

Fluorescent nucleoside analogs: synthesis, properties and applications

Guest editor: Yitzhak Tor

Department of Chemistry and Biochemistry, University of California, San Diego, MC 0358, La Jolla, CA 92093 0358, USA

Contents

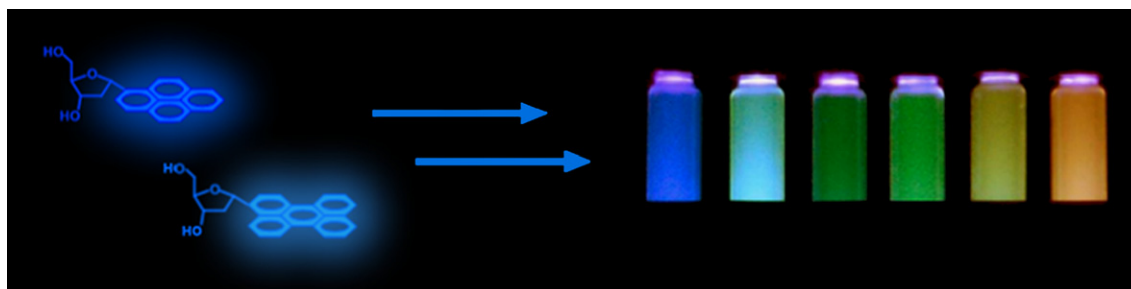
Announcement: Tetrahedron Symposia-in-Print
Preface

pp 3421–3423
pp 3425–3426

ARTICLES

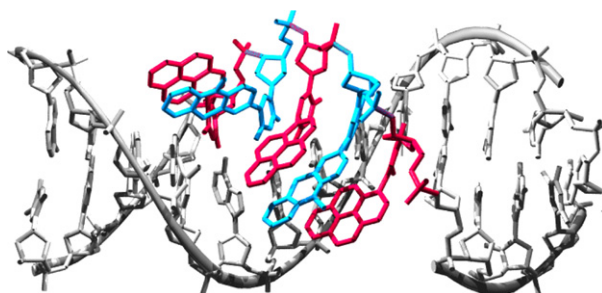
Oligodeoxyfluorosides: strong sequence dependence of fluorescence emission
James N. Wilson, Jianmin Gao and Eric T. Kool*

pp 3427–3433

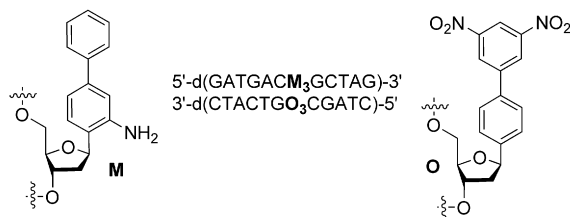


Helical self-assembled chromophore clusters based on DNA-like architecture
Elke Mayer-Enthart, Clemens Wagner, Janez Barbaric and Hans-Achim Wagenknecht*

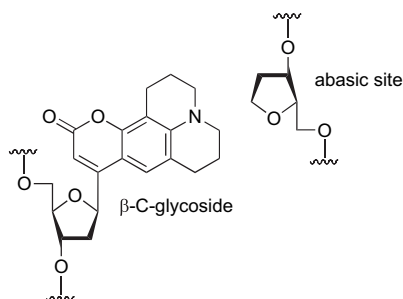
pp 3434–3439



A fluorescence-quencher pair for DNA hybridization studies based on hydrophobic base surrogates pp 3440–3449
Matthias Stoop, Alain Zahn and Christian J. Leumann*

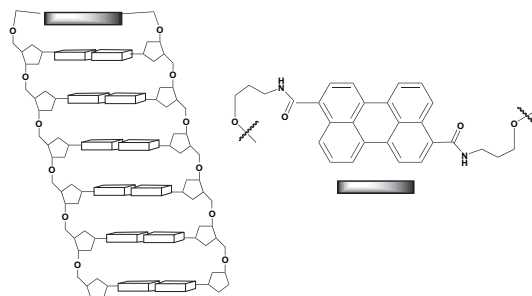


Coumarin base-pair replacement as a fluorescent probe of ultrafast DNA dynamics pp 3450–3456
Robert S. Coleman,* Mark A. Berg and Catherine J. Murphy

