

Contents

Special Issue: Chemical Biology of Thiamine

Guest Editors: Andreas Liese, Michael Müller, Martina Pohl and Kai Tittmann

Editorial

A. Liese (Hamburg, Germany), M. Müller (Freiburg, Germany), M. Pohl (Düsseldorf, Germany), D. Sell (Frankfurt, Germany), K. Tittmann (Göttingen, Germany) and The Scientific Organizing Committee	1
Interaction of E1 and E3 components with the core proteins of the human pyruvate dehydrogenase complex	2
M.S. Patel, L.G. Korotchkina and S. Sidhu (Buffalo, NY, USA)	2
Solution NMR studies of acetohydroxy acid synthase I: Identification of the sites of inter-subunit interactions using multidimensional NMR methods	7
N. Megha Karanth, A. Mitra and S.P. Sarma (Bangalore, India)	7
Multiple roles of mobile active center loops in the E1 component of the <i>Escherichia coli</i> pyruvate dehydrogenase complex—Linkage of protein dynamics to catalysis	14
F. Jordan (Newark, NJ, USA), P. Arjunan (Pittsburgh, PA, USA), S. Kale, N.S. Nemeria (Newark, NJ, USA) and W. Furey (Pittsburgh, PA, USA)	14
C ₂ -Ketol elongation by transketolase-catalyzed asymmetric synthesis	23
R. Wohlgemuth (Buchs, Switzerland)	23
Comparative characterisation of thiamin diphosphate-dependent decarboxylases	30
D. Gocke, T. Graf, H. Brosi, I. Frindi-Wosch (Jülich, Germany), L. Walter, M. Müller (Freiburg, Germany) and M. Pohl (Jülich, Germany)	30
DFT and MP2 studies on the C2-C2α bond cleavage in thiamin catalysis	36
R. Friedemann, K. Tittmann, R. Golbik and G. Hübner (Halle, Germany)	36
Characterization of recombinant thiamine diphosphate-dependent phosphonopyruvate decarboxylase from <i>Streptomyces viridochromogenes</i> Tü494	39
S. Johnen and G.A. Sprenger (Jülich, Germany)	39
Cyclohexane-1,2-dione hydrolase: A new tool to degrade alicyclic compounds	47
S. Fraas, A.K. Steinbach, A. Tabbert (Konstanz, Germany), J. Harder (Bremen, Germany), U. Ermler (Frankfurt, Germany), K. Tittmann (Göttingen, Germany), A. Meyer and P.M.H. Kroneck (Konstanz, Germany)	47
Origin of the specificities of acetohydroxyacid synthases and glyoxylate carboligase	50
D.M. Chipman, Z. Barak, B. Shaanan, M. Vyazmensky, E. Binshtein, I. Belenkay, V. Temam (Beer Sheva, Israel), A. Steinmetz, R. Golbik and K. Tittmann (Halle, Germany)	50
MenD as a versatile catalyst for asymmetric synthesis	56
A. Kurutsch, M. Richter, V. Brecht (Freiburg, Germany), G.A. Sprenger (Stuttgart, Germany) and M. Müller (Freiburg, Germany)	56
Steric and electronic properties of the cofactor's amino group control the lifetime of the central carbanion/enamine intermediate in transketolase	67
L.E. Meshalkina, G.A. Kochetov (Moscow, Russia), G. Hübner, K. Tittmann and R. Golbik (Halle/Saale, Germany)	67
Investigation of the carboligase activity of thiamine diphosphate-dependent enzymes using kinetic modeling and NMR spectroscopy	73
M. Kokova (Jülich, Germany), M. Zavrel (Aachen, Germany), K. Tittmann (Göttingen, Germany), A.C. Spiess (Aachen, Germany) and M. Pohl (Jülich, Germany)	73
Role of 2-oxoglutarate dehydrogenase in brain pathologies involving glutamate neurotoxicity	80
A. Graf, M. Kabysheva, E. Klimuk, L. Trofimova, T. Dunaeva (Moscow, Russian Federation), G. Zündorf, S. Kahlert, G. Reiser (Magdeburg, Germany), T. Storozhevych, V. Pinelis, N. Sokolova and V. Bunik (Moscow, Russian Federation)	80
New insights into the membrane-binding and activation mechanism of pyruvate oxidase from <i>Escherichia coli</i>	88
A. Weidner, P. Neumann, A. Pech, M.T. Stubbs (Halle, Germany) and K. Tittmann (Halle, Germany and Göttingen, Germany)	88
X-ray crystallographic snapshots of reaction intermediates in pyruvate oxidase and transketolase illustrate common themes in thiamin catalysis	93
K. Tittmann (Göttingen, Germany) and G. Wille (Frankfurt/Main, Germany)	93
Allosteric activation of pyruvate decarboxylases. A never-ending story?	100
S. König, M. Spinka and S. Kutter (Halle, Germany)	100
Asymmetric synthesis of chiral 2-hydroxy ketones by coupled biocatalytic alkene oxidation and C-C bond formation	111
N. Kurlemann (Hamburg, Germany), M. Lara (Graz, Austria), M. Pohl (Jülich, Germany), W. Kroutil (Graz, Austria) and A. Liese (Hamburg, Germany)	111