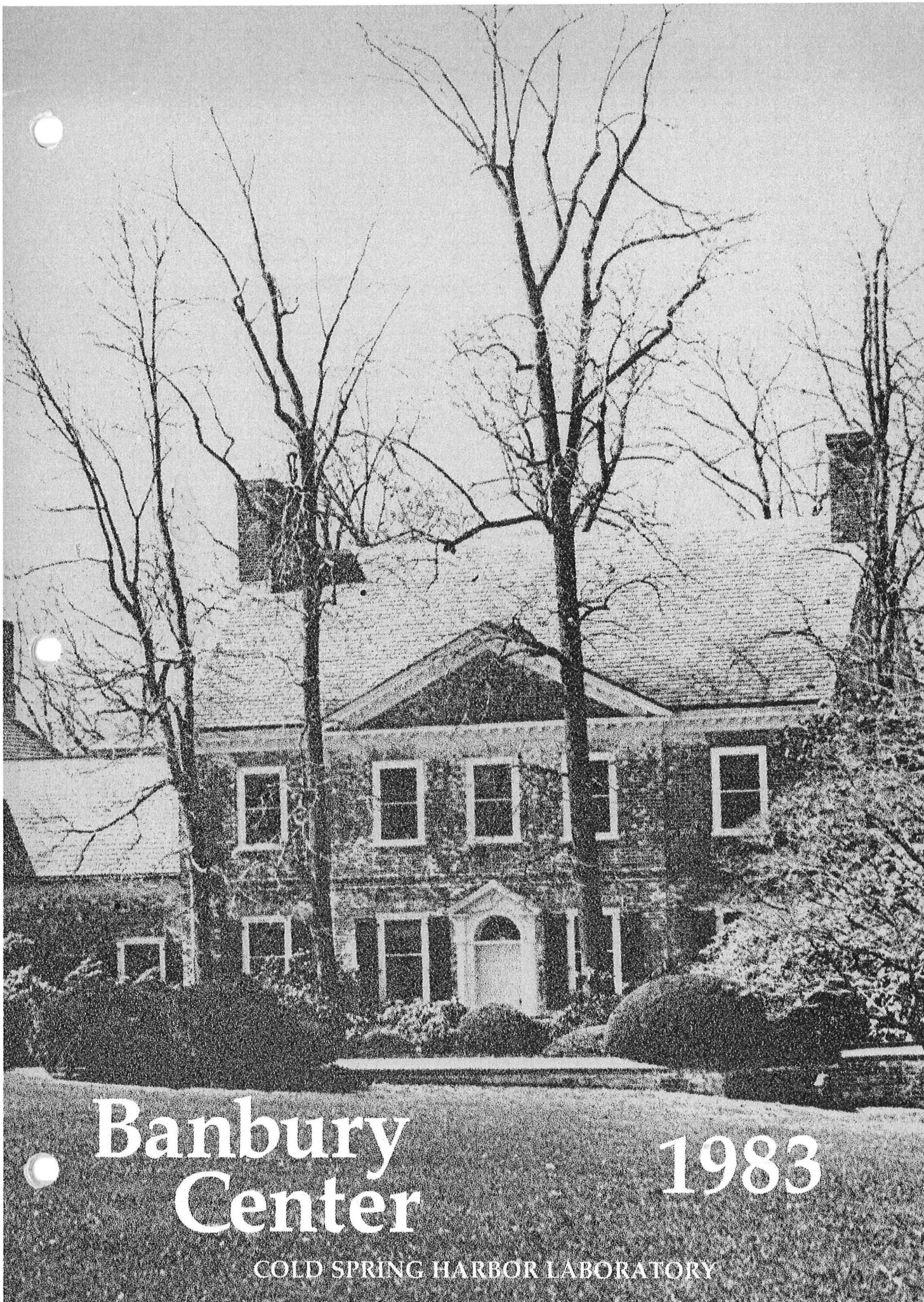


Banbury Center

1983

COLD SPRING HARBOR LABORATORY

BANBURY CENTER

Banbury Center is a 45-acre estate adjoining the waters of Long Island Sound on the north shore of Long Island, barely 40 miles east of downtown Manhattan. Located just across the harbor from Cold Spring Harbor Laboratory, the estate was donated to the laboratory in 1976 by Charles Sammis Robertson. With the laboratory's long history and international research reputation and its own renowned ongoing programs of courses and conferences, the magnificent Banbury grounds and buildings presented an ideal site for a complementary program of smaller conferences concentrating on aspects of the biological sciences which also bore significant social implications. Banbury's primary concerns remain in areas of environmental and occupational risk assessment and social and public policy-bearing developments in the biological and health sciences.

Banbury conferences, kept small to maximize spontaneous uninhibited exchanges between participants, achieve wider dissemination through the Center's other primary function as a small publishing center. What was once the estate's original seven-car garage is now administrative and publication offices, a small library, and—at its center—an opulently appointed yet intimate and informal conference room. Replete with extensive, unobtrusive sound and projection facilities as well as wall-to-wall blackboard space, the room can accommodate as many as fifty participants while remaining equally conducive to either formal presentations or informal give-and-take. The original Robertson neo-Georgian manor house, situated on the final promontory before the grounds descend to the shore of the harbor, now serves as a center for participant accommodations and dining, while the extensive grounds, swimming pool, tennis court, and beach present ample recreational resources. On-site accommodations have been further 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.

