

**AHVIE HERSKOWITZ, M.D.**  
**CURRICULUM VITAE**

**Contact Information:**

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San Francisco, CA 94109  
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Cellular: 415-420-4058  
[ahvie@anataramedicine.com](mailto:ahvie@anataramedicine.com)

**Experience:**

1999 - Present  
University of California San Francisco  
Clinical Professor of Medicine

1998 - Present  
VA Medical Center, San Francisco  
Consultant Cardiologist

2011 - Present  
Anatara Medicine, San Francisco  
Clinical Director and Founder  
[www.anataramedicine.com](http://www.anataramedicine.com)

2013 – Present  
San Francisco Stem Cell Treatment Center  
Clinical Director and Founder  
[www.sfstemcellcenter.com](http://www.sfstemcellcenter.com)

2009 - 2010  
Medicines360  
Chief Operating Officer  
Non-profit pharmaceutical company focused on drug/device development in the field of women's health. Raised \$82 million from the Buffett Foundation.

2000 - 2009  
OneWorld Health  
Co-Founder, COO, Chief Medical Officer (2000-2007) and CEO (2007-9)  
The first non-profit pharmaceutical company in the United States dedicated to developing new, effective and affordable drugs for neglected diseases throughout the world, with particular focus in India and South Asia. Raised \$170 million from the Bill & Melinda Gates Foundation.

1995 - 1999

Ischemia Research and Education Foundation (IREF)

Head of Research, Vice President

An independent, California-based nonprofit specialized in the design of large-scale clinical trials, epidemiologic, outcome studies and registries. Acted as the central analysis unit for the Multicenter Study of Perioperative Ischemia (McSPI) Research Group, composed of 100+ investigators in major academic medical centers in the United States, Canada, Europe and Asia.

1991 - 1995

The Johns Hopkins Hospital

Associate Professor of Medicine, Division of Cardiology, Attending Cardiologist, Cardiac Catheterization

Director, Cardiac Pathology Core Laboratory for Specialized Center of Research, Division of Cardiology

The Johns Hopkins School of Public Health and Hygiene

Associate Professor of Molecular Microbiology and Immunology

1987 - 1991

The Johns Hopkins Hospital

Assistant Professor of Medicine, Division of Cardiology

School of Hygiene and Public Health, MD

Attending Cardiologist, Cardiac Catheterization

Assistant Professor of Immunology and Infectious Disease

The Johns Hopkins School of Public Health and Hygiene

Director, Cardiac Pathology and Immunology Laboratory

1986 - 1987

The Johns Hopkins Hospital

Active Staff, Cardiology

The Johns Hopkins School of Public Health and Hygiene

Research Associate, Department of Immunology and Infectious Diseases

**Areas of Special Emphasis:**

Personalized Medicine; Integrative medicine; Integrative oncology

Regenerative Medicine

Immunomodulation/Autoimmunity

Cardiovascular Medicine and Internal Medicine

Vascular Immunobiology, Inflammation and Mechanisms of Injury

Transplantation and Immunogenetics

Pharmaceutical Drug Development

Global health; Non-profit Sustainability & Strategic Planning

Cardiac Pathology

**Licensure:**

Board Certified Internal Medicine  
Board Certified Anatomic Pathology

**Education:**

1983 - 1986

The Johns Hopkins Hospital  
Cardiology Fellow

1982 - 1983

Yale School of Medicine, Greenwich Hospital, CT  
Chief Resident in Internal Medicine

1980 - 1982

Yale School of Medicine, CT  
Resident in Internal Medicine, Greenwich Hospital

1979 - 1980

Albert Einstein Hospital, NY  
Chief Resident in Anatomic Pathology

1977 - 1979

Albert Einstein Hospital, NY  
Resident in Anatomic Pathology

1974 - 1977

Albert Einstein College of Medicine, NY  
Doctor of Medicine

1970 - 1974

City University of New York, NY  
Bachelor of Arts in Mathematics, Brooklyn College

**Memberships:**

American College for the Advancement of Medicine  
American Heart Association  
American Medical Association

**Awards and honors:**

2010

Appointed Chairman of the Board of the Institute for Rare & Neglected Diseases Drug Discovery (iRND3), a non-profit drug discovery pharmaceutical company facilitating the development of new medicines for rare and neglected diseases ([www.irnd3.org](http://www.irnd3.org)).

