

CURRICULUM VITAE

Wray H. Huestis

Professor of Chemistry
Stanford University
Stanford, California 94305-5080
(650) 723-2503

PERSONAL DATA

Birth date/place: December 29, 1945; Lander, Wyoming
Citizenship: USA
Marital Status: Married 2 June 1968
Home Address: 415 San Mateo Drive, Menlo Park, CA 94025
SSN: 475-58-8171

EDUCATION

1972 Ph.D. in Biophysics, minor in Chemistry
California Institute of Technology, Pasadena, CA
1967 B.A. in Chemistry (Honors)
Macalester College, St. Paul, MN

PROFESSIONAL EXPERIENCE

2005-2011 Vice-Chair, Department of Chemistry, Stanford University
1987- Professor of Chemistry, Stanford University
1980-1986 Associate Professor, Department of Chemistry, Stanford University
1974-1980 Assistant Professor, Department of Chemistry, Stanford University
1973-1974 National Institutes of Health Postdoctoral Fellow, Department of Chemistry,
Stanford University
1967-1972 National Science Foundation Predoctoral Fellow, Department of Biology,
California Institute of Technology

OTHER PROFESSIONAL ACTIVITIES AND AFFILIATIONS

1967- Member, American Chemical Society
1979- Member, Biophysical Society
1980- Member, Red Cell Club
1977-1979 Sloan Fellow
1977-1981 National Institutes of Health Research Career Development Award
1977-1980 Member, National Institutes of Health Study Section on Biophysics and
Biophysical Chemistry
1988 Distinguished Teaching Award, Dean of Humanities and Sciences
1989-1992 Member, National Science Foundation Graduate Fellowship Panel
1990-2011 Chair, Chemistry Department Committee on Teaching Assignments
2011- **Member, Chemistry Department Curriculum Committee**
Member, Chemistry Department Graduate Studies Committee
1997- Member, Phi Beta Kappa
2003-2011 Ombuds, Chemistry Department
2011-13 Member, ad hoc committee on design of Teaching and Learning Center
Chemistry and Biology Departments
2012-13 Member, Stanford University Committee on Libraries

RESEARCH INTERESTS

Cell-liposome interactions and modulation of cell membrane composition
Lipid translocation and sequestration in plasma membranes
Encapsulated virus recognition and fusion
Virus-membrane fragment chimaeras as drug delivery vehicles
Lipid bilayer balance and control of erythrocyte shape and platelet activation
Lipid-protein interactions in membrane structure regulation

WRAY H. HUESTIS

Publications

1. Huestis, W.H., and M.A. Raftery (1971) "Use of fluorine-19 nuclear magnetic resonance to study conformation changes in specifically modified ribonuclease S," Biochemistry **10**:1181-1186.
2. Raftery, M.A., W. H. Huestis, and F. Millet (1971) "Use of 19F-nmr spectroscopy for detection of protein conformation changes: Application to lysozyme, ribonuclease, and hemoglobin," Cold Spring Harbor Symposium on Quantitative Biology **36**:541-550.
3. Wolsey, W.C., W. H. Huestis, and T.W. Theyson (1972) "Investigation of some transition metal complexes of hydrogen cyanamide," J. Inorg. Nucl.Chem. **39**:2358-2362.
4. Huestis, W.H., and M.A. Raftery (1972a) "A study of cooperative interactions in hemoglobin using fluorine nuclear magnetic resonance," Biochemistry **11**:1648-1654.
5. Huestis, W.H., and M.A. Raftery (1972b) "Observation of cooperative ionizations in hemoglobin," Proc. Nat. Acad. Sci. U.S. **69**:1887-1891.
6. Huestis, W.H., and M.A. Raftery (1972c) "The binding of n-butyl isocyanide to human hemoglobin," Biochem. Biophys. Res. Commun. **48**:678-683.
7. Huestis, W.H., and M.A. Raftery (1972d) "31P-nmr studies of the release of diphosphoglyceric acid on carbon monoxide binding to hemoglobin," Biochem. Biophys. Res. Commun. **49**:428-433.
8. Huestis, W.H., and M.A. Raftery (1972e) "19F-nmr studies of oxygen binding to hemoglobin," Biochem. Biophys. Res. Commun. **49**:1358-1365.
9. Huestis, W.H., and M.A. Raftery (1973) "Characterization of intermediate states in the ligation of hemoglobin" Biochemistry **12**:2531-2535.
10. Lee, T.T., W.H. Huestis, and M.A. Raftery (1973) "Comparison of the functional properties of trifluoroacetylated hemoglobin and native hemoglobin," Biochemistry **12**:2535-2539.
11. Raftery, M.A., and W.H. Huestis (1973) "Molecular conformation and cooperativity in hemoglobin," Ann. N.Y. Acad. Sci. **222**:40-45.
12. Huestis, W.H., and H.M. McConnell (1974) "A functional acetylcholine receptor in the human erythrocyte," Biochem. Biophys. Res. Commun. **57**:726-732.
13. Huestis, W.H., and M.A. Raftery (1975) "Conformation and cooperativity in hemoglobin," Biochemistry **14**:1886-1892.