(*Above*) Architectural drawing of 1979 design of Sammis Hall, completed, with modifications, in 1981. (*Cover*) Robertson House.

REPORT OF THE DIRECTOR

Scientific meetings have been recognized as being important to the progress of science at least since the 1660s, when the newly established Royal Society assumed the regular holding of such meetings at Gresham College in London as one of its main functions. The establishment, in 1977, of an intimate and informal biological sciences conference center within the magnificent estate atop Banbury Lane was entered upon very much within this tradition. The small, highly interactive conferences of the Banbury Center have proven of particular value not just in the promotion of rapid and efficient communication of new data and concepts, but also in their further refinement and development during the spontaneous discussions and analyses that are an intrinsic part of the meeting dynamic itself. This is especially important in areas where previously divergent approaches may be coming together for the first time as well as in facilitating progress in existing fields either through identification of critical areas to be addressed or by placing possible impediments to progress within broader disciplinary perspectives.

This, the sixth year of such activities at the Banbury Center of Cold Spring Harbor Laboratory, saw a continuation and development of the Center's three broad areas of identified interest: human health risk assessment; pivotal areas accruing from newer approaches such as recombinant DNA methodologies and related molecular genetic manipulations; and the bringing of such perspectives to the attention of major public health concerns, especially in the area of biological aspects of, and possible interventions in, aging.

The first 1983 meeting occurred early in February and addressed the increasingly pressing public health problem presented by acquired immunodeficiency syndrome (AIDS). This meeting, by bringing together immunologists, epidemiologists, pathologists, virologists, and public health officials in a small, informal yet intensive environment, proved particularly useful for setting priorities and developing a greater coherence of effort in approaches to this growing health concern. It was fairly clear, by the meeting's conclusion, that a consensus was developing for a concerted search for a blood-borne viral agent, the properties of which could at least begin to be loosely defined. Subsequent events are tending to bear out the soundness of what was then still a tentative and perhaps somewhat controversial proposal.

If the AIDS conference was meant to help facilitate the coalescing of divergent approaches addressing the same central problem, the next two Banbury meetings were perhaps more useful in delineating and better defining critical areas to be addressed in already recognized important research areas. The first of these meetings, Plant Viruses and Viroids, considered an area of great potential importance not only in molecular biology, but also with regard to practical application. These often strange infectious agents, apparently unique to plants, present possible new mechanisms by which genetic material may be replicated, perpetuated, and transmitted from cell to cell or from plant to plant. The second meeting, held in the early spring, considered an equally important topic from both research and practical application perspectives—the ways in which the activities of genes may be regulated. This conference, Enhancers and Controlling Elements, focused on eukaryotic DNA sequences that, when placed anywhere in the vicinity of a given gene, have great effects upon the expression of that gene within the cell. Identification of such sequences will have great significance for fundamental questions of biology, such as molecular mechanisms of development, as well as for the manipulation of gene products in practical application. *Plant Infectious Agents* and *Enhancers and Eukaryotic Gene Expression* have both been published in extended abstract form as part of the Cold Spring Harbor Laboratory series Current Communications in Molecular Biology.

The Banbury Center publishing program also remained quite active in 1983 with the appearance of three new titles, two in the ongoing Banbury Report series and one as the first Banbury publication directed to a wider, nonscientific audience. Banbury Report 14, *Recombinant DNA Applications to Human Disease,* grew out of a fall 1982 conference considering new approaches that combine DNA cloning and hybridization techniques with more traditional genetic methodologies for identification and diagnosis of genetic defects at the level of the defective gene itself. The second 1983 book emanating from the 1982 conference program was Banbury Report 15, *Biological Aspects of Alzheimer's Disease.* Reflecting the impetus of the original conference in bringing together clinicians and basic researchers for an exploration of the origins and pathological bases of this devastating major health concern, this volume has proved a useful compendium both

of the current state of knowledge and of possible leads on how this might further be developed in the future. The final publication of 1983 also grew out of a 1982 Banbury conference, but it was the first Banbury publication outside of the Banbury Report series. *Gene Therapy: Fact and Fiction,* published as a "Banbury Public Information Report," combined the edited transcribed proceedings of the original conference with additional interpretive and descriptive material in an attempt to make known to the public at large the import of this high-level scientific meeting on a topic that continues to be of significant public interest and concern.

