

*CURRICULUM VITAE****Nancy Lynn Nicolson***

(3/2/11)

Date/Place of Birth: August 16, 1953, New York, New York
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<i>EDUCATION</i>	<i>College</i>	<i>Degree</i>	<i>Year</i>	<i>Area</i>
Undergraduate	Johns Hopkins University Baltimore, MD 21218	B.A.	1975	Natural Sciences Physics
Graduate	Nova University Ft. Lauderdale, FL	M.S.	1978	Biochemistry
	Florida State University Tallahassee, FL 32306	Ph.D.	1982	Biophysics/ Molecular Biology
Post-Doctoral	Department of Physics The University of Texas M. D. Anderson Cancer Center Houston, TX 77030	--	1982-4	Biophysics

PROFESSIONAL EXPERIENCE

1987-1991	Dept. of Immunology & Microbiology Baylor College of Medicine 1 Baylor Plaza Houston, TX 77030		Instructor
1985-1987	Dept. of Pharmacology Baylor College of Medicine 1 Baylor Plaza Houston, TX 77030		Instructor
1989-1996	The University of Texas M. D. Anderson Cancer Center Department of Tumor Biology Houston, TX 77030		Visiting Scientist
1991-1993	Rhodon, Inc. 8056 El Rio, Houston, TX 77054		Senior Staff Scientist
1993-present	Rhodon Foundation for Biomedical Research Inc. 15162 Triton Lane, Huntington Beach, CA 92649		President, COB
1996-present	Institute for Molecular Medicine 15162 Triton Lane, Huntington Beach, CA 92649		CEO, COB
2003-present	Secretary General of the United Nations Cultural Commission New York, NY		

FELLOWSHIPS AND ASSISTANTSHIPS

Maryland State Research Fellowship	1972-1973
Research Assistantship Florida State University	1979-1982
NIH Postdoctoral Traineeship	1982-1984

The University of Texas M. D. Anderson Cancer Center, Houston, TX 77030

AWARDS AND HONORS

Harold Lamport Award - Biophysical Society, 1982

Invited presentation "Molecular Biology: Now and Tomorrow, in honor of the 30th Anniversary of the Double Helix", 1983 - "Lines, Their Role in Chromatin Suprastructural Organization"

Session Co-chairmanship: Biophysical Society meeting - San Antonio, TX, 1984 Session on "Nucleic Acids, Protein-DNA Interactions, and Chromatin Structure"

Travel Fellowship to from the International Union of Pure and Applied Biophysics to Bristol, England, 1984, Presentation: "Chromatin Organization of Bam"

Invited participant in the 10th Baron Edmond de Rothschild Seminar in Biophysics Rehovot-Jerusalem, Israel, 1985

COLONEL (Honorary), U.S. Army Special Forces, 1995

Who's Who Woman in the World, 1996, for Nucleoprotein Gene Tracking and stand against Biological Warfare (Nominated by the British House of Lords, National Academy of Science USA, Barclay's Bank and The Vatican).

Who's Who in Executives in the World, the Top Up-and-Coming Executive in the United States, 1998

Albert Schweitzer Award, Lisbon, Portugal, sponsored by the International Journal of Medicine, 1998

Businesswoman of the Year, The Wall Street Journal, 2000

U.S. Congressional Business Medal of Honor, 2003

RESEARCH INTERESTS

1. Gene regulation at the chromatin level in eukaryotes.
2. Isolation of suborganellar nucleoprotein structures that are transcriptional and replicational control elements. The organizational structure and localization of these structures.
3. Possible role of these structures in cellular transformation, oncogene expression, changes in membrane markers, HIV integration and genetic instability.

TECHNICAL AND THEORETICAL EXPERTISE

1. Molecular cloning and hybridization techniques
2. Monoclonal antibody preparation
3. Electrophoresis (DNA, RNA, protein, DNP)
4. CD spectroscopy, absorption spectroscopy, Raman spectroscopy
5. Enzymology
6. Computers
7. Quantum mechanics

TEACHING EXPERIENCE

1. Molecular Biology and physical biochemistry for practicing physicians.
2. The University of Texas M. D. Anderson Hospital and Tumor Institute, 1983
3. A lecture series I developed upon request while I was a post-doctorate.
4. Molecular Biology - Florida State - 1981.

Students:

Stanley Yang	1989-1991	(Staff Physician, The University of Texas at Houston)
Douglas Suell	1990-1991	(Baylor College of Medicine)
Sharon Huff	1991-1994	(The University of Texas at Austin)
Douglas Chin	1992-1995	(U. T. Graduate School of Biomedical Sciences at Houston)
Daniel Lin	1993-1995	(Rice University, Houston)
Kang Tran	1992-1994	(The University of Texas at Austin)

COLLABORATIONS

Professor Garth Nicolson, Chief Scientific Officer, Institute for Molecular Medicine, Huntington Beach, CA, "The nucleoprotein structures of highly metastatic cells and their role in gene regulation"

Dr. Michael Tainsky, Professor, Department of Tumor Biology, The Karmonos Cancer Center, Detroit "The use of intact transcription structures as markers for oncogene expression in metastatic tumor cells".

Dr. Moshe Talpaz, Professor, Department of Clinical Immunology and Biological Therapy, University of Texas M. D. Anderson Cancer Center "The use of nucleoprotein complexes to assess the sensitivity or resistance of human CLL to interferon- α "

SPECIAL STUDY

With Nobelist Paul Dirac concerning special applications of quantum theory, F.S.U.

