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(617) 495-1502

March 13, 1999

Dear Participants,

It is my great pleasure to welcome you to the MIT-Harvard Conference on Genetic Technology and Society. The young men and women who organized this program have provided you with a special opportunity to get to know people from a wide range of disciplines—including medical research, government, religion, law, and academia—and to discuss with them the most significant issues facing genetic technology today.

In this age of unprecedented scientific innovation and remarkable technological wizardry, we must not neglect our clear responsibility to monitor the total impact of our actions, both the positive and the negative. I am glad that you have come to join in the discussion of these very important issues, and I send my best wishes to you all for an enlightening and productive conference.

Sincerely,


Neil L. Rudenstine



Radcliffe College

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OFFICE OF THE PRESIDENT

March 13, 1999

Dear Participants,

Welcome to the MIT-Harvard Conference on Genetic Technology and Society. Genetic technology has already given us a better understanding of inherited diseases and disorders, and as this field matures it is poised to impart a greater capacity to understand and alter life processes. Along with the potential for extraordinary accomplishments, however, we must be alert to reasonable fears about the consequences.

These concerns make it critical for us to examine what is happening in the field so that we can make more informed and ethical decisions about how to proceed with this awesome technology. I commend the students who have assembled this event, the speakers donating their time to inform you, and, of course, you, the conference attendees, who are vitally important participants in this dialogue. I warmly welcome you to this informative event.

I hope that you enjoy the speeches, discussions, and events, but even more I hope that you leave better equipped with knowledge about a topic that will affect us all in the century to come.

Sincerely,

Linda S. Wilson
President

Fay House • Ten Garden Street • Cambridge, MA 02138-3600
Telephone 617/495-8602 • Fax 617/496-3179



JOHN KERRY
MASSACHUSETTS

United States Senate
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February 24, 1999

Dear Friends,

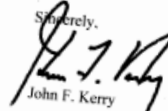
Welcome to Massachusetts and the 1999 MIT-Harvard Genetic Conference. The Commonwealth is honored to be home to a rich history of academic excellence and scientific progress, and I trust that the time you spend here at the Conference will be both informative and enjoyable.

Genetics and related research will continue to be a growing part of both our state and national economy, and one look at the World Wide Web, the Boston Globe, or college curricula, demonstrates the growing impact it has in our society. A complete understanding of genetics will contribute greatly to the medical profession, as well as to our ability to treat and prevent a wide variety of afflictions. The gene therapy research being conducted in numerous institutions is an encouraging approach to treating lethal and disabling diseases. The potential for disease prevention to control costs and alleviate suffering is especially encouraging.

The progress being made in genetic and other biological research is exceptional; it is progress in the proud tradition of Massachusetts. In the 106th Congress, I will continue my fight to see that government funding for these important endeavors continues. I want to express to you the appreciation of all that benefit from your work, and I personally extend to you my thanks and encouragement as you continue your research and academic endeavors.

Congratulations, once again, on convening the 1999 MIT-Harvard Genetic Conference.

Sincerely,


John F. Kerry

Schedule

Saturday, March 13, 1999

9:00 - 9:30 Registration

9:30 - 9:45 Opening Ceremonies

9:45 - 10:45 Keynote I: F. James Sensenbrenner, Jr.

Congressman from Wisconsin. Chair of the House Science Committee.
Member of the House Judiciary Committee.

10:45 - 11:35 Featured Speaker: Jeremy Rifkin

President, The Foundation on Economic Trends, Washington, DC. Author of fourteen books, including *The Biotech Century: Harnessing the Gene and Remaking the World*.

11:35 - 12:55 Panel I: Medicine

Robert Weinberg, Ph.D.
Founding member, Whitehead Institute for Biomedical Research. Prof. of Biology, MIT. Winner of the National Medal of Science in 1997.

Judy E. Garber, M.D., M.P.H.
Director, Clinical Genetics Program, Dana-Farber Cancer Institute, Boston, MA.

William A. Haseltine, Ph.D.
Chairman and CEO, Human Genome Sciences, Rockville, MD.

12:55 - 2:00 Lunch

2:00 - 2:50 Breakout I

Frederick R. Bieber, Ph.D. - Forensic DNA Analysis: Challenges and Opportunities

Juan Enríquez - Gene Research and the Global Economy

Daniel Harrell, Ph.D. - Where's The Line (Is There One)?

