A Redox-Responsive System for Drug/siRNA Co-Delivery

Simultaneous delivery of an anticancer drug and siRNA was achieved with cationic vesicles self-assembled from a novel ferrocenium-capped amphiphilic pillar[5]arene. These systems exhibit low cytotoxicity to healthy cells and are redox-responsive in the presence of a reductant/oxidant.



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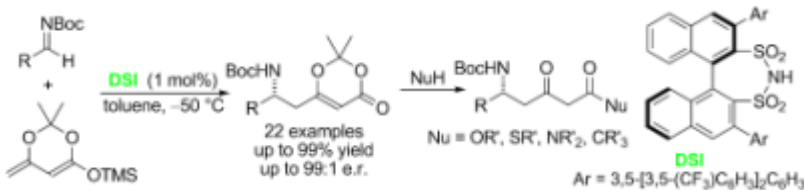
Drug Deliv.

Citation: List, B.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (49)*, 13592-13595.

Asymmetric Disulfonimide-Catalyzed Synthesis of d-Amino-ß-Ketoester Derivatives by Vinylogous Mukaiyama–Mannich Reactions

A chiral disulfonimide (DSI) serves as a highly efficient precatalyst for vinylogous Mukaiyama–Mannich reactions of a readily available silyloxydiene with protected imines, delivering d-amino-ß-ketoesters. The synthetic utility of the reaction is illustrated by the preparation of valuable enantiomerically enriched building blocks and the formal synthesis of (-)-lasubin.



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review
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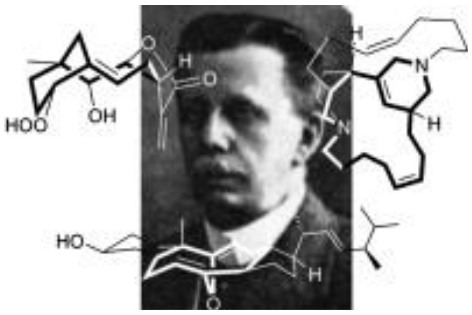
Laulimalide
Drug Deliv.

Citation: Williams, C.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (50)*, 13664-13668.

Natural Products with Anti-Bredt and Bridgehead Double Bonds

Bredt's rule, developed over a 100 years ago based on simple terpenes, states that the terminus of an olefin cannot exist at the bridgehead position of a bridged bicyclic system. For the first time, complex natural products containing bridgehead olefins and potential anti-Bredt systems are reviewed and evaluated, yet should they be considered anti-Bredt candidates at all?



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review
other

REDOR
Bryo
Gnid/Kirk
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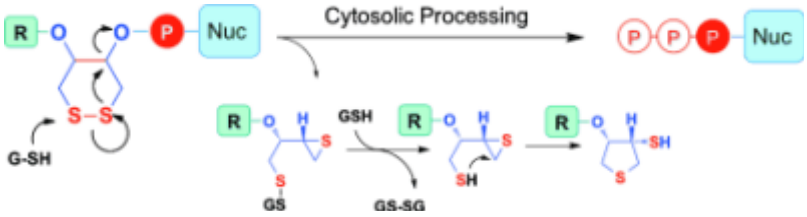
Citation: Davies, I.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (51)*, 14046-14050.

Cyclic-Disulfide-Based Prodrugs for Cytosol-Specific Drug Delivery

Cyclic-disulfide-based prodrugs are especially suitable for the highly efficient intracellular delivery of antiviral and antimetabolic nucleoside monophosphates. The key feature of this design is a reduction-triggered charge-dissipating cyclodeesterification of an alicyclic disulfide, followed by facile intramolecular self-quenching of the transient thiirane (see scheme; GSH=glutathione).



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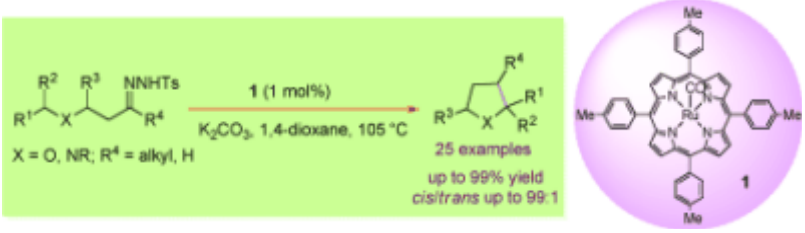
Citation: Che, C.-M.; et al. *Angew. Chem. Int. Ed*. **2014**, *53 (51)*, 14175-14180.

Ruthenium–Porphyrin-Catalyzed Diastereoselective Intramolecular Alkyl Carbene Insertion into C-H Bonds of Alkyl Diazomethanes Generated In Situ from N-Tosylhydrazones

With a ruthenium–porphyrin catalyst, alkyl diazomethanes generated in situ from N-tosylhydrazones underwent efficient intramolecular C(sp3)-H insertion to give substituted tetrahydrofurans and pyrrolidines (see scheme) in a reaction that can be viewed as a reductive coupling between C=O and C-H bonds to form a new C-C bond. This transformation was applied in a concise synthesis of (±)-pseudoheliotridane.



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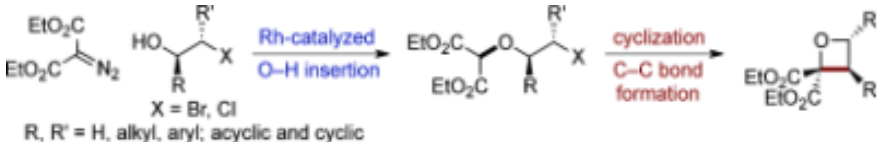
Laulimalide
Drug Deliv.

Citation: Davis, O.; Bull, J. *Angew. Chem. Int. Ed*. **2014**, *53 (51)*, 14230-14234.

Synthesis of Di-, Tri-, and Tetrasubstituted Oxetanes by Rhodium-Catalyzed O-H Insertion and C-C Bond-Forming Cyclization

Highly substituted oxetanes and fused oxetane bicycles were generated by a mild, functional-group-tolerant O-H insertion and cyclization strategy. Enantioenriched oxetanes were obtained with complete retention of configuration from enantioenriched bromohydrins. These oxetanes present interesting building blocks for medicinal chemistry and were further functionalized, while the oxetane ring remained intact



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synthesis
mechanism
review
other

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Bryo
Apop
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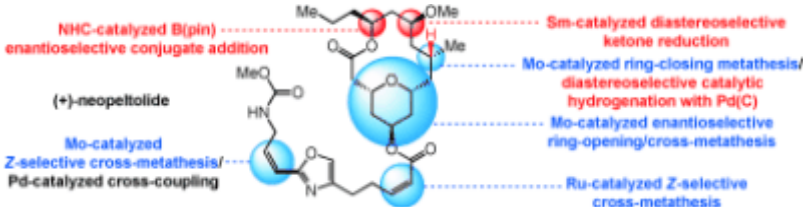
Gnid/ Kirk
Laulimalide
Drug Deliv.

Citation: Yu, M.; Schrock, R.; Hoveyda, A. *Angew. Chem. Int. Ed*. **2015**, *54 (1)*, 215-220.

Catalyst-Controlled Stereoselective Olefin Metathesis as a Principal Strategy in Multistep Synthesis Design: A Concise Route to (+)-Neopeltolide

The anti-proliferative agent neopeltolide has been prepared by a diastereo- and enantioselective route with a total of 28 steps and a longest linear sequence of 11 steps; catalytic processes were used to address every stereochemical issue. At the heart of the synthesis lie various selective Mo-, W-, or Ru-catalyzed metathesis reactions.



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Laulimalide
Drug Deliv.

Citation: Rotello, V.; et al. *Angew. Chem. Int. Ed*. **2015**, *54 (2)*, 506-510.

Direct Cytosolic Delivery of siRNA Using Nanoparticle-Stabilized Nanocapsules

Nanoparticle-stabilized capsules (NPSCs) rapidly deliver small interfering RNA (siRNA) into the cytosol of a cell in a cholesterol-dependent manner, and the siRNA enters cells by membrane fusion. Such a platform effectively silenced model gene expression up to 90?%, thus highlighting NPSC-facilitated direct cytosolic siRNA delivery as a powerful tool for gene regulation and disease treatment

bioorganic
asymmetric
methods
synthesis
mechanism
review
other

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Bryo
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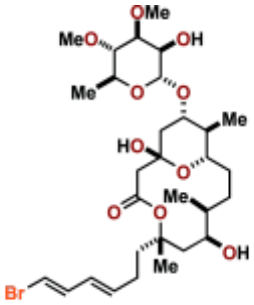
Laulimalide
Drug Deliv.

Citation: Fuwa, H.; et al. *Angew. Chem. Int. Ed*. **2015**, *54 (3)*, 868-873.

Total Synthesis, Stereochemical Reassignment, and Biological Evaluation of (-)-Lyngbyaloside B

Total synthesis of the proposed structure of (-)-lyngbyaloside B, a cytotoxic macrolide glycoside of marine origin, showed that the original stereochemical assignment needed to be reconsidered. The correct structure of this natural product was reassigned on the basis of spectroscopic and molecular modeling considerations and ultimately established by means of total synthesis.



correct structure of (–)-lyngbyaloside B

bioorganic
asymmetric
methods
synthesis
mechanism
review
other

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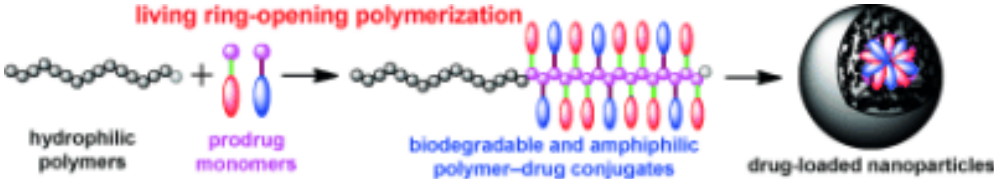
Gnid/ Kirk
Laulimalide
Drug Deliv.

Citation: Liu, J.; et al. *Angew. Chem. Int. Ed*. **2015**, *54 (3)*, 1002-1006.

Ring-Opening Polymerization of Prodrugs: A Versatile Approach to Prepare Well-Defined Drug-Loaded Nanoparticles

Biodegradable polymer–drug conjugates were synthesized through living ring-opening polymerization of prodrug monomers consisting of a cyclic polymerizable group that is attached to a drug through a cleavable linker. The polymer–drug conjugates are designed to self-assemble into nanoparticles and release the drug in response to a physiologically relevant stimulus.



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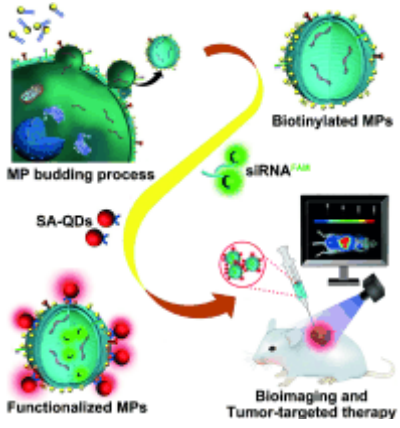
Laulimalide
Drug Deliv.

Citation: Zhao, Y.-F.; et al. *Angew. Chem. Int. Ed*. **2015**, *54 (3)*, 1036-1040.

Transformation of Cell-Derived Microparticles into Quantum-Dot-Labeled Nanovectors for Antitumor siRNA Delivery

Cell-derived microparticles (MPs) are transformed to functionalized nanovectors by combining quantum dot (QD) labeling and efficient siRNA loading. This strategy not only reliably conferred excellent traceability and therapeutic potential on MPs, but also preserved their natural properties, thus facilitating the identification and further application of biogenic MPs. SA=streptavidin.



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Laulimalide
Drug Deliv.

Citation: Sivaguru, J.; et al.; et al. *Angew. Chem. Int. Ed.* **2015**, *54 (4)*, 1159-1163.

Programmed Photodegradation of Polymeric/Oligomeric Materials Derived from Renewable Bioresources

Renewable polymeric materials derived from biomass with built-in phototriggers were synthesized and evaluated for degradation under irradiation by UV light (see picture). Complete decomposition of the polymeric materials was observed with recovery of the monomer that was used to resynthesize the polymers.

bioorganic
asymmetric
methods
synthesis
mechanism
review
other

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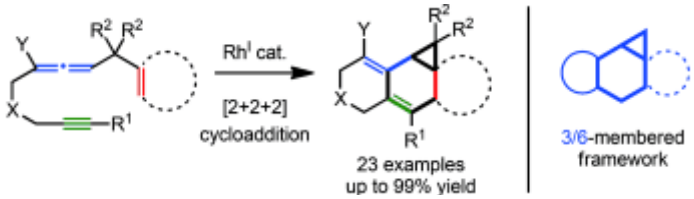
Bryo
Apop
Hybrid
Gnid/ Kirk
Laulimalide
Drug Deliv.

Citation: Mukai, C.; et al. *Angew. Chem. Int. Ed.* **2015**, *54 (4)*, 1240-1244.

Stereospecific and Stereoselective Rhodium(I)-Catalyzed Intramolecular [2+2+2] Cycloaddition of Allene-Ene-Ynes: Construction of Bicyclo[4.1.0]heptenes

Treatment of allene-ene-yne substrates with [{RhCl(CO)2}2] effected the intramolecular [2+2+2]-type ring-closing reaction to produce various of tri- and tetracyclic derivatives containing a cyclopropane ring. The reaction is highly stereoselective as well as stereospecific with good to excellent yields.



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Laulimalide
Drug Deliv.

Citation: Nagakubo, T., et al. *Bioconjugate Chem.* **2014**, 25, 1921-1924

Development of Cell-Penetrating R7 Fragment-Conjugated Helical Peptides as Inhibitors of Estrogen Receptor-Mediated Transcription

Downregulation of estrogen receptor-mediated gene activation via helical peptides has been introduced as a viable new strategy in treating breast cancer. Unfortunately, these helical peptides display low cell permeability, limiting their therapeutic utility. Here, the authors report the synthesis and evalution of R7-conjugated helical peptides, which were able to efficiently enter cells and exhibited high downregulation of mRNA producction at only 3 μM concentrations.

bioorganic
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synthesis
mechanism
review
other

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Drug Deliv.
Prostratin

Citation: Stefan, N., et al. *Bioconjugate Chem*. **2014**, 25, 2144-2156

Novel Prodrug-Like Fusion with Protease-Sensitive Bioorthogonal PEGylation for Tumor Targeting

Biotoxins have attracted attention for tumor targeting strategies, but unfortunately these compounds display potent side effects in normal tissue. The authors report a prodrug-like strategy for delivering such molecules, whereby they conjugate PEG polymers to the biotoxin using click chemistry. By incorporating a peptide linker into these modifications, the authors demonstrated that proteolytic cleavage fully restored function to the biotoxin. *In vivo* experiments in mice reveal that this PEGylated biotoxin was far less cytotoxic and showed a longer circulation half-life. The authors assert that these "prodrug-like fusion toxins" may allow for novel tumor targetting possibilities.

bioorganic
methods
synthesis
mechanism
review
other

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Drug Deliv.
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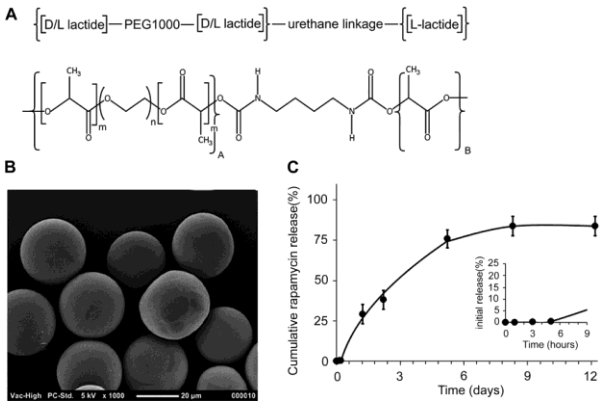
Citation: Biomaterials 2015, 42, 151–160.

Local Therapeutic Efficacy with Reduced Systemic Side Effects by Rapamycin-Loaded Subcapsular Microspheres.



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synthesis
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review
other

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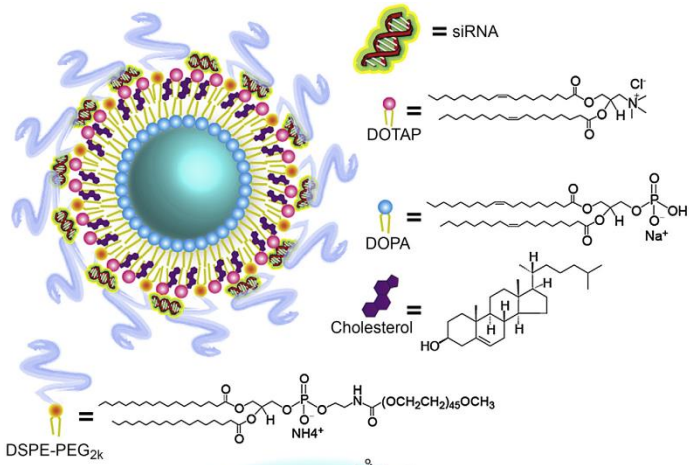
Citation: Biomaterials 2015, 36, 124–133.

