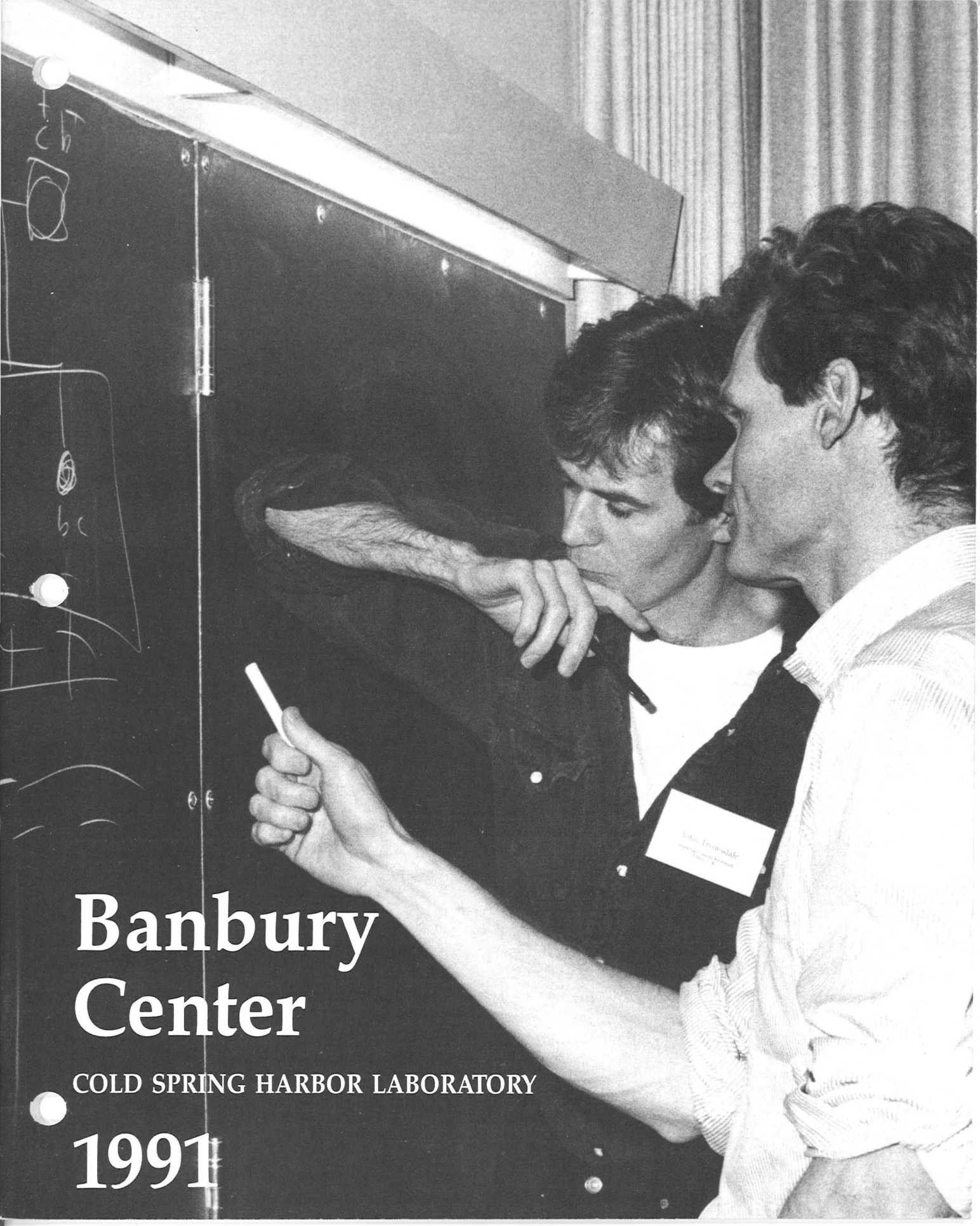


Banbury Center

COLD SPRING HARBOR LABORATORY

1991

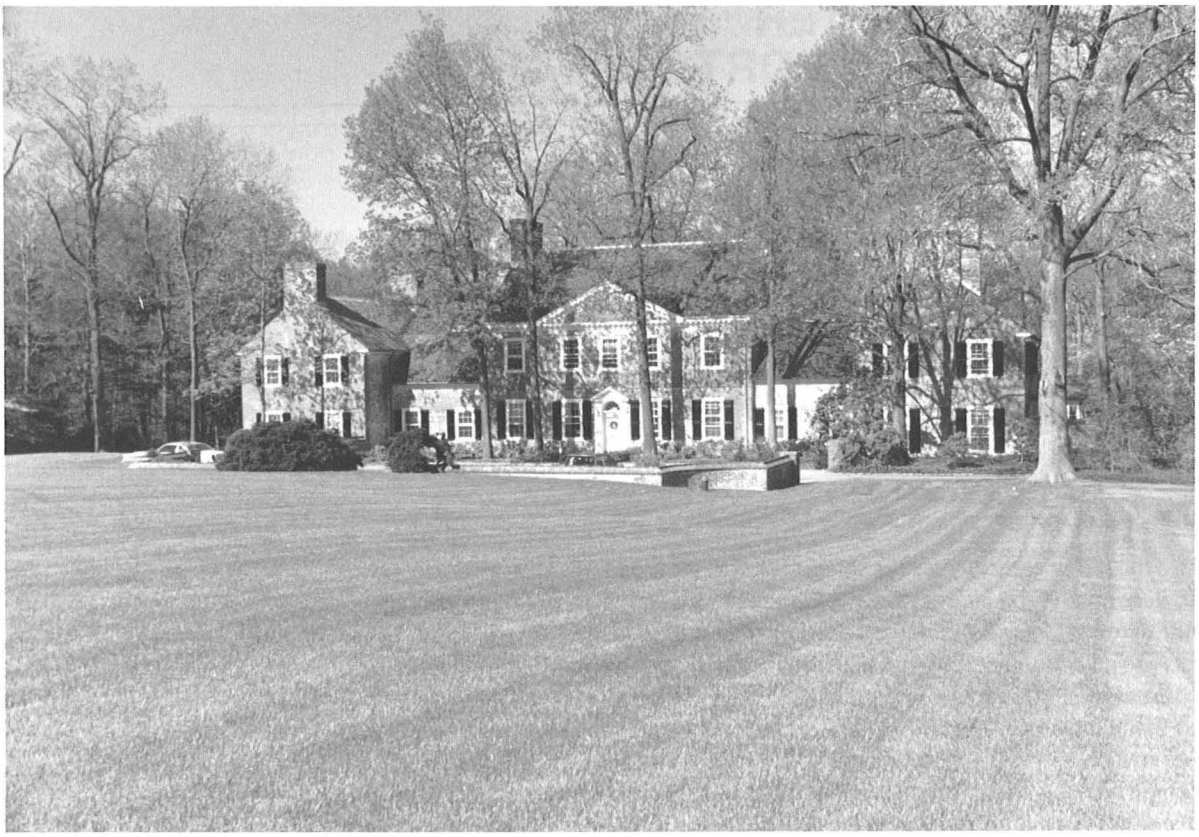
BANBURY CENTER DIRECTOR'S REPORT

The Banbury Center continues to play its role as one of the world's most effective small conference centers. 1991 was one of our busiest years ever, with 15 scientific meetings attended by almost 600 scientists. The gaps between these scientific meetings were filled with five other meetings, so that together with the courses held here during the summer, there seemed to be hardly a moment when the Center was not being used.

Molecular Biology

Two meetings early in the year set very high standards both for their scientific content and for the interest that they aroused. The first of these meetings was on **Adhesion Molecule Receptors and Disease**. Large families of adhesion molecules and their receptors have been identified in recent years, and it has become clear that a variety of responses to pathological conditions are mediated by these molecules. For example, they are involved in the cell movements in inflammation and in the mobilization of the immune system. The field has blossomed with the realization that adhesion molecule receptors are a target for therapies directed at modifying the body's response to inflammation, metastasis, and immune cell function.

Banbury Conference Center



Robertson House provides housing and dining accommodations at Banbury Center

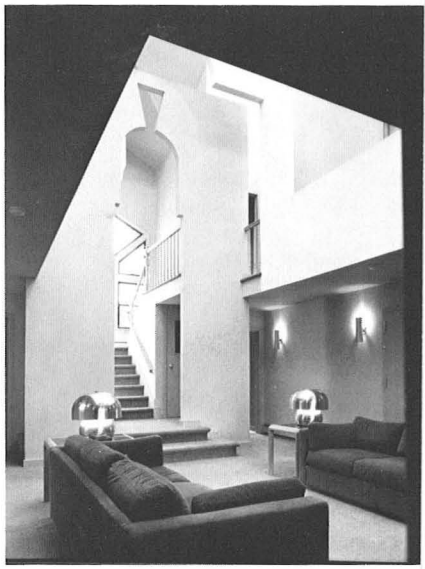
The second meeting was also concerned with the cell surface, but with a very large number of membrane proteins that share a common structural motif—the amino acid chain of the protein loops across the membrane from cytoplasm to the exterior of the cell seven times. The **Seven-transmembrane Segment Proteins** meeting examined the various functions of this family of proteins that include the receptors for pharmacologically active drugs like acetylcholine and dopamine, G proteins that help transmit messages across the membrane, and hormone receptors. The novel element of the meeting was that it compared these proteins, employing a common molecular design, across a wide evolutionary range. Participants thus included scientists working on diverse organisms including bacteria, yeast, the fruit fly, and vertebrates.

The Molecular Immunobiology of Lyme Disease meeting was particularly appropriate for the Long Island area. Lyme disease was recognized as a distinct clinical entity in 1977, and the causative agent, a spirochete *Borrelia burgdorferi*, was identified in 1982. It is the subject of increasingly intensive research as the disease spreads, and this meeting reviewed the latest findings. Research discussed ranged from the basic (trying to understand how the spirochete infects cells and how our immune system responds to infection), to the practical (trying to devise new diagnostic tests), to the future (examining how vaccines might be developed).

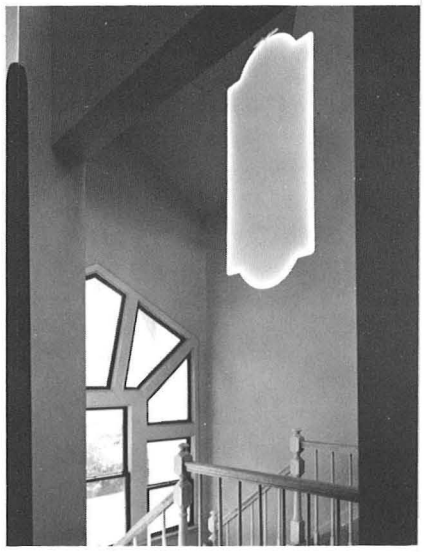
The bacterium *Escherichia coli* is one of the most intensively studied organisms. There is a detailed genetic map of its chromosome that is only 3 mil-

lion base pairs long. It is reasonable to regard *E. coli* as a model organism for genome studies and the Banbury meeting, **The Genome of *E. coli*** was intended to survey the current state of *E. coli* genome analysis. The topics covered included the amount of sequence available, the design and coordination of DNA sequence and genetic databases, interpretation of sequence data, and the ways in which the data can be quickly made available to all *E. coli* researchers. The meeting was outstanding in that it brought together all the leading participants from the United States, Europe, and Japan and that it received financial support from all the agencies that are interested in genome sequencing.

The **Receptor-mediated Virus Entry into Cells** meeting dealt with the earliest steps in virus infection. The mechanisms by which viruses enter cells are poorly understood, but progress has been made recently in identifying the cellular proteins that serve as receptors for viruses. In addition, the proteins in viral coats that are involved in the binding of virus to cell receptors have been analyzed by X-ray crystallography. We brought together scientists studying virus structure, cellular virus receptors, the kinetics of virus-receptor interactions, and what happens when a virus binds to a receptor. One hoped-for outcome of this research is the development of new antiviral drugs that will work by interfering with the process by which cells take up viral particles.



Sammis Hall lounge area



Sammis Hall stairway area

Human Molecular Genetics

In 1991, there were four meetings that continued Banbury Center's interest in human molecular genetics. The most timely of these meetings was **The Molecular Genetics and Cell Biology of Marfan Syndrome** meeting. Marfan Syndrome is a disorder of connective tissue, and the patients are also remarkably tall and thin (Abraham Lincoln is thought by some to have had Marfan Syndrome). Scientists have been mapping the chromosomal location of the gene involved and cloning DNA from that location, in addition to studying proteins known to be important for connective tissue function. Two lines of research came together at this spring meeting when it was found that both the gene mappers and the candidate protein researchers had cloned the same gene: the gene for a connective tissue protein called fibrillin. This was the first occasion on which the two groups had come together to discuss these findings, and their discussions hastened the publication of several papers in *Nature* reporting this work.

