**Marc Ostermeier**
Johns Hopkins University
Department of Chemical and Biomolecular Engineering
3400 N. Charles St.
Baltimore, MD 21218 USA
Tel: 410.516.7144
Fax: 410.516.5510
oster@jhu.edu

## Education
1996  Ph.D., Chemical Engineering, University of Texas at Austin
     Advisor: George Georgiou
1990  B.S., Chemical Engineering, University of Wisconsin-Madison

## Positions and Employment
2007-  Associate Professor of Chemical and Biomolecular Engineering, Johns Hopkins
     University.
2007-  Faculty Member, Chemistry-Biology Interface Program, Johns Hopkins University.
2006-  Faculty Member, NanoBioMed Graduate Training Program, Johns Hopkins University.
2000-  Faculty Member, Program in Molecular and Computational Biophysics, Johns Hopkins
     University.
2000-2007 Assistant Professor of Chemical and Biomolecular Engineering, Johns Hopkins
     University.
1996-2000 Postdoctoral Fellow, Chemistry Department, Pennsylvania State University.
     Advisor: Stephen J. Benkovic

## Honors and Awards
2003-2008 NSF CAREER Award
2005  Keynote Address, Protein Engineering: Defining the Next Generation of Biotherapeutics
2002-2003 W. W. Smith Charitable Trust Medical Research Grant in Cancer
1999  Conference Fellowship, UEF Enzyme Engineering XV
1996-1999 NIH Postdoctoral Fellowship
1991  University of Texas at Austin Competitive Graduate Scholarship
1990-  Member, Tau Beta Pi Engineering Honorary Society
1985-1987 New Mexico Institute of Mining and Technology Institutional Scholarship

## Publications
33. Hida, K., J. Hanes, M. Ostermeier (submitted) Directed evolution for drug and nucleic acid delivery. *Adv. Drug Deliv. Rev.* (invited review article).
32. Meister, G.E., M. Kanwar, M. Ostermeier (in press) Circular permutation of proteins. In: S. Lutz, and U. Bornscheuer (eds) Protein Engineering Handbook, Wiley-VCH.
31. Wright, C. M., R. A. Heins, and M. Ostermeier. (2007) As easy as flipping a switch? *Curr. Opin. Chem. Biol.* **11**, 342-346. (invited review article).
30. Liang, J., J. R. Kim, J. T. Boock, T. J. Mansell and M. Ostermeier. (2007) Ligand binding and allostery can emerge simultaneously. *Protein Sci.* **16**, 929-937.
29. Ostermeier, M. (2007) Beyond cataloging the Library of Babel. *Chem. Biol.* **14**, 237-238. (invited commentary)
28. S. Durai, A. D. Bosley, A. B. Abulencia, S. Chandrasegaran, and M. Ostermeier, (2006) A bacterial one-hybrid selection system for interrogating zinc finger-DNA interactions. *Comb. Chem. High Throughput Screen*. **9**, 301-311.

27. J. R. Kim and M. Ostermeier, (2006) Modulation of effector affinity by hinge region mutations also modulates switching activity in an engineered allosteric TEM1 β-lactamase. *Arch. Biochem. Biophys.* **446**, 44-51.

26. Paschon, D. E., Patel, Z. S. and Ostermeier, M. (2005) Enhanced catalytic efficiency of aminoglycoside phosphotransferase (3')-IIa achieved through protein fragmentation and reassembly. *J. Mol. Biol.* **353**, 26-37.

25. Ostermeier, M. (2005) Engineering allosteric protein switches by domain insertion. *Protein Eng. Des. Sel.* **18**, 359-364. (invited review article).

24. Guntas, G., Mansell, T. J., Kim, J. R., and Ostermeier, M. (2005) Directed evolution of protein switches and their application to the creation of ligand-binding proteins. *Proc. Nat. Acad. Sci. USA* **102**, 11224-11229.

23. W. Choe, S. Chandrasegaran, and M. Ostermeier, (2005) Protein fragment complementation in M.HhaI DNA methyltransferase. *Biochem. Biophys. Res. Commun.* **334**, 1233-1240.

22. Bosley, A. D. and Ostermeier, M. (2005) Mathematical expressions useful in the construction, description and evaluation of protein libraries. *Biomolecular Engineering* **22**, 57-61.

21. Guntas, G., Mitchell, S.F. and Ostermeier, M. (2004) A molecular switch created by *in vitro* recombination of non-homologous genes. *Chem. Biol.* **11**, 1483-1487. Featured in a commentary in *Chem. Biol.* **11**, 1475-1476, (2004).

20. Paschon, D.E. and Ostermeier, M. (2004) Construction of protein fragment complementation libraries using incremental truncation. *Methods Enzymol.* **388**, 103-116.