Self-Assembled Nanoscale Coordination Polymers Carrying siRNAs and Cisplatin for Effective Treatment of Resistant Ovarian Cancer



bioorganic
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synthesis
mechanism
review
other

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Drug Deliv.
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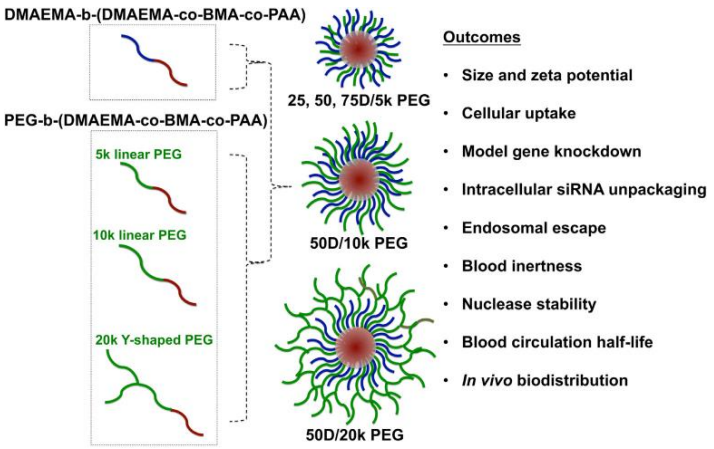
Citation: Biomaterials 2015, 38, 97–107.

Tuning PEGylation of Mixed Micelles to Overcome Intracellular and Systemic siRNA Delivery Barriers



bioorganic
methods
synthesis
mechanism
review
other

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Bryo
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Drug Deliv.
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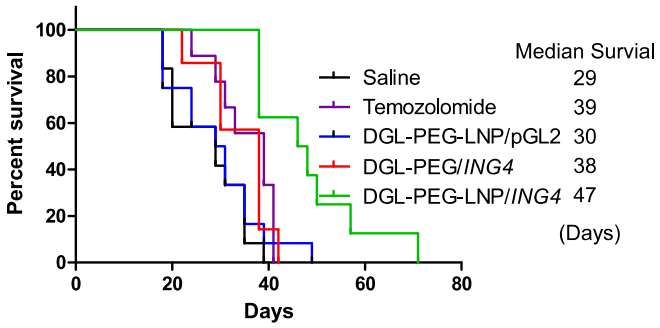
Citation: Biomaterials 2015, 37, 345–352.

Enhanced Blood–brain Barrier Penetration and Glioma Therapy Mediated by a New Peptide Modified Gene Delivery System.



bioorganic
methods
synthesis
mechanism
review
other

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Bryo
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Hybrid
Drug Deliv.
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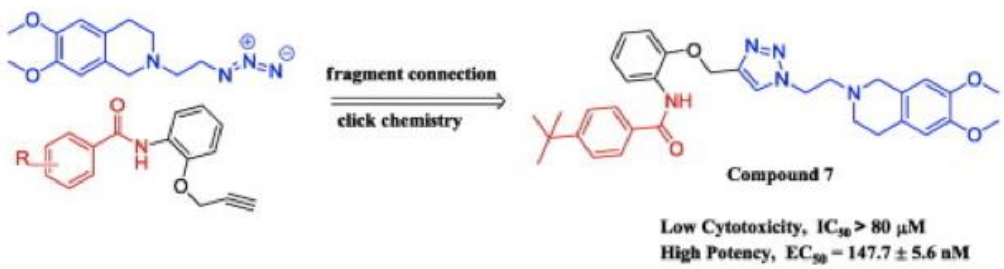
Citation: Jiao, L. et al. *Bioorg. Med. Chem.*, 22, (2014) 6857-6866

Design, synthesis and evaluation of novel triazole core based P-glycoprotein-mediated multidrug resistance reversal agents



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synthesis
mechanism
review
other

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Drug Deliv.
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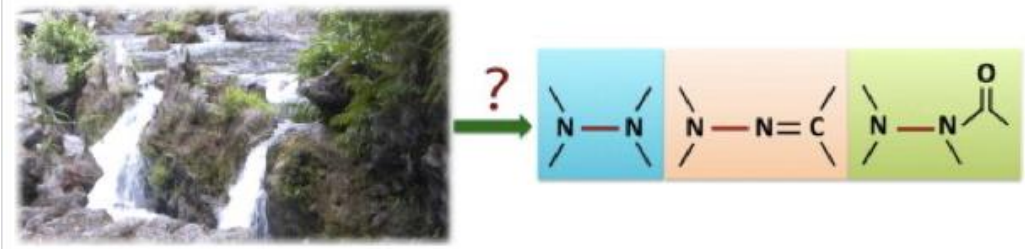
Citation: Goff, G. L. et al. *Bioorg. Med. Chem*., 22, (2014) 6529-6544

Natural hydrazine-containing compounds: Biosynthesis, isolation, biological activities and synthesis



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synthesis
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review
other

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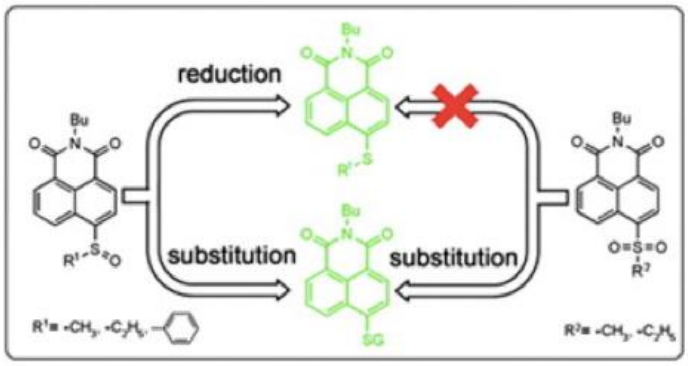
Hybrid
Drug Deliv.
Prostratin

Citation: Chen, R. et al. *Bioorg. Med. Chem. Lett*., 25, (2015) 59-61

Novel chemosensors for detection of glutathione by reduction or substitution of naphthalimide derivatives containing sulfoxide or sulfone substituents



bioorganic
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synthesis
mechanism
review
other

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Bryo
DDO
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Drug Deliv.
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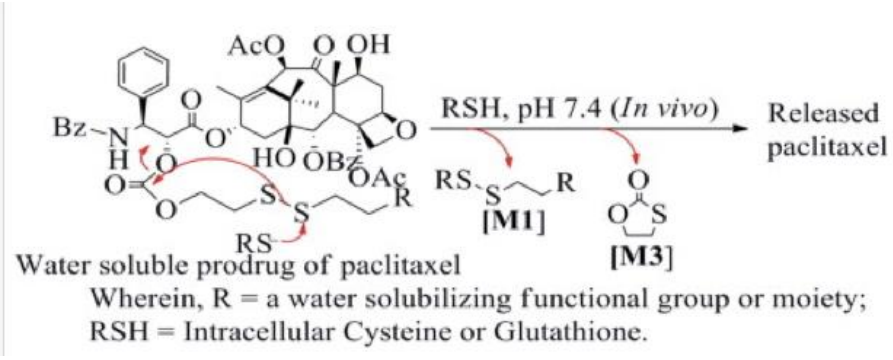
Citation: Gund, M. et al. *Bioorg. Med. Chem. Lett*., 25, (2015) 122-127

Water-soluble prodrugs of paclitaxel containing self-immolative disulfide linkers



bioorganic
methods
synthesis
mechanism
review
other

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Bryo
DDO
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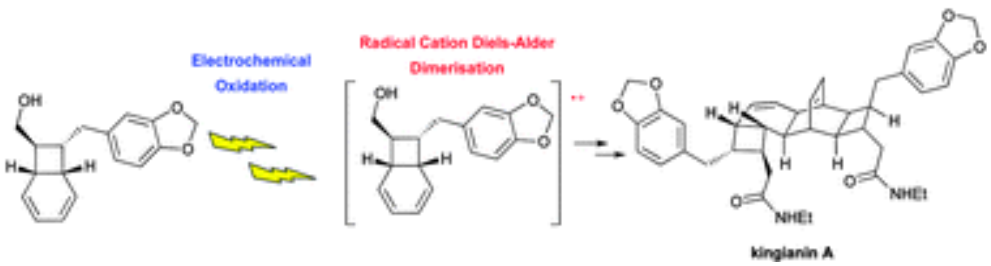
Drug Deliv.
Prostratin

Citation: Moore, J. C. *et al*. *Chem. Commun.* **2014**, *50,* 12523.

Formal synthesis of kingianin A based upon a novel electrochemically-induced radical cation Diels–Alder reaction



bioorganic
methods
synthesis
mechanism
review
other

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Bryo
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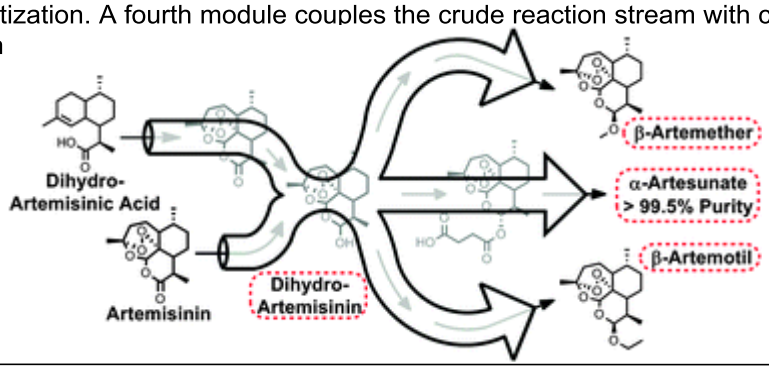
Hybrid
Drug Deliv.
Prostratin

Citation: Gilmore, K. *et al. Chem. Commun.* **2014**, *50,* 12652.

Continuous synthesis of artemisinin-derived medicines

Described is a continuous, divergent synthesis system which is coupled to continuous purification and is capable of producing four anti-malarial APIs. The system is comprised of three linked reaction modules for photooxidation/cyclization, reduction, and derivatization. A fourth module couples the crude reaction stream with continuous purification



bioorganic
methods
synthesis
mechanism
review
other

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Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
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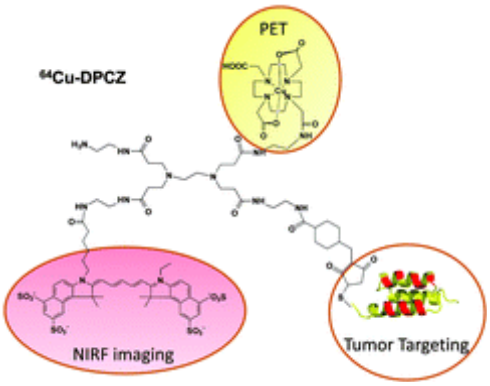
Citation: Wang, Y.; *et al. Chem. Commun.* **2014**, *50,* 12832.

A novel Affibody bioconjugate for dual-modality imaging of ovarian cancer



An Affibody based dual imaging probe (PET and optical imaging) has been successfully developed. Dendrimer PAMAM G0 was used as a platform to assemble an NIRF dye, a metal chelator, and Affibody for dual modality imaging of ovarian cancer. Excellent tumor imaging quality was achieved in both modalities in the living tumor mice models.

bioorganic
methods
synthesis
mechanism
review
other

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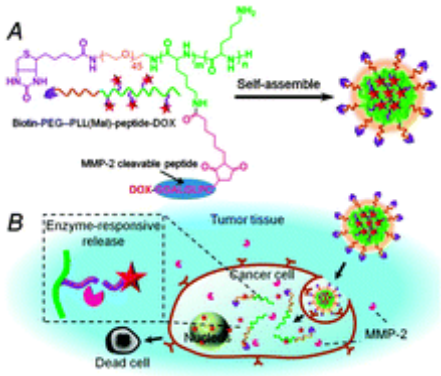
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: Chen, W.-H.; *et al. Chem. Commun.* **2015**, *51,* 465.

MMP-2 responsive polymeric micelles for cancer-targeted intracellular drug delivery



Multifunctional Biotin-PEG-b-PLL(Mal)-peptide-DOX polymeric micelles were prepared to selectively eliminate cancer cells. The micelles were able to enhance cancer cell uptake via the receptor-mediated endocytosis and respond to the stimulus of cancer cell excessive secreted protease MMP-2 to release the anticancer drug and induce apoptosis of cancer cells in a targeted manner.

bioorganic
methods
synthesis
mechanism
review
other

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Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: Arnaud, C. *C&EN.* **2015**, 93(1), 25-26.

Quantum Cascade Lasers Push Infrared Imaging Closer To The Clinic

High-intensity source could get IR imaging in clinicians' hands by speeding up data acquisition and enabling use of cheaper, uncooled detectors

bioorganic
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synthesis
mechanism
review
other

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Hybrid
Drug Deliv.
Prostratin

Citation: Jacoby, M. *C&EN.* **2015**, 93(1), 23-24.

For Energy Storage, MXene Materials Show Increasing Promise

Recently discovered family of 2-D materials could one day yield high-performance batteries, flexible electronics, and more

bioorganic
methods
synthesis
mechanism
review
other

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Bryo
DDO
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Drug Deliv.
Prostratin

Citation: Mullin, R. *C&EN.* **2015**, 93(2), 18-19.

Automation Inches Into Lab Management

The drug industry, known as an information technology laggard, slowly takes on asset management systems

bioorganic
methods
synthesis
mechanism
review
other

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DDO
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Drug Deliv.
Prostratin

Citation: McCoy, M. *C&EN.* **2015**, 93(3), 16-19.

Cleaning Product Makers Bask In New Solvents

Chemical makers unleash new products for cleaning industry customers unhappy with current offerings

bioorganic
methods
synthesis
mechanism
review
other

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Drug Deliv.
Prostratin

Citation: Rouhi, A. M. *C&EN.* **2015**, 93(3), 27-28.

ShanghaiTech Aims To Raise The Bar For Higher Education In China

Newly established university took cues from U.S. innovation hubs, recruited U.S. faculty to launch its research program

bioorganic
methods
synthesis
mechanism
review
other

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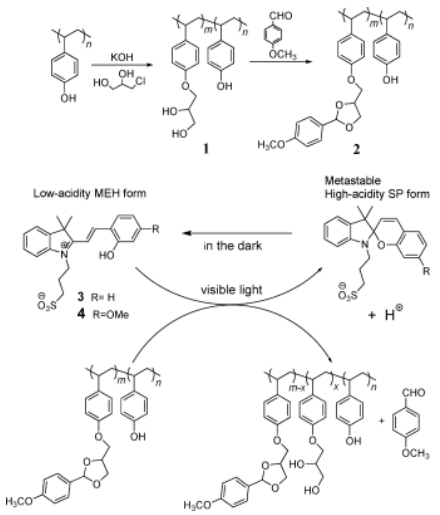
Hybrid
Drug Deliv.
Prostratin

Citation: Wang, *et al. Chem. Eur. J.* 2014, 20, 14637-14640.

Controlled Release of Fragrant Molecules with Visible Light

Photorelease is a cold mechanism that promises better temporal and spatial control than thermal release. Herein we report a novel material composed of an acid-sensitive polymer carrying a fragrant aldehyde and a reversible metastable-state photoacid. It releases the fragrant molecule under visible light, and stops releasing it after the light is turned off. A metastable-state photoacid with a fast reverse-reaction rate was developed to quickly stop the release after irradiation. Both the carrier polymer and the photoacid can be reused after all the fragrant molecules have been released. The material combines the advantages of visible-light activity, fast on/off rate, easy preparation, and recyclability, and thus is promising for digital scent technology.



bioorganic
methods
synthesis
mechanism
review
other

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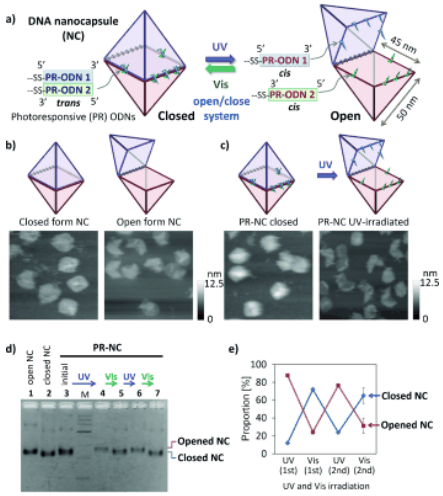
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: takenaka, *et al. Chem. Eur. J.* 2014, 20, 14951-14954.

Photoresponsive DNA Nanocapsule Having an Open/Close System for Capture and Release of Nanomaterials

a square bipyramidal DNA NC was designed and constructed, and a photocontrollable open/close system was introduced into the NC. The reversible open/closed state of PR-NC was switched by Vis and UV irradiation. The inclusion of AuNP into the PR-NC was also observed via hybridization of DNA strands between the NC and AuNP. In addition, the release of AuNP was successfully controlled using photoirradiation and strand displacement. These nanosized PR-NCs could be applied as an intelligent carrier for delivery of nanomaterials to cells, in a manner similar to a virus capsid.



bioorganic
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synthesis
mechanism
review
other

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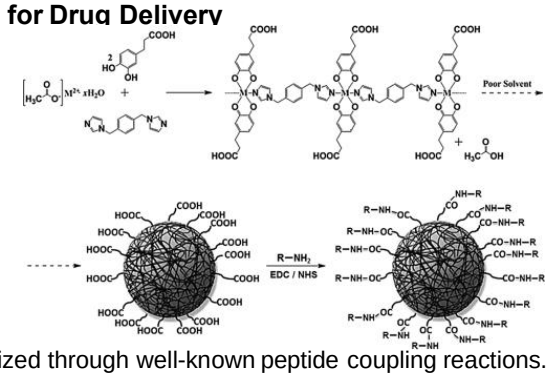
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Novio, *et al. Chem. Eur. J.* 2014, 20, 15443-15450.

