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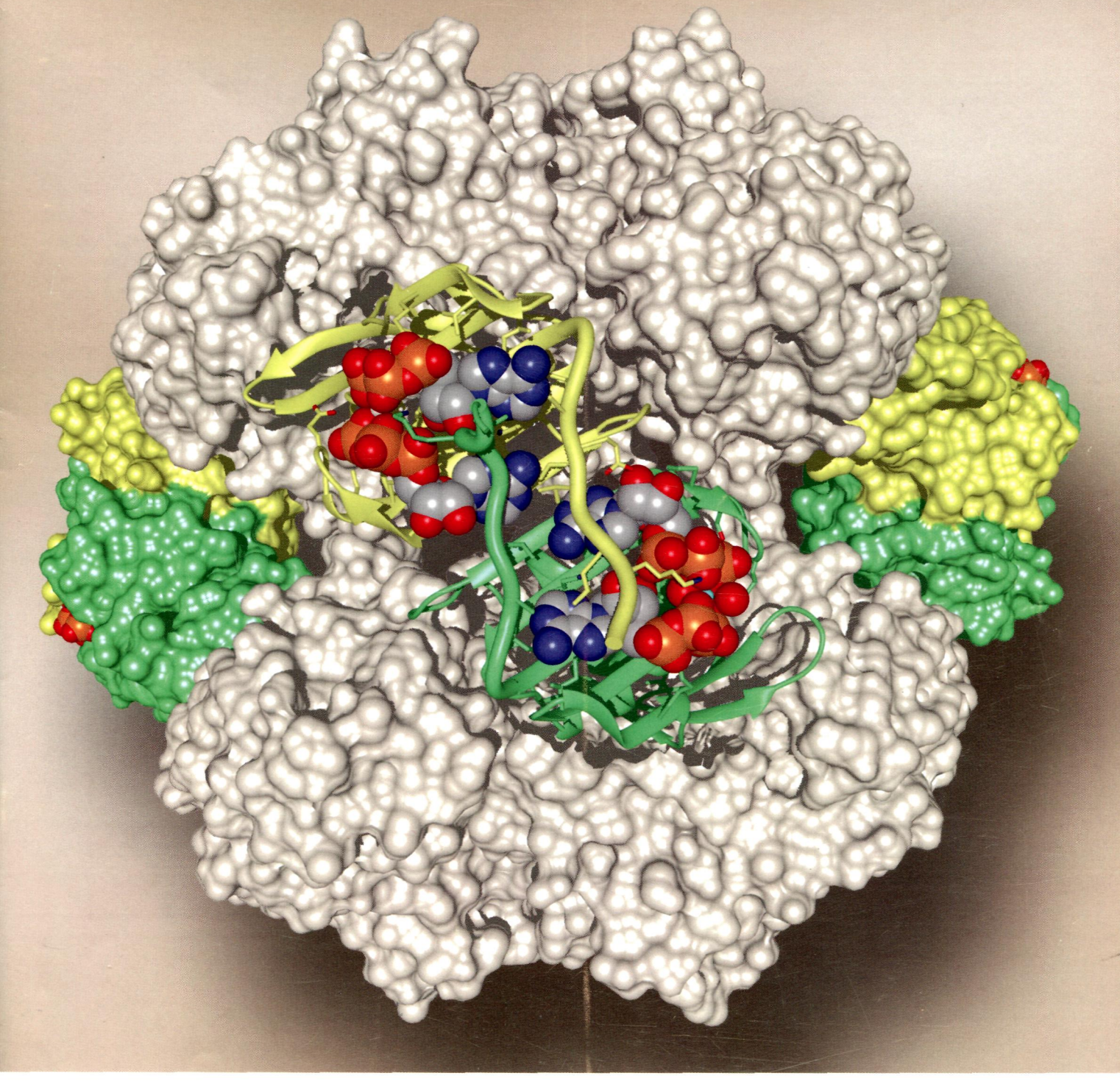

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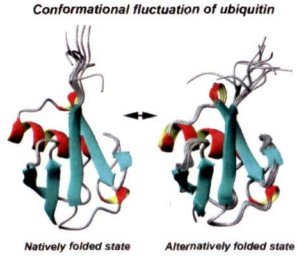
ON THE COVER: Three-dimensional structure of the *Escherichia coli* aspartate transcarbamoylase holoenzyme in the R state with two ATP molecules and a Mg^{2+} cation bound to each regulatory chain. The two catalytic trimers are shown as surface representations (tan). One chain of each of the three regulatory dimers is colored yellow, while the other is colored green. The two regulatory dimers on the sides are shown as surface representations, while the third, in front, is shown as a ribbon trace. The binding of the two ATP molecules and one Mg^{2+} molecule induces an alteration of the N-termini of the regulatory chains (thick lines), displacing them into the adjacent regulatory chain and thereby strengthening the dimer interface and further stabilizing the R state of the enzyme. This figure was generated using UCSF Chimera. [Cockrell, G. M., et al. (2013) *Biochemistry 52*, 8036−8047]

