

Biophysical Journal

Contents

April 2008

Volume 94

Number 8

Biophysical Letters

Does Arginine Remain Protonated in the Lipid Membrane? Insights from Microscopic pK_a Calculations. *Jejoong Yoo and Qiang Cui* L61–L63

Generation of the Endocochlear Potential: A Biophysical Model. *Imran H. Quraishi and Robert M. Raphael* L64–L66

Refractive Index Sensing of Green Fluorescent Proteins in Living Cells Using Fluorescence Lifetime Imaging Microscopy. *Henk-Jan van Manen, Paul Verkuijlen, Paul Wittendorp, Vinod Subramaniam, Timo K. van den Berg, Dirk Roos, and Cees Otto* L67–L69

Biophysical Theory and Modeling

Multifunctionality and Robustness Trade-Offs in Model Genetic Circuits. *Olivier C. Martin and Andreas Wagner* 2927–2937

Biophysical Regulation of Lipid Biosynthesis in the Plasma Membrane. *Stephen H. Alley, Oscar Ces, Richard H. Templer, and Mauricio Barahona* 2938–2954

Cytoskeletal Bundle Mechanics. *Mark Bathe, Claus Heussinger, Mireille M. A. E. Claessens, Andreas R. Bausch, and Erwin Frey* 2955–2964

Comparing Experimental and Simulated Pressure-Area Isotherms for DPPC. *Susan L. Duncan and Ronald G. Larson* 2965–2986

Do Chaperonins Boost Protein Yields by Accelerating Folding or Preventing Aggregation? *A. I. Jewett and J.-E. Shea* 2987–2993

Mechanosensitive Membrane Channels in Action. *Serge Yefimov, Erik van der Giessen, Patrick R. Onck, and Siewert J. Marrink* 2994–3002

Channels, Receptors, and Electrical Signaling

Pore Mutations of the *Escherichia coli* MscS Channel Affect Desensitization but Not Ionic Preference. *Michelle D. Edwards, Wendy Bartlett, and Ian R. Booth* 3003–3013

A Tyrosine Substitution in the Cavity Wall of a K Channel Induces an Inverted Inactivation. *Göran Klement, Johanna Nilsson, Peter Århem, and Fredrik Elinder* 3014–3022

$\alpha_2\delta_1$ Dihydropyridine Receptor Subunit Is a Critical Element for Excitation-Coupled Calcium Entry but Not for Formation of Tetrads in Skeletal Myotubes. *Marcin P. Gach, Gennady Cherednichenko, Claudia Haarmann, Jose R. Lopez, Kurt G. Beam, Isaac N. Pessah, Clara Franzini-Armstrong, and Paul D. Allen* 3023–3034

Membranes

Characterization of the Interactions between Fluoroquinolone Antibiotics and Lipids: a Multitechnique Approach. *Hayet Bensikaddour, Nathalie Fa, Ingrid Burton, Magali Deleu, Laurence Lins, André Schanck, Robert Brasseur, Yves F. Dufrêne, Erik Goormaghtigh, and Marie-Paule Mingeot-Leclercq* 3035–3046

Condensing and Fluidizing Effects of Ganglioside G_{M1} on Phospholipid Films. *Shelli L. Frey, Eva Y. Chi, Cristóbal Arratia, Jaroslaw Majewski, Kristian Kjaer, and Ka Yee C. Lee* 3047–3064

Role of Helix 0 of the N-BAR Domain in Membrane Curvature Generation. *Fábio Fernandes, Luís M. S. Loura, Francisco J. Chichón, Jose L. Carrascosa, Alexander Fedorov, and Manuel Prieto* 3065–3073

Rotation of Lipids in Membranes: Molecular Dynamics Simulation, ^{31}P Spin-Lattice Relaxation, and Rigid-Body Dynamics. *Jeffery B. Klauda, Mary F. Roberts, Alfred G. Redfield, Bernard R. Brooks, and Richard W. Pastor* 3074–3083

Contents (continued)