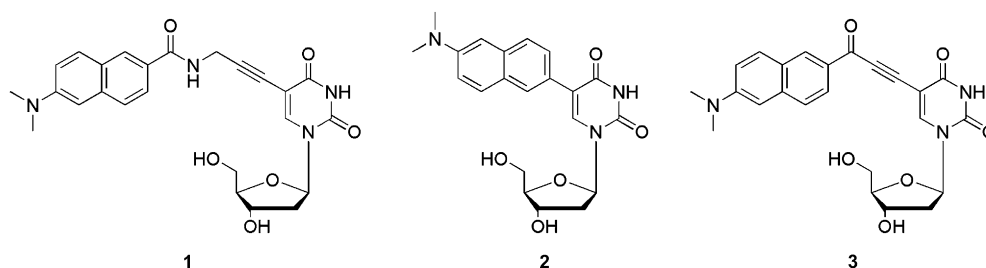


A perylenedicarboxamide linker for DNA hairpins pp 3457–3464
Frederick D. Lewis,* Ligang Zhang, Richard F. Kelley, David McCamant and Michael R. Wasielewski*

DNA hairpins possessing perylenedicarboxamide linkers are strongly fluorescent except when a guanine or deazaguanine base is located adjacent to the linker.



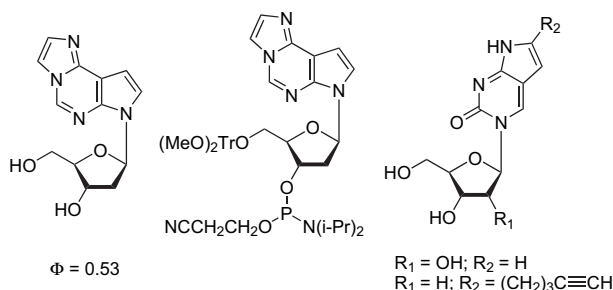
Synthesis and fluorescence properties of dimethylaminonaphthalene–deoxyuridine conjugates as polarity-sensitive probes pp 3465–3470
Akimitsu Okamoto,* Kazuki Tainaka, Tomo Unzai and Isao Saito*



1,*N*⁶-Etheno-2'-deoxytubercidin and pyrrolo-C: synthesis, base pairing, and fluorescence properties of 7-deazapurine nucleosides and oligonucleotides

pp 3471–3482

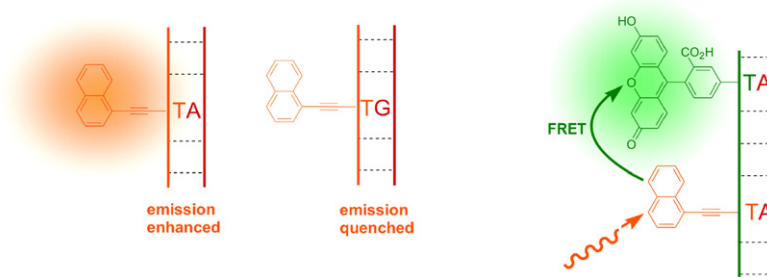
Frank Seela,* Enno Schweinberger, Kuiying Xu, Venkata Ramana Sirivolu, Helmut Rosemeyer and Eva-Maria Becker



