

CURRICULUM VITAE

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Past Director and Chief Scientific Officer (acting)
Genomic Medicine Institute at ECH
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Founder and Director
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Education:

--(b)(6)-- U.C. Santa Cruz
--(b)(6)-- A.B. U.C. San Diego (*summa cum laude*)
--(b)(6)-- M.D. Harvard Medical School
--(b)(6)-- Ph.D. Immunology, Harvard University Graduate School of Arts and Sciences,
(Baruj Benacerraf, MD Thesis Supervisor)

Post-Doctoral Training:

Internship and Residencies:

1979-80 University of Washington Affiliated Hospitals, Internal Medicine/Primary Care
1981-82 University of Washington Affiliated Hospitals, Internal Medicine

Clinical and Research Fellowships:

1972-74 Student Fellow, Salk Institute of Biological Sciences, Martin Kagnoff, M.D.,
Advisor
1973 Student Summer Fellow, American Gastroenterology Association, Morton
Grossman, M.D., Advisor
1976-79 Medical Scientist Training Grant Fellowship, NIH and Harvard University
1982-84 Fellow, Medical Genetics, University of Washington Affiliated Hospitals, Arno
Motulsky, M.D., Advisor
1984-86 Clinical and Research Fellow, Department of Medicine, Harvard Medical School
and the Dana-Farber Cancer Institute, Harvey Cantor, MD., Advisor

Academic Appointments:

1984 Winter Acting Assistant Professor, Department of Genetics, University of Washington
1985-88 Instructor, Department of Pathology, Harvard Medical School and Dana Farber
Cancer Institute
1987-89 Visiting Scientist, Cancer Research Center, Mass. Institute of Technology
1988-90 Instructor, Department of Medicine, Harvard Medical School
1990-97 Assistant Clinical Professor, Department of Medicine, UCSF School of Medicine
1990-92 Visiting Scientist, Lawrence Berkeley National Laboratory
1993-95 Associate Clinical Professor, Department of Medicine, Stanford University
Medical School
1995-97 Acting Associate Professor, Department of Medicine, Stanford University
Medical School
2000-02 Visiting Professor, Department of Anthropology, University of California at
Berkeley
2003- Adjunct Professor, Department of Anthropology, University of California at
Berkeley

Hospital/Clinical Appointments:

1980-81 Staff Physician, Southern California Permanente Medical Group
1982-84 Staff Physician (intermittent), Seattle Veterans Administration Hospital
1984-86 Clinical Fellow, Department of Medicine, Massachusetts General Hospital
1984-88 Staff Physician (intermittent), Boston Veterans Administration Hospital
1984-89 Clinical Fellow, Department of Medicine, Peter Bent Brigham Hospital
1986-90 Graduate Assistant, Department of Medicine, Massachusetts General Hospital
1987-90 Director, Clinic for Inherited Diseases, Department of Medicine, Deaconess Hospital

1988-90 Chief, Medical Services, Massachusetts Mental Health Center
1989-90 Staff Physician, Brigham and Women's Hospital
1990-92 Vice-Chairman, Department of Medicine, California Pacific Medical Center/Pacific Campus
1990-93 Chief, Division of Genetic Medicine, California Pacific Medical Center
1990-97 Staff Physician, San Francisco General Hospital
1993-94 Chief Medical Officer, San Jose Satellite Outpatient Clinic
1993-94 Chief, Division of General Internal Medicine, Veterans Affairs Medical Center, Palo Alto

1993-97 Staff Physician, Stanford University Hospital
1994-97 Deputy Chief of Staff, Satellite Clinic Operations, Veterans Affairs Medical Center, Palo Alto

1997-00 Deputy Network Director, VHA Heart of Texas Veterans Health Care System
1997-00 Chief Medical Officer, VHA Heart of Texas Veterans Health Care System
1997-00 Chief Academic Affiliations Officer, VHA Heart of Texas Veterans Health Care System

1998 Quality Management Officer, VHA Heart of Texas Veterans Health Care System
2009- Director and Chief Scientific Officer (acting), Genomic Medicine Institute at El Camino Hospital, Mountain View, CA

Corporate Appointments:

1994- Co-Founder and first Medical Director, CBR Systems Inc.
1999- Co-Founder, GeneSage, Inc.
2000-02 Executive Vice President, Chief Scientific and Medical Officer, GeneSage, Inc.
2002-03 Vice President for Life Sciences and Clinical Affairs, WIPRO, Ltd.
2003-05 Vice President and National Director, Genetics and Genomics, Laboratory Corporation of America
2005-07 Senior Vice President, Corporate Development, Laboratory Corporation of America
2007- 8 Executive Chairman, Signature Genomics Laboratories
2007- 9 President and Chief Executive Officer, Cellpoint Diagnostics, Inc and CELlective Dx Corporation
2009 Advisor, CELlective Dx Corporation
2009- Founder and Executive Chairman, Omicia, Inc.