2008

Rennebohm Lecturer, University of Wisconsin, School of Pharmacy

Appointed to the Board of Directors of the Pulmonary Vascular Research Institute (PVRI), a global on-profit clinical research organization devoted to increasing the awareness and knowledge of pulmonary and cardiovascular diseases, and to facilitating advances in the treatment of affected people worldwide ([www.pvri.info](http://www.pvri.info)).

2006

Clinton Global Health Initiative Awardee, "Access to Cures"

### **Research Projects:**

Dr. Herskowitz has over 115 peer-reviewed articles, book chapters and reviews in the fields of cardiology, cardiac surgery, immunology/inflammation and virology. A full listing of publications is also attached.

2010

Rich S, Herskowitz A. Targeting pulmonary vascular disease to improve global health. *Chest* 137: 1S-5S.

2002

Mangano DT for the Multicenter Study of Perioperative Ischemia Research Group; Herskowitz A. Aspirin and mortality from coronary bypass surgery. *New Engl J Med* 347:1309-17.

1999

Wolman RL, Nussmeir NA, Aggarwal A, Kanchuger MA, Roach GW, Newman MF, Mangano CM, Marschall, KE, Ley C, Boisvert DM, Ozanne GM, Herskowitz A, Graham SH, Mangano DT. Cerebral injury after cardiac surgery: Identification of a group at extraordinary risk. *Stroke* 30:514-22.

1998

Mora Mangano CT, Diamondstone LS, Ramsay JG, Aggarwal A, Herskowitz A, Mangano DT, and the Institutions of the Multicenter Study of Perioperative Ischemia (McSPI) Research Group. Renal dysfunction following coronary revascularization: Risk factors, morbid outcomes, and hospital resource utilization. *Ann Int Med* 128:194-203.

1996

Newman M, Wolman R, Marschall K, Mora Mangano C, Roach G, Smith LR, Aggarwal A, Nussmeier N, Kanchuger M, Herskowitz A, Mangano DT, and the Institutions of the Multicenter Study of Perioperative Ischemia (McSPI) Research Group: Multicenter preoperative stroke risk index for patients undergoing coronary artery bypass grafting. *Circulation* 94(Suppl II):II-74-80.

Herskowitz A, Mangano DT. Inflammatory cascade: A final common pathway for perioperative injury. *Anesthesiology* 85:957-960.

Roach GW, Kanchuger M, Mangano CM, Newman MF, Wolman R, Aggarwal A, Marschall K, Graham S, Nussmier NA, Ley C, Ozanne G, Herskowitz A, Mangano DT, and the Institutions of the Multicenter Study of Perioperative Ischemia (McSPI) Research Group. Adverse central nervous system outcomes following coronary artery bypass graft surgery in a multicenter study: Incidence, predictors and resource utilization. *N Eng J Med* 335:1857-1864.

1995

Gillinov AM, Redmond JM, Winkelstein JA, Zehr KJ, Herskowitz A, Baumgartner WA, Cameron DE. Complement and neutrophil activation during cardiopulmonary bypass: a study in the complement-deficient dog. *Ann Thoracic Surg* 7:345-52, 1994.

Herskowitz A, Choi S, Ansari AA, Wesselingh S. Cytokine mRNA expression in post-ischemic/reperfused myocardium. *Am J Pathol* 146:419-428, 1995.

Ansari AA, Sundstrom JB, Kanter K, Mayne A, Villinger F, Gravanis MB, Herskowitz A. Cellular and molecular mechanisms of human cardiac myocyte injury after transplantation. *J Heart Lung Transplantation* 14:102-112, 1995.

Sundstrom JB, Mayne A, Sundstrom JB, Kanter K, Herskowitz A, Ansari AA. Mechanisms of human cardiac allograft rejection: Absence of co-stimulatory molecules and cell adhesion molecules on MHC class I/II+ human cardiac myocytes does not induce anergy. *Transpl Proc* 27:1310-1313, 1995.