Carboxyl Group (-CO2H) Functionalized Coordination Polymer Nanoparticles as Efficient Platforms for Drug Delivery

Top: Schematic of the formation of polymeric chains and confinement into a nanostructure by fast precipitation. Bottom: Schematic of the functionalization of nanoparticles containing carboxyl groups on the surface with different species containing amino groups mediated by carbodiimine coupling reaction.



surface carboxyl groups could be functionalized through well-known peptide coupling reactions. The set of chemistries enabled a plethora of new functional improvements for the application of CPPs as drug delivery carriers, including enhanced colloidal stabilities and the incorporation of additional functional groups such as polyethylene glycol (PEG) or fluorescent dyes that enabled tracking of their cellular uptake.

bioorganic
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synthesis
mechanism
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other

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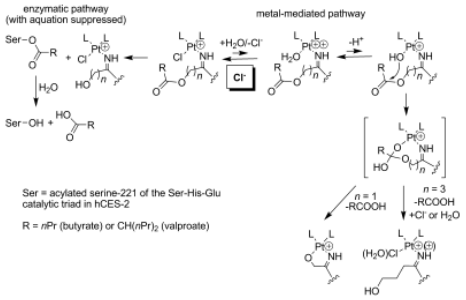
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Ding, *et al. Chem. Eur. J.* 2014, 20, 16164-16173.

Design of Enzymatically Cleavable Prodrugs of a Potent Platinum-Containing Anticancer Agent

Using a versatile synthetic approach, a new class of potential ester prodrugs of highly potent, but systemically too toxic, platinum¨Cacridine anticancer agents was generated. The new hybrids contain a hydroxyl group, which has been masked with a cleavable lipophilic acyl moiety. Both butanoic (butyric) and bulkier 2-propanepentanoic (valproic) esters were introduced. The goals of this design were to improve the drug-like properties (e.g., logD) and to reduce the systemic toxicity of the pharmacophore. Two distinct pathways by which the target compounds undergo effective ester hydrolysis, the proposed activating step, have been confirmed: platinum-assisted, self-immolative ester cleavage in a low-chloride environment (LC-ESMS, NMR spectroscopy) and enzymatic cleavage by human carboxylesterase-2 (hCES-2) (LC-ESMS).



bioorganic
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synthesis
mechanism
review
other

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Hybrid
Drug Deliv.
Prostratin

Citation: Pickard, *et al. Chem. Eur. J.* 2014, 20, 16174-16187.

Redesigning the DNA-Targeted Chromophore in Platinum¨CAcridine Anticancer Agents: A Structure¨CActivity Relationship Study

Platinum¨Cacridine hybrid agents show low-nanomolar potency in chemoresistant non-small cell lung cancer (NSCLC), but high systemic toxicity in vivo. To reduce the promiscuous genotoxicity of these agents and improve their pharmacological properties, a modular build¨Cclick¨Cscreen approach was used to evaluate a small library of twenty hybrid agents containing truncated and extended chromophores of varying basicities. Selected derivatives were resynthesized and tested in five NSCLC cell lines representing large cell, squamous cell, and adenocarcinomas.

bioorganic
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synthesis
mechanism
review
other

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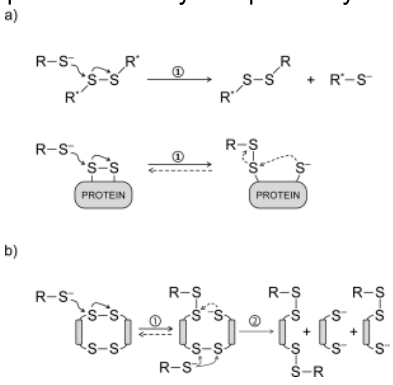
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Zhai, *et al. Chem. Eur. J.* 2014, 20, 17507-17514.

Extraordinary Modulation of Disulfide Redox-Responsiveness by Cooperativity of Twin-Disulfide Bonds

The authors have developed and explored a disulfide linker bearing two independent disulfide bonds, referred to as a twin-disulfide linker. We have demonstrated that the twin-disulfide linker displays an ultrahigh stability at lower concentrations of reducing agent or in weakly reducing environments without a significant compromise in the sensitivity of its response to highly reducing environments such as cytoplasm, a feature that is in remarkable contrast to the traditional single disulfide bonds.



a),Generic thiol-disulfide exchange reactions taking place during the reduction of disulfide bonds formed from two isolated thiolates and in proteins. b),Thiol-disulfide exchange reactions taking place in twin‚Äêdisulfide linkers bearing two independent disulfide bonds.

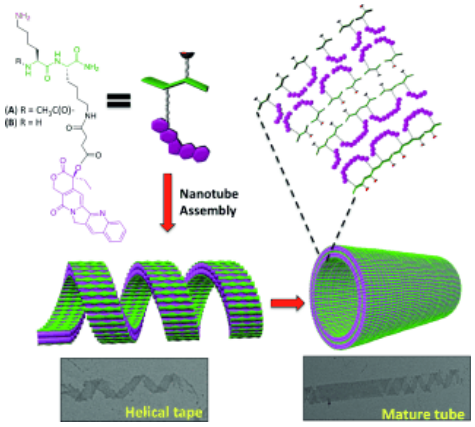
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Kim, *et al. Chem. Eur. J.* 2014, 21, 101-105.

The Self-Assembly of Anticancer Camptothecin–Dipeptide Nanotubes: A Minimalistic and High Drug Loading Approach to Increased Efficacy

20-(S)-Camptothecin (CPT)-conjugated dipeptides are reported that preassemble into nanotubes with diameters ranging from 80–120 nm. These nanoassemblies maintain a high (~47%) drug loading and exhibit greater drug stability (i.e., resistance to lactone hydrolysis), and consequently greater efficacy against several human cancer cells (HT-29, A549, H460, and H23) in vitro compared with the clinically used prodrug irinotecan. A key and defining feature of this system is the use of the CPT-conjugated dipeptide as both the drug and precursor to the nanostructured carrier, which simplifies the overall fabrication process



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Hickey, *et al. Chem. Eur. J.* 2014, 21, 568-575.

An Integrated Imaging Probe Design: The Synthesis of 99mTc/Re-Containing Macrocyclic Peptide Scaffolds

Starting from Fmoc-Lys(Fmoc)-OH, macrocyclic peptides were synthesized on a solid support, with peptide-chain elongation extending from both the alpha and epsilon amines of the lysine. The branching peptides were cyclized with a pyridyl tridentate chelation core followed by coordination using $[^{99m}Tc/Re(CO)_3(H_2O)_3]^+$. Variable temperature ^1H NMR spectroscopy studies were performed, demonstrating that intramolecular hydrogen bonding exists between the two sides of the uncoordinated macrocyclic peptide scaffolds. Additionally, computational modelling and circular dichroism spectroscopic analysis revealed that the peptide backbone exists in a similar conformation both before and after metal coordination. The ability to seamlessly incorporate a tridentate chelation core into the backbone of a macrocyclic peptide, without disrupting the secondary structure, can greatly assist in the design of metal-centric peptidomimetic imaging agents. This novel integrated imaging probe approach may facilitate the investigation into protein,Äiprotein interactions using macrocyclic Œ≤-sheet scaffolds.

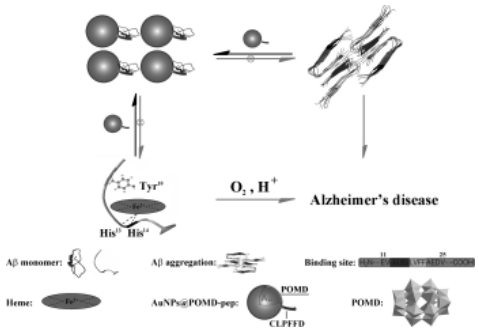
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Gao, *et al. Chem. Eur. J.* 2014, 21, 829-835.

Gold-Nanoparticle-Based Multifunctional Amyloid-beta Inhibitor against Alzheimer's Disease

Targeting amyloid-beta-induced complex neurotoxicity has received considerable attention in the therapeutic and preventive treatment of Alzheimer's disease (AD). The complex pathogenesis of AD suggests that it requires comprehensive treatment, and drugs with multiple functions against AD are more desirable. Herein, AuNPs@POMD-pep (AuNPs: gold nanoparticles, POMD: polyoxometalate with Wells,ÄiDawson structure, pep: peptide) were designed as a novel multifunctional AB inhibitor. AuNPs@POMD-pep shows synergistic effects in inhibiting AB≤ aggregation, dissociating fibrils and decreasing AB-mediated peroxidase activity and AB-induced cytotoxicity. By taking advantage of AuNPs as vehicles that can cross the blood,Äibrain barrier (BBB), AuNPs@POMD-pep can cross the BBB and thus overcome the drawbacks of small-molecule anti-AD drugs. Thus, this work provides new insights into the design and synthesis of inorganic nanoparticles as multifunctional therapeutic agents for treatment of AD.



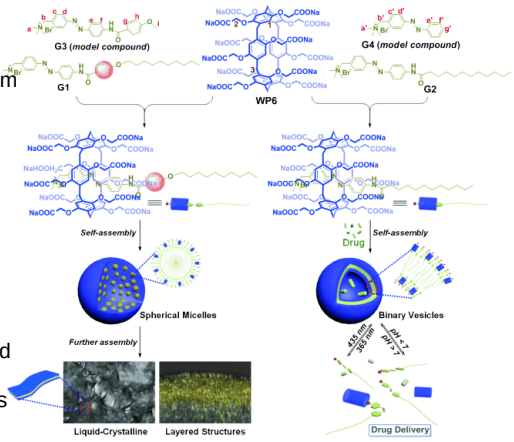
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Hu, *et al. Chem. Eur. J.* 2014, 21, 1208-1220

Dual Photo- and pH-Responsive Supramolecular Nanocarriers Based on Water-Soluble Pillar[6]arene and Different Azobenzene Derivatives for Intracellular Anticancer Drug Delivery

Two novel types of supramolecular nanocarriers fabricated by the amphiphilic host–guest inclusion complex formed from water-soluble pillar[6]arene (**WP6**) and azobenzene derivatives **G1** or **G2** have been developed, in which **G1** is structurally similar to **G2** but has an extra phenoxy group in its hydrophobic region. Supramolecular micelles can be initially formed by **WP6** with **G1**, which gradually transform into layered structures with liquid-crystalline properties, whereas stable supramolecular vesicles are obtained from **WP6** and **G2**, which exhibit dual photo- and pH-responsiveness. Notably, the resulting **WP6**…**G2** vesicles can efficiently encapsulate anticancer drug mitoxantrone (MTZ) to achieve MTZ-loaded vesicles, which maintain good stability in a simulated normal physiological environment, whereas in an acid environment similar to that of tumor cells or with external UV irradiation, the encapsulated drug is promptly released.



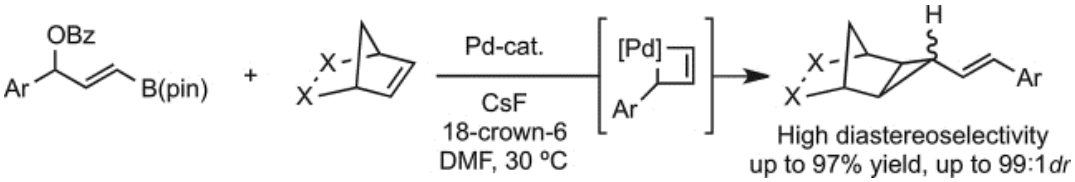
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Horino, Y. et. al. *Eur. J. Org. Chem.* **2014**, 7818–7822.

Palladium-Catalyzed Cyclopropanation of Strained Alkenes with 3-Pinacolatoboryl-1-arylallyl Carboxylates

The palladium-catalyzed cyclopropanation of strained alkenes with 3-pinacolatoboryl-1-arylallyl carboxylates is described. The reaction proceeds smoothly under mild conditions, and the cyclopropanation products are obtained in good to high yields with high diastereoselectivities if CsF, 18-crown-6, and molecular sieves are used as additives.



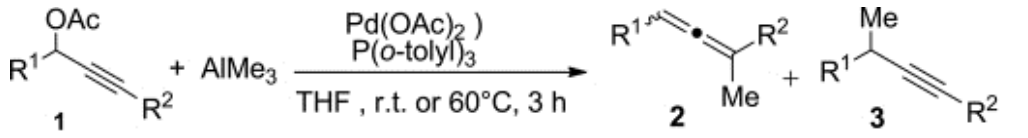
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Li, Q.-H. et. al. *Eur. J. Org. Chem.* **2014**, 7916–7923.

Highly Efficient Synthesis of Allenes from Trimethylaluminum Reagent and Propargyl Acetates Mediated by a Palladium Catalyst

Coupling reactions between trimethylaluminum and propargyl acetates catalyzed by palladium(II) acetate (1 mol-%) and tri(o-tolyl)phosphine (2 mol-%) were carried out in tetrahydrofuran at room temperature in 3 h to give the SN2' substituted allenes in good to excellent yields of up to 94%.



25 examples, selectivity:**2**/**3** > 99:1
compounds **2**: 43–94% yields

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: de Alaniz, J. R., et. al. *Eur. J. Org. Chem.* **2015**, 23-37.

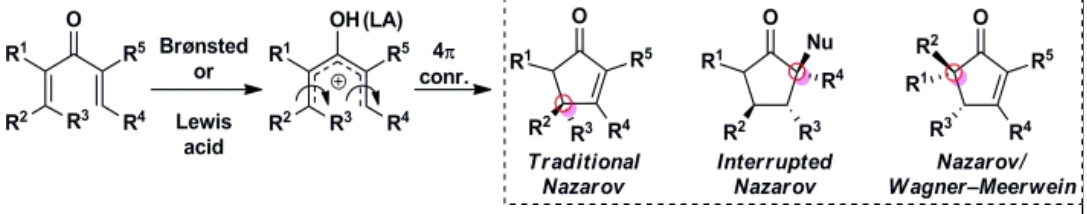
The Nazarov Cyclization: A Valuable Method to Synthesize Fully Substituted Carbon Stereocenters

Three general approaches to the formation of fully substituted quaternary carbon stereocenters by means of the Nazarov cyclization are described.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

The Nazarov cyclization: A versitale approach for forming fully substituted carbon stereocenters



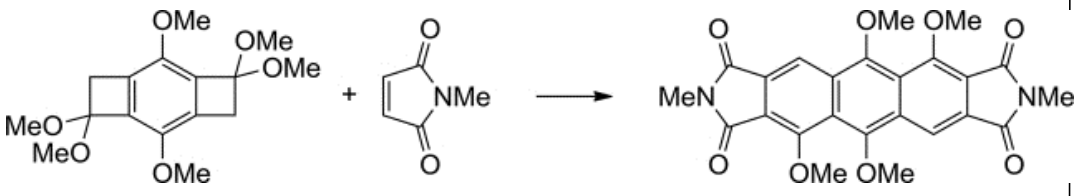
Citation: Butenschon, H., et. al. *Eur. J. Org. Chem.* **2015**, 226-234.

The First Bidirectional [4+2] Cycloadditions of Benzo[1,2:4,5]dicyclobutenes: Synthesis of Benzo[1,2-f:4,5-f]diisoindole-1,3,7,9-tetraones

A bidirectional sequence of electrocyclic ring opening, [4+2] cycloaddition, methanol elimination, and dehydrogenation allows the formation of benzo[1,2-f:4,5-f']diisoindole-1,3,7,9-tetraones from benzo[1,2:4,5]dicyclobutenes.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin



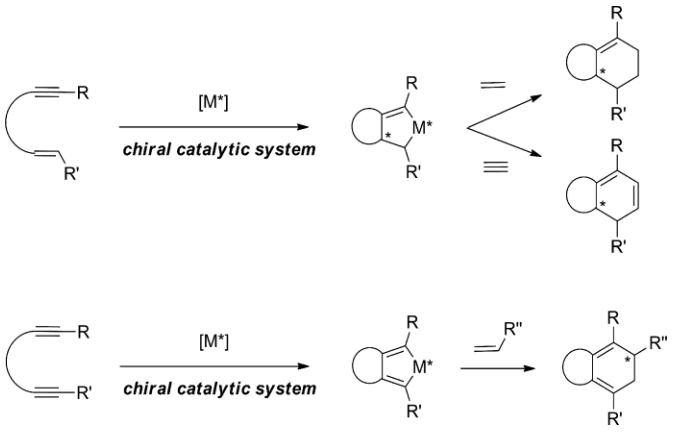
Citation: Amatore, M., et. al. *Eur. J. Org. Chem.* **2015**, 265–286.

Recent Advances in Stereoselective [2+2+2] Cycloadditions

[2+2+2] Cycloaddition reactions have achieved a leading position among the available tools for the construction of complex polycyclic molecules. The related asymmetric versions, now giving access to all chirality modes, are obviously more advantageous for the synthetic chemist. This review covers the recent advances in this field.