14. Huestis, W.H. (1976) "Preliminary characterization of the acetylcholine receptor in human erythrocytes," J. Supramol. Str. 4:355-365.
15. Huestis, W.H. (1976) "A single-cell system for study of cholinergic receptor function," Proceedings of the Dahlem Workshop on Hormone and Antihormone Action at the Target Cell (J.H. Clark, ed.), Berlin.
16. Bouma, S.R., F.W. Drislane, and W.H. Huestis (1977) "Selective extraction of membrane-bound proteins by phospholipid vesicles," J. Biol. Chem. 252:6759-6763.
17. Huestis, W.H. (1977) "A sodium-selective membrane permeability defect induced by phospholipid vesicle treatment of erythrocytes," J. Biol.Chem. 252:6764-6768.
18. Huestis, W.H., and M.A. Raftery (1978) "Bromotrifluoroacetone alkylates hemoglobin at cysteine β 93" Biochem. Biophys. Res. Comm. 81:892-899.
19. Bierbaum, T.J., S.R. Bouma, and W. H. Huestis (1979) "A mechanism of cell lysis by lysophosphatidylcholine," BBA Biomembranes 555:102-110.
20. Nelson, M.J., J.E. Ferrell, Jr., and W.H. Huestis (1980) " α -Adrenergic stimulation of human erythrocyte membrane protein phosphorylation," BBA Biomembranes 558:136-140.
21. Nelson, M.J., and W.H. Huestis (1980) "Evidence that calcium acts as an intracellular messenger for adrenergic responses in human erythrocytes," BBA Biomembranes 600:398-405.
22. Nelson, M.J., and W.H. Huestis (1980) "Preparation of a novel C-13 labeled heme protein," BBA General Subjects 623:467-470.
23. Cook, S.L., S.R. Bouma, and W.H. Huestis (1980) "Cell to vesicle transfer of intrinsic membrane proteins: Effect of membrane fluidity," Biochemistry 19:4601-4607.
24. Nelson, M.J., and W.H. Huestis (1982) "Cholinergic modification of glucose transport in human erythrocytes," BBA Biomembranes 685:279-282.
25. Nelson, M.J., D.L. Daleke, and W.H. Huestis (1982) "A calmodulin-dependent spectrin kinase activity in resealed human erythrocyte ghosts," BBA Biomembranes 686:182-188.
26. Ferrell, J.E., Jr., and W.H. Huestis (1982) "Calcium does not mediate the shape change that follows ATP depletion in human erythrocytes," BBA Biomembranes 687:321-328.
27. Newton, A.C., S.L. Cook, and W.H. Huestis (1983) "Transfer of Band 3, the erythrocyte anion transporter, between cells and model membranes," Biochemistry 22:6110-6117.
28. Ferrell, J.E., Jr., and W.H. Huestis (1984) "Phosphoinositide metabolism and the morphology of human erythrocytes," J. Cell Biology 98:1992-1998.