A. PUBLICATIONS

1. Vizard, D.L. and Rosenberg (Nicolson), N.L. (1984) Temporal replication of an interspersed repeated sequence of mouse DNA. *Biochim. Biophys. Acta* **782**: 402-407.
2. Rosenberg (Nicolson), N.L., Smith, R.M. and Rill, R.L. (1986) The action of chymotrypsin on nucleosome cores. *J. Biol. Chem.* **261**: 12375-12383.
3. Rosenberg (Nicolson), N.L. (1986) Isolation of an *Msp*I-derived transcriptionally-active particle, the transcripton. *Exp. Cell Res.* **165**: 41-52.
4. Rosenberg (Nicolson), N.L. (1987) Further characterization of an *Msp*-I-derived transcriptionally-active particle, the transcripton. *Mol. Cell. Biochem.* **75**: 5-13.
5. Nicolson, G.L. and Rosenberg (Nicolson), N.L. (1986) Diversification and progression of malignant tumors. *BioEssays* **6**: 203-208.
6. Rosenberg (Nicolson), N.L. (1987) ATP as an alternative inhibitor of bacterial and endogenous nucleases and its effects on chromatin compaction. *Mol. Cell. Biochem.* **76**: 113-121.
7. Rosenberg (Nicolson), N.L. and Nicolson, G.L. (1990). Immunofluorescence localization of the nucleolar transcription particle (transcripton) during nucleogenesis. *Exp. Cell Biol.* **57**: 330-338.
8. Rosenberg-Nicolson, N.L. (1991). Probing nucleosome core secondary structure before and after α -chymotrypsin treatment by use of Raman spectroscopy and high resolution thermal denaturation. *J. Cellular Biochem.* **47**: 11-17.
9. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1992). Nucleoprotein complexes released from metastatic cells that contain the *abl* oncogene and RNA and DNA polymerase and RNA primase activities. *J. Cellular Biochem.* **50**: 43-52.
10. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1992). Nucleoproteins derived from RNA polymerase complexes possess transcription activities and regulatory properties *in vitro*. *J. Cellular Biochem.* **50**: 301-312.
11. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1993). Nucleoprotein complexes from metastatic cells containing oncogenes and tissue-specific genes: A novel method to track genes associated with specific nucleoproteins. *Cancer Detect. Prev.* **18**: 31-42.

12. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1994). The isolation, purification and analysis of specific gene-containing nucleoproteins and nucleoprotein complexes. *Meth. Mol. Genet.* **5**: 281-298.
13. Nicolson, N.L. and Nicolson, G.L. (1994). The *p53* gene is bound to specific nucleoproteins of nonmetastatic and metastatic murine large-cell lymphoma cells. *Cancer Mol. Biol.* **1**: 95-106.
14. Nicolson, G.L. and Nicolson, N.L. (1995). Doxycycline treatment and Desert Storm *JAMA (J. Amer. Med. Assoc.)* **273**: 618-619.
15. Nicolson, N.L., Talpaz, M. and Nicolson, G.L. (1995). Interferon- α directly inhibits DNA polymerase activity in isolated chromatin nucleoprotein complexes: correlation with IFN- α treatment outcome in patients with chronic myelogenous leukemia. *Gene* **159**: 105-111.
16. Nicolson, G.L., Hyman, E., Korényi-Both, A., Lopez, D.A., Nicolson, N.L., Rea, W. and Urnovitz, H. (1995). Progress on Persian Gulf War Illnesses--Reality and hypotheses. *Int. J. Occup. Med. Tox.* **4**: 365-370.
17. Nicolson, N.L., Talpaz, M. and Nicolson, G.L. (1996). Chromatin nucleoprotein complexes containing tightly-bound *c-abl*, *p53* and *bcl-2* gene sequences: correlation of nucleoprotein-bound genes with progression of chronic myelogenous leukemia. *Gene* **169**: 173-178.
18. Nicolson, G.L. and Nicolson, N.L. (1996). Chronic fatigue illness and Operation Desert Storm. *J. Occup. Environ. Med.* **38**: 14-16.
20. Nicolson, G.L. and Nicolson, N.L. (1996). Diagnosis and treatment of mycoplasmal infections in Persian Gulf War Illness-CFIDS patients. *Int. J. Occup. Med. Immunol. Tox.* **5**: 69-78.
21. Nicolson, N.L. and Nicolson, G.L. (1998). Gene Tracking: Localization of specific genes to particular subchromatin nucleoprotein complexes and its application to HIV-1 infection of human cells. in press.
22. Nicolson, G.L. and Nicolson, N.L. (1996). Chronic Fatigue Illnesses Associated with Service in Operation Desert Storm. Were Biological Weapons Used Against our Forces in the Gulf War? *Townsend Lett. Doctors* **156**: 42-48.
23. Nicolson, G.L. and Nicolson, N.L. (1996) British Society for Allergy and Environmental Medicine: Comments on the Gulf-War or human laboratory. *Medicine Conflict & Survival* **12**: 260-262.
24. Nicolson, G.L. and Nicolson, N.L. (1996). Mycoplasmal infections--Diagnosis and treatment of GWS/CFIDS. *CFIDS Chron.* **9**(3): 66-69.
25. Nicolson, G.L. and Nicolson, N.L. (1997) The eight myths of Operation Desert Storm and Gulf War Syndrome. *Medicine Conflict & Survival* **13**: 140-146.
26. Nicolson, N.L. and Nicolson, G.L. (1999). Fas and *p53* gene-containing nucleoprotein possesses endonuclease and ligase activity *in vitro*. in preparation.
27. Nicolson, G.L., Nicolson, N.L. and Nasralla, M. (1998) Mycoplasmal infections and Fibromyalgia/Chronic Fatigue Illness (Gulf War Illness) associated with deployment to Operation Desert Storm. *Intern. J. Med.* **1**: 80-92.
28. Nicolson, G.L. and Nicolson, N.L. (1998) Gulf War Illnesses: complex medical, scientific and political paradox. *Medicine, Conflict & Survival* **14**: 74-83.
29. Nicolson, N.L. and Nicolson, G.L. (1998) Politics interfere with diagnosis and treatment of Gulf War Illnesses. *Intern. J. Med.* **1**: 161-164.
30. Nicolson, G.L., Nasralla, M, Hier, J. and Nicolson, N.L. (1998) Diagnosis and treatment of chronic mycoplasmal infections in Fibromyalgia Syndrome and Chronic Fatigue Syndrome: relationship to Gulf War Illness. *Biomed. Therapy* **16**: 266-271.
32. Leisure, K.M., Nicolson, N.L. and Nicolson, G.L. (1998) Hospitalizations for unexplained illnesses among U.S. veterans of the Persian Gulf War. *Emerg. Infect. Dis.* **4**: 707-709.