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2009- Executive Chairman, Melanoma Diagnostics, Inc.
2009- Advisor to CEO and BoD, Arcxis Biosciences
2010- Chief Medical Officer, LIFE Technologies, Inc.

Awards, Honors and Invited Lectures:

1974 AB degree (History), Highest Honors
1979 James Tolbert Shipley Prize for best published research, Harvard Medical School
1979 Finalist, Soma Weiss Award, Harvard Medical School
1979 Finalist, Eastern Student Medical Association Research Awards
1979 Invited Paper, National Student Medical Association Research Awards
1980 Diplomat, National Board of Medical Examiners (202826)
1984 Diplomat and Board Certified, Clinical Geneticist, American Board of Medical Genetics
1985 Fellow, Leukemia Research Foundation
1985 Fellow, Oliver Wendell Holmes Society, Harvard Medical School
1985 Diplomat and Board Certified, American Board of Internal Medicine
1987 Invited speaker, "Ethical Issues in Genetic Screening and Gene Therapy",
Minority Biomedical Research Support Program Symposia, City College of New York
1988 Invited speaker, "Non-molecular aspects of genetic screening", South African
Society of Human Genetics, Capetown, South Africa
1988 Invited address, "Social consequences of genetic screening", American Society of
Human Genetics (Social Issues Committee) New Orleans, LA
1989 Principal Speaker, "Are We Ready for the New Genetic Medicine?", Conference
at Harvard Medical School
1989 Principal Speaker, "Genetic Discrimination", Ehlers-Danlos National Conference,
Norfolk, Virginia
1990 Plenary Speaker, "Ghostbusting in Science: The Conduct and Context of
Biomedical Research", Colby-Bates-Bowdoin Conference on Biological Research
1990 Principal Speaker, "Ethical Issues in the Human Genome Initiative", American
Association of Clinical Pharmacy, San Francisco, CA
1991 Principal Speaker, "Genetics and the Bill of Rights", American Bar Association
National Conference on the Bicentennial of the 1991 Bill of Rights, Seattle, WA
1991 Speaker and Commissioned Paper, "The Scientific Basis of the 'Genetic
Revolution': A Selective Review" for AAAS-ABA Conference, Berkeley Springs,
West Virginia
1991 Session Chairperson, "Human Genome Research in The Interdependent World",
NIH/DOE sponsored conference, Bethesda, Maryland
1991 Distinguished Lecturer, Department of Energy/Oak Ridge National Laboratory
1991 Contributing Editor, "Journal Watch", New England Journal of Medicine/Mass.
Medical Society Publishing
1992 Invited Lecturer, Whitehead Institute/M.I.T., Sloan Foundation supported
presentation, Cambridge, MA
1992 Plenary Lecturer, Second International Conference on Bioethics, Fukui
University, Japan
1992 Plenary Lecturer, American Society of Human Genetics, San Francisco, CA

