

## **Professor Emeritus Garth L. Nicolson, Ph.D., M.D. (H)**

**Birth Date:** 10/01/1943      **Current Date:** 02/09/2018

**Birth Place:** Los Angeles, California

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### **Education:**

1970, Ph.D., Biochemistry/Cell Biology,  
University of California, San Diego

1965, B.S., Chemistry, University of California, Los Angeles

### **Professional Experience:**

#### **Primary Appointment:**

1996-Present, President, Chief Scientific Officer and Emeritus Professor of Molecular Pathology, The Institute for Molecular Medicine, PO Box 9355, S. Laguna Beach, CA 92652

#### **Secondary Appointments:**

2003-Present, Conjoint Emeritus Professor, Faculty of Science and Technology, University of Newcastle, Newcastle, Australia

#### **Previous Appointments:**

1989-00, Professor, Department of Internal Medicine, The University of Texas Medical School, Houston, TX

1981-99, Adjunct Professor, Department of Pathology, School of Veterinary Medicine, Texas A & M University, College Station, TX

1982-99, Professor, Department of Pathology and Laboratory Medicine, The University of Texas Medical School, Houston, TX

1980-96, David Bruton Jr. Chair in Cancer Research, Professor and Chairman, Tumor Biology, The University of Texas M. D. Anderson Cancer Center, Houston, TX

1980-96, Professor, The Graduate School of Biomedical Sciences, The University of Texas Health Science Center, Houston, TX

1980-87, Florence M. Thomas Professor of Cancer Research, The University of Texas M. D. Anderson Cancer Center, Houston, TX

1978-80, Professor, Department of Physiology and Biophysics, College of Medicine, University of California, Irvine, CA

1977-80, Associate Director, Oncology Program, University of California, Irvine, CA

1975-80, Professor, Department of Developmental and Cell Biology, University of California, Irvine

1974-76, Chairman, Department of Cancer Biology, The Salk Institute, La Jolla, CA

1972-74, Head, Cancer Council Laboratory, Director, Electron Microscopy Laboratory, The Salk Institute, La Jolla, CA

1970-71, Senior Research Associate, Cancer Council Laboratory, The Salk Institute, La Jolla, CA

1967-70, USPHS Predoctoral Fellow University of California, San Diego, CA

### **Editorships and Editorial Boards:**

**Editor (Current Editor or Field Editor: 3):**

Clinical & Experimental Metastasis (Founding & Emeritus Editor), 1981-2002  
Journal of Cellular Biochemistry (Field Editor)  
Journal of Functional Foods in Health and Disease (Co-Editor)  
Discoveries (Open Access) (Field Editor)  
Cancer & Metastasis Reviews (Founding & Emeritus Editor), 1981-1989  
Cell Surface Reviews (Founding & Emeritus Editor), 1976-1983  
Experimental Cell Research (Emeritus Field Editor), 1978-1984

**Associate Editor (Current Associate Editor: 10):**

Advances in Molecular Medicine  
Biochimica et Biophysica Acta, 1973-1979  
Cancer Biology Reviews, 1978-1984  
Cancer Communications, 1988-1992  
Cancer & Metastasis Reviews, 1987-2004  
Cancer Molecular Biology, 1994-1999  
Cancer Research, 1981-84, 1985-1989, 1990-1995  
Cancer Reviews, 1984-1990  
Current Cancer Therapy Reviews  
Discoveries  
Experimental Cell Biology, 1985-1991  
Experimental Cell Research, 1978-1994  
Gamete Research, 1978-1984  
International Journal of Cancer, 1984-1993  
Invasion & Metastasis, 1974-1999  
ISRN Biochemistry  
Journal of the American Nutraceutical Association, 2003-2010  
Journal of Chronic Fatigue Syndrome, 2000-2005  
Journal of Experimental Therapeutics and Oncology  
Medical Veritas  
Molecular Biology of Cancer  
Molecular & Cellular Biochemistry, 2001-2012  
Natural Immunity & Cell Growth Regulation, 1985-1989  
Oncology Research, 1990-2004  
Open Cancer Journal  
Open Journal of Tropical Medicine, 2016-  
Open Tropical Medicine Reviews, 2015-  
Pathobiology, 1991-1999  
Receptors & Recognition, 1974-1979  
Yearbook of Cancer, 1982-1987

**National & Intern. Committee Memberships:**

Member, National Tick-Borne Disease Working Group, Sub-group on Other Tick-Borne Diseases, 2018-  
Member, Board of Scientific Advisors, CFIDS Association of America, 2008-  
Member, Board of Advisors, Lay Foundation, 2008-

Member, Board of Advisors, Lyme in Autism Foundation, 2007-  
 Member, Board of Advisors, The Healthy Foundation, 2001-  
 Member, Board of Advisors, Road Back Foundation, 2000-  
 Member, Susan Koman Foundation for Breast Cancer Research Review Committee, 1995-1998  
 Chairman, Medical-Scientific Panel, Persian Gulf War Veterans Conference, 1995  
 Chairman, American Cancer Society Review Committee, Personnel B Review Committee, 1990-1994  
 Chairman, USAMRDC Review Committee on Breast Cancer, Endocrinology-2 Committee, 1994  
 Member, Extramural Scientific Advisory Committee, Moffitt Cancer Center, The University of South Florida, 1995-1998  
 Member, Extramural Scientific Advisory Committee, The University of Arizona Health Sciences Center, 1991-1999  
 Member, Extramural Scientific Advisory Committee, Roswell Park Memorial Institute, Buffalo, NY, 1988-1993  
 Member, Extramural Scientific Advisory Committee, The University of Nebraska Health Sciences Center, 1994-1996  
 Reviewer, National Cancer Institute Cancer Centers Program, 1974-1993  
 Member, National Cancer Institute Large Bowel Cancer Project, 1984-1988  
 Member, National Cancer Institute Organ Systems Program, 1984-1988  
 Member, National Cancer Institute Construction Review Committee, 1982-1986  
 Member, National Cancer Institute Breast Cancer Task Force, 1983-1986  
 Chairman, American Cancer Society Review Committee, Cell and Developmental Biology, 1979-1983  
 Member (Ad Hoc), NIH Pathology B Study Section, 1976-1981  
 Member, U.S.-Japan Cooperative Cancer Research Program, 1976-1980  
 Member, Advisory Committee, Division of Cancer Cause and Prevention, National Cancer Institute, 1974-1979  
 Member, National Cancer Institute Virus-Cancer Program Review Committee, 1974-1979  
 Member, World Health Organization Task Force on Human Fertility, 1973-1976

**Consultantships and Visiting Professorships:**

Conjoint Emeritus Professor, University of Newcastle (Aust.), 1999-  
 Distinguished Visiting Professor, Kuwait University, 1998  
 Visiting Professor, Ain Shams University, Faculty of Medicine, Cairo, Egypt, 1998  
 Burroughs Wellcome Distinguished Visiting Professor, Royal Society of Medicine, London, 1991  
 Roswell Park Memorial Distinguished Professor Lectureship, Buffalo, New York, 1991  
 Diana J. Benz Memorial Lectureship in Breast Cancer Research, The University of Iowa, 1991  
 Arnold D. Welch Visiting Professorship, Yale University, 1988  
 University of Arizona Health Sciences Center, 1990-1998  
 Creighton University School of Medicine, 1993-1995  
 University of Nebraska Health Sciences Center, 1993-1995  
 University of Pittsburgh Cancer Research Institute, 1989-1994  
 Glycomed Inc., 1994-1996  
 Ventures Medical, 1989-1996  
 California State University, Northridge Center for Cancer and Developmental Biology, 1985-1989  
 Cetus Corporation, 1985-1989  
 Grace Cancer Drug Center, Roswell Park Memorial Institute 1983-1989

Triton Biosciences, 1985-1989  
Smith-Kline Beckman Corp, 1979-1987  
NCI-Frederick Cancer Research Center, 1974-1980  
Alza Research, 1974-80  
University of Hawaii School of Medicine, 1973-1979  
Immuno-Diagnostics Systems, 1973-1976

### **Honors and Awards:**

Doctor of Medicine, M.D. (H), University of the Republic of Uruguay, 2015  
Yanagimachi Distinguished Lectureship, University of Hawaii School of Medicine, 2012  
John Drulle Memorial Lectureship, International Lyme and Associated Diseases Society (ILADS), 2008  
Annual Award of the Common Cause Medical Research Foundation (Canada), 2006  
Innovative Medicine Award (Canada), 2002  
Stephen Paget Award, Metastasis Research Society, 1998  
Albert Schweitzer Award (Portugal), 1998  
First Norman N. Durham Lectureship, Environmental Institute, OSU, 1996  
Indo-American Society for Health & Laboratory Professionals Award, 1996  
Distinguished Presentation Award, Third International Cancer Molecular Biology Symposium, 1996  
COLONEL (Honorary), U. S. Army Special Forces, 1995  
SEAL (Honorary), U.S. Navy Special Forces, 1995  
Haskel Visiting Professorship, University of Pennsylvania, 1995  
Burroughs Wellcome Medal, Royal Society of Medicine Foundation, London, 1991  
Outstanding Faculty Award, The University of Texas Health Science Center at Houston, 1991  
U.S. National Cancer Institute U.S.S.R. Scientist Exchange Award for Collaborative Research on  
Molecular and Genetic Aspects of Tumor Metastasis, 1991  
Evan and Marion Helfaer Distinguished Lectureship, The Cancer Center of the Medical College of  
Wisconsin, 1990  
Dean's Teaching Excellence List, The University of Texas Health Science Center at Houston Graduate  
School of Biomedical Sciences, 1985-1994  
Teaching Excellence Award for Best Course, The University of Texas Medical School at Houston, 1990  
NCI/NIH Outstanding Investigator Award, 1987  
Annual Award of the Japan Histochemical Society, 1976  
Eli Nadel Memorial Lecture in Biochemistry, 1983  
Rita Ferdinand Memorial Lectureship, 1982  
Guy Lipscomb Memorial Lecture in Chemistry, 1980  
Upjohn Biology Education Award, 1976  
Presidential Award, Electron Microscopy Society of America, 1971

### **Society Memberships with Offices Held:**

American Association for Cancer Research  
Member, Board of Directors, 1985-1988  
Chairman, Rhoades Award Committee, 1987-1988  
Chairman, Nomination Committee, 1985-1988  
Member, Program Committee, 1984-1988  
Member, Local Arrangements Committee, 1991

Metastasis Research Society

President, 1988-1990

Secretary-Treasurer, 1990-1998

Vice President, 1986-1988

International Association of Chronic Fatigue Syndrome/ME 2014-

Academic Society of Functional Foods and Bioactive Compounds in Health and Disease 2015-

American Academy of Environmental Medicine

American College for the Advancement of Medicine

American Society of Biological Chemists, 1975-1985

American Society for Cell Biology, 1970-1980

Biophysical Society, 1972-1980

Electron Microscopy Society of America, 1970-1978

### **Chairmanship of National and International Conferences:**

Co-Chairman, 2016 International Conference on Fibromyalgia and Pain, Philadelphia, PA 2016

Co-Chairman, 18<sup>th</sup> International Functional Food and Bioactive Compounds in Obesity, Harvard Medical School, Boston, MA 2015

Co-Chairman, 12<sup>th</sup> International Functional Food and Bioactive Compounds in the Mangement of Chronic Inflammation, UCLA, 2013

Co-Chairman, 11<sup>th</sup> International Functional Food Components in Health and Disease, Univ. Texas Southwestern Medical School, Dallas, 2012

Co-Chairman, 10<sup>th</sup> International Functional Food Components in Health and Disease, UC Santa Barbara, 2012

Co-Chairman, 9<sup>th</sup> International Functional Food Components in Health and Disease, U. San Diego, 2011

Co-Chairman, 2<sup>nd</sup> International Conference on Integrative Medicine and Women's Health, Los Angeles, 2002

Co-Chairman, IIACR Conference on Invasion and Metastasis, Athens, Greece 2001.

Co-Chairman, Conference on Integrative Medicine and Chronic Illnesses, Anaheim, CA, 2000

Co-Director, NATO Advanced Study Institute, Intermolecular Cross-talk in Tumor Metastasis, Athens, Greece, 1998

Co-Chairman, Keystone Symposium on Molecular and Cellular Biology, Cancer Cell Motility and Invasion, Tammaron, Colorado, 1995

Co-Chairman, Fifth International Congress of the Metastasis Research Society, Bethesda, Maryland, 1994

Co-Chairman, Pezcoller Foundation Symposium on Cell Adhesion Molecules, Roverto, Italy, 1992

Co-Chairman, 43rd MDACC Annual Symposium on Fundamental Cancer Research, Growth Factors and Their Receptors in Cancer: Basic Mechanisms and Therapy, Houston, 1991

Chairman, Third International Congress of the Metastasis Research Society, Bethesda, Maryland, 1990.