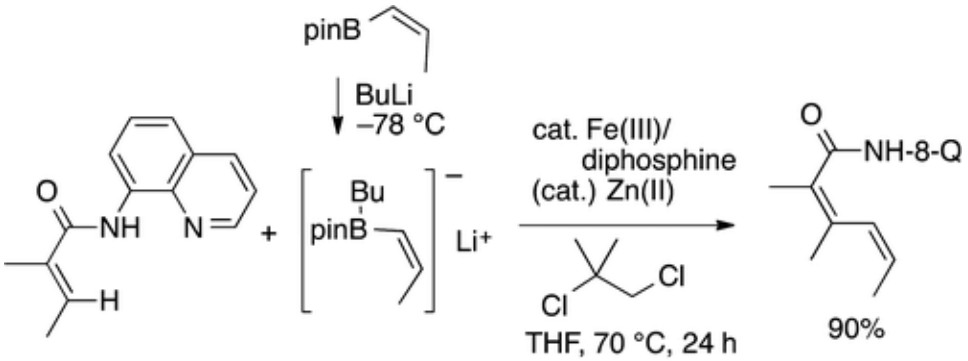
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin



Citation: Shang, R.; Ilies, L.; Asako, S.; Nakamura, E. *J. Am. Chem. Soc.*, **2014**, *136* (41), 14349-14352.

Iron-Catalyzed C(sp2)-H Bond Functionalization with Organoboron Compounds



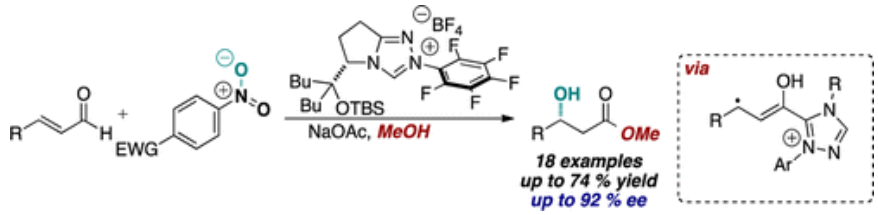
alkenyl-alkenyl, alkenyl-aryl, aryl-alkenyl, (hetero)aryl-aryl coupling

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: White, N. A.; Rovis, T. J. Am. Chem. Soc., 2014, 136 (42), pp 14674–14677

Enantioselective N-Heterocyclic Carbene-Catalyzed beta-Hydroxylation of Enals Using Nitroarenes: An Atom Transfer Reaction That Proceeds via Single Electron Transfer



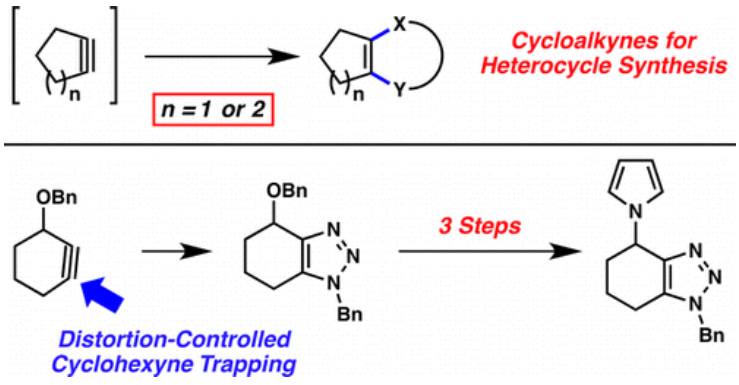
A novel oxidative N-heterocyclic carbene-catalyzed reaction pathway has been discovered. The proposed mechanism involves a single electron transfer event to initiate the reaction followed by radical recombination. This represents a profound mechanistic departure from the established two-electron disconnects in NHC catalysis.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Medina, J. M. et al. J. Am. Chem. Soc., 2014, 136 (42), pp 14706–14709

Cycloadditions of Cyclohexynes and Cyclopentyne



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Weires, N. A. J. Am. Chem. Soc., 2014, 136 (42), pp 14710–14713

Total Synthesis of (-)-N-Methylwelwitindolinone B Isothiocyanate via a Chlorinative Oxabicycle Ring-Opening Strategy

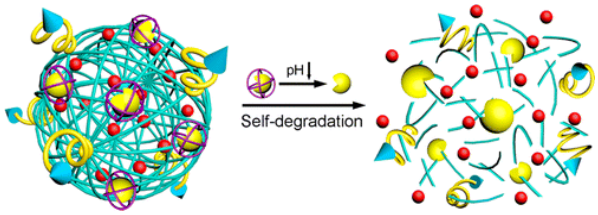
The first total synthesis of N-methylwelwitindolinone B isothiocyanate is reported. The route features several key steps, including a regio- and diastereoselective chlorinative oxabicycle ring-opening reaction to introduce the challenging alkyl chloride motif.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Sun, W. et al. J. Am. Chem. Soc., 2014, 136 (42), pp 14722–14725

Cocoon-Like Self-Degradable DNA Nanoclew for Anticancer Drug Delivery



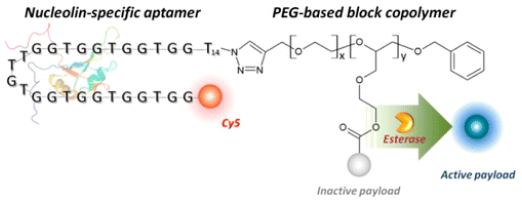
A bioinspired cocoon-like anticancer drug delivery system consisting of a deoxyribonuclease (DNase)-degradable DNA nanoclew (NCl) embedded with an acid-responsive DNase I nanocapsule (NCa) was developed for targeted cancer treatment. Multiple GC-pair sequences were integrated into the NCl for enhanced loading capacity of the anticancer drug doxorubicin (DOX). In an acidic environment, the activity of DNase I was activated through the acid-triggered shedding of the polymeric shell of the NCa, resulting in the cocoon-like self-degradation of the NCl and promoting the release of DOX for enhanced therapeutic efficacy.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Oh, S. S. et al. J. Am. Chem. Soc., 2014, 136 (42), pp 15010–15015

Synthetic Aptamer-Polymer Hybrid Constructs for Programmed Drug Delivery into Specific Target Cells



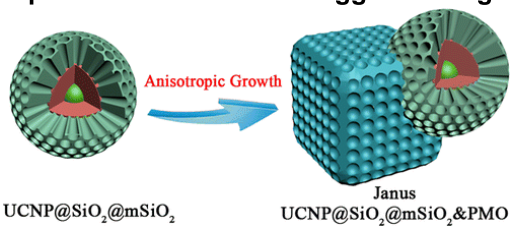
An efficient “click chemistry” technique was employed to synthesize aptamer-polymer hybrids (APHs), coupling cell-targeting aptamers to block copolymers that secure a therapeutic payload in an inactive state. Upon recognizing the targeted cell-surface marker, the APH enters the host cell via endocytosis, at which point the payload is triggered to be released into the cytoplasm. After visualizing this process with coumarin dye, targeted killing of tumor cells with doxorubicin was demonstrated. Importantly, this process can be generalized to yield APHs that specifically target different surface markers.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Li, X. et al. J. Am. Chem. Soc., 2014, 136 (42), pp 15086–15092

Anisotropic Growth-Induced Synthesis of Dual-Compartment Janus Mesoporous Silica Nanoparticles for Bimodal Triggered Drugs Delivery



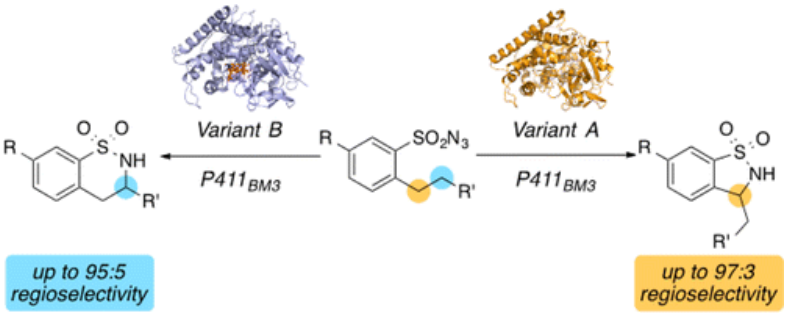
Multifunctional dual-compartment Janus mesoporous silica nanocomposites of UCNP@SiO2@mSiO2&PMO (UCNP = upconversion nanoparticle, PMO = periodic mesoporous organosilica) containing core@shell@shell structured UCNP@SiO2@mSiO2 nanospheres and PMO single-crystal nanocubes have been successfully synthesized via a novel anisotropic island nucleation and growth approach with the ordered mesostructure.The dual-compartment Janus mesoporous silica nanocomposites can be further applied into nanobiomedicine for heat and NIR light bimodal-triggered dual-drugs controllable release. It realizes significantly higher efficiency for cancer killing (more than 50%) compared to that of the single triggered drugs delivery system (~25%).

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Hyster, T. K. et al. J. Am. Chem. Soc., 2014, 136 (44), pp 15505–15508

Enzyme-Controlled Nitrogen-Atom Transfer Enables Regiodivergent C–H Amination



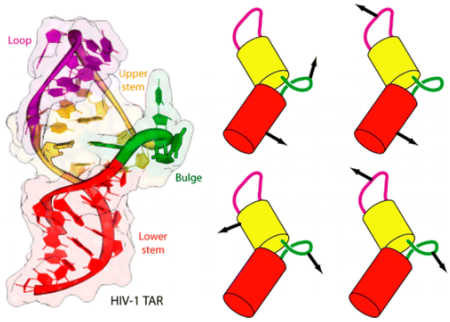
Variants of cytochrome P450BM3 (CYP102A1) catalyze the insertion of nitrogen species into benzylic C–H bonds to form new C–N bonds. An outstanding challenge in the field of C–H amination is catalyst-controlled regioselectivity.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Musiani, F. et al. J. Am. Chem. Soc., 2014, 136 (44), pp 15631–15637

Molecular Dynamics Simulations Identify Time Scale of Conformational Changes Responsible for Conformational Selection in Molecular Recognition of HIV-1 Transactivation Responsive RNA



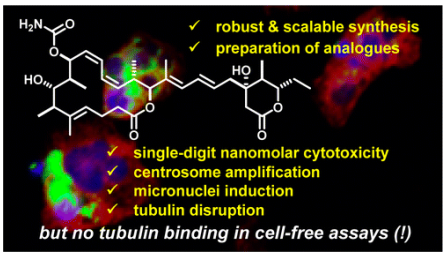
Molecular dynamics simulations can be effectively used toward the characterization of HIV-1 transactivation responsive RNA (TAR) conformational ensemble and dynamics by bridging the gap between functionally relevant time scales that are inaccessible to current experimental techniques. The conformational fluctuations observed over the previously elusive time scale have a strong functionally oriented character in that they are primed to sustain and assist ligand binding.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Malihol, D. et al. J. Am. Chem. Soc., 2014, 136 (44), pp 15719–15729

Synthesis, Molecular Editing, and Biological Assessment of the Potent Cytotoxin Leiodermatolide



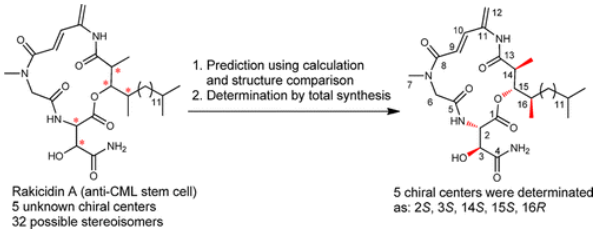
Studies with human U2OS cells revealed that the stereostructure of Leiodermatolide causes mitotic arrest, micronucleus induction, centrosome amplification and tubulin disruption, even though no evidence for direct tubulin binding has been found in cell-free assays; moreover, the compound does not seem to act through kinase inhibition. Indirect evidence points at centrosome declustering as a possible mechanism of action, which provides a potentially rewarding outlook in that centrosome declustering agents hold promise of being inherently selective for malignant over healthy human tissue.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Seng, F. et al. J. Am. Chem. Soc., 2014, 136 (44), pp 15787–15791

Total Synthesis and Determination of the Absolute Configuration of Rakicidin A



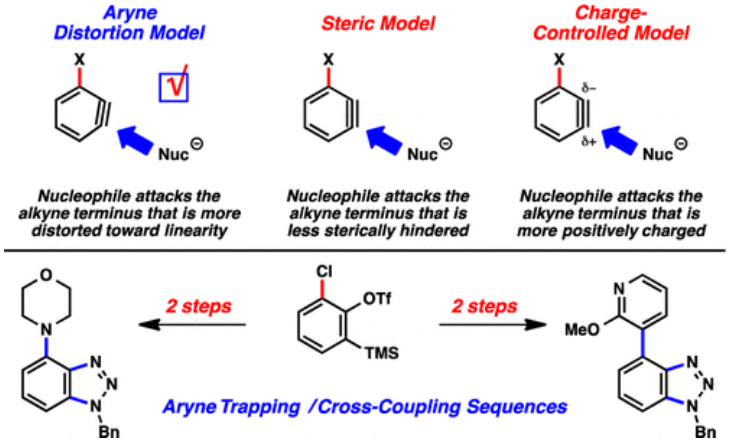
Rakicidin A is a cyclic depsipeptide that has exhibited unique growth inhibitory activity against chronic myelogenous leukemia stem cells. To predict the most probable stereochemistry of rakicidin A, calculations and structural comparison with natural cyclic depsipeptides were applied. A total synthesis of the proposed structure was subsequently completed and highlighted by the creation of a sterically hindered ester bond (C1–C15) through trans-acylation from an easily established isomer (C1–C13). The analytic data of the synthetic target were consistent with that of natural rakicidin A, and then the absolute configuration of rakicidin

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Medina, J. M. et al. J. Am. Chem. Soc., 2014, 136 (44), pp 15798–15805

The Role of Aryne Distortions, Steric Effects, and Charges in Regioselectivities of Aryne Reactions

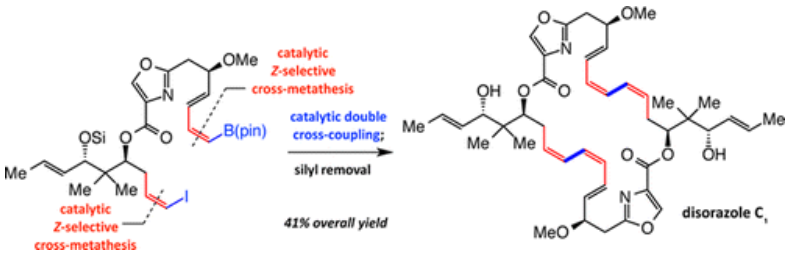


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Speed, A. W. H. et al. J. Am. Chem. Soc., 2014, 136 (46), pp 16136–16139

Catalytic Z-Selective Cross-Metathesis in Complex Molecule Synthesis: A Convergent Stereoselective Route to Disorazole C1



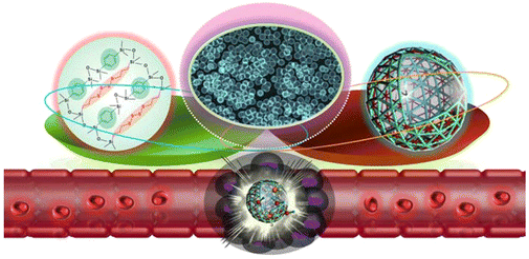
The central feature of the successful route is the application of catalytic Z-selective cross-metathesis (CM). Catalyst-controlled stereoselective CM can be performed to afford structurally complex Z-alkenyl–B(pin) as well as Z-alkenyl iodide compounds efficiently, and with high selectivity (pin = pinacolato). The resulting intermediates are then joined in a single-step operation through catalytic inter- and intramolecular cross-coupling to furnish the desired 30-membered ring macrocycle containing the critical (Z,Z,E)-triene moieties.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Chen, Y. et al. J. Am. Chem. Soc., 2014, 136 (46), pp 16326–16334

Hollow Mesoporous Organosilica Nanoparticles: A Generic Intelligent Framework-Hybridization Approach for Biomedicine



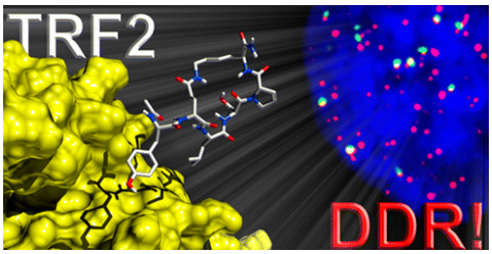
Chemical construction of molecularly organic–inorganic hybrid hollow mesoporous organosilica nanoparticles (HMONs) with silsesquioxane framework is expected to substantially improve their therapeutic performance and enhance the biological effects beneficial for biomedicine. In this work, a simple, controllable, and versatile chemical homology principle to synthesize multiple-hybridized HMONs with varied functional organic groups homogeneously incorporated into the framework (up to quintuple hybridizations) was reported.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Di Mario, S. et al. J. Am. Chem. Soc., 2014, 136 (48), pp 16708–16711