33. Nicolson, G.L., Nasralla, M, Hier, J., Erwin, R., Nicolson, N.L. and Ngwenya, R. (1999) Mycoplasmal infections in chronic illnesses: Fibromyalgia and Chronic Fatigue Syndromes, Gulf War Illness, HIV-AIDS and Rheumatoid Arthritis. *Med. Sentinel* 4: 172-176.
34. Nicolson, N.L. and Nicolson, G.L. (1999). Nucleoprotein Gene Tracking: localization of specific HIV-1 genes to subchromatin nucleoprotein complexes in HIV-1 infected human cells. *J. Cell. Biochem Suppl.* **32**: 158-165.
35. Nicolson, G.L., Nasralla, M, and Nicolson, N.L. (1999) The pathogenesis and treatment of mycoplasmal infections. *Antimicrob. Infect. Dis. Newsl.* **17**(11): 1-6.
36. Nicolson, G.L., Nasralla, M., Haier, J., Erwin, R., Nicolson, N.L. and Ngwenya, R. The role of chronic infections in the maintenance and progression of Chronic Fatigue Syndrome, Fibromyalgia Syndrome Rheumatoid Arthritis, Immune Deficiency Syndromes and Gulf War Illness. In: *The Challenge of Chronic Illness: A role for Complex Infections and Channelopathy*, (T. K. Roberts, Ed.), Lloyd Scott Enterp. Ltd., Sydney, Australia, 1-8 (1999).
37. Nicolson, G.L., Nasralla, M, Franco, A.R., Nicolson, N.L., Erwin, R., Ngwenya, R. and Berns, P.A. Diagnosis and integrative treatment of intracellular bacterial infections in Chronic Fatigue and Fibromyalgia Syndromes, Gulf War Illness, Rheumatoid Arthritis and other chronic illnesses. *Clin. Pract. Alt. Med.* **1**(2): 92-102 (2000).
38. Nicolson, G.L., Nass, M, and Nicolson, N.L. Anthrax vaccine: controversy over safety and efficacy. *Antimicrob. Infect. Dis. Newsl.* **18**(1): 1-6 (2000).
39. Nicolson, N.L. and Nicolson, G.L. HIV-1 genes are localized in specific nucleoproteins in subchromatin complexes in HIV-1 infected human cells. *Int. J. Med. Biol. Environ.* **28**(1): 25-31 (2000).
40. Nicolson, G.L., Nass, M. and Nicolson, N.L. Safety and efficacy problems with the anthrax vaccine. Why we must not use this vaccine for military prsonnel. *J. Degenerative Disease* **2**(1): 5-11 (2000).
41. Nicolson, G.L., Nasralla, M., Franco, R., De Meirleir, K., Nicolson, N.L. Ngwenya, R. and Haier, J. Role of Mycoplasmal infections in fatigue illnesses: chronic fatigue and fibromyalgia syndromes, Gulf War illness and rheumatoid arthritis. In: *Chronic Fatigue Syndrome: Critical Reviews and Clinical Advances* (K De Meirleir, R. Patarca-Montero, eds.), Haworth Medical Press, New York, 23-39 (2000).
42. Nicolson, G.L., Nass, M, and Nicolson, N.L. The anthrax vaccine controversy. Questions about its efficacy, safety and strategy. *Medical Sentinel* **5**(2): 97-101 (2000).
43. Nasralla, M., Haier, J., Nicolson, N.L. and Nicolson, G.L. Examination of mycoplasmas in blood of 565 Chronic Illness patients by polymerase chain reaction. *Int. J. Med. Biol. Environ.* **28**(1): 15-23 (2000).
44. Nicolson, G.L., Haier, J., Nasralla, M, Nicolson, N.L. Ngwenya, R. and De Meirleir, K. Mycoplasmal infections in Chronic Fatigue Syndrome, Fibromyalgia Syndrome and Gulf War Illness. *J. Chron. Fatigue Syndr.* **6**(3/4): 23-39 (2000).
45. Nicolson, G.L., Nasralla, M, Hier, J. and Nicolson, N.L. Gulf War Illnesses: role of chemical, radiological and biological exposures. In: *War and Health*, (H. Tapanainen, Ed.), Zed Press, Helsinki, 431-446 (2001)
46. Nicolson G.L, Berns P., Nasralla M., Haier J., Nicolson N.L., Nass M. Gulf War Illnesses: chemical, radiological and biological exposures resulting in chronic fatiguing illnesses can be identified and treated. *J. Chronic Fatigue Syndr.* **11**(1): 135-154 (2003).
47. Nicolson G.L., Nasralla M., Nicolson N.L. and Haier J. High prevalence of mycoplasmal infections in symptomatic (Chronic Fatigue Syndrome) family members of mycoplasma-positive Gulf War Illness patients. *J. Chronic Fatigue Syndr.* **11**(2): 21-36 (2003).
48. Nicolson, G.L., Berns, P., Gan, R., Nicolson, N.L. and Haier, J. Chronic mycoplasmal infections in Gulf War veterans' children and autism patients. *Med. Veritas* **2**: 383-387 (2005).
49. Nicolson, G.L. and Nicolson, N.L. Project Daylily, Xlibris Press, Philadelphia, 567 pp. (2006).