Co-Chairman, NCI Workshop on Cancer Cell Biology, Bethesda, Maryland, 1990

Co-Chairman, AACR/BACR/EORTC Conference on The Cell Membrane and Cell Signals as Targets in Cancer Chemotherapy, Cambridge, England, 1989

Co-Chairman, U.S.-Japan Conference on Cancer Cells, Honolulu, Hawaii, 1988

Chairman, UCLA Symposium on Molecular and Cellular Biology, Tumor Progression and Metastasis,

Keystone, Colorado, 1987

Co-Chairman, Second International Research Symposium on Cellular Oncology, Occult Nodal Metastasis in Solid Carcinomata, Palm Springs, California, 1985

Co-Chairman, MDACC Annual Symposium on Fundamental Cancer Research, Cancer Invasion and Metastasis: Biologic and Therapeutic Aspects, Houston, 1983

Co-Chairman, V.A. Medical Center Symposium on New Approaches in Biology, Diagnosis, and Treatment of Cancer, Long Beach, California, 1983

Chairman, UCLA Symposium on Molecular and Cellular Biology, Molecular Biology of Tumors and Potential Clinical Applications, Keystone, Colorado, 1976

Co-Chairman, UCLA Symposium on Molecular and Cellular Biology, Cell Membranes. Squaw Valley, California, 1974

### **U.S. Congressional Committee and Presidential Commission Testimony**

Testimony of Dr. Garth L. Nicolson, House Committee on Government Reform, Subcommittee on National Security, Veterans' Affairs and International Relations, United States House of Representatives, January 24, 2002.

Testimony of Dr. Garth L. Nicolson, House Committee on Veterans' Affairs, Subcommittee on Health, United States House of Representatives, January 24, 2002.

Testimony Of Dr. Garth L. Nicolson, Special Oversight Board For Department Of Defense Investigations Of Gulf War Chemical And Biological Incidents, U. S. Senate Hart Office Building SH-216, November 19, 1998.

Testimony Of Dr. Garth L. Nicolson, House Committee on Veterans' Affairs, Subcommittee on Benefits, United States House of Representatives, July 16, 1998.

Testimony Of Dr. Garth L. Nicolson and Dr. Nancy L. Nicolson, House Committee On Government Reform and Oversight, Subcommittee on Human Resource and Intergovernmental Relations, United States House of Representatives, June 26, 1997.

Testimony of Dr. Garth L. Nicolson and Dr. Nancy L. Nicolson, House Committee On Government Reform And Oversight, Subcommittee on Human Resource and Intergovernmental Relations, United States House of Representatives, April 2, 1996.

Testimony of Garth Nicolson and Nancy L. Nicolson, Mycoplasmal Infections in Gulf War Illnesses, President's Advisory Panel on Gulf War Veterans' Illnesses, Washington D.C., August 14-16, 1995.

### **Symposia Presentations at National or International Conferences (1987-2016):**

December 15, 2017. Las Vegas, NV. Annual Conference of the American Academy of Anti-Aging Medicine. Invited Speaker: Beneficial effects of hydrogenized water on human biomarkers for antioxidants, glucose uptake, glutamate toxicity and anti-aging.

November 19, 2017. London, England. Academy of Nutritional Medicine (United Kingdom) annual conference on The Emergence of 21<sup>st</sup> Century Acquired Immune Deficiencies and Innovative Solutions. Invited Speaker: Targeting membrane and mitochondrial dysfunction in complex chronic diseases.

March 25, 2017. San Diego, CA. International Conference on Functional Foods and Bioactive Compounds in Health and Disease. Invited Session Speaker: Membrane Lipid Replacement with glycerolphospholipids protected with fructooligosaccharides to restore mitochondrial function and reduce fatigue, pain, gastrointestinal and other symptoms in Chronic Fatigue Syndrome and Fibromyalgia.

January 20 and 23, 2017. Seattle, WA and Las Vegas, NV. Naturally Plus Hydrogen Conferences  
 Keynote Speaker: Use of molecular hydrogen (hydrogenized water) for health and disease.

December 13, 2016. Tokyo, Japan. Special Lecture at the Institute for Medical Research, University of Tokyo. Membrane Structure and the use of Membrane Lipid Replacement for repairing membrane damage and reducing symptoms in chronic diseases.

December 10-11, Osaka, Japan. International Conference on Hydrogen Medicine. Invited Keynote Speaker: Hydrogen medicine in health and disease.

November 4-6, 2016. Honolulu, Hawaii. Conference on Hydrogen Medicine. Invited Keynote Speaker. Hydrogen medicine and use of hydrogenized water for chronic illnesses.

June 15-16, 2016. Philadelphia, PA. International Conference on Fibromyalgia and Chronic Pain. Co-Chairman and Invited Keynote Speaker: Membrane Lipid Replacement with glycerolphospholipids to restore mitochondrial function and reduce fatigue and pain in CFS/ME and Fibromyalgia patients.

April 9-10, 2016. Seattle, Washington. Naturally Plus Regional Conference on Hydrogen Medicine. Invited Keynote Speaker: Hydrogen medicine and the use of hydrogenized water for chronic health conditions.

November 30-December 2, 2015. San Francisco, CA. International Conference on Lipid Science and Technology. Invited Keynote Speaker: Lipid Replacement Therapy for enhancing mitochondrial function and improving chronic disease symptoms and aging.

October 17-18, 2015. Montevideo, Uruguay. Faculty of Medicine, University of the Republic of Uruguay. Special Lectures: (1) Cell membranes and the Fluid-Mosaic Membrane model and (2) Chronic infections in fatiguing illnesses, neurodegenerative and neurobehavioral diseases.

October 15-16, 2015. Montevideo, Uruguay. Uruguayan Conference of Biochemistry and Molecular Biology. Keynote Speaker: The Fluid-Mosaic Model of membrane structure and it's importance in health and chronic disease.

September 15-18, 2015. Boston, MA, Harvard Medical School. 18<sup>th</sup> International Conference on Functional Foods and Bioactive Compounds in Health and Disease. Invited Speaker: Lipid Replacement with a membrane glycerolphospholipid formulation: enhancement of human spermatozoa motility and viability.

July 25, 2015. Las Vegas, NV. Annual Meeting of Naturally Plus USA. Invited Keynote Speaker: The science and uses of hydrogen water.

May 30-31, 2015. Oslo, Norway. International Norvect Conference. Invited Speaker: (1) Chronic bacterial infections in neurodegenerative and neurobehavioral diseases and other chronic illnesses and (2) Loss of mitochondrial function in chronic illnesses and infectious diseases: treatment with Lipid Replacement Therapy.

May 8-10, 2015. Augsburg, Germany. International Lyme and Associated Diseases Society Conference. Invited Speaker: Lipid Replacement therapy with NTFactor and ATP Fuel: reduction of fatigue and restoration of mitochondrial function in Lyme and associated diseases.

November 18-19, 2014. San Diego, CA. International Conference on Functional Foods and Bioactive Compounds in Health and Disease. Invited Speaker: Update of the Fluid-Mosaic Model of membrane structure: it's importance in health and chronic disease.

July 18-20, 2014. Quito, Ecuador. International Conference on Membranes and Health. Invited Keynote Speaker: The Fluid—Mosaic Model of Membrane Structure.

June 15-16, 2014. Madrid, Spain. Lipopharma meeting on Lipids in Medicine. Invited Participant: Lipid Replacement Therapy in chronic illnesses.

May 28-30, 2014. San Francisco, CA. Institute for Functional Medicine Society. Invited Speaker: Lipid

Replacement Therapy with NTFactor and ATP Fuel: reduction of fatigue and restoration of mitochondrial function in chronic diseases.

May 2-4, 2014. Bellevue, WA. Klinghardt Academy--Integrative Care Conference, Invited Speaker: Lyme-Associated Infections in Neurodegenerative, Neurobehavioral and Fatiguing Illnesses: Mitochondrial Dysfunction and Lipid Replacement Therapy.

March 21-23, 2014. San Francisco, CA. International Association of Chronic Fatigue Syndrome/ME. Invited Presenter: Lipid Replacement Therapy using NTFactor, NADH and CoQ10 significantly reduces fatigue improves mitochondrial function in long-term, intractable chronic fatiguing illnesses.

January 24-25, Costa Mesa, CA. 3<sup>rd</sup> Annual IV Therapies Integrative Oncology Conference. Invited Speaker: September 25-29, 2013. Portland, OR. International Conference on Human Nutrition and Functional Medicine. Invited Speaker: The role of chronic infections in mitochondrial dysfunction and the importance of combined antimicrobial therapy and nutritional interventions.

September 16-20, 2013. Minneapolis, MN. Institute for Functional Medicine, Applying Functional Medicine in Clinical Practice. Invited Speaker: Lipid replacement and mitochondrial function.

August 20-22, 2013. UCLA, Los Angeles, CA. 14<sup>th</sup> International Conference on Functional Foods and Bioactive Compounds in the Management of Inflammation. Invited Speaker: Lipid Replacement Therapy: a Functional Food Approach for Reducing Fatigue and the Adverse Effects of Antimicrobial Therapy in Fatiguing Illnesses and Chronic Lyme Disease.

June 6-10, 2013, Melbourne, Australia. 10<sup>th</sup> International Congress on Natural Medicine. Invited Keynote Speaker: The role of chronic bacterial and viral infections in neurodegenerative, neurobehavioral and other chronic diseases. 2<sup>nd</sup> Presentation: Lipid Replacement Therapy: a functional food approach to reduce fatigue and oxidative damage and restore mitochondrial function in chronic illnesses, infections and cancer.

May 12-15, 2013, Windsor, Ontario, Canada. 10<sup>th</sup> Annual Natural Health Products Research Conference. Plenary Speaker: Blood homocysteine levels are significantly reduced with Lipid Replacement Therapy: relevance to patients with chronic diseases.

April 25-26, 2013, Scottsdale, AZ. Integrative Cancer Medicine: Clinical Applications of Cancer Strategies. Special Speaker: Cancer-associated fatigue and nutraceutical approaches for reducing cancer-associated fatigue and the adverse effects of cancer therapy while restoring mitochondrial function.

April 18-20, 2013, Dallas, TX. Best Answer for Cancer Annual Conference. Invited Speaker: Cancer-associated fatigue and cancer treatment fatigue and treatment with natural medicine.

February 16-17, 2013, Phoenix, AZ. Oncology Natural Physicians Conference (OncNPC). Invited Speaker: Lipid Replacement Therapy: a functional food approach for reducing cancer-associated fatigue and the adverse effects of cancer therapy.

December 13-15, 2012. Las Vegas, NV. 20<sup>th</sup> World Congress on Anti-Aging and Regenerative Medicine. Invited Symposium Speaker: Lipid Replacement Therapy: an anti-aging membrane glycopospholipid formulation with NADH and CoQ10, significantly reduces fatigue in long-term intractable chronic fatiguing illnesses and chronic Lyme disease.

October 6, 2012. London, England, UK. Royal Society of Medicine Conference. Invited Keynote Speaker: Mitochondrial repair—Resolution of fatigue.

August 21-23, 2012. San Diego, CA. 11<sup>th</sup> International Functional Foods and Chronic Inflammation Conference. Session Chair and Invited Speaker: Blood homocysteine levels are significantly reduced with a glycopospholipid formulation plus vitamin B-complex: a retrospective study in older subjects.



May 22-25, 2012. Kelowna, British Columbia, Canada. 9<sup>th</sup> Natural Health Products Research Conference. Invited Keynote Speaker: Lipid replacement therapy: a functional food approach for reducing cancer-associated fatigue and the adverse effects of cancer therapy. Also, an invited presentation was presented: Lipid Replacement Therapy, a glycopospholipid formulation with NTFactor, NADH and CoQ10 reduces fatigue in long-term intractable chronic fatiguing illnesses and chronic Lyme Disease.

March 13-15, 2012. Santa Barbara, CA. 10<sup>th</sup> International Functional Foods and Bioactive Compounds Conference. Invited Speaker: Lipid Replacement Therapy using a glycopospholipid formulation with NTFactor, NADH and CoQ10 reduces fatigue in long-term intractable chronic fatiguing illnesses and chronic Lyme Disease.