Although *Gene Therapy: Fact and Fiction* was a departure in publishing for the Banbury Center, the function of the Center in broadly disseminating information about developments in key areas of the biological sciences has been ongoing almost since Banbury's inception. Under continuing support from the Sloan Foundation, Banbury Center has carried out a series of informational workshops specifically designed either for media representatives or for congressional aides and staff members. Two such Sloan Informational Workshops were held in 1983. The first of these, New Concepts in Mutation, was a summer workshop for journalists. For many years, mutational mechanisms could be studied productively mainly in microorganisms. The advent of current DNA methodologies, however, has presented opportunities for the highly effective study of such processes in higher organisms as well. The cumulative body of microorganismal data, together with the rapidly emerging new concepts derived from approaches in higher organisms, is leading to new perspectives on the origins and roles of mutation and on the mutational dynamic underlying biological evolution. These topics were considered in depth at the Sloan Journalists' Workshop, as well as at the subsequent full Banbury scientific conference, Mechanisms of Mutagenesis.

The second Sloan workshop, Biological Imaging and Nuclear Magnetic Resonance, was held early in December for congressional staff members. This rapidly developing area of medical technology is achieving spectacular results in imaging both structure and function in the living body while employing minimally invasive procedures. However, the costs can also be spectacular, and during this relatively early stage of development, it is imperative for congressional decision makers to have an understanding of what these technologies are likely to achieve and of the relative advantages and disadvantages of competing approaches. They must also have an overall feel for the benefits, risks, and costs that these technologies will potentially bring to the U.S. health care capability at large. The December workshop, which considered everything from the theoretical foundations of this technology to the practical installation of the apparatuses themselves, together with multiple examples of just what such approaches are currently achieving and are likely to achieve in the near future, helped to clarify considerably the complexities of this new area of medical technology.

Finally, two full Banbury Conferences, each with an ensuing Banbury Report, were held in the fall of 1983. The first of these, held in early October, considered the genetic predisposition of the individual in response to chemical exposure. Many of the bodily systems concerned with maintenance and integrity of function, or with metabolic activation or detoxification of chemicals, have such a large degree of underlying genetic variability that each individual almost certainly presents a unique profile of strengths and susceptibilities. Individualized genetic susceptibility profiles could clearly have a place in preventive medicine or even as personalized guides toward maximizing health and safety. There have already been controversial nascent attempts to apply such concepts to workers employed in hazardous workplace environments. The October conference, considering in depth the scientific data base underlying such possible approaches, is to be published as Banbury Report 16, *Genetic Variability in Responses to Chemical Exposure.*

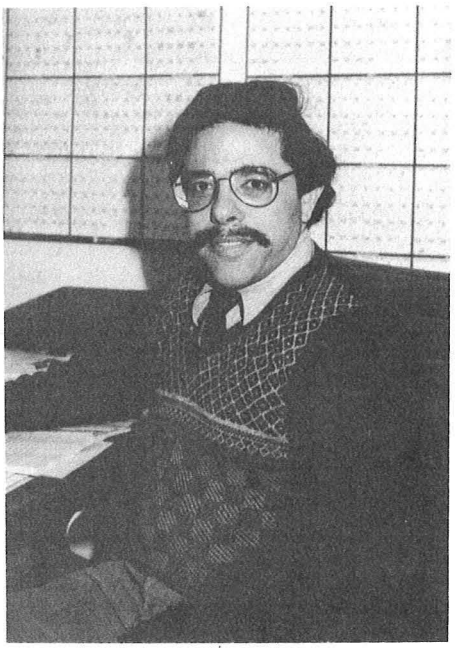
The second full Banbury Conference, held at the end of October and into early November, examined the health consequences of coffee consumption. Due to the great popularity and prevalence of this beverage, even possible minor deleterious effects have potentially far-reaching impact. The Coffee and Health conference assembled researchers from both private and public sectors representing both epidemiological and experimental approaches to this question. These proceedings, reviewing major ongoing studies together with assessment of where such research thrusts may be leading, is to be published as Banbury Report 17 in the spring of 1984.