Rapid Reports

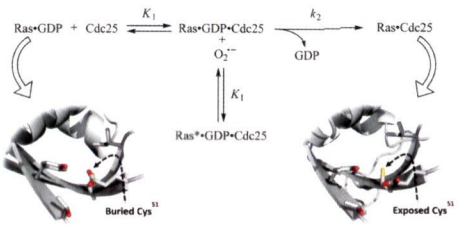


Articles

518 dx.doi.org/10.1021/bi401528n

Superoxide Inhibits Guanine Nucleotide Exchange Factor (GEF) Action on Ras, but not on Rho, through Desensitization of Ras to GEF

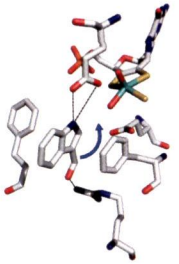
Michael Wey, Vinh Phan, Gerardo Yepez, and Jongyun Heo*



533 dx.doi.org/10.1021/bi401465u

Substrate Orientation and Specificity in Xanthine Oxidase: Crystal Structures of the Enzyme in Complex with Indole-3-acetaldehyde and Guanine

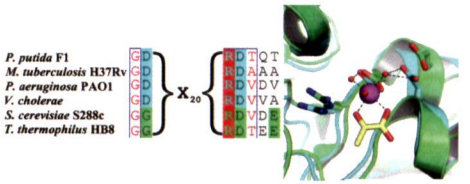
Hongnan Cao, James Hall, and Russ Hille*



542 dx.doi.org/10.1021/bi401486g

Biochemical and Structural Analysis of RraA Proteins To Decipher Their Relationships with 4-Hydroxy-4-methyl-2-oxoglutarate/4-Carboxy-4-hydroxy-2-oxoadipate Aldolases

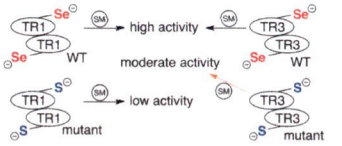
Scott Mazurkewich, Weijun Wang, and Stephen Y. K. Seah*



554 dx.doi.org/10.1021/bi400651x

Why Is Mammalian Thioredoxin Reductase 1 So Dependent upon the Use of Selenium?

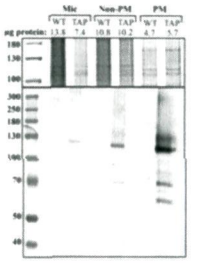
Adam P. Lothrop, Gregg W. Snider, Erik L. Ruggles, and Robert J. Hondal*



566 dx.doi.org/10.1021/bi401096m

Expression of a Translationally Fused TAP-Tagged Plasma Membrane Proton Pump in *Arabidopsis thaliana*

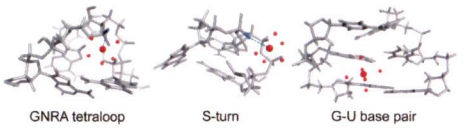
Rachel B. Rodrigues, Gregorz Sabat, Benjamin B. Minkoff, Heather L. Burch, Thao T. Nguyen, and Michael R. Sussman*



579 dx.doi.org/10.1021/bi401484a

NMR Localization of Divalent Cations at the Active Site of the *Neurospora* VS Ribozyme Provides Insights into RNA–Metal-Ion Interactions

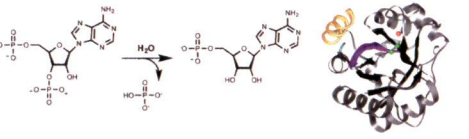
Eric Bonneau and Pascale Legault*

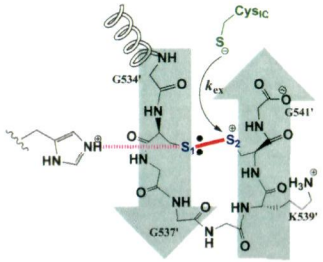


591 dx.doi.org/10.1021/bi401640r

Prospecting for Unannotated Enzymes: Discovery of a 3′,5′-Nucleotide Bisphosphate Phosphatase within the Amidohydrolase Superfamily

Jennifer A. Cummings, Matthew Vetting, Swapnil V. Ghodge, Chengfu Xu, Brandan Hillerich, Ronald D. Seidel, Steven C. Almo,* and Frank M. Raushel*





Additions and Corrections

Ⓢ Supporting Information available via online article