Effects of Cholesterol on Physical Properties of Human Erythrocyte Membranes: Impact on Susceptibility to Hydrolysis by Secretory Phospholipase A ₂ . <i>Anne L. Heiner, Elizabeth Gibbons, Jeremy L. Fairbourn, Laurie J. Gonzalez, Chisako O. McLemore, Taylor J. Brueseke, Allan M. Judd, and John D. Bell</i>	3084–3093	Sarcoplasmic Reticulum Ca ²⁺ Release Declines in Muscle Fibers from Aging Mice. <i>Ramón Jiménez-Moreno, Zhong-Min Wang, Robert C. Gerring, and Osvaldo Delbono</i>	3178–3188
Impact of Hapten Presentation on Antibody Binding at Lipid Membrane Interfaces. <i>Hyunsook Jung, Tinglu Yang, Mauricio D. Lasagna, Jinjun Shi, Gregory D. Reinhart, and Paul S. Cremer</i>	3094–3103	Subpicosecond Midinfrared Spectroscopy of the P _{fr} Reaction of Phytochrome Agp1 from <i>Agrobacterium tumefaciens</i> . <i>Christian Schumann, Ruth Groß, Matthias M. N. Wolf, Rolf Diller, Norbert Michael, and Tilman Lamparter</i>	3189–3197
Lipid Microdomain Formation: Characterization by Infrared Spectroscopy and Ultrasonic Velocimetry. <i>Zachary D. Schultz and Ira W. Levin</i>	3104–3114	Energy Transfer in the Peridinin-Chlorophyll Protein Complex Reconstituted with Mixed Chlorophyll Sites. <i>Tomáš Polívka, Torbjörn Pascher, and Roger G. Hiller</i>	3198–3207
Muscle and Contractility		Proteins	
Kinesin and Dynein-Dynactin at Intersecting Microtubules: Motor Density Affects Dynein Function. <i>Jennifer L. Ross, Henry Shuman, Erika L. F. Holzbaur, and Yale E. Goldman</i>	3115–3125	Crystallographic Study of Hydration of an Internal Cavity in Engineered Proteins with Buried Polar or Ionizable Groups. <i>Jamie L. Schlessman, Colby Abe, Apostolos Gittis, Daniel A. Karp, Michael A. Dolan, and Bertrand García-Moreno E.</i>	3208–3216
A Quantitative Analysis of Contractility in Active Cytoskeletal Protein Networks. <i>Poul M. Bendix, Gijsje H. Koenderink, Damien Cuvelier, Zvonimir Dogic, Bernard N. Koeleman, William M. Brieher, Christine M. Field, L. Mahadevan, and David A. Weitz</i>	3126–3136	Terahertz Spectroscopy of Bacteriorhodopsin and Rhodopsin: Similarities and Differences. <i>R. Balu, H. Zhang, E. Zukowski, J.-Y. Chen, A. G. Markelz, and S. K. Gregurick</i>	3217–3226
Nucleic Acids		Development of a Physics-Based Force Field for the Scoring and Refinement of Protein Models. <i>Liliana Wroblewska, Anna Jagielska, and Jeffrey Skolnick</i>	
Electrostatic Free Energy Landscapes for DNA Helix Bending. <i>Zhi-Jie Tan and Shi-Jie Chen</i>	3137–3149	Revealing Different Aggregation Pathways of Amyloidogenic Proteins by Ultrasound Velocimetry. <i>Vytautas Smirnovas and Roland Winter</i>	
Geometry of Mediating Protein Affects the Probability of Loop Formation in DNA. <i>Neeraj J. Agrawal, Ravi Radhakrishnan, and Prashant K. Purohit</i>	3150–3158	The Structure and Orientation of the C-Terminus of LRAP. <i>Wendy J. Shaw, Kim Ferris, Barbara Tarasevich, and Jenna L. Larson</i>	
Photobiophysics		Prevalence of Temperature-Dependent Heat Capacity Changes in Protein-DNA Interactions. <i>Chin-Chi Liu, Allison J. Richard, Kausiki Datta, and Vince J. LiCata</i>	
Laser Stimulation of Auditory Neurons: Effect of Shorter Pulse Duration and Penetration Depth. <i>Agnella D. Izzo, Joseph T. Walsh Jr., Heather Ralph, Jim Webb, Mark Bendett, Jonathon Wells, and Claus-Peter Richter</i>	3159–3166	Supramolecular Assemblies	
The Color of Lactotroph Secretory Granules Stained with FM1-43 Depends on Dye Concentration. <i>Joseph M. Johnson and William J. Betz</i>	3167–3177	Effects of Hydration on Mechanical Properties of a Highly Sclerotized Tissue. <i>Dana N. Moses, Michael G. Pontin, J. Herbert Waite, and Frank W. Zok</i>	

