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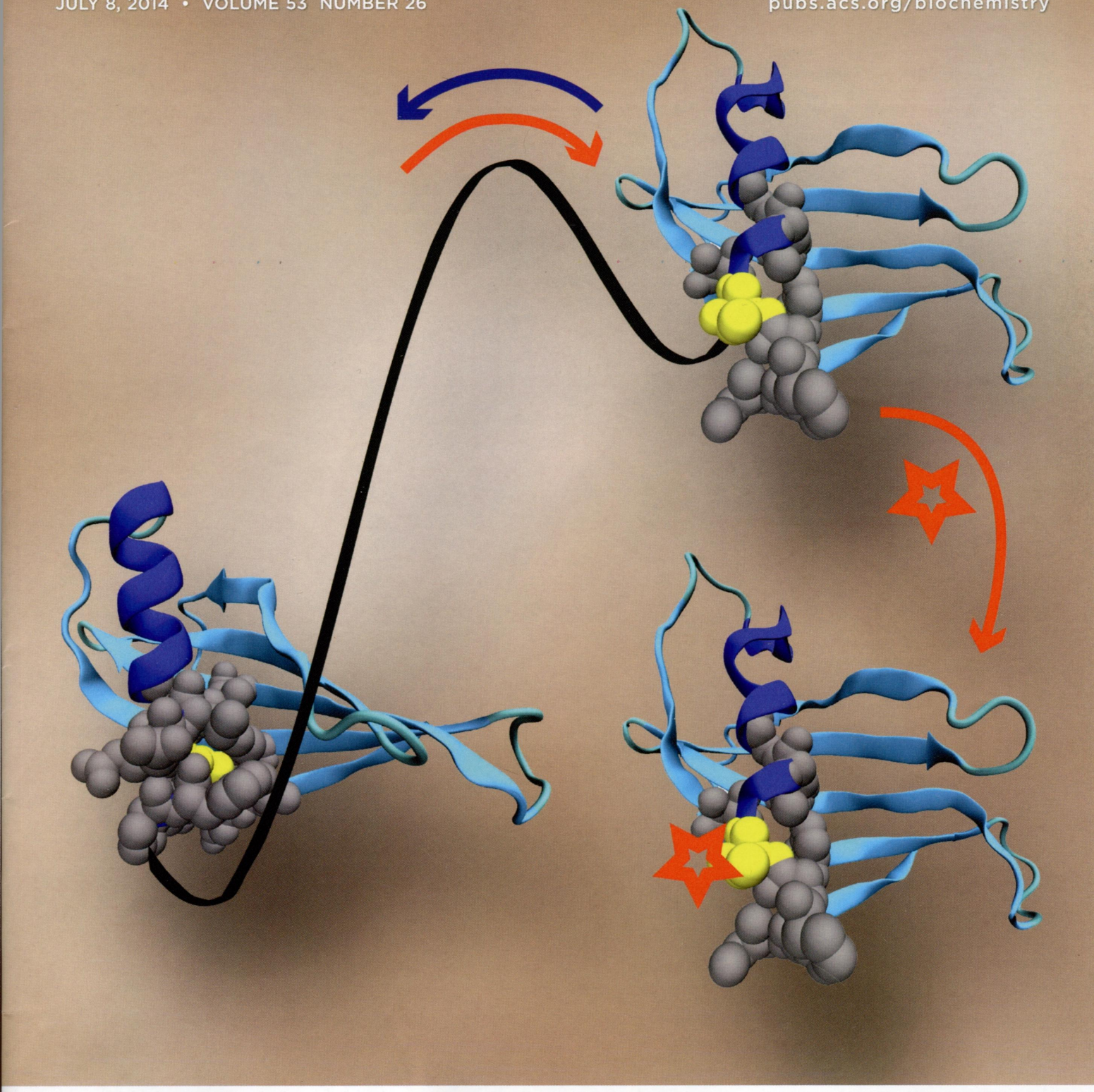

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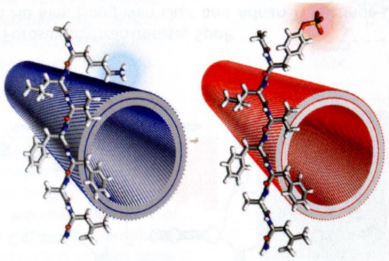
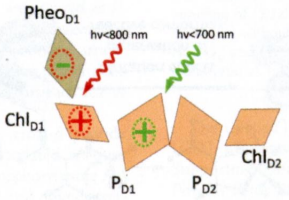
ON THE COVER: Thiol labeling of a single cysteine residue (yellow spheres) has been used to monitor rare unfolding events in a protein under nativelike conditions. The residues (gray spheres) surrounding the buried cysteine move apart, resulting in solvent exposure and hence labeling of the side chain 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



