

## CURRICULUM VITAE

### A. PERSONAL INFORMATION

Name **Lawrence Sweetman, Ph.D.**

Business Address

Kimberly H. Courtwright & Joseph W. Summers  
Institute of Metabolic Disease  
Baylor Research Institute  
3812 Elm Street  
Dallas, Texas 75226

Business Phone

(214) 820-4533

Business FAX

(214) 820-4853

e-mail

[l.sweetman@baylordallas.edu](mailto:l.sweetman@baylordallas.edu)

### B. EDUCATION

High School

Bent County High School, 1960, Las Animas, CO

Undergraduate

University of Colorado, B.A., Chemistry, 1964, Boulder, CO

Graduate

University of Miami, Ph.D., Biochemistry, 1969, Miami, FL

Licensure

California Clinical Chemist Scientist, License No. MTC433

Board Certification

American Board of Medical Genetics, 1987,  
Biochemical Geneticist 870359

**C. PROFESSIONAL BACKGROUND**

- 1968 - 1972                      Research Associate, Division of Biochemistry, Sloan-Kettering Institute for Cancer Research, New York, NY
- 1970 - 1972                      Instructor, Department of Biochemistry, Sloan-Kettering Division, Cornell University Graduate School of Medical Science, New York, NY
- 1972 - 1978                      Assistant Professor of Pediatrics, In Residence, Department of Pediatrics, University of California, San Diego, La Jolla, CA  
Supervisor of Biochemical Genetics Laboratory
- 1978 - 1980                      Associate Professor of Pediatrics, In Residence, Department of Pediatrics, University of California, San Diego, La Jolla, CA  
Supervisor of Biochemical Genetics Laboratory
- 1980 - 1981                      NIH Senior Investigator Fellow and INSERM Fellow, Department of Molecular Biology, Pasteur Institute, Paris, France
- 1981 - 1983                      Associate Professor of Pediatrics, In Residence, Department of Pediatrics, University of California, San Diego, La Jolla, CA  
Supervisor of Biochemical Genetics Laboratory
- 1983 - 1990                      Professor of Pediatrics, In Residence, Department of Pediatrics, University of California, San Diego, La Jolla, CA  
Supervisor of Biochemical Genetics Laboratory
- 1990 - 1996                      Professor of Pediatrics and Pathology, University of Southern California School of Medicine, Los Angeles, CA  
Director, Biochemical Genetics Laboratory, Childrens Hospital Los Angeles
- 1997 - present                    Director, Mass Spectrometry Unit, Institute of Metabolic Disease Baylor University Medical Center/ Baylor Research Institute, Dallas, TX
- 1998 - present                    Full Membership on the Graduate Faculty, Institute of Biomedical Studies, Baylor University, Waco, TX

**SPECIFIC TEACHING RESPONSIBILITIES**

**Teaching responsibilities at the University of California, San Diego from 1972-1990: (about 15% effort)**

Undergraduate - I gave individual instruction to upper division undergraduate biology students in Independent Research Projects, typically one student per quarter.

Graduate - I supervised the doctoral dissertation research of two graduate students in Chemistry:

B.J. Burri, Ph.D., 1982. Thesis "Properties of Holocarboxylase Synthetase in Patients with Biotin Responsive Multiple Carboxylase Deficiency".

K.M. Gibson, Ph.D., 1983. Thesis "Succinic Semialdehyde Dehydrogenase Deficiency: An Inborn Error of 4-Aminobutyric Acid Metabolism".

Medical School - I frequently supervised Independent Study Projects for medical students. From 1975 - 1990 I was co-instructor of the Medical School Elective Course, Pediatrics 223 "Inborn Errors of Metabolism" offered every spring quarter. From 1984 - 1990, I sponsored an elective course, Peds/Med 248 "Introduction to Laboratory Research" offered in the fall, winter, and spring quarters.

Post-graduate - For many years I supervised the postdoctoral research in Biochemical Genetics of one or two fellows per year. I routinely lectured on organic acid disorders in the American Board of Medical Genetics approved training program at the University of California, San Diego.