March 7, 2012. Honolulu, Hawaii. University of Hawaii John A. Burns School of Medicine. Yanagimachi Distinguished Lecture: Reducing cancer-associated fatigue and the adverse effects of cancer therapy using Lipid Replacement Therapy.

October 28-30, 2011. Toronto, Ontario, Canada. 2011 Annual Conference of the International Lyme and Associated Diseases Society. Invited Special Speaker: Recent clinical trials using Lipid Replacement Therapy to improve mitochondrial function and reduce fatigue for Lyme Disease and other chronic illnesses.

August 16, 2011. San Diego, CA. 9<sup>th</sup> International Functional Food Components in Health and Disease Conference. Invited Speaker: Lipid Replacement Therapy functional food formulation with NTFactor for reducing weight, girth, body mass, appetite, cravings for sweets and fatigue while improving cardiovascular blood lipid profiles.

April 29, 2011. Bellevue, WA. 18<sup>th</sup> International Symposium on Functional Medicine: Emerging infections in the 21<sup>st</sup> Century-Terrain, Tolerance and Susceptibility. Invited Speaker: Mycoplasma and other chronic infections in neurodegenerative, neurobehavioral and fatiguing illnesses.

April 17, 2011. Bologna, Italy. 6<sup>th</sup> International Academy on Nutrition and Aging. Invited Speaker: Lipid Replacement Therapy: a nutraceutical approach for reducing cancer-associated fatigue and the adverse effects of cancer therapy.

April 8, 2011. Minneapolis, MN. iMosaic Combined AAEM, ACAM, AHMA, ICIM Conference. Invited Speaker: Lipid Replacement Therapy with a glycopospholipid-antioxidant-vitamin formulation reduces fatigue within one week in chronic fatigued patients: implications for neurodegenerative, neurobehavioral and fatiguing illnesses.

March 17, 2011. Las Vegas, NV. International Functional Foods in Health and Chronic Diseases Conference. Keynote Speaker: Lipid Replacement Therapy: a functional food approach for reducing cancer-associated fatigue and the adverse effects of cancer therapy.

October 15, 2010. New Jersey City, NJ. International Lyme and Associated Diseases Society Conference. Invited Special Lecturer: Lyme-associated infections in neurodegenerative and neurobehavioral disorders, oxidative stress and the loss of mitochondrial function: using nutraceuticals to reverse mitochondrial damage and increase cellular energy.

October 10, 2010. Los Angeles, CA. 9<sup>th</sup> California Naturopathic Doctors Association Conference. Invited Special Lecture: Restoring mitochondrial function—The key to improving energy output.

October 3, 2010. Montreal, Quebec, Canada. 2<sup>nd</sup> International Cancer Fatigue Symposium. Invited Speaker: Lipid Replacement Therapy: a nutraceutical approach for reducing cancer-associated fatigue and the adverse effects of cancer therapy.

September 24, 2010. Buffalo, NY. 53<sup>rd</sup> Conference of the International College of Integrated Medicine. Invited Special Speaker: Chronic bacterial and viral infections in neurodegenerative and neurobehavioral diseases: Why physicians are not up to speed on chronic infections.

July 26, 2010. Santa Ana, NM. 5<sup>th</sup> Congress of the International Academy of Nutrition and Aging. Invited Speaker: Lipid replacement therapy with a phospholipids-antioxidant-vitamin formulation significantly reduces fatigue within one week in chronic fatigued patients.

July 19, 2010. Bethesda, MD. National Institutes of Health Conference on Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections. Invited Speaker: The role of Mycoplasmal Infections in neurodegenerative and neurobehavioral disorders.

October 9-11, 2009. Seattle, WA. Lyme and Associated Diseases Conference. Invited Speaker: Lyme Disease Co-Infections, Neurodegenerative and Neurobehavioral Diseases, Oxidative Damage and Lipid Replacement of Damaged Cellular Membranes.

May 28-29, 2009. London, England, UK. International ME/CFS Conference. Keynote Speaker: Similar infections found in ME/CFS and neurodegenerative and neurobehavioral diseases.

October 18-19, 2008. San Francisco, CA. International Lyme and Associated Diseases Annual Conference. John Drulle Memorial Lecture: Lyme co-infections in neurodegenerative and neurobehavioral diseases.

September 28-30, 2008. Cazadero, CA. Ratna Ling CFIDS Symposium. Invited Speaker: CFS and ASD: comparisons and treatments.

August 29-31, 2008. Sudbury, Ontario, Canada. Common Cause Medical Research Foundation Conference. Keynote Speaker: Chronic infections in neurodegenerative diseases: their origins.

July 23-25, 2008. Indian Wells, CA. Lyme-Induced Autism Foundation Physician Meeting. Invited Speaker: Chronic infections in Autism Spectrum Disorders.

January 27-28, 2008. San Diego, CA. Lyme-Induced Autism Foundation Workshop. Invited Speaker: Bacterial and viral infections in Autism Spectrum Disorders.

October 28-29, 2007. Santa Cruz, CA. Conference sponsored by Dr. Stan Montieth. Invited Keynote Speaker: Chronic infections in neurodegenerative and autoimmune diseases.

October 20-21, 2007. Houston, TX. 2007 Health Expo. Invited Symposium Speaker: Role of chronic infections in neurodegenerative diseases and fatiguing illnesses.

October 10-11, 2007. Irvine, CA. DAN Conference. Invited Speaker: Lyme Disease, other infections and autism.

August 8-12, 2007. Cazadero, CA. Ratna Ling CFIDS Symposium. Invited Speaker: Transmission of CFS to immediate family members and role of Lyme Disease.

July 3-6, 2007. Montecatini, Tuscany, Italy. 19<sup>th</sup> American Biologics Integrative Medicine Symposium. Invited Speaker: Evidence for chronic co-infections in the blood of Autism Spectrum Disorders.

June 23-24, 2007. Irvine, CA. Lyme Disease in Autism Conference. Invited Speaker: Chronic co-infections in Lyme Disease and Autistic Spectrum Disorders.

April 19-20, 2007. Ferrara, Italy. International Conference on Chronic Chlamydia and Mycoplasma Human Infections. Invited Speaker: Chronic co-infections (Mycoplasma, Chlamydia, Borrelia, Brucella) in various human illnesses.

March 24-25, 2007. Dallas, TX. Lay Institute Symposium. Invited Speaker: Biological Warfare and the ethics of development and testing biowarfare agents.

January 27-28, 2007. San Diego, CA. Lyme-Induced Autism Workshop. Invited Speaker: Co-infections in Lyme Disease and Autism Spectrum Disorders.

January 10-12, 2007. Ft. Lauderdale, FL. Eighth International Association of Chronic Fatigue Syndrome Conference. Invited Speaker: (1) Chronic bacterial co-infections in Chronic Fatigue Syndrome and Chronic Fatigue Syndrome patients subsequently diagnosed with Lyme Disease. (2) Lipid Replacement Therapy for restoring mitochondrial function in fatiguing illnesses and Chronic Fatigue Syndrome.

November 17-19, 2006. Sudbury, Ontario, Canada. Common Cause Medical Research Foundation. (1) Invited Keynote Speaker: Degenerative diseases and the role of chronic bacterial and viral infections. (2) Invited Speaker: Autistic Spectrum Disorders: role of chronic bacterial and viral infections.

October 26-29, 2006. Hilton Head, SC. American Academy of Environmental Medicine Annual Conference. Invited Speaker: Chronic co-infections in Autistic Spectrum Disorders: diagnosis and treatment.

July 1-5, 2006. Corfu, Greece. 18<sup>th</sup> American Biologics International Symposium. Invited Speaker: Role of multiple co-infections in Lyme Diseases: diagnosis and treatment.

June 8-11, 2006. Dallas, TX. 24<sup>th</sup> Symposium on Man and his Environment. Invited Speaker: Lipid replacement and antioxidant therapy for restoring mitochondrial function in Chronic Fatigue Syndrome and other fatiguing illnesses.

May 4-6, 2006. Richardson, TX. American College for Advancement in Medicine. Invited Speaker: Diagnosis and treatment of multiple co-infections in Lyme Disease.

October 29-31, 2005. Philadelphia, PA. International Lyme and Associated Diseases Conference. Invited Symposium Speaker: Role of mycoplasmal co-infections in Lyme Disease.

September 6-9, 2005. Dubrovnik, Croatia. 4th European-American Forensic Medicine Conference. Invited Symposium Speaker: Chronic infections in Gulf War veterans and immediate family members: relationship to Gulf War Syndrome.

September 3-4, 2005. Houston, TX. Center for Autistic Spectrum Disorders Symposium. Invited Speaker: Treating multiple chronic bacterial and viral infections in Autistic Spectrum Disorder patients.

July 10, 2005. Philadelphia, PA. Center for Autistic Spectrum Disorders Physicians Workshop. Invited Speaker: Role of chronic infections in Autistic Spectrum Disorders.

May 21-24, 2005. Budapest, Hungary. Hungarian Academy of Sciences Meeting on Membranes. (1) Invited Symposium Speaker: Breast cancer progression and metastasis-associated genes. (2) Invited Speaker: Lipid replacement therapy and mitochondrial function.

May 7-8, 2005. Unionville, CT. Lyme Disease Support Conference. Invited Speaker: Role of intracellular co-infections in Lyme Disease.

May 6, 2005. Hamilton, NJ. Medical Diagnostics Laboratories. Invited Speaker: Role of chronic bacterial and viral infections in fatiguing and autoimmune illnesses.

April 16-19, 2005. Istanbul, Turkey. Congress of Molecular Medicine. Invited Symposium Speaker: Cancer metastasis-associated human *MTA1* gene and its role in dacylation and signal transduction in epithelial cancer cells.

October 10-13, 2004. Phoenix, AZ. American Academy of Environmental Medicine. (1) Invited Speaker: Chronic co-infections in Chronic Fatigue Syndrome and other fatiguing illnesses. (2) Lipid Replacement Therapy, fatigue and mitochondrial function.

April 15-17, 2004. Kansas City, KS. American Academy of Environmental Medicine. Invited Speaker: Chronic bacterial and viral co-infections in Chronic Fatigue and Fibromyalgia Syndromes and Gulf War Illnesses.

March 3-4, 2004. Baton Rouge, LA. Chancellors Distinguished Lecture: Cancer progression and metastasis: role of genetics, growth factors and infections.

Febuary 12-15, 2004. Munster, Germany. Neurobiology of the Skin. Invited Symposium Speaker: Role of neurotrophins in regulating metastasis of melanoma to brain.

October 30-November 2, 2003. Phoenix, AZ. American Academy of Environmental Medicine Annual Meeting. Invited Symposium Speaker: (1) Diagnosis and treatment of multiple, chronic bacterial

and viral infections in Chronic Fatigue Syndrome, Fibromyalgia Syndrome and Gulf War Illnesses;  
(2) Nutritional support restores mitochondrial function and reduces moderately severe fatigue in aged subjects.

