

CURRICULUM VITAE

Jeffrey B. Stock

Address: Department of Molecular Biology
Princeton University
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Education: Johns Hopkins University, Biochemistry, Ph.D. 1967-1975
Johns Hopkins University, Biophysics, B.A. 1963-1967

Professional Experience:

1993-present Professor, Department of Molecular Biology, Princeton University
1988-present Associate Member, Chemistry Department, Princeton University
1988-1993 Associate Professor, Department of Molecular Biology, Princeton University
1982-1988 Assistant Professor, Departments of Molecular Biology and Biochemistry, Princeton University
1979-1982 Research Associate, Biochemistry Department, University of California, Berkeley
1977-1979 Cystic Fibrosis Fellow, Biochemistry Department, University of California, Berkeley
1975-1977 Research Associate, Biology Department, Johns Hopkins University

Research Interests: Membrane receptors and signal transduction. Roles of reversible protein phosphorylation and methylation in cell regulation.

Teaching:

1982-present Princeton University, Princeton, NJ

- Molecular Physiology
- Introductory Biochemistry
- Advanced Biochemistry
- Biochemistry of Transcriptional Regulation
- Microbial Signal Transduction
- Brain Biochemistry
- Pharmacology of Natural Products
- Biochemistry of Perception and Behavior
- Molecular and Cell Biology of Skin and Hair
- Protein Phosphotransfer Networks in Cell Regulation

1979-1982 University of California, Berkeley, CA

- Introductory Biochemistry

1968-1969 Johns Hopkins University, Baltimore, MD

- Biochemistry and Genetics Laboratories

Awards and Activities:

- 2008 Elected as a Fellow to the American Association for the Advancement of Science (AAAS)
- 2007 Keynote Speaker, Conference of the Australasian Society for Cognitive Science, University of Adelaide, Australia
- 2004-present Editorial Board, BMC Microbiology
- 2003-present Centers Review Committee, National Institute of Drug Abuse (NIDA)
- 2003-2008 Editorial Board, Journal of Biological Chemistry
- 1992-present Member, Materials Science Program, Princeton University
- 1988-present Member, Neuroscience Program, Princeton University
- 2006 Chair, National Institute of Drug Abuse (NIDA) – Epigenetics Study Section
- 2005 Prokaryotic Cell and Molecular Biology Study Section, National Institutes of Health
- 2002 Founder and Chairman of the Board, Signum Bioscience
- 1999 Fellow, American Academy of Microbiology
- 1999 Humboldt Prize, Germany
- 1998-2000 Paper Alerts in Cell Regulation, Current Opinion in Microbiology
- 1998-2001 Visiting Fellow, University of Kaiserslautern, Germany
- 1998 Review Oversight Committee, The National Cancer Institute
- 1994-2000 Visiting Fellow, Institut Pasteur, Paris
- 1986-1998 Faculty Fellow, Wilson College, Princeton University
- 1988-1998 Steering Committee, Molecular Biophysics Program, Princeton University
- 1992-1997 Editorial Board, Journal of Biological Chemistry
- 1992-1995 Scientific Advisory Board, Cadus Pharmaceuticals
- 1992 Founder, Cadus Pharmaceuticals
- 1988 Convenor, Seminar on “Molecular Mechanisms of Sensing and Adaptation,” Annual Meeting of the American Society for Microbiology
- 1979 Sigma Xi Lecturer
- 1977-1980 Postdoctoral Fellow, Cystic Fibrosis Association
- 1967-1975 Predoctoral Fellow, National Institutes of Health

Societies:

American Society for Biochemistry and Molecular Biology
Biophysical Society
American Society for Microbiology
American Academy of Microbiology
The Protein Society
American Chemical Society
New York Academy of Science
American Academy for the Advancement of Science