**Teaching responsibilities at Childrens Hospital Los Angeles/USC 1990-1996:  
( about 15% effort)**

Post-graduate - I supervised postdoctoral research in Biochemical Genetics of two fellows from 1990 - 1992 and of two fellows for 1996. I lectured in the American Board of Medical Genetics approved training program in the Division of Medical Genetics. I organized the weekly Medical Genetics Seminar for fellows and faculty from 1990-1995.

Medical Technologists - I supervised biweekly continuing education for the Medical Technologists of the Biochemical Genetics Laboratory.

**Teaching responsibilities at Baylor University, Institute of Biomedical Studies 1997-  
Present: ( about 5% effort)**

Graduate - Organized graduate course Clinical Chemistry BMS 5344, Spring 1999 and 2001  
Lectured in Intermediary Metabolism BMS 5343 & Biochemical and Molecular Genetics  
BMS 5304

**UNIVERSITY AND COMMUNITY SERVICE**

**Service at the University of California, San Diego:**

In 1983-86, I was Vice-Chairman of the Medical School Electives Committee and concurrently a member of the Committee on Educational Policy of the School of Medicine. In 1986-87, I was a member of the Academic Senate Health Sciences Subcommittee. In 1987-90, I was a member of the Department of Pediatrics Faculty Appraisal and Review Committee. About once a year I served on ad hoc faculty appointment or promotion committees.

### **Service at Childrens Hospital Los Angeles**

I served on the following committees: Research Committee, Patent Committee and Library Committee. From 1994-95 I was a member of the Department of Pathology & Laboratory Medicine Executive Committee and in 1996 a member of the Pathology Reorganization Task Force.

### **National Service**

From 1988 - 1990 I served on the subcommittee for Quality Assurance for Biochemical Genetic Laboratories of the Council of Regional Networks for Genetic Services. From 1991-1995 I served on the CAP/ASHG Biochemical and Molecular Genetics Committee for proficiency testing. From 1985-89, I was a member of the NIH DRG Biochemistry 2 study section. I was elected to the board of directors of the US Society for Inherited Metabolic Disorders in 1985 and was Membership Chairman for 1988-90. I was Program Chairman for 1991-92 and President for 1991. For the last eleven years I have served on the editorial board of the journal, Analytical Biochemistry. I serve as a reviewer of manuscripts for a number of journals.

### **HONORS**

I was the keynote speaker at the Australian Inborn Errors of Metabolism Conference, November 16 - 18, 1991 in Bondi Beach, Australia. I was an invited speaker at the Selective Screening for Inborn Errors of Metabolism meeting November 20 -22, 1991 in Fulda, Germany.

I gave the Donough O'Brien Presidents Lecture at the Society for Inherited Metabolic Disorders meeting, March 20 - 23, 1992 at Callaway Gardens, Georgia.

I was on the International Organizing Committee for the Kyoto '92 International Conference on Biological Mass Spectrometry and was an invited speaker at the meeting, September 20-24, 1992 in Kyoto, Japan. I was also an invited speaker at the 17th Meeting of the Japanese Society for Biomedical Mass Spectrometry, September 16-18, 1992 in Kanazawa, Japan.

I was an invited speaker at the 2<sup>nd</sup> International Symposium on Genetics, Health and Disease, Amritsar, India, February 15-18, 1993.

### **D. SOCIETY MEMBERSHIPS**

#### **NATIONAL**

Sigma Xi  
American Chemical Society  
American Association for the Advancement of Science  
American Society of Human Genetics  
Society for Inherited Metabolic Disorders  
American Association of Clinical Chemists  
American College of Medical Genetics, Founding Member

#### **INTERNATIONAL**

Society for the Study of Inborn Errors of Metabolism

**E. CONSULTANTSHIPS** none

**F. RESEARCH ACTIVITIES**

**MAJOR AREAS OF RESEARCH INTEREST**

A major research interest had been the study of biotin metabolism at the basic level, investigation of inherited disorders of biotin metabolism in man and acquired nutritional deficiency of biotin. In 1981, with a graduate student, Betty Burri, I identified the basic enzyme deficiency in one form of biotin-responsive multiple carboxylase deficiency as holocarboxylase synthetase with abnormal kinetic properties.