Naphthalenyl- and anthracenyl-ethynyl dT analogues as base discriminating fluorescent nucleosides and intramolecular energy transfer donors in oligonucleotide probes

pp 3483–3490

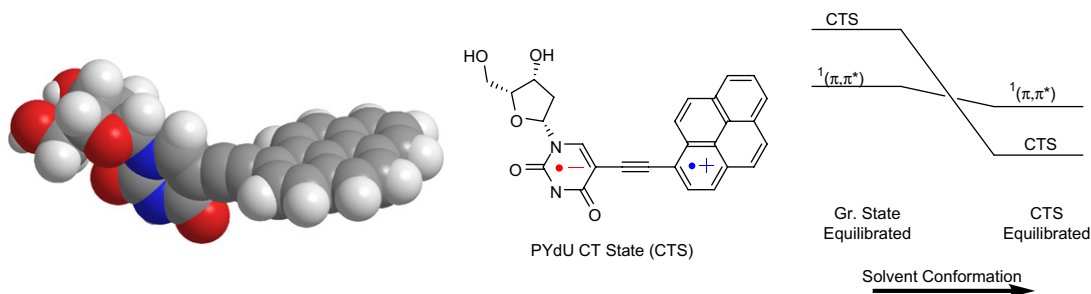
Qiang Xiao, Rohan T. Ranasinghe, Adrian M. P. Tang and Tom Brown*



The spectroscopy, dynamics, and electronic structure of pyrenyl-dU nucleosides: $\text{P}^{+}/\text{dU}^{-}$ charge transfer state photophysics

pp 3491–3514

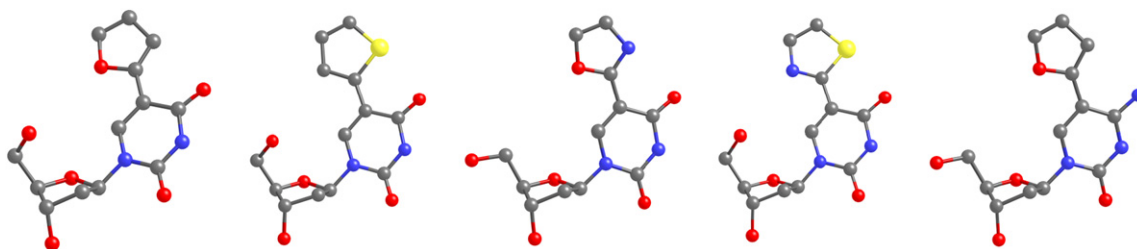
Thomas L. Netzel



Furan decorated nucleoside analogues as fluorescent probes: synthesis, photophysical evaluation, and site-specific incorporation