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1992 Invited Lecturer, California Institute of Technology, Pasadena, CA
1993 Plenary Lecturer, ACLI/HIAA Symposium, Crystal City, Virginia
1993 Invited Speaker, N.I.H./D.O.E., ELSI Working Group, Bethesda, MD,
1993 Plenary Lecturer, George Mason University/T.I.G.R.. Inaugural Symposium,
Fairfax, Virginia
1993 Plenary Lecturer, National Society of Genetic Counselors, Atlanta, Georgia
1993 Plenary Lecturer, Japan Society for Bioethics, Tokyo, Japan
1993 Plenary Lecturer, 3rd International Symposium on Genetics, Fukui, Japan
1993 Founding Fellow, American College of Medical Genetics
1994 Plenary Lecturer, National Association of Insurance Commissioners, Washington DC
1994 Rose Lecturer, HealthEast, Minneapolis, MN
1994 Guest Lecturer, Wharton School of Business, University of Pennsylvania
1995 Plenary Lecturer, University of Maryland Invited Symposium, Wye, MD
1995 Plenary Lecturer, National Organization of Rare Disorders, Washington, DC
1995 Guest Lecturer, Wharton School of Business, University of Pennsylvania
1996 Plenary Lecturer, South Eastern Regional Genetics Group, Atlanta, GA
1996 Invited Speaker, World Affairs Council, Philadelphia, PA
1996 Invited Speaker, Cambridge Health Institute Symposium, San Francisco, CA
1996 Invited Speaker, N.I.H. Symposium on Cord Blood Stem Cells, Washington DC
1996 Invited Speaker, National Research Council, Woods Hole, MA
1996 Invited Speaker, Snowbird /University of Utah Conference, Snowbird, UT
1996 Invited Speaker, Tourette Syndrome Association of California, Ontario, CA
1996 Invited Speaker, Harvard University/Second Annual International Conference on
Health and Human Rights, Cambridge, MA
1996 Plenary Lecturer, National Organization of Rare Disorders, Dallas, TX
1996 Plenary Lecturer, American Association of Cancer Research, Washington, DC
1996 Plenary Lecturer, Cooley's Anemia Foundation CA Chapter, Pasadena, CA
1996 Plenary Lecturer, Council for Responsible Genetics, Patents and Commercialization
Symposium, Cambridge, MA
1996 Invited Speaker, World Congress of Bioethics, San Francisco, CA
1996 Invited Speaker, Institute of Medicine, Washington, DC
1996 Invited Speaker, Food and Drug Administration, Washington, DC
1997 Special Contribution Award, Department of Veterans Affairs, Washington DC
1997 Invited Speaker, National Research Council, Washington, DC
1997 Plenary Lecturer, Huntington Disease Society of America/Northern California
Chapter, Fremont, CA
1997 Plenary Lecturer, American Society of Clinical Pharmacy, Vancouver, Canada
1997 Scissors Award, Department of Veterans Affairs, Washington, DC
1997 Invited Speaker, UCSF Symposium on Cancer Epidemiology, San Francisco, CA
1997 Plenary Lecturer, Amyotrophic Lateral Sclerosis Foundation, Scottsdale, AZ
1997 Distinguished Lecturer, European Union/University of Zagreb, Zagreb, Croatia
1998 Plenary Speaker, North American Conference on Genetic Research and Native
People, Poulson, MT
1998 Invited Participant, Case Western Reserve Stopping Science Symposium,
Cleveland, OH
1998 Invited Speaker, Association for Employment Practices and Principles,
San Francisco, CA

