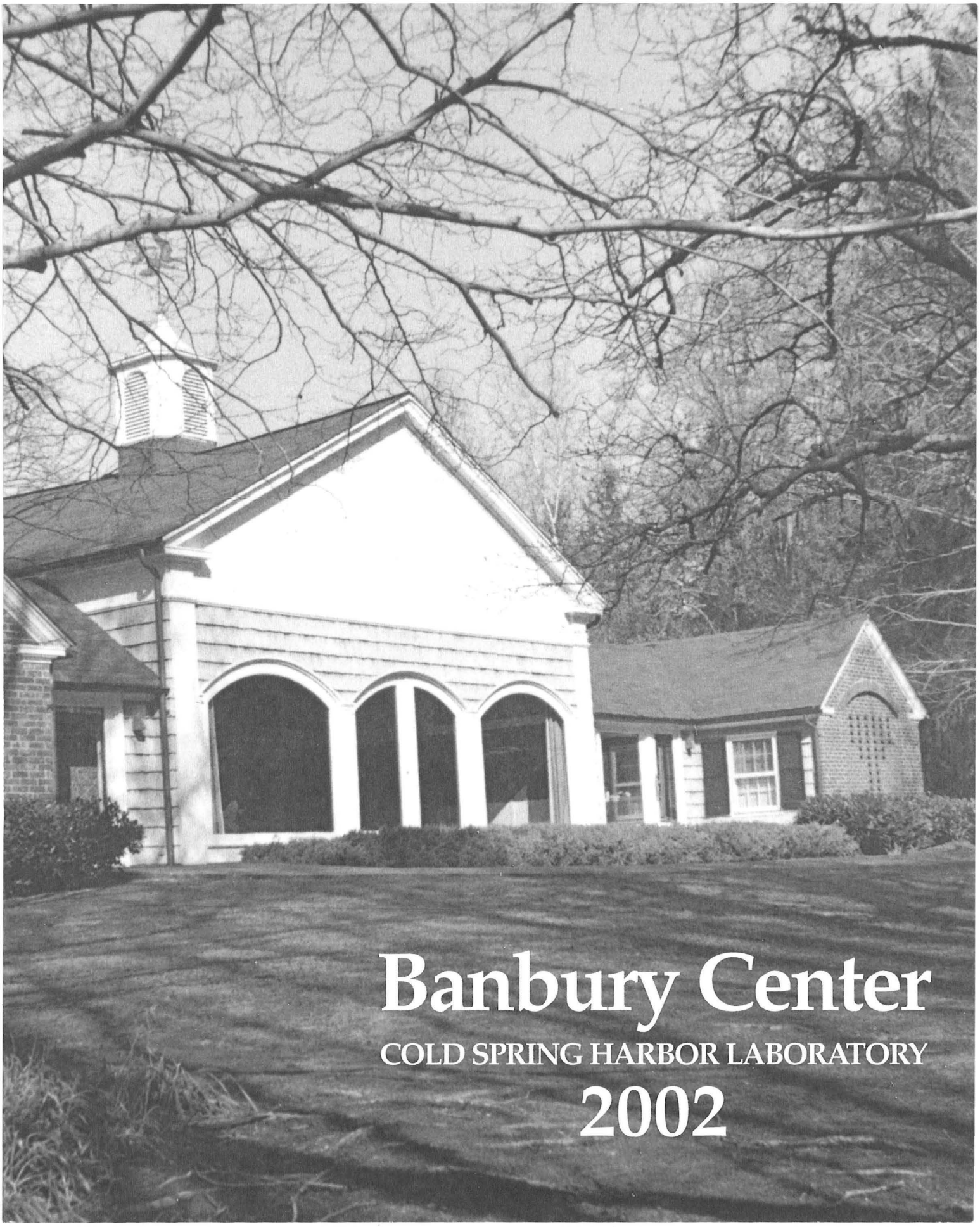

Banbury Center

COLD SPRING HARBOR LABORATORY

2002

BANBURY CENTER

Banbury Center is a 50-acre estate adjoining the waters of Long Island Sound on the north shore of Long Island, barely 40 miles east of downtown Manhattan and some five miles from Cold Spring Harbor Laboratory. The estate was donated to the Laboratory in 1976 by Charles Sammis Robertson together with funds for necessary architectural conversions and an endowment to cover upkeep of the grounds and the original estate structures. With the Laboratory's international reputation for research and education, the magnificent Banbury grounds and buildings are an ideal site for a complementary program of smaller conferences concentrating on aspects of the biological sciences which also bear significant social implications. Banbury's primary interests are in the areas of molecular biology and genetics, especially as they relate to health, social, and policy issues.

What was once the estate's original seven-car garage is now the Conference Center, containing administrative offices, a small library, and—at its center—a conference room of an ideal shape and size for workshop-style discussion meetings. Complete with extensive, unobtrusive sound and projection facilities as well as wall-to-wall blackboard space, the room can accommodate as many as 40 participants while remaining equally conducive to either formal presentations or informal give-and-take.

The Robertsons' family house, situated on the final promontory before the grounds descend to the shore of the harbor, now serves as the center for participant accommodations and dining, while the extensive grounds, swimming pool, tennis court, and beach present ample recreational resources. On-site accommodations were supplemented by the opening in 1981 of the Sammis Hall guest house—a modern embodiment of the sixteenth century Palladian villas—designed for the Center by the architectural firm of Moore Grover Harper. In 1997, the Meier House, opposite the Conference Center, was added to provide extra housing so that everyone attending a Banbury Center meeting can stay on the estate.

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BANBURY CENTER DIRECTOR'S REPORT

The Banbury Center continues to be used throughout the year, with the exception of the few weeks during the depth of the winter. There were 24 meetings in 2002 and Laboratory scientists used the Center for four group meetings. The Watson School of Biological Sciences held two week-long "Topics in Biology" courses, and there were the usual five neuroscience lecture courses. Finally, two local groups made use of the Center.

There were 654 participants in Banbury Center meetings, 75% of whom came from the United States, drawn from 36 states. As usual, New York, Maryland, California, and Massachusetts supplied most visitors; these four states accounted for almost 50% of the U.S. participants. 164 visitors came from around the world—from no fewer than 22 countries, demonstrating the high international reputation of the Center.

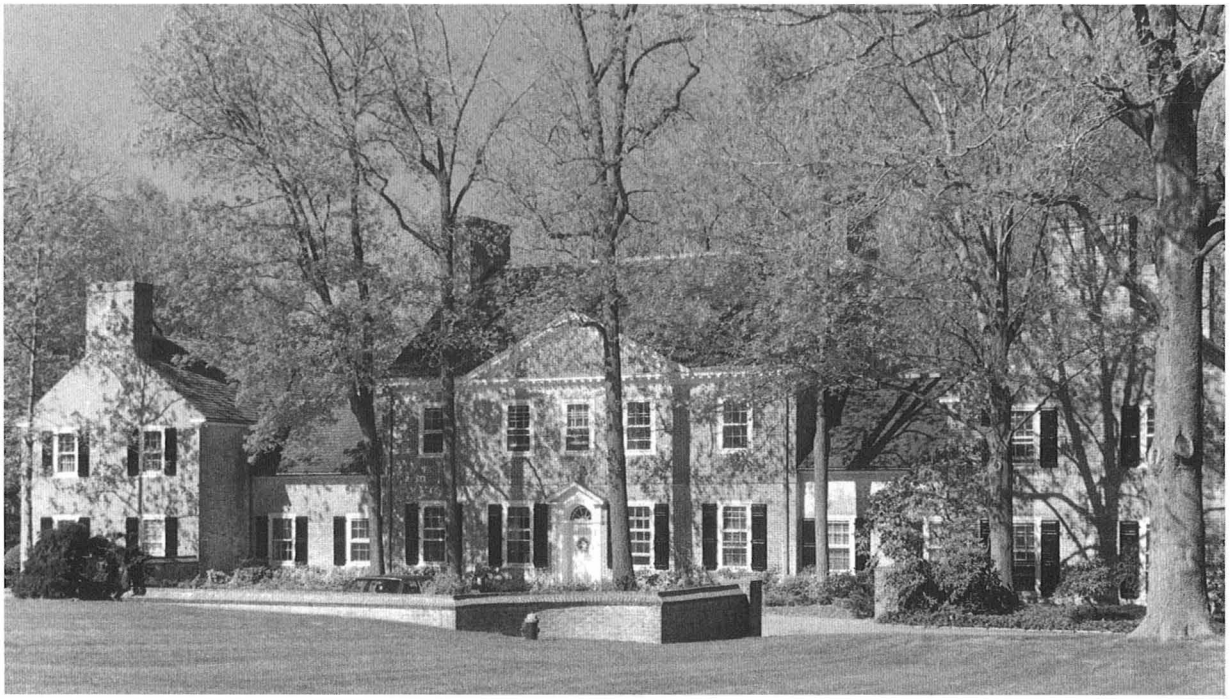
The topics for the meetings were varied as always, although this year, the program was largely concerned with genetics and cancer, and there were fewer neuroscience meetings than usual.

Genomics

Banbury Center's 24 years encompasses the revolution in human genetics brought about by gene mapping and sequencing. Now, with the human genome sequence available for nucleotide-by-nucleotide examination, new strategies should be devised to exploit this remarkable resource. *Sequenced-based Disease Gene Hunts*, organized by Aravinda Chakravarti (April 28–May 1), discussed how this might be done. It is especially important for complex traits such as schizophrenia or asthma, where progress has been slow using standard family linkage methods. New tools that allow the scanning of the entire genome, for expression differences or sequence variation, promise to change this situation.

The impact of genome sequences is not limited, of course, to human beings. Plant scientists have been at the forefront of sequencing efforts, and crop geneticists are making intensive use of the data. John Doebley and Antoni Rafalski organized the meeting *Sequence Diversity in Crop Plants: Results,*

Graduate School Course held at Banbury Center



Robertson House provides housing accommodations at Banbury Center.

Interpretations, and Applications (November 3–6) to examine new information coming from sequence comparisons of crop plants and wild species. These are being used to examine crop plant domestication, the evolution of polyploidy, and associations between traits and alleles. Some of the results have been surprising and some conflicting, and the meeting was intended to increase collaborations between experimentalists and theoreticians, as well as encourage the exchange of information between those interested in crop plants and those working with wild species or model systems.

Human Genetics

Fragile X is an example of a genetic disorder that has progressed from the gene-hunting stage to the functional analysis of the gene and its protein. Banbury Center has held annual meetings on Fragile X, and the advances in understanding the disorder are remarkable. *RNA Metabolism and the Fragile X Syndrome*, organized by Robert Darnell, Steve Warren, and David Nelson (April 7–10), continued the analysis of the role of the key protein—FMRP—that appears to bind to mRNA in the dendritic spines of neurons. The working hypothesis is that FMRP regulates specific mRNA transcripts that are critical in mediating communication between neurons. Such studies require the interactions of scientists drawn from diverse fields of research, and Banbury, as always, provides an ideal environment in which to promote collaborations.

Collaborations are very powerful ways of getting ahead through the pooling of resources and ideas. The Huntington's Disease Society of America and the Amyotrophic Lateral Sclerosis Association jointly sponsored the meeting on *Neurodegenerative Disease Models: From Pathogenesis to Therapeutics* (Christopher Ross and Lucie Bruijn; February 10–13). The theme of the meeting was that a set of neurodegenerative diseases including Huntington disease and amyotrophic lateral sclerosis seem to result from protein misfolding and aggregation. Perhaps, then, there are commonalities of mechanisms and questions to be answered: What are the roles of misfolding and aggregation in pathogenesis? Which are likely to be advantageous models for screening for therapeutics? Why are certain cells differential-

ly vulnerable in the different diseases? Answers were not found at the meeting, but new collaborations were fostered.

Gene Therapy

It is not often that a Banbury Center meeting attracts the attention of *Sports Illustrated*, but the meeting, *Genetic Enhancement of Athletic Performance* (Ted Friedmann, Gary Wadler, and Jan Witkowski; March 17–20), did so. Gene therapy has yet to live up to its promise, and it has suffered repeated setbacks, most recently the development of leukemia in children treated with retroviral vectors. However, the pressures and financial rewards of success in sport are so great that athletes may use gene therapy to introduce "desirable" performance-promoting genes while ignoring the dangers of gene therapy. Participants in this meeting, funded by the World Anti-Doping Agency (WADA), reviewed the current means by which athletes use medical treatments to promote performance and the current state of gene therapy, and discussed the future risks. It was hoped that the meeting would assist in the development of appropriate policy to anticipate and regulate extension of genetic therapy techniques and other emerging technologies to sports. The meeting was followed by a press conference in the New York City.

Infectious Diseases

Two meetings were prompted by the heightened awareness of the dangers of biological terrorism. The first, organized by Bud Mishra, was called *Designer Molecules for Biosensor Applications* (August 12–14) and discussed the potential of current state-of-the-art and possible short-term and long-term technology for rapid detection of pathogenic microorganisms. The relative merits of various technologies, based on genomic expression (mRNA), genome structure (DNA/RNA), protein structure, and other physical and geometric properties, were reviewed. Participants discussed the requirements of sensors for an advanced warning system against a biochemical attack, quick diagnosis of bio-warfare agents involved in the attack, and the forensics needed to determine the source of the attack.

The second meeting, *Microbial Forensics* (Steven Schutzer, Bruce Budowle, and Roger Breeze; November 10–13) was, in some ways, a descendant of the historic Banbury Center meeting on DNA fingerprinting held in 1989. Indeed, some of the participants in this meeting had been here in 1989. Participants discussed how to detect and identify pathogens, in particular using what might be called DNA signatures for pathogens. The meeting was initiated in part by new legislation that will change dramatically how certain dangerous pathogens are handled in the United States and that will subject academic laboratories to special physical, personnel, and pathogen security measures. The meeting was notable for the mix of scientists from academia and from government agencies—it set a new record for the number of acronyms appearing in a program.

The third meeting on infectious diseases—*Phage Therapy: Potential and Challenges* (Janakiraman Ramachandran, Gary Schoolnik, and Suresh Subramani; November 13–15)—discussed an antibacterial strategy that has been available for more than 80 years. Bacteriophages are viruses that attack bacteria, and their use as antibacterial agents was urged by Félix d'Herelle, codiscover, with Frederick Twort, of bacteriophage in the early part of the 20th century. However, phage therapy was ineffective because of the poor understanding of the biology of phages, especially their specificity, by the early practitioners. Recent global emergence of antibiotic-resistant bacterial pathogens, especially in hospitals, has led to the reevaluation of the potential of bacteriophages for the treatment of these infections. Phage therapy also has enormous potential for medical care in the developing world.

Cancer

The four meetings on cancer ranged from fundamental research through clinical trials of therapeutics to an evaluation of possible therapies. *Cell Immortalization and Transformation* (Gordon Peters and

John Sedivy; September 22–25) reviewed critically the current data on human cell immortalization and transformation, events that set a normal cell on the path to cancer. Here, an understanding of the pathways involved has been confused by the differing responses of rodent and human cells in assays; for example, two cooperating oncogenes are sufficient for transformation of primary rodent cells but not for transformation of human cells. Participants reviewed the data from different cell types and different species and tried to come to some consensus on what is going on.

The therapy of advanced melanoma remains a great challenge to researchers and physicians. Although there has been considerable progress in our understanding of the immune response in melanoma, clinical results based on this knowledge have not yet realized their full potential. Nonimmunological therapies may hold much promise, but relatively little has been done in this area, and it is not clear what these therapies might be. Meenhard Herlyn and Scott Lowe organized the meeting on *A Critical Review of Melanoma: Biology and Therapy* (September 29 to October 2) to bring together investigators working on the fundamental biology of melanomas, physicians developing and using therapies, and scientists working on related topics but not directly on melanoma. It was hoped that this combination of participants would foster critical reviews of current research and therapies for melanoma and suggest new strategies to attack this intractable cancer.