50. Nicolson, G.L., Gan, R., Nicolson, N.L. and Haier, J. Evidence for *Mycoplasma*, *Chlamydia pneumoniae* and HHV-6 Co-Infections in the Blood of Patients with Autism Spectrum Disorders. *J. Neuroscience Res.* **85**: 1143-1148 (2007).
51. Nicolson, G.L., Nicolson, N.L., Haier, J. Chronic Fatigue Syndrome patients subsequently diagnosed with Lyme Disease *Borrelia burgdorferi*: evidence for *Mycoplasma* species co-infections. *J. Chronic Fatigue Syndr.* **14**(4): 5-17 (2008).
52. Nicolson, G.L. and Nicolson, N.L. New emerging infections: Their development, testing and resulting diseases. *J. Degenerative Dis.* **9**(1): 50-53 (2008).
53. Nicolson, G.L., Nicolson, N.L., and Haier, J. Similarities of ME/Chronic Fatigue Syndrome and Autism Spectrum Disorders: Comparisons of co-infections. *J. IIME* **3**(1): 14-20 (2009).
54. Nicolson, N.L. and Nicolson, G.L. Nucleoprotein gene tracking using eukaryotic chromatin complexes: application to viral and other invasive infections and cancer progression and cytokine interactions. *Prog. Nucleic Acids Res. Mol. Biol.* in preparation.

B. ABSTRACTS

1. Rosenberg, N.L. (1982) α -Chymotrypsin as a topological probe of nucleosome core structure. *Biophys. J.* **37**: 3071.
2. Rosenberg, N.L. and Rill, R. (1983) α -Chymotrypsin cleavage produces a single accessible site in the nucleosome core. *Biophys. J.* **41**: 43a.
3. Rosenberg, N.L. (1984) Chromatin organization of a mouse interspersed repeated DNA sequence. *Biophys. J.* **45**: 402a.
4. Rosenberg, N.L. (1984) Chromatin organization of *Bam*. International Meeting of Pure and Applied Biophysics, Bristol, England.
5. Rosenberg, N.L. (1985) A model for asymmetrically-packaged chromatin DNA: Polymerase perturbation consequences. 10th Baron de Edmond Rothschild Meeting in Biophysics, Rehovot-Jerusalem, Israel.
6. Rosenberg, N.L. (1986) Isolation of an *Msp*-I transcription complex. *Biophys. J.* **49**: 225a.
7. Rosenberg, N.L. (1986) Isolation of a nucleolar transcription particle. *J. Cell. Biochem. Suppl.* **10**: 106.
8. Rosenberg, N.L. and Nicolson, G.L. (1987) The isolation of native functional particles from metastatic murine large cell lymphoma and rat Novikoff hepatoma cells. Bat-Sheva Seminar on Tumor Malignancy: Pathogenesis and Prevention of Tumor Dissemination. Rehovot-Eilat Israel, Sept. 6-11, 1987.
9. Rosenberg, N.L. and Nicolson, G.L. (1990) Nucleoprotein polymerase complexes from RAW117 cells contain the *abl* oncogene. *Proc. Japan Cancer Assoc.* **49**: 514.
10. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1992) Nucleoproteins purified by 2-D SDS-PAGE from large cell lymphoma cells possess oncogenes, tissue-specific genes, and *in vitro* transcription capability. *Biophys. J.* **61**: 58a.
11. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1992) Nucleoprotein-containing polymerase complexes isolated from large-cell lymphoma cells possess oncogenes and other tissue-specific genes. *Clin. Exp. Metastasis* **10**: Suppl. 10, 93.
12. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1993). Nucleoprotein complexes from metastatic cells containing oncogenes and tissue-specific genes: A novel method to track genes associated with specific nucleoproteins. *Cancer Detect. Prev.* **17**: 74.
13. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1994). Interferon- α directly inhibits DNA polymerase activity in isolated nucleoprotein complexes *in vitro*: correlation with Interferon- α treatment outcome for patients with chronic myelogenous leukemia. *Pharmaceutical Society of Japan*,

14. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1994). Chromatin nucleoprotein polymerase complexes from metastatic cells containing oncogenes and suppressor genes: their potential regulatory contribution to metastasis. *Biophys. J.* **66**: A359.
15. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1994). Interferon- α directly inhibits DNA polymerase activity in isolated nucleoprotein complexes in vitro: correlation with Interferon- α treatment outcome for patients with chronic myelogenous leukemia. *Clin. Exp. Metastasis* **12**: Suppl. 11, 5.
16. Rosenberg-Nicolson, N.L., Talpaz, M. and Nicolson, G.L. (1994). Interferon- α directly inhibits DNA polymerase activity in isolated nucleoprotein complexes in vitro: correlation with Interferon- α treatment outcome for patients with chronic myelogenous leukemia. *Clin. Exp. Metastasis* **12**: 79.
17. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1994). The *p53* gene is bound to specific nucleoproteins of metastatic but not nonmetastatic or metastatic revertants of murine large-cell lymphoma cells. *Clin. Exp. Metastasis* **12**: 7-8.
18. Rosenberg-Nicolson, N.L. and Nicolson, G.L. (1994). Isolation and purification of specific nucleoprotein (NP) complexes from insoluble chromatin of RAW117 large-cell lymphoma nuclei: Analysis of *in vitro* transcription of certain purified NP complexes. AACR Special Conference on Transcriptional Control of Cell Growth & Differentiation Conference, Chatham, Massachusetts, October 18, 1994.
19. Rosenberg-Nicolson, N.L. and Nicolson, G. L. (1994). The *p53* gene is bound to specific nucleoproteins of metastatic but not nonmetastatic or metastatic revertants of murine large-cell lymphoma cells. Symposium of Gene Diagnosis of Cancer, Munster, Germany. *J. Exp. Clin. Cancer Res. Suppl.* **13**: 3.
20. Nicolson, N.L., Cooke, C. P., Talpaz, M., and Nicolson, G.L. (1995). Nucleoprotein gene tracking: Subchromatin nucleoproteins with tightly bound *p53*, *c-abl* and *bcl2* genes and their possible role in chronic myelogenous leukemia. AACR and Japanese Cancer Association Third Joint Conference on Molecular Biology of Cancer: Implications for Prevention and Therapy, Maui, Hawaii, February 14, 1995.
21. Nicolson, N.L., Cooke, C. P., Talpaz, M., and Nicolson, G.L. (1996). Nucleoprotein Gene Tracking: A new method to analyze genes in tight association with nucleoprotein structures: application to tumor progression. *Immunol. Cell Biol.* in press.
22. Nicolson, N.L., Cooke, C. P., Talpaz, M., and Nicolson, G.L. (1996). Nucleoprotein Gene Tracking: subchromatin nucleoproteins with tightly bound *p53*, *c-abl* and *bcl-2* genes and its use to assess interferon- α sensitivity in chronic myelogenous leukemia. *Int. J. Oncol.* in press.
23. Nicolson, N.L., Cooke, C. P., Talpaz, M., and Nicolson, G.L. (1996). Nucleoprotein Gene Tracking method to analyze genes in association with nucleoprotein structures: correlation with tumor progression. *Proc. Amer. Assoc. Cancer Res.* **37**: 570.
24. Nicolson, N.L., Talpaz, M., and Nicolson, G.L. (1996). Nucleoprotein Gene Tracking to analyze genes in tight association with nucleoprotein structures during the progression of chronic myelogenous leukemia (CML). *Cancer Prev. Detect.*
25. Nicolson, N.L., Talpaz, M., and Nicolson, G.L. (1996). Nucleoprotein Gene Tracking: analysis of nucleoprotein structures during the progression of chronic myelogenous leukemia. *Clin. Exp. Metastasis* **14**: 36.
26. Nicolson, G.L. and Nicolson, N.L. (1996). Diagnosis and treatment of Persian Gulf War Illness: identification of cell-invasive *Mycoplasma fermentans* (incognitus strain) and its successful treatment with antibiotics. *Clin. Exp. Metastasis* **14**: 28.
27. Nicolson, G.L., Nasralla, M., Haier, J. and Nicolson, N.L. (1999). Diagnosis and treatment of mycoplasmal infections in Gulf War Illness, Chronic Fatigue Syndrome, Fibromyalgia Syndrome and Rheumatoid Arthritis. *Proc. 2nd World Congress on Chronic Fatigue Syndrome and Related Diseases* **2**: 8-9.
28. Nicolson, G.L., Nasralla, M., Haier, J. and Nicolson, N.L. (1999). Treatment of cell-invasive mycoplasmal infections in Gulf War Illness, Chronic Fatigue Syndrome, Fibromyalgia Syndrome and Rheumatoid Arthritis. *Proc. 2nd World Congress on Chronic Fatigue Syndrome and Related Diseases* **2**: 31-32.