1994

Ansari A, Sundstrom B, Gravanis MB, Kanter K, Herskowitz A. Absence of constitutive and induced expression of critical cell adhesion molecules on human cardiac myocytes: Role in transplant rejection. *Transplantation* 57:942-949.

Michels VV, Moll PP, Rodeheffer RJ, Miller FA, Tajik JA, Burnett JC, Driscoll DJ, Thibodeau SN, Ansari AA, Herskowitz A. Circulating heart autoantibodies in familial as compared to nonfamilial idiopathic dilated cardiomyopathy. *Mayo Clinic Proc* 69:24-27.

Ouyang P, Becker LC, Effron M, Herskowitz A, Weisfeldt ML. Hemodynamic vascular forces contribute to impaired endothelium-dependent vasodilation in reperfused canine epicardial coronary arteries. *J Am Coll Cardiol* 23:1216-23, 1994.

Herskowitz A, Mayne AE, Willoughby SB, Kanter K, Ansari AA. Patterns of myocardial cell-adhesion molecule expression in human endomyocardial biopsies post-cardiac transplantation: Induced ICAM-1 and VCAM-1 related to reperfusion and rejection. *Am J Pathol* 145:1082-1094, 1994.

Zehr KJ, Herskowitz A, Lee PC, Kumar P, Gillinov AM, Baumgartner WA. Neutrophil adhesion and complement inhibition prolongs survival of cardiac xenografts in discordant species. *Transplantation* 57:900-906, 1994.

1993

Handa N, Hatanaka M, Baumgartner WA, Reitz BA, Sanford G, Esa AH, Herskowitz A. Late cyclosporine treatment ameliorates established coronary graft disease in rat allografts. *Transplantation* 56:535-540.

Herskowitz A, Neumann DA, Ansari AA. Concepts of autoimmunity applied to idiopathic dilated cardiomyopathy. *J Am Coll Cardiol* 22:1385-8.

Shandelya SML, Kuppusamy P, Herskowitz A, Fearon D, Weisfeldt ML, Zweier JL. Soluble complement receptor Type 1 inhibits the complement pathway and prevents contractile failure in the postischemic heart: evidence that complement activation is required for neutrophil mediated reperfusion injury. *Circulation* 88:2812-2826.

Herskowitz A, Campbell S, Deckers J, Kasper EK, Boehmer J, Hadian D, Neumann DA, Baughman K. Demographic features and prevalence of idiopathic myocarditis in patients undergoing endomyocardial biopsy at The Johns Hopkins Hospital. *Am J Cardiol* 71:982-986.

Herskowitz A and Ansari AA. Myocarditis. *Curr Opin Cardiol* 8:473-479.

Weiss RG, Kalil-Filho R, Herskowitz A, Chacko VP, Litt M, Stern MD, Gerstenblith G. Tricarboxylic acid cycle activity in post-ischemic rat hearts. *Circulation* 87:270-282.

1991

Wang YC, Neckelmann N, Mayne A, Herskowitz A, Srinivasan A, Sell KW, Ansari AA. Establishment of a human fetal cardiac myocyte cell line. *In Vitro Cell Dev Biol* 27A:63-74.

Ansari AA, Wang YC, Danner DJ, Gravanis MB, Mayne A, Neckelmann N, Sell KW, Herskowitz A. Abnormal expression of histocompatibility and mitochondrial antigens by cardiac tissue from patients with myocarditis and dilated cardiomyopathy. *Am J Pathol* 139(2):337-354.

1990

Herskowitz A, Ansari AA, Neumann DA, Beschorner WE, Rose NR, Soule LM, Burek CL, Sell KW, Baughman KL. Induction of major histocompatibility complex (MHC) antigens within the myocardium of patients with active myocarditis: A non-histologic marker of myocarditis. *J Am Coll Card* 15(3):624-632, 1990.

Beschorner WE, Baughman KL, Turnicky RP, Hutchins GM, Rowe SA, Kavanaugh-McHugh AL, Suresch DL, Herskowitz A. HIV-associated myocarditis: Pathology and immunopathology. *Am J Pathol* 137(6):1365-1371.