Control of angiogenesis as a strategy for controlling cancer has received intense study over the past few years. In particular, a considerable amount of research—laboratory and clinical—is taking place on endostatin, and it seemed the right time to examine what is known of endostatin and its activities. Judah Folkman organized the meeting *A Critical Review of Endostatin and Its Biology* (March 10–13) that focused on topics such as the production of recombinant endostatin, studies of its mechanism of action in vitro and in animals, endostatin gene therapy, and clinical trials.

Innumerable "folk" remedies have been used for centuries to treat the all manner of illnesses. Green tea is said to have protective effects against cancer, but although some laboratory studies in vitro and in animals have found evidence that green tea contains cancer-preventing chemicals, these results are at variance with epidemiological studies that find no effect or are themselves inconsistent. Banbury Center excels in this sort of situation, bringing together researchers who have conflicting data to discuss—rationally one hopes—what is going on. Chung Yang undertook to bring the relevant parties together for a fascinating meeting *Green Tea and Cancer: A Critical Review* (May 12–15), which included a public lecture and demonstration of the Japanese tea ceremony in Grace Auditorium.

Cell Biology

Two meetings followed a rather unusual format, pioneered some years ago by Winship Herr, Robert Kingston, and Keith Yamamoto in a meeting on transcription factors. Instead of having a meeting with 36, 30-minute presentations, each of five sessions was devoted to a specific topic, introduced by one or two short talks that set the background for the topic. Anyone who had data relevant to the topic could then contribute, and could do so several times in the same session or in different sessions. To encourage short and to-the-point contributions, participants could use no visual aids other than the chalkboard or the overhead projector.

DNA Recombination and Repair (James Haber and Scott Hawley; October 20–23) reviewed the flood of new information about the proteins that carry out recombination, and the new methods being used to look in vivo at how DNA strands are being manipulated. The goal of the meeting was to see whether a consensus could be reached about the essential elements in the several types of homologous and nonhomologous recombination pathways.

The second meeting—*Glucocorticoid Regulatory Mechanisms and Pathophysiology* (Daryl Granner and Keith Yamamoto; December 8–11)—also looked at a well-established field. The corticosteroid hormones and their agonist and antagonist derivatives are among the most widely used therapeutic agents, and the glucocorticoid receptor is one of the best-understood eukaryotic transcriptional regulatory factors. The meeting brought together investigators working across the spectrum of studies of

Meier House Provides housing accommodations for meeting participants at Banbury Center.

glucocorticoid action, as well as several experts in related areas, to integrate knowledge in the field, identify specific challenges and opportunities, and bridge intellectual gaps.

Meetings of this format are much harder work for the participants, but they can be very rewarding. Indeed, both meetings worked extremely well and participants were enthusiastic, once the shock of not using PowerPoint presentations had worn off!

Gary Bokoch and Ulla Knaus organized a meeting on *Oxidases in Inflammation and Cellular Signaling* (November 17–20). Reactive oxygen species were recognized nearly 30 years ago as products generated by phagocytic leukocytes for the purpose of bacterial killing. During subsequent years, the system responsible for generating oxidants in a controlled fashion has been defined, and it is now apparent that oxidants may also have roles as intracellular signaling molecules or second messengers. Here again, disparate areas of research find common elements, and a discussion meeting of investigators drawn from these different fields can help promote new research.

Neuroscience

The neuroscience meeting took as its subject a topic that goes all the way from basic neurological processes to the highest levels of psychology. Understanding the neural and psychological basis of emotions is essential since emotional responses pervade all aspects of cognition and behavior and can give insight into psychiatric illnesses, including depression, anxiety, and aspects of drug addiction. Emotion has been a neglected topic for scientific discussion, but there is now a revival of interest from several different viewpoints, not least the advances in neurobiology and the increasing convergence of animal and human studies.

Psychobiology of Emotion (Ray Dolan and Lewis Wolpert; October 27–30) included biologists, imaging scientists, experimental psychologists, and pharmacologists, all attempting to understand how we come to experience these most personal experiences.

Vaccines

Banbury Center has hosted a series of meetings for the Albert B. Sabin Vaccine Institute devoted to many aspects of vaccines, scientific as well as social. *Global Vaccine Shortage: The Threat to Children and What to Do About It* (Lance Gordon, Lewis A. Miller, and Nancy Tomich; October 23–25) was one that dealt with social and policy issues. The participants, drawn from academia, government, and industry, discussed the most feasible approaches to solving the recurring vaccine supply problems in the United States and in developing nations.

Education

The Dolan DNA Learning Center and Banbury Center continue to work together on the eugenics Web Site (http://www.eugenicsarchive.org/eugenics/), funded by a grant from the ELSI program of the National Human Genome Research Institute. The most recent grant includes an education component—funding for a series of workshops on *American Eugenics and the New Biology: Perspectives and Parallels* (David Micklos and Jan Witkowski; April 14–16). This workshop, which was targeted at opinion leaders and policy makers from government, science, healthcare, education, and the mass media, provided an opportunity to learn about America's past involvement in eugenics from leading experts and to interact with them in the context of a small meeting.

Watson School of Biological Sciences

This year, for the first time, we held two *Topics in Biology* courses so as to keep the class size small. The first was the return visit, by popular demand, of Hidde Ploegh from Harvard to teach an immunology course. The second was a new course on microbial pathogenesis, taught by Stan Malloy and Ron Taylor. They teach the summer Bacterial Genetics course at the main campus and are wonderful teachers. By all accounts, their course was a tremendous success.

Acknowledgments

As always, Bea Toliver, Ellie Sidorenko, and Katya Davey ensure that the meetings ran properly; Chris McEvoy, Andy Sauer, Joe Ellis, and Craig Campbell keep the estate looking beautiful; Ed Campodonico, Bill Dickerson, and Jon Parsons coped masterfully with participants' audiovisual needs; and Claudia Schmid keeps our buildings pristine.

Jan Witkowski

MEETINGS

DNA Interactive Advisory Panel

January 17–19

FUNDED BY **Howard Hughes Medical Institute**

ARRANGED BY **D. Micklos,** Dolan DNA Learning Center, Cold Spring Harbor Laboratory
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

SESSION 1

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory: Welcome and procedures.

D. Micklos, Dolan DNA Learning Center, Cold Spring Harbor Laboratory: Purpose and overview of the Genetic Journey/ *DNAi* project.

Introductions: Participants, CSHL, HHMI, Windfall Films Ltd., and RGB Company Ltd.

P. Bruns and D. Liu, Howard Hughes Medical Institute, Chevy Chase, Maryland: Funding perspective and *DNAi* mini-courses.

J.D. Watson, Cold Spring Harbor Laboratory: Genetic Journey, evolution of the project, thoughts in the DNA structure, and key points of the series.

D. Dugan, Windfall Films Ltd., London, United Kingdom, and Max Whitby, The Red Green & Blue Company Ltd., London, United Kingdom: Production perspective.

D. Micklos, Dolan DNA Learning Center, Cold Spring Harbor Laboratory: Concept for *DNAi.*

SESSION 2

D. Micklos and DNALC Staff, Dolan DNA Learning Center, Cold Spring Harbor Laboratory: Tour of Dolan DNALC.

D. Micklos and DNALC Staff, Dolan DNA Learning Center, Cold Spring Harbor Laboratory: Discussion of *DNAi* template and Technology I.

Exploration of Innovative WWW Sites and Technology

D. Micklos and DNALC Staff, Dolan DNA Learning Center, Cold Spring Harbor Laboratory: Discussion of *DNAi* template and Technology II.

SESSION 3

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory: Introduction to five content areas of Genetic Journey.

Small Group Brainstorming on Five Content Areas, Concepts, and Innovative Approaches

Summary of group findings

Next Steps: WWW Site as Interaction Tool and Summer Internships

Dolan DNALC Focus Group

Neurodegenerative Disease Models: From Pathogenesis to Therapeutics

February 10–13

FUNDED BY **Huntington's Disease Society of America and the Amyotrophic Lateral Sclerosis Association**

ARRANGED BY **C.A. Ross,** Johns Hopkins University School of Medicine and Huntington's Disease Society of America, Baltimore, Maryland
L. Bruijn, Amyotrophic Lateral Sclerosis Association, Guilford, Connecticut

Welcome: J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
Opening Remarks: C.A. Ross, Johns Hopkins University School of Medicine, Baltimore, Maryland and Huntington's Disease Society of America
L. Bruijn, Amyotrophic Lateral Sclerosis Association, Guilford, Connecticut

SESSION 1: Biochemical Systems
Chairperson: S.L. Lindquist, Whitehead Institute, Cambridge, Massachusetts

R. Wetzel, University of Tennessee Medical Center, Knoxville: Polyglutamine aggregation and interactions.
A. Ciechanover, Technion-Israel Institute of Technology, Haifa, Israel: Ubiquitin activation of transcriptions: NF-κB as a paradigm.
T.M. Dawson, Johns Hopkins University School of Medicine, Baltimore, Maryland: The syns of PD.
J.F. Gusella, Massachusetts General Hospital, Charlestown: Genetic criteria for evaluating HD models.
R.H. Brown, Massachusetts General Hospital, Charlestown: ALS genetics and pathogenesis: Insights from studies of SOD1.

SESSION 2: Cell Systems
Chairperson: K. Duff, Nathan Kline Institute, Orangeburg, New York

Y. Lazebnik, Cold Spring Harbor Laboratory: Cell death.
R.R. Kopito, Stanford University, California: Protein aggregation and the ubiquitin proteasome system.
M.E. MacDonald, Massachusetts General Hospital, Charlestown: Early events in HD.
D. Sulzer, Columbia University, New York: Is macroautophagy a desperate attempt at neuroprotection?
H.D. Durham, Montreal Neurological Institute, Quebec, Canada: Physiology of aggregation in motor neurons.

R. Morimoto, M. MacDonald

SESSION 3: Invertebrate Model Systems
Chairperson: R.R. Kopito, Stanford University, California

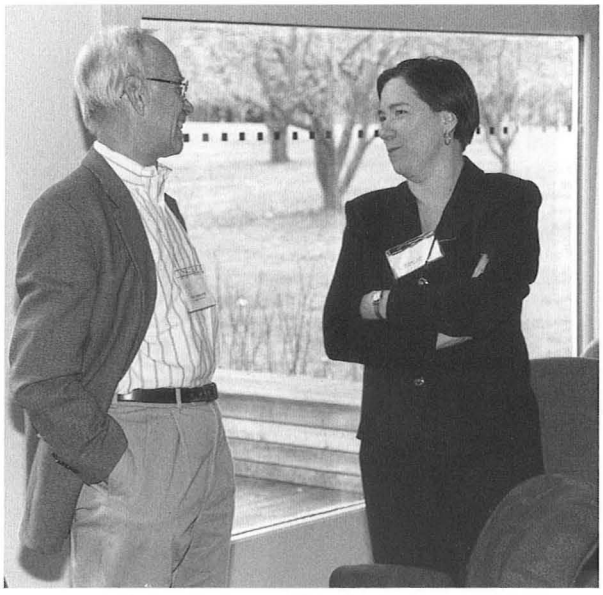
M. Feany, Brigham and Women's Hospital, Boston, Massachusetts: Fly models for neurodegeneration.
L.M. Thompson, University of California, Irvine: Therapeutic implications of transcriptional dysregulation and aggregation in HD.
S.L. Lindquist, Whitehead Institute, Cambridge, Massachusetts: Neurodegenerative disease models: Lessons from yeast.
R.I. Morimoto, Northwestern University, Evanston, Illinois: Stressing worms by polyglutamines: Effects of aging on aggregation and toxicity.
C. Link, University of Colorado, Boulder: β amyloid-chaperone interactions in a transgenic *C. elegans* model.

SESSION 4: Vertebrate Model Systems
Chairperson: L.M. Thompson, University of California, Irvine

S.B. Prusiner, University of California, San Francisco: Transgenic studies of prion diseases.
M. Hutton, Mayo Clinic, Jacksonville, Florida: *Tau* in neurodegenerative disease.
C.A. Ross, Johns Hopkins University School of Medicine, Baltimore, Maryland and Huntington's disease Society of America: Polyglutamine pathogenesis: Proteolysis, aggregation, and transcription.
J.D. Rothstein, Johns Hopkins University School of Medicine, Baltimore, Maryland: Astroglia, glutamate, and transporters: Pathway for cell death and target for neuroprotection.

SESSION 5: Models and Therapeutics
Chairperson: J.D. Rothstein, Johns Hopkins University School of Medicine, Baltimore, Maryland

K. Duff, Nathan Kline Institute, Orangeburg, New York: Sequestration of peripheral A-beta as a therapeutic approach.
D.R. Borchelt, Johns Hopkins Medical Institutions, Baltimore, Maryland: Protein aggregation in neurodegenerative disease.
Q. Liu, Harvard Medical School. Boston, Massachusetts: Chemical screens for compounds that affect mutant SOD1-induced aggresome formation.
P.T. Lansbury, Brigham and Women's Hospital, Boston, Massachusetts: From Parkinson's genes to new therapeutic strategies.



R. Abendroth, S. Lindquist

R. Brown, T. Maniatis

A Critical Review of Endostatin and Its Biology

March 10–13

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **J. Folkman,** Children's Hospital, Boston, Massachusetts

SESSION 1: Discovery and Structure-Function of Endostatin
Chairperson: J. Folkman, Children's Hospital, Boston, Massachusetts

M.S. O'Reilly, MD Anderson Cancer Center, Houston, Texas: The discovery and characterization of endostatin.
Y.-H. Ding, Pfizer Inc., Cambridge, Massachusetts: Crystal structure of human endostatin and its implications.
R. Kalluri, Beth Israel Deaconess Medical Center, Boston, Massachusetts: Cross-talk between endogenous inhibitors of angiogenesis.
A.W. Griffioen, University Hospital Maastricht, The Netherlands: Development of novel angiostatics by peptide design based on the structure of known angiogenesis inhibitors.

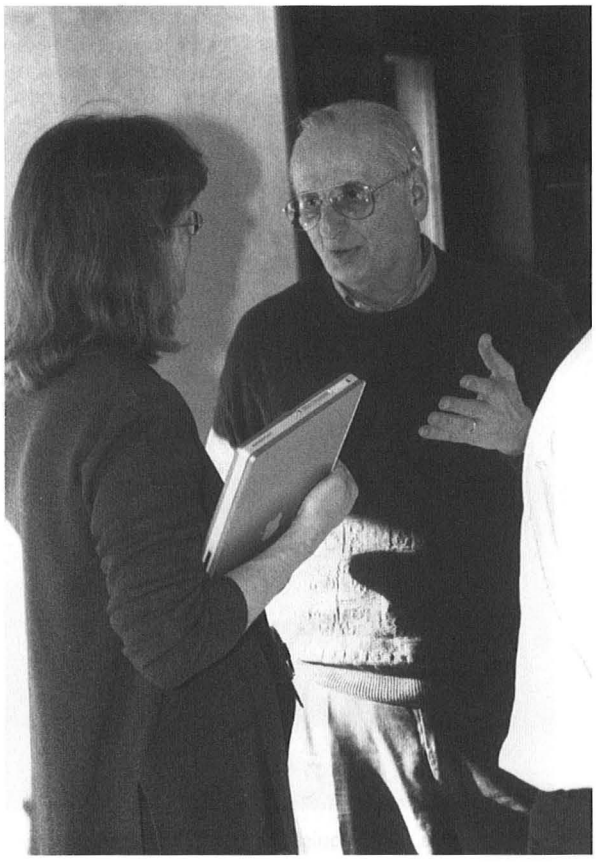
Summary and Discussion

SESSION 2: Production of Recombinant Endostatin
Chairperson: S. Libutti, National Cancer Institute, Bethesda, Maryland

J. Shiloach, National Institutes of Health, Bethesda, Maryland: Production and recovery of recombinant endostatin from *pichiapastoris*.
I.S. Chung, Kyung Hee University, Suwon, Korea: Production of recombinant endostatin from stably transformed lepidopteran and dipteran insect cells.