29. Nicolson, G.L., Nicolson, N.L. and Tan, P. (2006). Chronic co-infections in Lyme Disease and Chronic Fatigue Syndrome: Use of traditional and nutraceutical treatments. *18th American Biologics Symposium vol. 18*.
30. Nicolson, G.L., Nicolson, N.L. and Haier, J. (2007). Chronic bacterial co-infections (Mycoplasma, Chlamydia, Borrelia, Brucella) in various chronic illnesses. International Conference on Chlamydia and Mycoplasma Human Infections.
31. Nicolson, G.L., Nicolson, N.L. and Haier, J. (2008). CFS patients subsequently diagnosed with Lyme Disease *Borrelia burgdorferi*: evidence for *Mycoplasma* species co-infections. International Lyme and Associated Diseases Annual Conference, San Francisco, CA.
32. Nicolson, G.L., Nicolson, N.L. and Haier, J. (2009). Chronic Fatigue Syndrome patients subsequently diagnosed with Lyme Disease: evidence for Mycoplasma species co-infections. Congress of the International Association of Chronic Fatigue Syndrome, Reno, NV.
33. Nicolson, G.L., Nicolson, N.L. and Haier, J. (2009). Co-infections in neurodegenerative diseases, ME/Chronic Fatigue Syndrome and Autism Spectrum Disorders, 4th Invest in ME/CFS Conference, London, England.

C. PATENTS

1. Nicolson, N.L. and Nicolson, G.L. (2003). Mammalian sequence-specific nucleoprotein endonuclease enzymes. U. S. Patent Pending.

D. LECTURES AND PRESENTATIONS

1. α -Chymotrypsin: A Probe of the Nucleosome Core. Biophysical Society National Meeting, San Diego, California. February 15, 1983.
2. Organization of a BAMH1-Derived Repeated DNA Sequence. Biophysical Society National Meeting, San Antonio, Texas. February 23, 1984.
3. Isolation and Purification of an *MspI*-Derived Transcription Particle. Biophysical Society National Meeting, San Francisco, California. February 11, 1986.
4. Transcription Particle. Rice University, Biology Department. May 19, 1986.
5. Isolation of a Particle with Transcription Capability. Life Sciences Division, NASA. June 18, 1986.
6. Isolation of a Nucleolar Particle with Transcription Capability from Cancer Cells (Transcripton). Departments of Thoracic Surgery and Tumor Biology, The University of Texas M. D. Anderson Cancer Center, Houston, Texas. July 16, 1986.
7. Isolation of a Transcription Particle (Transcripton) from the Nucleolas. Institute of Molecular Biophysics, Florida State University, Tallahassee, Florida. September 16, 1986.
8. Nucleoprotein polymerase complexes from RAW117 cells contain the *abl* oncogene. Cancer Center, Hokkaido University Medical School, Sapporo, Japan. July 2, 1990.
9. Nucleoprotein complexes derived from subnuclear polymerase complexes mediate in vitro transcription and translation. Dept. of Tumor Biology, The University of Texas M. D. Anderson Cancer Center, Houston, Texas. March 20, 1991.
10. Cancer--the genetic machinery--A look into the future. Enron Corp., Houston, Texas. March 25, 1992.
11. Nucleoprotein structure and gene regulation. National Cancer Institute, Bethesda, Maryland Oct. 16, 1992.
12. Nucleoprotein-containing polymerases isolated from large cell lymphoma cells possess oncogenes, tissue-specific genes, and *in vitro* transcription capability. Invited Speaker, Symposium on Molecular Medicine, Keimyung University Dongsan Medical Center, Taegu, Korea, November 20, 1992.

13. Nucleoprotein complexes from metastatic cells containing oncogenes and tissue-specific genes. Invited lecture at University Medical Center, Department of Biochemistry, Seoul, Korea, November 26, 1992.
14. Nucleoprotein structure, function and gene regulation. Invited lecture at The University of Texas M. D. Anderson Cancer Center, Houston, Texas, December 6, 1992.
15. Nucleoprotein complexes from metastatic cells containing oncogenes and tissue-specific genes: A novel method to track genes associated with specific nucleoproteins. Invited Symposium Speaker, International Conference on Tumor Markers, Nice, France, March 15, 1993.
16. Nucleoprotein polymerases, sequence-specific endonucleases and gene regulation. Invited lecture at University of Texas M. D. Anderson Cancer Center, Houston, TX, April 12, 1993.
17. Nucleoprotein polymerases, sequence-specific endonucleases and gene regulation. Invited lecture at Roswell Park Memorial Institute, Buffalo, New York, May 13, 1993.
18. Nucleoprotein polymerase complexes from metastatic cells containing oncogenes and suppressor genes: their potential role in regulatory mechanisms. Invited lecture at Ein Shams University School of Medicine, Cairo, Egypt, November 26, 1993.
19. Nucleoprotein influences on gene regulation in tumor cells. Invited lecture at Armed Forces Institute of Pathology, Washington D.C., Dec. 6, 1993.
20. Nucleoprotein gene regulation: a future prospective. Invited lecture at Johns Hopkins University Medical School, Department of Cellular Pathology, Baltimore, MD, Dec. 8, 1993.
21. Nucleoprotein gene regulation as applied to metastasis and HIV. Invited lecture at Beth Israel Medical Center, New York, Dec. 9, 1993.
22. Nucleoprotein gene regulation: future applications for metastasis and HIV infection. Invited lecture at J. F. Kennedy Hospital, Medicine Grand Rounds, Florida, Jan. 13, 1994.
23. Nucleoprotein gene regulation: future applications for metastasis and HIV. Invited lecture at University of Miami School of Medicine, Miami, Florida, Jan. 14, 1994.
24. The Jewish quest to cope with and understand cancer: an ancient tradition from the time of Maimonides. Invited lecture at Temple Enshei Emunah, Florida, Jan. 18, 1994.
25. Nucleoprotein gene regulation. Invited lecture at University of California, Irvine, California, Feb. 24, 1994.
26. Nucleoprotein gene regulation: future applications for understanding AIDS. Invited lecture at Georgetown University Medical School, Washington D.C., March 18, 1994.
27. Interferon- α directly inhibits DNA polymerase activity in isolated nucleoprotein complexes in vitro: Correlation with interferon- α treatment outcome for patients with chronic myelogenous leukemia. Invited lecture at Texas Triangle Meeting, Dallas, Texas, March 19, 1994.
28. Interferon- α directly inhibits DNA polymerase activity in isolated nucleoprotein complexes in vitro: correlation with Interferon- α treatment outcome for patients with chronic myelogenous leukemia. Pharmaceutical Society of Japan, Tokyo, Japan, March 30, 1994.
28. Nucleoproteins and their relationship to cytokines, gene, and HIV tracking. Invited lecture at University of Tennessee, Memphis, Tennessee, May 3, 1994.
29. HIV gene tracking: A novel application for understanding AIDS. Invited lecture at AMFAR, Houston, Texas, June 21, 1994.
30. Chromatin nucleoproteins: Relationship to cytokine and gene and HIV tracking. Invited lecture at Roswell Park Cancer Institute, Buffalo, New York, June 24, 1994.

31. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited lecture at Albert Einstein College of Medicine of Yeshiva University, New York, New York, July 13, 1994.
32. A man-made infection? A possible link between the Desert Storm Syndrome and the mystery illness of Huntsville. Veterans of Foreign Wars, Livingston, Texas, August 2, 1994.
32. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited lecture at National Institute of Health, Bethesda, Maryland, August 26, 1994.
33. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited lecture at Department of Laboratory Medicine, The University of Texas M. D. Anderson Cancer Center, Houston, Texas, September 16, 1994.
34. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. The University of Texas Health Science Center, San Antonio, Texas, September 22, 1994.
35. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited lecture at Albert Einstein College of Medicine of Yeshiva University, New York, New York, October 3, 1994.
36. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited lecture at Texas A&M University, College Station, Texas, October 4, 1994.
37. Isolation and purification of specific nucleoprotein (NP) complexes from insoluble chromatin of RAW117 large-cell lymphoma nuclei: Analysis of *in vitro* transcription of certain purified NP complexes. Invited presentation at AACR Special Conference on Transcriptional Control of Cell Growth & Differentiation Conference, Chatham, Massachusetts, October 18, 1994.
38. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited Lecture at The University of Texas Health Sciences Center, San Antonio, Texas, December 14, 1994.
39. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited Lecture at The University of Texas Medical Branch, Galveston, Texas, December 19, 1994.
40. Nucleoproteins, cytokines, gene and HIV tracking: A novel perspective. Invited Lecture at Fort Lewis College, Durango, Colorado, January 17, 1995.
41. Nucleoprotein Gene Tracking: Application to Oncogene, Suppressor and HIV Gene Associations. Memorial Sloan-Kettering Cancer Center, New York, New York, March 7, 1995
42. Desert Storm and Biological Warfare. Invited Symposium Presentation at Desert Storm National Veterans Meeting, Dallas, Texas, March 22, 1995.
43. Application of Nucleoprotein Gene Tracking to HIV and Desert Storm Illness. Invited Lecture at Georgetown University, Washington DC, April 20, 1995.
44. Desert Storm--Operation Duplicity. Yellow Ribbon Desert Storm Veterans Meeting, Invited Symposium Presentation at Washington DC, August 7, 1995.
45. Nucleoprotein Gene Tracking: A New Method to Analyze Genes in Tight Association with Nucleoprotein Structures: Application to Tumor Progression. Invited Symposium Presentation at University of Girona, Girona, Spain, Sept. 20, 1995.
46. Nucleoprotein Gene Tracking: Subchromatin NP with Tightly Bound *p53*, *c-abl* and *bcl-2* Genes and the Use to Assess Interferon- α Sensitivity in Chronic Myelogenous Leukemia. Invited Symposium Presentation at the First World Congress on Oncology, Athens, Greece, October 22, 1995.
47. Nucleoprotein Gene Tracking: Physical Concepts and Practical Applications. International Association for Closed Electric Circuits in Biomedicine." Invited Symposium Presentation at the Third International Symposium, Jupiter, Florida, Oct. 30, 1995.