Contents (continued)

Cell Biophysics

Changes in the Hyperelastic Properties of Endothelial Cells Induced by Tumor Necrosis Factor- α . *Inkyung Kang, Dinesh Panneerselvam, Vassilis P. Panoskaltis, Steven J. Eppell, Roger E. Marchant, and Claire M. Doerschuk* 3273–3285

T Cell Receptor Microcluster Transport through Molecular Mazes Reveals Mechanism of Translocation. *Andrew L. DeMond, Kaspar D. Mossman, Toby Starr, Michael L. Dustin, and Jay T. Groves* 3286–3292

Impact of Chemical and Structural Anisotropy on the Electrophoretic Mobility of Spherical Soft Multilayer Particles: The Case of Bacteriophage MS2. *J  r  mie Langlet, Fabien Gaboriaud, Christophe Gantzer, and J  r  me F. L. Duval* 3293–3312

Intracellular Microrheology of Motile *Amoeba proteus*. *Salman S. Rogers, Thomas A. Waigh, and Jian R. Lu* 3313–3322

Evidence for a Common Mode of Transcription Factor Interaction with Chromatin as Revealed by Improved Quantitative Fluorescence Recovery after Photobleaching. *Florian Mueller, Paul Wach, and James G. McNally* 3323–3339

Electrophysiology

Molecular and Biophysical Properties of Voltage-Gated Na⁺ Channels in Murine Vas Deferens. *Hai-Lei Zhu, Manami Aishima, Hidetaka Morinaga, Richard D. Wassall, Atsushi Shibata, Kazuomi Iwasa, Masatoshi Nomura, Masaya Nagao, Katsuo Sueishi, Thomas C. Cunnane, and Noriyoshi Teramoto* 3340–3351

Other

Putative Functions and Functional Efficiency of Ordered Cuticular Nanoarrays on Insect Wings. *Gregory S. Watson, Sverre Myhra, Bronwen W. Cribb, and Jolanta A. Watson* 3352–3360

Corrections 3361

Author Index 3362

Advertiser Index

Below are this issue's Biophysical Journal advertisers. If the advertiser has a web site, you can visit the link to connect with the advertiser's site.

When you communicate with the advertiser, please let them know you heard about them through Biophysical Journal and the Biophysical Society web site.

For information on advertising in Biophysical Society publications, please visit www.biophysics.org/marketing/opportunities.htm

UCSB Electrical Eng. & Mechanical Eng.

Sutter Instrument www.sutter.com

The University of Vermont <http://physioweb.med.uvm.edu>

Weill Cornell Medical College in Qatar www.qatar-med.cornell.edu

For information on advertising in the Biophysical Society's publications, contact Gloria Nehemiah at 301-634-7265, or through email at gnehemiah@biophysics.org.

Cover picture: An *Amoeba proteus* cell stained for microtubules (green) and F-actin (red). The fluorescence images are overlaid (bottom left). The bright-field image (bottom right) shows many endogenous particles, whose displacements were tracked to study the viscoelasticity of the cytoplasm in the crawling cell, yielding information on the structure and dynamics of the cytoskeleton. See the article by Rogers et al. on page 3313.