Although research on breast cancer is not so advanced, our **Molecular Genetics of Breast Cancer** meeting showed that progress is being made in determining the genetic factors that are involved in breast cancer. The meeting brought together scientists who are following two different lines of research in the pursuit of the genetic causes of breast cancer. Epidemiologists and population geneticists are using linkage studies to map genes in families with a high incidence of breast cancer, and at this meeting, they were able to compare their data from different families. On the other hand, scientists are studying the expression of known oncogenes in breast tumors, trying to dissect out the genetic changes going on in these tumors. These two research strategies are beginning to complement each other; chromosomal location provides clues about which genes might be involved, and genes known to be altered provide resources for gene mapping.

The **Genetics of Psychiatric Disorders** meeting tackled two even more difficult fields: schizophrenia and bipolar disorder (manic depression). The difficulties of doing genetic studies of disorders common in the general population

Banbury Meeting Room

are compounded by the difficulties of accurate diagnosis. Thus, much of the meeting was taken up with discussions of what diagnostic criteria to use and how these might be standardized so that comparable studies can be done in different families in different countries.

Although these meetings contributed to the work on trying to unravel the molecular genetic basis of human inherited disorders, the **DNA-based Diagnosis: From Laboratory to Application** meeting was concerned with the practical applications of that new knowledge. Many tests have now been devised to detect mutations in human genes, and increasing numbers of PCR-based tests are being developed for use in parasitology, microbiology, forensic science, and so on. However, relatively few of these tests have moved from the research laboratory to routine diagnostic laboratories. This meeting brought together those individuals who are developing DNA-based tests with those who have experience in the routine deployment of tests to consider how DNA-based tests can be transferred to routine use cheaply and efficiently.

Sloan Foundation Workshops

This year for the first time we invited both Congressional staff and science journalists to attend the same workshops, rather than segregating the two groups. It was a successful change, leading to further interesting interactions. Our Sloan Foundation Workshops typically cover research in biology that has important social implications, and this year was no exception. The first workshop was on **Aging**. Topics ranged from basic research on the molecular biology and genetics of senescence in cells in tissue culture and in the nematode *Caenor-*

habditis elegans, through Alzheimer's disease, to economic and social consequences of a society made up increasingly of the elderly. The second workshop discussed topics in which political and social considerations play a large part in determining what research can be done and how it can be used. Appropriately called **Biology and Society: Controversial Issues**, the workshop dealt with topics such as using human fetal tissue for transplantation, in vitro fertilization and preimplantation diagnosis, genetic screening, and risk assessment.

Human Genetics and Genome Analysis Workshops

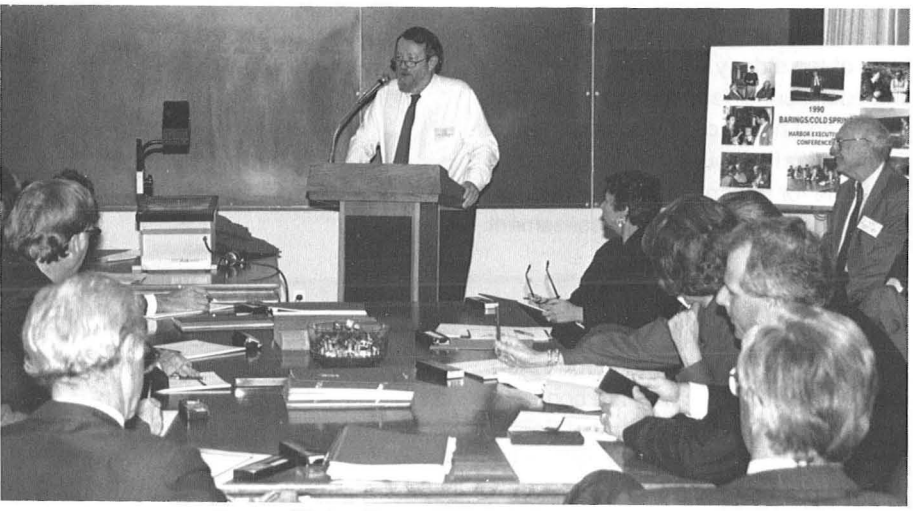
This was the first of what we hope will be a series of workshops intended to introduce the basics of human molecular genetics to nonscientists who are concerned about the human genome projects. Funded by the Department of Energy's Office of Health and Environmental Research (responsible for the DOE's Human Genome Project), the workshops are a joint effort by Banbury Center and the DNA Learning Center. Participants were selected from teachers, journalists, bioethicists, congressional staff, parent groups, and concerned citizens. The program had three components: lectures on the basic science of genetics, experiments at the DNA Learning Center, and talks by invited speakers. Appropriately, the first meeting began with a talk by David Galas, Associate Director of the Office of Health and Environmental Research, on the genome projects. The workshop was very successful, judging by the questionnaires returned by participants after the meeting.

Social Aspects of Science Policy

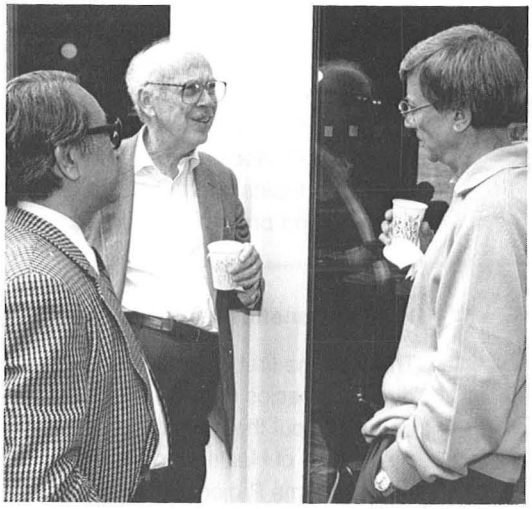
In October 1981, the Banbury Center hosted an influential meeting entitled **Patenting of Life Forms**. At that time, the first patent (for a bacterium that could metabolize oil) was a little over 1 year old, and both scientists and patent attorneys were trying to understand the implications of that decision for their own fields. In October 1991, the **Intellectual Property and Biotechnology** meeting was held to assess how events have measured up to the expectations and predictions of 10 years ago. There has been an extraordinary proliferation of biotechnology companies, academic institutions are much more sensitive to research of commercial potential, and many scientists have links directly or as consultants to companies. In addition to legal questions that are still unresolved, there was discussion of various socio-scientific questions. For example, there have been fears that the drive for commercial exploitation of research has led to more secretiveness and a reluctance to share data and materials. Fortuitously, the meeting was held just a few weeks after the announcement by the National Institutes of Health that patents had been filed for brain cDNAs.

Baring Brothers/Cold Spring Harbor Laboratory Meeting

Signal transduction—the means by which messages outside the cell are transmitted to the interior of the cell—was especially big news in biotechnology circles in 1991. We thus made the **Signal Transduction** meeting the sixth in the series of meetings sponsored by Baring Brothers for executives of biotechnology companies and investors. As usual, an outstanding group of scientists spoke at the meeting and the participants also spent time with Cold Spring Harbor



Henry Bourne (Baring Bros./CSHL Meeting)



Y. Sugino, J.D. Watson, B.R. Sykes

Laboratory scientists. A highlight of the meeting was the laboratory class, held this year in the teaching laboratories of the Beckman Neuroscience Center. The experiment was simple—isolating DNA from bacteria—but the participants had the privilege of being taught by Nobel laureate Sydney Altman. The scientists who attend Banbury Center meetings in 1992 and thereafter owe Baring Brothers a special vote of thanks. The chairs in the conference room have been renovated so that for the first time in many years participants will be at the correct height for the tables and not be in fear of falling off the chairs!

The William Stamps Farish Fund Meeting

The Farish Fund has given the Center funding for three meetings over a 3-year period. The general subject for the meetings is the genetics of complex human diseases. The first of the meetings was **Molecular Basis of HLA Predisposition**. It has been known for a long time that certain diseases, especially autoimmune diseases like diabetes, are associated with particular forms of genes found in the major histocompatibility locus. The molecular mechanisms underlying these associations are just beginning to be understood, i.e., we are beginning to see how changes in proteins that play an essential role in immune system function can have an effect on many apparently unrelated systems. Participants in the meeting reviewed the latest advances in this field.

Other Meetings

The Banbury Center continued to host a small number of meetings outside the main program. The Joint Informatics Task Force of the Department of Energy's genome project came here in January to review what needs to be done in an area that will prove crucial for the full exploitation of genome data. The Carnegie Council on Ethics and International Affairs held the Sixth Annual U.S.-Japan Agricultural Conference at Banbury Center. Appropriately, the topic for the meeting was a discussion of U.S.-Japan advances in biotechnology. Three other groups held meetings at Banbury Center: the Trustees of Huntington Hospital, the Psychiatry Department at Mt. Sinai, and the Trustees of the Planting Fields Foundation. The first in a new series of Lloyd Harbor seminars was given by Ann Gill of the Cold Spring Harbor Whaling Museum.

Two meetings held at Banbury Center spawned meetings in Grace Auditorium! George Cutting (chairman of LIBA) and I decided to exploit the presence of experts on Lyme disease and breast cancer at Banbury by having meetings for LIBA associates on these topics. So one day in April, four speakers from the meeting on Lyme disease were whisked away to Grace Auditorium for talks and a question and answer session, and 6 months later, we did the same with Mary-Claire King and Marc Lippman for a session on breast cancer.

Meetings Publications

Banbury Center meetings have continued to be a source of books published by Cold Spring Harbor Laboratory Press. Four titles in the new *Current Communications in Cell and Molecular Biology* series appeared, and most notably in the *Banbury Report* series, the book from the meeting, *The Biological Basis for Risk Assessment of Dioxins and Related Compounds*, was published. This was eagerly awaited as the definitive account of a meeting where misinformation following the meeting had been the source of much confusion.

Funding

I have already acknowledged the Alfred P. Sloan Foundation for their support of the Congressional staff and science journalists' workshops. The Foundation has been a staunch supporter of the Banbury Center for many years. The **Human Genetics and Genome Analysis** meetings funded by the Office of Health and Environmental Research, Department of Energy, allow us to expand this program of providing information for nonscientists. We are very grateful to the William Stamps Farish Fund for its 3-year grant. Such support gives us much flexibility in planning ahead, instead of having to scramble for funds each year. It was particularly pleasing that the **Genome of *E. coli*** meeting received funding from all the federal agencies interested in genome research: the National Center for Human Genome Research, the National Science Foundation, the National Library of Medicine, the Office of Health and Environmental Research, and the Department of Energy. The exciting meeting on the **Molecular Genetics and Cell Biology of Marfan Syndrome** was funded by the National Marfan Foundation and by the National Institute of Arthritis and Musculoskeletal and Skin Diseases. Once again, the corporate world was the Banbury Center's principal benefactor, through contributions to individual meetings and by company support of the Cold Spring Harbor Laboratory Corporate Sponsor Program. The legal divisions of five companies contributed to the costs of the meeting on **Intellectual Property and Biotechnology**, and the meeting on the **Molecular Biology of Lyme Disease** was funded by contributions from MetPath, Allen & Hanburys (Glaxo Inc.), Home Infusion, and the National Multiple Sclerosis Society. As usual, our greatest debt is to the members of the Cold Spring Harbor Laboratory Corporate Sponsor Program as funding for no fewer than five of our meetings came from this source.