SESSION 3: In Vitro Biology Mechanism of Action
Chairperson: S. Libutti, National Cancer Institute, Bethesda, Maryland

T. Pihlajaniemi, University of Oulu, Finland: Diverse roles of the endostatin precursor, type XVIII collagen, and its homologue, type XV collage.
L. Claesson-Welsh, Uppsala University, Sweden: Is endostatin's effect on endothelial cell migration receptor-independent and is it critical in anti-angiogenesis?
D.S. Milstone, Brigham & Women's Hospital, Boston, Massachusetts: E-selectin and the antiangiogenic activity of endostatin.
B.K. Lee Sim, Entremed, Inc., Rockville, Maryland: Endostatin interacts with tropomyosin and actin: A potential modulator of the antitumor activity of endostatin.
W.D. Figg, National Cancer Institute, Bethesda, Maryland: Comparison of murine and human endostatin in pre-clinical models.



L. Claesson-Welch, J. Folkman

SESSION 4: In Vivo: Laboratory Experiments I
Chairperson: M.S. O'Reilly, MD Anderson Cancer Center, Houston, Texas

B.D. Ackley, University of California, Santa Cruz: The *C. elegans* homologue of collagen XVIII/endostatin regulates aspects of cell motility and neurogenesis.

F. Bertolini, European Institute of Oncology, Milan, Italy: Effect of endostatin on mobilization, clonogenic potential, and differentiation of endothelial progenitors.

B.R. Olsen, Harvard Medical School, Boston, Massachusetts: Phenotypic abnormalities of collagen VIII/endostatin null mice: Implications for biological function.

O. Kisker, University Hospital Marburg, Germany: Continuous administration of endostatin improves the efficacy and potency of therapy in a mouse xenograft tumor model.

S. Soker, Children's Hospital, Boston, Massachusetts: Novel functions of endostatin, or what have we missed in vitro that can explain the antitumor activity of endostatin in vivo.

M.R. Passos-Bueno, Universidade de Sao Paulo, San Paulo, Brazil: Characterization of novel SNPs (single nucleotide polymorphisms) in endostatins derived from collagens XV and XVIII and their impact in the susceptibility of cancer.

SESSION 5: In Vivo: Laboratory Experiments II
Chairperson: H.M. Pinedo, VU Medical Center, Amsterdam, The Netherlands

K. Moulton, Children's Hospital, Boston, Massachusetts: Endostatin inhibition of angiogenesis in atherosclerotic plaques.

B. Fenton, University of Rochester Medical Center, New York: Disparate effects of endostatin on tumor vascular perfusion and hypoxia in two murine mammary carcinomas.

R. Bjerkvig, University of Bergen, Norway: Delivery of endostatin to brain tumors from engineered cells encapsulated in alginate.

S. Libutti, National Cancer Institute, Bethesda, Maryland: Antiangiogenic gene therapy and endothelial cell gene expression profiling.

R.M. Blaese, National Cancer Institute, Bethesda, Maryland: Commentary.

SESSION 6: Preclinical and Clinical Translation
Chairperson: W.D. Figg, National Cancer Institute, Bethesda, Maryland

J.G. McArthur, Cell Genesys, Inc., Foster City, California: The impact of vector 5 decisions on antiangiogenic gene therapy.

H.M. Pinedo, VU Medical Center, Amsterdam, The Netherlands: Intrapatient comparison of pharmacokinetics following subcutaneous and intravenous administration of endostatin.

C. Sidor, EntreMed, Inc., Rockville, Maryland: The issues in designing trials using endostatin.

R.S. Herbst and M.S. O'Reilly, MD Anderson Cancer Center, Houston, Texas: The MD Anderson Phase I endostatin study.

J. Heymach, Children's Hospital, Boston, Massachusetts: Use of circulating endothelial cells as a surrogate marker for endostatin therapy in patients.

J.P. Eder, Dana-Farber Cancer Institute, Boston, Massachusetts: Clinical trials of endostatin.

Banbury grounds

Genetic Enhancement of Athletic Performance

March 17–20

FUNDED BY **WADA Health, Medical & Research Committee**

ARRANGED BY **T. Friedmann,** University of California, San Diego
G.I. Wadler, New York University School of Medicine, Manhasset
J. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

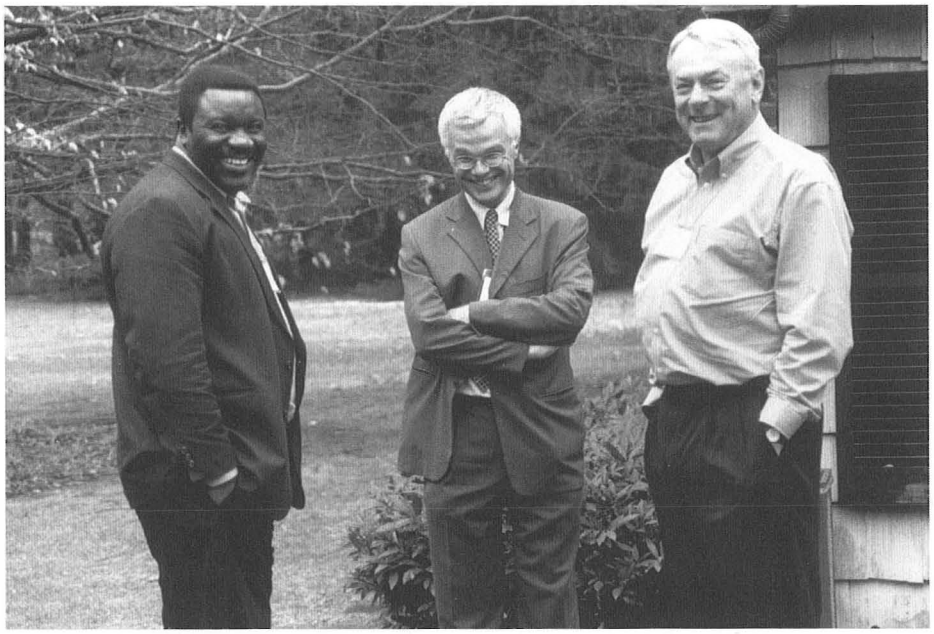
SESSION 1
Chairperson: T. Friedmann, University of California, San Diego

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory: Introduction.
T. Friedmann, University of California, San Diego: Background.
A. Ljungqvist, International Amateur Athletic Federation, Enebyberg, Sweden: Welcome.
R. Pound, World Anti-Doping Agency, Montreal, Quebec, Canada: Introduction.
G.I. Wadler, New York University School of Medicine, Manhasset, New York: The history of the nature of doping.
J.O. Koss, WADA Health, Medical & Research Committee, Aurora, Ontario, Canada: Athlete's perspective.
R.K. Mueller, Leipzig University, Germany: Current methods of screening.

SESSION 2
Chairperson: G. Goldspink, Royal Free & University College Medical School, London, United Kingdom

T. Friedmann, University of California, San Diego: Principles of gene therapy: History, current state, and directions.
H.L. Sweeney, University of Pennsylvania, Philadelphia: Target tissues, muscle.
J. Glorioso, University of Pittsburgh, Pennsylvania: Detection of gene transfer and genetic approaches to pain control.
C. Evans, Brigham and Women's Hospital, Boston, Massachusetts: Stem cells, injury, and tissue repair.
O. Cohen-Haguenauer, Hospital Saint-Louis, Paris, France: Regulatory issues.

Questions and General Discussion



J.-C. Mbanya, P. Verbiest, R. Pound

SESSION 3: Genetic Targets: Metabolism, Muscle Function and Growth Factors, Oxygen Carrying Capacity, Energy Utilization

Chairperson: G.I. Wadler, New York University School of Medicine, Manhasset, New York

C. Sundberg, Karolinska Institute, Stockholm, Sweden: Muscle physiology.

C. Sundberg, Karolinska Institute, Stockholm, Sweden: Metabolism of exercising muscle.

G. Goldspink, Royal Free & University College Medical School, London, United Kingdom: IGF-1.

B.J. Byrne, University of Florida School of Medicine, Gainesville: EPO.

D.C. Wallace, Emory University School of Medicine, Atlanta, Georgia: Mitochondrial energy production and performance.

J. Glorioso, University of Pittsburgh, Pennsylvania: Metabolic changes: Microarrays.

SESSION 4: Roundtable Discussion

Chairperson: T. Friedmann, University of California, San Diego

H.L. Sweeney, University of Pennsylvania, Philadelphia

B.J. Byrne, University of Florida School of Medicine, Gainesville

D.C. Wallace, Emory University School of Medicine, Atlanta, Georgia

B. Saltin, The Copenhagen Muscle Research Centre, Denmark

G.I. Wadler, New York University School of Medicine, Manhasset

Legal and Ethical Aspects of Gene-based Enhancement in Sport

Chairperson: R.R. Young, Holme Roberts & Owen LLP, Colorado Springs, Colorado

B.-M. Knoppers, Universite de Montreal, Quebec, Canada: Legal, medical perspective.

E.T. Juengst, Case Western Reserve University, Cleveland, Ohio: Biomedical ethics of enhancement.

A. Schneider, The University of Western Ontario, London, Canada: The ethics of sport.

R.R. Young, Holme Roberts & Owen LLP, Colorado Springs, Colorado: Sport and the law.

SESSION 5: Open Discussion, WADA Statement, and Communique

Chairpersons: A. Ljungqvist, International Amateur Athletic Federation, Enebyberg, Sweden; **R. Pound,** World Anti-Doping Agency, Montreal, Quebec, Canada; **G.I. Wadler,** New York University School of Medicine, Manhasset, New York; and **T. Friedmann,** University of California, San Diego

B. Drinkwater, A. Schneider

RNA Metabolism and the Fragile X Syndrome

April 7–10

FUNDED BY **National Institute of Mental Health, NIH, and National Institute of Child Health and Human Development, NIH**

ARRANGED BY **R.B. Darnell,** The Rockefeller University, New York
S.T. Warren, HHMI, Emory University School of Medicine, Atlanta, Georgia
D.L. Nelson, Baylor College of Medicine, Houston, Texas

Introduction: J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
R.B. Darnell, The Rockefeller University, New York

SESSION 1: FMRP and the Regulation of RNA and Protein Metabolism
Chairperson: R.B. Darnell, The Rockefeller University, New York

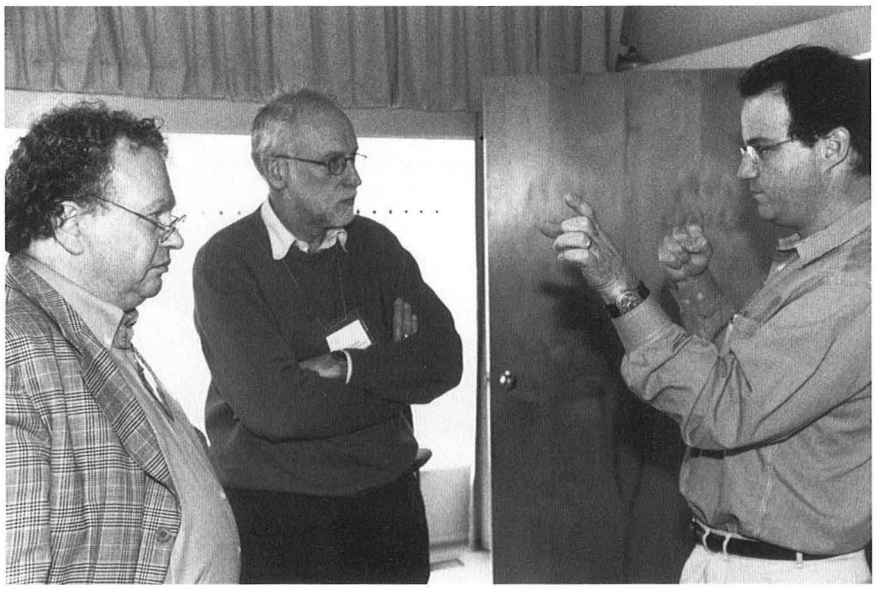
S. Ceman, Emory University School of Medicine, Atlanta, Georgia: Regulation of FMRP function by posttranslational modifications.
B. Oostra, Erasmus Universiteit Rotterdam, The Netherlands: Transport of FMRP in PC12 cells.
Y. Feng, Emory University, Atlanta, Georgia: FMRP in developing neural cells.
K. Jensen, The Rockefeller University, New York: Identifying in vivo RNA targets of vertebrate RNA-binding proteins.
H.T. Orr, University of Minnesota, Minneapolis: The SCA1 protein, ataxin-1, and RNA processing.
D.L. Black, HHMI, University of California, Los Angeles: Neuronal regulation of pre-mRNA splicing.

Overview and Questions

SESSION 2: FMR RNA Targets
Chairperson: S.T. Warren, HHMI, Emory University School of Medicine, Atlanta, Georgia

J. Darnell, The Rockefeller University, New York: Unique RNA targets of the RGG box and KH domains of FMRP.
W.T. Greenough, University of Illinois, Urbana: Possible phenotype contributions of some FMRP-interacting mRNAs.
H. Moine, Institut de Genetique et de Biologie Moleculaire et Cellulaire, Strasbourg, France: The interaction of FMRP with RNAs containing G-quartets.
L.J. Regan, Yale University, New Haven, Connecticut: Specific RNA recognition by FMRP: The role of the KH domains.

Overview and Questions



J.L. Mandel, B. Oostra, G. Bassell

SESSION 3: RNA Trafficking and Translational Control
Chairperson: D.L. Nelson, Baylor College of Medicine, Houston, Texas

O. Steward, University of California, Irvine: Targeting mRNA to synaptic sites on dendrites.
G.J. Bassell, Albert Einstein College, Bronx, New York: Regulation and function of FMRP and FMR1 mRNA trafficking in developing neurons.
M.W. Hentze, European Molecular Biology Laboratory, Heidelberg, Germany: Translational regulation by mRNA-binding proteins.
J. Richter, University of Massachusetts Medical School, Worcester: CPEB-mediated translational control.
J.R. Fallon, Brown University, Providence, Rhode Island: Regulation of FMR1 mRNA translation in neurons.

Overview and Questions

SESSION 4: FMR in Flies
Chairperson: W.T. Greenough, University of Illinois, Urbana

T.A. Jongens, University of Pennsylvania School of Medicine, Philadelphia: Analysis of behavioral and germ line defects of *dfmr1* mutant *Drosophila*.
A. Costa, Princeton University, New Jersey: dFMR-Orb interactions and mRNA localization/translation.
J. Morales, Baylor College of Medicine, Houston, Texas: DFXR regulates brain morphology and function in the CNS.
H. Matthies, University of Utah, Salt Lake City: Does *Drosophila* FMRP regulate microtubule dynamics/stability?
K. Moses, Emory University School of Medicine, Atlanta, Georgia: Genetic screen for dominant modifiers of *dFMRp*.
J.-L. Mandel, Institut Genetique et de Biologie Moleculaire et Cellulaire, Illkirch, France: FMRP interactors and *Drosophila* results.