48. Nucleoprotein Gene Tracking: Subchromatin NP with Tightly Bound *p53*, *c-abl* and *bcl-2* Genes and the Use to Assess Interferon- α Sensitivity in Chronic Myelogenous Leukemia. Invited Symposium Presentation at the Third International Molecular Biology Symposium, Cairo, Egypt, November 14-17, 1995
49. Infectious Agents in Desert Storm Soldiers: *Mycoplasma incognitus* and other biological agents. Invited Symposium Address: Royal Society of Environmental Medicine, British Society of General Practitioners, London, England, November 24, 1995.
50. Diagnosis and Treatment of Chronic Illnesses in Persian Gulf War Veterans. Invited Medicine Grand Rounds, The University of Texas Health Science Center at Houston, May 7, 1996.
51. Chromatin Structure and the Use of Nucleoprotein Gene Tracking to Determine HIV and Chronic Infection Association with Chromatin. Invited symposium speaker: Fourth International Cancer Molecular Biology Symposium, Cairo, Egypt, November 24, 1996.
52. Use of Gene Tracking to Identify Infectious Agents that Penetrate the Nucleus. Invited speaker: Neurocognitive Disorders and Molecular Genetics, San Francisco, CA, June 17, 1997.
53. Nucleoprotein Gene Tracking: Physical Concepts and Application to Chronic Infections. Invited symposium speaker, International Integrative Medicine Congress, Lago Maggiore, Italy, June 26, 1997.
54. Gulf War Illnesses, CFS/FMS: The use of Nucleoprotein Gene Tracking to identify chronic infections. Invited symposium speaker, Annual Clinical Nutrition Meeting, Austin, Texas, April 26, 1998.
55. Use of Nucleoprotein Gene Tracking to study cancer metastasis and HIV-1 and mycoplasma infections. Invited speaker, Kuwait University, Kuwait City, Kuwait, May 16, 1998.
56. Nucleoprotein Gene Tracking and Gulf War Illnesses. Invited symposium speaker, American Biologics International Symposium, Istanbul, Turkey, June 28, 1998.
55. Use of Nucleoprotein Gene Tracking to study Gulf War Illness and HIV-1 and mycoplasma infections. Invited symposium speaker, International Journal of Medicine--Peace and Medicine Conference, Lisbon, Portugal, July 7, 1998.
58. Update on the role of chronic infections in various chronic diseases. Invited symposium speaker, American Biologics 11th International Symposia on Integrative Medicine, Vienna, Austria, July 2, 1999.
59. Recognizing chronic illness. Invited symposium speaker 1st International Conference on Integrative Medicine and Women's Health, Los Angeles, November 11, 2000.
60. Progress in identifying and treating chronic illnesses Invited symposium speaker 12th Annual American Biologics Conference on Integrative Medicine, Malta, June 30, 2001.
61. Overview of Women's Health and the role of allied health and physicians. Invited symposium speaker 2nd International Conference on Integrative Medicine and Women's Health, Los Angeles, March 3, 2002.
62. Chronic infections in Gulf War Illness patients. Special lecture to the Intelligence Operative Association, Fort Myers, Arlington, VA October 12, 2002.
63. Bioterrorism and the recognition of bioterror agents. Invited symposium speaker 13th Annual American Biologics Conference on Integrative Medicine, Rhodes, July 2, 2002.
64. Chronic Co-Infections in Lyme Disease and Chronic Fatigue Syndrome: Use of Traditional and Nutraceutical Treatments, 18th American Biologics Symposium on Integrative Medicine, Corfu, Greece, July 3, 2006.
65. Chronic infections in Autistic Spectrum Disorders. 19th American Biologics Symposium on Integrative Medicine, Florence, Italy, July 4, 2007.
66. Chronic Fatigue Syndrome patients subsequently diagnosed with Lyme Disease *Borrelia burgdorferi*: Evidence for *Mycoplasma* coinfections. Presented at the 9th International Research and Clinical Conference on Chronic Fatigue Syndrome, Reno, NV, March 12, 2009.

67. Similarities of ME/CFS and Autism Spectrum Disorders (ASD): comparisons of co-infections. Presented at the 4th Invest in ME International ME/CFS conference in London, May 28, 2009.

E. RESEARCH PROSPECTUS

The major emphasis of my research program is to investigate eukaryotic gene regulation using specific and native functional nucleoprotein (NP) complexes. Using a technique that involves direct restriction digestion of the nucleolus or nucleus followed by gentle acidic extraction and low ionic strength electrophoresis, NP complexes have been identified that are capable of discrete and faithful transcription as well as DNA synthesis using endogenous rather than synthetic oligonucleotide substrates. The NP complexes are powerful tools, because the NP components are in a state that closely resembles their highly compacted *in vivo* organization. The NP complexes have been molecularly dissected into 400 specific NPs, and ongoing work in my laboratory has been to investigate NP enzymatic activity and tightly bound DNAs and RNAs. The basic thrust of my research is defined by four major objectives:

- (1) The initial characterization of the NP complexes resulted in 400 macromolecular building blocks. We are using a series of controlled reconstitution studies to elucidate various gene regulatory mechanisms in the isolated NP complexes. For example, one manuscript now in preparation deals with reconstitution studies and the *in vitro* experimental procedures we have developed that modulate the expression of various oncogenes and tissue specific genes in the RAW117 NP system. We are able to turn on and off the β -casein gene, a gene that is not normally expressed in the RAW117 system. Thus we hope to define regulation of the β -casein gene, a gene that is not normally expressed in the RAW117 system and the *in vitro* mechanisms for the silencing of genes as well as their expression.
- (2) The second objective of my research is to characterize a family of specific eukaryotic endonucleases that we have recently discovered in the NP complexes and that are directly associated with the polymerase function of the NPs. We will characterize the covalent linkages and nucleic acid sequences involved in these processes in collaboration with Dr. Robert Wells at Texas A & M University.
- (3) We have used the NP complexes in the development of a clinical assay to predict those patients that are resistant to interferon- α . We have discovered that interferon- α treatment directly modulates RNA and DNA polymerase activities in sensitive patients NPs. This study is being performed in collaboration with Dr. Moshe Talpaz at of the University of Texas.
- (4) Finally, we are now employing nucleoprotein techniques to track the localization of HIV in the mammalian nuclear chromatin. We have discovered that the HIV genome splits upon incorporation into the host genomic DNA. HIV envelope separates from HIV pol, and these can be found in different nucleoprotein fractions. We aim to examine these observations with respect to HIV mutations. These approaches have proven useful in studying the microorganisms associated with Gulf War Illnesses.