Acknowledgments

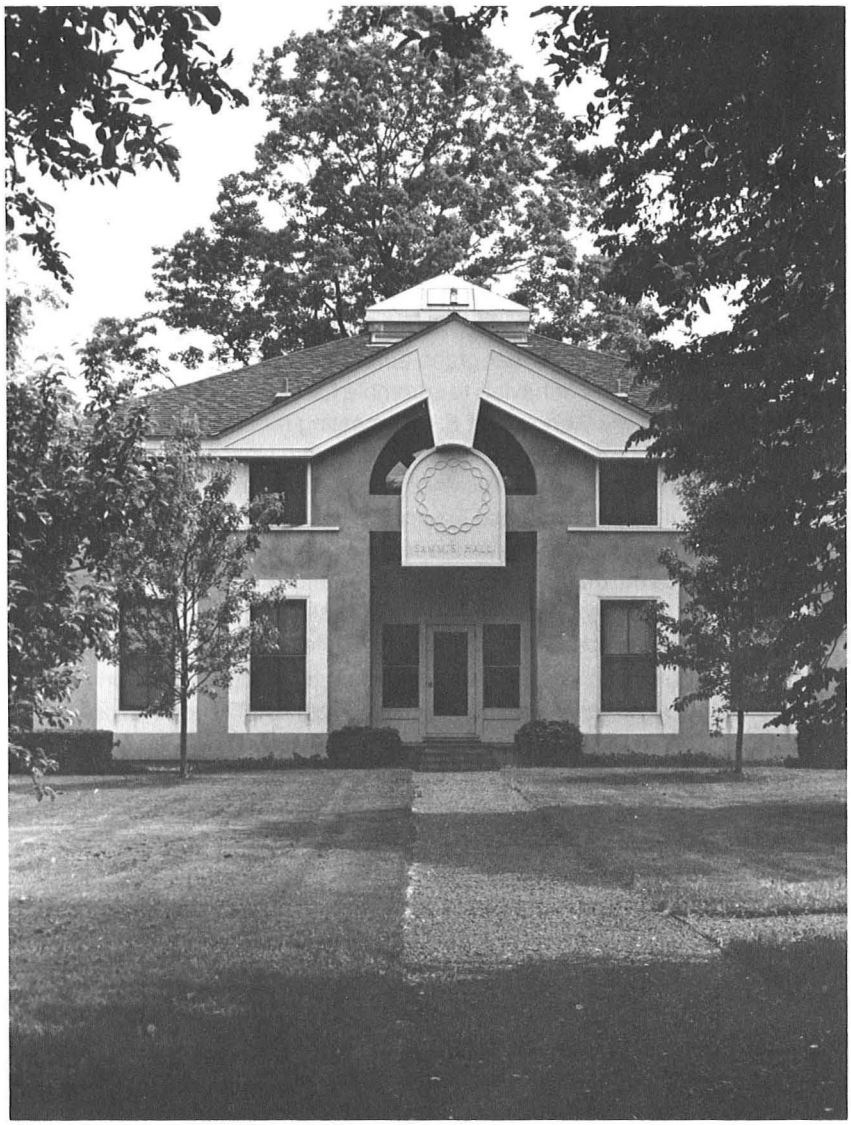
The Banbury Center could not possibly operate with its present intensity without the hard work and enthusiasm of all involved. In particular, our tight schedule puts a tremendous strain on Bea Toliver and Ellie Sidorenko in the Center's office

and on Katya Davey at Robertson House. The importance of their contributions can be seen in the many letters of appreciation that we receive from participants. The groundskeepers, Danny Miller and Andy Sauer, battle leaves in the fall and grass in the summer to make the Banbury estate a very special place for meetings. The Laboratory's housekeeping and catering staff also did a wonderful job coping with the rapid turnover of meetings and the increased numbers of participants at our meetings.

Jan A. Witkowski

Publications

Watson, J.D. , M. Gilman, J.A. Witkowski, and M. Zoller. 1992. *Recombinant DNA*. W.H. Freeman, New York.



Sammis Hall, guest house

MEETINGS

Sloan Foundation Congressional Workshop on Aging

January 24–January 26

ARRANGED BY

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York

SESSION 1

O.M. Pereira-Smith, Baylor College of Medicine, Houston, Texas: The molecular biology of aging of cells in vitro.
T.E. Johnson, University of Colorado, Boulder: Cell death in vivo and its role in normal development.
P. Davies, Albert Einstein College of Medicine, Bronx, New York: Alzheimer's Disease: Molecular pathology.
R. Tanzi, Massachusetts General Hospital, Boston: The genetics of Alzheimer's Disease.

SESSION 2

R. Suzman, National Institute on Aging, Bethesda, Maryland: The demography of aging populations.
R. Berg, Strong Memorial Hospital, Rochester, New York: Special features of health care for the elderly.
D. Callahan, The Hastings Center, Briarcliff Manor, New York: Provision of health care for the aged.

J. Witkowski, R. Herdman, R. Levinson

Adhesion Molecule Receptors and Disease

March 10–March 13

ARRANGED BY

J. M. Harlan, University of Washington, Seattle
T.A. Springer, Center for Blood Research, Boston, Massachusetts

SESSION 1: The Matrix, Cell Interactions, and Disease

Chairperson: R. Hynes, Massachusetts Institute of Technology, Cambridge

R. Hynes, Massachusetts Institute of Technology, Cambridge: Genetic analyses of cell-matrix adhesion.

M.E. Hemler, Dana-Farber Cancer Institute, Boston, Massachusetts: VLA-2 and VLA-4 in the integrin family: Adhesion receptors of critical importance to inflammation and metastasis.

C.F. Ockenhouse, Walter Reed Army Institute of Research, Washington, D.C.: Molecular basis for adhesion to CD36 and ICAM-1 by *Plasmodium falciparum* malaria-infected erythrocytes.

J. Leong, New England Medical Center, Boston, Massachusetts: Cellular penetration by yersina pseudotuberculosis.

S.-I. Hakomori, The Biomembrane Institute and University of Washington, Seattle: Multiple functional roles of carbohydrates in cell adhesion.

SESSION 2: Adhesion and Inflammation

Chairperson: T.A. Springer, Center for Blood Research, Boston, Massachusetts

T.A. Springer, Center for Blood Research, Boston, Massachusetts: How many ICAMs?

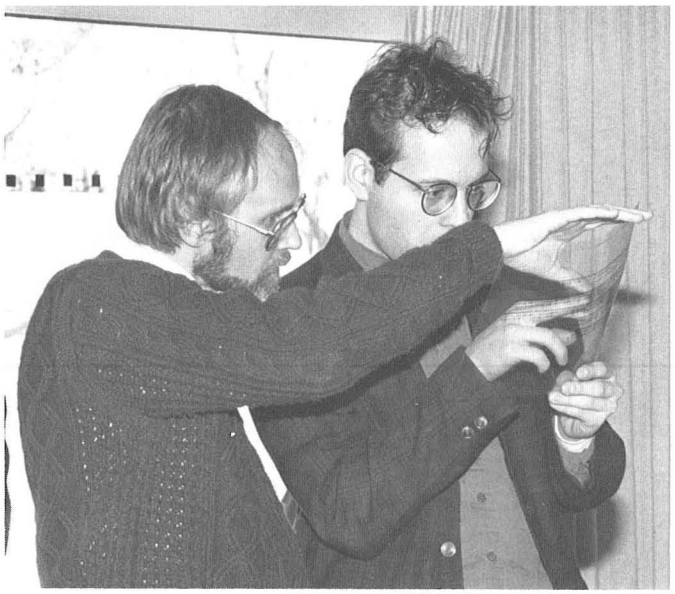
M.S. Diamond, Center for Blood Research, Boston, Massachusetts: Mac-1 (CD11b/CD18) and its interaction with ICAM-1 (CD54).

S.D. Wright, The Rockefeller University, New York, New York: Regulation of CD18 function: Activation of ELAM-1, and role of a novel small molecule as an allosteric effector of CD18.

F. Sanchez-Madrid, Hospital de la Princesa, Madrid, Spain: Functional mapping and regulation of VLA-4 adhesion activities.

S. Shaw, National Cancer Institute, Bethesda, Maryland: Adhesion molecules in T-cell differentiation and function.

D. Anderson, M. Diamond



T. Springer, B. Furie

SESSION 3: Adhesion and Inflammation: Inflammation and Selections

Chairperson: B. Furie, Tufts University School of Medicine, Boston, Massachusetts

C. MacKay, Basel Institute for Immunology, Switzerland: Correlations between the physiological recirculation of lymphocytes and expression of adhesion/homing molecules.

B. Furie, Tufts University School of Medicine, Boston, Massachusetts: PADGEM: A receptor that mediates platelet-leukocyte interaction by recognition of a lineage-specific carbohydrate role in thrombosis and inflammation.

R.P. McEver, University of Oklahoma Health Science Center, Oklahoma City: Leukocyte interactions with GMP-140.

G.A. Zimmerman, University of Utah School of Medicine, Salt Lake City: Proadhesive molecules expressed by activated endothelium-binding and -signaling functions.

J.C. Paulson, Cyetel Corporation, La Jolla, California: Comparison of the carbohydrate specificities of ELAM-1 and GMP-140.

SESSION 4: Adhesion and Inflammation: The Immune System

Chairperson: T.F. Tedder, Dana-Farber Cancer Institute, Boston, Massachusetts

R. Lobb, Biogen, Cambridge, Massachusetts: BCAM1 and ELAM1: Recent studies.

T.F. Tedder, Dana-Farber Cancer Institute, Boston, Massachusetts: LAM-1 mediates lymphocyte and neutrophil binding to endothelium in cooperation with other adhesion receptors.

T. Kishimoto, Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Connecticut: ELAM-1 is a receptor for skin-homing lymphocytes.

U. von Andrian, Pharmacia Experimental Medicine, La Jolla, California: A two-step model of leukocyte-endothelial cell interaction: Different roles for LECAM-1 and the B_2 integrins in vivo.

L.A. Lasky, Genentech, Inc., South San Francisco, California: The homing receptor: A lectin cell adhesion molecule of the immune system.

P.W. Kincade, Oklahoma Medical Research Foundation, Oklahoma City: Adhesion molecules utilized in bone marrow.

SESSION 5: Adhesion Molecules and Therapy

Chairperson: J.M. Harlan, University of Washington, Seattle

J.M. Harlan, University of Washington, Seattle: CD18 monoclonal antibody reduces vascular and tissue injury in acute inflammation.

R.F. Todd III, University of Michigan Medical School, Ann Arbor: β1 integrin expression on human small cell lung cancer cells.

D.C. Anderson, Baylor College of Medicine, Houston, Texas: Role of ICAM-1 in canine myocardial reperfusion injury: Mechanisms of regulation and therapeutic applications.

R. Rothlein, Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Connecticut: The anti-inflammatory effects of anti-ICAM-1 MAb.

Seven-transmembrane Segment Proteins

March 17–March 20

ARRANGED BY

M.R. Brann, National Institute of Neurological Disorders and Stroke, Bethesda, Maryland
M.G. Caron, Howard Hughes Medical Institute, Duke University Medical Center, Durham, North Carolina
M.R. Hanley, University of California, Davis

SESSION 1

Chairperson: M.R. Hanley, University of California, Davis

R. Henderson, MRC Laboratory of Molecular Biology, Cambridge, United Kingdom: Structure of bacteriorhodopsin.

E.L. Berson, Harvard Medical School, Boston, Massachusetts: Rhodopsin gene mutations in patients with autosomal dominant retinitis pigmentosa.

D.D. Jenness, University of Massachusetts Medical School, Worcester: Factors controlling stability and internalization of the yeast α-factor pheromone receptor.

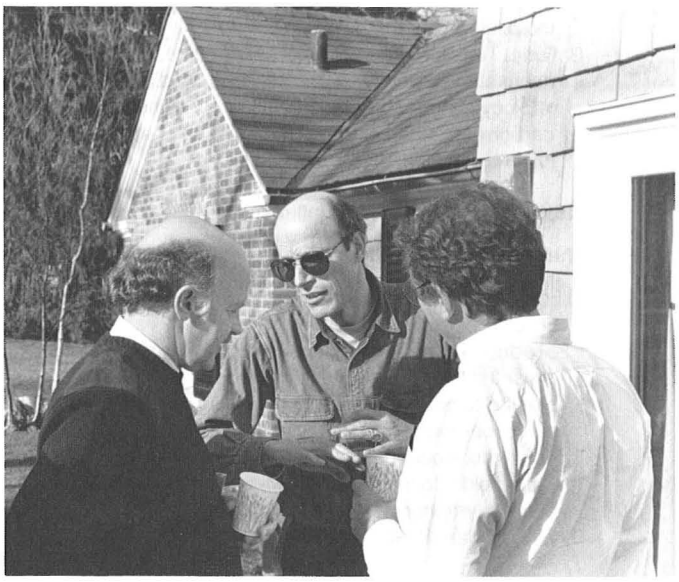
J.A. Kurjan, University of Vermont College of Medicine, Burlington: Role of a G protein in yeast pheromone

response: Effect of mutations in guanine nucleotide binding and carboxy-terminal domains.

