

**THOMAS H. HAINES**

Visiting Professor of Biochemistry and Molecular Biology, Rockefeller University.

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Emeritus Professor of Biochemistry, Graduate Center, City University of New York

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Date of Birth: August 9, 1933

Place of Birth: New York, NY USA

**EDUCATION**

<u>Institution</u>	<u>Degree</u>	<u>Year</u>
City College of CUNY	B. S.	1957
City College of CUNY	M. S.	1959
Rutgers the State University	Ph. D.	1964

**MAJOR RESEARCH INTERESTS:** Biochemistry, Biophysics, Lipids in Membranes and Cell Biology. Specific biological roles of membrane lipids: cholesterol, cardiolipin, isoprenes, isoprane, chains of fatty acids (including polyunsaturated), chlorosulfolipids, phospholipid headgroups, & membrane protein/lipid interactions.

**HONORS**

Honors Fellowship, Rutgers the State University (1963).

NSF-NIH Joint Travel Award to Tokyo, Japan to attend IUB Conference, (1967) (ASBMB Award).

NATO Senior Fellow: Awarded by the National Science Foundation, Paris, France (1970).

Invited by the USSR Academy of Sciences to chair the first symposium on Lipids ever held at a IUPAC Conference; Riga, USSR (1970).

Co-Chairman; Symposium on Lipids and Monolayers, Amer. Oil Chem. Soc., New York, NY, (1970).

Chairman; Symposium on Sulfolipids, American Oil Chemists Society, Houston, TX, (1970).

Elected to the American Society of Biological Chemists (1970)

125th Anniversary Medal, City College of CUNY, (1972).

Member, Medical Advisory Committee, Sophie Davis School for Biomedical Education,. Other members included all of the Deans of New York's Medical Schools. (1974-78).

Member, American Society of Biological Chemists, Education Committee, (1986-1991)

Chair, Symposium on Membrane Dynamics, The biophysical Society, Phoenix, AZ (1988)

Chair, Biophysics Section, New York Academy of Science (1991-1993).

Member, Association of Graduate and Medical Schools Biochemistry Chairs, (1986-pres.)

Honored Professor Award; CUNY Medical School; (1982, 1983, 1986, 1988, 1989, 1992, 1993, 1995).

Twentieth Anniversary Medal, for establishing the CUNY Medical School, (1993).

Biochemistry and Cell Biology Study Section of NIH Institute for Alcoholism and Alcohol Abuse, 1992-95

Chaired Symposium, "Should a Year of Organic Chemistry be Required for Medical School Admission?", ASBMB/ACS Joint Meeting, San Francisco, CA, (1995).

Who's Who in America, Who's Who International (2005-pres.)

Visiting Professor

**MEMBERSHIPS**

American Association for the Advancement of Science, American Chemical Society, American Oil Chemists Society, American Society of Biochemists and Molecular Biologists, Biophysical Society, New York Academy of Sciences.

**REVIEWER**

**Member, Editorial Board, BBA Biomembranes (Biochimica Biophysica Acta, Elsevier Press)**

**Journal Referee:** Archives Biochemistry and Biophysics, Biochem. J., Biochemistry, Biochimica Biophysica Acta, Comp. Biochem. Physiol., European J. Biochem. FEBS Letters, J. American Chemical Society, J. American Oil Chemists Society, J. Bacteriol., J. Biological Chemistry, J. Biochem. (Tokyo), J. Colloid Research, J. of Investigative Dermatology, J. Lipid Research, J. Membrane Biology, J. Natural Products Chemistry, J. Physical Chemistry, J. Protozoology, J. Theoretical Biology, Lipids, Proceedings National Academy of Sciences, Science, and Virology.

**Grant funding from these Agencies:** Department of Agriculture, Department of Energy, National Institute Environmental and Health Sciences, National Science Foundation, National Institutes of Health, National Institute for Alcohol and Alcoholism, The Petroleum Research Fund, Barth Syndrome Foundation and several University funding programs (Guelph, CUNY, etc.)

#### **ACADEMIC AND PROFESSIONAL EXPERIENCE**

Visiting Professor of Biochemistry, Rockefeller University (1/1/2007-pres.)