Shading the TRF2 Recruiting Function: A New Horizon in Drug Development



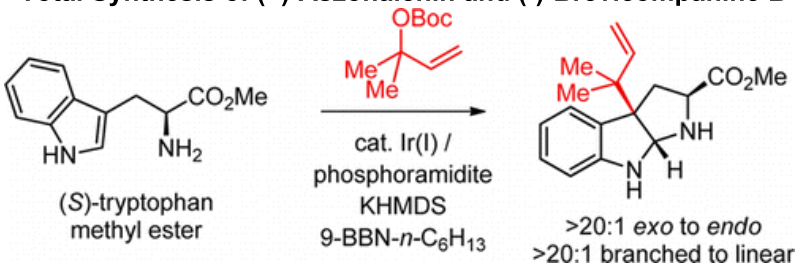
The shelterin protein TRF2 has come to the limelight for its role in telomere maintenance and tumorigenesis. Herein, the application of rational design and synthesis allowed identifying the first TRF2TRFH binder able to elicit a marked DNA damage response in cancer cells. This work paves the way for the unprecedented employment of a chemical tool to finely tune specific mechanisms underlying telomere maintenance.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Ruchti, J., Carreira, E. M. J. Am. Chem. Soc., 2014, 136 (48), pp 16756–16759

Ir-Catalyzed Reverse Prenylation of 3-Substitued Indoles: Total Synthesis of (+)-Aszonalenin and (-)-Brevicompanine B



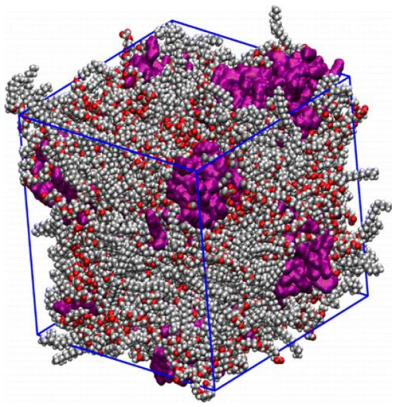
The selective reverse prenylation of 3-substituted-1H-indoles at C3 is described. The iridium-catalyzed reaction proceeds with high branched to linear selectivity (>20:1) for a variety of indoles. In addition, a diastereoselective reverse prenylation of tryptophan methyl ester is disclosed, and its synthetic utility is demonstrated in the synthesis of (+)-Aszonalenin and (-)-Brevicompanine B.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Brogan, A. P. S. et al. J. Am. Chem. Soc., 2014, 136 (48), pp 16824–16831

Molecular Dynamics Simulations Reveal a Dielectric-Responsive Coronal Structure in Protein–Polymer Surfactant Hybrid Nanoconstructs



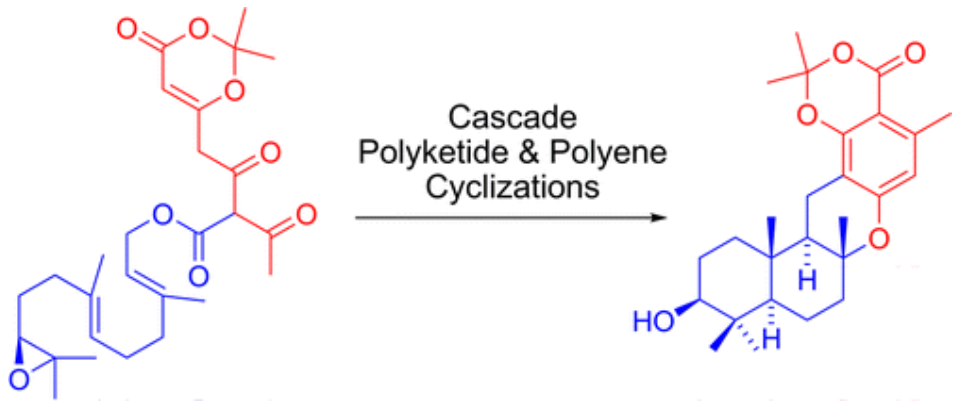
Molecular dynamics simulations of protein–polymer surfactant nanoconjugates consisting of globular cores of myoglobin or lysozyme and demonstrate that the derived structural parameters are highly consistent with experimental values were presented. The coronal layer structure is responsive to the dielectric constant of the medium and that the mobility of the polymer surfactant molecules is significantly hindered in the solvent-free state, providing a basis for the origins of retained protein dynamics in these novel biofluids. The results suggest that the extension of molecular dynamics simulations to hybrid nanoscale objects could be of generic value in diverse areas of soft matter chemistry, bioinspired engineering, and biomolecular nanotechnology.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Barrett, T.N.; Barrett, A.G.M. *J. Am. Chem. Soc.*, **2014**, *136* (49), 17013-17015.

Synthesis of Hongoquercin B



bioorganic
methods
synthesis
mechanism
review
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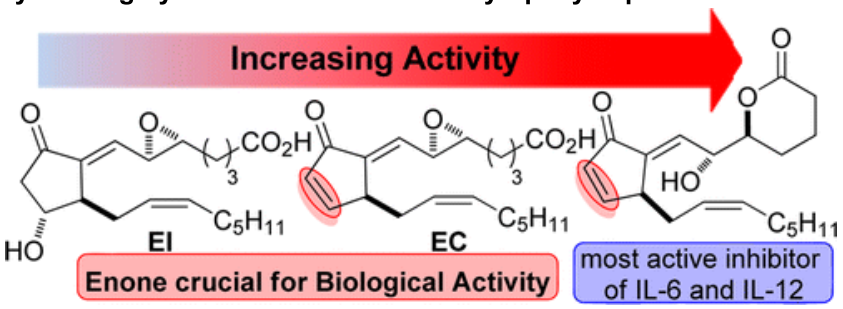
OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Egger, J. et al. J. Am. Chem. Soc., 2014, 136 (50), pp 17382–17385

Discovery of a Highly Potent Anti-inflammatory Epoxyisoprostane-Derived Lactone



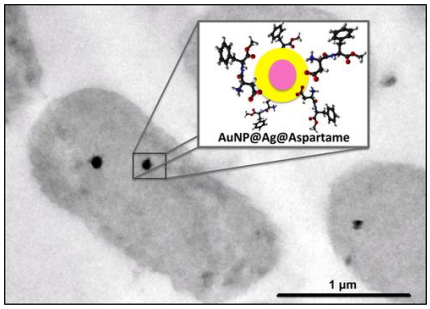
Epoxyisoprostanes EI (1) and EC (2) are effective inhibitors of the secretion of proinflammatory cytokines IL-6 and IL-12. In detailed studies toward the investigation of the molecular mode of action of these structures, a highly potent lactone (3) derived from 1 was identified. The known isoprostanoids 1 and 2 are most likely precursors of 3, the product of facile intramolecular reaction between the epoxide with the carboxylic acid in 2.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Fasciani, C. et al. J. Am. Chem. Soc., 2014, 136 (50), pp 17394–17397

Aspartame-Stabilized Gold–Silver Bimetallic Biocompatible Nanostructures with Plasmonic Photothermal Properties, Antibacterial Activity, and Long-Term Stability



Gold–silver core–shell nanoparticles stabilized with a common sweetener, aspartame (AuNP@Ag@Asm), combine the antimicrobial properties of silver with the photoinduced plasmon-mediated photothermal effects of gold. The particles were tested with several bacterial strains, while biocompatibility was verified with human dermal fibroblasts.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Trost, B. M. et al. J. Am. Chem. Soc., 2014, 136 (50), pp 17422–17425

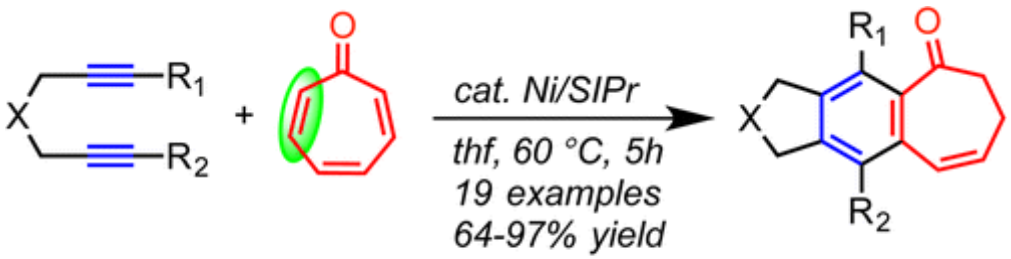
Construction of Enantioenriched [3.1.0] Bicycles via a Ruthenium-Catalyzed Asymmetric Redox Bicycloisomerization Reaction

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Kumar, P.; Thakur, A.; Hong, X.; Houk, K.N.; Louie, J. *J. Am. Chem. Soc.*, **2014**, *136* (51), 17844-17851.

Ni(NHC)]-Catalyzed Cycloaddition of Diynes and Tropone: Apparent Enone Cycloaddition Involving an 8pi Insertion



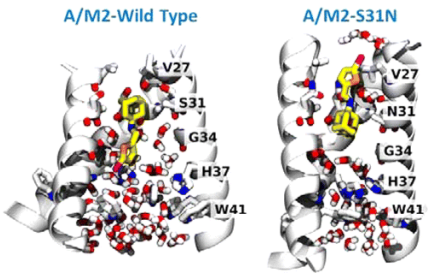
Unique Reactivity of Tropone

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Wu, Y. et al. J. Am. Chem. Soc., 2014, 136 (52), pp 17987–17995

Flipping in the Pore: Discovery of Dual Inhibitors That Bind in Different Orientations to the Wild-Type versus the Amantadine-Resistant S31N Mutant of the Influenza A Virus M2 Proton Channel



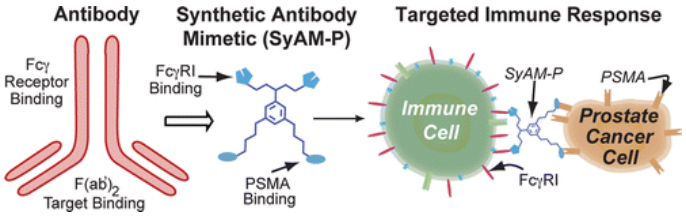
A novel class of dual inhibitors along with their ion channel blockage and antiviral activities was reported. The potency of the most active compound 11 in inhibiting WT and the S31N mutant influenza viruses is comparable with that of amantadine in inhibiting WT influenza virus. Solution NMR studies and molecular dynamics (MD) simulations of drug-M2 interactions supported our design hypothesis: namely, the dual inhibitor binds in the WT M2 channel with an aromatic group facing down toward the C-terminus, while the same drug binds in the S31N M2 channel with its aromatic group facing up toward the N-terminus. The flip-flop mode of drug binding correlates with the structure–activity relationship (SAR) and has paved the way for the next round of rational design of broad-spectrum antiviral drugs.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: McEnaney, P. J. et al. J. Am. Chem. Soc., 2014, 136 (52), pp 18034–18043

Chemically Synthesized Molecules with the Targeting and Effector Functions of Antibodies



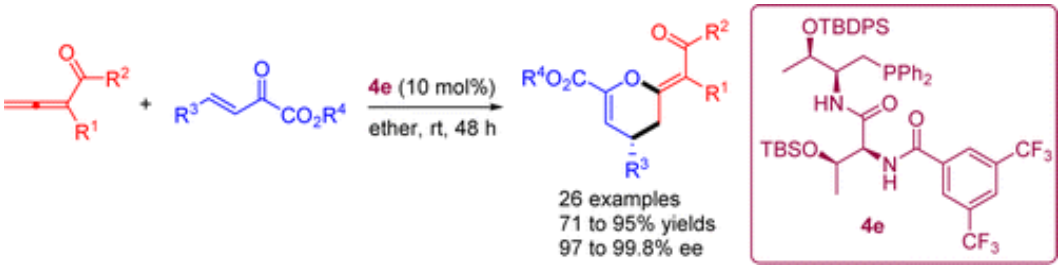
This article reports the design, synthesis, and evaluation of a novel class of molecules of intermediate size (approximately 7000 Da), which possess both the targeting and effector functions of antibodies. These compounds—called synthetic antibody mimics targeting prostate cancer (SyAM-Ps)—bind simultaneously to prostate-specific membrane antigen and Fc gamma receptor I, thus eliciting highly selective cancer cell phagocytosis. SyAMs have the potential to combine the advantages of both small-molecule and biologic therapies, and may address many drawbacks associated with available treatments for cancer and other diseases.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Yao, W.; Dou, X.; Lu, Y. *J. Am. Chem. Soc.*, **2015**, *137* (1), 54-57.

Highly Enantioselective Synthesis 3,4-Dihydropyrans through a Phosphine-Catalyzed [4+2] Annulation of Allenones and beta,gamma-unsaturated alpha-Keto Esters

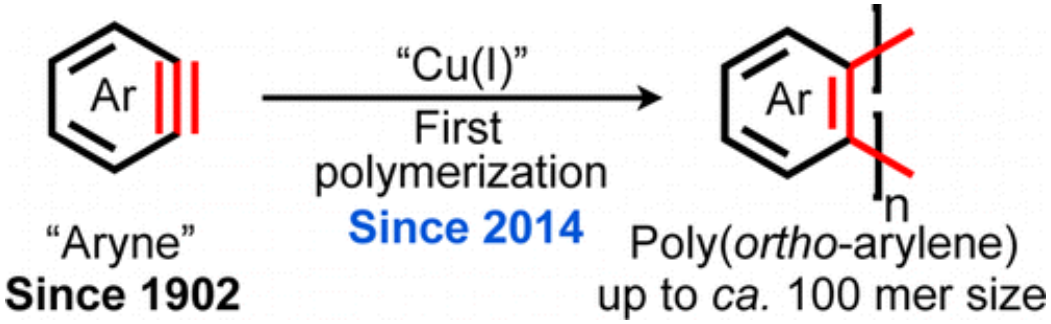


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Mizukoshi, Y.; Mikami, K.; Uchiyama, M. *J. Am. Chem. Soc.*, **2015**, *137* (1), 74-77.

Aryne Polymerization Enabling Straightforward Synthesis of Elusive Poly(ortho-arylene)s

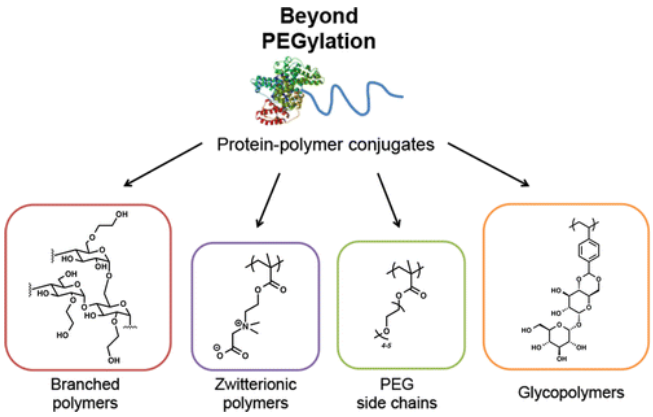


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Pelegri-O'Day, E.M.; Lin, E.-W.; Maynard, H.D. *J. Am. Chem. Soc.*, **2014**, *136* (41), 14323-14332.

Therapeutic Protein-Polymer Conjugates: Advancing Beyond PEGylation

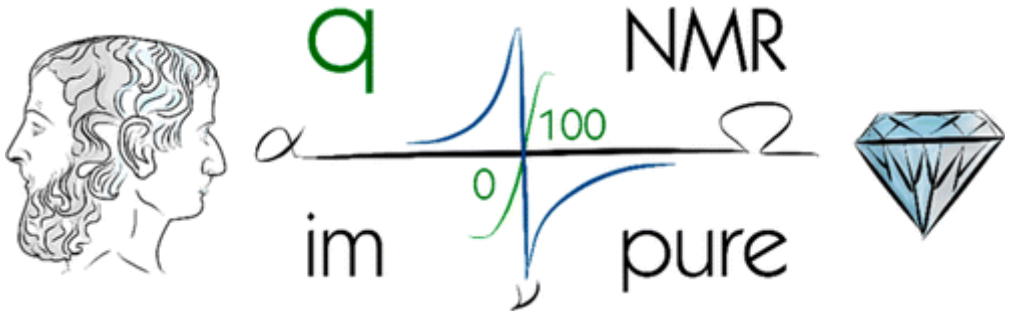


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Pauli, G. F.; *et al. J. Med. Chem.* **2014**, *57* (22), 9220.

Importance of Purity Evaluation and the Potential of Quantitative 1H NMR as a Purity Assay



This study reviews underlying concepts, provides a framework for standard qHNMR purity assays, and shows how adequate accuracy and precision are achieved for the intended use of the material.

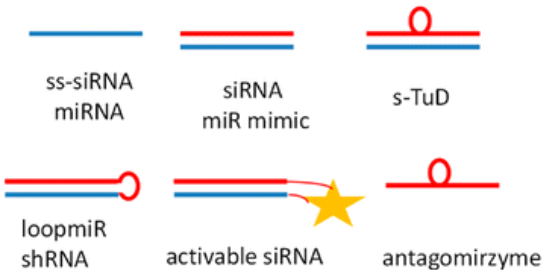
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: Avitabile, C. *et al. J. Med. Chem.* **2014**, *57* (24), 10220.

Oligonucleotide Analogues as Modulators of the Expression and Function of Noncoding RNAs (ncRNAs): Emerging Therapeutics Applications

Schematic representation of some structures of synthetic oligonucleotides modulators of the expression and function of ncRNAs

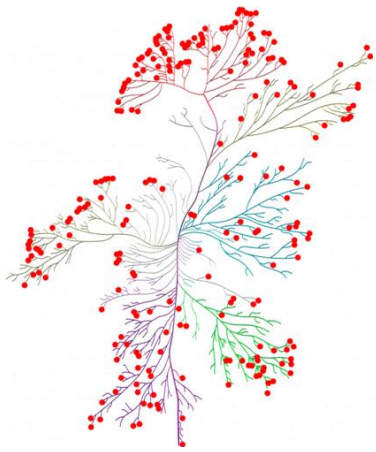


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: Hu, Y.; Furtmann, N.; Bajorath, J. *J. Med. Chem.* **2015**, *58* (1), 30.