Another major research interest is the use of stable isotopically labeled compounds and gas chromatography-mass spectrometry to elucidate the abnormal biochemistry of a variety of inherited disorders of organic acid metabolism, especially the beta oxidation of fatty acids and the metabolism of lactate and pyruvate.

A third area of interest is the identification of new metabolites and quantitative assessment of metabolic abnormalities in physiological fluids from patients with inherited organic acidurias to better understand their pathophysiology and to collaborate in clinical studies of treatment and dietary management of these patients.

My role as director of the Biochemical Genetics Laboratory at the University of California San Diego and at Childrens Hospital of Los Angeles which provided a major service for the diagnosis of patients with organic acidurias for all of California, enabled me to identify interesting new patients for research. At the Institute for Metabolic Disorders I continue to identify new metabolites by GCMS and tandem MS for better understanding of the pathophysiology of a variety of disorders. I will continue to do research on improved modes of therapy of the organic acidurias and fatty acid oxidation disorders, through accurate GCMS and tandem MS quantification of abnormal metabolites as various dietary and vitamin therapies are evaluated.

A major new research interest in the Institute of Metabolic Disease is the application of tandem mass spectrometry (MS-MS) techniques for new born screening using dried blood spots for the diagnosis of a large number of inherited disorders of amino acid, organic acid and fatty acid oxidation disorders. This became an established service at Baylor University Medical Center in June of 1998 and continues to expand.

**LIST OF PREVIOUS PRIVATE GRANTS**

1. Title: Academic Associate: Research on improved diagnostic techniques.
- Agency: Nichols Institute Reference Laboratory
- Period: 06/01/92 - 05/31/94
- Amount: \$36,000

**LIST OF PREVIOUS PUBLIC GRANTS**

1. Title: Amino Acid Interrelations in Human Metabolic Disease
- Agency: National Institute of Child Health and Human Development,  
2 RO1 HD04608
- Period: 09/30/85 - 08/31/90
- Amount: \$560,026 total direct costs awarded. Project completed.
2. Title: Holocarboxylase Synthetase-Multiple Carboxylase Deficiency
- Agency: National Institute of Child Health and Human Development,  
1 RO1 HD18789
- Period: 04/01/85 - 09/30/91
- Amount: \$597,454 total direct costs awarded. Project completed.

**G. BIBLIOGRAPHY****PEER REVIEWED PAPERS**

1. Nyhan, W.L., Pesek, J., Sweetman, L., Carpenter, D.G., and Carter, C.H. Genetics of an x-linked disorder of uric acid metabolism and cerebral function. *Ped. Res.* **1**, 5-13, 1967.
2. Sweetman, L. and Nyhan, W.L. Excretion of hypoxanthine and xanthine in a genetic disease of purine metabolism. *Nature* **215**, 859-860, 1967.
3. Nyhan, W.L., Sweetman, L., Carpenter, D.G., Carter, C.H. and Hoefnagel, D. Effects of azathioprine in a disorder of uric acid metabolism and cerebral function. *J. Ped.* **72**, 111-118, 1968.
4. Sweetman, L. and Nyhan, W.L. Sephadex G-10 adsorption chromatography of purines and related compounds. *J. Chromatog.* **32**, 662-675, 1968.
5. Sweetman, L. Urinary and cerebrospinal fluid oxypurine levels and allopurinol metabolism in the Lesch-Nyhan syndrome. *Fed. Proc.* **27**, 1055-1059, 1968.
6. Nyhan, W.L., Sweetman, L., and Lesch, M. Effects of the uricogenic agent, 2-ethylamino-1,3,4-thiadiazole in hypoxanthine-guanine phosphoribosyl transferase deficiency. *Metabolism* **17**, 846-853, 1968.
7. Nyhan, W.L., James, J.A., Teberg, A.J., Sweetman, L. and Nelson, L.G. A new disorder of purine metabolism with behavioral manifestations. *J. Ped.* **74**, 20-27, 1969.
8. Sweetman, L. and Nyhan, W.L. Quantitation of oxypurines and allopurinol metabolites in biological fluids by cation-exchange chromatography. *Analyt. Biochem.* **31**, 358-365, 1969.
9. Kogut, M.D., Donnell, G.N., Nyhan, W.L. and Sweetman, L. Disorder of purine metabolism due to partial deficiency of hypoxanthine-guanine phosphoribosyltransferase. A study of a family. *Am. J. Med.* **48**, 148-161, 1970.
10. Kopelovich, L., Sweetman, L. and Nisselbaum, J.S. Time-dependent inhibition of aspartate aminotransferase isozymes by DL-glyceraldehyde-3-phosphate. *J. Biol. Chem.* **245**, 2011-2017, 1970.
11. Sweetman, L. and Nyhan, W.L. Detailed comparison of the urinary excretion of purines in a patient with the Lesch-Nyhan syndrome and a control subject. *Biochem. Med.* **4**, 121-134, 1970.
12. Sweetman, L. and Nyhan, W.L. Studies on the mechanism of adsorption of purines in Sephadex G-10 chromatography. *J. Chromatog.* **59**, 349-366, 1971.