- August 22-23, 2003. Vancouver, BC, Canada. Common Cause Foundation Annual Meeting. Invited Speaker: Mycoplasmal, Chlamydial and Herpes Virus infections in chronic illnesses.
- July 24-26, 2003. Kansas City, MO. American Academy of Craniofacial Pain Annual Meeting. Invited Symposium Speaker: Chronic infections in fatiguing and autoimmune illnesses.
- March 18, 2003. San Diego, CA. San Diego VA Medical Center. Invited seminar speaker: Gulf War Illnesses: role of chronic infections and multiple chemical exposures.
- December 6-8, 2002. Belview, WA. Neurological Disease Conference. Invited Speaker: Co-Infections in Borrelia-Lyme Disease.
- October 24, 2002. San Diego, CA. Defeat Autism Now Workshop. Invited Speaker: Chronic infections in Autism and ADHD patients.
- September 18-20, 2002. Niagara Falls, Ont., Canada. Institute for Integrative Medicine Meeting. Invited Symposia Speaker: Mitochondrial function in fatiguing illnesses: Diagnosis and treatment.
- September 20-22, 2002. Chicago, IL. Metastasis Research Society Congress. Session presentation: The role of the *MTA1* gene in metastasis.
- June 27-July 6, 2002. Rhodes, Greece. 13<sup>th</sup> Annual American Biologics International Conference on Integrative Medicine. Invited Symposia Speaker: Biological Warfare agents: their identification and treatment.
- May 3-5, 2002. Orlando, FL. National Fibromyalgia Conference. Invited Speaker: Role of chronic bacterial and viral infections in Fibromyalgia Syndrome.
- April 3-10, 2002. Sydney, Australia. Mind of a Child Conference. Invited Symposia Speaker: Chronic infections in Autism patients: Identification and treatment.
- March 8-10, 2002. Carmel, CA. Annual Meeting of the Academy of Biological Dentistry. Invited Speaker: Chronic bacterial and viral infections in chronic illnesses.
- January 28, 2002. Arlington, VA. Joint Intelligence Operatives, Fort Myer. Gulf War Illnesses and related syndromes caused by chronic infections.
- January 24, 2002. Washington DC. House of Representatives, U.S. Congress. Invited testimony on Gulf War veterans' illnesses.
- December 6, 2001. Munich, Germany. International Conference on Staging of Cancer. Keynote Speaker: History of Cancer Research on Membranes, Invasion and Metastasis.
- December 1, 2001. Sydney, Australia. 3<sup>rd</sup> International Conference on Chronic Fatigue Syndrome. Keynote Speaker: Multiple Co-Infections in Chronic Fatigue Syndrome: Diagnosis and Treatment.
- November 15, 2001. Long Beach, CA. Biannual Meeting of the American Academy for Advancement in Medicine. Invited Workshop Speaker: Diagnosing and Treating Chronic Infections in Chronic Illnesses.
- June 30, 2001. Malta. 12<sup>th</sup> Annual American Biologics Conference on Integrative Medicine. Invited Speaker: Chronic Infections in Autoimmune Diseases.
- June 14-17, Athens, Greece. International Institute for Anticancer Research Conference. Conference Chairman and Speaker: *MTA1* Gene and Breast Cancer Progression.
- May 18, 2001. Ottawa, Quebec. Environmental Illness Soc. of Canada Conference. Invited Speaker: Role of Chronic Intracellular Infections in Chronic Illnesses.
- May 15, 2001. Aylmer, Quebec. Canadian Dept. of National Defense Symposium on Chemical Sensitivity. Invited Speaker: Diagnosis and Treatment of Mycoplasmal and Chlamydial Infections.
- November 11, 2000. Anaheim, CA. First Annual Conference on Integrative Medicine, Invited Speaker

and Conference Chairman: Integrative Medicine Approaches to Chronic Illnesses.

October 28, 2000. Salt Lake City, UT. American Academy for Advancement in Medicine, Semi-Annual Meeting. Invited Symposium Speaker: Intracellular Bacterial Infections: Diagnosis and Treatment.

August 18, 2000. Rochester, New York. Common Cause Foundation Meeting. Keynote Speaker: Chronic Infections in Fatiguing and Autoimmune Illnesses.

September 16, 2000. Herdon, VA. National Gulf War Conference. Invited Speaker: Gulf War Illnesses and the Role of Chronic Infections.

June 9, 2000. Dallas, Texas. American Academy of Environmental Medicine. Invited Symposium Lecture: Chronic Infections in Environmental Health.

May 23-26, 2<sup>nd</sup> Congress of Oncologists of the CIS. Kiev, Ukraine. Plenary Lecture: Genetics of Breast Cancer Invasion and Metastasis. Session Chairman, Invited Lecture: Chronic Infections in Cancer, Fatiguing Illnesses and Autoimmune Diseases.

April 6, 2000. Kuwait City, Kuwait. Ministry of Health of Kuwait. Invited Symposium Lecture: Gulf War Illnesses and the Role of Chronic Infections in Fatiguing and Autoimmune Illnesses.

March 3-5, 2000. Carmel, CA. American Academy of Biological Dentistry Annual Meeting. Invited Symposia Speaker. Role of Chronic Infections in Oral and Systemic Diseases.

September 20, 1999. Las Vegas, Nevada. National Gulf War Resource Center Conference. Invited symposia speaker: Chronic infections in Gulf War Illnesses.

September 10, 1999. Brussels, Belgium. Second International Congress on Chronic Fatigue Syndrome. Invited symposia speaker: Chronic infections in Chronic Fatigue Illnesses and their Treatment.

August 21, 1999. Gananoque, Ontario, Canada. Common Cause Foundation International Symposia. Invited symposia speaker: Chronic infections in CFS, FMS and Gulf War Illness.

July 26, 1999. Ottawa, Ontario, Canada. Second International Symposia on Breast Cancer. Invited symposia speaker: Breast cancer-associated genes and their gene products.

July 2, 1999. Vienna, Austria. American Biologics 11<sup>th</sup> International Symposium on Integrative Medicine. Invited symposia speaker: Chronic infections and Their Treatment

May 29, 1999. Washington DC. Memorial Day Veterans Health Conference. Invited symposia speaker: Chronic infections and Their Treatment in Gulf War Illnesses.

February 26, 1999. Sydney, Australia. Alison Hunter Memorial Foundation International Meeting on Chronic Illnesses. Invited symposia speaker: Chronic infections in CFS, FMS and Gulf War Illness.

October 8, 1998. San Diego, CA. International Congress of the Metastasis Research Society. Stephen Paget Award Lecture: Cancer metastasis-associated genes and cancer progression.

October 6, 1998. New Orleans, LA. September 10, 1998. American College of Occupational and Preventive Medicine. Invited symposia speaker: Chronic infections in CFS and Fibromyalgia Syndrome.

September 11, 1998. Oxford, England. Royal Society of General Practitioners. Invited symposia speaker: Mycoplasmas, Gulf War Syndrome and CFS/ME.

July 24, 1998. Athens, Greece. NATO Conference on Intermolecular Cross-talk in Tumor Metastasis. Conference Co-organizer and speaker: Metastasis-associated genes and breast cancer metastasis and Organ microvessel endothelial cells: secretion of organ-specific motility and growth factors.

June 27, 1998. Istanbul, Turkey. American Biologics International Conference. Invited symposia speaker. Role of chronic infections in Gulf War Illness, Chronic Fatigue and Fibromyalgia Syndromes.

April 18-19, 1998. Riverside, CA. The Arthritis Institute Conference on Antibiotic Treatment for Rheumatic Diseases. Invited symposia speaker: Mycoplasmal infections in chronic diseases.

February 27-March 1, 1998. San Francisco, CA. Fourth Annual Symposium on Orthomolecular

Medicine. Invited symposia speaker: Gulf War vaccines and disease.  
 February 10-12, 1998. Sydney, Australia. Chronic Fatigue Syndrome 98 International Conference.  
 Invited symposia speaker: Mycoplasmas, Gulf War Syndrome and CFS.  
 January 16-18, 1998. Pasadena, CA. National Health Federation. Invited symposia speaker: Chronic infections in CFS and Fibromyalgia Syndrome.  
 November 16, 1997. Santa Ynez Valley CFIDS Association. Invited symposium speaker: Chronic infections in Fibromyalgia/Chronic Fatigue Syndrome.  
 October 16, 1997. Los Angeles, CA. Granada Forum. Invited symposium speaker: Fibromyalgia/Chronic Fatigue Syndrome.  
 September 29-30, 1997. Indianapolis, IN. Advances in Enzyme Control in Normal and Neoplastic Tissues. Invited symposium speaker: Role of heparanase in cancer invasion and metastasis.  
 September 20-21, 1997. Sudbury, Ont., Canada. Invited symposium speaker: Chronic infections in GWI/ Fibromyalgia/Chronic Fatigue Syndrome.  
 August 30-31, 1997. Los Angeles, CA. Cancer Control Convention. Invited symposium speaker: Chronic infections in Fibromyalgia/Chronic Fatigue Syndrome.  
 June 25-28, 1997. Lago Maggiore, Italy. International Integrative Medicine Congress. Invited symposium speaker: Chronic infections in Gulf War Illness/Fibromyalgia/Chronic Fatigue Syndrome.  
 June 16-17, San Francisco, CA. Neurocognitive Disorders and Molecular Genetics. Invited symposium speaker: Chronic infections in Fibromyalgia/Chronic Fatigue Syndrome.  
 April 17, 1997. Oceanside, CA. San Diego County CFIDS Association. Invited symposium speaker: Chronic infections in Fibromyalgia/Chronic Fatigue Syndrome.  
 April 24-26, 1997. Tampa, FL. American College for Advancement in Medicine. Invited symposium speaker: Role of chronic infections in Gulf War Illness/Chronic Fatigue Syndrome.  
 April 12-16, 1996. San Diego, CA. American Society for Cancer Research Meeting. Invited symposium speaker: Cancer metastasis-associated genes.  
 February 7-9, 1997. Seattle, WA. Fibromyalgia International Conference. Invited symposium speaker: Chronic infections in Fibromyalgia/Chronic Fatigue Syndrome.  
 January 30, 1997. Santa Barbara, CA. Santa Barbara Medical Society, Invited symposium speaker: Gulf War Illness/Chronic Fatigue Syndrome: role of chronic infections.  
 December 14, 1996. Le Puente, CA. Indo-American Society for Health and Laboratory Professionals. Invited speaker: Chronic infections associated with Chronic Fatigue Syndrome and Gulf War Illness.  
 November 14-16, 1996. Cairo, Egypt. 4th International Cancer Molecular Biology Symposium. Invited symposium speaker: Cancer metastasis-associated genes.  
 October 26-28, 1996. Nice, France. 3rd International Symposium on Predictive Oncology and Therapy. Invited speaker and session chairman.  
 September 7-11, 1996. Metastasis Research Society Congress. Invited Keynote Speaker: Breast cancer progression and the role of quantitative genomic changes and quantitative changes in gene expression.  
 July 20-24, 1996. Snowmass, CO. 45th Symposium on the Biology of the Skin. Invited symposium speaker: Neurotrophins and malignant melanoma invasion and metastasis.  
 June 5, 1996. Dallas, TX. Institute for Environmental Medicine. Invited symposium speaker: Mycoplasmal infections in Gulf War Illness-CFIDS.  
 April 28-May 2, 1996. Houston, TX. 9th International Congress on Breast Disease. Invited symposium speaker: Breast cancer metastasis genes and oncogenes and their role in tumor progression, cellular communication and metastasis.

March 24-27, 1996. San Francisco, CA. American Cancer Society Annual Science Writers Symposium. Invited speaker: Role of cancer metastasis associated genes in the progression of cancer to the metastatic state.

March 7-8, 1996. New Orleans, LA. 19th Annual Interdisciplinary Cancer Research Workshop. Keynote speaker: Breast cancer-associated genes and regulation of tumor progression.

March 1-2, 1996. Houston, TX. Endocrine and Breast Diseases International Congress. Invited speaker: Breast cancer metastasis and gene expression.

February 27, 1996. San Antonio, TX. Presidential Advisory Commission on Gulf War Veterans' Illnesses. Invited speaker: Mycoplasmal infections in Gulf War Illnesses.

February 15, 1996. Oklahoma City, OK. 1st Norman Durham Lecturer, Environmental Institute, Oklahoma State University.

January 15-17, 1996. Bethesda, MD. U.S.-Japan Cooperative Research Program on the Role of Cytokines in Cancer. Invited speaker: Mechanism of interferon- $\alpha$  inhibition of CML.

January 12, 1996. Kansas City, MO. Presidential Advisory Commission on Gulf War Veterans' Illnesses. Invited speaker: Mycoplasmal infections in Gulf War Illnesses.

November 23-26, 1995. London, England. Annual Meeting of the British Society of General Practitioners. Invited symposium speaker: Persian Gulf War Illness: role of mycoplasmal infections.

November 10-16, 1995. Alexandria, Egypt. Third International Cancer Molecular Biology Symposium. Invited symposium speaker: Cancer metastasis-associated genes.

November 1-5, 1995. Schwarzwald Titisee, Germany. International Titisee Conference on Tumor Angiogenesis. Invited speaker: Paracrine growth and motility factors from microvessel endothelial cells stimulate metastasis.

October 1-5, 1995. Terrigal, New South Wales, Australia. 19th Annual Conference of the Connective Tissue Society. Keynote Speaker: Role of trophic factors in stimulating metastatic cell matrix invasion and degradative enzymes.

June 25-28, 1995. Kansas City, MO. Sixth Meeting of the Pan American Society for Pigment Cell Research. Keynote Address: Role of neurotrophins and paracrine growth factors in brain metastasis of melanoma.

March 18-22, 1995. Toronto, Canada. American Association for Cancer Research. Invited symposium speaker. The *mta1* gene and breast cancer metastasis.

January 15-18, 1995. Durango, Colorado. Keystone Symposium on Cancer Cell Invasion and Motility. Invited symposium speaker: Organ microvessel endothelial cells: role in cancer cell invasion and growth.