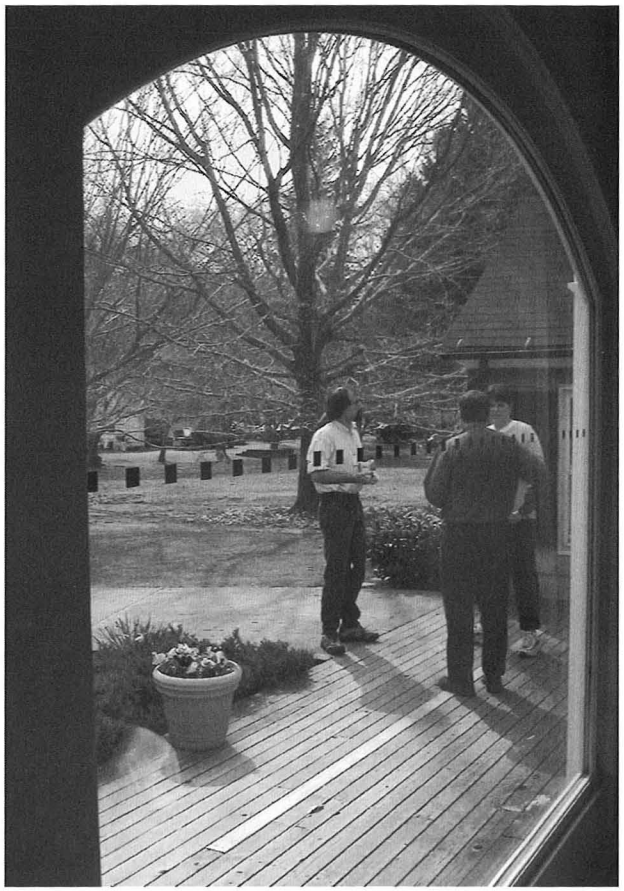
Overview and Questions

SESSION 5: FMR RNA Physiology
Chairperson: R.B. Darnell, The Rockefeller University, New York

K.M. Huber, University of Texas Southwestern Medical Center, Dallas: Role for ERK in mGluR and protein-synthesis-dependent LTD.
M.F. Bear, HHMI, Brown University, Providence, Rhode Island: Fragile X: The LTD connection.
R. Malinow, Cold Spring Harbor Laboratory: AMPA receptor trafficking during synaptic plasticity.
K. Zito, Cold Spring Harbor Laboratory: Identification of genes differentially expressed in wild-type and *fmr1* knockout mouse barrel cortex.

Summing Up: Current Issues, Future Plans

R.B. Darnell, The Rockefeller University, New York
D.L. Nelson, Baylor College of Medicine, Houston, Texas
S.T. Warren, HHMI, Emory University School of Medicine, Atlanta, Georgia



Coffee break

American Eugenics and the New Biology: Perspectives and Parallels

April 14–16

FUNDED BY **National Human Genome Research Institute**

ARRANGED BY **D. Micklos,** Dolan DNA Learning Center, Cold Spring Harbor Laboratory
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

SESSION 1: History

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory: Introduction
G. Allen, Washington University, St. Louis, Missouri: Progressive origins of eugenics and the Eugenics Record Office.
E. Carlson, SUNY, Stony Brook: Badseed, corrupted germ plasm, prized pedigrees, and eugenic worth.

SESSION 2: Impacts

S. Selden, University of Maryland, College Park: Fitter Families for Future Firesides: State fairs and the construction of merit and race in America, 1913–1930.
P.A. Lombardo, University of Virginia, Charlottesville: Immigration and sterilization in the United States.

SESSION 3: Resources: Dolan DNA Learning Center

D. Micklos and J.A. Witkowski, Cold Spring Harbor Laboratory: Introduction to the Image Archive on the American Eugenics Movement.

SESSION 4: Lessons

B. Biesecker, National Human Genome Research Institute, Bethesda, Maryland: Use of genetic information: Reproductive choice, risk prediction, and (ultimately) behavior change.
D. Goldman, National Institutes of Health, Bethesda, Maryland: Genetics of alcoholism.

R. Apodaca, P. Ryan, G. Allen

Sequence-based Disease Gene Hunts

April 28–May 1

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **A. Chakravarti,** Johns Hopkins University School of Medicine, Baltimore, Maryland

Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
A. Chakravarti, Johns Hopkins University School of Medicine, Baltimore, Maryland

SESSION 1: Concepts of Complex Disease
Chairperson: A. Chakravarti, Johns Hopkins University School of Medicine, Baltimore, Maryland

J.K. Pritchard, University of Chicago, Illinois: Allelic heterogeneity, haplotype blocks, and linkage disequilibrium mapping.
X. Estivill, The Hospital for Sick Children, Toronto, Canada: Somatic interstitial duplications of chromosome 15 in anxiety disorders.
C.H. Langley, University of California, Davis: Association mapping of a model organism: Patterning of *Drosophila* sensory organs.

SESSION 2: Human Genomic Variation
Chairperson: C.H. Langley, University of California, Davis

J.L. Weber, Marshfield Medical Research Foundation, Wisconsin: Diallelic insertion/deletion polymorphisms.
J.C. Stephens, Genaissance Pharmaceuticals, Inc., New Haven, Connecticut: DNA variation of human genes.
D. Altshuler, Massachusetts General Hospital, Boston: A large-scale study of human haplotypes in four population samples.
D. Cutler, Johns Hopkins University School of Medicine, Baltimore, Maryland: Human genetic substructure and its implications for disease association studies..

SESSION 3: Human Genome Structure
Chairperson: F.S. Collins, National Human Genome Research Institute, Bethesda, Maryland

J.D. McPherson, Washington University, St. Louis, Missouri: Whole-genome comparative physical maps.
M. Clamp, The Sanger Institute, Cambridge, United Kingdom: Human genome annotation in Ensembl.
F.S. Collins, National Human Genome Research Institute, Bethesda, Maryland: Commentary.

SESSION 4: Genome Scanning Technology
Chairperson: D. Altshuler, Massachusetts General Hospital, Boston

C.R. Cantor, Sequenom Inc., San Diego, California: Finding disease genes in the healthy population.
M.S. Chee, Illumina, Inc., Cardiff, California: Automated large-scale SNP genotyping on randomly assembled arrays.
M. Zwick, McKusick-Nathans Institute of Genetic Medicine, Baltimore, Maryland: High-throughput genome resequencing using microarrays and the ABACUS software package.
M. Wigler, Cold Spring Harbor Laboratory: Mapping genome deletions using microarray methods.

SESSION 5: Discussion: Present and Future
Chairperson: A Chakravarti, Johns Hopkins University School of Medicine, Baltimore, Maryland

Points for Discussion Arising during Meeting

M. Clamp, E. Dawson

Green Tea and Cancer: A Critical Review

May 12–15

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **C.S. Yang,** Rutgers University, Piscataway, New Jersey

SESSION 1: Chemistry: Inhibition of Tumorigenesis in Animal Models
Chairpersons: A. Conney, Rutgers University, Piscataway, New Jersey, and **H. Fujiki,** Saitama Cancer Center Research Institute, Japan

C.-T. Ho, Rutgers University, New Brunswick, New Jersey, and D. Balentine, Unilever Research Vlaardingen, The Netherlands: Chemistry and antioxidant mechanism of green tea catechins.

H. Fujiki, Saitama Cancer Center Research Institute, Japan: Cancer prevention with green tea before cancer onset and combination cancer prevention with green tea following cancer treatment.

A.H. Conney, Rutgers University, Piscataway, New Jersey: Inhibition of skin tumorigenesis by tea: What are the mechanisms and active constituents?

F.-L. Chung, American Health Foundation, Valhalla, New York: Inhibition of lung carcinogenesis by tea.

SESSION 2: Studies In Vivo
Chairpersons: J. Weisburger, American Health Foundation, Valhalla, New York, and **H. Mukhtar,** University of Wisconsin, Madison

J. Weisburger, American Health Foundation, Valhalla, New York: Inhibition of colon carcinogenesis by tea.

R. Dashwood, Oregon State University, Corvallis: Response of *Apc*min and *A33*DNb-cat mutant mice to treatment with tea, sulindac, and 2-amino-1-methyl-6-phenylimidazo(4,5-*b*)pyridine (PhIP).

H. Mukhtar, University of Wisconsin, Madison: Green tea in prevention of prostate cancer.

Y. Hara, Tokyo Food Techno Co., Ltd., Japan: The fate of tea catechins in vivo.

X. Meng, Rutgers University, Piscataway, New Jersey: Bioavailability and biotransformation of tea polyphenols.

Public Lecture: C.S. Yang, Rutgers University, Piscataway, New Jersey: Beneficial health effects of tea: Evidence, myth, and perspectives.

A. Conney, L. Arab

SESSION 3: Mechanistic Studies In Vitro
Chairpersons: I.B. Weinstein, Columbia University, New York, and **Z. Dong,** University of Minnesota, Austin

I.B. Weinstein, Columbia University, New York: Molecular mechanisms of growth inhibition by EGCG.
Z. Dong, University of Minnesota, Austin: The effects of tea polyphenols on signal transduction pathways.
Y. Cao, Karolinska Institute, Stockholm, Sweden: Suppression of angiogenesis by green tea.
M. Egeblad, University of California, San Francisco: Green tea as a matrix metalloproteinase inhibitor: Review of the literature.
S. Garbisa, Universita degli Studi di Padova, Italy: Green tea inhibition of matrix proteases instrumental to invasion.

SESSION 4: Epidemiological Studies I
Chairpersons: L. Arab, University of North Carolina, Chapel Hill, and **Y.-T. Gao,** Shanghai Cancer Insti-tute, China.

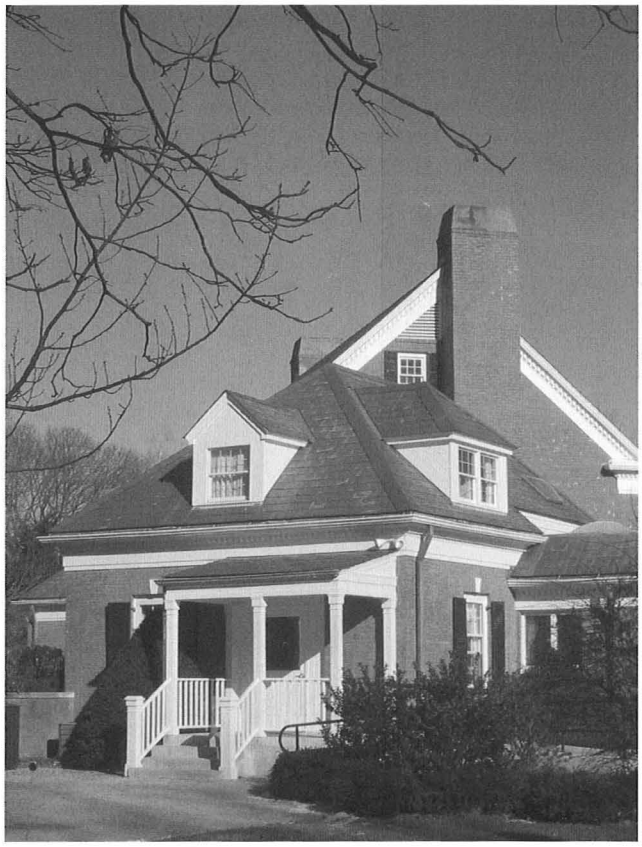
L. Arab, University of North Carolina at Chapel Hill: Tea and rectal cancer, epidemiologic studies in the U.S. and Russia.
I. Hakim, University of Arizona Health Sciences Center, Tucson: Green tea and oxidative stress among smokers: Results from a randomized clinical trial.
Y.-T. Gao, Shanghai Cancer Institute, China: Epidemiological studies on cancer and green tea drinking in Shanghai, China.
Y. Tsubono, Tohoku University, Sendai: A summary of Japanese epidemiologic studies, published and unpublished.
J.-M. Yuan, University of Southern California: Urinary tea polyphenols in relation to reduced risk of gastric and esophageal cancers: Findings from the Shanghai cohort study.
Z.-F. Zhang, University of California of Los Angeles School of Public Health: Green tea drinking and reduced risk of gastric cancer and chronic gastritis.

SESSION 5: Epidemiological Studies II
Chairperson: C.S. Yang, Rutgers University, Piscataway, New Jersey

Z.-M. Chen, Radcliffe Infirmary, Oxford, United Kingdom: Green tea and cancer mortality: A prospective study of 220,000 male adults in China.
C.-C. Hsieh, University of Massachusetts, Worcester: Green tea and cancer: Some thoughts on intervention studies.

SESSION 6: Final Assessment and Future Research

Discussion A: What are the mechanisms of inhibition of carcinogenesis by tea constituents? How do we integrate studies in vivo and in vitro?
Discussion B: Does tea consumption inhibit human carcinogenesis? How can we reconcile the different results in epidemiological studies?
Discussion C: What are the key questions to be answered on tea and cancer? How can we set about answering them?



Meier House

Designer Molecules for Biosensor Applications

August 12–14

FUNDED BY **National Science Foundation, through a grant to University of Illinois, Urbana**

ARRANGED BY **B. Mishra,** Courant Institute of Mathematical Sciences, New York University, New York

Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

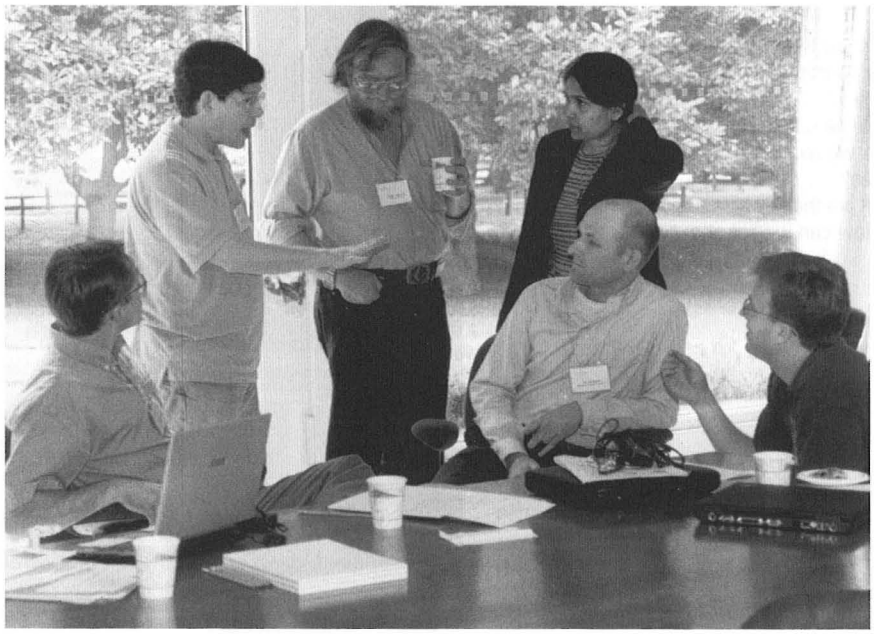
SESSION 1
Chairperson: B. Mishra, Courant Institute of Mathematical Sciences, New York University, New York

M. Desai, Program Officer, National Science Foundation, Arlington,Virginia
J.T. Schwartz, Courant Institute of Mathematical Sciences, New York University, New York
M. Wigler, Cold Spring Harbor Laboratory
J. Dahlberg, University of Wisconsin, Madison

SESSION 2: Discussion Panels I

PANEL 1: Genome-based Techniques
Chairperson and Discussion Leader: F.R. Kramer, The International Center for Public Health, Newark, New Jersey

C.R. Cantor, Sequenom, Inc., San Diego, California
J. Dahlberg, University of Wisconsin, Madison
J. Ju, Columbia Genome Center, New York
F.R. Kramer, The International Center for Public Health, Newark, New Jersey
M. Wigler, Cold Spring Harbor Laboratory



Discussion during Coffee break

SESSION 3: Discussion Panels II

PANEL 2: Protein-based Techniques
Chairperson and Discussion Leader: R. Brent, The Molecular Sciences Institute, Inc., Berkeley, California

R. Brent, The Molecular Sciences Institute, Inc., Berkeley, California
R.R. Breaker, Yale University, New Haven, Connecticut
I. Burbulis, The Molecular Sciences Institute, Inc., Berkeley, California
A. Ellington, University of Texas, Austin
M. Sitharam, University of Florida, Gainesville

SESSION 4: Discussion Panels III

PANEL 3: Miscellaneous
Chairperson and Discussion Leader: N.C. Seeman, New York University, New York

N.C. Seeman, New York University, New York
H.R. Garner, University of Texas Southwestern Medical Center, Dallas
E.M. David, The Rockefeller University, New York
B. Mishra, Courant Institute of Mathematical Sciences, New York University, New York
A. Ray, University of Rochester, New York

SESSION 5: Conclusions
Chairperson: B. Mishra, Courant Institute of Mathematical Sciences, New York University, New York

R. Brent, The Molecular Sciences Institute, Inc., Berkeley California: Personal perspective.

SESSION 6: Panel Summaries and Review

SESSION 7: Key Points for Report and Recommendations

M. Desai, National Science Foundation, Arlington, Virginia
S. Katona, Department of Health and Human Services, Washington, D.C.
J.T. Schwartz, Courant Institute of Mathematical Sciences, New York University, New York

Cell Immortalization and Transformation

September 22–25

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **G. Peters,** Cancer Research UK, London, United Kingdom
J. Sedivy, Brown University, Providence, Rhode Island

Introduction:
G. Peters, Cancer Research UK, London, United Kingdom

SESSION 1: Telomeres and Mortality
Chairperson: C.J. Marshall, Institute of Cancer Research, London, United Kingdom

T. de Lange, The Rockefeller University, New York: Telomere-directed senescence.

R.R. Reddel, Children's Medical Research Institute, Westmead, Australia: Coexistence of ALT and telomerase in cells and tumors.