Current Compound Coverage of the Kinome



Publicly available kinase inhibitors have been analyzed in detail. Nearly 19000 inhibitors have been identified with activity against 266 different kinases. Most available kinase inhibitors are likely to be type I inhibitors. By contrast, type II inhibitors are rare but usually have high potency. Kinase inhibitors generally display high scaffold diversity. Moreover, kinase inhibitors are less promiscuous than often thought. More than 70% of available inhibitors are only annotated with a single kinase activity, and only ~1% of the inhibitors are active against five or more kinases.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: George, D. M.; *et al. J. Med. Chem.* **2015**, *58* (1), 222.

Discovery of Selective and Orally Bioavailable Protein Kinase Cθ (PKCθ) Inhibitors from a Fragment Hit

Compound 1
PKCθ (TR-FRET) IC_{50} = 19 μM
PKCθ (enzyme) IC_{50} = 453 μM

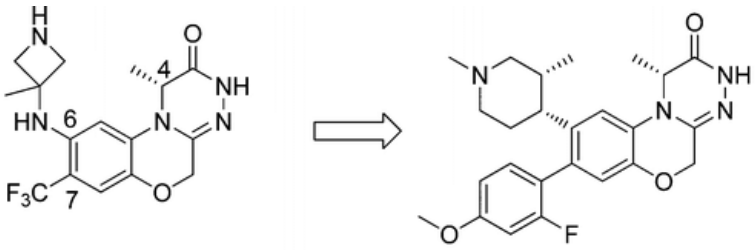
Compound 41
PKCθ (TR-FRET) IC_{50} = 0.006 μM
PKCθ (enzyme) IC_{50} = 0.023 μM

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: George, D. M.; *et al. J. Med. Chem.* **2015**, *58* (1), 333.

Optimized Protein Kinase Cθ (PKCθ) Inhibitors Reveal Only Modest Anti-inflammatory Efficacy in a Rodent Model of Arthritis



Compound 1
Cell IL-2 IC_{50} = 0.12 μM
Con A IL-2 ED_{80} = 29 mg/kg
Mouse GPI: 100% inhibition of paw swelling at 30 mg/kg

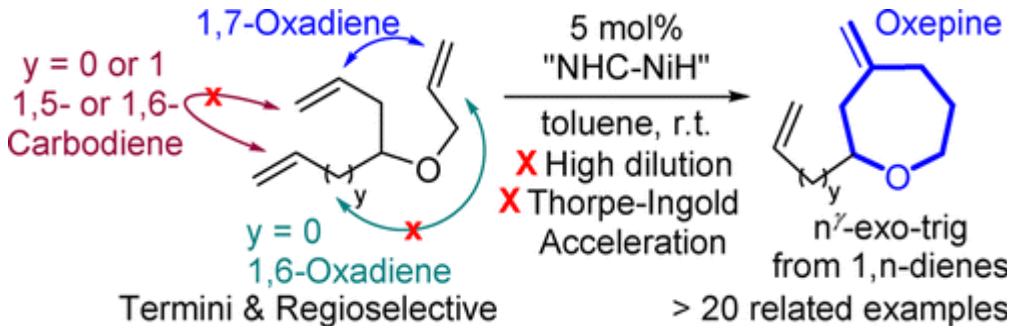
Compound 17l
Cell IL-2 IC_{50} = 0.014 μM
Con A IL-2 ED_{80} = 9 mg/kg
Mouse GPI: 43% inhibition of paw swelling at 10 mg/kg

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: Ho, C-.Y.; He, L. *JOC,* **2014**, *79,* 11873-11884.

Medium-Sized Heterocycle Synthesis by the Use of Synergistic Effects of Ni-NHC and gamma-Coordination in Cycloisomerization

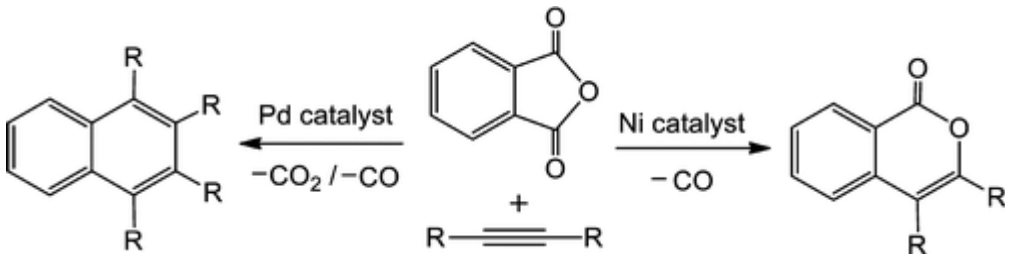


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Xie, H.; Sun, Q.; Ren, G.; Cao, Z. *JOC,* **2014**, *79*, 11911-11921.

Mechanisms and Reactivity Differences for Cycloaddition of Anhydride to Alkyne Catalyzed by Palladium and Nickel Catalysts: Insight from Density Functional Calculations

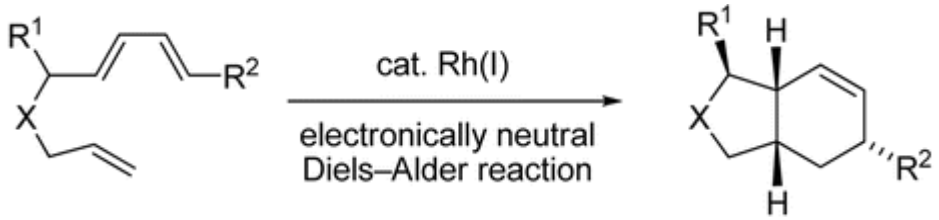


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Liao, W.; Yu, Z-.X. *JOC,* **2014**, *79*, 11949-11960.

DFT Study of the Mechanism and Stereochemistry of the Rh(I)-Catalyzed Diels–Alder Reactions between Electronically Neutral Dienes and Dienophiles



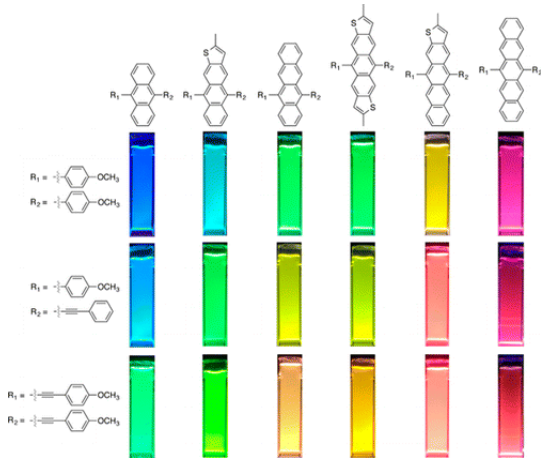
DFT Understanding of Reaction Mechanism and Stereochemistry

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Zhang, J.; Smith, Z.C.; Thomas III, S.W. *JOC,* **2014**, *79,* 10081-10093.

Electronic Effects of Ring Fusion and Alkyne Substitution on Acene Properties and Reactivity

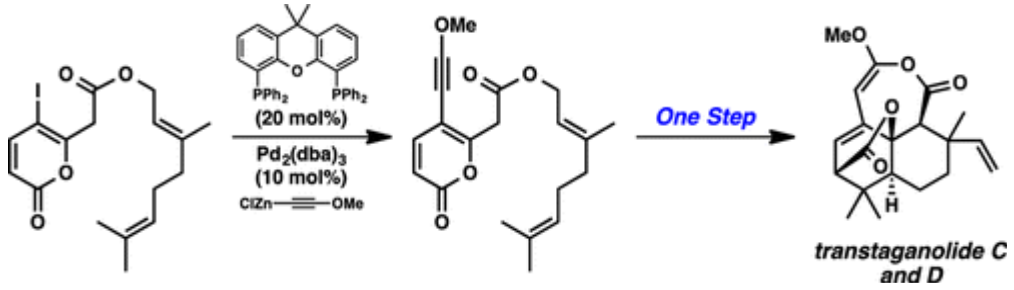


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Gordon, J.R.; Nelson, H.M.; Virgil, S.C.; Stoltz, B.M. *JOC,* **2014**, *79*, 9740-9747.

The Total Syntheses of Basiliolide C, epi-Basiliolide C, and Protecting-Group-Free Total Syntheses of Transtaganolides C and D



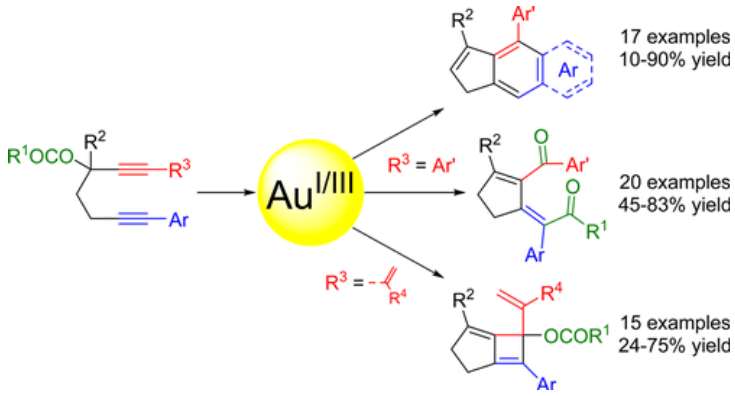
In this paper, they also developed a new (although inefficient) coupling of methoxy acetylene to a vinyl iodide.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Chan, P.W.H; *et al*. *JOC,* **2014**, *79*, 11301-11315.

Gold-Catalyzed Cycloisomerization of 1,6-Diyne Esters to 1H-Cyclopenta[b]naphthalenes, cis-Cyclopenten-2-yl d-Diketones, and Bicyclo[3.2.0]hepta-1,5-dienes



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Pham, H.V.; Houk, K.N. *JOC*, **2014**, *79*, 89698976.

Diels-Alder Reactions of Allene with Benzene and Butadiene: concerted, Stepwise, and Ambimodal Transition States

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Yin, J.; Mao, M.; Zhu, G. *JOC*, **2014**, *79*, 9179-9185.

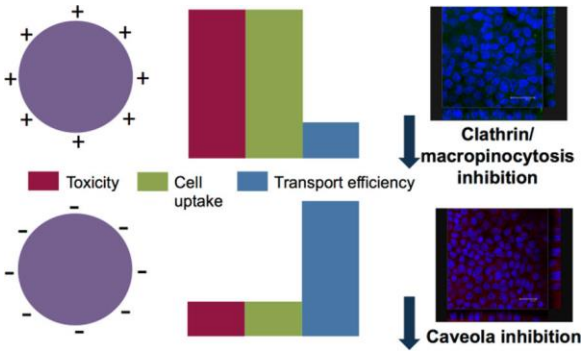
Silver-Catalyzed Regio- and Stereoselective Addition of Carboxylic Acids to Ynol Ethers

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Mol. Pharmaceutics 2014, 11, 4363–4373.

Nanoparticle Internalization and Transport Across an Intestinal Epithelial Cell Model: Effect of Size and Surface Charge

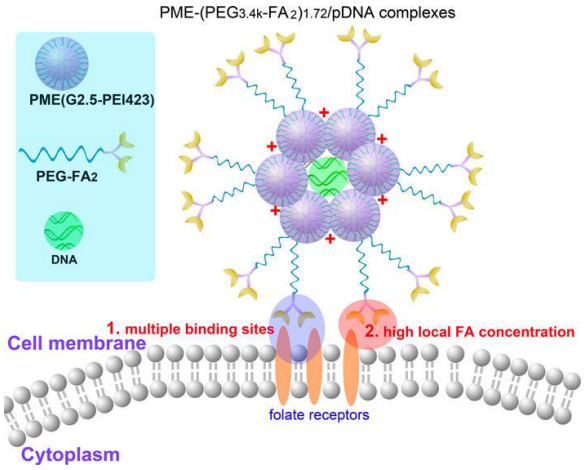


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Mol. Pharmaceutics 2014, 12, 240–252.

Divalent Folate Modification on PEG: An Effective Strategy for Improving the Cellular Uptake and Targetability of PEGylated Polyamidoamine–Polyethylenimine Copolymer

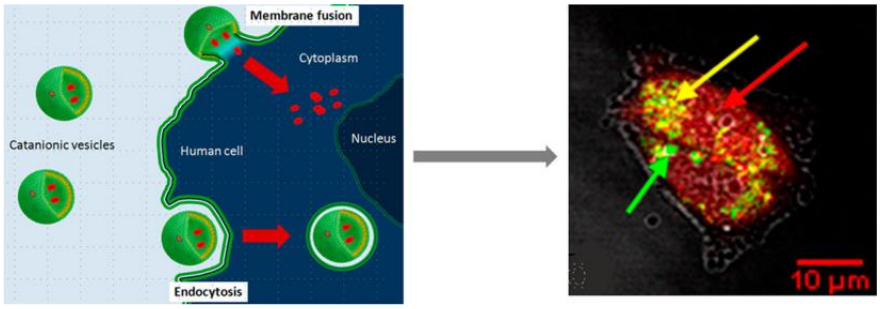


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Mol. Pharmaceutics 2014, 12, 103–110.

Versatile Cellular Uptake Mediated by Catanionic Vesicles: Simultaneous Spontaneous Membrane Fusion and Endocytosis

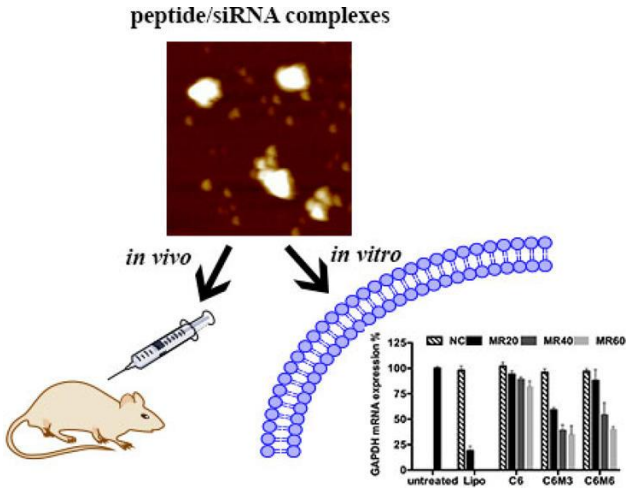


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Mol. Pharmaceutics 2014, 12, 56–65.

Design and Evaluation of Endosomolytic Biocompatible Peptides as Carriers for siRNA Delivery



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Martinez, J.P. et. al, *Nat. Prod. Rep.* 32 (2015) 29-48

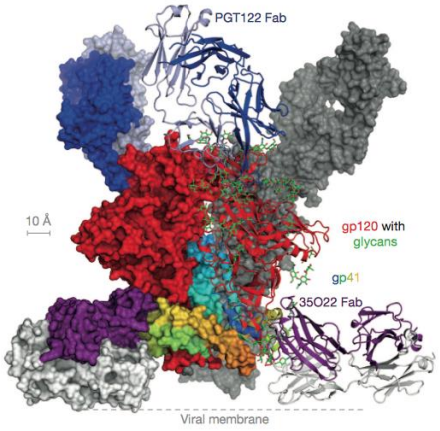
Antiviral drug discovery: broad-spectrum drugs from nature

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Pancera, M. et al. *Nature*. **2014**, *514*, 455.

Structure and immune recognition of trimeric pre-fusion HIV-1 Env

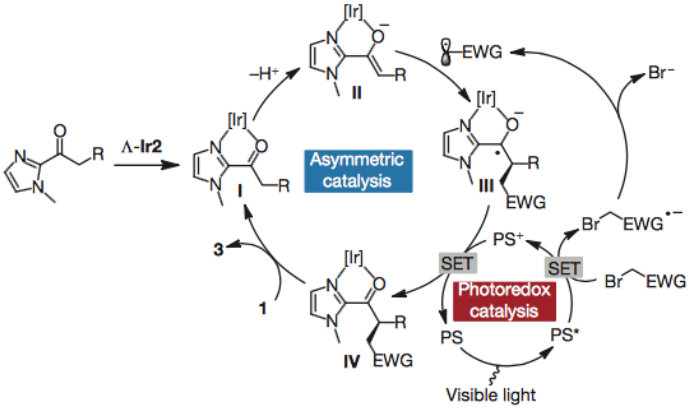


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Meggers, E. et al. *Nature*. **2014**, *515*,100 .

Asymmetric photoredox transition-metal catalysis activated by visible light

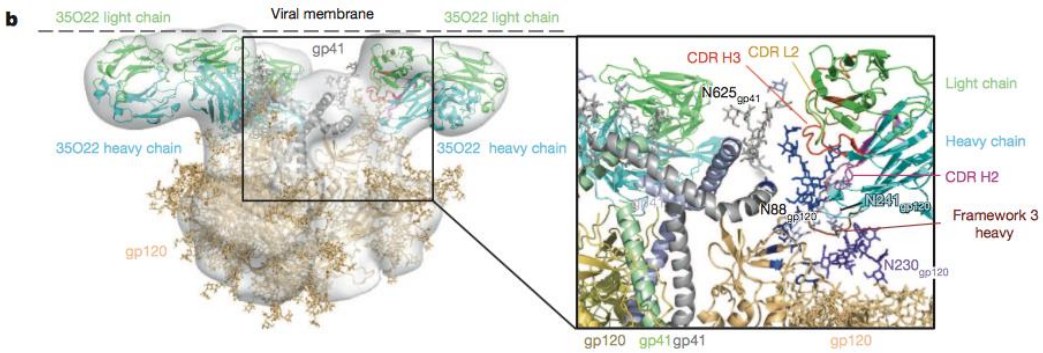


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Huang, J. et al. *Nature*. **2014**, *515*, 138.