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- 1998 Principal Speaker, UC Berkeley Germline Engineering Symposium, Berkeley, CA
- 1998 Plenary Lecturer, GeneCom Symposium, Adelaide, Australia
- 1998 Invited Speaker, SIGMA Xi, Vancouver, Canada
- 1998 Special Contribution Award, Department of Veterans Affairs, Washington, DC
- 1999- Distinguished Lecturer and Member, Sigma Xi Society
- 1999 Presenter, NIH/FDA Recombinant DNA Advisory Board, Washington, DC
- 1999 Featured Speaker, "Future Watch", Harvey Mudd College, Claremont, Ca
- 1999 Plenary Speaker, "Genetics and Freedom", Ministry of Justice, Valencia, Spain
- 1999 Invited Participant, "Stopping Science", Case Western Reserve Medical School
Cleveland, OH
- 1999 Invited Participant, "Genetics and the Law", Arizona State University School of Law
and SKB, Phoenix, AZ
- 1999 Speaker, "Genetic Discrimination Update", National Conference of State
Governments, Lake Tahoe, CA
- 1999 Special Session Speaker, "Genetic Discrimination", Huntington's Disease Society of
America, Washington, DC
- 1999 Featured Speaker, Environmental Media Service's national news briefing, "Environ-
mental Care", Washington, DC
- 1999 Invited Speaker, "Cloning", Calif. State Commission on Cloning, San Diego, CA
- 1999 Plenary Speaker, "Gene Patenting", IBC Conferences, Washington, DC
- 1999 Plenary Speaker, "Genetic Discrimination", National Conference of State Govern-
ments, Washington, DC
- 1999 Invited Lecturer, "Germline Gene Therapy", University of Louisville, Louisville, KY
- 1999 Speaker, "VISN Clinical Performance", Heart of Texas Medical Society, San
Antonio, TX
- 1999 Invited Speaker, "VHA Clinical Policy", VHA Anesthesiologists National Meeting,
Dallas, TX
- 1999 Invited Speaker, "VISN 17", Texas Association of Veterans Service Officers,
Dallas, TX
- 1999 Featured Speaker, Environmental Media Service's national news briefing, "Food
Safety", Washington, DC
- 1999 Special Session Speaker, "Genes and Violence Research", American Public Health
Association, Chicago, IL
- 1999 Plenary Speaker, "Germline Gene Therapy". University of Basel and Schering
Foundation, Berlin, Germany
- 1999- Editor-in-Chief, GeneSage's GeneLetter
- 2000 Special Contribution Award, Department of Veterans Affairs
- 2000 Invited Speaker, 25th Anniversary of the Asilomar Conference, Asilomar, CA
- 2000 Featured Speaker, "Genomic Medicine", Biotechnology Center, Harvey Mudd
College, Pomona CA
- 2000 Speaker, Society of Medical Anthropology, San Francisco, CA
- 2000 Plenary Speaker, "Genomics in Occupational Settings", Pitie-Salpetriere Hospital,
Paris, France
- 2000 Featured Speaker, "Policy and Genomics", University of Essen, Germany
- 2000 Plenary Speaker, "Genomic Medicine", AAHP, Orlando, FL
- 2000 Invited Speaker, "Genetic Discrimination", ASLME, Cleveland, OH
- 2000 Featured Presenter, "The Next 20 Years", Palace of Fine Arts, San Francisco, CA

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- 2000 Invited Speaker, "Technology in Medicine", ACHE Forum, Dallas, TX
- 2000 Plenary Speaker, "Genetics and Justice", 9th Circuit Conference, Sun Valley, ID
- 2000 Moderator, "The Genomic Revolution", NYU, New York City, NY
- 2000 Featured Speaker, "Genetic Testing", NSGC, Los Angeles, CA
- 2000 Invited Paper, "CF Testing and Coverages", BC/BS of California Technology Assessment Committee, San Bruno, CA
- 2000 Invited Presentation, "New Genetic Counseling", Mayo Clinic, Rochester, MN
- 2000 Invited Presentation, "Bioethics", International Society of Clinical Endocrinology, Sydney, Australia
- 2000 Presenter, "Genomics in Medicine", APHA, Boston, MA
- 2000 Invited Presentation, "Behavioral Genetics and Responsibility", Reno Commission on DNA Technologies and Identification, Cambridge, MA
- 2000 Luncheon Speaker, "Update on DNA", 9th Circuit Federal Judges, San Francisco, CA
- 2001- Fellow, American College of Physicians
- 2001 Plenary Presentation, "Living with the Genome", Wash. State Health Dept., Tacoma, WA
- 2001 Presenter, "Genomic Medicine", Council of the Medical Service, AMA, Chicago, IL
- 2001 Program Organizer, "Genomic Medicine", AAHP Leadership Board, Del Mar, CA
- 2001 Featured Speaker, "New Genomics", IBC International Inc, San Diego, CA
- 2001 Session Chair, "Personalized Medicine", Cambridge Health Institute, Inc. San Francisco, CA
- 2001 Featured Speaker, "Unbounded Thinkers", Webb School of CA, Claremont, CA
- 2001 Grand Rounds, "Personalized Medicine", Cedars-Sinai Hospital, Beverly Hills, CA
- 2001 Plenary Panel, "Toxic Torts and Genomics", ABA Section, San Francisco, CA
- 2001 Panel Leader, "Biodevastation and GMOs", International Biodevastation Conference, San Diego, CA
- 2001 Rose Lecturer, "Genomic Medicine", ING Insurance Company, Minneapolis, MN
- 2001 Panelist, "Stem Cells", Health Technology Center, Inc. San Francisco, CA
- 2001 Featured Speaker, "Genomic Entrepreneurship", Bay Area Business Breakfast Forum, San Francisco, CA
- 2001 Panelist, "Genetic Testing", Health Technology Center, Inc., San Francisco, CA
- 2001 Panelist, "Genetic Discrimination", NCSL National Meeting, Washington, DC
- 2001 Plenary Speaker, "Predictive Medicine", North American Primary Care Research Group Annual Meeting, Nova Scotia, Canada
- 2001 Panelist, "Research Compliance", Health Care Compliance Assoc., Anaheim, CA
- 2001 Invitee, "Genomic Medicine and Curriculum Reform", AMA, Chicago, IL
- 2001 Plenary Speaker, "Human Cloning", AHRP Annual Meeting, Washington, DC
- 2002 Session Chair, "Personalized Medicine", IBC International Inc. San Francisco, CA
- 2002 Panelist, "Genetic Discrimination", NIH/West Harlem Environmental Action Program, Columbia University, New York City, NY
- 2002 Featured Panelist, "Genomic Medicine", Grant Makers on Health Annual Meeting, New York City, NY
- 2002 Invited Participant, "Living with the Genie: Governing Science and Technology in the 21st Century", Columbia University, New York City, NY
- 2002 Featured Panelist, "Pharmacogenomics", AMA Leadership Meeting, Los Angeles, CA