December 7-8, 1995. Dearborn, Michigan. Preuss Foundation Annual Meeting. Invited symposium speaker: Role of neurotrophins in brain invasion and metastasis.

December 2-5, 1994. Keystone, Colorado. Keystone Symposia on Cancer. Invited symposium speaker: Paracrine motility factors and metastasis.

October 30-November 5, 1994. New Delhi, India. International Cancer Congress. Invited Symposium Chairman and Speaker: Membranes of metastatic cells.

October 25-26, 1994. Munster, Germany. Symposium on Gene Diagnosis of Cancer. Invited symposium speaker. Genes related to breast cancer metastasis.

October 9-12, 1994. Vienna, Austria. Annual Meeting of German and Austrian Societies of Haematology and Oncology. Invited symposium speaker: Molecular properties of metastatic cells.

June 10-12, 1994. Mexico City, Mexico. 130th Anniversary of the Mexican National Academy of Medicine. Invited symposium speaker: Metastasis of tumors to brain: molecular mechanisms.

March 28-April 1, 1994. Tokyo, Japan. Annual Meeting of the Japanese Pharmaceutical Society.  
Invited symposium speaker: Brain Metastasis: molecular mechanisms.

February 17-20, 1994. Houston, Texas. Annual Meeting of the Radiation Therapy Oncology Group.  
Invited symposium speaker: Metastasis: molecular mechanisms of invasion and metastasis.

February 11, 1994. Detroit, Michigan. Distinguish Faculty Lecture of Wayne State University. Invited speaker: Molecular mechanisms of cancer metastasis.

January 31-February 5, 1994. Big Sky, Montana. AACR Special Conference on the Molecular Genetics of Tumor Progression and Metastasis. Invited speaker: Role of neurotrophins and paracrine factors in brain cancer metastasis.

January 14, 1994. Miami, Florida. University of Maimi School of Medicine. Sigma Xi Distinguished Lecture: Tumor microenvironment and metastasis to specific sites-Molecular mechanisms.

December 2-5, 1993. Houston, Texas. Society for Basic Urological Research. Invited speaker: Molecular mechanisms of cancer metastasis.

November 24-26, 1993. Cairo, Egypt. Second International Cancer Molecular Biology Symposium.  
Invited symposium speaker: Cancer metastasis: Role of specific tumor cell and host properties in metastasis and identification of genes associated with breast cancer metastasis.

November 4-7, 1993. Houston, Texas. Thirty-Seventh Annual Clinical Conference. Invited symposium speaker: Cancer metastasis.

October 19-22, 1993. Potsdam, Germany. Schering Research Foundation Symposium. Invited speaker: Tumor metastasis and host microenvironment.

July 15-16, 1993. Glasgow, Scotland. Cancer Research Campaign Review of Metastasis Research.  
Invited speaker: Interactions of metastasis with host tissue.

March 6, 1993. San Francisco, California. Twenty-eighth Annual San Francisco Cancer Symposium.  
Invited symposium speaker: The Mechanisms of Metastasis: Current Concepts--Understanding and Predicting Tumor Spread.

December 9-10, 1992. San Antonio, Texas. Fifteenth Annual San Antonio Breast Cancer Symposium.  
Invited symposium speaker: Breast Cancer Metastasis: Role of Microenvironmental Signals at Primary and Secondary Sites.

Novvermber 20, 1992. Taegu, Korea. Molecular Medicine of Cancer Symposium. Invited symposium speaker: Organ Specificity of Cancer Metastasis: Role of Specific Tumor Cell Properties and Host Paracrine Motility Factors, Paracrine Growth Factors and other Cytokines in Metastasis to Specific Sites.

September 1-4, 1992. Paris, France. Fourth International Congress of the Metastasis Research Society. Invited symposium speaker: Organ Specificity of Cancer Metastasis: Role of Specific Tumor Cell Properties and Host Paracrine Motility Factors, Paracrine Growth Factors and other Cytokines.

June 26, 1992. Rovereto, Italy. Pezcoller Foundation's Fourth International Symposium on Cell Adhesion Molecules. Invited speaker, Session V: Endothelial Cell Adhesion in Invasion and Metastasis.

June 20, 1992. Innsbruck, Austria. University of Innsbruck. Invited speaker: The Role of Adhesion Components and Paracrine Growth Factors in Metastasis to Specific Sites.

June 16, 1992. Milan, Italy. Ares-Serono Symposium on Heterogeneity of Cancer Cells. Invited plenary speaker: Heterogeneity of Metastases.

May 22, 1992. Duarte, California. City of Hope 1992 Distinguished Visiting Lecturer Series: Organ Specificity of Metastasis: Role of Specific Adhesion, Invasion and Paracrine Growth Factors.

May 20, 1992. San Diego, California. Eighty-Third Annual Meeting of the American Association for



Cancer Research. Invited symposia speaker, Metastasis and the Microenvironment Session: Purification and Characterization of Migration-stimulating Factor Secreted by Mouse Hepatic Sinusoidal Endothelial Cells.

April 23-24, 1992. Memphis, Tennessee. University of Tennessee. The Baptist Memorial Health Care Foundation Forum on Cancer Research: The Molecular Basis for Cancer Prevention. Invited symposia speaker: Organ specificity of cancer metastasis: Role of specific tumor cell properties and host cytokines.

March 15, 1992. New York, New York. Society of Surgical Oncology 45th Annual Cancer Symposium. Invited symposia speaker: Paracrine growth factors and metastasis.

February 9-13, 1992. Houston, Texas. ASBMB/Biophysical Society Meeting.

January 26-February 2, 1992. Keystone, Colorado. Keystone Symposium. Invited speaker: Paracrine Growth Factors.

January 22-24, 1992. Atlanta, Georgia. American Cancer Society. Invited symposia speaker: Invasion and metastasis.

December 9, 1991. Dallas, Texas. American Academy of Dermatology's 50th Annual Meeting. Invited symposia speaker: Mechanisms of invasion and metastasis of malignant melanoma.

November 7, 1991. Berlin, Germany. Schering AG West Germany. Invited speaker series: Role of Adhesion Components, Motility Factors and Paracrine Growth Factors in Cancer Metastasis.

October 30-November 6, 1991. Moscow, U.S.S.R. All Union Cancer Center, U.S.S.R., Moscow. Visiting professor and lecturer: Tumor Invasion and Metastasis: Role of Endothelial Cell Adhesion and Degradative Enzymes and Organ Preference of Tumor Metastasis: Paracrine and Autocrine Organ Growth and Motility Molecules.

October 28-30, 1991. Bonn, Germany. International Meeting on Metastasis: Basic Research and Clinical Applications. Invited speaker: Integrin and Non-integrin Receptors and Paracrine Growth Factors in Organ Preference of Metastasis.

October 2, 1991. Dallas, Texas. Komen Foundation Symposium on Breast Cancer at the Molecular and Cellular Level. Invited speaker: Role of a Paracrine Growth Factor in Metastatic Breast Cancer.

August 11-16, 1991. Newport, Rhode Island. Gordon Research Conference on Cancer. Invited speaker: "Tissue-specific Growth Factors in Cancer Metastasis.

June 5-7, 1991. Trento, Italy. III Annual Pezcoller Symposium. Invited speaker: Tumor Suppressor Genes.

May 28-29, 1991. Cedar Rapids, Iowa. Fourth Annual Diana J. Benz Memorial Lecture. Distinguished lecture series: Breast Cancer Metastasis.

May 21-22, 1991. Buffalo, New York. Roswell Park Memorial Institute. Distinguished lecturer series: Organ Specificity of Cancer Metastasis: Role of Specific Tumor Cell Properties and Cytokines Expressed at Organ Sites.

May 4, 1991. Maui, Hawaii. Society of Head and Neck Surgery Symposium on Cervical Lymph Node Metastases. Invited speaker: Mechanisms of Lymphatic and Hematogenous Metastases.

April 18-20, 1991. New York City. The Fourth World Congress on Cancers of the Skin. Invited speaker: Biology of Malignant Melanoma Metastasis: Tumor Cell Properties and Cytokines Expressed at Particular Organ Sites Determine Organ Specificity.

April 1-7, 1991. Steamboat Springs, Colorado. UCLA Symposium on Epithelial Cancers and Aerodigestive Tract. Invited speaker: Lung Colonization by Metastatic Tumor Cells is Determined by the Properties of Unique Tumor Cells and Lung-Associated Cytokines.

March 26-27, 1991. Phoenix, Arizona. Thirty-third Science Writers' Seminar. Invited speaker: Breast

## Cancer Metastasis.

- March 13-15, 1991. St. Gallen, Switzerland. International Symposium on Angiogenesis. Invited symposia speaker: Stimulation of Growth and Migration of Liver-metastasizing Lymphoma Cells by Molecules from Murine Liver Endothelial Cells.
- February 26, 1991. New York City. New York Academy of Sciences Meeting on Metastasis: Mechanisms to Therapies. Invited speaker: The Role of Cell Adhesion in Tumor Metastasis.
- December 4-7, 1990. Houston, Texas. University of Texas M.D. Anderson Cancer Center's 43rd Annual Symposium on Fundamental Cancer Research. Co-chairman and plenary lecturer in Session II (Epithelial Tissue): Paracrine Growth Factors.
- October 18-21, 1990. Prouts Neck, Maine. International Conference on Molecular Genetics of Bladder Cancer. Lectured in Session VI (Molecular Markers in Bladder Cancer) on Cytokines Involved in Tumor Invasion and Metastasis.
- September 17-19, 1990. Bethesda, Maryland. Third International Congress of the Metastasis Research Society. Chairman of the Congress Program Committee. Delivered the President's address on Integrin and Non-Integrin Receptors and Paracrine Growth Factors in Organ Preference of Metastasis. Co-chaired Symposium II on Cell Adhesion and Extracellular Matrix.
- September 13-16, 1990. Washington, D.C. Tenth International Scientific Symposium of the National Foundation for Cancer Research, Georgetown University Conference Center. In the third session (Basic Carcinogenesis) lectured on Human and Mouse Melanoma Heparanases Are Inhibited by the Anticancer Agent Suramin.
- August 11-17, 1990. Bethesda, Maryland. Annual meeting of the NCI Laboratory of Tumor Cell Biology on Frontiers in Human Retrovirology and Related Topics. Invited special speaker on Malignancies Associated with Retrovirus Infections.
- July 6, 1990. Sapporo, Japan. 10th Sapporo Cancer Seminar. Keynote speaker: Generation of Diversity in Malignant Cell Populations. Plenary lecture on Organ Specificity of Cancer Metastasis Is Determined by Tumor Cell Molecules and Cytokines Expressed at Particular Organ Sites.
- July 3-5, 1990. Sapporo, Japan. 49th Annual Meeting of the Japanese Cancer Association. Speaker in the symposium on Progression and Metastasis in Malignancy entitled Cell Surface and Growth Properties of Metastatic Cells.
- June 11-13, 1990. Trento, Italy. Fondazione Pezcoller Trento Symposium on the Therapeutic Implications of Molecular Biology of Breast Cancer. Invited participant/discussant.
- May 23-26, 1990. Washington, D.C. 81st Annual Meeting of the American Association for Cancer Research. Invited participant in the symposium on Metastasis: Genetic Mechanisms and Cytokine Signal Transduction.
- April 26-29, 1990. Washington, D.C. Cancer Cell Biology Workshop on Implications for New Drug Development. Invited discussant and lecturer: Molecular Properties of Metastatic Cancer Cells.
- April 23-24, 1990. New York City. Cancer Progress V. Invited symposia presenter: Shaping Future Strategies for the Pharmacological Intervention of Tumor Cell Metastasis.
- April 1-5, 1990. Washington, D.C. American Association of Pathologists Program of the FASEB 1990 Annual Meeting. Invited speaker in the Minisymposium, Invasion and Metastasis. Lecture title: Cytokines in Metastasis Growth and Organ Homing.
- March 9-12, 1990. Squaw Valley, California. UCLA Symposia on Molecular and Cellular Biology: Biology of Sarcomas. Invited speaker: Interactions between Tumor Cells, Vascular Cells and Extracellular Matrix.
- February 7-9, 1990. La Jolla, California. Twelfth Annual Conference on Clinical Laboratory Molecular Analysis sponsored by Scripps Clinic and Research Foundation. Invited speaker and instructor:

Molecular Determinants of Metastasis.

