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JULY 15, 2014 • VOLUME 53 NUMBER 27

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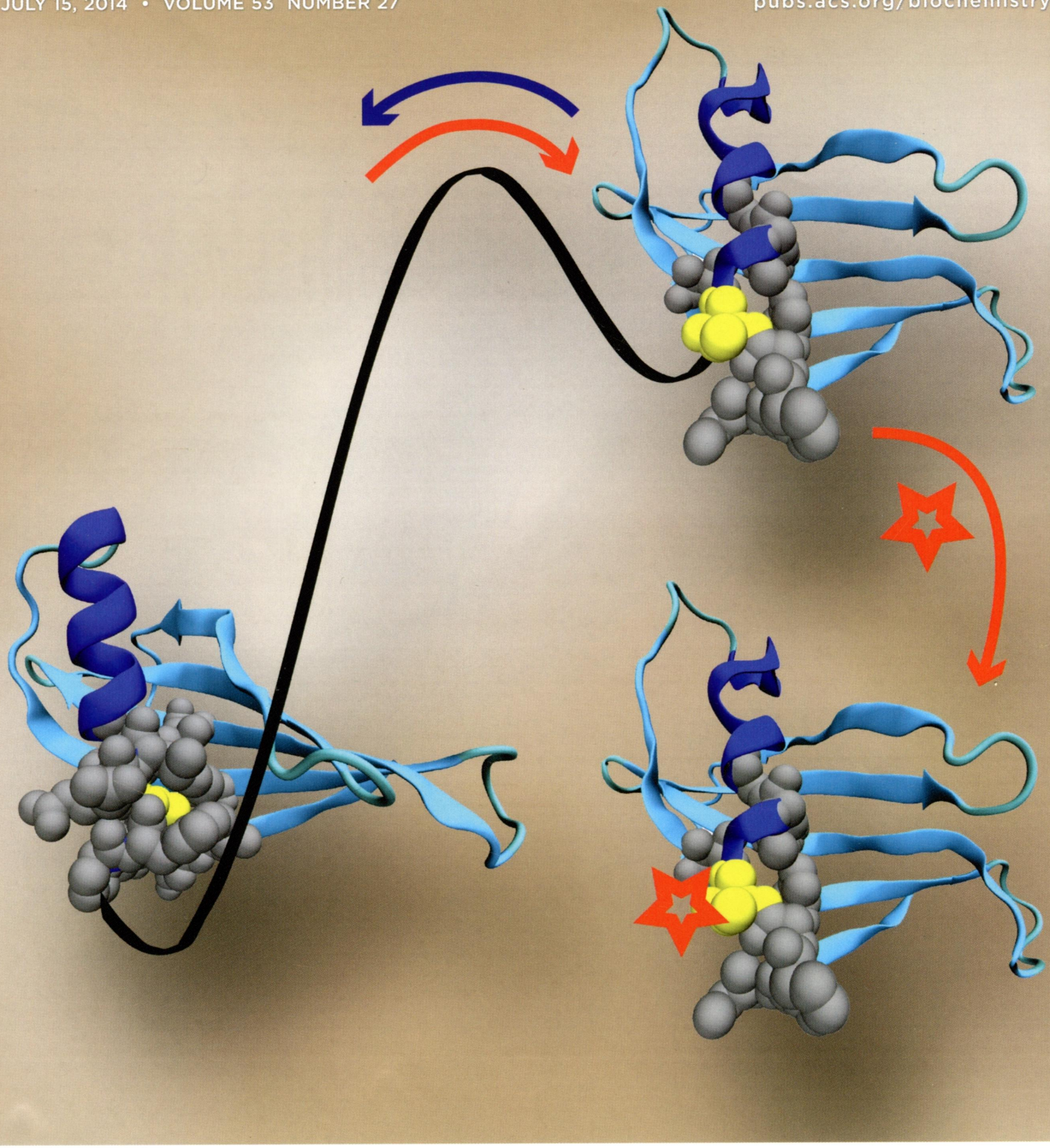

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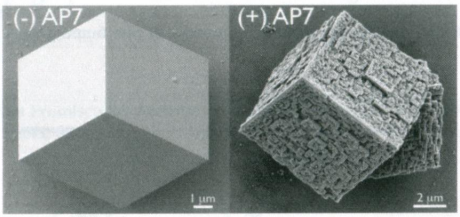
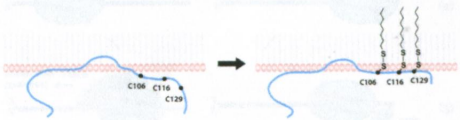
JULY 15, 2014
VOLUME 53 ISSUE 27

BICHAW 53(27) 4317–4488 (2014)
ISSN 0006-2960
Registered in the U.S. Patent and Trademark Office