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- 2002 Featured Speaker, “Personalized Medicine”, Board of Directors, California Health Care Foundation, Dana Point, CA
- 2002 Dinner Speaker, “Stem Cells”, Milwaukee OB/Gyn Society, Milwaukee, WI
- 2002 Featured Speaker, “Genetic Discrimination”, Whittier Law School, Whittier, CA
- 2002 Lorene T. and Floyd Davidson Lecturer in Biology, Baylor University, Waco, TX
- 2002 Featured Speaker, “Clinical Uses of Stem Cells”, ACOG Annual Meeting, Los Angeles, CA
- 2002 Selected Invitee, “Pharmacogenomics”, ATKearney Conference, Venice, Italy
- 2002 Selected Participant, “Genomics, Science and the Media”, Institute Pasteur, Paris, France
- 2002 Rose Lecturer, “Personalized Medicine”, ING Insurance Group, Minneapolis, MN.
- 2003 Plenary Speaker, “Stem Cells”, Merck Inc. National Sales Meeting, San Antonio, TX
- 2003 Invited Lecturer, “Personalized Medicine: Will It Work?” Laboratory Corporation of America, Burlington, NC
- 2003 Featured Program Presenter, “Problems with Genomic Medicine Delivery”, BIO Annual National Meeting, New York City, NY
- 2003 Grand Rounds Presenter, “Stem Cells: Making the Promise a Reality”, Yale University OB/GYN Grand Rounds, New Haven, CT.
- 2003 First Plenary Session Speaker, “The Ethics of Gene Therapy”, Second International Symposium on Molecular Diagnostics and Skin Therapy, University of Düsseldorf, Düsseldorf, Germany
- 2003 Invited Participant, “Ethics and Technology”, University of California, Berkeley, CA
- 2003 Grand Rounds Presenter, “Stem Cells: Promise and Problems in Delivery”, OB/GYN Grand Rounds, Stanford University Medical Center, Stanford, CA
- 2003 Presenter, “Stem Cells”, 7th Annual Update on Perinatal Issues, Overlake Medical Center, Bellevue, WA
- 2003 Invited Participant, “Risk in Biotechnology”, Hybrid Vigor Institute, San Francisco, CA
- 2003 Invited Participant, “Genomics and Ethics”, University of Colorado Annual CME, Aspen, CO
- 2003 Lecturer, “Maladaptation”, Anthropology Course Number 1, University of California, Berkeley, CA
- 2000-03 Distinguished Lecturer, Sigma Xi Society. During this period delivered 30-40 talks, “Promise and Pitfalls of the Genomic Revolution” and “Legislating the Genome: Public Policy and Biotechnology”, at universities and colleges around the country.
- 2004 Presenter, “Tests, Healthcare and Rights in the Post Genomic World”, The Council for Responsible Genetics, San Francisco, CA
- 2005 Presenter, “Genetic Screening and Pediatric Testing, The Hastings Center, Garrison, NY
- 2005 Presenter, “Business Stakeholder Perspectives on the Introduction of DX/RX Combinations, IBC/Molecular Diagnostics and Personalized Medicine Conference, San Francisco, CA
- 2005 Presenter, “Molecular Diagnostics – Today and Tomorrow”, California Clinical Lab Association, Sacramento, CA
- 2006 Presenter, “Legislating the Genome: Making a good world of genomics”, University of Connecticut School of Medicine, Farmington, CT