William Haseltine, Ph.D. - From Genomics to Drugs: Case Studies

Jonathan King, Ph.D. - Protecting Human Genes from the Patent System

David Magnus, Ph.D. - Should You Clone Your Dog?

Jon Turney, Ph.D. - Why Are All Mad Scientists Biologists?

3:00 - 4:20

Panel II: Cloning

Phillip A. Sharp, Ph.D.

Head, Biology Department, MIT. Nobel prize in medicine in 1993 for his discovery of introns.

Daniel Harrell, Ph.D.

Associate minister, Park Street Church, Boston, MA.

David Magnus, Ph.D.

Professor and Graduate Studies Director, Center for Bioethics, University of Pennsylvania.

George J. Annas, J.D., M.P.H.

Chair, Health Law Department, Boston University School of Public Health.

4:30 - 5:20

Breakout II

George Annas, J.D., M.P.H. - Human Rights (and Researcher Responsibilities) in Human Genetics Variation Research (including the "Human Genome Diversity Project")

William Haseltine, Ph.D. - From Genomics to Drugs: Case Studies

Jonathan King, Ph.D. - Protecting Human Genes from the Patent System

David Magnus, Ph.D. - Should You Clone Your Dog?

Martin Teitel, Ph.D. - Own Your Own Life Form: Life Patenting

6:00 - 8:00

Reception and Dinner Banquet (Semi-formal attire requested)

Mary-Jo Good, Ph.D. - The Biotechnical Embrace: Tales from the Field of Oncology

The Saturday keynote, featured speech, and panels will be in Kresge Auditorium at MIT. Breakout session rooms to be announced.

The reception and dinner banquet will be in the Pforzheimer dining hall at Harvard. There will be buses to take you to the banquet after Breakout II.

Schedule

Sunday, March 14, 1999

9:00 - 10:00 Continental Breakfast

10:00 - 10:30 Featured Speaker: Walter Gilbert, Ph.D.

University Professor, Harvard University. Nobel prize in chemistry in 1980 for developing DNA sequencing technology.

10:30 - 11:50 Panel III: Business

Martin Teitel, Ph.D.
Executive Director, Council for Responsible Genetics, Cambridge, MA.

William Winkenwerder, Jr., M.D., MBA
Executive Vice President for Health Care Services, Blue Cross Blue Shield of Massachusetts.

Bruce A. Lehman
Former U.S. Patent Commissioner. President, International Intellectual Property Institute, Washington, D.C.

Kári Stefánsson, M.D.
President and CEO, deCODE Genetics, Reykjavík, Iceland.

11:50 - 1:15 Lunch

1:15 - 2:35 Panel IV: Predictions for the future

Norton D. Zinder, Ph.D.
Head of the Laboratory of Genetics, Rockefeller University. Former chair of the NIH's Program Advisory Committee on the Human Genome.

Jay R. Kaufman
Co-Chair, Committee on Genetic Information Policy, Massachusetts State Legislature.

Colin B. Gracey, D.Min.
Community representative on several Institutional Review Boards in Boston. Treasurer, Council for Responsible Genetics.

Jon Turney, Ph.D.
Senior lecturer in Science Communication, University College London. Author of *Frankenstein's Footsteps: Science, Genetics, and Popular Culture*.

2:45 - 3:35	Breakout III S. Rebecca Holmes-Farley, J.D., M.P.H. - The Ethics of Human Cloning Jay Kaufman - Privacy in the Genetics Age Martin Teitel, Ph.D. - You are What You Eat: Biotechnology and Food
3:45 - 4:45	Keynote II: Ian Wilmut, Ph.D. Cloner of Dolly the sheep. Prof. of Development and Reproduction, Roslin Institute, Edinburgh, Scotland.
4:45 - 5:00	Closing Ceremonies

The Sunday keynote, featured speech, and panels will be in Lecture hall 10-250 at MIT.
Breakout session rooms to be announced.

George J. Annas, J.D., M.P.H.

Dr. Annas is the Edward R. Utley Professor of Health Law and Chairman of Health Law Department at Boston University School of Public Health. He received an A.B. magna cum laude from Harvard University, a J.D. from Harvard Law School, and an M.P.H. from Harvard School of Public Health. A widely published national expert in the field of law and medicine, Dr. Annas has also taught at Boston University School of Medicine and Boston College Law School. For five years, he was the director of the Boston University School of Law's Center for Law and Health Sciences. Prof. Annas teaches bioethics.