M.A. Blasco, National Centre of Biotechnology, Madrid, Spain: Functional interactions at the mammalian telomere: Implications for cancer and aging.

W.E. Wright, University of Texas Southwestern Medical Center, Dallas: Telomere-based replicative aging versus damage responses in human cells.

L. Donehower, Baylor College of Medicine, Houston, Texas: Aging-associated phenotypes in p53 mutant mice.

M. Serrano, National Center of Biotechnology, Madrid, Spain: "Super p53" mice: Phenotype of transgenic mice containing supernumerary *p53* genes.

SESSION 2: Senescence versus Stasis
Chairperson: T. de Lange, The Rockefeller University, New York

S. Lowe, Cold Spring Harbor Laboratory: Initiation and maintenance of cellular senescence.

J.W. Shay, University of Texas Southwestern Medical Center, Dallas: Telomerase and human epithelial cell tumor progression.

D. Galloway, Fred Hutchinson Cancer Research Center, Seattle, Washington: Telomere-independent pathways in senescent and immortal human cells.

T.D. Tlsty, University of California San Francisco: Loss of genomic integrity in human mammary epithelial cells: Early events in breast cancer.

R. Bernards, The Netherlands Cancer Institute, Amsterdam: New tools to study immortalization and transformation.

A. Zetterberg, C. Helin, J. DeCaprio, G. Peters, N. Sharpless

SESSION 3: Cell Cycle/Myc
Chairperson: C.J. Sherr, St. Jude Children's Research Hospital, Memphis, Tennessee

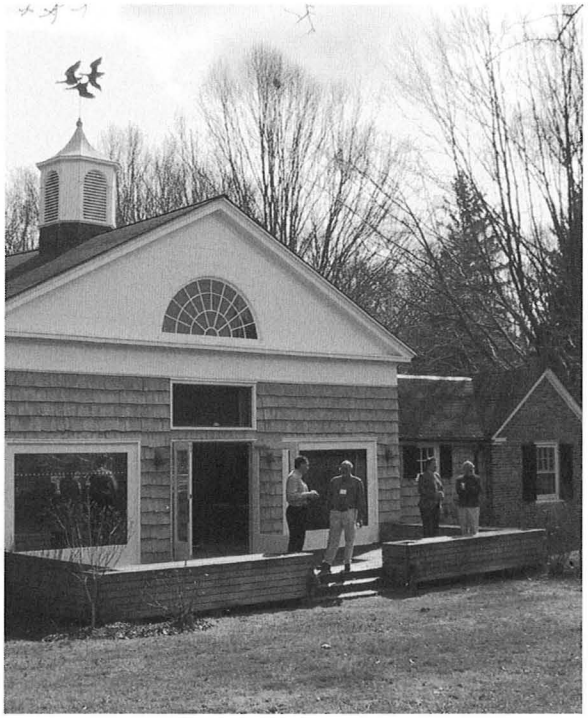
A. Zetterberg, Karolinska Institute, Stockholm, Sweden: Cell growth and checkpoints in G_1.
K. Helin, European Institute of Oncology, Milano, Italy: Suppression of the pRB- or p53-mediated G_1 checkpoint is required for E2F-induced S-phase entry.
J.M. Sedivy, Brown University, Providence, Rhode Island: What does Myc do: A few new insights into the cell growth versus proliferation conundrum.
A. Trumpp, Swiss Institute for Experimental Cancer Research, Epalinges, Switzerland: A novel role for c-Myc in stem cell self-renewal.

SESSION 4: INK4a/ARF
Chairperson: G. Peters, Cancer Research UK, London, United Kingdom

C.J. Sherr, St. Jude Children's Research Hospital, Memphis, Tennessee: *Ink4* genes and ARF.
N.E. Sharpless, Lineberger Comprehensive Center, Chapel Hill, North Carolina: The relative roles of $p16^{INK4}$ and $p19^{ARF}$ in murine cancer.
G. Peters, Cancer Research UK, London, United Kingdom: Transformation of $P16^{INK4A}$-deficient human fibroblasts.
J.A. DeCaprio, Dana-Farber Cancer Institute, Boston, Massachusetts: Genetic interactions between SV40 large T antigen and p53, Ink4a, and Arf.
M. van Lohuizen, The Netherlands Cancer Institute, Amsterdam: Senescence-bypass and transformation screens in primary mouse cells.

SESSION 5: Transformation/Tumorigenesis
Chairperson: J.M. Sedivy, Brown University, Providence, Rhode Island

W.C. Hahn, Dana-Farber Cancer Institute, Boston, Massachusetts: Human cell transformation: Cooperation among telomerase, tumor suppressor proteins, and oncogenes.
C. Counter, Duke University Medical Center, Durham, North Carolina: Distinct requirements for Ras oncogenesis in human versus mouse cells.
M. Frame, Beatson Institute for Cancer Research, Glasgow, United Kingdom: Transformation and cancer behavior controlled by Src kinase.
C.J. Marshall, Institute of Cancer Research, London, United Kingdom: Interactions between GTPase signaling pathways in cell proliferation.
Hartmut Land, University of Rochester Medical Center, New York: Mechanisms of oncogene cooperation.



Coffee break during meeting

A Critical Review of Melanoma: Biology and Therapy

September 29–October 2

FUNDED BY **Herbert J. Siegel Fund For Cancer Pharmacogenomics**

ARRANGED BY **M. Herlyn,** The Wistar Institute, Philadelphia, Pennsylvania
S. Lowe, Cold Spring Harbor Laboratory

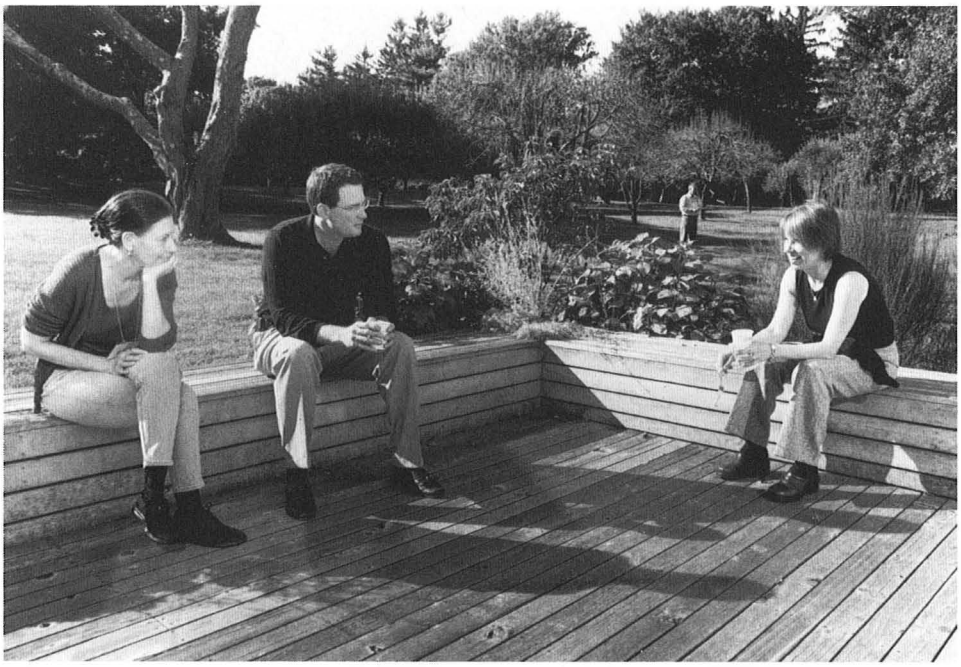
Introduction:
S. Lowe, Cold Spring Harbor Laboratory
M. Herlyn, The Wistar Institute, Philadelphia, Pennsylvania

SESSION 1: The Clinical Problem
Chairperson: S. Lowe, Cold Spring Harbor Laboratory

L. Schuchter, University of Pennsylvania, Philadelphia: Overview of the treatment of malignant melanoma: Limitations of our current therapeutic options.
D.L. Fraker, University of Pennsylvania, Philadelphia: Clinical results and mechanism of response of regional perfusion of melanoma.
M. Berwick, Memorial Sloan-Kettering Cancer Center, New York: Gene-environment interactions in the etiology of melanoma.

SESSION 2: Biology of Melanoma
Chairperson: M. Herlyn, The Wistar Institute, Philadelphia, Pennsylvania

D.C. Bennett, St. George's Hospital Medical School, London, United Kingdom: Melanocyte senescence, apoptosis, p16, and melanoma progression.
C. Berking, University of Munich, Germany: Induction of human melanoma by growth factors and UVB radiation.
E.E. Medrano, Baylor College of Medicine, Houston, Texas: The oncogenic protein Ski in melanoma development.
D.E. Fisher, Dana-Farber Cancer Institute, Boston, Massachusetts: MITF: Master transcriptional regulator in melanocytes and melanoma.



L. Schuchter, D. Fraker, M. Berwick

SESSION 3: Genetics of Melanoma
Chairperson: J. Sambrook, Peter MacCallum Cancer Research Institute, East Melbourne, Australia

D. Hogg, The University of Toronto, Canada: Using familial melanoma to probe mechanisms of tumor suppression.
J.M. Trent, National Human Genome Research Institute, Bethesda, Maryland: Using microarrays to dissect the genetics of melanoma.
B. Bastian, University of California, San Francisco: Genomic characteristics of melanocytic neoplasms.
L. Chin, Dana-Farber Cancer Institute, Boston, Massachusetts: Genetics, genomics, and biology of malignant melanoma.

SESSION 4: Molecular Biology of Melanoma
Chairperson: A.J. Levine, Institute for Advanced Studies, Princeton, New Jersey

Z.A. Ronai, Mount Sinai School of Medicine, New York: The transcriptional switch and melanoma resistance to apoptosis.
M.S. Soengas, University of Michigan Comprehensive Cancer Center, Ann Arbor: Bypassing cell death deficiencies in melanoma.
A. Ben-Ze'ev, Weizmann Institute of Science, Rehovot, Israel: Novel target genes of β-catenin signaling in melanoma.
M. McMahon, University of California, San Francisco: Regulation of apoptosis by Raf protein kinases.

SESSION 5: Detection and Targeting of Melanoma
Chairperson: D.E. Fisher, Dana-Farber Cancer Institute, Boston, Massachusetts

D. Becker, University of Pittsburgh Cancer Institute, Pennsylvania: Molecular and optical imaging analysis of melanoma and nevi in the context of biological therapy.
I. Hellstrom, Pacific Northwest Research Institute, Seattle, Washington: Therapeutic tumor vaccination of an MHC class I and II negative mouse melanoma.
D. Herlyn, The Wistar Institute, Philadelphia, Pennsylvania: Identification of melanoma antigen p23 using antibody phage display.
S. Ferrone, Roswell Park Cancer Institute, Buffalo, New York: HLA class I antigen abnormalities in melanoma cells: What have we learned?
P.S. Huang, GlaxoSmithKline, King of Prussia, Pennsylvania: Application of the IL-18 cytokine as an antimelanoma therapy.

Walking to lunch at Robertson House

DNA Interactive Advisory Panel—Second Meeting

October 6–8

FUNDED BY **Howard Hughes Medical Institute**

ARRANGED BY **D. Micklos,** Dolan DNA Learning Center, Cold Spring Harbor Laboratory
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

SESSION 1: Banbury Center

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory: Welcome and procedures.
D. Micklos, Dolan DNA Learning Center, Cold Spring Harbor Laboratory: Project overview and review.

Prototype DNA Interactive Modules
WWW page: C.-H. Yang
Timeline: S. Chan and E.-S. Jeong
DNA: S. Chan and C.-H. Yang
Genome: S. Chan and W.-B. Wu
WWW Site: D. Micklos and A. Arva
Lesson Builder: D. Micklos and A. Arva
Summer Fellows: C. Gough, L. Fletcher, M. Colvard
Classroom demo of lesson builder
Teacher Guide for Anastasia
DVD and Animation Resources: M. Whitby and D. Berry

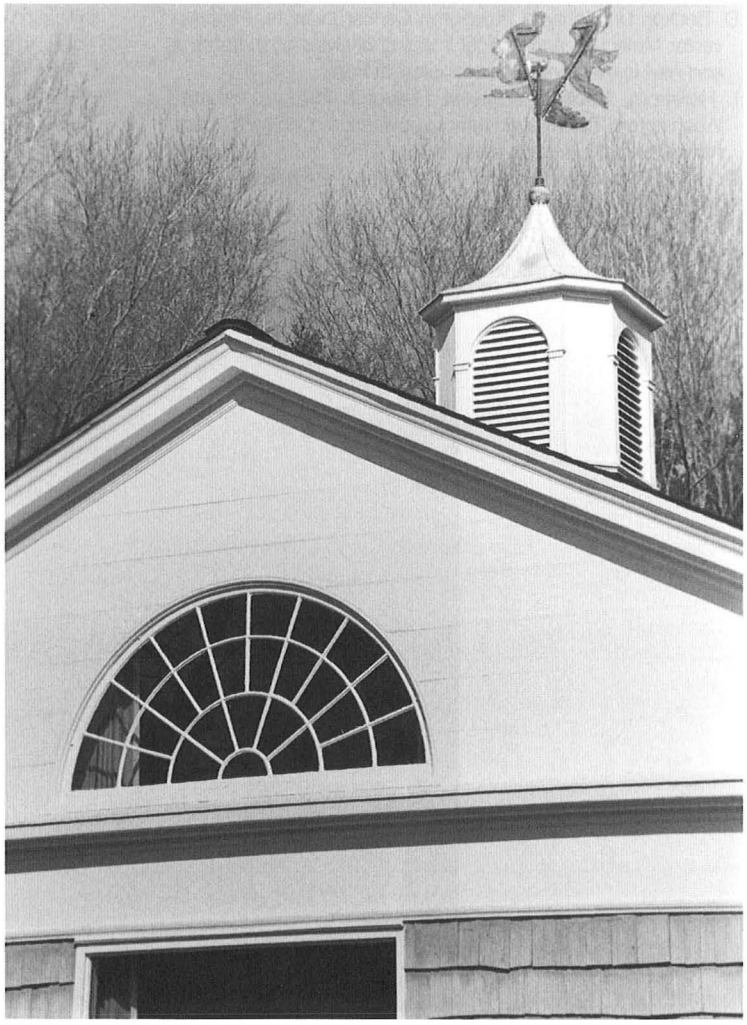
SESSION 2: Dolan DNA Learning Center

Session A: Design and Functionality
Customizable WWW site
Lesson Builder
DVD

Session B: Design and Functionality
Timeline
DNA
Genome

Session C: Content and Teacher Resources
Timeline
DNA
Genome

Session D: Content and Teacher Resources
Manipulation
Applications
Implications
Session Reports
Future Activities
Keeping Connected
Classroom Testing
Dissemination and Workshops



Banbury Conference Center

DNA Recombination and Repair

October 20–23

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **J. Haber,** Brandeis University, Waltham, Massachusetts
S. Hawley, Stowers Institute for Medical Research, Kansas City, Missouri

Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

SESSION 1

Overviews:
J. Petrini, Memorial Sloan-Kettering Cancer Center, New York, and **P. Sung,** University of Texas Health Science Center, San Antonio:

What does the MRX (MRN) complex do? Does it directly act as an exonuclease in vivo or does it control an unknown exonuclease (or endonuclease)? Does it bridge DNA ends or span sister chromatids similar to other SMC proteins? Does it play a role in end-joining other than in budding yeast?