Professor of Biochemistry, Doctoral Program of Biochemistry, Graduate Center, CUNY, (1972-2006)

Professor of Chemistry, City College of CUNY, (1972-2006)

Director of Biochemistry, CUNY Medical School, (1974-2006)

Principal Investigator of Research Grants from National Institutes of Health, National Science Foundation, National Heart Institute, Petroleum Research Fund, CUNY Faculty Research Award Program, Commonwealth Fund, Mellon Foundation, (1970-2001)

Visiting Scholar, Dept. of Cell and Molecular Biology, Div. Biochem., U. Cal., Berkeley, CA, (1993-4).

Visiting Scholar, Mitsubishi-Kasai Institute for Life Sciences, Tokyo Japan, (1986-1987).

Visiting Professor, Beijing Medical School, Beijing, China, (1986).

Visiting Professor, University of Minnesota, The Hormel Institute, Austin MN Spring (1978).

Acting Director, Center for Biomedical Education. Established 6 Year MD program. (1972-74)

Visiting Associate Professor, University of California, Berkeley, (1970-71).

Visiting Scholar, National Center for Scientific Research (C.N.R.S.) Institute for the Chemistry of Natural Products, Gif-sur-Yvette, France, (1970).

NATO Senior Fellow, NSF Award, (1970).

Lecturer, Department of Chemistry, City College of City University of New York (1963-64)

Research Assistant, Department of Biochemistry, Rutgers the State University, (1962-63).

Research Biochemist, Boyce Thompson Institute for Plant Research, Yonkers, NY (1959-62).

Science Teacher Fieldston Elementary School, Riverdale, NY (1958-59).

Research Assistant, School of Education, CCNY, (1957-58).

#### **PROFESSIONAL ACTIVITIES (Other than academic appointments)**

**Guest Editor, Elsevier Press:** Biochimica et Biophysica Acta Special issue on Cardiolipin (2009)

**President of the City College Science Alumni Association.** 1998 to Present.

**Chair of the Biophysics Section of the New York Academy of Sciences.** 1991-1993.

Member of the **Executive Committee of the Levich Institute for Hydrodynamics**, City College of CUNY. 1991 to 2002.

Member of the **Board of Directors of the Alumni Association of CCNY.** 1991 to present.

Member of the **Education Committee of the American Society of Biochemists and Molecular Biologists.** 1993-1995.

Consultant, **Liposome Technology Incorporated**, (1993-4).

Consultant, **Sequus, Inc.**(Liposome technology) (1995-2001)

Appointed **NIAAA Biochemistry and Cell Biology Study Section**, National Institute of Alcoholism and Alcohol Abuse, Bethesda MD 1994-1997.

**President of the City College Chemistry Alumni Association.** 1993-1998.

**Co-Chair Symposium on Lipids and Monolayers**, American Oil Chemists Society, NY, NY, May 1970.

**PUBLICATIONS****BOOK**

Haines, T. H. (1972) *The Sulfolipids*. In series: Progress in the Chemistry of Fats and Oils. Series editor, Ralph Holman. Pergamon Press, NY.

**REFEREED JOURNALS**

**Haines, T. H.**, S. M. Henry & R. Block. (1960) The sulfur metabolism of insects, V. The ability of insects to use sulfate in the synthesis of methionine. *Contrib. Boyce Thompson Inst.* **20**, 363-5.

**Haines, T. H.** & R. Block. (1962) The sulfur metabolism of algae. I. Synthesis of metabolically inert chloroform-soluble sulfate esters by two Chrysoomonads and *Chlorella pyrenoidosa*. *J. Protozool.* **9**, 33-38.

**Haines, T. H.**, S. Aaronson, J. Gellerman & H. Schlenk. (1962) Occurrence of arachidonic acid and related acids in the protozoan, *Ochromonas danica*. *Nature* **194**, 1283-4.

Aaronson, S., B. Bensky, **Haines, T. H.**, J. Gellerman & H. Schlenk. (1963) Fatty acids of protozoa, especially of phytoflagellates; differences associated with the absence of photosynthetic apparatus in *Euglena*. *J. Protozool.* **10**, 9-12.

