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Russell Jaffe has had the privilege of contributing to the “birth” of modern integrative medicine. He works from first principles of biology to clarify the causal mechanisms of good health and ill health. His over 100 articles and invited reviews attest to his professional contributions.

The practical contributions to clinical medicine and to healthcare policy presented here provide you an introduction to him and his work. Functional, predictive tests and procedures designed to improve the precision of both diagnosis and of treatment outcomes are his focus. Cause (fundamental source of the problem) is more interesting than consequence (symptoms) when the goal is high-level function and well-being. Examples of his contributions to molecular biology and clinical diagnostics include:

1. Early colon cancer detection test: Tests a tiny speck of stool for traces of blood (occult blood). Previous occult blood tests were inhibited by ascorbate. After documenting how much inhibition ascorbate causes, he validated a novel procedure suitable for either stool or urine that is not inhibited by ascorbate (vitamin C).

A. Jaffe R et.al. Ascorbic Acid (vitamin C) Inhibits Occult Blood Detection in Stool, AFCC, Atlantic City, *Clinical Research* 22:453, 1973.

B. __, Kasten B, MacLowry J, Young D. False Negative Occult Blood Tests Caused by Ascorbic Acid. *Ann Int Med* 1975;83:824-826.

C. __, Zierdt W. An Occult Blood Test Procedure not Subject to Inhibition by Reducing Substances. *J Lab Clin Med* 1975;93:879-886.

D. __, Lawrence L, Schmid A, MacLowry J. Inhibition by Ascorbic Acid (vitamin C) of Chemical Detection in Urine. *American Journal of Clinical Pathology* 1979; 42:468-470.

2. Predictive tests of cardiovascular health and function based on changes in blood clotting and systemic repair status:

- Dose-response platelet aggregation assays.
- Fibrinogen survival assay using fully active fibrinogen.
- Platelet survival assay using fully active platelets.

A. Jaffe R. Platelet Interaction with Connective Tissue. In *Physiological Reaction of Blood Platelets* (Gordon, Ed.). *Elsevier* 1976, 261-292.

B. Pitas R, Nelson, C, Jaffe R, Mahley R. 15,18-Tetracosadienoic Acid Content of Sphingolipids from Platelets and Erythrocytes of Animals Fed Diets High in Saturated or Polyunsaturated Fats. *Lipids* 1978; 13:551-556.

C. Pitas RE, Nelson GJ, Jaffe RM, Mahley RW. The Effect of Cholesterol Supplementation on the Composition of Phospholipids from Platelets and Erythrocytes of Dogs Fed Diets High in Tallow or Cottonseed Oil. *American Oil Chemists Society* St. Louis, Missouri, May, 1978.

D. __, Oxidized Cholesterol and Atherosclerosis. *Common Knowledge* 1980; 4 (Winter): 67-72.

3. Molecular biology discoveries:

- Quantification of the number of concurrent platelet binding sites needed for collagen to activate platelet-induced blood clotting.
- Identification of the mechanism that controls collagen activation of platelets.

A. Jaffe R, Deykin D. Aggregation of Platelets by Purified Collagens, FASEB, Atlantic City, N.J., *Fed Proc* 31:243, 1972.

B. __, Deykin D. Evidence for the Structural Requirement for the Aggregation of Platelets by Collagen. *J Clin Invest* 1974;53:875-883.

C. __, Deykin D. Aggregation of Platelets by Different Collagens, AHA, Dallas, Texas, *Circ Supp* 3:289, 1974.

D. __, Deykin D. Role of Quaternary Structure in Collagen: Platelet Interaction, AFCC, Atlantic City, NJ. *Clinical Research* 23:276, 1975.

E. __, Binding of Different Collagens to Human Platelets. Proc. 5th Congress International Society for Thrombosis and Haemostasis, *Thromb Diath Haemorrh* 34:332, 1976.

F. __, Role of Quaternary Structure in Collagen Binding to and Aggregation of Platelets, (with Daniel Deykin), *Texas Rep. Biol Med* 1975;33(4):586.

G. __, Deykin, D. Proceedings: Bindings of Collagen to Platelets. *Thromb Diath Haemorrh* 1975;34(1):330-332.

H. Jaffe, R. Platelet Interaction with Connective Tissue. In *Physiological Reaction of Blood Platelets* (J Gordon, Ed.) *Elsevier* 1976, 261-292.