S.C. Kowalczykowski, University of California, Davis:

How does Rad51p assemble on to a filament and what do other recombination proteins do during this process of stand invasion?

SESSION 2

Overviews:
D. Bishop, University of Chicago, Illinois:

What does Dmc1 do that Rad51 doesn't do? How might Dmc1 and Rad1 act at opposite ends of a DSB? How are the two ends of a DSB coordinated and why doesn't BIR occur if both ends of a DSB share homology to the donor?

F.W. Stahl, University of Oregon, Eugene, and **M. Lichten,** National Cancer Institute, NIH, Bethesda, Maryland:

Are there two distinct crossover-generating pathways in meiosis, one using only Rad51 (but also Msh4/5-independent) and one using both Dmc1 and Rad51? How many non-crossover pathways are there and how do they relate to crossover-generating events?

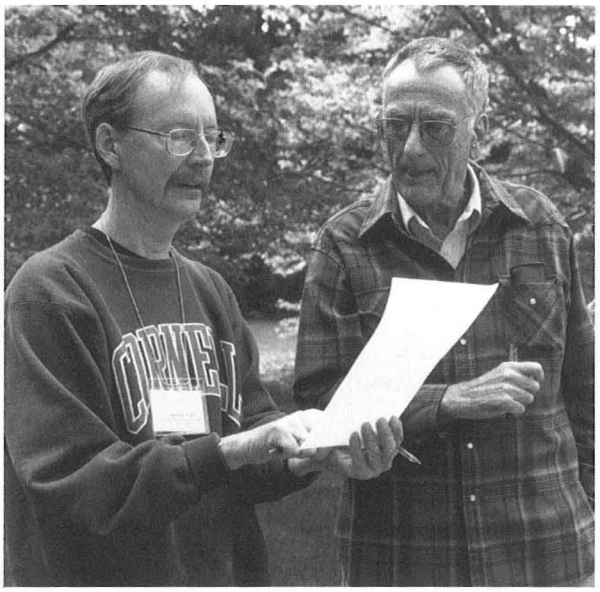
SESSION 3

Overviews:
R. Rothstein, Columbia University, New York, and **R. Kanaar,** Erasmus University Rotterdam, The Netherlands:

Are there "recombination centers" where many independent repair events occur? How do donor and recipient sequences assemble at these places?

S. Takeda, Kyoto University Medical School, Japan, and **M. Jasin**, Sloan-Kettering Institute, New York:

What distinguishes vertebrate/mammalian DSB repair from yeast? What do the BRAC proteins do? Why is Rad52 dispensable in worms and flies and not very important in vertebrate cells, even though its overall properties appear to be preserved?



T. Petes, F. Stahl

SESSION 4

Overviews:

R.S. Hawley, Stowers Institute for Medical Research, Kansas City, Missouri, and **N. Kleckner,** Harvard University, Cambridge, Massachusetts:

What is the role of known SC components in facilitating meiotic exchange and/or synapsis?

B. Michel, Institut National de la Recherche Agronomique, Jouy-en-Josas, France, and **R.G. Lloyd,** University of Nottingham, United Kingdom:

How does recombination lead to replication restart? In eukaryotes, what proteins carry out the functions assigned to RecG and RuvABC?

SESSION 5

Overviews:

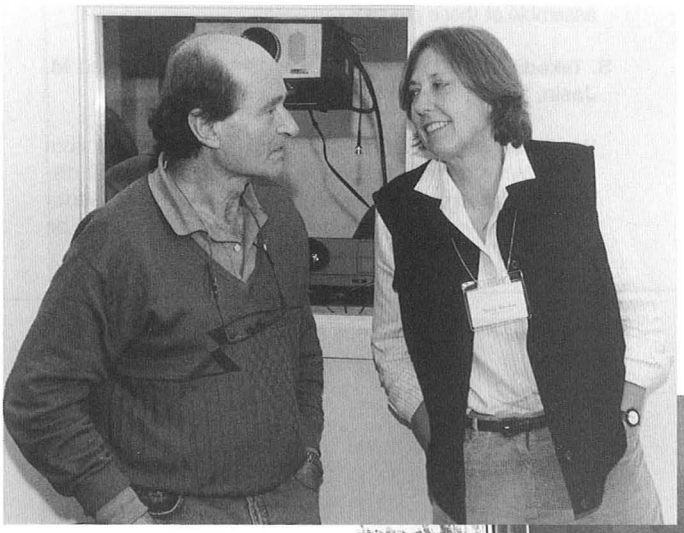
S.C. West, Clare Hall Laboratories Cancer Research UK, Herts, **N.M. Hollingsworth,** SUNY, Stony Brook, and **A. Shinohara,** Osaka University, Osaka, Japan:

Is Mus81/Mms4 (Eme1) THE Holliday junction resolvase, or A HJ resolvase, or does it act predominantly to cleave other types of branched molecules? Budding versus fission yeast. What other HJ-resolving activities are found in eukaryotes.

J. Haber, Brandeis University, Waltham, Massachusetts, and **F. Fabre**, Commissariat a l'Energie Atomique, Fontenay-aux-Roses, France:

How many distinct roles are played by the helicases Sgs1and Srs2? Do they act early/middle/late or after recombination is complete? What is the significance that overexpressing SGS1 suppresses *srs2* but not vice versa?

Grand Summing Up



F. Fabre, N. Kleckner

M. Lichten, L. Symington, J. Haber

Global Vaccine Shortage: The Threat to Children and What to Do About It

October 23–25

FUNDED BY **Bill & Melinda Gates Foundation, through a grant to Albert B. Sabin Vaccine Institute, Inc.**

ARRANGED BY **L.K. Gordon,** VaxGen, Inc., Brisbane, California
H. Larson, UNICEF, New York
N.E. Tomich, U.S. Medicine Institute, Bethesda, Maryland
L. Miller, Intermedica, Darien, Connecticut

SESSION 1: Keynote Speeches
C. Bellamy, UNICEF, New York
K. Reilly, Wyeth Global Vaccines, St. Davids, Pennsylvania

Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
L.K. Gordon, VaxGen, Inc., Brisbane, California
H. Larson, UNICEF, New York

N.E. Tomich, U.S. Medicine Institute, Bethesda, Maryland: Charge to the conference.
Piers Whitehead, VaxGen Inc., Brisbane, California: 2002 Mercer Report. The worldwide problem.

SESSION 2: Return on Investment in the Vaccine Industry

Overview:
D. Braga, Aventis, USA, Swiftwater, Pennsylvania

Discussants:
K. Reilly, Wyeth Global Vaccines, St. Davids, Pennsylvania
J. Heinrich, U.S. General Accounting Office, Washington, D.C.
S. Jarrett, UNICEF, New York

Round Table Discussions

Reports from Round Tables

SESSION 3: The Regulatory Process and Vaccines I
Chairperson: L.K. Gordon, VaxGen, Inc., Brisbane, California

Overview:
W. Vandersmissen, GlaxoSmithKline Biologicals, Rixensart, Belgium

Discussants:
J.E. Fischer, Committee on Veterans' Affairs, Washington, D.C.
K. Midthun, FDA, NIH, Rockville, Maryland
J. Milstien, World Health Organization, Geneva, Switzerland

SESSION 4: The Regulatory Process and Vaccines II
Chairperson: L.K. Gordon, VaxGen, Inc., Brisbane, California

Round Table Discussions

Reports from Round Tables

SESSION 5: Adequate Vaccine Capacity
Chairperson: L.K. Gordon, VaxGen, Inc., Brisbane, California

Overview:
A. Robbins, Tufts University School of Medicine, Boston, Massachusetts

Discussants:
D. Simpson, Centers for Disease Control & Prevention, Atlanta, Georgia
L. Tan, American Medical Association, Chicago, Illinois

Round Table Discussions

Reports from Round Tables

SESSION 6: Vaccines as a National Priority

Overview:
S. Bice, Centers for Disease Control & Prevention, Atlanta, Georgia

Discussants:
R. Chalk, National Academy of Sciences, Washington, D.C.
L.Z. Cooper, American Academy of Pediatrics, New York
J.I. Santos, National Immunization Council, Mexico City, Mexico

Round Table Discussions

Reports from Round Tables

Review of Reports: Identifying Areas of Consensus
Next Steps: Need for Task Forces to Follow Up?

D. Simpson, J. Heinrich, M. Chafee

Psychobiology of Emotion

October 27–30

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **R.J. Dolan,** Institute of Neurology, London, United Kingdom
L. Wolpert, University College London, United Kingdom

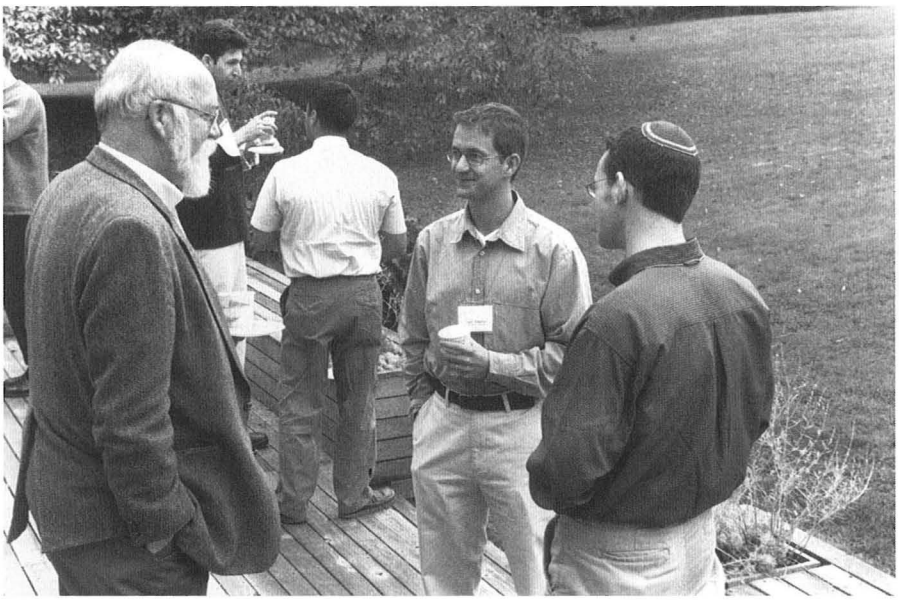
Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
L. Wolpert, University College London, United Kingdom

SESSION 1: Neural Basis of Emotion I
Chairperson: R.J. Dolan, Institute of Neurology, London, United Kingdom

D.J. Anderson, HHMI, California Institute of Technology, Pasadena: Neural substrates of innate fear and their regulation by anxiety.
J.H. Bachevalier, University of Texas Health Science Center, Houston: Neural correlates of emotion from the perspective of primate neuropsychological studies.
A. Calder, MRC Cognition & Brain Science Unit, Cambridge, United Kingdom: The neuropsychology of disgust and anger.
R.J. Davidson, University of Wisconsin, Madison: The neuroscience of affective style.
W.C. Drevets, National Institutes of Health, NIMH/MIB, Bethesda, Maryland: The neurobiology of major depression.

SESSION 2: Neural Basis of Emotion II
Chairperson: J.H. Bachevalier, University of Texas Health Science Center, Houston

R. Garcia, Universite Nice-Sophia Antipolis, Nice, France: Neural basis of emotional perseveration.
K. Nader, McGill University, Montreal, Canada: Reconsolidation: New opportunities for treatment of psychiatric disorders.
T. Ono, Toyama Medical & Pharmaceutical University, Sugitani, Japan: Neural representation of emotion in the prefrontal cortex, limbic system, and nucleus accumbens.
D. Pare, Rutgers University, Newark, New Jersey: Activity-dependent synaptic plasticity in intercalated neurons of the amygdala.
J.A. Parkinson, University of Cambridge, United Kingdom: Psychological representations and neural mechanisms underlying appetitive emotional conditioning.
P.J. Whalen, University of Wisconsin, Madison: The human dorsal amygdaloid region in facial expression processing.



D. Dennett, J. Parkinson, J. Winston

SESSION 3: Emotion and Cognition
Chairperson: L. Wolpert, University College London, United Kingdom

A. Bechara, University of Iowa College of Medicine, Iowa City: Is emotion beneficial or disruptive to judgment and decision-making?
A. Dickinson, University of Cambridge, United Kingdom: The function of affect: The interface between cognition and motivation.
R.J. Dolan, Institute of Neurology, London, United Kingdom: Emotion, cognition, and behavior.
M. Gallagher, Johns Hopkins University, Baltimore, Maryland: Amygdala/orbitofrontal interactions for goal-directed behavior.
E.A. Phelps, New York University, New York: The human amygdala and episodic memory or interaction of cognition and emotion.

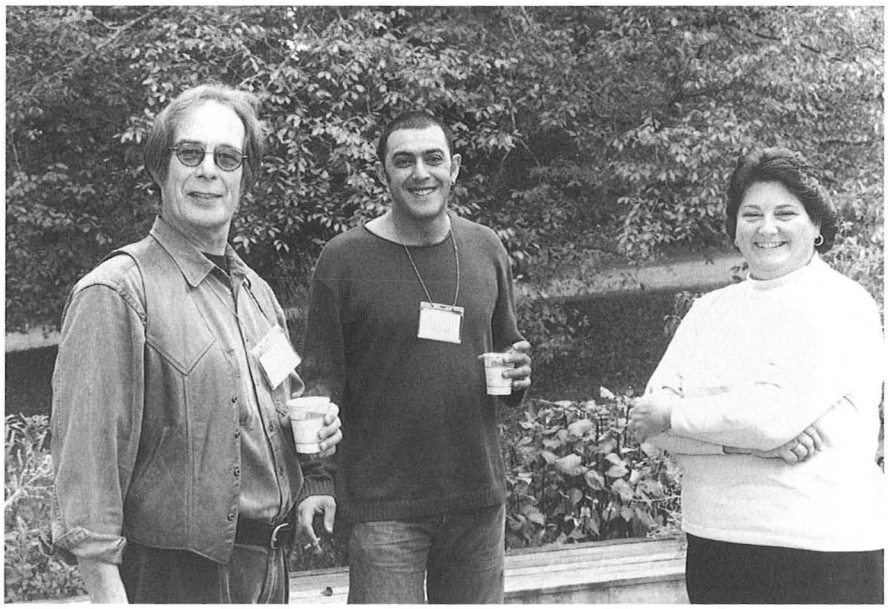
SESSION 4: Emotion, Mood, and Personality
Chairperson: L. Wolpert, University College London, United Kingdom

D. Evans, University of Bath, United Kingdom: Emotions and physical health: A biological mechanisms for the placebo response.
J.J. Gross, Stanford University, California: Emotion regulation.
T. Heatherton, Dartmouth College, Hanover, New Hampshire: Self-regulation of emotion.
A. Holmes, National Institutes of Health, Bethesda, Maryland: Analysis of emotional behavior in genetically modified mice.
A. Ohman, Karolinska Hospital, Stockholm, Sweden: The overlap of emotion activation and attention capture.

