

INTERPRETING COMPLEXITY

THE SCIENTIFIC AND SOCIAL MEANING
OF BEHAVIORAL GENETICS

Tuesday, June 6th, 2006
1pm - 6pm

Clark Center Auditorium
Stanford University

Hosted by

The Center for the Integration of Research on Genetics and Ethics (CIRGE)

CIRGE is one of four interdisciplinary Centers of Excellence in Ethical, Legal, and Social Implications (ELSI) research created by the National Human Genome Research Institute of the U.S. National Institutes of Health, to proactively identify and deliberate ethical, legal, and social issues in current and emerging genetic research.



The Stanford Center for Biomedical Ethics (SCBE)

The Stanford Center for Biomedical Ethics is dedicated to interdisciplinary research and education in biomedical ethics, and provides clinical and research ethics consultation. SCBE serves as a scholarly resource on emerging ethical issues raised by medicine and biomedical research.



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Interpreting Complexity: The Scientific and Social Meaning of Behavioral Genetics

Human behavior is both an object of scientific inquiry and public fascination. This symposium will explore the complexity of gene-environment interactions in mediating behavior, as well as the complexity of the relationship between scientific and social interpretations of behavior. We hope this discussion will foster communication and new approaches to advancing this dynamic area of research.

http://cirge.stanford.edu/behavioral_genetics_2006/

Conference Agenda

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| 1:00pm-1:05pm | Introduction |
| 1:05pm-1:20pm | Psychiatric Genetics: Methods, Findings, and Ethical Issues Kenneth Kendler |
| 1:20pm-1:35pm | Behavioral and Psychiatric Genetics: Learning from History Kenneth Schaffner |
| 1:35pm-1:50pm | TBA Joachim Hallmayer |
| 1:50pm-2:05pm | What is the Impact of the Sequencing of the Human Genome and the Increasing Development of Genomic Technologies on the Study of Complex Behavioral Traits? Richard Myers |
| 20 min. discussion | |
| 2:25pm-2:40pm | Can an Understanding of the Origins of Individual Differences in Behavior be Achieved Without Behavioral Genetic Methodology? Matthew McGue |
| 2:40pm-2:55pm | The Contribution of Gene-environment Interplay to Psychiatric Disorders and Behavior Anita Thapar |
| 2:55pm-3:10pm | The Meaning of "Complexity" in Determination of Behavior Marcus Feldman |
| 20 min. discussion followed by a 15 min. break | |
| 3:45pm-4:00pm | Phenotypes, Social Constructionism, and the Spurious Finding Nancy Press |
| 4:00pm-4:15pm | Challenging or Reinforcing Social Prejudice? Helen Longino |
| 4:15pm-4:30pm | Behavioral Genetics and Equality Dan Brock |
| 4:30pm-4:45pm | Recent Use of Behavioral Genetics in Criminal Cases Nita Farahany |
| 4:45pm-5:00pm | TBA Barry Steinhardt |
| 5:00pm-5:15pm | Impact of Behavior Genetics on Medicine and Society Dean Hamer |
| 45 min. discussion | |
| 6:00pm-7:00pm | Reception |

About the Speakers

Dan Brock

Professor of Medical Ethics
Harvard Medical School

Dan W. Brock is the Frances Glessner Lee Professor of Medical Ethics in the Department of Social Medicine and Director of the Division of Medical Ethics at the Harvard Medical School. He is also Director of the Harvard Program in Ethics and Health. Previously he was Senior Scientist and a member of the Department of Clinical Bioethics at the National Institutes of Health. Until July 2002, he was Charles C. Tillinghast, Jr. University Professor, Professor of Philosophy and Biomedical Ethics, and Director of the Center for Biomedical Ethics at Brown University where he had a joint appointment in the Philosophy Department (of which he was Chair in 1980-86) and in the Medical School. He received his B.A. in economics from Cornell University and his Ph.D. in philosophy from Columbia University.