L. Marsh, Albert Einstein College of Medicine, Bronx, New York: Determinants of ligand specificity and activation for the yeast α-factor receptor.

J.W. Thorner, University of California, Berkeley: New insights in desensitization: Role of the SST2 gene product in adaptation of the yeast pheromone response pathway.

G. Vassart, R. Sprengle



J. Shine, O. Civelli

SESSION 2

Chairperson: M.G. Caron, Howard Hughes Medical Institute, Duke University Medical Center, Durham, North Carolina

P.N. Adler, University of Virginia, Charlottesville: The frizzled tissue polarity gene of *Drosophila*.

P.N. Devreotes, Johns Hopkins Medical School, Baltimore, Maryland: The cAMP receptor of slime mold.

N.M. Nathanson, University of Washington, Seattle: Function and regulation of muscarinic acetylcholine receptors and G proteins.

E.C. Hulme, MRC National Institute for Medical Research, London, United Kingdom: Muscarinic acetylcholine receptors: Structure-function relationships.

M.R. Brann, National Institute of Neurological Disorders and Stroke, Bethesda, Maryland: Localization of muscarinic receptor subtype gene expression: mRNAs and proteins.

J. Wess, National Institutes of Health, Bethesda, Maryland: Mutational analysis of muscarinic receptors: Identification of ligand binding and effector coupling domains.

SESSION 3

Chairperson: M. R. Brann, National Institute of Neurological Disorders and Stroke, Bethesda, Maryland

R.J. Lefkowitz, Howard Hughes Medical Institute, Duke University Medical Center, Durham, North Carolina: Adrenergic receptors: Structure and regulation.

O. Civelli, Oregon Health Sciences University, Portland: Molecular biology and complexity of dopamine receptors.

J.-C. Schwartz, INSERM, Paris, France: The dopamine D_3 receptor gene and its products: Localization and function.

M.G. Caron, Howard Hughes Medical Institute, Duke University Medical Center, Durham, North Carolina: Catecholamine receptors/structure-function.

G. Vassart, Institut de Recherche Interdisciplinaire en Biologie Humaine, Brussels, Belgium: Identification of adenosine A_1 and A_2 receptors amongst a series of orphan receptors.

S. Nakanishi, Kyoto University Faculty of Medicine, Japan: Molecular characterization of metabotropic glutamate receptors.

E. Mulvihill, ZymoGenetics, Inc., Seattle, Washington: Cloning and expression of the metabotropic glutamate receptor.

SESSION 4

Chairperson: R. J. Lefkowitz, Howard Hughes Medical Institute, Duke University Medical Center, Durham, North Carolina

J. Shine, St. Vincent's Hospital, Sydney, Australia: Molecular cloning and expression of G protein coupled receptors.

M. Brownstein, National Institute of Mental Health, Bethesda, Maryland: Novel G protein coupled receptors.

M.C. Gershengorn, Cornell University Medical College, New York, New York: The TRH receptor.

J.B.C. Findlay, University of Leeds, United Kingdom: Protein chemistry and computer-based approaches to the structure of G-protein-linked receptors.

J. Battey, National Institute of Neurological Disorders and Stroke, Bethesda, Maryland: Bombesin receptors.

D. Richter, University of Hamburg, Germany: Neuropeptide receptors.

T.J. Murphy, Emory University School of Medicine, Atlanta, Georgia: The angiotensin II receptor.

C. Dykes, Glaxo Group Research Limited, Middlesex, United Kingdom: Expression of *MAS* oncogene in *Xenopus* oocytes.

SESSION 5

Chairperson: R. Henderson, MRC Laboratory of Molecular Biology, Cambridge, United Kingdom

R. Cone, Oregon Health Sciences University, Portland: New sites for expression for the glycoprotein hormone receptors: TSH receptor in adipocytes and LH/CG receptor in the thyroid.

R. Sprengel, ZMBH, University of Heidelberg, Germany: Signal transduction at gonadotropin receptors.

E.M. Ross, University of Texas, Dallas: Role of extreme carboxy-terminal regions in determining receptor localization.

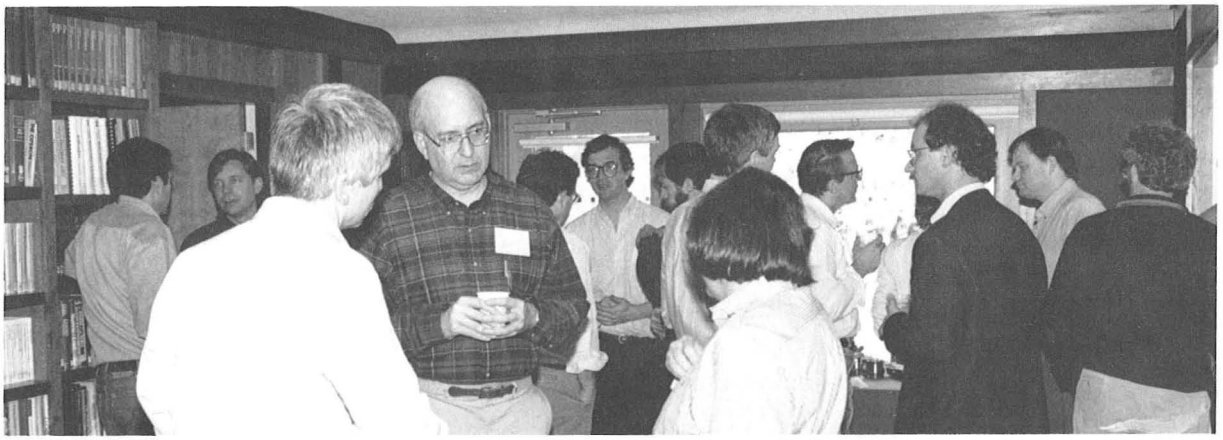
A.D. Strosberg, CNRS, Institut Cochin de Genetique Moleculaire, Paris, France: Ligand and G protein binding to B-adrenergic and serotoninergic receptors expressed in *E. coli.*

DNA-based Diagnosis: From Laboratory to Application

March 31–April 3

ARRANGED BY

R.A. Gibbs, Baylor College of Medicine, Houston, Texas
D.W. Yandell, Massachusetts Eye and Ear Infirmary, Boston



Coffee break in Conference Center Library

SESSION 1: DNA Screening Programs

P. Reilly, Shriver Center for Mental Retardation, Waltham, Massachusetts: The CF debate: Do medico-legal forces drive the implementation of new tests?

R.A. Gravel, Montreal Children's Hospital Research Institute, Quebec, Canada: Mutation screening in Tay-Sachs disease.

H.H. Kazazian, Jr., Johns Hopkins Hospital, Baltimore, Maryland: Impact of DNA testing on family diagnosis.

F.K. Fujimura, Nichols Institute, San Juan Capistrano, California: Clinical applications of DNA-based diagnosis.

SESSION 2: New Developments in Instrumentation

L.M. Smith, University of Wisconsin-Madison: High-speed DNA sequencing by horizontal ultra-thin gel electrophoresis with fluorescence detection.

L.J. McBride, Applied Biosystems, Foster City, California: Automated genetic analysis: PCR and analytical fluorescence-based detection.

A. Costa, Beckman Instruments, Palo Alto, California: Robotics in the laboratory.

SESSION 3: Techniques for DNA Screening

D. Nickerson, California Institute of Technology, Pasadena: DNA diagnostics using an oligonucleotide ligation assay.

S.S. Sommer, Mayo Clinic/Foundation, Rochester, Minnesota: An efficient two-tiered diagnostic approach applied to DNA-based testing in hemophilia and familial amyloidotic polyneuropathy.

D.J. Kemp, The Walter and Elizabeth Hall Institute of Medical Research, Victoria, Australia: Capture of PCR products with DNA binding proteins.

S.R. Bouma, Abbott Laboratories, Abbott Park, Illinois: The ligase chain reaction (LCR) in DNA-based diagnostics.

E.R.B. McCabe, Baylor College of Medicine, Houston, Texas: DNA analysis using newborn screening specimens: Evolving applications for dried blood spot technology.

SESSION 4: Applications in Genetic Diseases

D.J. Prockop, Jefferson Medical College, Philadelphia, Pennsylvania: Repetitive sequencing of collagen genes for mutations that can cause common diseases such as osteoarthritis, arterial aneurysms, and osteoporosis.

L.-C. Tsui, The Hospital for Sick Children, Toronto, Ontario, Canada: Identification of mutations in the cystic fibrosis transmembrane conductance regulator gene.

F.F. Chehab, University of California, San Francisco: Molecular diagnostics of cystic fibrosis in a clinical laboratory: A new perspective.

F. Smith, Shriver Center for Mental Retardation, Waltham, Massachusetts: Use of single-strand conformation polymorphism (SSCP) analysis and denaturing gradient gel electrophoresis for screening patient samples for defects in the acid β-glucosidase and proteolipid protein genes.

J.S. Chamberlain, University of Michigan Medical School, Ann Arbor: Diagnosis and carrier detection of DMD via PCR.

L. Ugozzoli, Beckman Research Institute, Duarte, California: Allele-specific PCR: A new application.

D.F. Wirth, Harvard School of Public Health, Boston, Massachusetts: DNA probe diagnosis of parasitic diseases: Use of PCR.

B. Trask, R. Gibbs

SESSION 5: DNA-Based Diagnosis Of Cancer

S.H. Friend, Massachusetts General Hospital Cancer Center, Charlestown: Screening for germ line p53 mutations: Within and outside of L.-Fraumeni families.
D.W. Yandell, Massachusetts Eye and Ear Infirmary, Boston: DNA-based diagnosis of cancer predisposition: Analysis of *RB* and *p53* genes.
K. Hayashi, National Cancer Center Research Institute, Tokyo, Japan: PCR-SSCP analysis: Detection of DNA polymorphisms and mutations in oncogenes, anti-oncogenes, or genes for hereditary diseases.
B.J. Trask, Lawrence Livermore National Laboratory, California: Chromosome analysis using flow cytometry and fluorescence in situ hybridization.

SESSION 6: Detection of Viruses and Other Pathogens

T.J. White, Roche Diagnostic Research, Alameda, California: Development of PCR-based diagnostic kits and services for HIV-1.
R.A. Gibbs, Baylor College of Medicine, Houston, Texas: Analysis of mixed DNA sequences in genetic and infectious diseases.
B. Weiser, State University of New York at Stony Brook: Measurement of HIV-1 nucleotide sequence diversity among close contacts for epidemiologic investigation.
S.M. Wolinsky, Northwestern University Medical School, Chicago, Illinois: Characterization of HIV-1 sequence variation between mother-infant transmission pairs using PCR-temperature gradient gel electrophoresis (TGGE) and direct PCR cycle sequencing.
D. Shibata, University of Southern California, Los Angeles: Applications of the PCR to routinely obtained fixed tissue.
H.H. Kazazian, Jr., Johns Hopkins Hospital, Baltimore, Maryland: Concluding remarks.

The Molecular Immunobiology of Lyme Disease

April 7–April 10

ARRANGED BY

J.J. Dunn, Brookhaven National Laboratory, Upton, New York
S.E. Schutzer, UMDNJ-New Jersey Medical School, Newark

SESSION 1: Pathogenesis

Chairperson: J.L. Benach, State University of New York at Stony Brook

J.L. Benach, State University of New York at Stony Brook: Diversity in the adhesion process of *Borrelia* to eukaryotic cells.
P.H. Duray, Fox Chase Cancer Center, Philadelphia, Pennsylvania: Mammalian tissue–spirochete interactions.
G. Peltz, Syntex, Palo Alto, California: T cells in the pathogenesis of human Lyme arthritis.
S.W. Barthold, Yale University School of Medicine, New Haven, Connecticut: Lyme borreliosis in the laboratory mouse.
N. Bhardwaj, The Rockefeller University, New York, New York: Dendritic cells in human blood and synovial exudates.

SESSION 2: Neurology

Chairperson: P.K. Coyle, State University of New York at Stony Brook

P.K. Coyle, State University of New York at Stony Brook: Immune complex analysis in *Borrelia burgdorferi* infection.
D.E. Griffin, Johns Hopkins University School of Medicine, Baltimore, Maryland: Immune responses to CNS infections.
S.A. Lukehart, University of Washington School of Medicine, Seattle: Early involvement of the central nervous system by *Treponema pallidum.*
G. Habicht, State University of New York at Stony Brook: Molecular mechanisms of *Borrelia burgdorferi* pathogenicity.
J.C. Garcia-Monco, Hospital de Galdacano, Vizcaya, Spain: Early central nervous system invasion by *Borrelia burgdorferi.*

SESSION 3: Molecular Biology I: Surface Antigens

Chairperson: J.J. Dunn, Brookhaven National Laboratory, Upton, New York

J.J. Dunn, Brookhaven National Laboratory, Upton, New York: High-level expression of *Borrelia burgdorferi* surface proteins.