pp 3515–3527

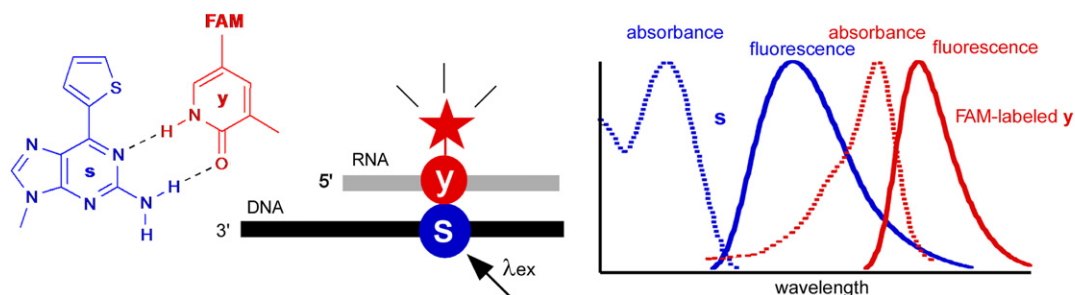
Nicholas J. Greco and Yitzhak Tor*



Characterization of fluorescent, unnatural base pairs

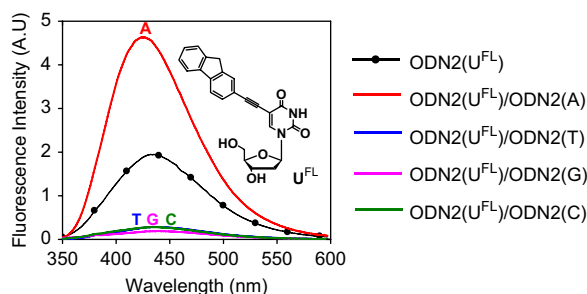
pp 3528–3537

Tsuneo Mitsui, Michiko Kimoto, Rie Kawai, Shigeyuki Yokoyama* and Ichiro Hirao*

**Triad base pairs containing fluorene unit for quencher-free SNP typing**

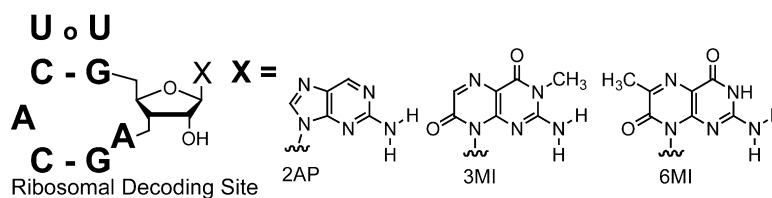
pp 3538–3547

Jin Ho Ryu, Young Jun Seo, Gil Tae Hwang, Jin Yong Lee and Byeang Hyeon Kim*

**Conformational flexibility of ribosomal decoding-site RNA monitored by fluorescent pteridine base analogues**

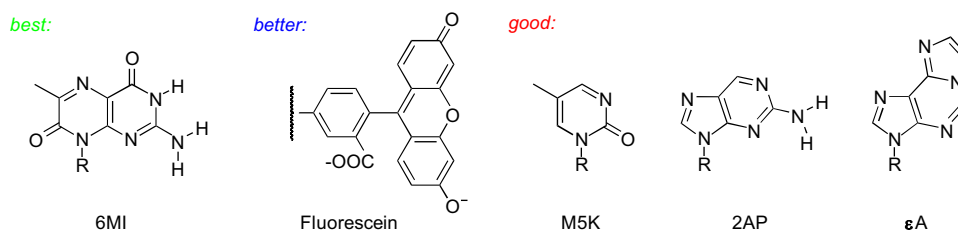
pp 3548–3552

Jerod Parsons and Thomas Hermann*

**Probing the structure of RecA–DNA filaments. Advantages of a fluorescent guanine analog**

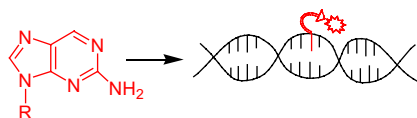
pp 3553–3566

Scott F. Singleton,* Alberto I. Roca, Andrew M. Lee and Jie Xiao



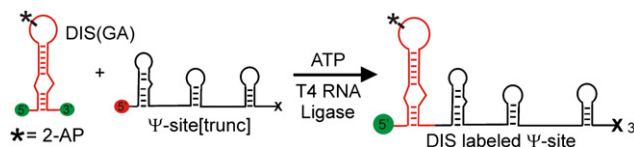
Use of 2-aminopurine as a fluorescent tool for characterizing antibiotic recognition of the bacterial rRNA A-site pp 3567–3574

Christopher M. Barbieri, Malvika Kaul and Daniel S. Pilch*



Synthesis of HIV-1 Ψ-site RNA sequences with site specific incorporation of the fluorescent base analog 2-aminopurine pp 3575–3584

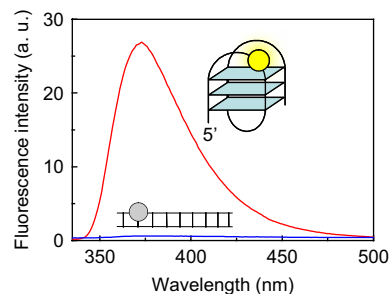
Chang Zhao and John P. Marino*



Monitoring G-quadruplex structures and G-quadruplex–ligand complex using 2-aminopurine modified oligonucleotides pp 3585–3590