Neumann DA, Burek CL, Baughman KL, Rose NR, Herskowitz A. Circulating heart-reactive antibodies in patients with myocarditis or cardiomyopathy. *J Am Coll Card* 16(4):839-846.

## Full Listing of Dr. Herskowitz's Publications:

1. Herskowitz A, Factor SM: Mitral valve duplication associated with membranous septum aneurysm: Embryogenesis of atrioventricular valve duplication. *NY State J Med* 79:260-263, 1979.
2. Mei GS, Rendler S, Herskowitz A, Molnar JJ: Renal oncocytoma. Report of five cases and review of literature. *Cancer* 45:1010-1018, 1980.
3. Herskowitz A, Cho S, Factor SM: Syphilitic arteritis involving the proximal coronary arteries. *NY State J Med* 80:971-974, 1980.
4. Tanowitz HB, Davies P, Factor SM, Minase T, Herskowitz A, Whitner M: *Trypanosoma cruzi*: Comparison of choline acetyltransferase activity in the hearts and brains of susceptible and resistant mice infected with the Brazil strain. *Exp Parasitology* 51:269-278, 1981.
5. Koenigsberg M, Factor SM, Cho S, Herskowitz A, Nitowsky H, Morechi R: Fetal Marfan syndrome: Prenatal ultrasound diagnosis with pathologic confirmation of skeletal and aortic lesions. *Prenatal Diagnosis* 1:241-247, 1981.
6. Ueda K, Baumgartner WA, Beschoner WE, Borkon MA, Soule LM, Reithz BR, Herskowitz A: Histologic pattern of early heart allograft rejection under cyclosporine treatment. *J Heart Transplantation* 4(3):296-301, 1985.
7. Herskowitz A, Beisel KW, Wolfgram LJ, Rose NR: Coxsackievirus B3 murine myocarditis: A wide pathologic spectrum in genetically defined inbred strains. *Human Pathol* 16(7):671-673, 1985.
8. Beisel KW, Wolfgram LJ, Herskowitz A, Rose NR: Differences in severity of coxsackievirus B3-induced myocarditis among H-2 congenic mouse strains. in *Genetic Control of Resistance to Infection and Malignancy*, ed: Skamame E, Alan R. Liss, Inc., New York, pp 195-205, 1985.
9. Wolfgram LJ, Beisel KW, Herskowitz A, Rose NR: Variations in the susceptibility to coxsackievirus B3-induced myocarditis among different strains of mice. *J Immunol* 136(5):1846-1852, 1986.
10. Herskowitz A, Traystman MD, Beisel KW: Murine viral myocarditis: New insights into mechanisms of disease. *Heart Failure* 2(2):86-90, 1986.