P.A. Rosa, Rocky Mountain Laboratories, Hamilton, Montana: The molecular basis of (some) outer surface protein variation in *Borrelia burgdorferi.*

J. Radolf, University of Texas, Dallas: Immunobiology of spirochete lipoproteins.

D.H. Persing, Mayo Clinic, Rochester, Minnesota: Ticks, mice, and men: Molecular detection of the Lyme disease spirochete.

I. Saint-Girons, Institut Pasteur, Paris, France: Genome organization of *Borrelia.*

SESSION 4: Immunobiology I: Immune Response

Chairperson: S.E. Schutzer, UMDNJ-New Jersey Medical School, Newark

R.C. Johnson, University of Minnesota, Minneapolis: Immunogenicity of *Borrelia burgdorferi.*

S.E. Schutzer, University of Medicine & Dentistry of New Jersey/New Jersey Medical School, Newark: Autoimmune reactions triggered by *Borrelia burgdorferi* infection, versus persistent infection.

J. Zabriskie, Rockefeller University, New York, New York: Cross-reactive antibody against bacteria.

S.-M. Cheng, Wyeth-Ayerst Research, Radnor, Pennsylvania: Antigen capture PCR.

B. Johnson, Centers for Disease Control, Fort Collins, Colorado: Evaluation of recombinant Ospa as a protective immunogen in tick-challenged hamsters.

E. Fikrig, Yale University School of Medicine, New Haven, Connecticut: Protective immunity in Lyme borreliosis.

D.J. Volkman, State University of New York at Stony Brook: *Borrelia* antigens eliciting early T- and B-cell responses.

U.E. Schaible, Max-Planck-Institut fur Immunbiologie, Freiburg, Germany: A mouse model for *Borrelia burgdorferi* infection: Pathogenesis immune response and protection.

SESSION 5: Special Topics

Chairperson: F.S. Kantor, Yale University School of Medicine, New Haven, Connecticut

Molecular Biology II

J. Hinnebusch, University of Texas, San Antonio: Structural characterization of *Borrelia* linear plasmids.

Immunobiology II-Round Table: Detection of Bb

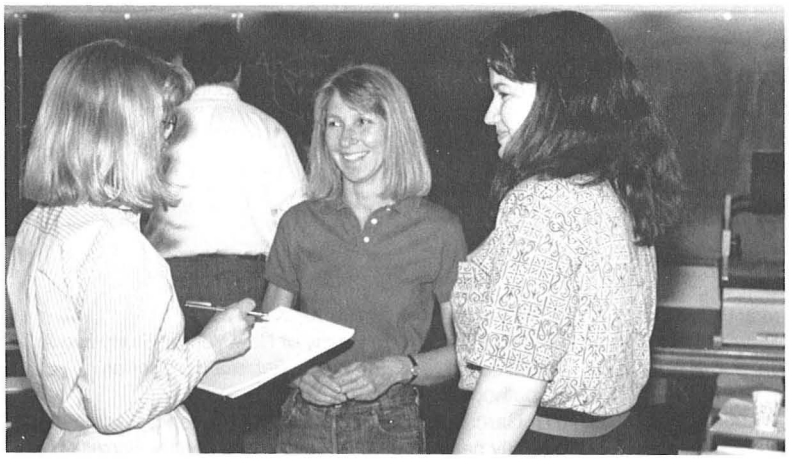
M. Sand, MetPath Inc., Teterboro, New Jersey: Serological detection of Lyme disease.

M. Golightly, State University of New York at Stony Brook: Comparative studies of antibody detection of *Borrelia burgdorferi.*

NIH Report and Questions to be Researched

B.J. Luft, State University of New York at Stony Brook: Development and use of recombinant proteins for serodiagnosis of Lyme disease.

S.P. Heyse, National Institutes of Health, Bethesda, Maryland: Brief report on the NIAMS Lyme disease research and education programs.



B. Johnson, S. Lukehart, R. Montgomery

The Molecular Genetics and Cell Biology of Marfan Syndrome

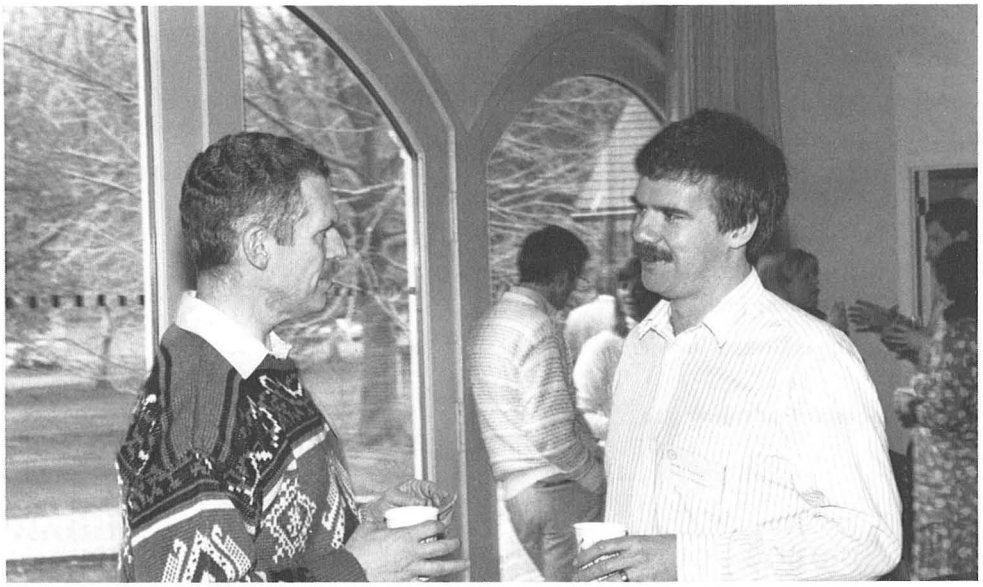
April 19–April 21

ARRANGED BY

F.S. Collins, Howard Hughes Medical Institute, University of Michigan, Ann Arbor
U. Francke, Howard Hughes Medical Institute, Stanford University Medical Center, California
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York

OPENING SESSION

F.S. Collins, Howard Hughes Medical Institute, University of Michigan, Ann Arbor: Deducing the genetic pathogenesis of MFS: Examples from other disorders.



Meeting participants during coffee break in Conference Room

SESSION 1: Phenotype and Heterogeneity

Chairperson: F.S. Collins, Howard Hughes Medical Institute, University of Michigan, Ann Arbor

R.E. Pyeritz, John Hopkins University School of Medicine, Baltimore, Maryland: The MFS and related disorders: History and nosology.
R.B. Devereux, New York Hospital–Cornell Medical Center, New York, New York: Phenotype and clinical complications of the MFS: The need for definitive (genetic) and intermediate (nongenetic) therapies.

SESSION 2: Linkage Studies

Chairperson: C.A. Francomano, Johns Hopkins Hospital, Baltimore, Maryland

L. Peltonen, National Public Health Institute, Helsinki, Finland: Location of the MFS locus and heterogeneity analysis with markers of 15q.
M. Sarfarazi, University of Connecticut Health Center, Farmington: The linkage map of 15q markers.
H.C. Dietz, The Johns Hopkins Hospital, Baltimore,

Maryland: Linkage relationships between the MFS locus and chromosome 15 markers.

P. Tsipouras, University of Connecticut Health Center, Farmington: Fine mapping of the region surrounding the MFS locus on chromosome 15.

M.W. Kilpatrick, University of Birmingham, United Kingdom: Localization of a gene for MFS by linkage analysis with chromosome 15 markers.

Discussion: Linkage and heterogeneity.

SESSION 3: Elastic Tissue Microfibrils and Fibrillin

Chairperson: P. Byers, University of Washington, Seattle

R.W. Glanville, Shriners Hospital for Crippled Children, Portland, Oregon: Structural studies on fibrillin and microfibril assembly.

L.Y. Sakai, Shriners Hospital for Crippled Children, Portland, Oregon: Biochemical characterization of fibrillin.

C. Maslen, Shriners Hospital for Crippled Children, Portland, Oregon: Cloning and sequence analysis of fibrillin cDNA.

E. Magenis, Oregon Health Sciences University, Portland: Chromosome localization of the fibrillin gene.

M. Godfrey, University of Nebraska Medical Center, Omaha: Immunohistochemical analyses of microfibrils in MFD and other pathological conditions.

D. McGookey, University of Washington, Seattle: MFS: Defective synthesis, secretion, and extracellular matrix formation of fibrillin by cultured dermal fibroblasts.

K. Potter, Washington State University, Pullman: Bovine model for MFS.

Discussion: Fibrillin gene defects in MFS.

SESSION 4: Other Elastic Fiber Genes

Chairperson: B. Sykes, University of Oxford, United Kingdom

R.P. Mecham, The Jewish Hospital of St. Louis, Missouri: The elastic fiber microfibril: Catalyst of elastic fiber.

J. Rosenbloom, University of Pennsylvania, Philadelphia: Molecular cloning of elastic fiber genes.

B. Lee, Mt. Sinai School of Medicine, New York, New York: A candidate gene approach toward characterizing the molecular lesions in MFS.

SESSION 5: Summary and Strategies for Future Research

Chairperson: U. Francke, Howard Hughes Medical Institute, Stanford University Medical Center, California

P. Ciccariello, National Marfan Foundation, Port Washington, New York: The role of NMF.

Sloan Foundation Science Journalists/Congressional Workshop on Biology and Society: Controversial Issues

May 5–May 7

ARRANGED BY

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York

SESSION 1

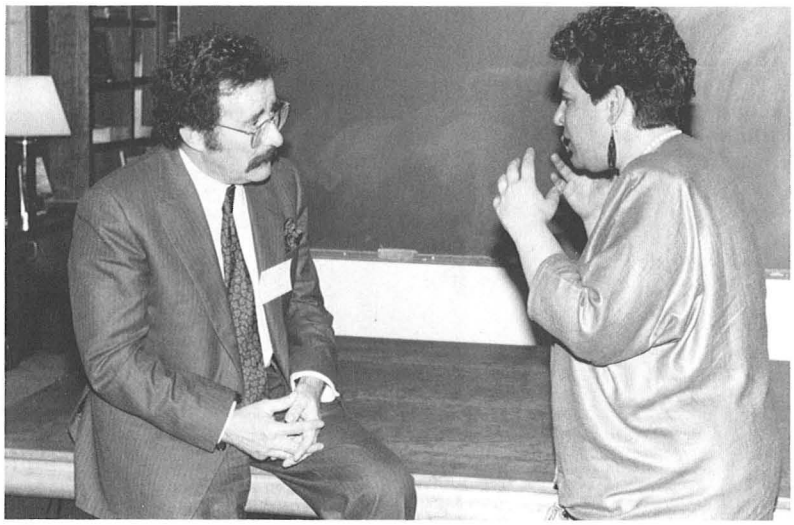
A. Charo, University of Wisconsin Law School, Madison: RU486 and contraceptive research.

R.M.L. Winston, Royal Postgraduate Medical School, Institute of Obstetrics and Gynaecology, London, United Kingdom: Preimplantation genetic diagnosis.

K.J. Lafferty, Childhood Diabetes Center, University of Colorado Health Sciences Center, Denver: Human fetal tissue transplantation.

SESSION 2

D. Vawter, Center for Biomedical Ethics, University of Minnesota, Minneapolis: Ethical and legal aspects of research using human fetal tissue.



R. Winston, A. Charo

SESSION 3

P.T. Rowley, Division of Genetics, University of Rochester Medical Center, New York: Screening populations for genetic mutations: Cystic fibrosis.

W.C. Thompson, Program in Social Ecology, University of California, Irvine: DNA fingerprinting in forensic science: Scientists on the witness stand.

J.D. Graham, Department of Health Policy and Management, Harvard School of Public Health, Boston, Massachusetts: Setting limits for environmental exposure: The use of expert scientific judgment.