SESSION 5: Emotion, Mood, and Society
Chairperson: D. Dennett, Tufts University, Medford, Massachusetts

D. Fessler, University of California at Los Angeles: The evolutionary psychology of human emotions.
A. Hopfensitz, CREED, University of Amsterdam, The Netherlands: Emotions in economics.
A.R. Hariri, National Institute of Mental Health, Bethesda, Maryland: Genetic variation and the response of the human amygdala.
J.S. Winston, University College London, United Kingdom: Brain regions responding to social and emotional information in faces.

SESSION 6: General Discussion and Summary
Chairpersons: R.J. Dolan, Institute of Neurology, London, United Kingdom, and **L. Wolpert,** University College London, United Kingdom



A. Dickerson, K. Nader, J. Bachevalier

Sequence Diversity in Crop Plants: Results, Interpretations, and Applications

November 3–6

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **J. Doebley,** University of Wisconsin, Madison
J. Antoni Rafalski, DuPont Agricultural Enterprise, Newark, Delaware

Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

SESSION 1: Theoretical/General
Chairperson: B. Burr, Brookhaven National Laboratory, Upton, New York

B.S. Weir, North Carolina State University, Raleigh, North Carolina: Recent methods for characterizing population structure and association mapping.

A. Long, University of California, Irvine: Using linkage disequilibrium to dissect complex traits.

E. Thompson, North Carolina State University, Raleigh: The information available in the pedigree relationships among inbred lines.

M. Nordborg, University of Southern California, Los Angeles: A genomic-wide survey of polymorphism in *Arabidopsis*.

H.K. Dooner, Rutgers University, Piscataway, New Jersey: The polymorphic organization of the *bz* genomic region in maize.

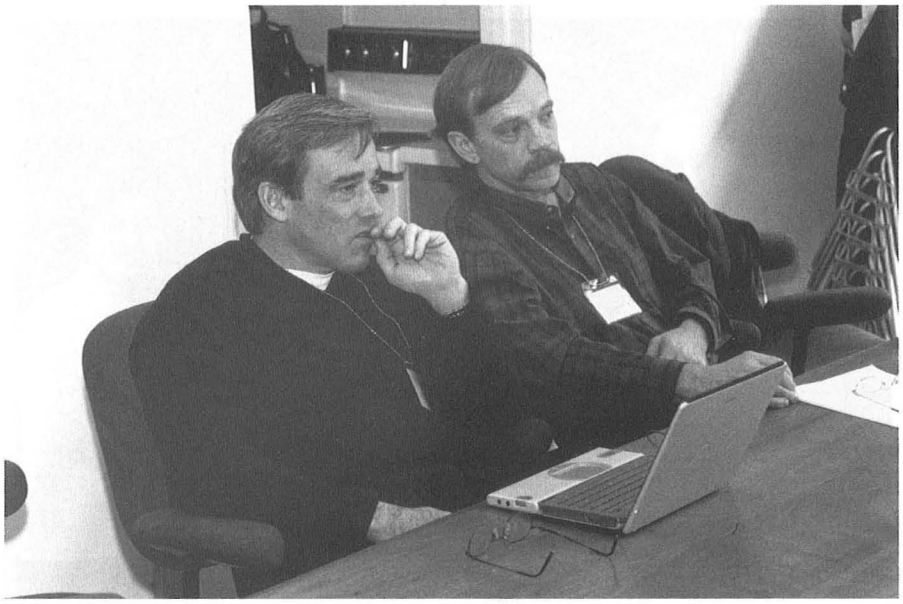
SESSION 2: Learning from Flies and Humans
Chairperson: J. Doebley, University of Wisconsin, Madison

A.G. Clark, Cornell University, Ithaca, New York: LD patterns and haplotypes in humans.

W. Stephan, University of Munich, Germany: Species and recombination effects on DNA sequence variation in the tomato genus.

C.F. Aquadro, Cornell University, Ithaca, New York: Finding novel genes based on footprints of natural selection.

C. Schlotterer, Universitat für Veterinarmedizin, Vienna, Austria: Local selective sweeps: What can be learned from *Drosophila?*



S. Tingey, T. Mitchell-Olds

SESSION 3: Sequence Diversity in Plants I
Chairperson: S. Tingey, DuPont Company, Newark, Delaware

M.D. Purugganan, North Carolina State University, Raleigh: Selection in the *Arabidopsis* genome.
T. Mitchell-Olds, Max-Planck Institute for Chemical Ecology, Jena, Germany: Functional nucleotide polymorphisms within and between species.
K. Schmid, Max-Planck Institute for Chemical Ecology, Jena, Germany: Population genomics in *Arabidopsis* Identification and analysis of rapidly evolving genes.
P.B. Cregan, USDA, Agricultural Research Service, Beltsville, Maryland: Nucleotide and haplotype diversity and linkage disequilibrium in cultured and wild soybean.
M. Aquade, Universitat de Barcelona, Spain: Variation in phenylpropanoid genes in cruciferae.

SESSION 4: Sequence Diversity in Plants II
Chairperson: J.A. Rafalski, DuPont Agricultural Enterprise, Newark, Delaware

O. Savolainen, University of Oulu, Finland: Sequence diversity in species at different stages of domestication.
B.S. Gaut, University of California, Irvine: DNA sequence diversity in maize and its wild relatives.
M. Morgante, DuPont Crop Genetics, Newark, Delaware: Sequence conservation in conifers.
O. Smith, Pioneer Hi-Bred International, Inc., Johnston, Iowa: Marker diversity and preliminary LD results among lines in elite breeding populations.

SESSION 5: Linking Phenotypes and Sequences
Chairperson: D.T. Tomes, Pioneer Hi-Bred International, Inc., Johnston, Iowa

J.A. Rafalski, DuPont Agricultural Enterprise, Newark, Delaware: Sequence diversity selection and linkage disequilibrium in maize elite germ plasm.
E. Buckler, North Carolina State University, Raleigh: Candidate gene associations across diverse maize germ plasm.
J. Liu, Cornell University, Ithaca, New York: Genetic basis of the evolution of crop plant morphology.
M. Cooper, Pioneer Hi-Bred International Inc., Johnston, Iowa: Modeling breeding strategies for complex traits.
J. Doebley, University of Wisconsin, Madison: What microsatellites tell us about maize and its genome.

Back view of Banbury Conference Center

Microbial Forensics

November 10–13

FUNDED BY **National Institute of Justice of the U.S. Department of Justice and the U.S. Department of Energy (NNSA, CNBP)**

ARRANGED BY **S.E. Schutzer**, UMDNJ-New Jersey Medical School, Newark
B. Budowle, Federal Bureau of Investigation, Washington, D.C.
R. Breeze, USDA, Agricultural Research Service, Washington, D.C.

Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
S.E. Schutzer, UMDNJ-New Jersey Medical School, Newark

SESSION 1: Issues
Chairperson: R. Breeze, USDA, Agricultural Research Service, Washington, D.C.

B. Budowle, FBI Academy, Washington, D.C.: What is the big picture? What are FBI needs and how can they be in concert with those of HHS, USDA, DOD, DOE, EPA, etc.? What are the court needs?

R.P. Harmon, Alameda County Attorney's Office, Oakland, California: Rules of evidence for the courts.

J. Smith, FBI Laboratory, Washington, D.C.: How did DNA testing begin in U.S. Courts? What problems were encountered? How did this grow into the CODIS system? What can be learned for microbial forensics?

R. Breeze, USDA, Agricultural Research Service, Washington, D.C.: Developments in physical security, personnel assurance, and pathogen surety for select human and agricultural pathogens: How guns, guards, and gates relate to microbial forensics.

SESSION 2: High-consequence Pathogens for the FBI
Chairperson: R. Breeze, USDA, Agricultural Research Service, Washington, D.C.

FBI's Human, Animal, and Plant Concerns:
B. Budowle, FBI, Washington, D.C., and **L. Collins Kelley**, USDA, Agricultural Research Service, Athens, Georgia

SESSION 3: What Is The State of the Art for "Signatures?" I
Chairperson: A.D. Steinberg, Mitretek Systems, McLean, Virginia

General Issues and Specific Cases:
Key differences between classes of pathogens
Evidence for laboratory of origin and/or recent culture
Distinguishing from background, close neighbors, and mixed populations

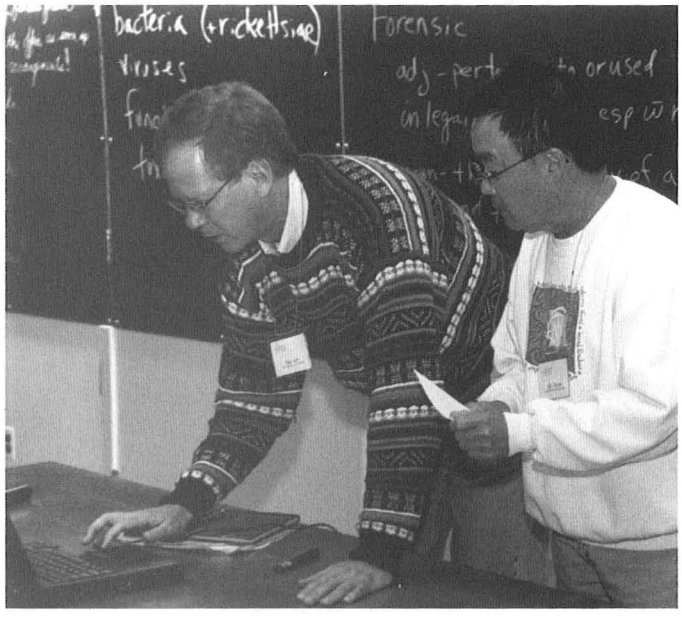
D.L. Rock, USDA, Agricultural Research Service, Greenport, New York: Viruses.

P. Keim, Northern Arizona University, Flagstaff: Bacteria.

G.A. Payne, North Carolina State University, Raleigh: Fungi.

J. Marks, University of California, San Francisco: Botulinum toxins.

P.J. Jackson, Los Alamos National Laboratory, New Mexico: Geo-location.



P. Keim, R. Okinaka

SESSION 4: What Have We Learned About Microbial Forensics Over the Past Year? Including What Should Have Been in Place for Anthrax?
Chairperson: S.E. Schutzer, UMDNJ-New Jersey Medical School, Newark

D. Beecher, FBI Academy, Quantico, Virginia: Microbiological sampling at the scene of a covert biological release.
J.W. Ezzell, USAMRIID, Ft. Detrick, Maryland: Sample analysis: Meeting a forensic standard.
P. Keim, Northern Arizona University, Flagstaff: High-resolution DNA typing for precise identification of bacterial pathogens.
T.D. Read, The Institute for Genomic Research, Rockville, Maryland: Genomics of *Bacillus anthracis*.

SESSION 5: What Is the State of the Art for "Signatures?" II
Chairperson: P. Keim, Northern Arizona University, Flagstaff

S. Salzberg, The Institute for Genomic Research, Rockville, Maryland, and John J. Dunn, Brookhaven National Laboratory, Upton, New York: Foreign genes: Identification, function, origin, natural, or engineered.
W.D. Wilson, Lawrence Livermore National Laboratory, California, and C.M. Schaldach, Lawrence Livermore National Laboratory, California: Nongenomic signatures.
A.D. Steinberg, Mitretek Systems, McLean, Virginia: Host-pathogen interactions.
S.E. Schutzer, UMDNJ-New Jersey Medical School, Newark: Components of the immune response distinguishing perpetrator from victim.
B.J. Luft, SUNY, Stony Brook: Protective measures: Antibiotic half-life vaccines.
D.L. Wilson, FBI, Washington, D.C., and M. Wilson, FBI, Washington, D.C.: Matrices and trace substances.

SESSION 6: Validating Signatures I
Chairperson: D.L. Rock, USDA, Agricultural Research Service, Greenport, New York

C.L. Cook, Defense Threat Reduction Agency, Ft. Belvoir, Virginia, and L. Collins Kelley, USDA, Agricultural Research Service, Athens, Georgia: The DTRA Microbial Forensics Initiative.

SESSION 7: Validating Signatures II
Chairperson: D.L. Rock, USDA, Agricultural Research Service, Greenport, New York

C. Carrillo, USDA, Agricultural Research Service, NASS, Greenport, New York: Pathogen evolution: Behavior in culture vs. interspecies and intraspecies infections.
J.J. Dunn, Brookhaven National Laboratory, Upton, New York: The unexpected signature.

SESSION 8: General Discussion: What Do These Signature Techniques Mean?
Discussion Leader: R. Breeze, USDA, Agricultural Research Service, Washington, D.C.

What do they not tell us?
How do we interpret them?
What do we need to do to get the degree of attribution we require? And can we reach it?
Can the signatures be forged?
How do we get automated technologies for high throughput?

SESSION 9: Can We Have a Systematic Approach to an Unknown Sample?
Discussion Leader: R. Breeze, USDA, Agricultural Research Service, Washington, D.C

E.S. Raveche, UMDNJ-New Jersey Medical School, Newark: An algorithmic approach.

SESSION 10: Outline of a U.S. Microbial Forensics System I
Discussion Leader: R. Breeze, USDA, Agricultural Research Service, Washington, D.C

P.J. Jackson, Los Alamos National Laboratory, New Mexico, and P. Keim, Northern Arizona University, Flagstaff: Repositories.
N.D. Zinder, The Rockefeller University, New York: Personal perspective: Academia and chemical and biological defense.

SESSION 11: Outline of a U.S. Microbial Forensics System II
Chairpersons: B. Budowle, Federal Bureau of Investigation, Washington, D.C., and **S.E. Schutzer,** UMDNJ-New Jersey Medical School, Newark

T. Slezak, Lawrence Livermore National Laboratory, California, and N. Kahn, CIA/DST/ODDST/ITIC, Washington, D.C.: Databases.
R.T. Okinaka, Los Alamos National Laboratory, New Mexico: Sample issues/near neighbors.
S.A. Morse, CDC/NCID/BPRP, Atlanta, Georgia: Validation.

QA/QC Proficiency Tests

Research Needs

G. Parker, U.S. Army Medical Research and Material Command, Fort Detrick, Maryland: For each threat class, how can we get the capacity to obtain the information we need and the degree of attribution we require?

Discussion and Recommendations for Action Agencies
Discussion Leaders: B. Budowle, Federal Bureau of Investigation, Washington D.C., and **S.E. Schutzer,** UMDNJ-New Jersey Medical School, Newark

Phage Therapy: Potential and Challenges

November 13–15

FUNDED BY **ICF Ventures**

ARRANGED BY **J. Ramachandran,** GangaGen, Inc., Palo Alto, California
G.K. Schoolnik, Stanford University Medical Center, California
S. Subramani, University of California, San Diego

Introduction: J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
J. Ramachandran, GangaGen, Inc., Palo Alto, California

SESSION 1: The New Phage Biology
Chairperson: S. Adhya, National Cancer Institute, NIH, Bethesda, Maryland

R. Young, Texas A&M University, College Station: Timing is everything; optimizing phage lysis for any growth condition.
P. Garcia, Centro de Investigaciones Biologicas, Madrid, Spain: Pneumococcal phages and their lytic enzyme.
M.J. Loessner, Technical University of Munich, Germany: The weapons of the enemy: Viral enzymes for selective targeting of pathogenic bacteria.
M. Waldor, New England Medical Center, Boston, Massachusetts: Mechanisms controlling the horizontal and vertical transmission of the cholera toxin genes.
D. Fitzgerald, National Cancer Institute, Bethesda, Maryland: Pseudomonas and phage.