11. Rose NR, Wolfgram LJ, Herskowitz A, Beisel KW: Post-infectious autoimmunity: two distinct disease phases in coxsackievirus B3-induced myocarditis. *Ann NY Acad Sci* 475:146-156, 1986.
12. Topol EJ, Herskowitz A, Hutchins GM: Massive hemorrhagic myocardial infarction after coronary thrombolysis. *Am J Med* 81(2):339-343, 1986.
13. Halperin HR, Guerci AD, Chandra N, Herskowitz A, Tsitlik J, Niskanen RA, Wurmb E, Weisfeldt ML: Vest inflation without simultaneous ventilation during cardiac arrest in dogs: improved survival from prolonged cardiopulmonary resuscitation. *Circulation* 74(6):1407-1415, 1986.
14. Rose NR, Beisel KW, Herskowitz A, Neu N, Wolfgram LJ, Alvarez FL, Traystman MD, Craig SW: Cardiac myosin and autoimmune disease. in *Ciba Foundation Symposium 129*, John Wiley and Sons, Ltd., London, July/Aug 1987.
15. Rosengard BR, Adachi H, Ueda K, Hall TS, Hutchins GM, Herskowitz A, Borkon AM, Baumgartner WA, Reitz BA: Differences in the pathogenesis of first-set allograft rejection and acute xenograft rejection as determined by sequential morphologic analysis. *J Heart Transplantation* 4(5):263-267, 1986.
16. Herskowitz A, Soule LM, Mellits ED, Traill TA, Achuff SC, Reitz BA, Borkon AM, Baumgartner WA, Baughman KL: Histologic predictors of acute cardiac rejection in human endomyocardial biopsies: A multivariate analysis. *J Am Coll Card* 9(4):802-810, 1987.
17. Herskowitz A, Wolfgram LJ, Rose NR, Beisel KW: Coxsackievirus B3 murine myocarditis: A pathologic spectrum of myocarditis in genetically defined inbred strains. *J Am Coll Card* 9(6):1311-1309, 1987.
18. Herskowitz A, Soule LM, Ueda K, Tamura F, Baumgartner WA, Borkon AM, Reitz BA, Achuff SC, Traill TA, Baughman KL: Arteriolar vasculitis on endomyocardial biopsy: A histologic predictor of poor outcome in cyclosporine-treated heart transplant recipients. *J Heart Transplantation* 6(3):127-136, 1987.
19. Neu N, Rose NR, Beisel KW, Herskowitz A, Gurri-Glass G, Craig SW: Cardiac myosin induces myocarditis in genetically predisposed mice. *J Immunology* 139(11):3630-3636, 1987.
20. Ueda K, Takeda K, LaFrance ND, Solez K, Baumgartner WA, Reitz BA, Herskowitz A. Is In-111 antimyosin antibody a useful diagnostic marker for evaluation of early cardiac allograft rejection? *Transplantation Proc* 20(1 Suppl 1):778-781, 1988.

21. Rose NR, Herskowitz A, Neumann DA, Neu N. Autoimmune myocarditis. A paradigm of post-infection autoimmune disease. *Immunol Today* 9(4):117-119, 1988.
22. Herskowitz A, Baughman KL, Rose NR, Neumann DA, Beschorner WE, Sell KW, Ansari AA. Induction of major histocompatibility antigens on myocardial cells in patients with active myocarditis and idiopathic cardiomyopathy. in *New Concepts in Viral Heart Disease*, ed: Schultheiss HP, Springer Verlag, pp 312-324, 1988.
23. Rose NR, Neu N, Neumann DA, Herskowitz A. Myocarditis: A post-infectious autoimmune disease. in *New Concepts in Viral Heart Disease*, ed: Schultheiss HP, Springer Verlag, pp 139-147, 1988.
24. Rose NR, Neumann DA, Herskowitz A. Genetics of susceptibility to viral myocarditis in mice. *Path Immunopathol Res* 7:266-278, 1988.
25. Burkoff D, Flaherty JT, Yue DT, Herskowitz A, Oikawa RY, Sugiura S, Franz MR, Baumgartner WA, Shaefer J, Reitz BA, Sagawa K. In vitro studies of isolated supported human hearts. *Heart Vessels* 4(4):185-196, 1988.
26. Herskowitz A, Tamura F, Ueda K, Neumann DA, Slepian MJ, Rose NR, Beschorner WE, Baumgartner WA, Sell KW, Ahmed-Ansari A. Induction of donor major histocompatibility complex antigens in coronary arterial vessels: mechanism of arterial vasculitis in rat allografts treated with cyclosporine. *J Heart Transplantation* 8(1):11-19, 1989.
27. Tamura F, Vogelsang GB, Reitz BA, Baumgartner WA, Herskowitz A. Combination thalidomide and cyclosporine for cardiac allograft rejection: comparison with combination methylprednisolone and cyclosporine. *Transplantation* 49(1):20-25, 1990.
28. Herskowitz A, Ansari AA, Neumann DA, Beschorner WE, Rose NR, Soule LM, Burek CL, Sell KW, Baughman KL. Induction of major histocompatibility complex (MHC) antigens within the myocardium of patients with active myocarditis: A non-histologic marker of myocarditis. *J Am Coll Card* 15(3):624-632, 1990.
29. Neumann DA, Burek CL, Baughman KL, Rose NR, Herskowitz A. Circulating heart-reactive antibodies in patients with myocarditis or cardiomyopathy. *J Am Coll Card* 16(4):839-846, 1990.
30. Beschorner WE, Baughman KL, Turnicky RP, Hutchins GM, Rowe SA, Kavanaugh-McHugh AL, Suresch DL, Herskowitz A. HIV-associated myocarditis: Pathology and immunopathology. *Am J Pathol* 137(6):1365-1371, 1990.