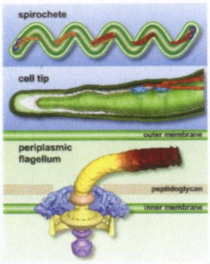
ON THE COVER: Thiol labeling of a single cysteine residue (yellow spheres) has been used to monitor rare unfolding events in a protein under nativelike conditions. The residues (gray spheres) surrounding the buried cysteine move apart, resulting in solvent exposure and hence labeling of the side chain thiol. This deprotection of the side chain is associated with an energy barrier between the native state and a partially unfolded, labeling-competent intermediate. Such intermediates have been mapped onto the unfolding energy landscape of the protein monellin using the kinetic and thermodynamic information obtained from thiol labeling. [Malhotra, P., and Udgaonkar, J. B. (2014) *Biochemistry* 53, 3608–3620]

Rapid Reports





Current Topics



Articles

$$P + D \underset{}{\overset{\beta_1}{\rightleftharpoons}} PD$$

$$P + A \underset{}{\overset{\beta_A}{\rightleftharpoons}} PA$$

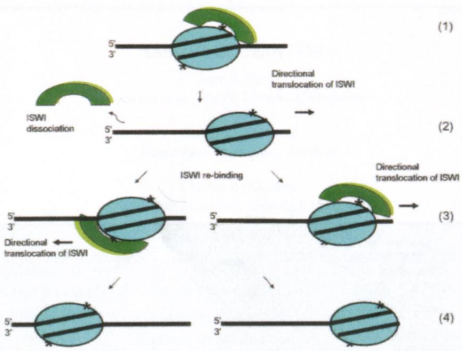
$$PA + D \underset{}{\overset{\beta_{1,A}}{\rightleftharpoons}} PAD$$

$$PD + A \underset{}{\overset{\beta_{A,1}}{\rightleftharpoons}} PDA$$

4346 S dx.doi.org/10.1021/bi500226b

ISWI Remodels Nucleosomes through a Random Walk

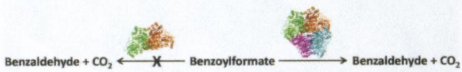
Gada Al-Ani, Shuja Shafi Malik, Allen Eastlund, Koan Briggs, and Christopher J. Fischer*



4358 S dx.doi.org/10.1021/bi500081r

Perturbation of the Monomer–Monomer Interfaces of the Benzoylformate Decarboxylase Tetramer

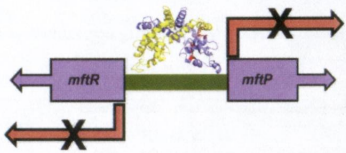
Forest H. Andrews, Megan P. Rogers, Lake N. Paul, and Michael J. McLeish*



4368 S dx.doi.org/10.1021/bi500219t

Ligand-Binding Pocket Bridges DNA-Binding and Dimerization Domains of the Urate-Responsive MarR Homologue MftR from *Burkholderia thailandensis*

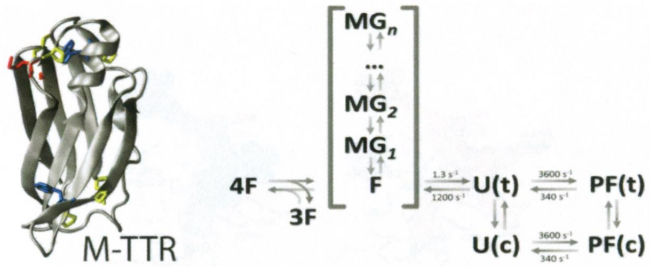
Ashish Gupta and Anne Grove*



4381 S dx.doi.org/10.1021/bi500430w

A Complex Equilibrium among Partially Unfolded Conformations in Monomeric Transthyretin

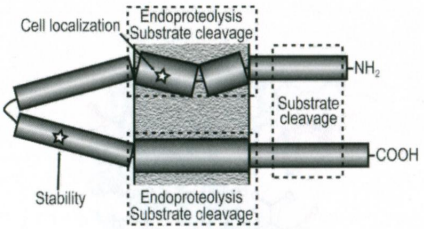
Simona Conti, Xinyi Li, Stefano Gianni, Seyyed Abolghasem Ghadami, Joel Buxbaum, Cristina Cecchi, Fabrizio Chiti, and Francesco Bemporad*



4393 dx.doi.org/10.1021/bi500489j

Pen-2 Is Essential for γ-Secretase Complex Stability and Trafficking but Partially Dispensable for Endoproteolysis

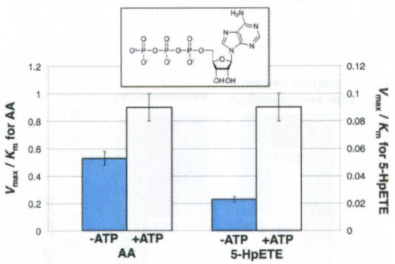
Oliver Holmes, Swetha Paturi, Dennis J. Selkoe, and Michael S. Wolfe*