Frederick R. Bieber, Ph.D.

Professor Bieber, a member of the Harvard Medical School faculty, works as a medical geneticist in the Department of Pathology. His research and clinical work deals with laboratory genetic diagnostic testing, medical genetics, and developmental biology. Dr. Bieber is also a forensic scientist with a strong interest in science and public policy. He has served as an expert witness throughout the U.S. in numerous criminal and civil cases involving genetics and DNA evidence. He is an appointed consultant to the Connecticut State Police Forensic Science Laboratory, a Special Consultant to the Office of the Chief Medical Examiner in Massachusetts, and was recently appointed to the DNA Advisory Board of the Federal Bureau of Investigation. He has served as a member of the Social Issues Committee of the American Society of Human Genetics.



Juan Enríquez

Mr. Enríquez has worked as CEO of Mexico City's Urban Development Corporation, and as a member of the Peace Commission that negotiated the cease-fire in Chiapas' Zapatista rebellion. He lived and worked in the war zone for six months. For the past decade he has also been writing on the restructuring of commodity systems and on technology. He is the author of over a dozen cases for the Harvard Business School. He is currently working at Harvard finishing two books, one of which is focused on the global economic restructuring caused by gene research. Parts of this research were presented at the 150th anniversary of the AAAS and published in *Science*.

Judy E. Garber, M.D., M.P.H.

Dr. Garber is an Attending Physician in the Breast Evaluation Center and Director of the Friends of Dana-Farber Cancer Risk and Prevention / Clinical Genetics Program at Dana-Farber Cancer Institute. She is also an Associate Physician at Brigham and Women's Hospital and an Assistant Professor of Medicine at Harvard Medical School.

Dr. Garber treats patients with breast cancer and uses the tools of cancer epidemiology and biostatistics, genetics, and molecular biology to identify women at high risk for breast cancer.

Dr. Garber served as principal investigator for Dana-Farber in the landmark tamoxifen study. The Pittsburgh-based National Surgical Adjuvant Breast Program led the study, launched in 1992, with support from the National Cancer Institute. The results of the study -- one of the largest cancer prevention trials ever undertaken -- were made public last April.

Dr. Garber earned a bachelor's degree from the University of Virginia (1976) and M.D./M.P.H. degrees from Yale University School of Medicine (1981), she served her internship and residencies in internal medicine at Brigham and Women's Hospital and the Veteran's

Administration Medical Center, West Roxbury and Brockton, MA. She received her hematology training at Brigham and Women's Hospital.



Walter Gilbert, Ph.D.

Dr. Gilbert is a renowned scientist who won the Nobel Prize for Chemistry in 1980 for developing DNA sequencing technology. He has held professorships at Harvard University in the Departments of Physics, Biophysics, Biochemistry, and Biology, and since 1985, in Molecular and Cellular Biology (formerly Cellular and Developmental Biology). He presently holds the Carl M. Loeb University Professorship. Dr. Gilbert received his Ph.D. in Mathematics from Cambridge University in 1957, an M.A. in Physics in 1954, and a B.A. in Chemistry and Physics in 1953 from Harvard University. His current research interests include molecular evolution and intron/exon gene structure.



Colin B. Gracey, D.Min.

Rev. Gracey is a community representative on several Institutional Review Boards in the Boston area. He is a board member and treasurer of the Council for Responsible Genetics, a public interest group based in Cambridge, MA. He serves as the Episcopal chaplain at Northeastern University.



Daniel Harrell, Ph.D.

For the past 13 years, Dr. Harrell has served as a minister at Park Street Church in Boston. Park Street Church is a 200-year-old congregational church with deep ties to the academic communities of Boston. Dr. Harrell is a graduate of the University of North Carolina Chapel Hill (AB-Psychology & Religion), Gordon-Conwell Theological Seminary (Masters of Divinity) and Boston College (PhD. Developmental Psychology). He serves as adjunct faculty in educational psychology at Gordon-Conwell Seminary and Gordon College. Dr. Harrell brings to the table theological and ethical concerns regarding the boundaries of genetic technology with both its scientific and commercial implications.