Michael Shodell

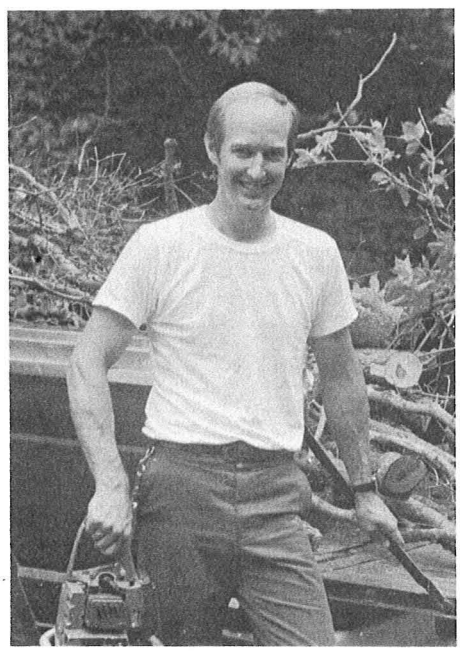
BANBURY CENTER STAFF

Beatrice Toliver, Administrative Assistant

Judith Blum, Editor



Michael Shodell, Director



Peter Stahl, groundskeeper

Katya Davey, hostess at Robertson House

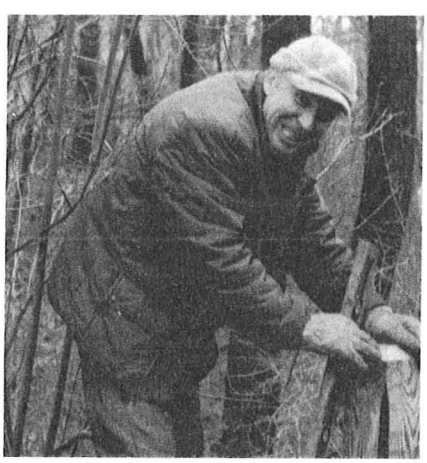
1983 SUPPORT

Together with the donation to Cold Spring Harbor Laboratory of his estate on Banbury Lane, Charles S. Robertson also generously supplied an endowment for upkeep of the grounds and of Robertson House proper. However, maintenance of Sammis Hall and the conference center, as well as support for Banbury Center conferences and publications, remains strictly dependent upon government and foundation grants and corporate contributions. In 1983, Banbury Center activities were greatly facilitated by unrestricted core support accruing from the generous donations of nine corporations: The Bristol-Myers Fund, Inc., Conoco, Inc., The Dow Chemical Company, E.I. du Pont de Nemours & Company, Exxon Corporation, Getty Oil Company, International Business Machines Corporation, Eli Lilly & Company, and Texaco Philanthropic Foundation, Inc. In addition, the Center was able to proceed with specific conference programs as a result of the following grants and contributions: The Role of Genetic Predisposition in Responses to Chemical Exposure was supported by the National Cancer Institute, the National Institute of Environmental Health Sciences, and the Fogarty International Center, together with essential additional support from the American Occupational Medical Association, the Aluminum Company of America, E.I. du Pont de Nemours & Company, Johnson & Johnson, the Occupational Health Institute, Inc., and United States Steel. Support for Coffee and Health was obtained from Cold Spring Harbor Laboratory, with major additional funding from the National Coffee Association of the U.S.A., Inc., and the International Coffee Organization; contributions toward publication of these proceedings were received from the Folger Coffee Company, the Nestle Company, Inc., and Tetley, Inc. The conference on Plant Viruses and Viroids received corporate contributions from Monsanto Company, ARCO Plant Cell Research Institute, Pfizer Central Research, Agrigenetics Corporation, and Calgene Corporation. The Enhancers and Controlling Elements conference was made possible by donations provided by Abbott Laboratories, Applied Molecular Genetics, Inc., Biogen N.V., the Cetus Corporation, Collaborative Research, Inc., E.I. du Pont de Nemours & Company, Genentech, Inc., Lilly Research Laboratories, and the Monsanto Company. The conference on Acquired Immunodeficiency Syndrome was supported by a grant from the Cancer Research Institute and the National Cancer Institute (National Institutes of Health). The meeting on Mechanisms of Mutagenesis was supported in part by a grant from the March of Dimes Birth Defects Foundation. These generous grants and donations in support of the Banbury Center program are gratefully acknowledged. Collectively, these grants and contributions, the ongoing Sloan Foundation sponsorship of informational workshops for journalists and congressional staff, and contributions received from the Kaiser Family Foundation financing the publication of *Gene Therapy: Fact and Fiction* and the original conference on this topic have formed the financial base that has permitted continuation of the Banbury Center program through its sixth year of operation.

Alfred Pfeiffer

1919 – 1984

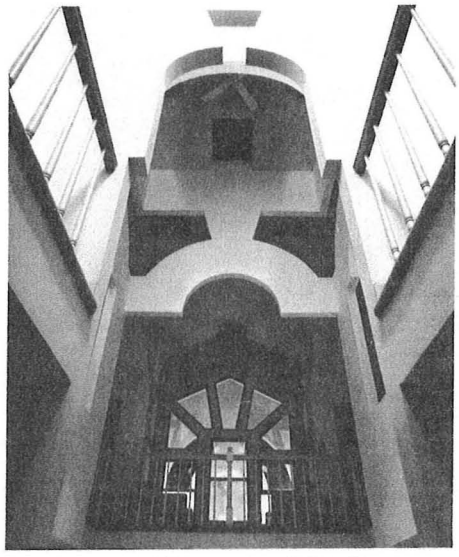
When the Banbury estate was donated to Cold Spring Harbor Laboratory, the Laboratory was especially fortunate in being able to retain the services of the estate's head groundskeeper, Fred Pfeiffer. Fred not only continued to give his special type of care to the estate's grounds, but also brought to the Banbury community a special sense of culture and thoughtfulness. Fred's sudden death in March, 1984, just months before he was due to retire, was a great loss. He will continue to be missed by the staff and visitors to the Banbury Center.