He served as Staff Philosopher on the President's Commission for the Study of Ethical Problems in Medicine in 1981-82, and in 1993 was a member of the Ethics Working Group of the Clinton Task Force on National Health Reform. He has been a consultant in biomedical ethics and health policy to numerous national and international bodies, including the Institute of Medicine, the National Bioethics Advisory Commission, and the World Health Organization. He is a fellow and former Board member of the Hastings Center. He was President of the American Association of Bioethics in 1995-96, and was a founding Board Member of the American Society for Bioethics and Humanities.

He is the author of over 150 articles in bioethics and in moral and political philosophy, which have appeared in books and peer-reviewed scholarly journals, including the New England Journal of Medicine, JAMA, Science, Hastings Center Report, Philosophy and Public Affairs, and Ethics. He is the author of Deciding For Others: The Ethics of Surrogate Decision Making, 1989, (with Allen E. Buchanan), Life and Death: Philosophical Essays in Biomedical Ethics, 1993, and From Chance to Choice: Genetics and Justice (with Allen Buchanan, Norman Daniels and Daniel Wikler) 2000, all published by Cambridge University Press. He is currently an editorial board member of 14 professional journals in ethics, bioethics and health policy, and has lectured widely at national and international conferences, professional societies, universities, and health care institutions. His current research focuses on the prioritization of health resources and rationing, with a special focus on cost-effectiveness analysis, and on genetic selection for enhancement and to prevent disability.

Nita Farahany

Professor of Law
Vanderbilt University Law School

Nita Farahany is pursuing research in the areas of behavioral genetics, mental retardation, insanity and criminal law. Professor Farahany earned her undergraduate degree in

genetics, cell, and developmental biology from Dartmouth. She received the Order of the Coif from Duke, where she focused on the philosophy of biology and philosophy of law, and completed her master's thesis on "The Limited Applicability of Estimates of Genetic Heritability." After completing her M.A., Farahany clerked for the Honorable Judith W. Rogers on the U.S. Court of Appeals, D.C. Circuit. She delivered a presentation, "Science or Science Fiction? Behavior Genetics of Criminal Behavior," at the Genome, Ethics, Law & Policy Series in 2004, and is serving as a special co-editor of the fall and winter issues of Law & Contemporary Problems, which will focus on behavioral genetics and criminal law. She is currently a candidate for a Ph.D. in philosophy from Duke, and is completing her dissertation, "Rediscovering Criminal Responsibility through Behavioral Genetics" while serving as a fellow at Vanderbilt. She is also completing her master's thesis for her A.L.M. in Biology at Harvard, with a focus on the mentally retarded in the criminal justice system and medical versus legal concepts of insanity.

Marcus Feldman

Professor of Biological Sciences
Stanford University

Marcus Feldman is the Burnet C. and Mildred Finley Wohlford Professor of Biological Sciences and director of the Morrison Institute for Population and Resource Studies at Stanford University. He uses applied mathematics and computer modeling to simulate and analyze the process of evolution, specifically the evolution of complex genetic systems that can undergo both natural selection and recombination, and the evolution of learning as one interface between modern methods in artificial intelligence and models of biological processes, including communication. He helped develop the quantitative theory of cultural evolution, which he applies to issues in human behavior, and also the theory of niche construction, which has wide applications in ecology and evolutionary analysis. His work on human genetic variation and its relationship to continental ancestry has received wide recognition. He also has a large research program on demographic issues related to the gender ratio in China.

Feldman is a trustee and member of the science steering committee of the Santa Fe Institute. He is managing editor of Theoretical Population Biology and associate editor of the journals Genetics; Human Genomics; Complexity; the Annals of Human Genetics; and the Annals of Human Biology. He is a fellow of the American Academy of Arts and Sciences and of the California Academy of Science. His work received the "Paper of the Year 2003" award in all of biomedical science from The Lancet. He has written more than 335 scientific papers and four books on evolution, ecology, and mathematical biology. He received an honorary doctorate of philosophy from The Hebrew University of Jerusalem and is an Honorary Professor at two major Chinese universities. He received a BSc in mathematics and statistics from the University of Western Australia, an MSc in mathematics from Monash University (Australia), and a PhD in mathematical biology from Stanford. He has been a member of the Stanford faculty since 1971.