13. Kopelovich, L., Sweetman, L. and Nisselbaum, J.S. Kinetics of the inhibition of aspartate aminotransferase isozymes by DL-glyceraldehyde 3-phosphate. *Eur. J. Biochem.* **20**, 351-362, 1971.
14. Nisselbaum, J.S., Sweetman, L. and Kopelovich, L. Effects of oxaloacetic and L-glutamate on glyceraldehyde-3-phosphate inhibition of aspartate aminotransferase isozymes as measured by a2-oxoglutarate dehydrogenase coupled assay. *Eur. J. Biochem.* **23**, 314-320, 1971.
15. Kopelovich, L., Sweetman, L. and Nisselbaum, J.S. Regulation of aspartate aminotransferase isozymes by D-erythrose-4-phosphate and glycolaldehyde phosphate, the naturally occurring homologues of D-glyceraldehyde-3-phosphate. *J. Biol. Chem.* **247**, 3262-3268, 1972.
16. Sweetman, L. and Nyhan, W.L. Further studies of the enzyme composition of mutant cells in x-linked uric aciduria. *Arch. Intern. Med.* **130**, 214-220, 1972.
17. Bryson, Y., Connor, J.D., Sweetman, L., Carey, S., Stuckey, M.A. and Buchanan, R. Determination of plaque inhibitory activity of adenine arabinoside (9-B-D-arabinofuranosyladenine) for herpes viruses using an adenosine deaminase inhibitor. *Antimicrobial Agents and Chemotherapy* **6**, 98-101, 1974.
18. Wadlington, W.B., Kilroy, A., Ando, T., Sweetman, L. and Nyhan, W.L. Hyperglycinemia and propionyl CoA carboxylase deficiency and episodic severe illness without consistent ketosis. *J. Pediat.* **86**, 707-712, 1975.
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20. Trauner, D.A., Nyhan, W.L. and Sweetman, L. Short-chain organic acidemia and Reye's syndrome. *Neurology* **25**, 296-298, 1975.
21. Trauner, D.A., Stockard, J.J., and Sweetman, L. EEG correlations with biochemical abnormalities in Reye's syndrome. *Arch. Neurol.* **34**, 116-118, 1977.
22. Weyler, W., Sweetman, L., Maggio, D.C. and Nyhan, W.L. Deficiency of propionyl-CoA carboxylase and methylcrotonyl-CoA carboxylase in a patient with methylcrotonylglycinuria. *Clin. Chim. Acta* **76**, 321-328, 1977.
23. Sweetman, L., Bates, S.P., Hull, D. and Nyhan, W.L. Propionyl-CoA carboxylase deficiency in a patient with biotin-responsive 3-methylcrotonylglycinuria. *Pediatr. Res.* **11**, 1144-1147, 1977.
24. Brandange, S., Josephson, S., Mahlen, A., Morch, L., Sweetman, L. and Vallen, S. Stereochemistry of the methylcitric acids formed in the citrate synthase reaction with propionyl-CoA. *Acta Chemica Scandinavica* **B31**, 628-630, 1977.