Publications

1. Stock, J.B. and Roseman, S. (1971) A sodium-dependent co-transport system in bacteria. *Biochem. Biophys. Res. Comm.* **44**, 132-138.
2. Stock, J.B., Rauch, B., and Roseman, S. (1977) Periplasmic space in Salmonella typhimurium and Escherichia coli. *J. Biol. Chem.* **252**, 7850-7861.
3. Stock, J.B. and Koshland, D.E., Jr. (1978) A protein methyltransferase involved in bacterial sensing. *Proc. Natl. Acad. Sci. U.S.A.* **75**, 3659-3663.
4. Stock, J.B. and Koshland, D.E., Jr. (1978) Identification of a methyltransferase and a methyltransferase with genes involved in bacterial chemotaxis. In *Transmethylation* (E. Usdin, R.T. Borhardt, and C.R. Creveking, eds.) Elsevier, New York, pp. 595-602.
5. Postma, P.W. and Stock, J.B. (1980) Enzymes II of the phosphotransferase system do not catalyze sugar transport in the absence of phosphorylation. *J. Bacteriol.* **141**, 476-484.
6. Snyder, M.A., Stock, J.B., and Koshland, D.E., Jr. (1981) Role of membrane potential and calcium in chemotactic sensing by bacteria. *J. Mol. Biol.* **149**, 241-257.
7. Stock, J.B., Maderis, A.M., and Koshland, D.E., Jr. (1981) Bacterial chemotaxis in the absence of receptor carboxyl methylation. *Cell* **27**, 37-44.
8. Stock, J.B. and Koshland, D.E., Jr. (1981) Changing reactivity of receptor carboxyl groups during bacterial sensing. *J. Biol. Chem.* **256**, 10826-10833.
9. Stock, J.B. and Koshland, D.E., Jr. (1981) A cyclic mechanism for excitation and adaptation. *Curr. Topics Cell. Regul.* **18**, 505-517.
10. Koshland, D.E., Jr., Goldbeter, A., and Stock, J.B. (1982) Amplification and adaptation in regulatory and sensory systems. *Science* **217**, 220-225.
11. Stock, J.B., Waygood, E.B., Meadow, N.D., Postma, P.W., and Roseman, S. (1982) The glucose receptors of the Salmonella typhimurium phosphotransferase system. *J. Biol. Chem.* **257**, 14543-14552.
12. Snyder, M.A., Stock, J.B., and Koshland, D.E., Jr. (1984) Carboxyl methyltransferase of bacterial chemotaxis. *Methods Enzymol.* **106**, 321-330.
13. Stock, J.B., Clarke, S., and Koshland, D.E., Jr. (1984) The protein carboxyl methyltransferase involved in E. coli and S. typhimurium chemotaxis. *Methods Enzymol.* **106**, 331-340.
14. Stock, J. and Koshland, D.E., Jr. (1984) Sensory adaptation mechanisms in swarm development. *Microbial Development* (Shapiro, L. and Losick, R., eds.) Cold Springs Harbor, New York, pp. 117-131.
15. Stock, J.B., Kersulis, G., and Koshland, D.E., Jr. (1985) Neither methylating nor demethylating enzymes are required for adaptive responses in bacterial chemosensing. *Cell* **42**, 683-690.
16. Stock, A., Koshland, D.E., Jr., and Stock, J.B. (1985) Homologies between the Salmonella typhimurium CheY protein and proteins involved in the regulation of chemotaxis, membrane protein synthesis, and sporulation. *Proc. Natl. Acad. Sci. U.S.A.* **82**, 7989-7993.

17. Simms, S., Keane, M., and Stock, J.B. (1985) Multiple forms of the CheB methylesterase in bacterial chemosensing. *J. Biol. Chem.* **260**, 10161-10168.
18. Stock, J.B., Borczuk, A., Chiou, F., and Burchanel, J. (1985) Compensatory mutations in receptor function: a re-evaluation of the role of methylation in bacterial chemotaxis. *Proc. Natl. Acad. Sci. U.S.A.* **82**, 8364-8368.
19. Borczuk, A., Staub, A., and Stock, J.B. (1986) Demethylation of bacterial chemoreceptors is inhibited by attractant stimuli in the complete absence of the regulatory domain of the demethylating enzyme. *Biochem. Biophys. Res. Comm.* **141**, 918-923.
20. Simms, S.A., Cornman, E., Mottonen, J., and Stock, J.B. (1987) Active site of the enzyme which demethylates receptors during bacterial chemotaxis. *J. Biol. Chem.* **262**, 29-31.
21. Stock, A., Mottonen, J., Chen, T., and Stock, J.B. (1987) Identification of a possible nucleotide binding site in CheW, a protein required for sensory transduction in bacterial chemotaxis. *J. Biol. Chem.* **262**, 535-537.
22. Stock, J.B. (1987) Mechanisms of receptor function and the molecular biology of information processing in bacteria. *BioEssays* **6**, 199-203.
23. Stock, A., Schaeffer, E., Koshland, D.E., Jr., and Stock, J.B. (1987) A second type of protein methylation reaction in bacterial chemotaxis. *J. Biol. Chem.* **262**, 8011-8014.
24. Simms, S.A., Stock, A.M., and Stock, J.B. (1987) Purification and characterization of the S-adenosylmethionine: glutamyl methyltransferase that modifies membrane chemoreceptor proteins in bacteria. *J. Biol. Chem.* **262**, 8537-8543.
25. Borczuk, A., Stock, A.M., and Stock, J.B. (1987) S-Adenosylmethionine may not be essential for signal transduction during bacterial chemotaxis. *J. Bacteriol.* **269**, 3295-3300.
26. Stock, A.M. and Stock, J.B. (1987) Purification and characterization of the CheZ protein of bacterial chemotaxis. *J. Bacteriol.* **269**, 3301-3311.
27. Stock, J.B. and Stock, A.M. (1987) What is the role of receptor methylation in bacterial chemotaxis? *Trends Biochem. Sci.* **12**, 371-375.
28. Stock, A., Clarke, S., Clarke, C., and Stock, J.B. (1987) N-Terminal methylation of proteins - structure, function, and specificity. *FEBS. Lett.* **220**, 8-14.
29. Ninfa, A.J., Ninfa, E.G., Lupas, A.R., Stock, A., Magasanik, B., and Stock, J.B. (1988) Crosstalk between bacterial chemotaxis signal transduction proteins and the regulators of transcription of the Ntr regulon: evidence that nitrogen assimilation and chemotaxis are controlled by a common phosphotransfer mechanism. *Proc. Natl. Acad. Sci. U.S.A.* **85**, 5492-5496.
30. Stock, J.B., and Simms, S. (1988) Methylation, demethylation, and deamidation at glutamate residues in membrane chemoreceptor proteins. *Post-translational Modifications of Proteins and Ageing* (V. Zappia, ed.) Plenum Publishing Comp., London, pp. 201-212.
31. Stock, A., Chen, T., Welsh, D., and Stock, J.B. (1988) CheA, a central regulator of bacterial chemotaxis, belongs to a family of proteins that control gene expression in response to changing environmental conditions. *Proc. Natl. Acad. Sci. U.S.A.* **85**, 1403-1407.