Joachim Hallmayer

Professor of Psychiatry and Behavioral Sciences
Stanford University

Joachim Hallmayer is an Associate Professor of Psychiatry and Behavioral Sciences. He received his undergraduate and medical education in Germany at the University of Dusseldorf (1980-82) and the University of Cologne (1982-86), respectively. After completing his doctoral thesis at the Max Planck Institute for Neurological Research in Cologne he became a research fellow in the laboratory of Dr. Luca Cavalli-Sforza in the Department of Genetics at Stanford, which he continued through 1994. Between 1995 and 2001 he was Associate Professor of Psychiatry at the University of Western Australia and Co-Director of the Centre for Clinical Research in Neuropsychiatry. He joined the Stanford Child Division faculty in May 2001 where he became the director of the Molecular Genetics Laboratory. The focus of the research program of Dr. Hallmayer is the genetics of child psychiatric disorders, combining epidemiological and molecular methods. A major goal is to resolve the heterogeneity of clinical phenotypes such as autism into genetically simpler, quantifiable components, thus facilitating the search for susceptibility genes for these disorders.

Dean Hamer

Senior Principal Investigator
Laboratory of Biochemistry, NCI/DDR/NIH

Dean Hamer was born in Montclair, NJ. He received his B.A. from Trinity College, Connecticut and his Ph.D. from Harvard Medical School. He has worked at the National Institutes of Health for 28 years, where he is currently the Chief of the Section on Gene Structure and Regulation in the Laboratory of Biochemistry of the National Cancer Institute.

Dr. Hamer's research has led to major contributions in a variety of areas including recombinant DNA, drug and vaccine production, and gene regulation. He is best known for his research on the role of inheritance in human behavior, personality traits and other complex characteristics. His discovery of genetic links to sexual orientation and personality traits have changed the way we think about human behavior and raise a host of important scientific, social and ethical issues. His current research focuses on HIV/AIDS treatment and prevention.

Dr. Hamer has published over 100 scientific papers and received numerous honors including the Ariens Kappers Award for Neurobiology. His books *The Science of Desire*, *Living With Our Genes*, and *The God Gene* have won widespread critical acclaim.

Kenneth Kendler

Professor and Eminent Scholar of Psychiatry
Virginia Commonwealth University

Dr. Kendler received his medical and psychiatric training at Stanford and Yale University, respectively. Since 1983, he has been engaged in studies of the genetics of psychiatric

and substance use disorders, including schizophrenia, major depression, alcoholism, smoking and nicotine dependence. He has utilized methods ranging from family studies, to large-sample population-based twin studies to molecular genetic studies aimed at identifying the genomic location of specific genes that influence the vulnerability to schizophrenia, alcoholism and nicotine dependence. Data collection for these studies have been completed in New Zealand, Virginia, Ireland, Northern Ireland and Sweden. He has published over 440 reviewed journals, has received a number of national and international awards for his work and serves on several Editorial Boards and is Editor of *Psychological Medicine*. Since 1996, he has served as Director of the Virginia Institute of Psychiatric and Behavioral Genetics.

Helen Longino

Professor of Philosophy
Stanford University

Helen Longino is Professor of Philosophy at Stanford [University]. Her teaching and research interests are in philosophy of science, social epistemology, and feminist philosophy. She is the author of *Science As Social Knowledge* (Princeton University Press, 1990), *The Fate of Knowledge* (Princeton University Press, 2001), and many articles in the philosophy of science, feminist philosophy and epistemology. Among her many co-edited volumes is *Scientific Pluralism*, forthcoming as Vol. XIX of the Minnesota Studies in Philosophy of Science. She is currently completing a book length comparative analysis of four approaches in the sciences of human behavior, focusing on research on aggression and research on sexual orientation. This analysis includes both an examination of the logical structures and interrelations of these approaches and study of their social and cultural reception and uptake.