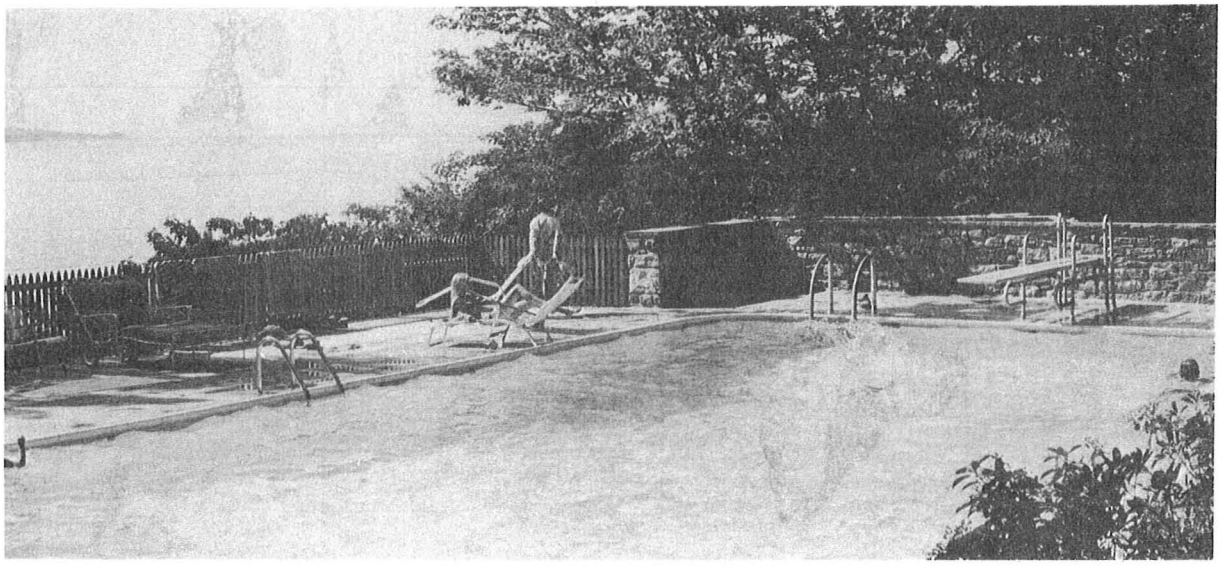
Banbury Center Meeting House

Rear view of Meeting House

Sammis Hall (photo by E. Watson)



Sammis Hall, interior view (photo by B. Korab)



Swimming pool at Robertson House

Participants in Banbury Programs 1983

BANBURY MEETINGS PROGRAMS

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) AND KAPOSI'S SARCOMA, February 6–February 8

Organizers: W. Topp, Cold Spring Harbor Laboratory
B. Safai, Memorial Sloan-Kettering Cancer Center

OVERVIEW

B. Safai, Memorial Sloan-Kettering Cancer Center, New York, New York: Clinical aspects.

J.W. Curran, Centers for Disease Control, Atlanta, Georgia: Epidemiology.

J. Shuster, McGill University, Montreal, Canada: AIDS and the hemophiliac population.

SESSION 1 *Immunological Aspects I*

Chairperson: R.A. Good, Oklahoma Medical Research Foundation, Oklahoma City

B. Dupont, Memorial Sloan-Kettering Cancer Center, New York, New York.
P. Rubinstein, The New York Blood Center, New York, New York.
H.C. Lane, National Institute of Allergy and Infectious Disease, Bethesda, Maryland.
A. Rubinstein, Albert Einstein College of Medicine, Bronx, New York.
A.J. Ammann, University of California, San Francisco.

Discussants: J. Reuben, M.D. Anderson Hospital and Tumor Institute, Houston, Texas; J.L. Fahey, University of California, Los Angeles; F.P. Siegal, Mt. Sinai School of Medicine, New York, New York.

SESSION 2 *Immunological Aspects II*

Chairperson: K.W. Sell, National Institute of Allergy and Infectious Disease, Bethesda, Maryland

S. Cunningham-Rundles, Memorial Sloan-Kettering Cancer Center, New York, New York.
J. Laurence, Rockefeller University, New York, New York.
G. Quinnan, National Institutes of Health, Bethesda, Maryland.
S. Zolla-Pazner, New York University School of Medicine, New York, New York.
G.M. Shearer, National Institutes of Health, Bethesda, Maryland.
E.M. Shevach, National Institute of Allergy and Infectious Disease, Bethesda, Maryland.

SESSION 3 *Pathology and Cell Biology*

Chairperson: R.C. Gallo, National Cancer Institute, Bethesda, Maryland

D. Gospodarowicz, University of California, San Francisco.
L.C.M. Reid, Albert Einstein College of Medicine, Bronx, New York.

SESSION 4 *Virology I*

D. Armstrong, Memorial Sloan-Kettering Cancer Center, New York, New York.
M.S. Hirsch, Massachusetts General Hospital, Boston.
G. Noble, Centers for Disease Control, Atlanta, Georgia.
W.L. Drew, University of California, San Francisco.
D. Francis, Centers for Disease Control, Phoenix, Arizona.

SESSION 5 *Virology II*

K.K. Takemoto, National Institute of Allergy and Infectious Disease, Bethesda, Maryland.
R.C. Gallo, National Cancer Institute, Bethesda, Maryland.
M.S. Horwitz, Albert Einstein College of Medicine, Bronx, New York.
G.S. Hayward, Johns Hopkins University, Baltimore, Maryland.
D.H. Spector, University of California, San Diego, La Jolla, California.
I.M. Arias, Albert Einstein College of Medicine, Bronx, New York.