Intellectual Property and Biotechnology

October 10–October 13

ARRANGED BY

A.P. Halluin, Fliesler, Dubb, Meyer & Lovejoy, San Francisco, California
J. Maroney, Cold Spring Harbor Laboratory, New York
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York

OPENING SESSION: Introduction

Chairperson: A.P. Halluin, Fliesler, Dubb, Meyer & Lovejoy, San Francisco, California

A.P. Halluin, Fliesler, Dubb, Meyer & Lovejoy, San Francisco, California: Unanswered questions following the prosecution of Cohen and Boyer patent: The dust has not settled.

N.J. Reimers, Stanford University, California: Managing the Cohen and Boyer licensing program and patent prosecution.

B.I. Rowland, Cooley, Godard, Castro et al., Palo Alto, California: Prosecuting the Cohen and Boyer patent application under the public eye: Pros and cons.

SESSION 1: Prosecuting Patents in the Patent and Trademark Office

Chairperson: J.A. Goldstein, Stern, Kessler, Goldstein and Fox, Washington, D.C.

P. Granahan, Hamilton, Brook, Smith and Reynolds, Lexington, Massachusetts: Establishing patentability over the Prior Art.

K. Murashige, Irell & Manella, Menlo Park, California: Dealing with scope of claim issues and related problems in interference proceedings.

SESSION 2: European Issues

Chairperson: J.F. Haley, Jr., Fish & Neave, New York, New York

Higher Life Forms

R.E. Bizley, Hepworth, Lawrence, Bryer, & Bizley, Harlow, United Kingdom: Developments in life patenting in Europe.

European Prosecution

V. Vossius, Vossius & Partner, Munich, Germany: Strategies for prosecuting European patent applications and oppositions.

SESSION 3: Emerging Issues for Scientists

Chairperson: N. Zinder, The Rockefeller University, New York, New York

Patenting from Scientist's Viewpoint

T.J. White, Roche Diagnostics Research, Alameda, California: Unstated assumptions about scientific publication from industrial laboratories.

N. Zinder, Rockefeller University, New York, New York: Using data from the Human Genome Project.

How Do Academic and Corporate Entities Manage the Licensing Process?

G.M. Gould, Hoffmann-La Roche Inc., Nutley, New Jersey: Licensing biotechnology inventions from the corporate perspective.

L.L. Nelsen, Massachusetts Institute of Technology, Cambridge: Licensing biotechnology inventions from the academic perspective.

G. Frank, K. Mullis, E. Kubasiewicz

SESSION 4: Appealing Patent Decisions

Chairperson: G. Rich, U.S. Court of Appeals for the Federal Circuit, Washington, D.C.

H.C. Wegner, Wegner, Cantor, Mueller & Player, Washington, D.C.: Decisions of the PTO Board of Appeals and Interferences, and the Court of Appeals for the Federal Circuit.

L. Misrock, Pennie & Edmonds, New York: Appeals to the Federal Circuit from the Federal District Courts and the ITC.

A. Lourie, U.S. Court of Appeals for the Federal Circuit, Washington, D.C.: The Federal Circuit's perspective of biotechnology cases.

E.E. Kubasiewicz, Patent and Trademark Office, Arlington, Virginia: PTO's handling and dissemination of Board of Appeals and Interferences and Federal Circuit decisions.

SESSION 5: Managing Patent Litigation

Chairperson: S. Raines, Genentech, Inc., South San Francisco, California

B. Eisen, Genetics Institute, Inc., Cambridge, Massachusetts: Overview in managing patent litigation.

K. Mullis, La Jolla, California: Perspective of the inventor/scientist in patent litigation before a jury.

M. Hall Patel, U.S. District Court Judge for the Northern District of California, San Francisco: Managing complex biotechnology patent litigation from the courts' point of view.

SESSION 6: Overviews

Chairperson: A.P. Halluin, Fliesler, Dubb, Meyer & Lovejoy, San Francisco, California

Patent Office
Legal
Science

The Genome of *E. Coli*

October 16–October 19

ARRANGED BY

F.R. Blattner, University of Wisconsin, Madison
G.M. Church, Harvard Medical School, Boston, Massachusetts
J.H. Miller, University of California, Los Angeles
K.E. Rudd, National Institutes of Health, Bethesda, Maryland
C.L. Smith, University of California, Berkeley

Opening Remarks

J.H. Miller, University of California, Los Angeles

SESSION 1: *E. coli* Sequence

Chairperson: J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York

F.R. Blattner, University of Wisconsin, Madison: Status of the *E. coli* sequence.
D.L. Daniels, University of Wisconsin, Madison: *E. coli* sequencing.
K.I. Isono, Kobe University, Rokkodai, Japan: Genome analysis of *E. coli* K-12: Summary of joint work conducted in Japan.
G.M. Church, Harvard Medical School, Boston, Massachusetts: Automation, multiplex DNA sequencing, and *E. coli* proteins.
K.E. Rudd, National Institutes of Health, Bethesda, Maryland: *E. coli* genome data bases: EcoMap, EcoSeq, and EcoGene.

SESSION 2: Data Bases (A)

Chairperson: K.E. Rudd, National Institutes of Health, Bethesda, Maryland

M. Kroger, Justus-Liebig-Universitat Giessen, Germany: Collection of *E. coli* DNA sequence data; structure and use of the ECD data bank; detection of sequencing or other errors; comparison of different strains.
S. Henikoff, Howard Hughes Medical Institute, Hutchinson Cancer Research Center, Seattle, Washington: Protein blocks as aids to sequence interpretation.
R. VanBogelen, University of Michigan Medical School, Ann Arbor: Genome-linked protein data base of *E. coli.*
M.R. Riley, Marine Biological Laboratory, Woods Hole, Massachusetts: A data base of *E. coli* metabolism connected to the underlying genes.
M. Berlyn, Yale University, New Haven, Connecticut: Genes, products, functions, maps: A subset of the *E. coli* Genetic Stock Center data base.

SESSION 3: Data Bases (B)

Chairperson: C.L. Smith, University of California, Berkeley

K.E. Sanderson, University of Calgary, Alberta, Canada: Data management at the *Salmonella* Genetic Stock Center.
J.C. Wootton, National Institutes of Health, Bethesda, Maryland: NCBI data bases and sequence interpretation.
D.W. Mount, University of Arizona, Tucson: Some short and long-range planning considerations for an E. coli data base.
C.L. Smith, University of California, Berkeley: The application of logic programming to genomic analysis.

K. Rudd, G. Church, M. Kroger, D. Daniels, R. Gesteland

SESSION 4: Organization of the Genome

Chairperson: F.R. Blattner, University of Wisconsin, Madison

J.R. Roth, University of Utah, Salt Lake City: Genetic stability and plasticity of the bacterial genetic map.
G. Ferro-Luzzi Ames, University of California, Berkeley: Tandem chromosomal duplications: A role for REP sequences.
P.M. Sharp, Trinity College, Dublin, Ireland: DNA sequence variability in *E. coli.*
G.D. Stormo, University of Colorado, Boulder: Using the *E. coli* sequence to learn about biology.
S. Gottesman, National Cancer Institute, Bethesda, Maryland: A new cryptic prophage in *E. coli.*
D.E. Berg, Washington University Medical School, St. Louis, Missouri: Transposon and PCR-based methods for efficient DNA sequencing. Large-scale reverse genetic analysis of the *E. coli* genome.

SESSION 5: The Future

Chairperson: J.H. Miller, University of California, Los Angles

This session was devoted to additional unannounced talks about the issues raised at the meeting and the planning for the next meeting, a larger meeting of 150–200 to be held 1 year hence.

Molecular Genetics of Breast Cancer

November 10–November 13

ARRANGED BY

M.-C. King, University of California, Berkeley
D. Slamon, University of California, Los Angeles

SESSION 1: Expression of Oncogenes and Growth Factor Receptors in Breast Cancers

Chairperson: D. Slamon, University of California, Los Angeles

D. Slamon, University of California, Los Angeles: HER2/neu amplification and breast cancer metastasis.
M.F. Press, University of Southern California, Los Angeles: HER2/neu expression and risk of recurrence in node-negative breast cancers.
A. Chan, National Cancer Institute, Bethesda, Maryland: Expression cDNA cloning of genes important in mitogenic signaling pathways.
W.J. Gullick, Hammersmith Hospital, London, United Kingdom: Expression of the ERBB3 protein in normal and malignant tissues.
A.L. Harris, Churchill Hospital, Oxford, United Kingdom: Expression of epidemal growth factor receptors in breast cancer.
S.A.W. Fuqua, University of Texas, San Antonio: Variants of estrogen receptor RNA in breast tumors.

SESSION 2: p53, Protein Kinases, nm23, and Stromelysin

Chairperson: D. Slamon, University of California, Los Angeles

G. Casey, University of California, Irvine: p53 mutations and breast cancer.
E.Y.-H. Lee, University of Texas Health Science Center, San Antonio: Suppressing neoplasia by replacing *RB* and *p53* genes in breast cancer cells.
E. Liu, University of North Carolina at Chapel Hill: Protein kinases in human breast cancer.
P. Basset, Institute of Biological Chemistry, Strasbourg, France: Stromelysin and breast cancer metastasis.
M.E. Lippman, Georgetown University Medical Center, Washington, D.C.: Growth factor control of malignant progression in human breast cancer.
H.M. Shepard, Genentech, Inc., San Francisco, California: Monoclonal antibody therapy of human cancer. Taking the *HER2* proto-oncogene to the clinic.

SESSION 3: Gene Mapping of Breast Cancer in Families

Chairperson: M.-C. King, University of California, Berkeley

M.-C. King, University of California, Berkeley: Closing in on a breast cancer gene on chromosome 17q.
G.M. Lenoir, International Agency for Research on Cancer, Lyon, France: Closing in on a breast cancer gene on chromosome 17q.
N.K. Spurr, Imperial Cancer Research Fund, Herts, United Kingdom: ICRF studies on the genetic analysis of familial breast cancer.
B.J. Ponder, University of Cambridge, United Kingdom: Closing in on a breast cancer gene on chromosome 17q.
D.T. Bishop, Imperial Cancer Research Fund, Leeds, United Kingdom: Genetic heterogeneity and breast cancer.
Discussion: Critical recombinants from informative pedigrees.

SESSION 4: Mapping Breast Cancer Genes in Tumors

Chairperson: M.-C. King, University of California, Berkeley

P. Devilee, Sylvius Laboratories, Leiden, The Netherlands: Deletion mapping in primary tumors as a tool to identify tumor suppressor.
R. Callahan, National Cancer Institute, Bethesda, Maryland: Mutations in breast cancer.
G. Peters, Imperial Cancer Research Fund, London, United Kingdom: Amplification of chromosome 11q13 and cyclin D1 in breast cancer.
H.S. Smith, Geraldine Brush Cancer Research Institute, San Francisco, California: Tumor suppressor genes and breast cancer progression.
Discussion: Consensus regions of interest on chromosome 17 and elsewhere.

SESSION 5: Tools for Genetic Analysis

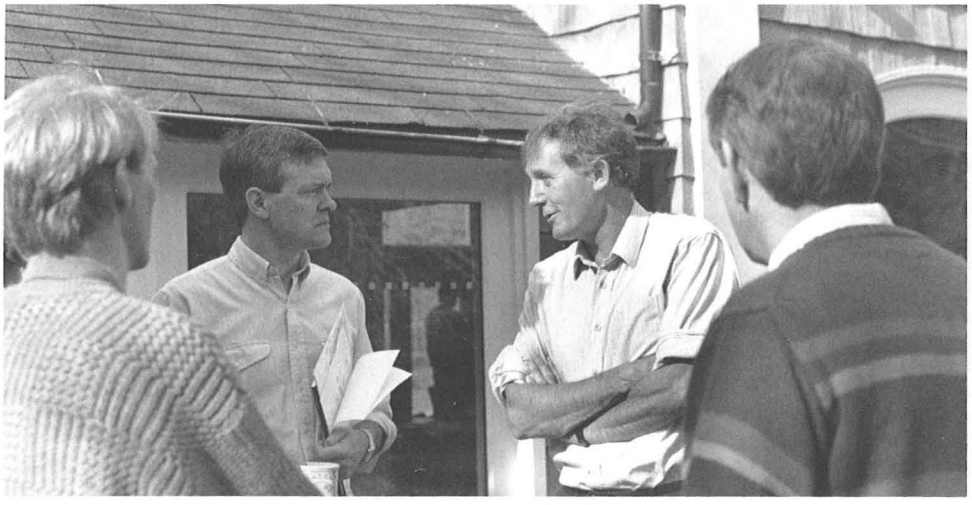
Chairperson: N.J. Risch, Yale University School of Medicine, New Haven, Connecticut

Physical and Genetic Mapping of Chromosome 17q

E. Solomon, Imperial Cancer Research Fund, London, United Kingdom: Physical and genetic mapping of early onset breast cancer region on 17q.
R.L. White, Howard Hughes Medical Institute, University of Utah Medical Center, Salt Lake City: Genetic mapping of chromosome 17.
F.S. Collins, Howard Hughes Medical Institute, University of Michigan, Ann Arbor: Genetic and physical mapping of 17q21-q23.