SESSION 2: Phage Therapy I
Chairperson: G.K. Schoolnik, Stanford University Medical Center, California

S. Adhya, National Cancer Institute, NIH, Bethesda, Maryland: Bacteriophage therapy of experimental bacterimia .
V.A. Fischetti, The Rockefeller University, New York: Using phage lytic enzymes to control bacterial infections.
C.R. Merril, National Institute of Mental Health, NIH, Bethesda, Maryland: Phage interactions with mammalian systems: Pharmacokinetic effects and other considerations for antibacterial phage therapy.
E. Kutter, Evergreen State College, Olympia, Washington: Virulent phage infection under conditions reflecting their natural habitats.
J.A. Fralick, Texas Tech University Health Sciences Center, Lubbock: Phage therapy: The treatment of *P. aeruginosa* infections of burn wounds and *C. difficile* associated disease in animal model systems.

SESSION 3: Phage Therapy II
Chairperson: R. Young, Texas A&M University, College Station

W.C. Summers, Yale University, New Haven, Connecticut: Historical origins of phage therapy.
R. Adamia, United Nations, New York: Tbilisi experience.
G.K. Schoolnik, Stanford University Medical Center, California: Clinical results from Poland.
J.M. Manur, GangaGen Biotechnologies Pvt. Ltd., Bangalore, India: Investigation of potential limitations of phage therapy.
K. Murthy, GangaGen Life Sciences Inc., Ottawa, Canada: Regulatory issues and challenges.

Oxidases in Inflammation and Cellular Signaling

November 17–20

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **G.M. Bokoch,** The Scripps Research Institute, La Jolla, California
U.G. Knaus, The Scripps Research Institute, La Jolla, California

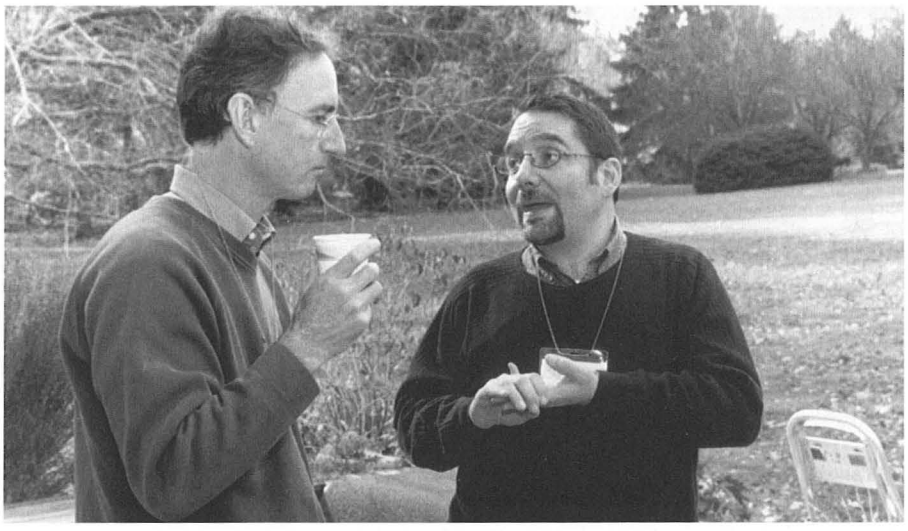
Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
G.M. Bokoch, The Scripps Research Institute, La Jolla, California

SESSION 1: Neutrophil NADPH Oxidase (Phox I)
Chairperson: A.R. Cross, The Scripps Research Institute, La Jolla, California

K. Rittinger, National Institute for Medical Research, London, United Kingdom: NADPH oxidase assembly: A structural perspective.
A. Jesaitis, Montana State University, Bozeman: Structural changes induced in human neurtrophil cytochrome *b* by NADPH oxidase activators.
E. Pick, Tel Aviv University Sackler School of Medicine, Israel: Deconstructing the oxidase.
G.M. Bokoch, The Scripps Research Institute, La Jolla, California: Mechanism of NADPH oxidase regulation by Rac GTPase.
M. Dinauer, Indiana University School of Medicine, Indianapolis: Superoxide production by phagocytes: NADPH oxidase and regulation by RhoGTPase Rac2.
M.-C. Dagher, Laboratoire Biochimie et Biophysique des Systèmes Intégrés, Département Réponse et Dynamique Cellulaire, CEA, Grenoble, France: Insights into differential reactivity of G12V and Q61L *rac* mutants.

SESSION 2: Neutrophil NADPH Oxidase (Phox II)
Chairperson: E. Pick, Tel Aviv University Sackler School of Medicine, Israel

A.R. Cross, The Scripps Research Institute, La Jolla, California: Electron transport in NADPH oxidase.
T.E. DeCoursey, Rush Medical Center, Chicago, Illinois: Interactions between voltage-gated proton channels and NADPH oxidase.
L. Henderson, University of Bristol, United Kingdom: Expression of Nox homologues in gp91phox knockout PLB-985 cells: An explanation for the presence of voltage-gated proton currents.
A.W. Segal, University College London, United Kingdom: The influence of NADPH oxidase induced K+ movement into the phagocytic vacuole on protease activity and microbial killing.
M.T. Quinn, Montana State University, Bozeman: Transcriptional regulation of p67*phox* gene expression.
H. Sumimoto, Kyushu University, Fukuoka, Japan: The adaptor protein p40*phox* as a positive regulator of the phagocyte NADPH.



J. Jones, T. Leto

SESSION 3: Noxel Oxidases (Nox I)
Chairperson: R. Clark, University of Texas Health Science Center, San Antonio

R. Clark, University of Texas Health Science Center, San Antonio: Regulation and function of NADPH oxidases: NOX1 versus the phagocyte oxidase.
K.-H. Krause, Geneva University Hospital, Switzerland: Nox1 in humans and mice.
T.L. Leto, National Institute of Allergy and Infectious Diseases, NIH, Bethesda, Maryland: The Nox/Duox family of NAD(P)H oxidases: Potential mediators of host defense and inflammation.
T. Kawahara, University of Tokushima, Japan: Roles of Nox1 in innate immune responses of the gastrointestinal tract.
M. Geiszt, Semmelweis University, Budapest: Functional characterization of NADPH oxidase: Remarkable similarities to the phox systems.
U.G. Knaus, The Scripps Research Institute, La Jolla, California: Regulation and functions of Nox proteins.

SESSION 4: Novel Oxidases (Nox II)
Chairperson: W.M. Nauseef, University of Iowa, Iowa City

R. Arnold, Emory University, Atlanta, Georgia: The Nox family of NADPH oxidases: Regulation and cancer associations.
B. Banfi, Geneva University Hospital, Switzerland: Activation of NOX1 by two novel subunits.
W.M. Nauseef, University of Iowa, Iowa City: Biosynthesis of NOX proteins: Work in progress.
R. Fluhr, Weizmann Institute of Science, Rehovot, Israel: Multifunctional ROS signaling plants.
J.D.G. Jones, John Innes Centre, Norwich, United Kingdom: Diverse roles of plant respiratory burst oxidase homologs in cellular signaling.

SESSION 5: ROS Signaling and Cellular Consequences
Chairperson: S.G. Rhee, National Heart, Lung & Blood Institute, NIH, Bethesda, Maryland

S.G. Rhee, National heart, Lung & Blood Institute, NIH, Bethesda, Maryland: Intracellular messenger function of hydrogen peroxide.
N.K. Tonks, Cold Spring Harbor Laboratory: Harnessing ligand-induced reversible oxidation for elucidating the signaling function of protein tyrosine phosphatases.
E. Werner, Emory University, Atlanta, Georgia: A novel mechanism for *ras*-dependent ROS generation.
P. Hordijk, Sanquin Research at CLB, Amsterdam, The Netherlands: Role of endothelial ROS in the control of cell-cell adhesion and leukocyte transmigration.
P.J. Pagano, Case Western Reserve University, Cleveland, Ohio: Adenoviral targeting of NADPH oxidase inhibitors to the vasculature.
S. Nemoto, National Heart, Lung & Blood Institute, NIH, Bethesda, Maryland: Strategies to isolate novel regulators of the intracellular redox state.

Glucocorticoid Regulatory Mechanisms and Pathophysiology

December 8–11

FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **K. Yamamoto,** University of California, San Francisco
D.K. Granner, Vanderbilt University School of Medicine, Nashville, Tennessee

Introduction:
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

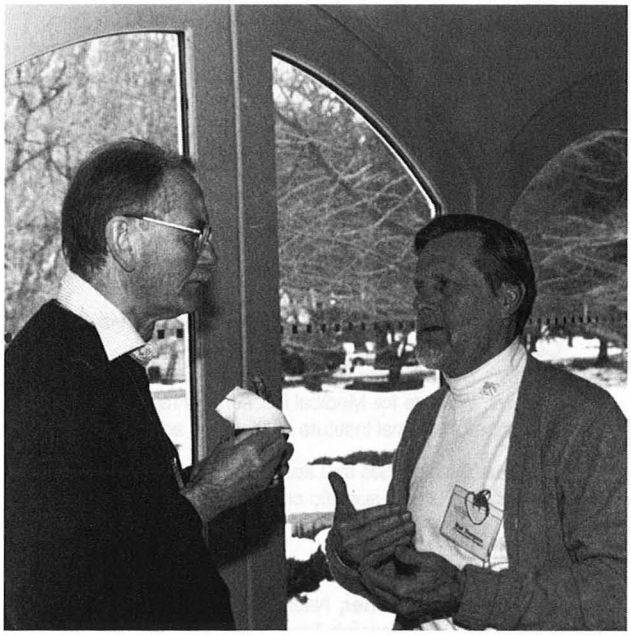
SESSION 1

Overview: M. Dallman, University of California, San Francisco
Discussants:
S. Davis, Vanderbilt University, Nashville Tennessee
D.B. DeFranco, University of Pittsburgh School of Medicine, Pennsylvania
D.K. Granner, Vanderbilt University School of Medicine, Nashville, Tennessee
G. Schutz, German Cancer Research Center, Heidelberg

What are the key actions and coupling networks for corticosteroids in metabolism, stress, and the HPA axis?

Overview: J. Funder, Prince Henry's Institute of Medical Research, Clayton, Australia
Discussants
E.R. de Kloet, Gorlaeus Laboratory, Leiden, The Netherlands
D. Pearce, University of California, San Francisco

What are the key actions and coupling networks for corticosteroids in cardiovascular and renal physiology?



G. Schutz, B. Thompson

SESSION 2

Overview: J.N. Miner, Ligand Pharmaceuticals, San Diego, California
Discussants:
H. Samuels, New York University, New York
A. Shiau, Tularik, Inc., South San Francisco, California
S. Simons, National Institute of Diabetes and Digestive and Kidney Diseases, NIH
H.E. Xu, Van Andel Research Institute, Grand Rapids, Michigan

How can we begin to move toward rational design of selective glucocorticoid agonists?

Overview: M. Garabedian, New York University School of Medicine, New York
Discussants:
J. Funder, Prince Henry's Institute of Medical Research, Clayton, Australia
P. Herrlich, Institute of Toxicology and Genetics, Karlsruhe, Germany
D. Pearce, University of California, San Francisco
G. Schutz, German Cancer Research Center, Heidelberg

How do receptor modifications, such as phosphorylation, methylation, sumoylation, couple receptor action to other signaling pathways, and what cross-talk circuits are most significant physiologically?

SESSION 3

Overview: P. Herrlich, Institute of Toxicology and Genetics, Karlsruhe, Germany
Discussants:
A.C.B. Cato, Institute of Toxicology and Genetics, Karlsruhe, Germany
G. Haegeman, University of Gent, Belgium
T. Heinzel, Institute for Biomedical Research, Frankfurt, Germany
B. Thompson, University of Texas Medical Branch, Galveston

What are the key actions and coupling networks for corticosteroids in immune cell and inflammatory development, physiology, and pathophysiology?

Overview: L. Freedman, Merck Research Labs, West Point, Pennsylvania
Discussants:
R. Derynck, University of California, San Francisco
M. Garabedian, New York University School of Medicine, New York

What are the key actions and coupling networks for corticosteroids in bone pathophysiology?

SESSION 4

Overview: K. Yamamoto, University of California, San Francisco
Discussants:
M. Brown, Dana-Farber Cancer Institute, Boston, Massachusetts
G.L. Hager, National Cancer Institute, NIH, Bethesda, Maryland
T. Heinzel, Institute for Medical Research, Frankfurt, Germany
D.K. Granner, Vanderbilt University School of Medicine, Nashville, Tennessee
H. Samuels, New York University, New York

How can we understand combinatorial assembly of transcriptional regulatory complexes?

Overview: D.K. Granner, Vanderbilt University School of Medicine, Nashville, Tennessee
Discussants:
T.K. Archer, National Institute of Environmental Health Sciences, NIH, Research Triangle Park, North Carolina
M. Brown, Dana-Farber Cancer Institute, Boston, Massachusetts
T. Heinzel, Institute for Medical Research, Frankfurt, Germany
S.S. Simons, National Institute of Diabetes and Digestive and Kidney Diseases, NIH, Bethesda, Maryland

What are the activities and actions of receptor cofactors, and how do they signal specific changes in polymerase activity?

SESSION 5

Overview: T. K. Archer, National Institute of Environmental Health Sciences, NIH, Research Triangle Park, North Carolina
Discussants:
D.B. DeFranco, University of Pittsburgh School of Medicine, Pennsylvania, *and others.*

What are the signals, mechanisms, and physiological significance of receptor proteolysis?

Overview: G.L. Hager, National Cancer Institute, NIH, Bethesda, Maryland
Discussants:
D.B. DeFranco, University of Pittsburgh School of Medicine, Pennsylvania
K. Yamamoto, University of California, San Francisco

What are the mechanisms and significance of receptor dynamics and intracellular localization?

Grand Summing Up

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Grantor	*Program/Principal Investigator*	*Duration of Grant*	*2002 Funding*[+]
FEDERAL SUPPORT			
NIH–National Human Genome Research Institute	American Eugenics and the New Biology: Perspectives and Parallels	2002	$33,099
National Institute of Justice of the U.S. Department of Justice	Microbial Forensics	2002	30,000 *
NIH–National Institute of Mental Health and National Institute of Child Health and Human Development (through a grant to the University of Illinois, Urbana)	RNA Metabolism and the Fragile X Syndrome	2002	32,752 *
National Science Foundation (through a grant to New York University)	Designer Molecules for Biosensor Applications	2002	19,208 *
U.S. Department of Energy (NNSA, CNBP)	Microbial Forensics	2002	10,000 *
NONFEDERAL SUPPORT			
Meeting Support			
Amyotrophic Lateral Disease Association	Neurodegenerative Disease Models: From Pathogenesis to Therapeutics	2002	19,894 *
Bill and Melinda Gates Foundation (through a grant to Albert B. Sabin Vaccine Institute, Inc.)	Global Vaccine Shortage: The Threat to Children and What to do About It	2002	28,224 *
Howard Hughes Medical Institute	DNA Interactive Advisory Panel	2002	20,921
Howard Hughes Medical Institute	DNA Interactive Advisory Panel, Second Meeting	2002	21,381
Huntington's Disease Society of America	Neurodegenerative Disease Models: From Pathogenesis to Therapeutics	2002	19,894 *
ICF Ventures	Phage Therapy—Potential and Challenges	2002	50,000 *
Herbert J. Siegel Fund for Cancer Pharmacogenomics	A Critical Review of Melanoma—Biology and Therapy	2002	34,607
WADA Health, Medical and Research Committee	Genetic Enhancement of Athletic Performance	2002	39,619 *
Yamanouchi USA Foundation	Glucocorticoid Regulatory Mechanisms and Pathophysiology	2002	41,825

*New Grants Awarded in 2002.

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