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27. Sweetman, L., Hoch, M.A., Bakay, B., Borden, M., Lesh, M. and Nyhan, W.L. A distinct human variant of hypoxanthine-guanine phosphoribosyl transferase. *J. Pediat.* **92**, 385-389, 1978.
28. Bakay, B., Nissinen, E. and Sweetman, L. Analysis of radioactive and nonradioactive purine bases, nucleosides and nucleotides by high-speed chromatography on a single column. *Analyt. Biochem.* **86**, 65-77, 1978.
29. Sweetman, L., Weyler, W., Nyhan, W.L., de Cespedes, C., Loria, A.R. and Estrada, Y. Abnormal metabolites of isoleucine in a patient with propionyl-CoA carboxylase deficiency. *Biomed. Mass Spectrometry* **5**, 198-207, 1978.
30. Higginbottom, M.C., Sweetman, L. and Nyhan, W.L. A syndrome of methylmalonic aciduria, homocystinuria, megaloblastic anemia and neurological abnormalities in B<sub>12</sub> deficient breast-fed infant of a strict vegetarian. *New Eng. J. Med.* **299**, 317-323, 1978.
31. Trauner, D., Sweetman, L., Holm, J., Kulovich, S. and Nyhan, W.L. Biochemical correlates of illness and recovery in Reye's syndrome. *Ann. Neurol.* **2**, 238-241, 1977.
32. Ballard, R.A., Vinocur, B., Reynolds, J.W., Wennberg, R.P., Merritt, A., Sweetman, L. and Nyhan, W.L. Transient hyperammonemia of the preterm infant. *New Eng. J. Med.* **299**, 920-925, 1978.
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34. Bryson, Y.J., Sweetman, L. and Connor, J.D. Simple sensitive microbioassay for adenine arabinoside and hypoxanthine arabinoside in human plasma. *Antimicrobial Agents and Chemotherapy* **14**, 909-915, 1978.
35. Sweetman, L., Weyler, W., Shafai, T., Young, P.E. and Nyhan, W.L. Prenatal diagnosis of propionic acidemia. *JAMA* **242**, 1048-1052, 1979.
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39. Coude, F.X., Sweetman, L. and Nyhan, W.L. Inhibition by propionyl-Coenzyme A of N-acetylglutamate synthetase in rat liver mitochondria. A possible explanation for hyperammonemia in propionic and methylmalonic acidemia. *J. Clin. Invest.* **64**, 1544-1551, 1979.
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42. Sweetman, L., Nyhan, W.L., Trauner, D.A., Merritt, T.A. and Singh, M. Glutaric Aciduria Type II. *J. Pediatr.* **96**, 1020-1026, 1980.
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44. Naylor, G., Sweetman, L., Nyhan, W.L., Hornbeck, C., Griffiths, J., Morch, L. and Brandange, S. Isotope dilution analysis of methylcitric acid in amniotic fluid for the prenatal diagnosis of propionic and methylmalonic acidemia. *Clin. Chim. Acta* **107**, 175-183, 1980.
45. Trauner, D.A., Page, T., Greco, C., Sweetman, L., Kulovich, S. and Nyhan, W.L. Progressive neurodegenerative disorder in a patient with nonketotic hyperglycemia. *J. Pediatr.* **98**, 272-275, 1981.
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61. Jakobs, C., Sweetman, L., Wadman, S.K., Duran, M., Saudubray, J.M. and Nyhan, W.L.. Prenatal diagnosis of glutaric aciduria type II by direct chemical analysis of dicarboxylic acids in amniotic fluid. *Eur. J. Pediatr.* **141**, 153-157, 1984.
62. Greene, C.L., Cann, H.M., Robinson, B.H., Gibson, K.M., Sweetman, L., Holm, J. and Nyhan, W.L. 3-Hydroxy-3-methylglutaric aciduria. *J. Neurogenet.* **1**, 165-173, 1984.

63. Jakobs, C., Sweetman, L., Nyhan, W.L., and Packman, S. Stable isotope dilution analysis of 3-hydroxyisovaleric acid in amniotic fluid: Contribution to the prenatal diagnosis of inherited disorders of leucine catabolism. *J. Inher. Dis.* **7**, 15-20, 1984.
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**NON-PEER REVIEW**

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**ABSTRACTS** - greater than 80, not listed

**BOOK REVIEWS** - several, not listed

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**BOOKS** - none

**MISCELLANY** - none