PLANT VIRUSES AND VIROIDS, February 27–March 2

Organizers: R. Malmberg, Cold Spring Harbor Laboratory
S.H. Howell, University of California, San Diego
H.D. Robertson, Rockefeller University
M. Zaitlin, Cornell University

SESSION 1

S.H. Howell, University of California, San Diego, La Jolla: Introduction to DNA viruses.

K.E. Richards, Institut de Biologie Moléculaire et Cellulaire, Strasbourg, France: Structure and expression of CaMV DNA.

R. Hull, John Innes Institute, Norwich, England: Unencapsidated nucleic acids of CaMV and their significance in virus replication.

T. Hohn, Friedrich Miescher-Institut, Basel, Switzerland: Reverse transcription involved in CaMV replication.

T.J. Guilfoyle, University of Minnesota, St. Paul: CaMV minichromosome.

S.H. Howell, University of California, San Diego, La Jolla, California: Recombination of CaMV genomes.

L. Hirth, Institut de Biologie Moléculaire et Cellulaire, Strasbourg, France: CaMV DNA in the elaboration of gene vectors.

SESSION 2

R.M. Goodman, Calgene, Inc., Davis, California: Genome structure and relationships among whitefly-borne geminiviruses.

K.W. Buck, Imperial College of Science, London, England: Intracellular forms of TGMV DNA.

R.H. Symons, University of Adelaide, Australia: Characterizations of the DNA genomes of the Australian geminiviruses.

M. Zaitlin, Cornell University, Ithaca, New York: Introduction to RNA viruses.

P. Goelet, MRC Laboratory of Molecular Biology, Cambridge, England: Nucleotide sequence of TMV RNA.

M. Zaitlin, Cornell University, Ithaca, New York: Characterization of single- and double-stranded subgenomic RNAs from TMV-infected plants.

A. Siegel, Wayne State University, Detroit, Michigan: Characterization of the subgenomic and host RNA species encapsidated in vivo by TMV capsid protein.

T.J. Morris, University of California, Berkeley: Virus-specific dsRNA—Functional role in RNA virus infection.

SESSION 3

W.O. Dawson, University of California, Riverside: Examination of the mRNA component of TMV RNA synthesis.

D.L.D. Caspar, Brandeis University, Waltham, Massachusetts: Electrostatic interactions in the structure and assembly of TMV.

A.O. Jackson, Purdue University, West Lafayette, Indiana: Characterization of the RNAs of four strains of BSMV.

G. Bruening, University of California, Davis: RNA and nucleocapsid accumulation in protoplasts resistant to CPMV.

R.W. Goldbach, Agricultural University, Wageningen, The Netherlands: Structure and genetic organization of CPMV RNAs.

D.L. Nuss, New York State Department of Health, Albany: Molecular biology of WTV—Characterization of subgenomic RNAs associated with extravectorial isolates.

SESSION 4

T.C. Hall, University of Wisconsin, Madison: Template and product specificity of plant virus replicases.

A. van Kammen, Agricultural University, Wageningen, The Netherlands: Isolation and characterization of the CPMV RNA replication complex.

J. Mottinger, University of Rhode Island, Kingston: Genetic and molecular examination of virally associated mutations in maize.

S. Dellaporta, Cold Spring Harbor Laboratory, New York: Molecular and genetic examination of virally associated mutations in maize.

H.D. Robertson, Rockefeller University, New York, New York: Introduction to viroids, virusoids, and satellites.

H. Sänger, Max-Planck-Institut für Biochemie, Munich, Federal Republic of Germany: Studies on viroid replication.

P. Palukaitis, Cornell University, Ithaca, New York: Reexamination of the nature and biological significance of linear viroid molecules—Sequence of the 5′ end of linear PSTV molecules.

A.D. Branch, Rockefeller University, New York, New York: Structure of the viroid replication complex.

J. Semancik, University of California, Riverside: Nuclear replication and cellular pathology in CEV infection.

SESSION 5

D. Riesner, Universität Dusseldorf, Federal Republic of Germany: Structure and cellular organization of viroids.

R.A. Owens, Plant Protection Institute, USDA, Beltsville, Maryland: Biological activity of cloned PSTV cDNAs.

G. Bruening, University of California, Davis: Properties and biological effects of satellite RNA of TobRV.

C.W. Collmer, Plant Protection Institute, USDA, Beltsville, Maryland: Structural analyses of the cucumovirus satellite RNAs differing in biological function.

P. Palukaitis, Cornell University, Ithaca, New York: Comparison of four satellite RNAs of CMV.

R.I.B. Francki, University of Adelaide, Glen Osmond, South Australia: Satellite nature of some viroidlike RNAs.

R.H. Symons, University of Adelaide, Australia: Comparative structure and properties of virusoids.