**Haines, T. H.** A microbial sulfolipid. I. Isolation and physiological studies. (1965) *J. Protozool.* **12**, 656-659.

Mayers, G.L. & **Haines, T.H.** (1967). A microbial sulfolipid. II. Structural studies. *Biochemistry* **6**, 1665-1671.

**Haines, T. H.** (1967) A new sulfolipid. Application to problems of drug transport. Progr. In Biochemical Pharmacology, Vol. III, 1848-54.

Gershengorn, M. C., A. R. H. Smith, G. Goulston, L. J. Goad, T. W. Goodwin & **Haines, T. H.** (1968) The sterols of *Ochromonas danica* and *O. malhamensis*. *Biochemistry* **7**, 1698-1708.

**Haines, T.H.**, Pousada, M., Stern, B., and Mayers, G.L. (1969). Microbial sulpholipids. IV. (R)-13-choro-1-(R)-14-docosanediol disulphate and polychlorosulpholipids in *Ochromonas danica*. *Biochem. J.* **113**, 565-566.

Mayers, G.L., Pousada, M., & **Haines, T.H.** (1969). Microbial sulfolipids. 3. The disulfate of (+)-1,14-docosanediol in *Ochromonas danica*. *Biochemistry* **8**, 2981-2986.

**Haines, T. H.** (1970) The reduction of alkyl sulfates to alkane with lithium aluminum hydride. *Lipids* **5**, 149-151.

**Haines, T. H.** (1970) Algae sulfolipids and chlorosulfolipids. In, "Properties and Products of Algae." J. E. Zajic, ed. New York Plenum Press, pp. 129-142.

Aaronson, S., U. Behrens, R. Orner & **Haines T. H.** (1971) Ultrastructure of intracellular and extracellular vesicles, membranes and myelin figures produced by *Ochromonas danica*. *J. Ultrastructure Research* **35**, 418-30.

Mooney, C. L., E. M. Mahoney, M. Pousada & **Haines, T. H.** (1972) Direct incorporation of fatty acids into the halosulfatides of *Ochromonas danica*. *Biochemistry* **11**, 4839-44.

**Haines, T.H.** (1973). Halogen- and sulfur-containing lipids in protozoa.. *Annu. Rev. Microbiol.* **27**, 403-411.

Mooney, C. L. & **Haines, T. H.** (1973) Chlorination and sulfation reactions in the biosynthesis of chlorosulfolipids in *Ochromonas danica*, *in vivo*. *Biochemistry* **12**,4469-72.

**Haines, T. H.** (1973) Sulfolipids and halosulfolipids. In, "Lipids and Biomembranes of Eukaryotic Microorganisms." Ed., J. A. Erwin, Academic Press, NY.

**Haines, T. H.** (1974) The halogenated sulfatides. In, "Biochemistry of Lipids." In MTP International Review of Science, Biochemistry Vol. IV, T. W. Goodwin. Ed. Pp.271-286. Butterworths Press, Oxford.

Chen, L.L. & **Haines, T.H.** (1976). The flagellar membrane of *Ochromonas danica*. Isolation and electrophoretic analysis of the flagellar membrane, axonemes, and mastigonemes. *J. Biol. Chem.* **251**, 1828-1834.

Chen, L.L., Pousada, M., & **Haines, T.H.** (1976). The flagellar membrane of *Ochromonas danica*. Lipid composition. *J. Biol. Chem.* **251**, 1835-1842.

**Haines, T.H.** (1979). A proposal on the function of unsaturated fatty acids and ionic lipids: the role of potential compaction in biological membranes. *J. Theor. Biol.* **80**, 307-323.

**Haines, T. H.** (1982) A model for transition state dynamics in bilayers. Implications for the role of lipids in biomembrane transport. *Biophys. J.* **37**, 147-9.

**Haines, T.H.** (1983). Anionic lipid headgroups as a proton-conducting pathway along the surface of membranes: a hypothesis. *Proc. Natl. Acad. Sci. U. S. A.* **80**, 160-164.

**Haines, T. H.** (1984) The microbial sulfolipids. CRC Handbook of Microbiology. Second Edition. Vol. V. A. I. Laskin & H. A. Lechevalier, eds. Boca Raton, FL 115-123.