William A. Haseltine, Ph.D.

Dr. Haseltine is Chairman of the Board of Directors and Chief Executive Officer of Human Genome Sciences, Inc., located in Rockville, Maryland. Human Genome Sciences, Inc. is a company with the mission to develop products to predict, prevent, detect, treat, and cure disease based on its leadership in the discovery and understanding of human genes.

Dr. Haseltine holds a doctorate from Harvard University in biophysics. He was a professor at Dana-Farber Cancer Institute, Harvard Medical School and Harvard School of Public Health from 1976 to 1993, before joining Human Genome Sciences. He has a distinguished record of achievement in

cancer and AIDS research. He has received numerous awards for his scientific work. He is editor-in-chief of the *Journal of AIDS* and is on the editorial boards of many other scientific journals. Dr. Haseltine has over 250 publications in the scientific literature. He has been awarded more than 50 patents for his discoveries. He has also served on many national and international scientific committees and has been actively involved in a number of charitable organizations, including the American Cancer Society, Leukemia Society of America, American Foundation for AIDS Research, AIDS Crisis Trust, and L.I.F.E.

Dr. Haseltine also has many years of experience with biotechnology companies. Since 1981 he has founded seven companies, each in a different area of medicine. As a scientific advisor to HealthCare Ventures, he helped to establish an additional 20 biotechnology companies. In June 1996, Dr. Haseltine received the *Ernst & Young 1996 Greater Washington Entrepreneur of the Year Award* in the field of biotechnology. Additionally, Dr. Haseltine is a 1996 recipient of the American Academy of Achievement *Golden Plate Award*.



S. Rebecca Holmes-Farley, J.D., M.P.H.

Ms. Holmes-Farley is presently a Bioethics Fellow in the Health Law Department at the Boston University School of Public Health. She holds a Bachelor of Arts degree from Cornell University, a Juris Doctor degree from Suffolk University Law School, and a Master of Public Health degree from Boston University. She was most recently employed at the Council for Responsible Genetics as Director of Legislative Research where she was involved in efforts to draft, pass, and track genetic discrimination legislation at both the federal and state levels. Her current areas of interest include issues raised by the advanced reproductive technologies and human cloning, research ethics and genetic discrimination. She recently co-authored the Foreword to the American Journal of Law and Medicine's Symposium issue on Law, Medicine, and Socially Responsible Research as well as an article, which appeared in *GeneWatch*, in February of 1997, "CRG Files Amicus Brief in Workplace Privacy and Discrimination Case."



Jay R. Kaufman

Mr. Kaufman is now serving his third term in the state legislature, representing Lexington and Lincoln on Beacon Hill. Rep. Kaufman chairs a subcommittee on Patient Confidentiality and Medical Records Privacy. He co-chaired a Special Committee on Genetic Information Policy exploring appropriate legislative action to address the social and ethical concerns of the emerging technology. He also co-chaired a special legislative commission looking at alternatives to the local property tax to fund public education. Prior to leaping into the political arena, Jay was the founder and, for over a decade, director of a consortium of eighteen colleges and universities with a focus on interdisciplinary environmental education and policy. He also serves as a strategic planning consultant.

Jonathan King, Ph.D.

Dr. King is Professor of Molecular Biology at MIT and an authority on the genetic control of protein folding and assembly. He has long been interested in the social and ethical aspects of biomedical research. He currently serves on the Board of Directors of the Council for Responsible Genetics. He was a leader of the scientist's Pledge against the Military Use

of Biological Research which strengthened support for the Biological Weapons Convention. His most recent writings critique the patenting of genes, proteins, and cell lines, (for example *Chronicle of Higher Education*, Feb. 5, 1999, p. B6).



Bruce A. Lehman

Mr. Lehman is President of the International Intellectual Property Institute (IIPI), a non-partisan, not-for-profit institution, based in Washington, D.C. The purpose of institute is to foster the creation of modern intellectual property systems and the use of intellectual property rights as a mechanism for investment, technology transfer and the creation of wealth in all countries of the world. Prior to joining IIPI, until December 31 of last year, Mr. Lehman served as Assistant Secretary of Commerce and United States Commissioner of Patents and Trademarks for nearly six years. As the Clinton Administration's primary representative for intellectual property rights protection, he was a key player on these issues, both domestically and internationally. At the request of the President, he served concurrently in the fall of 1997 as Acting Chairman of the National Endowment for the Humanities, which fosters and recognizes the work of America's artistic and creative community. In 1994 the National Law Journal named Mr. Lehman its "Lawyer of the Year". In 1997 the National Journal named Mr. Lehman one of the 100 most influential men and women in Washington, stating, "*In today's Information Age, the issue of intellectual property rights is no longer an arcane concern, but a vital part of U.S. trade policy. Since taking over his current posts in 1993, Lehman has been the Clinton Administration's outspoken voice on such matters here and abroad.*"



David Magnus, Ph.D.