ENHANCERS AND CONTROLLING ELEMENTS, April 3–April 6

Organizers: Y. Gluzman, Cold Spring Harbor Laboratory
T.E. Shenk, State University of New York, Stony Brook

SESSION 1 *Papova Enhancers*

P. Chambon, Faculté de Médecine de Strasbourg, France: Upstream elements (72-bp and 21-bp repeats) of the SV40 early promoter—In vivo and in vitro studies.

P. Gruss, University of Heidelberg, Germany: Competition for cellular factors required for the transcriptional activation of enhancers.

T. Kadesch, Stanford University School of Medicine, California: Transcriptional position effects and enhancement of the SV40 early promoter.

A. Nordheim, Massachusetts Institute of Technology, Cambridge: Potential Z-DNA in the SV40 enhancer region.

W. Schaffner, University of Zurich, Switzerland: Transcriptional enhancers of viral and cellular origin.

M. Botchan, University of California, Berkeley: Anatomy of the BPV activator and the relationship between enhancers of transformation and activators of transcription.

G. Khoury, National Cancer Institute, Bethesda, Maryland: Specificity associated with viral enhancers.

M.R. Capecchi, University of Utah, Salt Lake City: Location and function of retroviral and SV40 sequences that enhance biochemical transformation after microinjection of DNA.

SESSION 2 *Promoters*

G.L. Hager, National Cancer Institute, Bethesda, Maryland: Glucocorticoid regulatory sequence from MMTV—A negative element?

K.R. Yamamoto, University of California, San Francisco: Fusions of a glucocorticoid regulatory element to the *tk* promoter region—Hormone-regulated enhancement of promoter activity.

D.H. Hamer, National Institutes of Health, Bethesda, Maryland: Distinct promoter and regulatory sequences of an inducible metallothionein gene.

B. Roizman, University of Chicago, Illinois: Identification of the regulatory regions of alpha genes of HSV by construction of a chimeric gene.

J. Nevins, Rockefeller University, New York, New York: Regulatory signals in adenovirus-inducible promoter.

W. Dynan, University of California, Berkeley: A promoter-specific transcription factor that allows recognition of upstream sequence in early SV40 promoter.

SESSION 3 *Enhancers II*

R. Kamen, Genetics Institute, Boston, Massachusetts: Relationship between the polyoma virus enhancer and the *cis*-acting element required for viral DNA replication—Studies using SV40/polyoma recombinants.

E. Linney, La Jolla Cancer Research Foundation, California: Virus enhancing sequences for teratocarcinoma cells.

M. Yaniv, Institut Pasteur, Paris, France: Function of polyoma virus enhancer in embryonal and differentiated cells of the mouse.

J.A. Hassell, McGill University, Montreal, Canada: Deletion mapping of the polyoma virus early promoter-enhancer region.

I.M. Verma, The Salk Institute, San Diego, California: Enhancer elements in murine LTR.

T.G. Wood, National Cancer Institute, Bethesda, Maryland: Sequences required for the activation of the transforming potential of a normal cellular gene, *c-mos*.

B.H. Howard, National Institutes of Health, Bethesda, Maryland: Comparison of enhancer functions in SV40 and RSV.

T.E. Shenk, State University of New York, Stony Brook: The Ad5 E1A transcription unit contains an enhancerlike element.

P. Sassone-Corsi, Faculté de Medecine de Strasbourg, France: An activator element upstream from the Ad2 E1A promoter.

SESSION 4 *Promoters II*

S. Beckendorf, University of California, Berkeley: Chromatin structure and expression of a *Drosophila glu* protein gene.

P.M. Bingham, State University of New York, Stony Brook: Properties of putative enhancerlike elements at the *white* locus of *Drosophila*.

L.P. Guarente, Massachusetts Institute of Technology, Cambridge: Regulation of the yeast iso-1-cytochrome *c* gene by heme via an upstream activation site.

A.G. Hinnebusch, Massachusetts Institute of Technology, Cambridge: Repeated DNA sequences and regulatory genes that control amino acid biosynthetic genes in yeast.

S. Mitrani-Rosenbaum, National Cancer Institute, Bethesda, Maryland: Regulation of the human interferon gene expression.

K. Zinn, Harvard University, Cambridge, Massachusetts: DNA sequences controlling expression of the human β-interferon gene.

H.R.B. Pelham, MRC Laboratory of Molecular Biology, Cambridge, England: Anatomy of stress-inducible promoters.

SESSION 5 *Special Systems*

M. Fried, Imperial Cancer Research Fund Laboratories, London, England: Host sequences that enhance the expression of adjacent DNA.

K. Calame, University of California, Los Angeles: Regions in the mouse immunoglobulin heavy-chain locus that enhance transcription from the SV40 early promoter.

V.T. Oi, Stanford University School of Medicine, California: Control of immunoglobulin gene expression in transfected lymphoid cells.

S. Tonegawa, Massachusetts Institute of Technology, Cambridge: Tissue-specific enhancer element in the major intron of an immunoglobulin heavy-chain gene.

A. Rich, Massachusetts Institute of Technology, Cambridge: Nucleotide sequences, Z-DNA formation, and protein interactions.

M. Green, Harvard University, Cambridge, Massachusetts: Activation of human globin gene transcription by *cis*- and *trans*-acting factors.

