# BIOCHEMISTRY

## including biophysical chemistry & molecular biology

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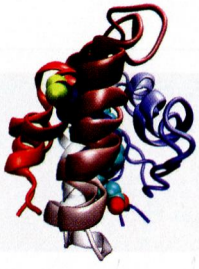
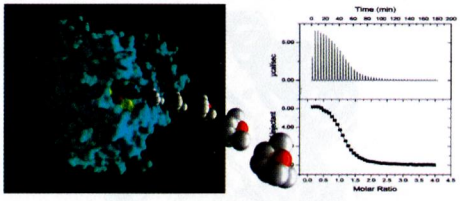
**ON THE COVER:** The detailed atomistic reaction mechanism for the epigenetic methylation of cytosine has been elucidated for the representative prokaryotic DNA methyltransferase *HhaI*, utilizing ab initio quantum mechanical/molecular mechanical-molecular dynamics simulations. Shown here is the intermediate in the reaction pathway. The methyl group has been transferred from *S*-adenosyl-l-methionine to carbon 5 of cytosine, and the covalent Michael adduct between a conserved cysteine residue of the enzyme and carbon 6 of cytosine has formed. The image was produced using PyMOL (Schrödinger, LLC) [Yang, J., et al. (2013) *Biochemistry* 52, 2828−2838].

## Articles



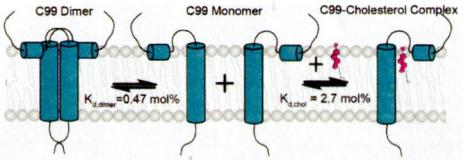






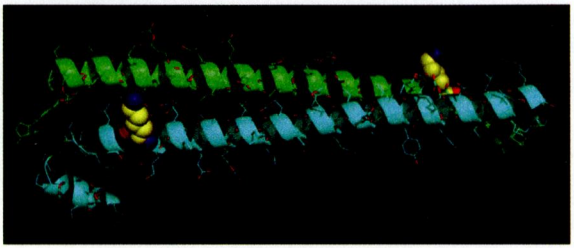
5051 S dx.doi.org/10.1021/bi400735x

**Competition Between Homodimerization and Cholesterol Binding to the C99 Domain of the Amyloid Precursor Protein**
Yuanli Song, Eric J. Hustedt, Suzanne Brandon, and Charles R. Sanders*



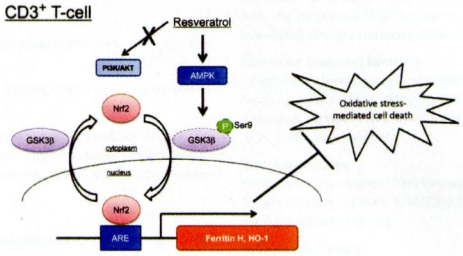

5065 S dx.doi.org/10.1021/bi400288p

**The Dimerization Domain in Outer Segment Guanylate Cyclase Is a $Ca^{2+}$-Sensitive Control Switch Module**
Patrick Zägel, Daniele Dell'Orco, and Karl-Wilhelm Koch*



5075 S dx.doi.org/10.1021/bi400399f

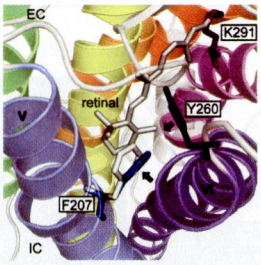
**Role of AMP-Activated Protein Kinase in Ferritin H Gene Expression by Resveratrol in Human T Cells**
Kenta Iwasaki,* Paul D. Ray, Bo-Wen Huang, Kensuke Sakamoto, Takaaki Kobayashi, and Yoshiaki Tsuji



5084 Ⓢ dx.doi.org/10.1021/bi400490g

**A Conserved Aromatic Residue Regulating Photosensitivity in Short-Wavelength Sensitive Cone Visual Pigments**

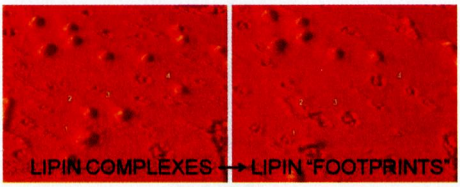
Colleen M. Kuemmel, Megan N. Sandberg, Robert R. Birge,* and Barry E. Knox*