- February 4-7, 1990. San Francisco, California. Annual Meeting of the Society of Gynecologic Oncologists. Invited symposia speaker: Adhesive, Invasive and Growth Properties of Metastatic Cells.
- January 27-February 3, 1990. Park City, Utah. UCLA Symposia on Molecular and Cellular Biology: Molecular Pathways of Cytokine Action. Symposia lecture on "Organ Specificity of Metastasis Is Determined by Adhesive, Invasive and Growth Properties of Unique Tumor Cells and Host Environments.
- September 25-27, 1989. Genoa, Italy. Joint NCI-IST Symposium on Biology and Therapy of Breast Cancer. Plenary speaker, Differential Adhesion, Invasion and Growth Properties of Metastatic Mammary Adeno-carcinoma Cells.
- September 14-16, 1989. Cambridge, England. AACR BACR EORTC meeting on The Cell Membrane and Cell Signals as Targets in Cancer Chemotherapy. Session chairman (Metastasis and Cell Death) and speaker, The Cell Surface and Metastasis.
- May 28, 1989. Honolulu, Hawaii. Joint Meeting of the AACR/JCA on Molecular Aspects of Growth Control. Poster presentation entitled: Oncogene-induced tumor cell diversification and loss of intercellular junctional communication correlates with metastatic potential in EJ c-H-ras gene transferred to rat mammary carcinoma cells. Lectures entitled: Membrane Functions and Cell Growth and Tumor Progression and Metastasis.
- May 25-27, 1989. San Francisco, California. Presented at the 80th Annual Meeting of the American Association for Cancer Research.
- April 13, 1989. Castres, France. International Symposium on New Concepts in Cancer, sponsored by the Centre de Recherche Pierre FABRE (Castres) and the Centre National de la Recherche Scientifique in (Toulouse). Delivered two lectures: Oncogenes and metastasis and Organ specific adhesion: Invasion and Growth in Metastasis.
- March 30, 1989. Dana Point, California. Fourth ICN-UCI Symposium. Lecturer on Protein-Nucleic Acid Interactions in Gene Expression.
- October 12, 1988. New Orleans, Louisiana. ASTRA Symposium on The Cell Membrane and Therapeutic Strategies for Neoplastic Diseases. Delivered keynote talk on The Role of Membrane Structure in Blood-Borne Metastasis.
- September 26-29, 1988. Heidelberg, West Germany. Second International Meeting of the Metastasis Research Society. Chairperson for two symposia; delivered plenary lecture on Organ tropism: Role of Differential Tumor Cell Adhesion.
- September 13, 1988. Galveston, Texas. Galveston R. E. 'Bob' Smith International Workshop. Delivered a lecture on Metastasis and chaired a symposium session entitled The Biology of Melanoma
- September 8, 1988. La Jolla, California. Participated in the Benson Biomedical Symposium and was a presenter and session Chairman in the area of Cancer and Genetic Disorders.
- July 4-12, 1988. Sapporo, Japan. 8th Sapporo Cancer Seminar. Plenary speaker in the symposium on Cancer Progression and Metastasis.
- May 24-28, 1988. New Orleans, Louisiana. 79th Annual Meeting of the American Association for Cancer Research. Chairperson of the poster discussant session on Invasion and Metastasis (Biology I). Participate in meetings of the Board of Directors of the AACR.
- March 17-19, 1988. Dana Point, California. Third ICN-UCI Symposium on the Molecular Basis of Genetic Disease.
- February 14-19, 1988. Honolulu, Hawaii. U.S.-Japan Cancer Program meeting on Cancer Cell

Membranes: Aberrant Glycosylation and other Critical Molecular Events. Delivered a plenary lecture on Metastatic Potential of Tumor Cells and Genetic Background.

November 30, 1987 - December 2, 1987. Bethesda, Maryland. National Cancer Institute, Division of Cancer Biology and Diagnosis (Tumor Biology Program) Workshop on Experimental Metastasis: Designing New Research Strategies.

September 6-11, 1987. Eilat, Israel. Bat-Sheva Seminar on Tumor Malignancy: Pathogenesis and Prevention of Tumor Dissemination. Speaker in the Session on Functional Aspects of Oncogenes: Tumor Diversification and Metastasis.

August 16-21, 1987. New London, New Hampshire. Gordon Research Conference on Cancer. Speaker in the Session on High Frequency Variation in Normal and Neoplastic Populations: Oncogenes in Tumor Progression and Metastasis."

July 26-31, 1987. Saxtons River, Vermont. FASEB Summer Research Conference on Biology of Tumor Metastases. Speaker in the Session on Endothelium & Angiogenesis: Role of Endothelium in Tumor Metastases.

June 4, 1987. Bethesda, Maryland. Meeting of the Breast Cancer Working Group of the NCI Organ Systems Coordinating Program entitled Methods for Quantitating Cell Heterogeneity and Phenotypic Variation in Breast Cancer.

May 19-22, 1987. Atlanta, Georgia. 78th Annual Meeting of the American Association for Cancer Research. Chaired and spoke in a symposium on Invasion and Metastasis (Biology III).

May 12-15, 1987. Bologna, Italy. International Congress on Cancer Metastasis: Biological and Biochemical Mechanisms and Clinical aspects. In the session on Biology of Metastatic Cells, chaired a round table discussion on metastatic models. Presented a plenary presentation: Cytoskeletal and Junctional Heterogeneity in Mammary Tumor Cells and their Possible Significance in Tumor Progression.

April 6-12, 1987. Keystone, Colorado. Co-chaired the UCLA Symposium on Tumor Progression and Metastasis Delivered a lecture in the session on Regulation of the Metastatic Phenotype on Gene Expression and Metastasis.

March 12, 1987. Bethesda, Maryland. Upper Aerodigestive Cancer Program Workshop on Biology of Tumor Growth and Progression. Chaired and presented in Session II on Invasion and Metastasis.

February 1-5, 1987. Taormina, Sicily. Erbamont/Farmitalia Carlo Erbe Workshop on Platelets and Angiogenesis in Cardiovascular and Cancer Research. Symposium lecture: The biology and biochemistry of metastasis.

#### **University Teaching (Outside Univ. of Texas):**

Cancer Biology Course (Winter and Fall), Invasion and Metastasis I, II & III, Stanford University, 1979-1993

University of Copenhagen, Center for Medical Biotechnology, Nordic Course on Techniques in Cell Biology, 1991

Rice University/Baylor College of Medicine/University of Texas Medical School at Houston: Vascular Cell Biology, Functional Differences in Organ Microvascular Endothelial Cells, 1990

National Taiwan University, College of Medicine, Taipei. Institute of Biochemistry, Tumor and Host Properties in Blood-Borne Metastasis, 1990

Houston Community College, Downtown Campus, Membrane Biology and Cancer Metastases, 1990

Rice University/Baylor College of Medicine/University of Texas Medical School at Houston: Vascular Cell Biology, Functional Differences in Organ Microvascular Endothelial Cells and Their Importance

in Organ Preference of Tumor Metastasis, 1990

National Taiwan University, College of Medicine, Taipei. Institute of Biochemistry, Tumor and Host Properties in Blood-Borne Metastasis, 1990

Houston Community College, Downtown Campus, Membrane Biology and Cancer Metastases, 1990

The Lineberger Cancer Research Center of the University of North Carolina School of Medicine, Chapel Hill, Biochemistry and Biology of Metastasis, 1985

Stanford, California. Stanford University Program in Cancer Biology, Metastasis I and Metastasis II, 1985

Tucson, Arizona. University of Arizona, Cancer Biology Training Program at the Arizona Health Sciences Center: Models for Breast Cancer Metastasis, 1985

Houston Community College, Northwest Campus, Structure and Function of Cell Surface Membranes and the Fluid Mosaic Model, 1986-1988

American Cancer Society, 9th Annual Florida Division meeting, Breast Cancer Metastasis, 1986

Multidisciplinary Evening Seminar, Biology of Melanoma, sponsored by MDACC and the UT M. D. Anderson Associates, 1985

Shanghai Institute of Materia Medica, Chinese Academy of Sciences, Shanghai, China, Mechanisms of Blood-Borne Metastasis and Tumor Formation, 1984

Shanghai Institute of Materia Medica, Chinese Academy of Sciences, Shanghai, China, Role of Fetal and Virus Components in Large Cell Lymphoma Metastasis, 1984

Beijing Neurosurgical Institute, Beijing, China, Mechanisms of Blood-Borne Metastasis and Tumor Formation, 1984

Beijing Medical Institute, Beijing, China, Role of Fetal and Virus Components in Lymphoma Metastasis, 1984

MDACC Multidisciplinary Management of Early Breast Cancer: Present Status and Future Directions, sponsored by the M. D. Anderson Associates, 1984

Histopathobiology of Cancer Course, Keystone, Colorado (NCI sponsored), 1984

Oregon University Health Sciences Center, Biochemical and Biophysical Properties of Membranes series (BioChem 520), Cytoskeleton Membrane Interactions, 1984

Stanford University Program in Cancer Biology, Molecular and Cellular Aspects of Cancer Biol., Metastasis I & II, 1984

University of California, Los Angeles, Pathology Program in Cancer Biology, Cancer Metastasis, 1984

Yale University School of Medicine, Cancer Center Educational Lecture Series, Mechanisms of Invasion and Metastasis, 1983

University of Missouri School of Medicine, Columbia, Perspectives in Pharmacology and Medicine Series, Cellular Diversity and Instability during the Malignant Progression of Cancer, 1983

University of California, Los Angeles, Major Concepts in Oncology (M293), Blood-Borne Metastasis, 1980

Histopathobiology of Neoplasia, Lake Placid, New York (NCI sponsored), Mechanisms of Metastasis, 1980

American Cancer Society Biology of Cancer series, California State University, Northridge, 1978-1982

American Cancer Society Biology of Cancer series, University of California, Los Angeles, 1978-1980

Histopathobiology of Cancer Course, Keystone, Colorado (NCI sponsored), Mechanisms of Metastasis, 1979

Transformed Cell Course, Cold Spring Harbor Laboratory, New York, Pathobiology of Cancer Progression, 1978

Pathophysiology of Cancer Course, Keystone, Colorado (NCI sponsored), Pathobiology of Cancer

Progression, 1978

University of Washington School of Medicine, Visiting Professor of Pathology (Pathology 507), 1977  
The Upjohn Company Biology Education Lecture Series, Cell Surfaces and Plasma Membranes, 1976  
University of California, Riverside, Visiting Professor of Biochemistry (Biochemistry 230), 1975  
California Institute of Technology, Visiting Assistant Professor of Cell Biology, 1971

### **Supervisory Teaching:**

#### ***Ph.D. Thesis Committees--Chairman:***

Amr Moustafa, M.D., Ph.D. 1998, Ain Shams University, Cairo, Egypt. Current: Associate Professor of Biochemistry and Medicine, Ain Shams University Faculty of Medicine, Cairo, Egypt.

Mei Hu, M.D., Ph.D. 1996, University of Texas Graduate School of Biomedical Sciences, Houston, TX. Current: Associate Professor, Dept. of Rehabilitative Medicine, Baylor College of Medicine, Houston, TX.

Zhong Yun, M.S., Ph.D., 1996, University of Texas Graduate School of Biomedical Sciences, Houston, TX. Current: Associate Professor, Yale University, New Haven, CT.

John Herrmann, Ph.D., 1995, University of Texas Graduate School of Biomedical Sciences, Houston, TX. Current: Associate Professor, Baylor College of Medicine, Houston.

Li Jin, M.D., Ph.D. 1994, University of Texas Graduate School of Biomedical Sciences, Houston. Current: Department Head, New Jersey State Pathology Laboratory, Newark, NJ.

John Patton, Ph.D., 1993, Rice University, Dept. of Chemical Engineering. Current: Staff scientist, Glycomed, Alameda, CA.

Alexander Chop, Ph.D. 1992, University of Texas Graduate School of Biomedical Sciences, Houston. Current: Staff Physician, Creighton University School of Medicine, Omaha, NB.

Sridhar Rajagopalan, Ph.D., 1990, Rice University, Dept. of Chemical Engineering. Current: Staff Scientist, Shell Oil Research Division, Houston, TX.

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Ronald A. LaBiche, Ph.D., 1990, University of Texas Graduate School of Biomedical Sciences, Houston; 6/90-6/92 Postdoctoral Fellow, 6/95-present, Associate Professor, University of North Carolina, Chappel Hill, NC.