Application of Molecular Genetics to Early Detection

D.L. Page, Vanderbilt University Medical Center North, Nashville, Tennessee: Precursor lesions of human breast cancer.
P. Steeg, National Cancer Institute, Bethesda, Maryland: Genetic alterations associated with breast cancer aggressiveness.
General Discussion: How can results from molecular genetics be applied to early diagnosis of breast tumors generally (not only in families)?



G. Casey, J. Witkowski, B. Ponder, R. Callahan

Genetics of Psychiatric Disorders

November 17–November 20

ARRANGED BY

K. Berg, National Institute of Mental Health, Bethesda, Maryland
S.M. Paul, National Institute of Mental Health, Bethesda, Maryland
D.G. Kirch, National Institute of Mental Health, Rockville, Maryland

SESSION 1: Bipolar Disorder

Chairperson: J.A. Egeland, University of Miami North Psychiatric Research Office, Hershey, Pennsylvania

E.S. Gershon, National Institute of Mental Health, Bethesda, Maryland: A systematic genomic scan for linkage to manic-depressive illness: Current results.
W.F. Byerley, University of Utah School of Medicine, Salt Lake City: Genomic mapping of Utah bipolar pedigrees.
M. Baron, New York State Psychiatric Institute, New York: Uncertainties in linkage studies of bipolar affective disorder.
N. Barden, Laval University Hospital, Quebec, Canada: Linkage studies of bipolar disorders in a very large pedigree derived from a Quebec isolate.
E.I. Ginns, National Institute of Mental Health, Bethesda, Maryland: Update on the search for DNA markers linked to manic depressive illness in the Old Order Amish.

Discussants

T. Reich, Jewish Hospital of St. Louis, Missouri
E. Thompson, University of Washington, Seattle
D. L. Pauls, Yale University School of Medicine, New Haven, Connecticut

T. Reich, J. Ott

SESSION 2: Schizophrenia

Chairperson: I.I. Gottesman, University of Virginia, Charlottesville

K.S. Kendler, Medical College of Virginia, Richmond: A case-control family study and linkage study of schizophrenia in Ireland.
C.A. Kaufmann, New York State Psychiatric Institute, New York: Diagnostic interview for genetic studies: A polydiagnostic, multidimensional instrument.
J. Mallet, CNRS, Gif-sur-Yvette, France: Schizophrenia and the pseudoautosomal region.
H.M.D. Gurling, University College and Middlesex School of Medicine, London, United Kingdom: Increasing the efficiency of detection of heterogeneity of linkage or false positive results in psychiatric genetics.
M.J. Owen, University of Wales College of Medicine, Cardiff, United Kingdom: Chromosome 11q and schizophrenia.
L.E. DeLisi, State University of New York, Stony Brook: X and Y chromosome linkage in schizophrenia: The evidence for and against.

Discussants

S.S. Kety, National Institute of Mental Health, Bethesda, Maryland
J. Ott, New York State Psychiatric Institute, New York
D. R. Cox, University of California, San Francisco

SESSION 3: Markers and Mapping

Chairperson: J.R. Kelsoe, University of California, San Diego

A. Chakravarti, University of Pittsburgh, Pennsylvania: Candidate gene association studies in schizophrenia.
C. Gilliam, New York State Psychiatric Institute, New York: Genome-wide search for linkage to bipolar disorder using mini- and micro-satellite markers.
J.L. Kennedy, Clarke Institute, Toronto, Canada: Antibody selection of candidate genes in psychiatric disorders.
D.R. Cox, University of California, San Francisco: Sorting the haystack: A sequential approach to identify bipolar disorder genes by using genetic linkage analysis.

Discussants

R. Freedman, University of Colorado, Denver
T. Keith, Collaborative Research Inc., Bedford, Massachusetts

SESSION 4: Quantitative Analysis

Chairperson: N.J. Risch, Yale University School of Medicine, New Haven, Connecticut

J. Ott, New York State Psychiatric Institute, New York: Linkage analyses with psychiatric traits under one-locus and two-locus models.
B. K. Suarez, Washington University School of Medicine, St. Louis, Missouri: Detecting loci for oligogenic traits via linkage analysis.
E. Thompson, University of Washington, Seattle: Linkage and segregation analysis for the quantitative indicators of complex traits.

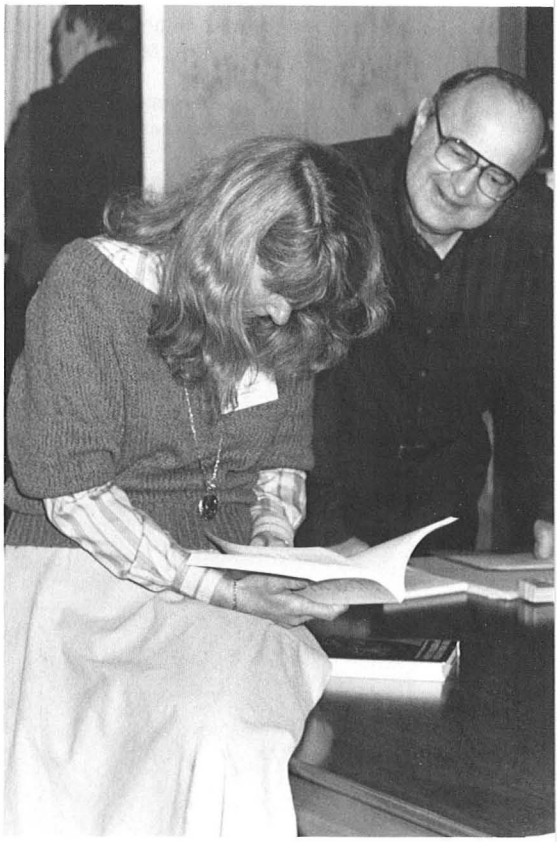
Discussants

R.C. Elston, Louisiana State University Medical Center, New Orleans.
H.M.D. Gurling, University College and Middlesex School of Medicine, London, United Kingdom
R. Plomin, Pennsylvania State University, University Park

SESSION 5: Overview and Strategies for Future Research

Discussants

T. Keith, Collaborative Research Inc., Bedford, Massachusetts
R. C. Elston, Louisiana State University Medical Center, New Orleans
C. Van Broeckhoven, University of Antwerp, Belgium
N.S. Wexler, Columbia University College of Physicians & Surgeons, New York
D.A. Regier, National Institute of Mental Health, Rockville, Maryland
S.S. Kety, National Institute of Mental Health, Bethesda, Maryland
A.I. Leshner, National Institute of Mental Health, Rockville, Maryland



L. DeLisi, I. Gottesman

Receptor-mediated Virus Entry into Cells

November 24–November 27

ARRANGED BY

R.A. Weiss, Institute of Cancer Research, London, United Kingdom
E. Wimmer, State University of New York at Stony Brook

Opening Remarks

E. Wimmer, State University at New York at Stony Brook: Viruses and viral receptors.

SESSION 1: Glycoprotein-mediated Endocytosis, Polarized Cells

Chairperson: B. Fields, Harvard Medical School, Boston, Massachusetts

J.J. Skehel, National Institute for Medical Research, London, United Kingdom: Receptor binding and membrane fusion by influenza hemagglutinin.

D.C. Wiley, Howard Hughes Medical Institute, Harvard University, Cambridge, Massachusetts: Binding of influenza virus to cells: A second binding site, synthetic inhibitors.

A. Helenius, Yale University School of Medicine, New Haven, Connecticut: Uncoating and intracellular targeting during virus entry.

S. Tucker, University of Alabama at Birmingham: Interaction of viruses with polarized epithelial cells.

SESSION 2: Retroviruses

Chairperson: P.G. Spear, Northwestern University, Chicago, Illinois

R.A. Weiss, Institute of Cancer Research, London, United Kingdom: Entry of HIV into cells.

S.C. Harrison, Howard Hughes Medical Institute, Harvard University, Cambridge, Massachusetts: Structure of CD4 domains.

J. Gavalchin, State University of New York at Syracuse: A monoclonal antibody, 34-23, blocks HTLV-I binding and infection.

J. Cunningham, Harvard Medical School, Boston, Massachusetts: Mouse ecotropic retrovirus receptor: Cellular function and role in infection.

D. Kabat, Oregon Health Sciences University, Portland: Basic amino acid transport by the receptor for ecotropic murine retroviruses.

B. O'Hara, Lederle Laboratories, Pearl River, New York: Regions of GLVR1 required for infection by gibbon ape leukemia virus.

J.A.T. Young, University of California, San Francisco, School of Medicine: Isolation and characterization of avian DNA sequences that confer susceptibility to subgroup A-ALV infection upon mammalian cells.

K. Holmes

SESSION 3: Corona- and Sindbisvirus

Chairperson: E. Wimmer, State University of New York at Stony Brook

K.V. Holmes, Uniformed Services University of the Health Sciences, Bethesda, Maryland: Coronavirus receptors.

J.H. Strauss, California Institute of Technology, Pasadena: Identification of a cellular receptor for sindbis virus.

SESSION 4: Picornaviruses

Chairperson: J.J. Skehel, National Institute for Medical Research, London, United Kingdom

R.L. Crowell, Hahnemann University School of Medicine, Philadelphia, Pennsylvania: Characteristics of the group B cox-sackie virus receptors.

J.M. Hogle, Harvard Medical School, Boston, Massachusetts: Conformational changes in poliovirus associated with cell entry.

V. Racaniello, Columbia University, New York, New York: Poliovirus-receptor interaction: Role in entry and pathogenesis.

S. Koike, The Tokyo Metropolitan Institute of Medical Science, Japan: Poliovirus receptor: Structure and function.

J.M. Greve, Miles Research Center, West Haven, Connecticut: The interaction and consequences of ICAM-1 interaction with rhinovirus in vitro and in vivo.

T.A. Springer, Center for Blood Research, Boston, Massachusetts: ICAM-1 as a rhinovirus receptor: Structural features important in virus entry.

D. Blaas, University of Vienna, Austria: The rhinovirus minor group receptor.

SESSION 5: Herpesviruses

Chairperson: J.M. White, University of California, San Francisco

B. Roizman, University of Chicago, Illinois: Herpes simplex virus glycoproteins interact with more than one cellular receptor and restrict the entry of superinfecting virus into infected cells.

P.G. Spear, Northwestern University, Chicago, Illinois: Virion-cell interactions required for the binding of herpes simplex virus to cells and for infection of the cells.

N.R. Cooper, Scripps Research Institute, La Jolla, California: Human herpes virus ligands and receptors.

SESSION 6: HBV

A.R. Neurath, The New York Blood Center, New York: HBV: HBV-cell receptor interactions mediated by the pre-S1 region of the virus envelope protein.

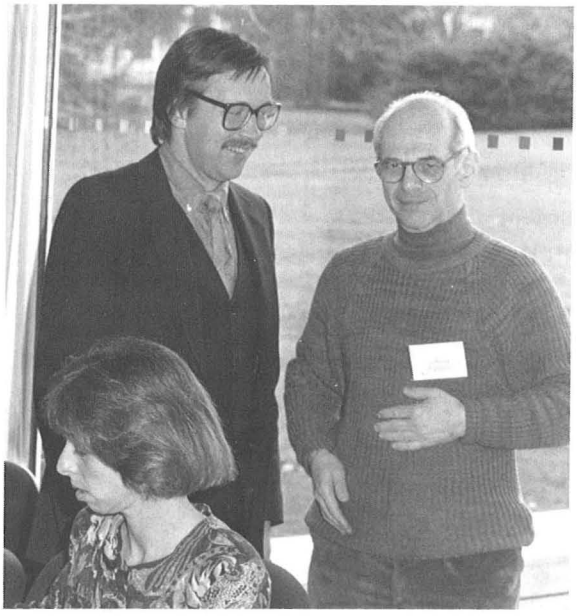
H. Schaller, University of Heidelberg, Germany: Early steps in hepadnavirus infection: Mechanism of virus uptake and participation of *env* proteins.