5092 dx.doi.org/10.1021/bi4004765

**Assembly of High Molecular Weight Complexes of Lipin on a Supported Lipid Bilayer Observed by Atomic Force Microscopy**

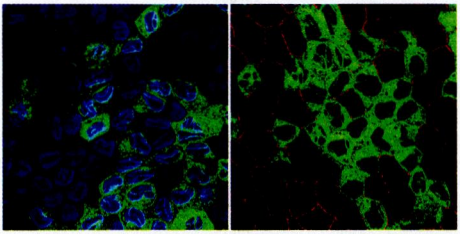
Carl E. Creutz,* James M. Eaton, and Thurl E. Harris




5103 Ⓢ dx.doi.org/10.1021/bi4005914

**The N-Terminal Basolateral Targeting Signal Unlikely Acts Alone in the Differential Trafficking of Membrane Transporters in MDCK Cells**

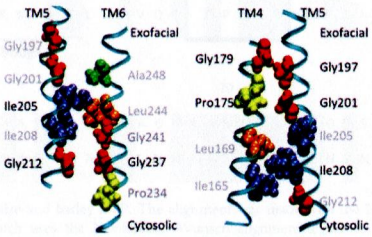
Shiu-Ming Kuo,* Li-Yuan Wang, Siyuan Yu, Christine E. Campbell, Sujith A. Valiyaparambil, Mark Rance, and Kenneth M. Blumenthal



5117 dx.doi.org/10.1021/bi400028q

**Transmembrane Domain V Plays a Stabilizing Role in the Function of Human Bile Acid Transporter SLC10A2**

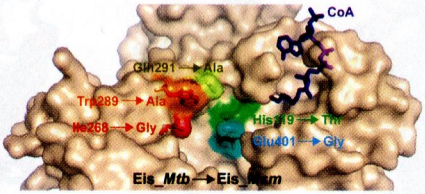
Robyn H. Moore, Paresh Chothe, and Peter W. Swaan*




5125 S dx.doi.org/10.1021/bi4002985

**Redesign of Substrate Specificity and Identification of the Aminoglycoside Binding Residues of Eis from *Mycobacterium tuberculosis***

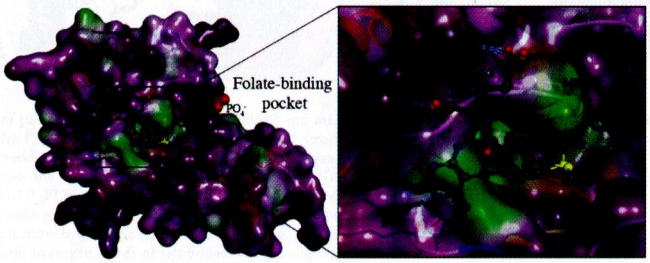
Benjamin C. Jennings, Kristin J. Labby, Keith D. Green, and Sylvie Garneau-Tsodikova*




5133 S dx.doi.org/10.1021/bi4005182

**Biological and Structural Evaluation of 10*R*- and 10*S*-Methylthio-DDACTHF Reveals a New Role for Sulfur in Inhibition of Glycinamide Ribonucleotide Transformylase**

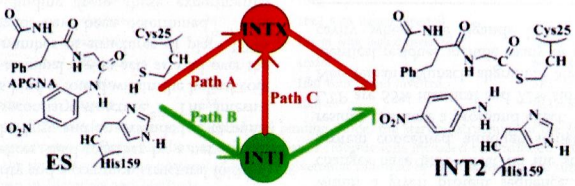
Stephen Connelly, Jessica K. DeMartino, Dale L. Boger, and Ian A. Wilson*



dx.doi.org/10.1021/bi400629r

**Reaction Pathway and Free Energy Profile for Papain-Catalyzed Hydrolysis of *N*-Acetyl-Phe-Gly 4-Nitroanilide**

Donghui Wei, Xiaoqin Huang, Junjun Liu, Mingsheng Tang, and Chang-Guo Zhan*

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