Paula N. Belloni, Ph.D., 1989, The University of Texas Graduate School of Biomedical Sciences, Houston; Postdoctoral Fellow, 11/89-8/90, Instructor, University of Texas M. D. Anderson Cancer Center; 8/90-present, Department Head, Syntex Research, Palo Alto, CA.

Timothy V. Updyke, Ph.D., 1987, University of California, Irvine; 9/87-9/91, Research Associate, MDACC, Houston, 9/91-present, Vice-President for Development, Novex Inc. San Diego, CA.

Danny R. Welch, Ph.D., 1984, University of Texas Graduate School of Biomedical Sciences, Houston; 6/84-6/87, Staff Scientist, Upjohn Co., Kalamazoo, MI; 6/87-6/90, Department Head, Glaxo Pharm., Research Triangle, NCI; 6/90-9/02, Assistant, then Associate Professor of Experimental Pathology, Pennsylvania State University, Hershey, PA. 9/02-present, Endowed Professor, Department of Pathology, University of Kansas Medical Center, Kansas City, KS.

Jaime Estrada-Aguilar, M.D., M.S., 1983, University of Texas Graduate School of Biomedical Sciences, Houston; 9/83-9/88, Assistant Professor of Pediatrics; 9/88-6/92, Associate Professor of Pediatrics, University of South Florida, Tampa, FL, 6/92-present, Professor of Pediatrics, University of Texas Health Science Center at San Antonio, San Antonio, TX.

Ruth Davis, M.S., 1980, University of California, Irvine. Current: Staff scientist, Allergin Corp., Irvine,

CA.

Anthony Neri, Ph.D., 1980, University of California, Irvine; 9/80-4/83, Postdoctoral Fellow, University of Southern California, Los Angeles, CA; 9/83-present, Staff Scientist, Department Head, Hoffmann-LaRoche, Nutley, NJ.

**Thesis Advisory Committees - Member:**

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Dihua Yu, Ph.D., University of Texas at Houston

John Patton, Ph.D., Rice University

Paul Chiao, Ph.D., University of Texas at Houston

Douglas P. Evans, Ph.D., University of Texas at Houston

Raphael Pollock, M.D./Ph.D., University of Texas at Houston

Sridhir Rajagopalan, Ph.D., Rice University

John P. Volpe, M.A./Ph.D., University of Texas at Houston

David Krizman, Ph.D., University of Texas at Houston

Paul E. Cizdziel, Ph.D., University of Texas at Houston

David Danielpour, Ph.D., University of Texas at Houston

Martin A. Schwarz, Ph.D., University of Texas at Houston

Cheung Lam King, Ph.D., University of Texas at Houston

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Carl Thomas McGary, M.D./Ph.D., The University of Texas Graduate School of Biomedical Sciences at Galveston

Buddy Weissman, Ph.D., University of California, Irvine.

Channing Der, Ph.D., University of California, Irvine.

Carl Ware, Ph.D., University of California, Irvine.

**Postdoctoral Trainees:**

Jelena Prljic, Ph.D., 10/00-9/01, Postdoctoral Fellow. The Institute for Molecular Medicine, Huntington Beach; Present: Scientist, Academy of Sciences, Belgrade, Yugoslavia.

Oliver LeChef, D.V.M., 10/99-10/00, Postdoctoral Fellow. The Institute for Molecular Medicine, Huntington Beach; Present: scientist, INSERM, Paris, France

Jorg Haier, M.D., Ph.D., 4/97-2/98 Visiting Scientist, Department of Molecular Pathology, The Institute for Molecular Medicine, Huntington Beach, CA. Present: Professor of Surgery & Medicine, University of Muenster, Muenster, Germany.

Amr Moustafa, M.D., 9/95-2/98 Visiting Scientist, Department of Molecular Pathology, The Institute for Molecular Medicine, Huntington Beach, CA; Present: Assistant Professor of Biochemistry and Medicine, Ein Shams University School of Medicine, Cairo, Egypt.

Marwan Nasralla, Ph.D., 11/95-11/97 Visiting Scientist, Visiting Scientist, Department of Molecular Pathology, The Institute for Molecular Medicine, Huntington Beach; Present: Department Head, LabCorp, San Diego.

Hiroyuki Tsujimoto, M.D., Ph.D., 1/97-12/97 Visiting Scientist, Department of Molecular Pathology, The Institute for Molecular Medicine, Irvine, CA; Present: Associate Professor, Yokohama University, Japan.

Fumiyuki Uematsu, M.D., Ph.D., 9/96-9/97 Visiting Scientist, Department of Molecular Pathology, The Institute for Molecular Medicine, Irvine, CA. Present: Nagoya Medical School, Nagoya, Japan.

Hironao Wakabashi, Ph.D., 4/92-8/96, Project Investigator, Department of Tumor Biology, University of Texas M.D. Anderson Cancer Center, Houston, TX; Present: Assoc. Research Professor, University of Rochester Medical School, Rochester, NY.

Dario Marchetti, Ph.D., 9/91-8/96, Research Associate, Instructor, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston, TX; until 9/01: Assistant Professor of Experimental Neurology, The University of Texas Medical School, Houston, TX. Present: Professor, Louisiana State University, Baton Rouge, LA.

Hidetomo Sawada, M.D., Ph.D., 4/94-4/96 Research Associate, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston, TX; Present: Associate Professor of Surgery, Nara University Medical School, Nara, Japan.

Akihiro Nawa, M.D., Ph.D., 4/94-4/96, Research Associate, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston, TX; Present: Professor of Surgery, Nagoya University Medical School, Japan.

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June-Sik Park, M.D., Ph.D., 8/90-8/91, Visiting Scientist, Department of Tumor Biology, University of Texas M.D. Anderson Cancer Center, Houston; 9/91-present, Professor of Surgery, Department of Otolaryngology, Kyungpook University School of Medicine, Taegu, Korea.

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Takatoshi Inoue, M.D., 10/87-6/89, Research Associate, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston; 6/89-present, Professor of Surgery, Kyushu University, Fukuoka, Japan.

David G. Menter, Ph.D., 11/86-9/89 Postdoctoral fellow; 9/89-9/96, Present: Assistant Professor, Department of Cancer Prevention, University of Texas M. D. Anderson Cancer Center, Houston, TX.

Philip G. Cavanaugh, Ph.D., 1/87-9/91, Project Investigator; 9/91-9/96, Present: Assist. Research



Professor, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston, TX.

Mitsuzi Yoshida, Ph.D., 7/84-6/86, Project Investigator, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston; 6/86-9/88. Present, Associate Professor, Cancer Chemotherapy Center, Tokyo, Japan.

Susan M. North, Ph.D., 10/82-6/85, Project Investigator, 6/85-12/86, Research Instructor, 1/87-9/89, Assistant Professor, University of Texas M. D. Anderson Cancer Center, Houston; 9/89-9/93, School of Veterinary Medicine, Texas A & M University, College Station, TX, Current: Staff Veterinarian, Manhattan Veterinary Clinic, New York, NY.

Motowo Nakajima, Ph.D., 10/81-8/82, Project Investigator; 9/1/82-8/86, Research Instructor; 9/86-7/91, Assistant Professor, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston; 8/91-present, Professor (tenured), Cancer Research Institute, University of Tokyo, Tokyo, Current: Department Head, Novartis Japan.

Peter A. Steck, Ph.D., 6/81-6/82, Project Investigator; 7/82-6/84, Postdoctoral Fellow (NIH Fellowship); 7/1/84-8/86, Research Instructor; 9/86-1993, Assistant Professor, 1994-present Associate Professor (tenured), Department of Neuro-Oncology, University of Texas M. D. Anderson Cancer Center, Houston (deceased).

Tatsuro Irimura, Ph.D., 2/80-6/80, Project Investigator, Department of Developmental and Cell Biology, University of California, Irvine; 6/80-8/87, Assistant Professor; 9/87-8/91, Associate Professor, University of Texas M. D. Anderson Cancer Center; 8/91-6/88, Present: Professor and Chairman, Pharmaceutical Sciences and Cancer Biology, University of Tokyo, Tokyo, Japan.

Randall H. Kramer, Ph.D., 1977-1979, Postdoctoral Fellow, Depart. of Developmental and Cell Biology, University of California, Irvine; 1980-1985, Assistant Professor; 1985-1990, Associate Professor; 1990-present Professor, University of California, San Francisco, CA.

Christopher L. Reading, Ph.D., 1977-1980, Postdoctoral Fellow, Department of Developmental and Cell Biology, University of California, Irvine; 6/80-5/88, Assistant Professor; 6/88-6/94, Associate Professor, Dept. of Hematology, University of Texas M. D. Anderson Cancer Center, Houston, TX.

Gregory J. Giotta, Ph.D., 1976-1977, Project Investigator; 1977-1992, Research Biologist, The Salk Institute for Biological Studies, La Jolla, CA; 1992-present Senior Council, Glycomed Inc., Alameda, CA.

Charles R. Birdwell, Ph.D., 1975-1977, Postdoctoral Fellow, The Salk Institute; 1977-1981, Assistant Professor, Scripps Clinic and Research Foundation, La Jolla, California; 1981-1985 Research Scientist, La Jolla Cancer Research Foundation, La Jolla, California; 1985-present, Director of Research Development, Hybritech, San Diego, CA.

Reuben Lotan, Ph.D., 1975-1976, Research Associate, The Salk Institute for Biological Studies, La Jolla, CA; 1977-1980, Assistant Professor, Dept. of Developmental and Cell Biology, University of California, Irvine; 1980-1982 Senior Scientist; 1982-1984, Associate Professor, The Weizmann Institute of Science; 1984-1995, Professor and Deputy Chairman, Department of Tumor Biology, University of Texas M. D. Anderson Cancer Center, Houston, TX. 1995-present, Professor and Assoc. Vice President for Cancer Prevention, University of Texas M. D. Anderson Cancer Center, Houston, TX.

Kenneth W. Brunson, Ph.D., 1974-1976, Research Associate, Department of Cancer Biology, The Salk Institute for Biological Studies, La Jolla; 1977-1979, Assistant Specialist, Department of Developmental and Cell Biology, University of California, Irvine; 1979-1984, Assistant Professor, Departments of Pathology and Microbiology and Immunology, Indiana University School of Medicine, Gary, IN; 1984-1991, Staff Scientist, Department Head, Pfizer, Inc., Groton, CN,

Associate Professor, University of Pittsburgh, PA. Present position: Professor, North Texas State University School of Medicine, Fort Worth, TX.

James C. Robbins, Ph.D., 1974-1976, Postdoctoral Fellow, The Salk Institute for Biological Studies, La Jolla, California; 1976-present, Senior Research Administrator, Biological Chemistry, Merck Institute, Rahway, NJ.

Jeffrey L. Winkelhake, Ph.D., 1974-1976, Postdoctoral Researcher, The Salk Institute for Biological Studies, La Jolla, California; 1976-1984, Assistant Professor, Medical College of Wisconsin, Milwaukee; 6/84-8/91 Staff Scientist, Cetus Corporation, San Francisco, CA; 8/91-present, Vice President, Cytol Corp., San Diego, CA.

### ***Clinical Fellows:***

Jorg Haier, M.D., Ph.D., 4/97-2/98 Visiting Scientist, Department of Molecular Pathology, The Institute for Molecular Medicine, Huntington Beach, CA. Present: Assist. Professor of Surgery & Medicine, University of Muenster, Muenster, Germany.

Paul Lin, M.D., 1994-1996; Dept. of Gynecology, University of Texas M. D. Anderson Cancer Center, Houston, TX, Current: Associate Professor, Department of Gynecology, University of Texas M. D. Anderson Cancer Center, Houston, TX.

Edna Mora, M.D., 1994-1996, Department of Medical Oncology, University of Texas M. D. Anderson Cancer Center, Houston, TX; 1995-present, Assist. Professor of Surgery, University of Puerto Rico School of Medicine, San Juan, Puerto Rico.

Tim Yeatman, M.D., 1990-1992, Department of General Surgery, University of Texas M. D. Anderson Cancer Center; 7/92-present Associate Professor of Surgery, University of South Florida, Tampa, FL.

George Barnes, M.D., 1991-1992, Department of General Surgery, University of Texas M. D. Anderson Cancer Center, Houston, TX; 1992-present, Associate Professor of Surgery, Howard University, Washington D.C.

Hiroaki Ohigashi, M.D., 1989-90, Dept. of Surgery, Osaka University, 1990-present, Associate Professor of Surgery, Osaka University Medical School, Osaka, Japan.