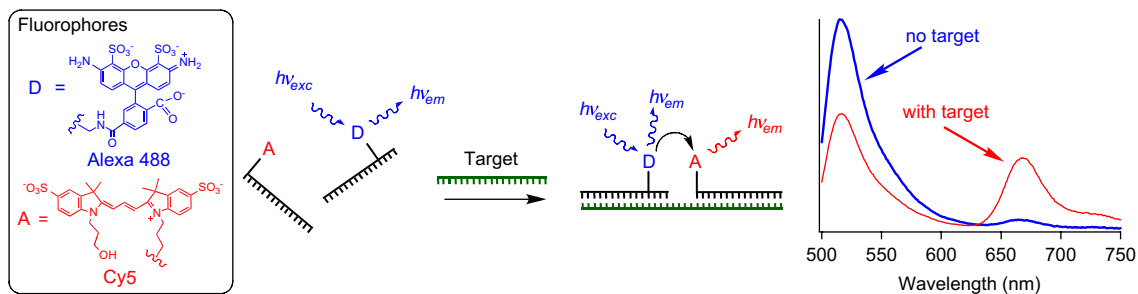
Takumi Kimura, Kiyohiko Kawai, Mamoru Fujitsuka and Tetsuro Majima*

The 2-aminopurine (Ap) was incorporated into the human telomeric DNA sequence d[AGGG(TTAGGG)₃]. Interestingly, a significant change in the fluorescence intensity of Ap between G-quadruplex and duplex was observed.



Design and characterization of two-dye and three-dye binary fluorescent probes for mRNA detection pp 3591–3600

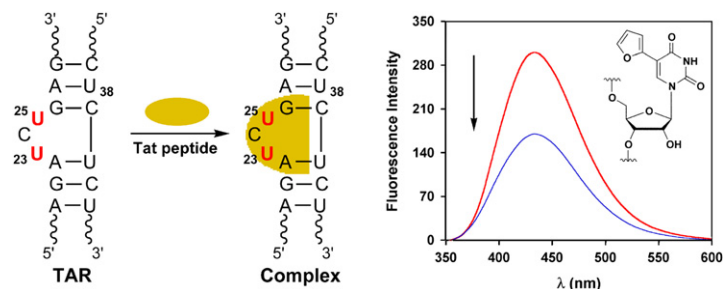
Angel A. Martí, Xiaoxu Li, Steffen Jockusch, Nathan Stevens, Zengmin Li, Bindu Raveendra, Sergey Kalachikov, Irina Morozova, James J. Russo, Daniel L. Akins, Jingyue Ju* and Nicholas J. Turro*



Using an emissive uridine analogue for assembling fluorescent HIV-1 TAR constructs

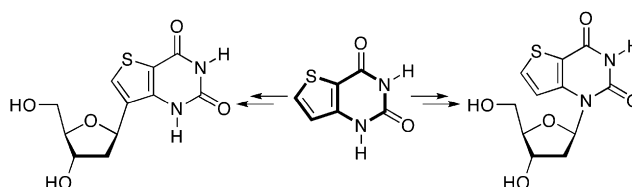
pp 3601–3607

Seergazhi G. Srivatsan and Yitzhak Tor*

Designing new isomorphous fluorescent nucleobase analogues: the thieno[3,2-*d*]pyrimidine core

pp 3608–3614

Yitzhak Tor,* Susan Del Valle, David Jaramillo, Seergazhi G. Srivatsan, Andro Rios and Haim Weizman



*Corresponding author

Supplementary data available via ScienceDirect

COVER

Combining fluorescent nucleosides into oligomeric sequences encourages photophysical interactions between the individual bases. This graphic illustrates how two simple fluorophores, perylene and pyrene, in varying combinations on a DNA backbone, generate a broad range of emissions as described in 'Oligodeoxyfluorosides: strong sequence dependence of fluorescence emission'.

© 2007 J. Wilson. Published by Elsevier Ltd.



Full text of this journal is available, on-line from **ScienceDirect**. Visit www.sciencedirect.com for more information.

Abstracted/indexed in: AGRICOLA, Beilstein, BIOSIS Previews, CAB Abstracts, Chemical Abstracts, Current Contents: Life Sciences, Current Contents: Physical, Chemical and Earth Sciences, Current Contents Search, Derwent Drug File, Ei compendex, EMBASE/Excerpta Medica, Medline, PASCAL, Research Alert, Science Citation Index, SciSearch. Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®



ELSEVIER

ISSN 0040-4020