Broad and potent HIV-1 neutralization by a human antibody that binds the gp41-gp120 interface

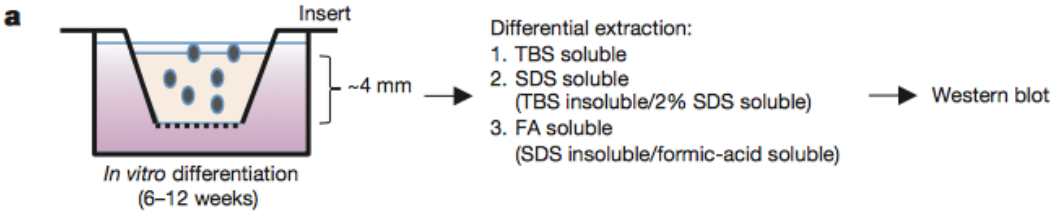


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Choi, S. H. et al. *Nature*. **2014**, *515*, 274.

A three-dimensional human neural cell culture model of Alzheimer's disease

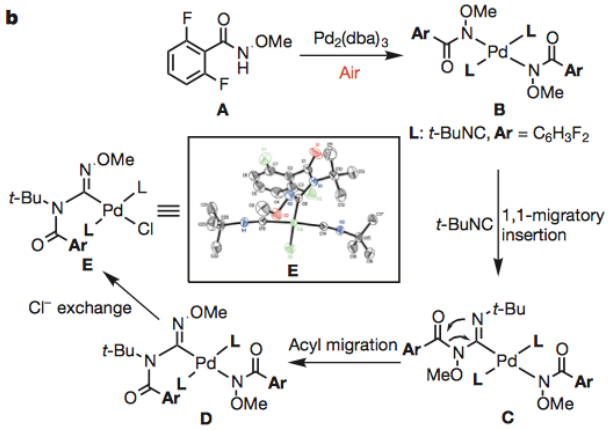


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Yu, J. -Q. et al. *Nature*. **2014**, *515*, 389.

Overcoming the limitations of directed C-H functionalizations of heterocycles



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Quasdorf, K. W.; Overman, L. E. *Nature*. **2014**, *516*, 181.

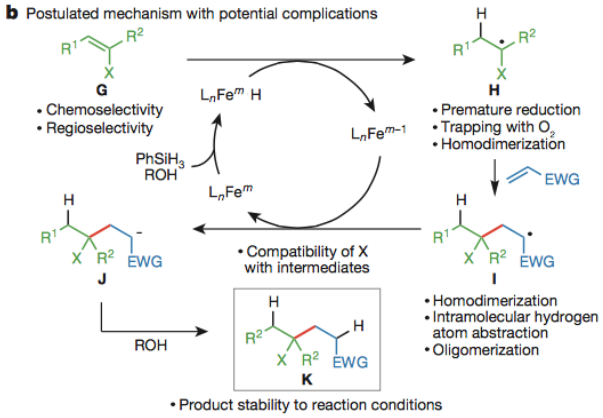
Nice review of current methods

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Lo, J. C.; Gui, J.; Yabe, Y.; Pan, C. -M.; Baran, P. S. *Nature*. **2014**, *516*, 343.

Functionalized olefin cross-coupling to construct carbon-carbon bonds

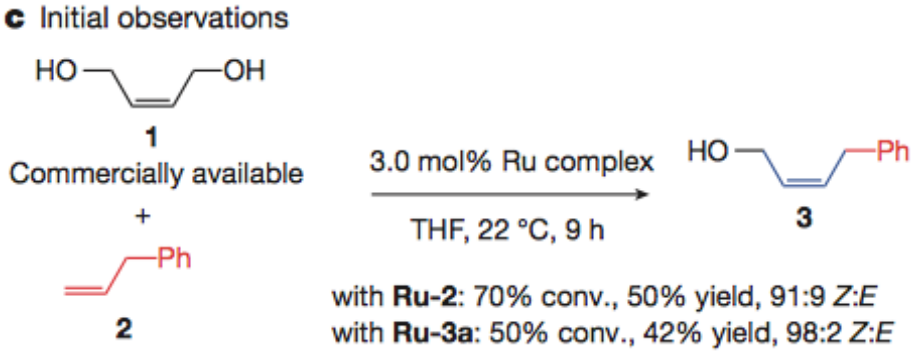


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Hoveyda, A. H. et al. *Nature*. **2014**, *517*, 181.

High-value alcohols and higher-oxidation-state compounds by catalytic Z-selective cross-metathesis



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Siliciano, R. F. et al. *Nature*. **2014**, *517*, 381.

Broad CTL response is required to clear latent HIV-1 due to dominance of escape mutations

To purge the reservoir, pharmacological reactivation of latent HIV-1 has been proposed and tested both in vitro and in vivo. A key remaining question is whether virus- specific immune mechanisms, including cytotoxic T lymphocytes (CTLs), can clear infected cells in ART-treated patients after latency is reversed. Here we show that there is a striking all or none pattern for CTL escape mutations in HIV-1 Gag epitopes. Unless ART is started early, the vast majority (.98%) of latent viruses carry CTL escape mutations that render infected cells insensitive to CTLs directed at common epitopes. To solve this problem, we identified CTLs that could recognize epitopes from latent HIV-1 that were unmutated in every chronically infected patient tested. Upon stimulation, these CTLs eliminated target cells infected with autologous virus derived from the latent reservoir, both in vitro and in patient-derived human- ized mice. Our results demonstrate that chronically infected patients retain a broad-spectrum viral-specific CTL response and that appropriate boosting of this response may be required for the elimination of the latent reservoir.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Li, J., et al. *Nature Chem. Bio.* **2014**, 10, 1003-1005

Diels-Alder reaction-triggered bioorthogonal protein decaging in living cells

The authors propopse here a generally applicable method for activating intracellular proteins of interest. In order to do this, they report the development of a bioorthogonal inverse electron-demand Diels-Alder to liberate chemically caged proteins. This technique was tested on protein systems and showed some obvious advantages to other methods: the method appears to be very general, the timescale for decaging is short, and the reaction requires a simple, biocompatible small molecule such as a tetrazine derivative.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: http://www.nytimes.com/2014/11/16/magazine/why-are-there-so-few-new-drugs-invented-today.html?_r=0

Why Are So Few Blockbuster Drugs Invented Today?

An interesting piece on the changes of the drug discovery process over the past decades.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: http://www.nytimes.com/2015/01/15/opinion/why-drugs-cost-so-much.html

Why Drugs Cost So Much

Why? Drug manufacturers blame high prices on the complexity of biology, government regulations and shareholder expectations for high profit margins. In other words, they say, they are hamstrung. But there's a simpler explanation.

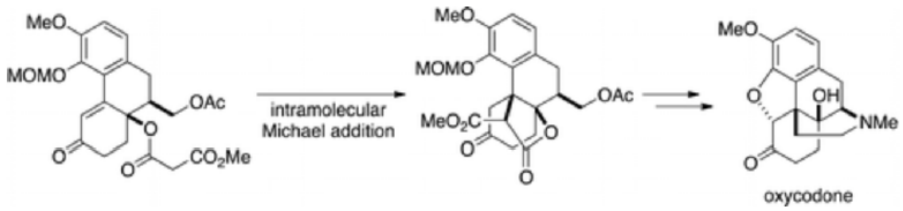
Companies are taking advantage of a mix of laws that force insurers to include essentially all expensive drugs in their policies, and a philosophy that demands that every new health care product be available to everyone, no matter how little it helps or how much it costs.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Kimishima, A.; *et al. Org. Lett.* **2014**, 16 (23), 6244-6247

Synthesis of (-)-Oxycodone



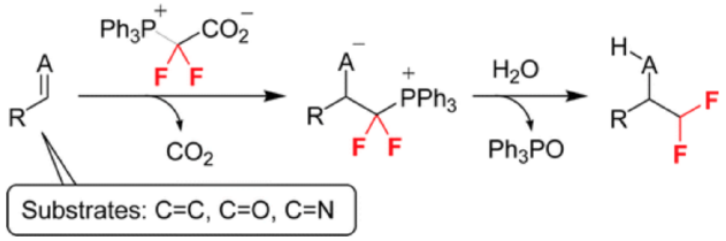
Our novel synthetic route to (-)-oxycodone, a semisynthetic opioid analgesic, features a palladium-catalyzed direct intramolecular arylation of an aryl bromide, oxidative dearomatization of a dihydrophenanthrenol, formation of a benzylic quaternary carbon by an intramolecular Michael addition of a malonate moiety, and construction of the morphinan skeleton via a Hofmann rearrangement/lactamization cascade.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Levin, V. *et al. Org. Lett.* **2014**, 16(23), 6256-6259.

Difluoromethylene Phosphabetaine as an Equivalent of Difluoromethyl Carbanion



A method for nucleophilic difluoromethylation of reactive Michael acceptors, aldehydes, and azomethines is described. The reaction is performed using the readily available and air-stable reagent difluoromethylene phosphabetaine. The process involves interaction of an electrophilic substrate with in situ generated difluorinated phosphonium ylide followed by hydrolysis of the carbon–phosphorus bond under mild conditions.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo

Hybrid
Drug Deliv.
Prostratin

Citation: Shockley, S. E..; *et al. Org. Lett.* **2014**, 16 (24), 6362-6365

A Catalytic, Enantioselective Formal Synthesis of (+)-Dichroanone and (+)-Taiwaniaquinone H

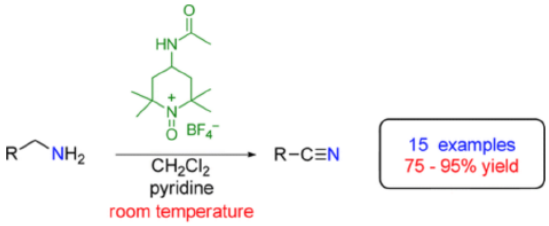
A catalytic, enantioselective formal synthesis of (+)-dichroanone and (+)-taiwaniaquinone H is reported. The all-carbon quaternary stereocenter was constructed by asymmetric conjugate addition catalyzed by a palladium(II) (S)-*tert*-butylpyridinooxazoline complex. The unexpected formation of a [3.2.1] bicyclic intermediate required the identification of a new route. Analysis of the Hammett constants for *para*-substituted arenes enabled the rational design of a highly enantioselective conjugate addition substrate that led to the completion of the formal synthesis.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Webb, N.; *et al. Org. Lett.* **2014**, 16 (24), 6484-6487

Facile Oxidation of Primary Amines to Nitriles Using an Oxoammonium Salt



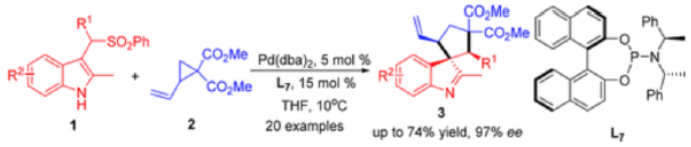
The oxidation of primary amines using a stoichiometric quantity of 4-acetamido-2,2,6,6-tetramethylpiperidine-1-oxoammonium tetrafluoroborate (**1**) in CH_2Cl_2–pyridine solvent at room temperature or at gentle reflux affords nitriles in good yield under mild conditions. The mechanism of the oxidation, which has been investigated computationally, involves a hydride transfer from the amine to the oxygen atom of **1** as the rate-limiting step.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Liu, Z-S.; *et al. Org. Lett.* **2015**, 17 (1), 150-153

Palladium-Catalyzed Asymmetric Cycloadditions of Vinylcyclopropanes and in Situ Formed Unsaturated Imines: Construction of Structurally and Optically Enriched Spiroindolenines



A palladium-catalyzed (3 + 2) cycloaddition of vinyl cyclopropane and Œ±,Œ≤-unsaturated imines generated in situ from aryl sulfonyl indoles is reported. The reaction proceeds with high diastereoselectivity to provide the optically enriched spirocyclopentane-1,3,Ä≤-indolenines in up to 74% yield and with up to 97% ee, which contains an all-carbon quaternary center and two tertiary stereocenters. The reaction involves a first conjugate addition of the carbon anion of zwitterionic œÄ-allylpalladium complex from vinyl cyclopropane to the in situ formed unsaturated imine followed by a palladium-catalyzed intramolecular C_3-allylation of indole.

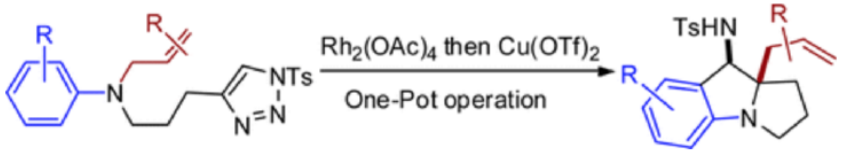
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo

Hybrid
Drug Deliv.
Prostratin

Citation: Xu, H-D.; *et al. Org. Lett.* **2015**, 17 (1), 66-69

One-Pot Protocol to Functionalized Benzopyrrolizidine Catalyzed Successively by $Rh_2(OAc)_4$ and $Cu(OTf)_2$: A Transition Metal-Lewis Acid Catalysis Relay



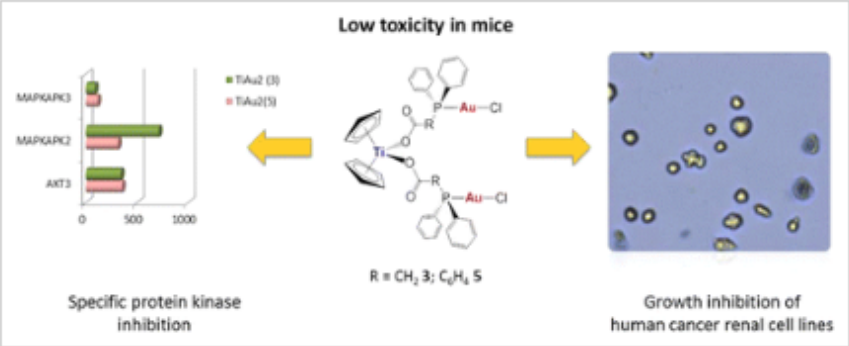
4-*N*-Allylarylpropylamino-1-sulfonyl triazoles are converted to structurally unique benzopyrrolizidinyl sulfonamides in a one-pot operation. Intramolecular capture of rhodium carbene with arylamino nitrogen gives rise to the formation of an ammonium ylide immediate. A [2,3]- or [1,2]-rearrangement occurs to give a 2-allylpyrrolidinyl-2-carbimine intermediate which undergoes $Cu(OTf)_2$ catalyzed aza-Friedel–Crafts cyclization to finish a highly functionalized tricyclic system decorated with a synthetically difficult quaternary carbon center, a sulfonamide group, and an allyl segment.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Fernandez-Gallardo, J. et al. *Organometallics*. **2014**, *33*, 6669.

Organometallic Titanocene-Gold Compounds as Potential Chemotherapeutics in Renal Cancer. Study of their Protein Kinase Inhibitory Properties

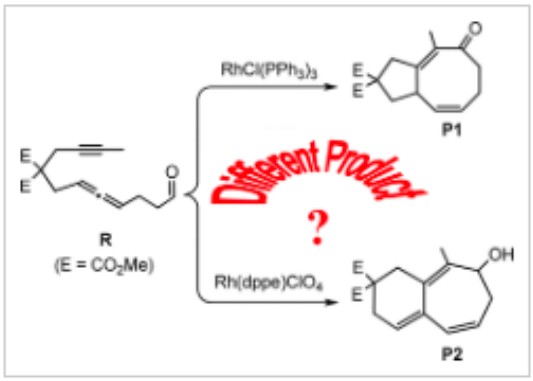


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Liu, T.; Han, L.; Han, S.; Bi, S. *Organometallics*. **2015**, *34*, 280.