31. Herskowitz A, Tamura F, Ueda K, Ansari A, Beschorner W, Neumann D, Rose N, Baumgartner W. Immune mechanisms in experimental chronic vascular rejection post-cardiac transplantation. in *Transplantation and Clinical Immunology XXI*. ed: JL Touraine et al, Elsevier Science Publishers, pp 95-104, 1990.
32. Ueda K, Herskowitz A, Pearson TA, Dillman JM, Suzuki M, Adachi H, Omoto R, Baumgartner WA, Reitz BA. Dipyridamole and Nifedipine -- studies on their protective effects for heart allograft arterial stenosis. *Vascular Surgery* 24(5):326-334, 1990.
33. Wang YC, Herskowitz A, Gu LB, Kanter K, Lattouf O, Sell KW, Ansari AA. Influence of cytokines and immunosuppressive drugs on MHC Class I/II expression by cardiac myocytes in vitro. *Human Immunol* 31(2):123-133, 1991.
34. Ansari AA, Wang YC, Danner DJ, Gravanis MB, Mayne A, Neckelmann N, Sell KW, Herskowitz A. Abnormal expression of histocompatibility and mitochondrial antigens by cardiac tissue from patients with myocarditis and dilated cardiomyopathy. *Am J Pathol* 139(2):337-354, 1991.
35. Neumann DA, Lane JR, Lafond-Walker A, Allen GS, Frondoza C, Herskowitz A, Rose NR. Elution of autoantibodies from the hearts of Coxsackievirus-infected mice. *Eur Heart J* 12(Suppl D):113-116, 1991.
36. Wang YC, Neckelmann N, Mayne A, Herskowitz A, Srinivasan A, Sell KW, Ansari AA. Establishment of a human fetal cardiac myocyte cell line. *In Vitro Cell Dev Biol* 27A:63-74, 1991.
37. Jones SR, Herskowitz A, Hutchins GM, Baughman KL. Effects of immunosuppressive therapy in biopsy-proven myocarditis and borderline myocarditis on left ventricular function. *Am J Cardiol* 68:370-376, 1991.
38. Lane JR, Neumann DA, Lafond-Walker A, Herskowitz A, Rose NR. LPS promotes CB3-induced myocarditis in resistant B10.A mice. *Cell Immunol* 136:219-233, 1991.
39. Lieberman EB, Hutchins GM, Herskowitz A, Rose NR, Baughman KL. Clinicopathologic description of myocarditis. *J Am Coll Card* 18(7):1617-1626, 1991.
40. Takeda K, Ueda K, Scheffel U, Ravert H, LaFrance ND, Baumgartner WA, Reitz BA, Herskowitz A, Wagner HN Jr. Indium-111 myosin-specific antibodies and technetium-99m pyrophosphate in the detection of acute

cardiac rejection of transplanted hearts: studies in a heterotopic rat heart model. *Eur J Nucl Med* 18:461-466, 1991.