Dr. Magnus is currently the Graduate Studies Director and member of the faculty at the Center for Bioethics at the University of Pennsylvania. He received his Ph.D. in philosophy from Stanford University and has published articles on the history and philosophy of biology and bioethics, particularly on issues concerning genetic technology. He is co-editor of a forthcoming volume, *Contemporary Genetic Technology: Scientific, Ethical, and Social Challenges* for Krieger Publishing. Recent publications include "Evolution Without Change in Gene Frequencies," in *Biology and Philosophy* (1998), "Disease Gene Patenting: A Dilemma for Clinicians" in *Cambridge Quarterly of Healthcare Ethics* (1998), and "Cloning and the Regulative Dilemma" for an anthology on cloning (1999). He directed a 1996 summer Institute for College and University faculty on "Scientific, Ethical, and Social Challenges of Contemporary Genetic Technology." He recently received grants from the Geraldine R. Dodge Foundation and the Scott Charitable Trust to develop a collection of essays to be entitled *Who Owns Life?* He is the chief operating officer and Treasurer for the *International Society for the History, Philosophy, and Social Studies of Biology*. He has appeared on many television shows including CBS This Morning and The Evening News with Brian Williams, several nationally syndicated radio shows, and has been quoted in *Time* magazine and *USA Today* among other publications. In addition to his scholarly work, he has published op-ed pieces in newspapers and newsletters.



Jeremy Rifkin

Mr. Rifkin is the author of fourteen books on the impact of scientific and technological changes on the economy, the workforce, society, and the environment. His books have been translated into sixteen languages and are used in hundreds of universities around the world. His newest book, *The Biotech Century: Harnessing the Gene and Remaking the World*, addresses the many critical issues accompanying the new era of genetic commerce.

Mr. Rifkin holds a degree in economics from the Wharton School of Finance and Commerce of the University of Pennsylvania, and a degree in international affairs from the Fletcher School of Law and Diplomacy at Tufts University. He is a consultant to heads of state and government officials around the world and speaks frequently before business, labor, and civic forums.

Rifkin has been influential in shaping public policy in the United States and around the world. He has testified before numerous congressional committees and has had consistent success in litigation to ensure responsible government policies on a variety of environmental, scientific, and technology related issues. His unique perspective and social commentary have made him a frequent guest on numerous television programs, including CNN Crossfire, Face the Nation, ABC Nightline, MacNeil Lehrer News Hour, 20/20, Larry King Live, Firing Line, The Today Show, and Good Morning America. He has been featured in many of the nation's most prominent news weeklies.

The National Journal, among the nation's leading public policy journals, named Rifkin as one of 150 people in the U.S. that have the most influence in shaping federal government policy.

Mr. Rifkin is the founder and president of the Foundation on Economic Trends in Washington, DC.



F. James Sensenbrenner, Jr.

Mr. Sensenbrenner is a Republican Member of Congress representing the Ninth Congressional District of Wisconsin. He was elected to Congress in November of 1978, after serving ten years in the Wisconsin State Legislature. Congressman Sensenbrenner has been elected Chairman of the House Science Committee, which is responsible for developing and overseeing government science policy. Previously, Congressman Sensenbrenner served as Chairman of the Science Committee's Space and Aeronautics Subcommittee, where he solidified his reputation as an independent leader on space issues, including his efforts in support of the Space Station. He has also established a strong record on crime, constitutional, and intellectual property issues as a Member of the Judiciary Committee.

Throughout his public life, Congressman Sensenbrenner has been at the forefront of efforts to eliminate wasteful government spending and protect the interests of American taxpayers. He has regularly been cited by the National Taxpayers Union as the most fiscally responsible House Member -- including each of the past three years.