Theoretical Investigation on Rhodium(I)-Catalyzed Cycloisomerizations of 4-Allenal Species with Linked Alkyne: Ketone vs Alcohol Products



bioorganic
methods
synthesis
mechanism
review
other

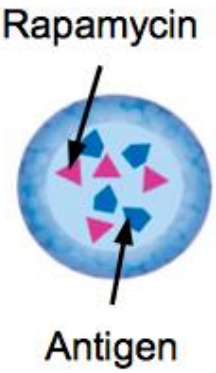
OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Langer, et al. PNAS **January 13, 2015** vol. 112 no. 2 **E156-E165**

Polymeric synthetic nanoparticles for the induction of antigen-specific immunological tolerance

Summary: biodegradable PLGA nanoparticles carrying either protein or peptide antigens and a tolerogenic immunomodulator, rapamycin induce durable and antigen-specific immune tolerance

I'm not kidding, this was the best figure in the paper:



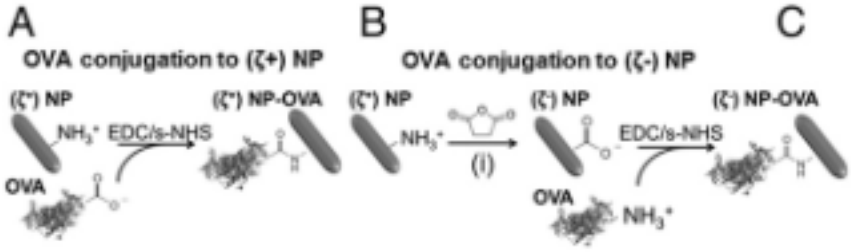
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: DeSimone et al. PNAS **January 13, 2015** vol. 112 no. 2 **488-493**

Controlled analysis of nanoparticle charge on mucosal and systemic antibody responses following pulmonary immunization

A variety of nanoparticle (NP) formulations with PEG and amino-functionalized acrylates have been tested preclinically for pulmonary vaccine development. The authors used hydrogel NPs that varied only in surface charge and otherwise maintained constant size, shape, and antigen loading. They found that positively charged nanoparticles induce robust mucosal and systemic antibody responses following pul- monary administration, where anionic ones do not.



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: PNAS | January 13, 2015 | vol. 112 | no. 2 | 313–318

A generation at risk: Young investigators and the future of the biomedical workforce

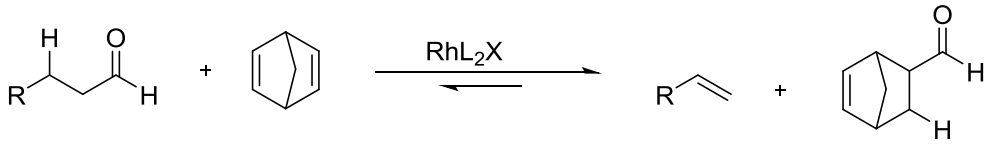
This is a perspective highlighting the current funding climate and length of time until young researchers receive their first R01 grant. These are good things to think about, irrespective of our career goals.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: S. K. Murphy, J.-W. Park, F. A. Cruz, V. M. Dong *et al.*, *Science* **2015,** *347,* 56-60.

Rh-catalyzed C-C bond cleavage by transfer hydroformylation



The dehydroformylation of aldehydes to generate olefins occurs during the biosynthesis of various sterols, including cholesterol in humans. Here, we implement a synthetic version that features the transfer of a formyl group and hydride from an aldehyde substrate to a strained olefin acceptor. A Rhodium (Xantphos)(benzoate) catalyst activates aldehyde carbon-hydrogen (C–H) bonds with high chemoselectivity to trigger carbon-carbon (C–C) bond cleavage and generate olefins at low loadings (0.3 to 2 mole percent) and temperatures (22° to 80°C). This mild protocol can be applied to various natural products and was used to achieve a three-step synthesis of (+)-yohimbenone. A study of the mechanism reveals that the benzoate counterion acts as a proton shuttle to enable transfer hydroformylation

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: G. Ofek, R. Diskin *et al.*, *Science* **2014,** *346,* 1290-1291.

Expanding the breadth of an HIV-1 vaccine
Immunogens are designed to elicit the production of highly coveted broadly neutralizing antibodies that protect against HIV-1

Better HIV-1 vaccine immunogens. Recombinant Env immunogens can be tested for the relative activation of B cells. expressing either nNAb germline BCRs or bNAb gemline BCRs when both sets of B cells are present. Standard Env immunogens preferentially activate B cells expressing germline nABb BCRs. Recombinant Envs can be engineered to preferentially activate B cells expressing bNAb germline BCRs as a first step in the eliciation pathway of mature bNAbs.

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
Gnid/Kirk
Hybrid
Drug Deliv.
Prostratin

Citation: Stevens, M. et al. Science Trns. Med. Vol 6 Issue 264, 1

Changing the Mindset in Life Sciences Toward Translation: A Consensus

An exerpt: "Overall, efective translation will require a change in the scientifc mindset to value much more interactive and collaborative relationships. Tis starts with young in- vestigators who learn to maintain a trained open eye and ear to other disciplines be- yond their individual educational experi- ence. Translational investigators should be skilled at properly identifying unmet clini- cal needs, matching appropriate strategies and partners, and including nonscientifc parameters in their evaluation."

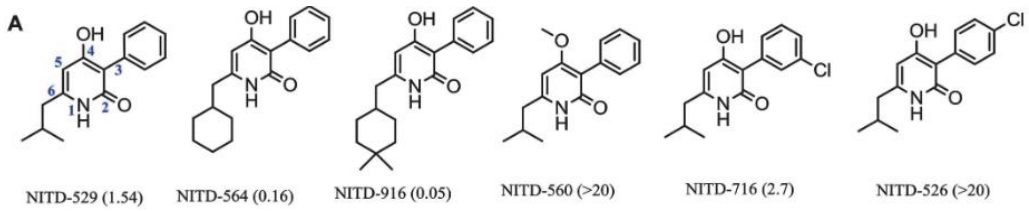
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation:

Direct inhibitors of InhA are active against *Mycobacterium tuberculosis*

The mycobacterial enoyl reductase InhA is one of the few clinically validated targets in tuberculosis drug discovery. We report the identification of a new class of direct InhA inhibitors, the 4-hydroxy-2-pyridones, using phenotypic high-throughput whole-cell screening. Parenthetical values are MIC50s.



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: *Science Trns. Med.* Vol 6 Issue 268 268ra178

Targeting ATM ameliorates mutant Huntingtin toxicity in cell and animal models of Huntington's disease

Age-related neurodegenerative disorders including Alzheimer's disease and Huntington's disease (HD) consistently show elevated DNA damage, but the relevant molecular pathways in disease pathogenesis remain unclear. One attractive gene is that encoding the ataxia-telangiectasia mutated (ATM) protein, a kinase involved in the DNA damage response, apoptosis, and cellular homeostasis. Loss-of-function mutations in both alleles of ATM cause ataxia-telangiectasia in children, but heterozygous mutation carriers are disease-free. Persistently elevated ATM signaling has been demonstrated in Alzheimer's disease and in mouse models of other neurodegenerative diseases.

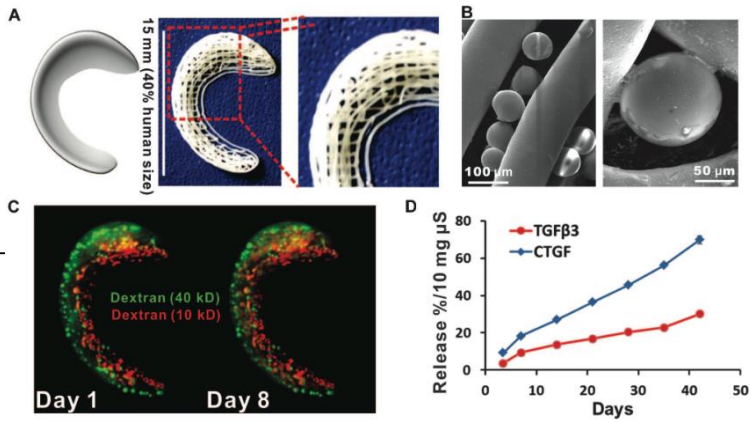
bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: *Science Trns. Med.* Vol 6 Issue 266 266ra171

Protein-releasing polymeric scaffolds induce fibrochondrocytic differentiation of endogenous cells for knee meniscus regeneration in sheep

Endogenous stem/progenitor cells regenerated the knee meniscus upon spatially released human connective tissue growth factor (CTGF) and transforming growth factor–b3 (TGFb3) from a three-dimensional (3D)–printed biomaterial, enabling functional knee recovery.

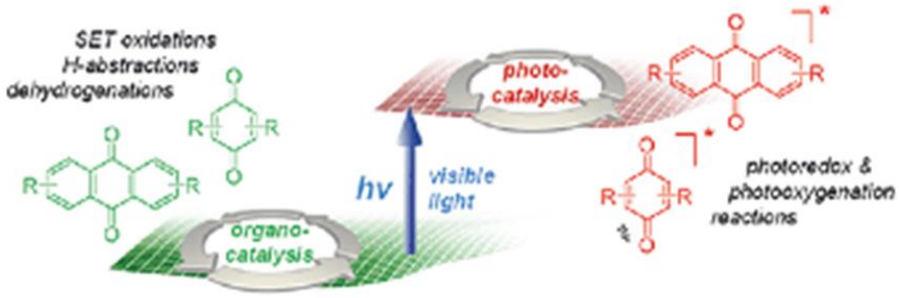


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Brasholz et. al *Synlett* **2014**, *25(19)*, 2673

Ground- and Excited-State Quinones: Perspectives in Organocatalysis and Visible-Light Photocatalysis

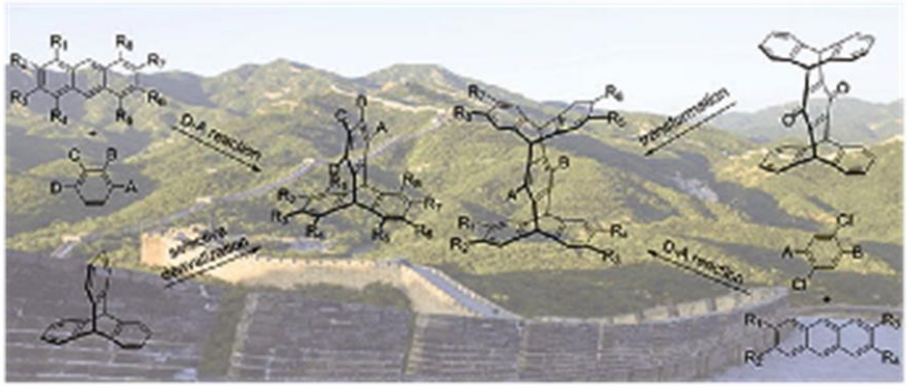


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Chuan-Feng et. al *Synlett* **2015**, *26(1)*, 6

Synthesis of Substituted Iptycenes

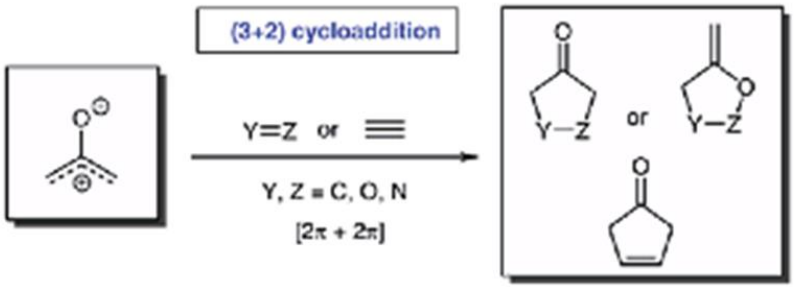


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Wu et. al Synthesis **2015**, *47*, 22

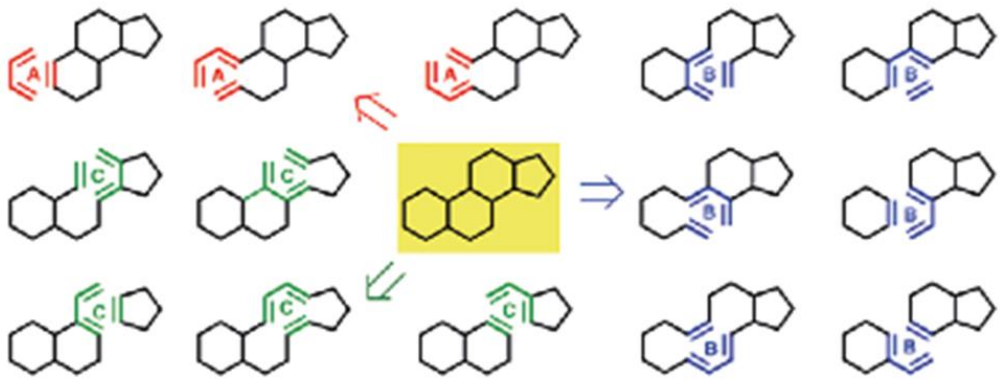
(3+2)-Cycloaddition Reactions of Oxyallyl Cations



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Sherburn et. al Synthesis **2015**, *47*, 1

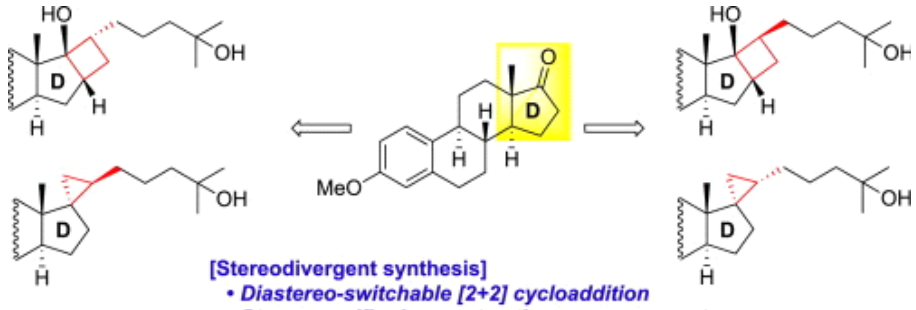


bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Arichi, N., Hata, K., Takemoto, Y., Yamada, K., Yamaoka, Y., & Takasu, K. (**2015**). Tetrahedron, 71(2), 233–244.

Synthesis of steroidal derivatives bearing a small ring using a catalytic [2+2] cycloaddition and a ring-contraction rearrangement



bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Ilie, A., Agudo, R., Roiban, G.-D., & Reetz, M. T. (**2015**). Tetrahedron, 71(3), 470–475.

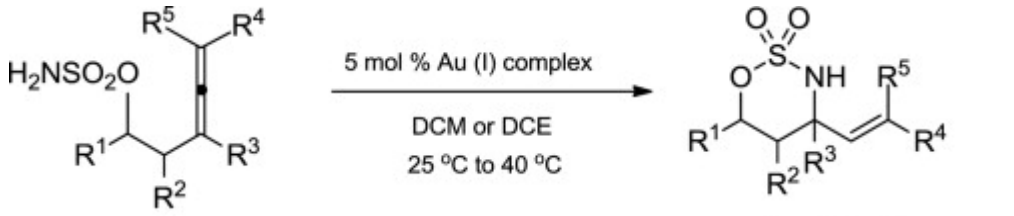
P450-catalyzed regio- and stereoselective oxidative hydroxylation of disubstituted cyclohexanes: creation of three centers of chirality in a single CH-activation event

bioorganic
methods
synthesis
mechanism
review
other

OM
Bryo
DDO
Hybrid
Drug Deliv.
Prostratin

Citation: Higginbotham, M. C. M., Kennedy, L., Lindsay, A. G., Troester, A., & Bebbington, M. W. P. (**2015**). Tetrahedron, 71(4), 727–737.

Gold(I)-catalysed synthesis of cyclic sulfamidates: current scope, stereochemistry and competing ene-allene cycloisomerisation



bioorganic
methods
synthesis
mechanism
review
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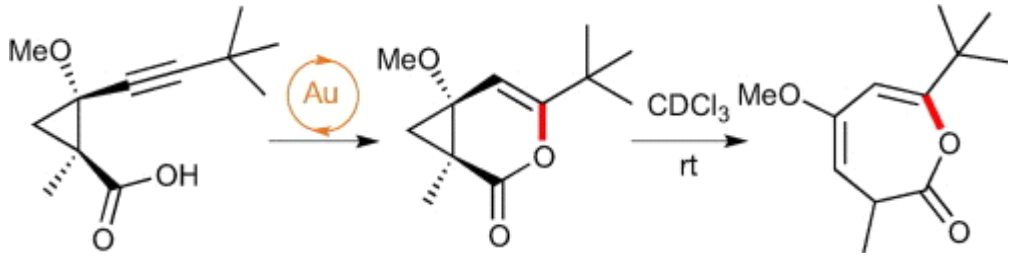
DDO
Hybrid
Drug Deliv.
Prostratin

Citation:	Otero, E. M., Fernández-García, J. M., Fernández-Rodríguez, M. A., & Aguilar, E. (**2015**). Tetrahedron Letters, 56(1), 195–198.

Gold-catalyzed synthesis of oxepinones: an experimental mechanistic evidence



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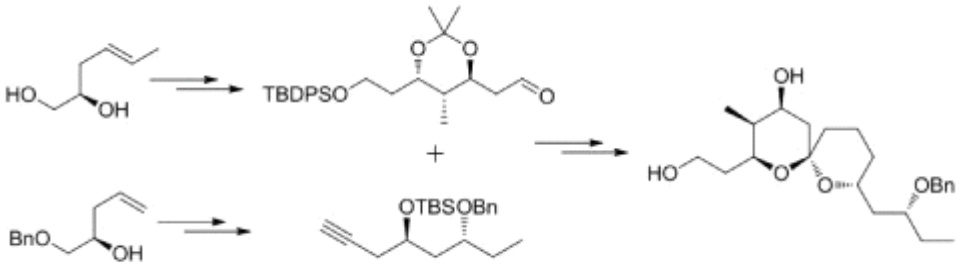
Citation:	Yadav, J. S., Rahman, M. A., Reddy, N. M., & Prasad, A. R. (**2015**). Tetrahedron Letters, 56(2), 365–367.

Synthesis of spiroketal fragment of ossamycin via Prins cyclization



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