41. Rose NR, Neumann DA, Herskowitz A. Autoimmune myocarditis: Concepts and questions. *Immunol Today* 12(8):253-255, 1991.
42. Traystman MD, Chow LH, McManus BM, Herskowitz A, Nesbitt MN, Beisel KW. Susceptibility to coxsackievirus B3-induced chronic myocarditis maps near the murine Tcr alpha and Mych alpha loci on chromosome 14. *Am J Pathol* 138(3):721-726, 1991.
43. Neumann DA, Lane JR, Lafond-Walker A, Allen GS, Wulff SM, Herskowitz A, Rose NR. Heart-specific autoantibodies can be eluted from the hearts of Coxsackievirus B3-infected mice. *Clin Exp Immunol* 86:405-412, 1991.
44. Turnicky RP, Goodin J, Smialek JE, Herskowitz A, Beschorner WE. Incidental myocarditis with intravenous drug abuse: The pathology, immunopathology and potential implications for HIV associated myocarditis. *Hum Pathol* 23(2):138-143, 1992.
45. Rose NR, Neumann DA, Herskowitz A. Coxsackievirus myocarditis. *Adv in Int Med* 37:411-429, 1992.
46. Herskowitz A, Willoughby SB, Baughman KL, Schulman SP, Bartlett JD. Cardiomyopathy associated with anti-retroviral therapy in patients with HIV infection: a report of six cases. *Ann Int Med* 116(4):311-313, 1992.
47. Rose NR, Neumann DA, Burek CL, Herskowitz A. Autoimmune Heart Disease. in *The Autoimmune Diseases II*, eds: Rose NR and Mackay RI, Academic Press, San Diego, pp 303-314, 1992.
48. Herskowitz A and Ansari AA. Myocarditis. *Curr Opin Cardiol* 7(3):469-475, 1992.
49. Wu TC, Pizzorno MC, Hayward GS, Hruban RH, Willoughby S, Neumann DA, Rose NR, Ansari AA, Beschorner WE, Baughman KL, Herskowitz A. In situ detection of cytomegalovirus immediate-early gene (IE-2) transcripts within cardiac myocytes of patients with HIV-associated cardiomyopathy. *AIDS* 6:777-785, 1992.
50. Neumann DA, Lane JR, Wulff SM, Allen GS, Lafond-Walker A, Herskowitz A, Rose NR. In vivo deposition of myosin-specific autoantibodies in the hearts of mice with experimental autoimmune myocarditis. *J Immunol* 148(12):1-8, 1992.

51. Gips SJ and Herskowitz A. Immune markers in the diagnosis of myocarditis. *Primary Cardiology* 18(6):29-35, 1992.
52. Lane JR, Neumann DA, Lafond-Walker A, Herskowitz A, Rose NR. Interleukin 1 or tumor necrosis factor can promote coxsackie B3-induced myocarditis in resistant B10.A mice. *J Exp Med* 175:1123-1129, 1992.
53. Ansari A, Wang YC, Kanter K, Mayne A, Sell K, Herskowitz A. Host T-Cell primary allosensitization to MHC class I- and II-expressing human cardiac myocytes requires the presence of a second signal. *Hum Immunol* 37:108-118, 1993.
54. Neumann DA, Wulff SM, Leppo MK, Love LA, Rose NR, Herskowitz A. Pathologic changes in the cardiac interstitium of mice infected with encephalomyocarditis virus. *Cardiovasc Pathol* 2(2):117-126, 1993.
55. Willoughby SB, Vlahov D, Herskowitz A. Frequency of left ventricular dysfunction and other echocardiographic abnormalities in human immunodeficiency virus seronegative intravenous drug users. *Am J Cardiol* 71:446-447, 1993.
56. Herskowitz A, Vlahov D, Willoughby S, Chaisson RE, Schulman SP, Neumann DA, Baughman KL. Prevalence and incidence of left ventricular dysfunction in patients with human immunodeficiency virus infection. *Am J Cardiol* 71:955-958, 1993.
57. Handa N, Hatanaka M, Baumgartner WA, Reitz BA, Sanford G, Esa AH, Herskowitz A. Late cyclosporine treatment ameliorates established coronary graft disease in rat allografts. *Transplantation* 56:535-540, 1993.
58. Ansari A, Kanter K, Wang YC, Mayne A, Sell K, Herskowitz A. MHC-expressing human cardiac myocytes are not the direct target of host cardiac infiltrating cells: Evidence for a prominent role of the indirect pathway in human cardiac allograft rejection. *Transplant Proc* 25:89-93, 1993.
59. Weiss RG, Kalil-Filho R, Herskowitz A, Chacko VP, Litt M, Stern MD, Gerstenblith G. Tricarboxylic acid cycle activity in post-ischemic rat hearts. *Circulation* 87:270-282, 1993.
60. Herskowitz A and Baughman KL. Myocarditis. in *Cardiovascular Disorders: Pathogenesis and Pathophysiology*, Gravanis MB ed: Mosby Press, St. Louis, Chapter 6, pp 178-209, 1993.
61. Herskowitz A and Ansari AA. Myocarditis. *Curr Opin Cardiol* 8:473-479, 1993.