Matthew McGue

Professor of Psychology
University of Minnesota

Matt McGue is a Professor in the Department of Psychology and Member of the Institute of Human Genetics at the University of Minnesota and a Professor in the Department of Epidemiology at the University of Southern Denmark. He is a past president of the Behavior Genetics Association and current chair of the Behavior Genetics and Epidemiology initial review group at the NIH. McGue's research seeks to understand the origins of individual differences in two model systems: adolescent substance use and abuse and psychological aging. Towards this goal he directs a series of longitudinal behavioral genetic studies that span adolescence through late life. He has served on the editorial boards of a number of academic journals including *Genetic Epidemiology* and *Developmental Psychology* and has authored or co-authored over 200 articles and book chapters.

Richard Myers

Professor of Genetics
Stanford University

Richard M. Myers, Ph.D. is the Stanford W. Ascherman Professor and Chairman of the Department of Genetics at Stanford University School of Medicine. He also serves as Director of the Stanford Human Genome Center.

Dr. Myers' research uses classical and molecular genetics, genomics, and computational methods to understand the contributions of genes in a wide range of human traits, including diseases, behaviors and other phenotypes. He has particularly focused on diseases of the brain, including bipolar disease, Parkinson disease, Huntington disease and epilepsy. An area of emphasis is understanding how the regulation of transcription of human genes is coordinated and altered by DNA sequence differences between people as well as by environmental influences. His work has led to a genome-wide picture of regulatory elements and the proteins that control them during transcription.

Dr. Myers' research contributions have resulted in more than 170 publications and have been recognized by a Searle Scholar Award (1987-1990), a Pritzker Foundation Award (2002), a Wills Foundation Award (1996-2003) and an Honorary Doctorate in Humane Letters from the University of Alabama (2005). He was on the editorial board of the journal Human Molecular Genetics from 1992-2000, the Board of Directors of the American Society of Human Genetics from 1997-2001, a member and chair of the Genome Research Review Committee, National Human Genome Research Institute from 1998-2002, and has served on numerous editorial, scientific society, and governmental review panels. He currently serves on more than a dozen groups, including serving as a member of the Advisory Council for the National Human Genome Research Institute, an editor of the journal Genome Research, a founding member of the Stanford Genetics/San Jose Tech Museum Science Education Partnership, and a member and chair of the HapMap Advisory Committee.

Nancy Press

Professor of Medical Anthropology
Oregon Health and Science University

Nancy Press, PhD received a BA degree in social psychology from Sarah Lawrence College, a PhD in cultural anthropology from Duke University, and postdoctoral training in medical anthropology through an NIMH fellowship done at UCLA. Dr. Press' research has focused on reproductive genetic testing, about which she has written from feminist, disability and health policy perspectives, and genetic testing for adult onset disorders, especially breast cancer, where her written work has particularly explored sharing of information with genetic and social families. Press' empirical research generally uses a mixed methods approach, blending qualitative and quantitative analysis of semi-structured interviews, participant-observation, and investigator-devised scales. Press also has expertise in normative projects. Most recently, she was a participant in a Hastings Center project on behavioral genetics, Creating Tools for a Public Discussion of Behavioral Genetics, which brought together biological scientists, social scientists,

philosophers, lawyers, and members of the media together to explore ways to craft a public conversation about behavioral genetics. Press is co-editor of the Johns Hopkins University Press volume that is the product of this project. Dr. Press is currently a Professor in the Schools of Nursing and Medicine at the Oregon Health & Science University.