Phillip A. Sharp, Ph.D.

Dr. Sharp, Institute Professor and Salvador E. Luria Professor of Biology, joined the Center for Cancer Research and Department of Biology at MIT in 1974. On June 1, 1985, Dr. Sharp became Director of the Center for Cancer Research after serving as Associate Director for three years. He is currently Head of the Department of Biology, a position he assumed on July 1, 1991. Dr. Sharp obtained a B.A. in chemistry and mathematics from Union College, Kentucky, and a Ph.D. in chemistry from the University of Illinois, Champaign-Urbana. He did his postdoctoral work first at Caltech and then at CSH. Dr. Sharp's most noted achievement for which he shared the 1993 Nobel Prize in Physiology or Medicine was the discovery of split genes in 1977. Dr. Sharp is an elected member of many societies including the National Academy of Sciences, the Institute of Medicine, and the American Philosophical Society. Dr. Sharp's twenty-year career as a scientist and educator has been recognized by numerous awards including the General Motors Research Foundation Alfred P. Sloan, Jr. Prize for Cancer Research, the Louisa Gross Horwitz Prize, and the Albert Lasker Basic Medical Research Award. Dr. Sharp serves on numerous committees including the National Institute Advisory Board of the National Cancer Institute, member of the Board of Trustees of the Alfred P. Sloan Foundation, Member of the Scientific Board of the Ludwig Institute, and Chairman of the Awards Assembly of the General Motors Foundation. He is co-founder and Chairman of the Scientific Board of Biogen, Inc. and a member of its Board of Directors.



Kári Stefánsson, M.D.

Dr. Stefánsson is President and CEO of deCODE Genetics, based in Reykjavík, Iceland. His company recently won approval from the Icelandic Parliament to compile a central database of the health records and genealogies of all Icelanders. This database will enable his company to find disease-causing genes.

Dr. Stefánsson founded deCODE Genetics while he was Professor of Neurology, Neuropathology and Neuroscience at Harvard University and Director of Neuropathology at the Boston Beth Israel Hospital.

The focus of his research has been on the molecular biology and genetics of neurologic diseases. He is an author of more than 150 scientific articles. Dr. Stefánsson received his M.D. from the University of Iceland in 1976.



Martin Teitel, Ph.D.

Dr. Teitel is Executive Director of the Council for Responsible Genetics, a national watchdog organization that seeks to increase citizen participation in decisions about new biotechnology and genetic engineering. The Council also publishes the respected journal of biotechnology activism, *GeneWatch*.

Teitel is the author of *Rain Forest in Your Kitchen: The Hidden Connection Between Extinction and your Supermarket*. He also co-authored with Hope Shand, *The Ownership of Life: When Patents and Values Clash*. In addition to biotechnology concerns, he writes on food and agriculture, environmental issues, and human rights. His articles have appeared in *Dollars and Sense*, *Countryside*, *Sierra*, the *Utne Reader*, and other publications.

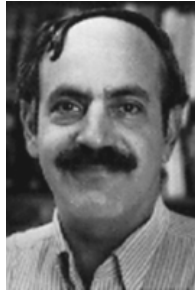
Martin Teitel holds a Ph.D. in philosophy from the Graduate School of the Union

Institute, an MSW from San Diego State University, and a BA in philosophy from the University of Wisconsin (Madison).

Prior to joining the Council for Responsible Genetics, Teitel was Senior Fellow and Executive Director of the CS Fund, a private philanthropic foundation based in California. He has also directed the western offices of The Youth Project and the Council on Economic Priorities. From 1969 through 1975 he held a number of positions with the American Friends Service Committee (Quakers), including Director of Asia Programs, Director of Overseas Refugee Programs, Indochina Commissioner, and Laos Field Director.

Jon Turney, Ph.D.

Dr. Turney teaches science writing and the history of science at University College London. He studied biochemistry and history of science, and worked as a science and policy journalist, and as features editor for the UK Times Higher Education Supplement. He is the author of *Frankenstein's Footsteps: Science, Genetics and Popular Culture*, published last year by Yale University Press. His current research focuses on public understanding of genetics and on rhetorics of popular science.



Robert Weinberg, Ph.D.

Dr. Weinberg is a founding member of the Whitehead Institute for Biomedical Research, and a Professor of Biology at MIT.