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- 2006 Presenter, "Challenges and Opportunities in the Diagnostics Industry", Duke University Healthcare Sector Group, Durham, NC
- 2006 Presenter, "Academic/Commercial Collaborations in Diagnostics: The Duke/LabCorp Model", Tampa G2 Conference, Tampa, FL
- 2006 Presenter, "Update on Pharmacogenomics", ACSP Annual Meeting, Las Vegas, NV
- 2007 Presenter, "A Discussion on Companion Diagnostics and its Role in the Future of Healthcare", Lazard Healthcare Conference, New York, NY
- 2007 Presenter, "Looking Beyond the Horizon in Laboratory Science", Clinical Laboratory Management Association, Murphys, CA
- 2007 Presenter, "Development of Diagnostics for the Metabolic Syndrome: Trends, Risk Factor, Interactions and Future Direction", IBC Life Sciences, Boston, MA
- 2007 Presenter, "Diagnostics in Personalized Medicine", Personalized Medicine Meeting, San Francisco, CA
- 2008 Presenter, "Diagnostics in Translation: A Challenge to Value", Molecular Medicine Tri-Conference, San Francisco, CA

Governmental Committees, Contracts, Consultantships and Boards:

- 1989 Contractor, Office of Technology Assessment, United States Congress, "Genetic Testing in the Workplace"
- 1989 Reviewer, Office of Technology Assessment, United States Congress, "DNA Identification Systems"
- 1989 Special N.I.H. Study Section, "The Human Genome Initiative"
- 1990 Reviewer, Office of Technology Assessment, United States Congress, "Genetic Testing in the Workplace"
- 1990 Board of Directors, Science for the People
- 1990-93 Scientific Advisor, Council for Responsible Genetics
- 1990- Advisory Board, CMT International.
- 1990-97 Consultant, State of California, Northern California Regional Centers
- 1991-96 Member, Scientific Advisory Board, Genetrix Corporation.
- 1991-93 Member, Special Insurance Task Force on Insurance and Genetics, NIH/DOE Human Genome Initiative.
- 1991-95 Consultant, Assembly and Senate, State of California, Sacramento, CA
- 1991 Member, Study Section on Cystic Fibrosis Screening, NIH Genome Center
- 1991 Reviewer, Office of Technology Assessment, United States Congress, "CF Screening".
- 1991-93 Chairperson, Subcommittee on "Genetic Discrimination", NIH Special Task Force on Insurance and Genetic Information.
- 1992 Consultant, Institute of Medicine's Committee of Assessing Genetic Risks
- 1993-97 Member, Social Issues Committee, American Society of Human Genetics.
- 1993- Director, Council for Responsible Genetics, Cambridge, MA.
- 1994 Reviewer, Office of Technology Assessment, United States Congress "DNA Patenting"
- 1994- Consultant, National Association of Insurance Commissioners
- 1994-00 Director, Genethics Center, Hagerstown, Maryland.
- 1994-97 Director, Monterey Regional Health, Inc., Monterey, CA
- 1995- Consultant, California Senate Select Committee on Genetics and Public Policy