4. Antigen ultra-purification for use in high sensitivity immunology assays: Purer antigens mean more precise test results. A novel volatile buffer is used. The buffer evaporates as the antigen dries on the surface of the reaction chamber (microtiter plate). This allows for uniquely effective, more specific challenges from which to determine hypersensitivity in LRA by ELISA/ACT functional cell response assays.

5. Mechanism of connective tissue cross-link inhibition by d-penicillamine.

A. Franzblau, C. Faris B. Salcedo, L. Jaffe, R. and Crombie, G. *Chemistry and Biosynthesis of Cross-links in Elastin*. In *Chemistry and Molecular Biology of the Extracellular Matrix* (Balazas, Ed.) Academic Press, 1970, p 617-641.

B. Jaffe R. *Mechanism of Cross-Linkage Inhibition by Penicillamine*, in *Texas Reports on Biology and Medicine*, Spring, 1971. [Merck, Sharp, & Dohme Excellence in Research Award given for this work].

6. Predictive tests of immune function and hypersensitivity / delayed allergy:

A proprietary, comprehensive, autologous, *ex vivo* lymphocyte response assay (LRA by ELISA/ACT®) cell culture that tests concurrently all 3 types of delayed immune responses (based on Gel and Coombs' categories of immune response) in reaction to antigens recognized as helpful (tolerant, non-reactive) or harmful (hypersensitive, reactive).

- A. Jaffe R. Improved Immune Function Using Specific Nutrient Supplementation and ELISA/ACT "Immunologic Fingerprint" to Detect Late Phase Responses Ex Vivo. *J Am Col Nutr* 1989; 8(5):424.[Dr. Jaffe holds worldwide patents on enzyme-amplified immune cell response technologies and on novel, disposable, sterile reaction chambers (microtiter plates).]
- B. Deuster PA, Jaffe R. A Novel Treatment for Fibromyalgia Improves Clinical Outcomes in a Community-Based Study. *J Musculo Pain* 1998; 6:133-149.
- C. __,Autoimmunity: Clinical Relevance of Biological Response Modifiers in Diagnosis, Treatment, and Testing, Part I and Part II. *Intl J Integrative Med* 2000;2 (2):16-22 & 58-65.
- D. __,Brown S. Acid-Alkaline Balance And Its Effect on Bone Health. *Intl J Integrative Med* 2001; 4 (6):7-18.
- E. __,Clinical importance of delayed immune reactions to antigens and haptens detected by functional Lymphocyte Response Assays (LRA by ELISA/ACT tests) in primary management of chronic disease – Part 1 and Part II. *Townsend Letter for Doctors and Patients* 2003: 245:72-77 & 246:68-73.
- F. __,Fibromyalgia: Clinical management improves outcomes, reduces treatment complications. *Townsend Letter for Doctors and Patients* 2004: 249:84-89.
- G. __,Jaffe R. Functional Lab Tests to Evaluate Immune Competencies in Chronic Illness and Chronic Infection: Part 1. *Townsend Letter for Doctors and Patients*, 2006; Jan: 87-89.
- H. __,Jaffe R. Functional Lab Tests to Evaluate Immune Competencies in Chronic Illness and Chronic Infection: Part 2. *Townsend Letter for Doctors and Patients*, 2006; Feb/Mar: 107-109.
- I. __,Jaffe R, Mani J, DeVane J, Mani H. Tolerance loss in diabetics: Association with foreign antigen exposure. *Diabetic Medicine: A Journal of the British Diabetic Association* 2006 Aug;23(8): 924-5.
- J. __,Jaffe R. First-Line Comprehensive Care III Update on Immune System Lab Tests for Fibromyalgia-Chronic Fatigue-Metabolic Syndrome: Continuum of Treatment-Resistant Pain and Fatigue: Optimum Clinical Management Improves Outcomes and Reduces Risks and Treatment Complications as Supported by New Data. *Townsend Letter for Doctors and Patients*, 2008; Jan: 87-94.
- K. __,Jaffe R. Functional Lab Tests to Evaluate Immune Competencies in Chronic Illness and Chronic Infection: Part 3. *Townsend Letter for Doctors and Patients*, 2009; Jan: 80-90.
- L. __,Jaffe R. Food Reactivities: Diagnosing and Treating Food Allergies, Intolerances, and Celiac Disease in *Food and Nutrients in Disease Management*. Edited by Ingrid Kohlstadt, CRC Press, Feb 2009: 241-255.
- M. __,Jaffe R. Immune Defense and Repair Systems in Biologic Medicine: Clinical Relevance of Biological Response Modifiers in Autoimmunity: Diagnosis, Treatment, Tests, and Interpretation (Part I). *Townsend Letter for Doctors and Patients* 2009; Oct: 82-89.
- N. __,Jaffe R. Immune Defense and Repair Systems in Biologic Medicine: Clinical Relevance of Biological Response Modifiers in Autoimmunity: Diagnosis, Treatment, Tests, and Interpretation (Part II). *Townsend Letter for Doctors and Patients* 2009; Nov: 90-98.
- O. __,Jaffe R. Immune Defense and Repair Systems in Biologic Medicine: Clinical Relevance of Biological Response Modifiers in Autoimmunity: Diagnosis, Treatment, Tests, and Interpretation (Part III). *Townsend Letter for Doctors and Patients* 2009; Dec: 76-80.
- P. __,Jaffe, R. LRA by ELISA/ACT Tests: Lymphocyte Response Assays (LRA) are More Sensitive, Specific, Predictive, and Accurate for Determining Delayed Allergy to Foods and Chemicals: Letter to the Editor. *Townsend Letter for Doctors and Patients*, 2010; Aug/Sep: 91-92.
- Q. __,Jaffe, R. The Alkaline Way: Integrative Management of Autoimmune Conditions. *Townsend Letter for Doctors and Patients*, 2010; Nov: 44-51.
- R. __,Jaffe R. Diabetes as an Autoimmune-immune Dysfunction Syndrome in *Bioactive Foods in Chronic Disease States*. Edited by Ronald Ross Watson, Elsevier, Inc: in press.