62. Gillinov AM, DeValeria PA, Winkelstein JA, Wilson I, Curtis WE, Shaw D, Yeh CG, Rudolph AR, Baumgartner WA, Herskowitz A, Cameron DE. Complement inhibition with soluble complement receptor Type I in cardiopulmonary bypass. *Ann Thorac Surg* 55:619-624, 1993.
63. Herskowitz A, Campbell S, Deckers J, Kasper EK, Boehmer J, Hadian D, Neumann DA, Baughman K. Demographic features and prevalence of idiopathic myocarditis in patients undergoing endomyocardial biopsy at The Johns Hopkins Hospital. *Am J Cardiol* 71:982-986, 1993.
64. Shandelya SML, Kuppusamy P, Herskowitz A, Fearon D, Weisfeldt ML, Zweier JL. Soluble complement receptor Type 1 inhibits the complement pathway and prevents contractile failure in the postischemic heart: evidence that complement activation is required for neutrophil mediated reperfusion injury. *Circulation* 88:2812-2826, 1993.
65. Zehr KJ, Herskowitz A, Lee PC, Poston RS, Gillinov AM, Baumgartner WA. Neutrophil adhesion inhibition prolongs survival of cardiac allografts with hyperacute rejection. *J Heart Lung Transplant* 12:837-845, 1993.
66. Herskowitz A, Neumann DA, Ansari AA. Concepts of autoimmunity applied to idiopathic dilated cardiomyopathy. *J Am Coll Cardiol* 22:1385-8, 1993.
67. Neumann DA, Lane JR, Allen GS, Rose NR, Herskowitz A. Viral myocarditis leading to cardiomyopathy: do cytokines contribute to pathogenesis? *Clin Immunol Immunopathol* 68(2):181-190, 1993.
68. Ansari AA, Neckelmann N, Wang YC, Gravanis MB, Sell KW, Herskowitz A. Immunologic dialogue between cardiac myocytes, endothelial cells, and mononuclear cells. *Clin Immunol Immunopathol* 68(2):208-214, 1993.
69. Herskowitz A, Willoughby S, Wu T-C, Beschoner WE, Neumann D, Rose NR, Baughman KL, Ansari AA. Immunopathogenesis of HIV-1-associated cardiomyopathy. *Clin Immunol Immunopathol* 68:234-241, 1993.
70. Lane JR, Neumann DA, Lafond-Walker A, Herskowitz A, Rose NR. Role of IL-1 and tumor necrosis factor in coxsackie virus-induced autoimmune myocarditis. *J Immunol* 151(3):1682-1690, 1993.
71. Neumann DA, Allen GS, Narins CR, Rose NR, Herskowitz A. Heart autoantibodies in human myocarditis and cardiomyopathy: virus and skeletal muscle cross-reactivity. in *Idiopathic Dilated Cardiomyopathy, Cellular and Molecular Mechanisms, Clinical Consequences*, eds: Figula HR, Kandolf R, McManus B, Springer-Verlag, New York, pp 325-334, 1993.

72. Rose NR, Herskowitz A, Neumann DA. Autoimmunity in myocarditis: models and mechanisms. *Clin Immunol Immunopathol* 68(2):95-99, 1993.
73. Lieberman EB, Herskowitz A, Rose NR, Baughman KL. A clinicopathologic description of myocarditis. *Clin Immunol Immunopathol* 68(2):191-196, 1993.
74. Bator JM, Gillinov AM, Zehr KJ, Redmond JM, Wilson IC, Herskowitz A, Connor JR, Burch RM, Cameron DE. NPC 15669 blocks neutrophil CD18 increase and lung injury during cardiopulmonary bypass in pigs. *Mediators Inflamm* 2(2):135-141, 1993.
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