SESSION 7: Reovirus

Chairperson: R.L. Crowell, Hahnemann University School of Medicine, Philadelphia, Pennsylvania

B. Fields, Harvard Medical School, Boston, Massachusetts: Entry of reovirus into cells: Role of ISVPs.

P.W.K. Lee, University of Calgary Health Sciences Centre, Alberta, Canada: Structure-function relationships of the reovirus cell-attachment protein sigma 1.



J. Gavalchin, V. Zakis, A. Neurath

SESSION 8: Polyomavirus

R.A. Consigli, Kansas State University, Manhattan: Early events of polyomavirus infection: Adsorption, penetration, uncoating, and nuclear entry.

SESSION 9: Inhibitors

J.M. White, University of California, San Francisco: Fusion mechanism of the influenza hemagglutinin: Toward rational drug design.

F.J. Dutko, Sterling Research Group, Rensselaer, New York: Antiviral drugs that inhibit rhinovirus-receptor interactions and virus uncoating.

The William Stamps Farish Fund Conference on the Molecular Basis of HLA Predisposition

December 1–December 4

ARRANGED BY

J. Bell, John Radcliffe Hospital, Oxford, United Kingdom
J.L. Strominger, Harvard University, Cambridge, Massachusetts

Introduction

J. Bell, John Radcliffe Hospital, United Kingdom.

SESSION 1: MHC Structure/Function and Peptide Binding

Chairperson: J. Trowsdale, Imperial Cancer Research Fund, London, United Kingdom

D. Madden, Harvard University, Cambridge, Massachusetts: Structural views of peptide binding to HLA B27.

T. Elliott, Institute for Molecular Medicine, Oxford, United Kingdom: Role of peptides in MHC class I assembly.

G. Ruberti, Stanford University School of Medicine, California: Presentation of antigen by mixed isotope class II molecules in normal H-2^d mice.

D.C. Wraith, Cambridge University, United Kingdom: Molecular characterization of MHC and T-cell interactions with a dominant autoantigenic epitope: Biological significance and implications for disease.

SESSION 2: MHC Disease Genetics

Chairperson: J. Bell, John Radcliffe Hospital, Oxford, United Kingdom

A.V.S. Hill, John Radcliffe Hospital, Oxford, United Kingdom: HLA associations with malaria: A route to an effective vaccine?

G.T. Nepom, Virginia Mason Research Center, Seattle, Washington and Ann Begovich, Cetus Corporation, Emeryville, California: Probing beneath the surface: Genetic control of class II allelic variation.

H.A. Erlich, Cetus Corporation, Emeryville, California: Role of individual residues and of haplotypes in HLA disease predisposition.

P. Parham, Stanford University, California: Unusual class I HLA molecules of American Indians: Role in disease.

A.B. Rickinson, University of Birmingham, United Kingdom: HLA polymorphism and target antigen choice in the Epstein-Barr virus system.

A.J. McMichael, John Radcliffe Hospital, Oxford, United Kingdom: HIV escape mutants in vivo.

SESSION 3: Transporters and Proteases

Chairperson: P. Parham, Stanford University, California

J.J. Monaco, Medical College of Virginia/Virginia Commonwealth University, Richmond: H-2 linked transporter (HAM1 and HAM2) and proteasome (LMP) genes.

J. Trowsdale, Imperial Cancer Research Fund, London, United Kingdom: A cluster of transporter and protease genes in the HLA class II region that may have a role in antigen processing.

A.J. McMichael, Institute of Molecular Medicine, Oxford, United Kingdom: MHC-linked factor(s) affecting epitopes presented by class I.

SESSION 4: Diabetes and Target Antigens

Chairperson: A.J. McMichael, John Radcliffe Hospital, Oxford, United Kingdom

L. Wicker, Merck Sharp & Dohme Research Laboratories, Rahway, New Jersey: Influence of non-MHC-linked diabetogenic genes in the NOD mouse.

J.-F. Bach, Hospital Necker, Paris, France: Cellular level of MHC and non-MHC gene expression in type-1 diabetes.

J. Bell, John Radcliffe Hospital, Oxford, United Kingdom: An HLA DR4-dependent diabetes susceptibility gene on chromosome 11.

S. Baekkeskov, University of California, San Francisco: Role of MHC-class I antigen expression in presentation and targeting of autoantigen.
N. Willcox, John Radcliffe Hospital, Oxford, United Kingdom: Autoimmune T cells and HLA restriction in myasthenia gravis: First footsteps.
S. Reeders, Yale University School of Medicine, New Haven, Connecticut: Preliminary studies on the molecular characterization of the Goodpasture antigen.

SESSION 5: TCR Repertoire

Chairperson: D.C. Wraith, Cambridge University, United Kingdom

J. Silver, North Shore University Hospital, Manhasset, New York: Influence of HLA genes on the human T-cell receptor repertoire.
X. Paliard, Howard Hughes Medical Institute Research Laboratories, Denver, Colorado: Interaction of EBV with human T cells.
J. Oksenberg, Stanford University Medical Center, California: TCR usage in MS brain plaques.
J. Bell, John Radcliffe Hospital, Oxford, United Kingdom: T-cell receptor repertoire in man.

U.S. Department of Energy Workshop on Human Genetics and Genome Analysis

December 8–December 11

ARRANGED BY

M. Bloom, DNA Learning Center, Cold Spring Harbor Laboratory, New York
D. Micklos, DNA Learning Center, Cold Spring Harbor Laboratory, New York
J. A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York

SESSION 1

D. Galas, U.S. Department of Energy, Washington, D.C.: Origins and impacts of the Human Genome Project.

SESSION 2

D. Micklos, DNA Learning Center, Cold Spring Harbor Laboratory, New York: Mendelian genetics and linkage.
J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York: DNA, restriction enzymes, and molecular cloning.

SESSION 3

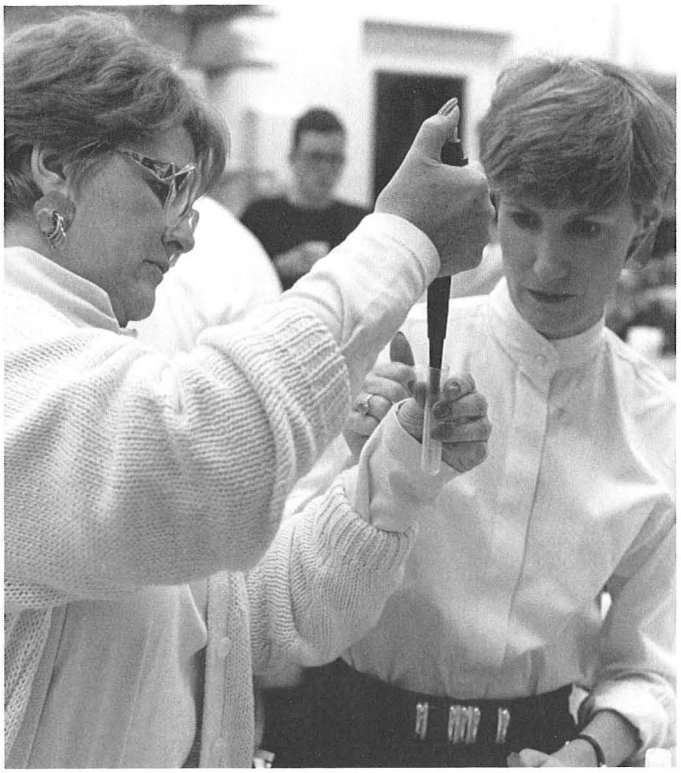
D. Micklos, DNA Learning Center, Cold Spring Harbor Laboratory, New York: Laboratory: Measurements, micropipetting, and sterile techniques: DNA restriction analysis and restriction mapping.

SESSION 4

P. Reilly, Shriver Center for Mental Retardation, Waltham, Massachusetts: The Eugenics movement.

SESSION 5

M. Bloom, DNA Learning Center, Cold Spring Harbor



J. Edwards, M. Peck

Laboratory, New York: Construction and screening of human gene libraries.

J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory, New York: DNA polymorphisms and linkage analysis.

SESSION 6

D. Micklos, DNA Learning Center, Cold Spring Harbor Laboratory, New York: Laboratory: Transformation of *E. coli* with plasmid DNA.

M. Bloom, DNA Learning Center, Cold Spring Harbor Laboratory, New York: Laboratory: Human DNA fingerprinting by polymerase chain reaction.

SESSION 7

M. Wallace, University of Florida Hillis Miller Health Center, Gainesville: Cloning human disease genes: Neurofibromatosis 1.

SESSION 8

D. Micklos, DNA Learning Center, Cold Spring Harbor Laboratory, New York: Laboratory results: Transformation of *E. coli* with plasmid DNA.

M. Bloom, DNA Learning Center, Cold Spring Harbor Laboratory, New York: Laboratory: DNA fingerprinting by polymerase chain reaction.

SESSION 9

C. Gilliam, New York State Psychiatric Institute, New York: Searching for genes for mental disorders.

SESSION 10

K. Culver, National Institutes of Health, Bethesda, Maryland: The first human gene therapy trials.

BANBURY CENTER

Grantor	*Program/Principal Investigator*	*Duration of Grant*	*Total Award*
FEDERAL GRANTS			
NATIONAL INSTITUTES OF HEALTH			
	Workshop on the Genome of *E. coli* (NLM)	1991	6,000 *
	Workshop on the Genome of *E. coli* (NCHGR)	1991	23,000 *
	Molecular Genetics and Cell Biology of Marfan Syndrome Meeting (NIAMSD)	1991	10,000 *
NATIONAL SCIENCE FOUNDATION			
	Issues in Training Computational and Mathematical Biologists: A Workshop	1991	19,650 *
	Workshop on the Genome of *E. Coli*	1991	6,000 *
DEPARTMENT OF ENERGY			
	Human Genetics and Genome Analysis: Practical Workshop for Public Policy Makers and Opinion Leaders	3/91 -3/93	128,059 *
	Workshop on DNA Sequence Acquisition and Interpretation	9/91 -9/92	6,000 *
NONFEDERAL SUPPORT			
Meeting Support			
Alfred P. Sloan Foundation	Journalists and Congressional Workshops	1990 -1992	150,000
Allen & Hanburys	Molecular Immunobiology of Lyme Disease	1991	10,000 *
Amgen, Inc.	Intellectual Property and Biotechnology	1991	5,000 *
Baring Brothers & Co.	Baring Brothers Conference	1991	88,324 *
E.I. du Pont de Nemours & Co.	Intellectual Property and Biotechnology	1991	5,000 *
Eli Lilly and Company	Intellectual Property and Biotechnology	1991	5,000 *
Genentech, Inc.	Intellectual Property and Biotechnology	1991	5,000 *
Glaxo Group Research Limited	Seven-transmembrane Segment Proteins	1991	4,000 *
Hoffmann-La Roche Inc	Intellectual Property and Technology	1991	5,000 *
Home Infusion Pharmaceutical Services	Molecular Immunobiology of Lyme Disease	1991	5,000 *
Merck Sharp & Dohme Research Laboratories	Seven-transmembrane Segment Proteins	1991	3,000 *
MetPath Inc.	Molecular Immunobiology of Lyme Disease	1991	10,000 *
National Multiple Sclerosis Society	Molecular Immunobiology of Lyme Disease	1991	2,000 *
NovoNordisk	Seven-transmembrane Segment Proteins	1991	1,000 *
Repligen Corporation	Control of HIV Gene Expression	1991	5,000 *
The William Stamps Farish Fund	Meetings on Complex Genetic Diseases	1991 -1993	150,000
ZymoGenetics	Seven-transmembrane Segment Proteins	1991	1,000 *

* New Grants Awarded in 1991

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Katya Davey, Hostess
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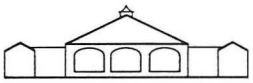

A Banbury Center Meeting

Banbury Reports

Banbury Report 35: Biological Basis for Risk Assessment of Dioxin and Related Compounds
Banbury Report 36: Intellectual Property and Biotechnology

Current Communications in Cell & Molecular Biology

Cellular and Molecular Aspects of Fiber Carcinogenesis
Apoptosis: The Molecular Basis of Cell Death
Animal Applications of Research in Mammalian Development
Molecular Biology of Free Radical Scavenging Systems
Lyme Disease: Molecular and Immunologic Approaches