29. Nikinmaa, M., and W.H. Huestis (1984a) "Shape changes in goose erythrocytes," BBA Biomembranes 773:317-320.
30. Nikinmaa, M., and W.H. Huestis (1984b) "Adrenergic swelling in nucleated erythrocytes," J. Exp. Biol. 113:215-224.
31. Ferrell, J.E., Jr., K.-J. Lee, and W.H. Huestis (1985a) "Membrane bilayer balance and erythrocyte shape: a quantitative assessment," Biochemistry 24:2849-2857.
32. Ferrell, J.E., Jr., K.-J. Lee, and W.H. Huestis (1985b) "Lipid transfer between phosphatidylcholine vesicles and human erythrocytes: exponential decrease in rate with increasing acyl chain length," Biochemistry 24:2857-2864.
33. Murphy-Chutorian, D., J. Kosek, W. Mok, S. Quay, W.H. Huestis, J. Mehigan, J. Profitt, and R. Ginsburg (1985) "Selective absorption of UV laser energy by atherosclerotic plaque treated with tetracycline," Am. J. Cardiology 55:1293-1297.
34. Daleke, D.L., and W.H. Huestis (1985) "Incorporation and translocation of aminophospholipids in human erythrocytes," Biochemistry 24:5406-5416.
35. Truong, H.T., J.E. Ferrell, Jr., and W.H. Huestis (1986) "Sulfhydryl reducing agents and shape regulation in human erythrocytes," Blood 67:214-221.
36. Newton, A.C., and W.H. Huestis, "Efflux of dipicolinic acid from human erythrocytes, membrane fragments, and Band 3-liposome complexes: a fluorescence probe for the erythrocyte anion transporter," Analytical Biochemistry 156:56-60.
37. Mitchell, K.T., J.E. Ferrell, Jr., and W.H. Huestis, (1986) "Separation of phosphoinositides and other phospholipids by two-dimensional thin-layer chromatography," Analytical Biochemistry, 158:447-453.
38. Huestis, W.H., and A.C. Newton (1986) "Intermembrane protein transfer: Band 3, the erythrocyte anion transporter, transfers in native orientation from human red cells into the bilayer of phospholipid vesicles," J. Biol. Chem. 261:16274-16278.
39. Ferrell, J.E., Jr., K.T. Mitchell, and W.H. Huestis (1988), "Membrane bilayer balance and platelet shape: Morphological and biochemical responses to amphipathic compounds," BBA Biomembranes 939:223-237.
40. Newton, A.C., and W.H. Huestis (1988) "Lymphocyte-vesicle interactions: vesicle adsorption, membrane fragmentation, and intermembrane protein transfer," Biochemistry 27:4645-4655.
41. Newton, A.C., and W.H. Huestis (1988) "Vesicle-to-cell protein transfer: Insertion of Band 3, the erythrocyte anion transporter, into lymphocytes," Biochemistry 27:4655-4659.
42. Daleke, D.L., and W.H. Huestis (1989) "Erythrocyte morphology reflects the transmembrane distribution of incorporated phospholipids," J. Cell Biol 108:1375-1385.

43. Brown, J.W. and W.H. Huestis (1993) "Structure and orientation of a bilayer-bound model peptide. A ^1H NMR study," J. Phys. Chem. 97:2967-2973.
44. Truong, H.-T.N., D.L. Daleke, and W.H. Huestis (1993) "Human erythrocyte shape regulation: Interaction of metabolic and redox status," BBA Biomembranes 1150:51-56.
45. Truong, H.-T.N., D.L. Daleke, and W.H. Huestis (1993) "Dithiothreitol stimulates the activity of the plasma membrane aminophospholipid translocator," BBA Biomembranes 1150:57-62.
46. Loh, R.K., and W.H. Huestis (1993) "Human erythrocyte membrane lipid asymmetry: Transbilayer distribution of rapidly diffusing phosphatidylserines," Biochemistry, 32:11722-11726
47. Brunauer, L.S., and W.H. Huestis (1993) "Effects of exogenous lipids on platelet activation," BBA Biomembranes, 1152:109-118.
48. Yang, E., and W.H. Huestis (1993) "Mechanism of intermembrane phosphatidylcholine transfer: Effects of pH and membrane configuration," Biochemistry, 32:12218-12228.
49. Hall, M.P., and W.H. Huestis (1994) "Phosphatidylserine headgroup diastereomers translocate equivalently across human erythrocyte membranes," BBA Biomembranes, 1190:243-247.
50. Brunauer L.S., M.S. Moxness , and W.H. Huestis (1994) "Hydrogen peroxide oxidation induces the transfer of phospholipids from the membrane into the cytosol of human erythrocytes," Biochemistry, 33:4527-4532.
51. Daleke, D.L., W.H. Huestis, and A.C. Newton (1994) "Protein kinase C as a measure of transbilayer phosphatidylserine asymmetry," Analytical Biochemistry, 217:33-40.
52. Brown, James W., and W.H. Huestis (1994) "Quantification of two-dimensional NOE spectra via a combined linear and nonlinear least-squares fit." J. Biol. NMR 4:645-652.
53. Lin, S., E. Yang, and W.H. Huestis (1994) "Relationship of phospholipid distribution to shape change in calcium crenated and recovered human erythrocytes" Biochemistry.33:7337-7344.
54. Yang, E., and W.H. Huestis (1994) "Oxidative interactions between the erythrocyte membrane and phosphatidyl choline vesicles," J. Biol. Chem. 269:14518-14524.
55. Lin, S, and W.H. Huestis (1995) "Wheat germ agglutinin stabilization of erythrocyte shape: Role of bilayer balance and the membrane skeleton," BBA Biomembranes 1233:47-56.
56. Gedde, M.M., E. Yang, and W.H. Huestis (1995) "Shape response of human erythrocytes to altered cell pH," Blood 86:1595-1599.
57. Waters, S.I., R. Sen, L.S. Brunauer, and W.H. Huestis (1996) "Physical determinants of intermembrane protein transfer," Biochemistry 35:4002-4008.
58. Moxness, M.S., L.S. Brunauer, and W.H. Huestis (1996) "Choleglobin and sulfhemoglobin extract phospholipids from the membrane of human erythrocytes," Biochemistry 35:7181-7187.