7. Predictive tests of nutritional / metabolic function: Nutritional and toxic mineral provocation test protocols using d-penicillamine to assess cellular mineral and buffering capacity through a safer, non-invasive technique. Separately, Dr. Jaffe has received numerous patents for this discoveries in nutritional science. These advances are incorporated into the PERQUE line of professionally dispensed dietary supplements. PERQUE unique features include scientific and clinical leadership, full disclosure labels, proven full bioavailability, proven full function formulas, and clinically validated full health promotion.

- A. __,Improved Immune Function Using Specific Nutrient Supplementation and ELISA/ACT "Immunologic Fingerprint" to Detect Late Phase Responses Ex Vivo. *J Am Col Nutr* 1989; 8(5):424.
- B. Singh A, Jaffe R, Moses F, Dohoda V, Moran R, Kealey B, and Deuster PA. Biochemical indices of vitamin status in response to supplement use. *Am J Clin Nutr* 1990;51:523.

8. In health policy and the development of a cost and outcome effective, sustainable health promotion system.

- A. Jaffe R. Science and Wellness: The New Medicine. *Annals American Public Health Assoc* 104: 4080, 1977.
- B. __,Health in the 80s: Toward Optimum Existence. In *Through the 80s: Thinking Globally and Acting Locally* (Feather, Ed.). World Future Society. Washington, DC, 1980, 356p.
- C. __,Continuing Care Service and Wellness Medicine. *Archives of Thanatology* 1980; 8:2.
- D. __,Bell I. Ecological Factors in Learning and Behavioral Disorders. *Osteopathic Physician* 1980; 47:25-33
- E. __,Indoor Environmental Quality: Report to The Governor, Dept. of Consumer Affairs, Sacramento, California, 1981, 397 p.
- F. __,Gerzoff S. *Directory of Experts in Indoor Pollution*. Dept. of Consumer Affairs, Sacramento, California., 1981, 88 p.
- G. __,Spohn R. *Clean Your Room: Indoor Environmental Quality and Indoor Pollution*. Department of Consumer Affairs, Sacramento, California, 1981, 220p.
- H. __,Malathion: Risk, Benefit, Safety, and Biological Chemistry. Health Studies Collegium, Vienna, VA, 1982, 157p.
- I. __,Heptachlor: Risk, Benefit, Safety, and Biological Chemistry. Health Studies Collegium, Vienna, VA,1983, 99p.