Aurora, T.S., Li, W., Cummins, H.Z., & **Haines, T.H.** (1985). Preparation and characterization of monodisperse unilamellar phospholipid vesicles with selected diameters from 3000 to 6000 Angstroms. *Biochim. Biophys. Acta* **820**, 250-258.

Li, W., Aurora, T.S., **Haines, T.H.**, & Cummins, H.Z. (1986). The elasticity of synthetic phospholipid vesicles and submitochondrial particles during osmotic swelling. *Biochemistry* **25**, 8220-8229.

Li, W. & **Haines, T.H.** (1986). Uniform preparations of large unilamellar vesicles containing anionic lipids. *Biochemistry* **25**, 7477-7483.

**Haines, T.H.**, Li, W., Green, M., & Cummins, H.Z. (1987). The elasticity of uniform, unilamellar vesicles of acidic. *Biochemistry* **26**, 5439-5447.

Rutkowski, C. R., Williams, L., Cummins, H. Z. & **Haines, T. H.** (1992) The elasticity of synthetic phospholipid vesicles obtained by photon correlation spectroscopy. *Biochemistry* **31**, 5688-96.

Kates, M., Syz, J.Y., Gosser, D. & **Haines, T.H.** (1993). pH-dissociation characteristics of cardiolipin and its 2'-deoxy analogue. *Lipids* **28**, 877-882.

**Haines, T. H.** (1994) Minireview. Water transport across biological membranes. *FEBS Letters* **346**, 115-122.

**Haines, T. H.** & Liebovitch, L. (1995) A molecular mechanism for the transport of water across phospholipid bilayers. In "Permeability and Stability of Lipid Bilayers" S. A. Simon and A. Disalvo, eds. CRC Press, Boca Raton FL. (Includes lateral chain movement vs. H<sub>2</sub>O permeability of bilayers.)

Mas-Oliva, J., Velasco-Loyden, G. & **Haines, T. H.** (1996) Receptor pattern formation as a signal for the capture of lipoproteins. *Biochemical and Biophysical Research Communications* **224**, 212-218.

Paula, S., Volkov, A. G., Van Hoek, A. N., **Haines, T. H.**, Deamer, D. W. (1996) Permeation of Protons, Potassium ions and small polar molecules through phospholipids bilayers as a function of membrane thickness. *Biophys. J.* **70** 339-48. (Shows H<sub>2</sub>O permeability is unaffected by chainlength.)

**Haines, T. H.** (2001) Do sterols reduce proton and sodium leaks through lipid bilayers? *Progress in Lipid Research*, **40**, 299-324. (Includes function of cholesterol)

Mileykovskaya, E., Dowhan, W., Birke, R. L. Zheng, D. & **Haines, T. H.** (2001) Cardiolipin binds nonyl acridine orange by aggregating the dye at exposed hydrophobic domains on bilayer surfaces. *FEBS Letters*, 507 187-190.

Hauss, T., Dante, S., Dencher, N. A., **Haines, T. H.** (2002) Squalene is in the midplane of the lipid bilayer: implications for its function as a proton permeability barrier. *Biochim. Biophys. Acta* **1556** 149-154.

**Haines, T. H.** & Dencher, N. A. (2003) Is cardiolipin a proton trap for ATP synthesis? *FEBS Lett.* **528**, 35-39. (Includes function of cardiolipin)

Dante, S., Hauß, T., Dencher, N. A. & **Haines, T. H.** (2005) Localization of coenzyme Q<sub>10</sub> in the center of a deuterated lipid bilayer by neutron diffraction. *Biochimica et Biophysica Acta—Bioenergetics* **1710**, 57-62.

Bedke, D., Shibuya, G., Pereira, A., Gerwick, W., **Haines, T. H.**, Vanderwal, C. (2009) Relative stereochemistry determination and synthesis of the major chlorosulfolipid from *Ochromonas danica*. *Journal of the American Chemical Society*, **131**, 7570–7572.

**Haines, T. H.** (2009) A new look at cardiolipin. *Biochimica et Biophysica Acta—Biomembranes* In Press.