Mark Roh, M.D., 1/88-1/89, Department of General Surgery, University of Texas M. D. Anderson Cancer Center, Houston; 1989-1996, Associate Professor, Department of Surgical Oncology, University of Texas M. D. Anderson Cancer Center, Houston, TX. Present: Professor of Surgery, University of Pittsburgh School of Medicine.

### **Patents Pending and Granted:**

U.S. Patent Issued: (No. 4,859,581) Endoglycosidase Assay, invented by G.L. Nicolson, M. Nakajima and T. Irimura, 1989.

U.S. Patent Issued: (No. 5,030,559) Methods and Compositions for the Identification of Metastatic Human Tumors, invented by G.L. Nicolson, S.M. North and P.A. Steck, 1991.

U.S. Patent Issued: (No. 5,164,489) Lung Growth Stimulatory and Inhibitory Factors for Carcinoma Tumor Cells, invented by G.L. Nicolson and P.G. Cavanaugh, 1992.

U.S. Patent Issued: (No. 5,262,403) Glycosaminoglycan Derivatives and their use as Inhibitors of Tumor Invasiveness or Metastatic Profusion-II, invented by G.L. Nicolson, T. Irimura and M. Nakajima, 1993.

U.S. Patent Pending: (UTMDACC:115) Metastasis Associated Collagenolytic Metalloproteinase, invented by M. Nakajima and G.L. Nicolson

U.S. Patent Pending: (UTMDACC:193) Immunochemical Localization of Heparanase in Mouse and

Human Melanomas, invented by G.L. Nicolson, L. Jin and M. Nakajima  
U.S. Patent Issued: (No. 5,332,812) Endoglycosidase Immunoassay, invented by G.L. Nicolson, M. Nakajima and T. Irimura  
U.S. Patent Pending: (UTDMACC:270) Liver-Derived Tumor Cell Growth Inhibitor, invented by P.G. Cavanaugh and G.L. Nicolson  
U.S. Patent Pending: (UTDMACC:387) Metastasis-Associated Gene, invented by G.L. Nicolson, Y. Toh and S. Pencil.

### **Publications - Garth L. Nicolson**

1. Nicolson, G.L. and Clayton, R.K. The reducing potential of the bacterial photosynthetic reaction center. *Photochem. Photobiol.* 9: 395-399 (1969).
2. Schmidt, G.L., Nicolson, G.L. and Kamen, M.D. Composition of the sulfur particle of *Chromatium vinosum* strain D. *J. Bacteriol.* 105: 1137-1141 (1971).
3. Nicolson, G.L. and Schmidt, G.L. Structure of the *Chromatium* sulfur particle and its protein membrane. *J. Bacteriol.* 105: 1142-1148 (1971).
4. Nicolson, G.L. Structure of the photosynthetic apparatus in protein-embedded chloroplasts. *J. Cell Biol* 50: 258-263 (1971).
5. Nicolson, G.L. and Singer, S.J. Ferritin-conjugated plant agglutinins as specific saccharide stains for electron microscopy: Application to saccharides bound to cell membranes. *Proc. Natl. Acad. Sci. U.S.A.* 68: 942-946 (1971).
6. Nicolson, G.L., Masouredis, S.P. and Singer, S.J. Quantitative two-dimensional ultrastructural distribution of RHo(D) antigenic sites on human erythrocyte membranes. *Proc. Natl. Acad. Sci. U.S.A.* 68: 1416-1420 (1971).
7. Nicolson, G.L., Hyman, R.H. and Singer, S.J. The two-dimensional topographic distribution of H-2 histocompatibility alloantigens on mouse red blood cell membranes. *J. Cell Biol.* 50: 905-910 (1971).
8. Nicolson, G.L., Marchesi, V.T. and Singer, S.J. The localization of spectrin on the inner surface of human red blood cell membranes with ferritin-conjugated antibodies. *J. Cell Biol.* 51: 265-272 (1971).
9. Singer, S.J. and Nicolson, G.L. The structure and chemistry of mammalian cell membranes. *Am. J. Pathol.* 65: 427-437 (1971).
10. Nicolson, G.L. and Singer, S.J. Ferritin-conjugated plant agglutinins as specific saccharide stains. *In Proc. of the Electron Microscopy Society of America* (C. Arceneaux, ed.), Claitors Publishing, Baton Rouge, 536-538 (1971).
11. Nicolson, G.L. Difference in the topology of normal and tumour cell membranes as shown by

different distributions of ferritin-conjugated concanavalin A on their surfaces. *Nature New Biol.* 233: 244-246 (1971).

¶12. Singer, S.J. and Nicolson, G.L. The fluid mosaic model of the structure of cell membranes. *Science* 175: 720-731 (1972).

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13. Nicolson, G.L. and Singer, S.J. Electron microscopic localization of macromolecules on membrane surfaces. *Ann. N.Y. Acad. Sci.* 195: 368-375 (1972).
14. Nicolson, G.L. and Yanagimachi, R. Terminal saccharides on sperm plasma membranes: Identification by specific agglutinins. *Science* 177: 276-279 (1972).
15. Nicolson, G.L. and Blaustein, J. Interaction of *Ricinus communis* agglutinin with normal and tumor cell surfaces. *Biochim. Biophys. Acta* 266: 543-547 (1972).
16. Nicolson, G.L., Lacorbiere, M. and Delmonte, P. The outer membrane terminal saccharides of bovine liver nuclei and mitochondria. *Exp. Cell Res.* 71: 468-473 (1972).
17. Nicolson, G.L. A rapid method for determining the topological distribution of anionic sites on membrane surfaces. *J. Supramol. Struct.* 1: 159-164 (1972).
18. Nicolson, G.L. Topological studies on the structure of cell membranes. *In* *Membrane Research* (C.F. Fox, ed.), Academic Press, New York, 53-70 (1972).
19. Nicolson, G.L. Topography of cell membrane concanavalin A-sites modified by proteolysis. *Nature New Biol.* 239: 193-197 (1972).
20. Yanagimachi, R., Noda, D., Fujimoto, M. and Nicolson, G.L. The distribution of negative surface charge on mammalian spermatozoa. *Amer. J. Anat.* 135: 497-520 (1972).
21. Nicolson, G.L., Lacorbiere, M. and Yanagimachi, R. Quantitative determination of plant agglutinin membrane sites on mammalian spermatozoa. *Proc. Soc. Exp. Biol. Med.* 141: 661-663 (1972).
22. Hirano, H., Parkhouse, G., Nicolson, G.L., Lennox, E.S. and Singer, S.J. Distribution of saccharide residues on membrane fragments from a myeloma-cell homogenate: Its implications for membrane biogenesis. *Proc. Natl. Acad. Sci. U.S.A.* 69: 2945-2949 (1972).
23. Nicolson, G.L. Neuraminidase "unmasking" and the failure of trypsin to "unmask" D-galactose-like sites on erythrocyte, lymphoma and normal and virus-transformed fibroblast cell membranes. *J. Natl. Cancer Inst.* 50: 1443-1451 (1973).
24. Yanagimachi, R., Nicolson, G.L., Noda, Y.D. and Fujimoto, M. Electron microscopic observations of the distribution of acidic anionic residues on hamster spermatozoa and eggs before and

- during fertilization. *J. Ultrastruct. Res.* 43: 344-353 (1973).
25. Nicolson, G.L. Anionic sites of human erythrocyte membranes. I. Effects of trypsin, phospholipase C and pH on the topography of positively charged colloidal particles. *J. Cell Biol.* 57: 373-387 (1973).
  26. Nicolson, G.L. and Painter, R.G. Anionic sites of human erythrocyte membranes. II. Anti-spectrin-induced transmembrane aggregation of the binding sites for positively charged colloidal particles. *J. Cell Biol.* 59: 395-406 (1973).
  27. Oikawa, T., Yanagimachi, R. and Nicolson, G.L. Wheat germ agglutinin blocks mammalian fertilization. *Nature* 241: 256-259 (1973).
  28. Nicolson, G.L. Cis- and trans-membrane control of cell surface topography. *J. Supramol. Struct.* 1: 410-416 (1973).
  29. Nicolson, G.L. Temperature-dependent mobility of concanavalin A sites on tumour cell surfaces. *Nature New Biol.* 243: 218-220 (1973).
  30. Nicolson, G.L. and Lacorbiere, M. Cell contact-dependent increase in membrane D-b-galactopyranosyl-like residues on normal, but not virus- or spontaneously-transformed murine fibroblasts. *Proc. Natl. Acad. Sci. U.S.A.* 70: 1672-1676 (1973).
  31. Nicolson, G.L. The relationship of a fluid membrane structure to cell agglutination and surface topography. *Ser. Haematol.* 6: 275-291 (1973).
  32. Nicolson, G.L. Une nouvelle arme contre le cancer. *Preuves* 16: 95-101 (1973).
  33. Nicolson, G.L. Cancer cells: How are they different from normal cells and why do they escape immune destruction? *Lab. Management* 7: 38-40 (1973).
  34. Nicolson, G.L. and Singer, S.J. The distribution and asymmetry of saccharides on mammalian cell membrane surfaces utilizing ferritin-conjugated plant agglutinins as specific saccharide stains. *J. Cell Biol.* 60: 236-248 (1974).
  35. Nicolson, G.L., Blaustein, J. and Etzler, M.E. Characterization of two plant lectins from *Ricinus communis* and their quantitative interaction with a murine lymphoma. *Biochemistry* 13: 196-204 (1974).
  36. Oikawa, T., Nicolson, G.L. and Yanagimachi, R. Inhibition of hamster egg fertilization by phytoagglutinins. *Exp. Cell Res.* 83: 239-246 (1974).
  37. Nicolson, G.L. Factors influencing the dynamic display of lectin-binding sites on normal and transformed cell surfaces. *In* Control of Proliferation in Animal Cells (B. Clarkson and R. Baserga, eds.), Cold Spring Harbor Laboratory, New York, 251-270 (1974).

38. Krach, S.W., Green, A., Nicolson, G.L. and Oppenheimer, S.B. Cell surface changes occurring during sea urchin embryonic development monitored by quantitative agglutination with plant lectins. *Exp. Cell Res.* 84: 191–198 (1974).
39. Nicolson, G.L. and Yanagimachi, R. Mobility and the restriction of mobility of plasma membrane lectin-binding components. *Science* 184: 1294-1296 (1974).
- ¶40. Nicolson, G.L. The interactions of lectins with animal cell surfaces. *Intern. Rev. Cytol.* 39: 89-190 (1974).

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42. Nicolson, G.L. Cell-contact and transformation-induced changes in the dynamic organization of normal and neoplastic cell plasma membranes and their role in lectin-mediated toxicity toward tumor cells. *In Biology And Chemistry Of Eucaryotic Cell Surfaces* (E.Y.C. Lee and E.E. Smith, eds.), Academic Press, New York, 103-124 (1974).
43. Ji, T.H. and Nicolson, G.L. Lectin binding and perturbation of the cell membrane outer surface induces a transmembrane organizational alteration at the inner surface. *Proc. Natl. Acad. Sci. U.S.A.* 71: 2212-2216 (1974).
44. Pinto Da Silva, P. and Nicolson G.L. Freeze-etch localization of concanavalin A receptors to the membrane intercalated particles on human erythrocyte membranes. *Biochim. Biophys. Acta* 363: 311-319 (1974).
45. Penhoet E., Olsen, C., Carlson, S., Lacorbiere, M. and Nicolson, G.L. Quantitative interaction of *Ricinus communis* agglutinin and concanavalin A with influenza and vesicular stomatitis viruses and virus-infected normal and polyoma-transformed cells. *Biochemistry* 13: 3561-3566 (1974).
46. Nicolson, G.L. Ultrastructural analysis of toxin binding and entry into mammalian cells. *Nature* 251: 628-630 (1974).
47. Nicolson, G.L. Cancer clues at the cell's surface. *In Science Year* (A.G. Tressler and M. Reed, eds.), Field Enterprises Educational Corporation, Chicago, 108-119 (1974).
48. Nicolson, G.L. Restrictions on the lateral mobility of cell membrane components. *In Functional Linkage in Biomolecular Systems* (F.O. Schmitt, D.M. Schneider and D.M. Crothers, eds.), Raven Press, New York, 127-147 (1975).
49. Nicolson, G.L. Current views on the molecular organization of biological membranes. *In Mammalian Cells: Probes and Problems* (C.R. Richmond, D.F. Peterson, P.F. Mullaney and E.C. Anderson, eds.), USERDA Technical Information Center, Oak Ridge, Tenn, 246–253 (1975).

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