59. Chen, J. and W.H. Huestis, (1997) "Role of membrane lipid distribution in chlorpromazine-induced shape change in human erythrocytes," BBA Biomembranes 1323:299-309
60. Maulucci-Gedde, M., and W.H. Huestis (1997) "Membrane potential and human erythrocyte shape," Biophys. J. 72:1220-1233
61. Maulucci-Gedde, M., D.J. Davis, and W.H. Huestis (1997) "Cytosolic pH and human erythrocyte shape," Biophys. J. 72:1234-1246
62. Hall, M.P., K.K. Burson, and W.H. Huestis (1998) "Interactions of a vesicular stomatitis virus G protein fragment with phosphatidylserine: Nmr and fluorescence studies", BBA Biomembranes 1415: 101-113.
63. Keller, S.L., W.H. Pitcher III, W.H. Huestis, and H.M. McConnell (1998) "Red blood cell lipids form immiscible liquids", Phys. Rev. Letters 81:5019-5022.
64. Gedde, M. and W.H. Huestis (1999) "Resolution of the paradox of red cell shape changes in low and high pH", BBA Biomembranes 1417:246-253.
65. Trigiant, G., and W.H. Huestis (2000) "Selective virus-mediated intracellular delivery of membrane-impermeant compounds by means of plasma membrane vesicles" Aniviral Research 45:211-221.
66. Pitcher, Wayne H. III, Sarah L. Keller, and W.H. Huestis (2002) "Interaction of nominally soluble proteins with phospholipid monolayers at the air-water interface" BBA Biomembranes 1564:107113.67.
67. Pitcher, Wayne H. III, and W.H. Huestis (2002) "Preparation and analysis of small unilamellar phospholipid vesicles of a uniform size" Biochemical and Biophysical Research Communications 296: 1352-1355.
68. Chen, James Y., Linda S. Brunauer, Felicia C. Chu, Colleen M. Helsel, Margaret M. Gedde, and W.H. Huestis (2003) "Selective amphipathic nature of chlorpromazine binding to plasma membrane bilayers" BBA Biomembranes 1616: 95-105.
69. Pitcher, Wayne H. III, Romita Sen, Michael P. Hall, and W.H. Huestis "1H-Nmr Study of hemoglobin interactions with model membranes: Lipid headgroup dependence" submitted to BBA Biomembranes.

In preparation

70. **Brunauer, Linda S., James Y. Chen, M. Zachary Koontz, Kathryn K. Davis, Laura E. O'Brien, Emily M. Wright, and W.H. Huestis, "Extraction of Phospholipids from Human Erythrocyte Membranes by Hemoglobin Oxidation Products", submitted to BBA Biomembranes.**

71. **Huestis, W.H. “Nutrition and History” (working title).**

Patent:

Trigiant, G., and W.H. Huestis (1998) “Composition and method for antiviral therapy”
Provisional Application No. 60/087,322 filed May 29, 1998 OTL Reference: S98-039