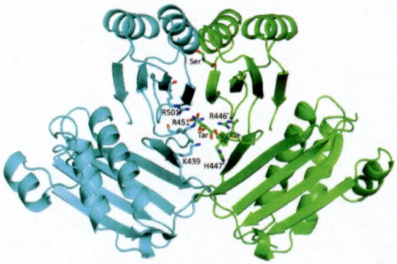
Articles



4239 dx.doi.org/10.1021/bi500469d

Regulation of *Mycobacterium tuberculosis* D-3-Phosphoglycerate Dehydrogenase by Phosphate-Modulated Quaternary Structure Dynamics and a Potential Role for Polyphosphate in Enzyme Regulation

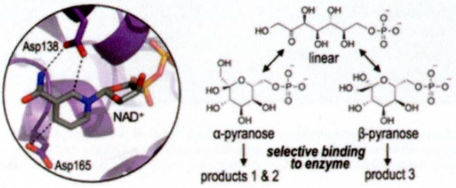
Xiao Lan Xu and Gregory A. Grant*



4250 dx.doi.org/10.1021/bi5003508

Structure of a Sedoheptulose 7-Phosphate Cyclase: ValA from *Streptomyces hygroscopicus*

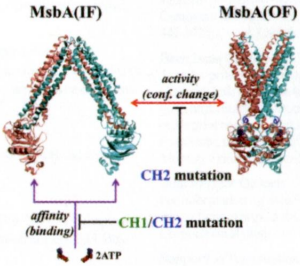
Kelsey M. Kean, Sara J. Codding, Shumpei Asamizu, Taifo Mahmud, and P. Andrew Karplus*



4261 dx.doi.org/10.1021/bi500255j

Analysis of the Structural and Functional Roles of Coupling Helices in the ATP-Binding Cassette Transporter MsbA through Enzyme Assays and Molecular Dynamics Simulations

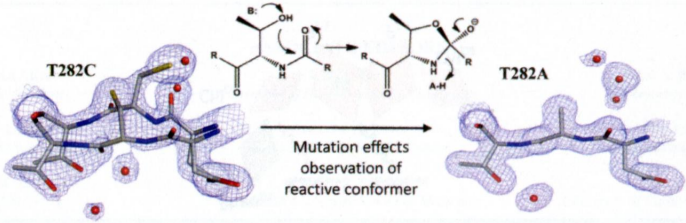
Tadaomi Furuta, Tomohiro Yamaguchi, Hiroaki Kato, and Minoru Sakurai*



4273 Ⓢ dx.doi.org/10.1021/bi500385d

Exploring the Role of Conformational Heterogeneity in *cis*-Autoproteolytic Activation of ThnT

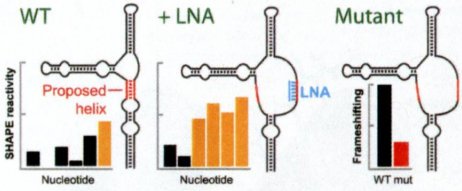
Andrew R. Buller, Michael F. Freeman, Joel F. Schildbach, and Craig A. Townsend*



4282 Ⓢ dx.doi.org/10.1021/bi5004926

Structure and Dynamics of the HIV-1 Frameshift Element RNA

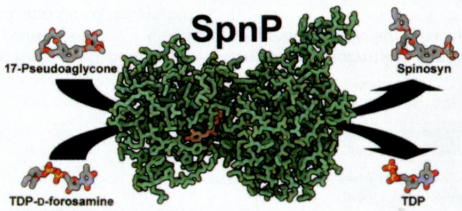
Justin T. Low, Pablo Garcia-Miranda, Kathryn D. Mouzakis, Robert J. Gorelick, Samuel E. Butcher, and Kevin M. Weeks*

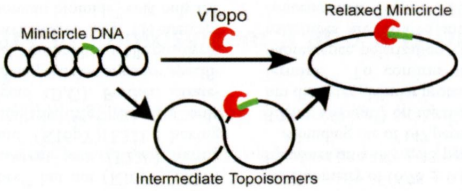


4292 Ⓢ dx.doi.org/10.1021/bi5003629

Structural Studies of the Spinosyn Forosaminyltransferase, SpnP

Eta A. Isiorho, Byung-Sun Jeon, Nam Ho Kim, Hung-wen Liu,* and Adrian T. Keatinge-Clay*





Additions and Corrections

Ⓢ Supporting Information available via online article