His laboratory has been home to many firsts in cancer research. In 1980, his laboratory identified the first human oncogene, *ras*. In 1986, he and his colleagues isolated the first tumor suppressor gene, the *retinoblastoma* gene. These achievements revolutionized the way scientists think about the origins of human cancer and paved the way for powerful new technologies in cancer diagnosis.

Dr. Weinberg was named *Discover Magazine* Scientist of the Year in 1982, and received the National Medal of Science in 1997. He received his S.B. and Ph.D. in biology from the Massachusetts Institute of Technology.



Ian Wilmut, Ph.D.

Dr. Wilmut cloned a Finn Dorset lamb named Dolly in 1996. This was the first successful cloning of a mammal from fully differentiated adult cells. A year later, he created Polly, a cloned sheep that had been genetically engineered to produce a human protein in its milk. Dr. Wilmut is Professor of Development and Reproduction at the Roslin Institute in Edinburgh, Scotland.

Dr. Wilmut received a B.S. from the University of Nottingham, and a Ph.D. from Darwin College at Cambridge University in 1971 for his work on deep-freeze preservation of boar semen.

Dr. Wilmut received a post-doctoral fellowship to research on frozen embryos at the ARC Unit of Reproductive Physiology and Biochemistry at Cambridge, where he created the first calf ever produced from a frozen embryo. He joined the Roslin Institute in 1974 and was appointed a Principal Investigator at the Institute of Animal Physiology and Genetics Research at the Roslin Institute in 1981.



William Winkenwerder, Jr., M.D., MBA

Dr. Winkenwerder is Executive Vice President for Blue Cross and Blue Shield of Massachusetts, where he is responsible for the company's activities and operations relating to health care providers. Prior to joining Blue Cross and Blue Shield in October 1998, Dr. Winkenwerder served as Vice President, Primary Care for Emory Healthcare, and as Associate Vice President for Health Affairs at Emory University. Previously he was Vice President, Chief Medical Officer for Prudential Health Care's Southeast Operations which served 1.5 million enrollees in six states, and Associate Medical Director for Kaiser Permanente, both based in Atlanta.

He also previously served as Special Assistant to the Administrator of the Health Care Financing Administration (HCFA) in Washington, DC in the mid 1980's.

Dr. Winkenwerder is a graduate of Davidson College and obtained his MD and completed his residency in internal medicine at the University of North Carolina at Chapel Hill. He also obtained an MBA at The Wharton School in Pennsylvania.

His writings have appeared in several publications, including *The New England Journal of Medicine* and *The Journal of the American Medical Association* and he serves on the editorial boards of several publications. He is active in many professional organizations and is a featured speaker for health care audiences across the country.



Norton D. Zinder, Ph.D.

Dr. Zinder, John D. Rockefeller, Jr. Professor of the Rockefeller University and Head of the Laboratory of Genetics, was the first chairman (1989-1993) of the Program Advisory Committee on the Human Genome convened by the National Institutes of Health. He is currently on the Advisory Committee of Celera Genomics Inc. which by virtue of a technological breakthrough will sequence the Human Genome (3 billion base pairs) in the next few years.

Dr. Zinder's studies of the genetics of bacteria and bacteriophages -- bacteria that infect bacteria -- have provided important information on the mechanisms of heredity, the punctuation in the genetic code and the technology of DNA sequencing and combinatorial peptide display.

Born in New York City, Dr. Zinder received the A.B. degree from Columbia College and the Ph.D. degree from the University of Wisconsin in 1952, the same year he joined the Rockefeller University. He was appointed Professor in 1964. He is a member of The National Academy of Sciences, The Academy of Arts and Sciences, The Council on Foreign Relations, and many other professional organizations. He is the author of some 250 scientific papers, reviews, and reports. Dr. Zinder has served on many scientific, government, university, and industry advisory committees and is the recipient of numerous awards, including The Scientific Freedom and Responsibility Award of the AAAS.

Notes

Notes

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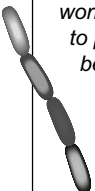
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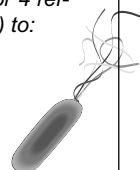
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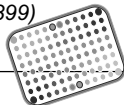


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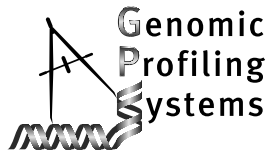
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