8. In health policy and the development of a cost and outcome effective, sustainable health promotion system, *continued.*

- J. __, *Immune Reconstitution Protocol: Testing Bechamp's Hypothesis*. Health Studies Collegium, Vienna, VA, 1983, 48p.
- K. __, *Risk Analysis and Health Assessment*. Health Studies Collegium, 1984, 75.
- L. __, Bellardo, T. *Directory of Experts in Indoor Pollution*. 2nd Edition, Health Studies Collegium, 1985, 104p.
- M. __, *Scenarios of Health: The Transformation Hypothesis Re-evaluated*. World Future Society Proceedings, Bethesda, MD, 1985.
- N. __, *Delayed Hypersensitivity in Chronic Illness and Health*. Health Studies Collegium, Vienna, VA, 1985, 44p.
- O. __, *Delayed Allergy and Inflammation: Link to Autoimmunity*. Health Studies Collegium, Vienna, VA, 1985, 33p.
- P. __, Jaffe R. *First Line Comprehensive Care. Part I: Chronic Autoimmune Disease Management by Causes Rather than Symptomatic Consequences*. Seminars in Integrative Medicine. 2005 (Jun); 3 (2): 44-60.
- Q. __, Jaffe R. *First Line Comprehensive Care. Part II: Anthropogenic Xenobiotics in Functional Medicine. Managing Persisting Bioaccumulating Pollutants: Toxic Minerals, Biocides, Hormone Mimics, Solvents, and Chemical Disruptors*. Seminars in Integrative Medicine. 2005 (Sep) 3; (3): 79-92.
- R. __, Jaffe R. *Managing toxic minerals, biocides, hormone mimics, solvents and chemical disruptors in Nutrition for Musculoskeletal Health*. Edited by Ingrid Kohlsrud, chapter 30, Marcel Dekker/CRC Press, 2006.
- S. __, Jaffe R. Functional Lab Tests to Evaluate Immune Competencies in Chronic Illness and Chronic Infection: Part 2. *Townsend Letter for Doctors and Patients*, 2006; Feb/Mar: 107-109.
- T. __, Jaffe R, Nash R, Ash R, Schwartz N, Corish R, Born T, Lazarus H. Healthcare transparency: opportunity or mirage. *J Management Development*, 2006; 25 (10): 981-995.
- U. __, Jaffe R, Nash R, Ash R, Schwartz N, Corish R, Born T, Lazarus H. An equation of health: Role of transparency and opacity in developing healthcare efficacy measures and metrics. *J Management Development*, 2007; 26 (5): 441-458.
- V. __, Jaffe R, Nash R, Ash R, Schwartz N, Corish R, Born T, Carter J, Lazarus H. Role of transparency in managing outcome successes: Causes and end use/least cost as decision guides. *Journal of Management Development*, 2008; 27 (10): 1086-1114.
- W. __, Jaffe R and Mani J. Diabetes: Food and Nutrients in Primary Practice in *Food and Nutrients in Disease Management*. Edited by Ingrid Kohlstadt, CRC Press, Feb 2009:281-300.
- X. __, Jaffe R. Gastrointestinal Health: A Functional Approach in *Bioactive Foods in Chronic Disease States*. Edited by Ronald Ross Watson, Elsevier, Inc: in press.
- Y. __, Jaffe R. Scientific Basis for the Alkaline Way, Ascorbate Calibration and other Functional Tests of Heart Health and Disease in *Bioactive Foods in Chronic Disease States*. Edited by Ronald Ross Watson, Elsevier, Inc: in press.
- Z. __, Jaffe R. Inflammation as Repair Deficit in Arthritis in *Bioactive Foods in Chronic Disease States*. Edited by Ronald Ross Watson, Elsevier, Inc: in press.

Honored as an International Scientist of 2003 by the IBC, Oxford, England, UK for his lifetime contributions to clinical medicine, biochemistry, immunology, methodology, and integrative health policy, Dr. Jaffe is appreciative of the recognition of his peers. He currently serves on the American Board of Clinical Metal Toxicology and coordinates its certification training program. America's Top Physicians 2005, Who's Who in America; Who's Who in Medicine and Science; Who's Who in Business and Engineering all have included him in recognition of his contributions to science and community.