19. Guntas, G. and Ostermeier, M. (2004) Creation of an allosteric enzyme by domain insertion. *J. Mol. Biol.* **336**, 263-273.

18. Ostermeier, M. (2003) Synthetic gene libraries: in search of the optimal diversity. *Trends Biotechnol.* **21**, 244-247. (invited commentary)

17. Ostermeier, M. (2003) Theoretical distribution of truncation lengths in incremental truncation libraries. *Biotechnol. Bioeng.* **82**, 564-577.

16. Ostermeier, M. and Lutz, S. (2003) The creation of ITCHY hybrid protein libraries. *Methods Mol. Biol.* **231**, 129-142.

15. Lutz, S. and Ostermeier, M. (2003) Preparation of SCRATCHY hybrid protein libraries: size- and in-frame selection of nucleic acid sequences. *Methods Mol. Biol.* **231**, 143-152.

14. Ostermeier, M., Lutz, S. and Benkovic, S.J. (2002) Generation of protein fragment libraries by incremental truncation. In: Golemis, E.A. (ed) <u>Protein-Protein Interactions: A Molecular Cloning Manual</u>, Cold Spring Harbor Laboratory Press (Cold Spring Harbor, NY).

13. Lutz, S., Ostermeier, M., Moore, G., Maranas, C., and Benkovic, S.J. (2001) Creating multiple-crossover DNA libraries independent of sequence identity. *Proc. Nat. Acad. Sci. USA* **98**, 11248-11253.

12. Lutz, S., Ostermeier, M. and Benkovic, S. J. (2001) Rapid generation of incremental truncation libraries for protein engineering using a-phosphothioate nucleotides. *Nucleic Acids Res.* **29**, e16.

11. Ostermeier, M. and Benkovic, S. J. (2001) Construction of hybrid gene libraries involving the circular permutation of DNA. *Biotechnology Letters* **23**, 303-310.

10. Ostermeier, M. and Benkovic, S. J. (2000) Evolution of protein function by domain swapping. *Advances in Protein Chemistry* **55**, 29-77.

9. Ostermeier, M. and Benkovic, S. J. (2000) A two-phagemid system for the creation of non-phage displayed antibody libraries approaching one trillion members. *J. Immunol. Methods* **237**, 175-186.

8. Ostermeier, M., Shim, J. H. and Benkovic, S. J. (1999) A combinatorial approach to hybrid enzymes independent of DNA homology. *Nature Biotechnol.* **17**, 1205-1209.

7. Ostermeier, M., Nixon, A. E. and Benkovic, S. J. (1999) Incremental truncation as a strategy in the engineering of novel catalysts. *Bioorg. Med. Chem.* **7**, 2139-2144.

6. Ostermeier, M. and Benkovic, S. J. (1999) Finding Cinderella's slipper—proteins that fit. *Nature Biotechnol.* **17**, 639-640.

5. Ostermeier, M., Nixon, A. E., Shim, J. H. and Benkovic, S. J. (1999) Combinatorial protein engineering by incremental truncation. *Proc. Nat. Acad. Sci. USA* **96**, 3562-3567.
4. Nixon, A. E., Ostermeier, M. and Benkovic, S. J. (1998) Hybrid enzymes: manipulating enzyme design. *Trends Biotechnol.* **16**, 258-264.
3. Ostermeier, M., De Sutter, K. and Georgiou, G. (1996) Eukaryotic protein disulfide isomerase complements *Escherichia coli dsbA* mutants and increases the yield of a heterologously secreted protein with disulfide bonds. *J. Biol. Chem.* **271**, 10616-10622.
2. Georgiou, G., Valax, P., Ostermeier, M. and Horowitz, P. M. (1994) Folding and aggregation of TEM β-lactamase: analogies with the formation of inclusion bodies in *Escherichia coli*. *Prot. Sci.* **3**, 1953-1960.
1. Ostermeier, M. and Georgiou, G. (1994) The folding of bovine pancreatic trypsin inhibitor in the *Escherichia coli* periplasm. *J. Biol. Chem.* **269**, 21072-21077.

**Patents**
4. "Methods for making and using molecular switches involving circular permutation" Ostermeier, M. and Guntas, G.  Patent filed.
3. "Molecular switches and methods for making and using the same." Ostermeier, M.  U.S. patent filed.
2. "Incrementally truncated nucleic acids and methods of making same" Benkovic, S. J., Ostermeier, M., Nixon, A. E., and Lutz, S. U.S. and world patents filed.
1. "Methods for producing soluble, biologically-active disulfide-bond containing eukaryotic proteins in bacterial cells" Georgiou, G. and Ostermeier, M., U.S. patent 6,027,888.