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1995-98 President and CEO, International Cord Blood Foundation
1995- Chair, Medical/Scientific Advisory Board, Cord Blood Registry, Inc.
1995 Consultant, Sequana, Inc.
1996 Consultant, Institute of Medicine Committee on Mental Diseases
1996- Director, Cardiac Arrhythmia Research and Education Foundation
1996-98 Director, California Biotechnology Action Coalition
1996 Consultant, National Research Council's Computer Science and Telecommunications Board
1996 Consultant, Sandoz, Inc.
1997 Consultant, Arcades Biosystems, Inc.
1997 Consultant, SmithKline Beecham Pharmaceuticals, Inc.
1997-99 Member, Scientific Advisory Board, Benelytics, Inc.
1997 Consultant, National Research Council's Board on Biology
1997-00 Member, National Leadership Board, Veterans Health Administration
1997-00 Member, National Bioethics Committee, Veterans Health Administration
1997-00 Member, National Technology Review Panel, Veterans Health Administration
1997-00 Reviewer, Health Services Research and Development Program, Veterans Health Administration
1998 Member, National Emergency Care Task Group, Veterans Health Administration
1998 Chairperson, National Committee on External Appeals, Veterans Health Administration
1998 Member, National Task Group on Viagra, Veterans Health Administration
1998 Reviewer, United States President's National Bioethics Advisory Commission
1998- Director, Cord Blood Donor Foundation
1998-03 Founder and Treasurer, GeneSage, Inc.
1998-00 Member, Research and Methods Committee, Quality Enhancement Research Enhancement Initiative, Veterans Health Administration
1998-00 Chairperson, National Committee on Internal Appeals, Veterans Health Administration
1998-00 Member, VHA HSR&D Liaison Committee
1998-00 Member, VHA Quality Evaluation and Research Initiative Research and Methodology Committee
1998-00 Member, Veterans Evidence-based Research Steering Committee
1998-00 Member, VHA Health Economics Center Steering Committee
1998-00 Member, VHA Cardiology and Cardiac Surgery Improvement Program Steering Committee
1998-99 Chair, VHA Bioethics Subcommittee on Use of Unapproved Therapies
1998- Chair, Medical Advisory Board, Cord Blood Registry, Inc.
1999 Consultant, NIH/FDA Recombinant DNA Advisory Committee
1999-00 Member, VHA Customer Service Advisory Board
1999 Member, VHA Clinical Managers Hepatitis C Task Group
1999 Member, VHA Clinical Managers Complementary and Alternative Medicine Task Group
1999-00 Member, VHA Telecommunications Advisory Committee
1999-00 Member, Veterans Health Initiative Steering Committee
2000-04 Consultant, XOMA Corporation
2001-03 Member, Alpha-1 Foundation, Consumer Issues Advisory Committee

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2002-04 Consultant, Celera Diagnostics, Inc., Alameda, CA
2002-04 Consultant, Sequenom, Inc., San Diego, CA
2002- Affiliate, Institute for the Future, Inc., San Francisco, CA
2002-04 Consultant, Health Tech, Inc., San Francisco, CA
2002 Consultant, NorthBay Health Care, Inc., Bay Point, CA
2002-03 President and Chairman, Alpha-1 Association, Minneapolis, MN
2002-06 Board Chairman, Council for Responsible Genetics, Cambridge, MA
2007- Director, Bioscale, Cambridge, MA
2007-08 Advisor, Blue Shield Foundation of California, Translating Personalized
Medicine to Practice and Policy: Moving the Policy Agenda Forward
2007- Director, Cyntellect, Inc., San Diego, CA
2007-09 Director, Cellpoint Diagnostics and CELlective Dx Corporation, Mountain View,
CA
2007-08 Director, KidsDx, San Francisco, CA
2007-08 Director, Lipomics, West Sacramento, CA
2008- Board Member, Secretary's Advisory Committee on Genetics, Health and
Society, Bethesda, MD
2007- Reviewer, National Institute of Dental and Craniofacial Research, NIH Special
Study Section on Salivary Diagnostics, Bethesda MD
2007-08 Director, Signature Genomics, LLC, Spokane, WA
2008- Member, VA Genomic Medicine Advisory Committee, Washington, DC
2006- Medical Advisory Board, dnaDirect Inc. San Francisco, CA
2007- Medical Advisory Board, Beautiful Inc., Emeryville, CA
2008- Board Observer, Tethys Inc., Emeryville, CA
2008- Director, Student Pugwash, Washington, DC
2008- Director, Catalysis for Health, Emeryville, CA
2009- Advisor, DecisionQ, Inc. Washington, DC
2009- Board Advisor and SAB Member, Arcxis Biotechnologies, Pleasanton, CA

Professional Societies (Past and Current):

American Federation of Clinical Research, American Association for the Advancement of Science, American College of Medical Genetics, American Society of Human Genetics, Genetics Society of America, Human Genome Organization (HUGO), Physicians for Social Responsibility, New York Academy of Science, American College of Physicians, European Society for Human Genetics, Sigma Xi Science Society, Chief Medical Officers Society, Hemophilia Association of America.

Major Research Interests:

The impact of genomic information and biotechnology on society.

The integration of genomics in to health care. Post-genomic health and identity.

Molecular biology and immunogenetics, its relationship to cellular differentiation, and its application to cancer care.

Human stem cell research and its relationship to clinical medicine.