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34. Stock, A.M., Wylie, D.C., Mottonen, J.M., Lupas, A.N., Ninfa, E.G., Ninfa, A.J., Schutt, C.E., and Stock, J.B. (1988) Phospho-proteins involved in bacterial signal transduction. *Cold Springs Harbor Symp. Quant. Biol.* **53**, 49-57.
35. Krueger, J.K., Kulke, M.H., Schutt, C., and Stock, J.B. (1989) Protein inclusion body formation and purification. *BioPharm.* **2**, 40-45.
36. Stock, A.M., Mottonen, J.M., Stock, J.B., and Schutt, C.E. (1989) Three-dimensional structure of CheY, the response regulator of the bacterial chemotaxis system. *Nature* **337**, 745-749.
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43. Krueger, J., Stock, A., Schutt, C., and Stock, J.B. (1990) Inclusion bodies from proteins produced at high levels in *E. coli*. *Protein Folding: Deciphering the Second Half of the Genetic Code*. (Gierasch, L.M. and King, J., eds.) AAAS, Washington, D.C., pp. 1236-1242.
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45. Stock, J.B. (1990) A membrane receptor kinase that regulates development in *Bacillus subtilis*. *BioEssays* **12**, 387-388.
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48. Volker, C., Miller, R.A., and Stock, J.B. (1990) S-Farnesylcysteine methyltransferase in bovine brain. *Methods* **1**, 283-287.
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52. Stock, J.B. (1991) Balancing effector outputs. *Current Biology* **1**, 154-156.
53. Lupas, A., Dyke, M.V., and Stock, J.B. (1991) Predicting coiled-coils from protein sequences. *Science* **252**, 1162-1164.
54. Volker, C., Lane, P., Kwee, C., Johnson, M., and Stock, J.B. (1991) A single activity carboxyl methylates both farnesyl and geranylgeranyl cysteine residues. *FEBS Lett.* **295**, 189-194.
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61. Feng, J., Atkinson, M.R., McCleary, W., Stock, J.B., Wanner, B.L., and Ninfa, A.J. (1992) Role of phosphorylated metabolic intermediates in the regulation of glutamine synthetase synthesis in *Escherichia coli*. *J. Bacteriol.* **174**, 6061-6070.
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67. McCleary, W.R., Stock, J.B., and Ninfa, A.J. (1993) Is acetyl phosphate a global signal in *Escherichia coli*? *J. Bacteriol.* **175**, 2793-2798.
68. DeKoster, G.T., Robertson, A.D., Stock, A.M., and Stock, J.B. (1993) Urea and guanidine-HCl yield different unfolding free energies for CheY: Which denaturant provides the most reliable free energy values? *Tech. Prot. Chem.* **IV**, 533-540.
69. Lee, J. and Stock, J. (1993) Protein phosphatase 2A catalytic subunit is methyl-esterified at its carboxyl terminus by a novel methyltransferase. *J. Biol. Chem.* **268**, 19192-19195.
70. McCleary, W.R. and Stock, J.B. (1993) Phosphorylation in bacterial chemotaxis. *Signal Transduction: Prokaryotic and Simple Eukaryotic Systems*. (Kurjan, J. and Taylor, B.L., eds.), Academic Press, Inc., New York, NY, pp. 17-41.
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91. Levit, M., Liu, Y., Surette, M., and Stock, J.B. (1996) Active site interference and asymmetric activation in the chemotaxis protein histidine kinase CheA. *J. Biol. Chem.* **271**, 32057-32063.
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93. Hakenbeck, R. and Stock, J.B. (1996) Analysis of two-component signal transduction systems involved in transcriptional regulation. *Meth. Enzymol.* **273**, 281-300.
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104. Levit, M.N., Liu, Y., and Stock, J.B. (1999) Mechanism of CheA protein kinase activation in receptor signaling complexes. *Biochemistry* **38**, 6651-6658.
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