Kenneth Schaffner

Professor of History and Philosophy of Science
University of Pittsburgh

Kenneth F. Schaffner (Ph.D., Columbia, 1967; M.D., University of Pittsburgh, 1986) is University Professor of History and Philosophy of Science and University Professor of Philosophy at the University of Pittsburgh. Before returning to Pittsburgh, he was University Professor of Medical Humanities and Professor of Philosophy at the George Washington University. His most recent book is *Discovery and Explanation in Biology and Medicine*, published in 1993 by the University of Chicago Press. He has been a Guggenheim Fellow and has published extensively in philosophical and medical journals on ethical and conceptual issues in science and medicine. He is a current member of the World Psychiatric Association (WPA)-World Health Organization (WHO) Workgroup on Classification and on International Diagnostic Systems, where the task is to advise on the approach and content of the Mental Health Section of the eleventh version of the International Classification of Diseases (ICD-11), due out in 2011. He is developing papers for this WPA-WHO workgroup that apply the multilevel prototype model of biological sciences from his 1993 book to psychiatric classification and diagnosis. His recent work has been on ethical and philosophical issues in human behavioral and psychiatric genetics, and he is in the final editing stages of a book on *Behaving: What's Genetic and What's Not, and Why Should We Care?* for Oxford University Press. Dr. Schaffner is a Fellow of both the Hastings Center and the American Association for the Advancement of Science. He is a former Editor-in-Chief of *Philosophy of Science* (1975-80), and was section editor psychiatry and philosophy of medicine of the recent 3rd edition of the *Encyclopedia of Bioethics*. Currently Dr. Schaffner is an associate editor of *Philosophy, Psychiatry, and Psychology*, and also serves on the editorial boards of *Biology and Philosophy*, *The Journal of Medicine and Philosophy*, *Theoretical Medicine and Bioethics*, and *Psychiatry: Interpersonal and Biological Processes*.

Barry Steinhardt

Director of Technology and Liberty Program
American Civil Liberties Union

Barry Steinhardt served as Associate Director of the American Civil Liberties Union between 1992 and 2002, taking a leave of absence in 1998 to serve as President of the Electronic Frontier Foundation. In 2002, he was named as the inaugural Director of the ACLU's Program on Technology and Liberty. He was chair of the 2003 Computer Freedom and Privacy Conference (CFP) and a co-founder of the Global Internet Liberty Campaign (GILC), the world's first international coalition of Non-Governmental Organizations concerned with the rights of Internet users to privacy and free expression. He is

a member of the Advisory Committee to the US Census and was a member of the Blue Ribbon Panel on Genetics of the National Conference of State Legislatures. He also was selected to be a member of delegation to the G-8 Government and Private Sector Tokyo conference on Cyber Crime.

Steinhardt has spoken and written widely on privacy and information technology issues to audiences ranging from the National Conference of State Legislatures, to the National Commission on the Future of DNA Evidence, to the Hoover Institute, to the UNESCO Conference on Intellectual Property. At the invitation of members of the Japanese Parliament, Steinhardt gave a series of lectures in Japan on electronic surveillance in the information age. He has written on privacy issues and free expression issues in a variety of periodicals ranging from USA Today, to CIO Magazine, to the journal of the Davos World Economic Forum. Steinhardt is a frequent guest on news and talk programs and has appeared on such programs as the Today Show, CNN's Crossfire, CBS's Face the Nation and Morning News, and The Donahue Shows. Steinhardt is a 1978 graduate of the Northeastern University School of Law.

Anita Thapar

Professor of Child and Adolescent Psychiatry
Cardiff University

Anita Thapar qualified in medicine in 1985. She undertook clinical training in psychiatry following which she became a Medical Research Council Clinical Research Training Fellow at the Department of Psychological Medicine, University of Wales College of Medicine. During her research training fellowship she attained a PhD in Genetic Epidemiology and, in 1996, was appointed as Senior Lecturer in Child and Adolescent Psychiatry at the University of Manchester. She returned to Cardiff in 1999 and became Professor of Child and Adolescent Psychiatry.

She is currently secretary and treasurer for the UK Child Psychiatry Research Society, on the editorial board of a number of psychiatry journals and on The Wellcome Trust Cognitive and Higher Systems Funding Committee. She was a member of the Nuffield Council on Bioethics working party on "Genetics and human behaviour: the ethical context" and is a co-editor on the latest version of the Rutter Textbook of Child and Adolescent Psychiatry. Her research interests are in the genetic aetiology of child and adolescent psychiatric disorders and gene-environment interplay.

Moderated by

Penny Nelson

KQED Radio Host