Grants:

- 1985-86 Fellowship, Leukemia Research Foundation
- 1986-88 Supported by core funds, Dana Farber Cancer Institute
- 1988-90 Supported by New England Deaconess Hospital and private grants to the Clinic for Inherited Diseases
- 1989 March of Dimes Grant No. 4-220, "The New Genetic Medicine"
- 1989-90 Combined Harvard Medical Genetics Training Program (American Board of Medical Genetics, Inc.)
- 1991 P.I., "Bioscience and Society: The Impact of the Human Genome Initiative", \$30,000, DOE#DE-AC03-76SF00098
- 1991-93 Co-P.I., "Studies on Genetic Discrimination", DOE Contract, \$150,000/1.5 years, DOE#DE-FG02-92ER61395
- 1991-93 Co-PI "Vitamin C and Lung Cancer", C.C.O.P. (multicenter trial), NIH/M.D. Anderson
- 1991-93 Consultant "Cystic Fibrosis Testing and Families", NIH, \$130,000/2 years, (total grant support), NIH#1-R01-HG00639-01
- 1991-92 Consultant "CF and HbS Screening", NIH, \$298,000/3 years (total grant support), NIH#DE-FG03-92ER6-1393
- 1992-93 P.I., "Indepth Studies of Genetic Discrimination, NIH, \$9,500, NIH#263-MD-245650
- 1992-94 P.I./Supervisor, Post Doctoral Fellowship --(b)(6)--, "Legal Studies of Genetic Discrimination", NIH#1 F32 HG00086-01
- 1993-94 Supervisor, Post Doctoral Fellowship --(b)(6)--, "Studies in Biotechnology", Center for Health Care Evaluation, UCSF and Stanford Universities.
- 2000- Subcontractor, "CED- Distance Learning", HRSA Grant No. 7T02MC00021 --(b)(6)--and --(b)(6)--PIs (\$25,000)
- 2001-2 Contractor, "Non-Health Care Uses of Genomic Information", commissioned project for --(b)(6)--
- 2002 Principal Investigator, "Genomic Medicine for Health Care Decision Makers" --(b)(6)--, Co-PI) with the Institute for the Future, from Robert Wood Johnson Foundation (\$132,000)
- 2003 Principal Investigator, "Genetic Information and the Law: Establishing a Comprehensive Database of Essential Cases and Regulations" with the Council for Responsible Genetics from the Robert Wood Johnson Foundation (\$130,090)

Teaching Experience:

1981-82	Resident, University of Washington Affiliated Hospitals
1982-84	Fellow, Division of Medical Genetics, Department of Medicine, University of Washington, Seattle
1984	Acting Assistant Professor, Department of Genetics, University of Washington
1984-90	Tutor, "Life Cycle", Harvard Medical School
1988	Tutor, "Identity, Defense, and Microbes", Harvard Medical School
1988-90	Tutor, "Genetics", Harvard Medical School
1990-97	Teaching Attending, San Francisco General Hospital, UCSF
1990-97	Teaching Attending, California Pacific Medical Center
1993-97	Teaching Attending, VAMC, Palo Alto and Stanford University Medical School
2000-02	Visiting Professor, Department of Anthropology, University of California at Berkeley, Anthropology 112, "Genetics and Society"
2003-	Adjunct Professor, Department of Anthropology, University of California at Berkeley

PUBLICATIONS:

1. Kagnoff M, Billings P and Cohn M. Functional characteristics of Peyer's Patch lymphoid tissue. *J Exp Med* 1974; **139**:407.
2. Billings P, Burakoff S, Dorf M, and Benacerraf B. Cytotoxic T lymphocytes specific for I region determinants do not require interaction with H-2K or D gene products. *J Exp Med* 1977; **145**:1387.
3. Billings P, Burakoff S, Dorf M and Benacerraf B. Cytotoxic T lymphocytes induced allogeneic I region determinants react with Ia molecules on trinitrophenyl-conjugated syngeneic target cells. *J Exp Med* 1977; **146**:623.
4. Billings P, Burakoff S, Dorf M, and Benacerraf B. Genetic control of cytolytic T lymphocyte responses. I. Gene control of the specificity of cytolytic T lymphocyte responses to trinitrophenyl-modified syngeneic cells. *J Exp Med* 1978; **148**:341.
5. Billings P, Burakoff S, Dorf M and Benacerraf B. Genetic control of cytolytic T lymphocyte responses. II. The role of the host genotype in parental-F1 radiation chimeras

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