4407 dx.doi.org/10.1021/bi401621d

ATP Allosterically Activates the Human 5-Lipoxygenase Molecular Mechanism of Arachidonic Acid and 5(*S*)-Hydroperoxy-6(*E*),8(*Z*),11(*Z*),14(*Z*)-eicosatetraenoic Acid

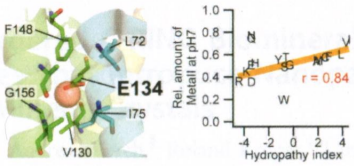
Christopher J. Smyrniotis, Shannon R. Barbour, Zexin Xia, Mark S. Hixon, and Theodore R. Holman*



4420 dx.doi.org/10.1021/bi5003772

Contribution of Glutamic Acid in the Conserved E/DRY Triad to the Functional Properties of Rhodopsin

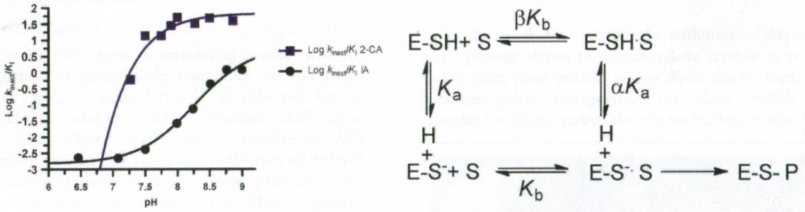
Keita Sato, Takahiro Yamashita, and Yoshinori Shichida*



4426 dx.doi.org/10.1021/bi500554b

Mechanistic Studies of Protein Arginine Deiminase 2: Evidence for a Substrate-Assisted Mechanism

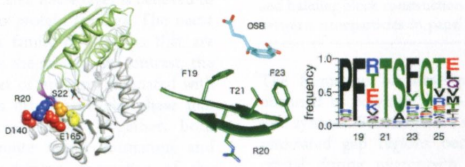
Christina J. Dreyton, Bryan Knuckley, Justin E. Jones, Daniel M. Lewallen, and Paul R. Thompson*



4434 dx.doi.org/10.1021/bi500573v

Role of an Active Site Loop in the Promiscuous Activities of *Amycolatopsis* sp. T-1-60 NSAR/OSBS

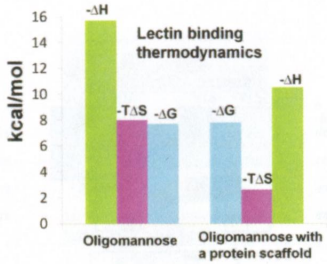
Andrew W. McMillan, Mariana S. Lopez, Mingzhao Zhu, Benjamin C. Morse, In-Cheol Yeo, Jaleesia Amos, Ken Hull, Daniel Romo, and Margaret E. Glasner*



4445 Ⓢ dx.doi.org/10.1021/bi5001307

Significant Other Half of a Glycoconjugate: Contributions of Scaffolds to Lectin–Glycoconjugate Interactions

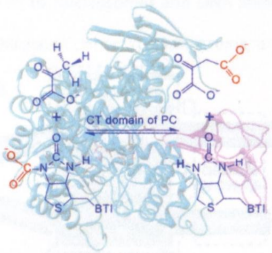
Melanie L. Talaga, Ni Fan, Ashli L. Fueri, Robert K. Brown, Yoann M. Chabre, Purnima Bandyopadhyay, René Roy, and Tarun K. Dam*



4455 Ⓢ dx.doi.org/10.1021/bi500020r

QM/MM Study of the Reaction Mechanism of the Carboxyl Transferase Domain of Pyruvate Carboxylase from *Staphylococcus aureus*

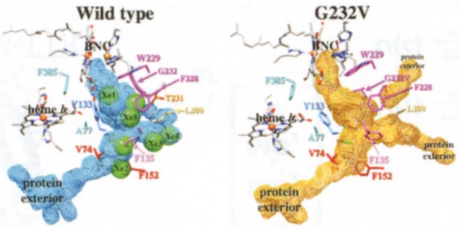
Xiang Sheng and Yongjun Liu*



4467 Ⓢ dx.doi.org/10.1021/bi500289h

Conserved Glycine 232 in the Ligand Channel of ba_3 Cytochrome Oxidase from *Thermus thermophilus*

William McDonald, Chie Funatogawa, Yang Li, Ying Chen, Istvan Szundi, James A. Fee, C. David Stout, and Ólöf Einarsdóttir*



4476 S dx.doi.org/10.1021/bi500491w

Novel Human Butyrylcholinesterase Variants: Toward Organophosphonate Detoxication

Mary Dwyer, Sacha Javor, Daniel A. Ryan, Emily M. Smith, Beilin Wang, Jun Zhang, and John R. Cashman*

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