MECHANISMS OF PERCEPTION: MARR MEMORIAL CONFERENCE, April 24–April 29

Organizer: W. Richards, Massachusetts Institute of Technology

Participants

Allman, John, California Institute of Technology, Pasadena
Bajcsy, Ruzena, Moore School of Electrical Engineering, Philadelphia, Pennsylvania
Baker, Curtis, Dalhousie University, Halifax, Nova Scotia
Binford, Thomas, Stanford University, California
Bobick, Aaron, Massachusetts Institute of Technology, Cambridge
Braddick, Oliver J., University of Cambridge, England
Brady, Michael, Massachusetts Institute of Technology, Cambridge
Brown, Christopher M., University of Rochester, New York
Bulthof, Heinrich, Max-Planck-Institut für Biologische Kybernetik, Tubingen, Federal Republic of Germany
Chien, Y.T., National Science Foundation, Washington, D.C.
Crick, Francis H.C., Salk Institute, San Diego, California
Daugman, John, Harvard University, Cambridge, Massachusetts
Dawson, Benjamin, Massachusetts Institute of Technology, Cambridge
Fahle, Manfred, Eberhard-Karls-Universität, Tubingen, Federal Republic of Germany
Frisby, John, University of Sheffield, England
Glaser, Donald A., University of California, Berkeley
Grimson, Eric, Massachusetts Institute of Technology, Cambridge
Hildreth, Ellen, Massachusetts Institute of Technology, Cambridge
Hoffman, Donald, Massachusetts Institute of Technology, Cambridge
Kass, Michael, Massachusetts Institute of Technology, Cambridge
Koch, Cristof, Massachusetts Institute of Technology, Cambridge
Koenderink, J.J., Rijksuniversiteit Utrecht, The Netherlands
Longuet-Higgins, Christopher H., Sussex University, Brighton, England
Mayhew, John, University of Sheffield, England
Mandelbrot, Benoit B., Thomas J. Watson Research Center, IBM, Yorktown Heights, New York
McGill, Michael, National Science Foundation, Washington, D.C.
Mitchison, Graeme J., University of Cambridge, England
Morgan, Michael J., University College London, England
Nielsen, Kenneth R.K., Massachusetts Institute of Technology, Cambridge
Nishihara, Keith H., Massachusetts Institute of Technology, Cambridge
Poggio, Tomaso, Massachusetts Institute of Technology, Cambridge
Reichardt, Werner, Max-Planck-Institut für Biologische Kybernetik, Tubingen, Federal Republic of Germany
Richards, Whitman, Massachusetts Institute of Technology, Cambridge
Richter, Jacobi, Weizmann Institute of Science, Rehovot, Israel
Rosenfeld, Azriel, University of Maryland, College Park
Rubin, John, Massachusetts Institute of Technology, Cambridge
Scheuhammer, Joseph, Massachusetts Institute of Technology, Cambridge
Segev, Idan, National Institutes of Health, Bethesda, Maryland
Sejnowski, Terrence, Johns Hopkins University, Baltimore, Maryland
Stevens, Kent, University of Oregon, Eugene
Sutherland, Stuart N., Sussex University, Brighton, England
Terzopoulos, Demetri, Massachusetts Institute of Technology, Cambridge
Thompson, William, University of Minnesota, Minneapolis
Torre, Vincent, Universita di Genova, Italy
Treisman, Anne, University of British Columbia, Vancouver, Canada
Ullman, Shimon, Massachusetts Institute of Technology, Cambridge
Vaina, Lucia, Boston University, Massachusetts
Van Essen, David, California Institute of Technology, Pasadena
Watt, R.J., University College London, England
Westheimer, Gerald, University of California, Berkeley
Winston, Patrick, Massachusetts Institute of Technology, Cambridge
Witkin, Andrew, Fairchild Corporation, Palo Alto, California
Woodham, Robert J., University of British Columbia, Vancouver, Canada
Yuille, A., Massachusetts Institute of Technology, Cambridge
Zipser, David, University of California, San Diego, La Jolla

SLOAN JOURNALISTS' WORKSHOP: NEW CONCEPTS IN MUTATION, August 5–August 7

Organizer: M. Shodell, Banbury Center

SESSION 1 *Genetic Origins of Human Disease*

J. Cairns, Harvard School of Public Health, Boston, Massachusetts.
J.F. Crow, University of Wisconsin, Madison.

SESSION 2 *Origins of Genetic Change*

J.H. Miller, University of California, Los Angeles.
M. Botchan, University of California, Berkeley.
R.T. Schimke, Stanford University, California.

SESSION 3 *Engineering the Mutation Process*

D. Shortle, State University of New York, Stony Brook.
M. Smith, University of British Columbia, Vancouver, Canada.

SESSION 4 *Mutation in Evolution*

A.C. Wilson, University of California, Berkeley.

SESSION 5 *Approaches to Human Genetic Disease*

C.T. Caskey, Baylor College of Medicine, Houston, Texas.

MECHANISMS OF MUTAGENESIS, August 7–August 10

Organizers: J.H. Miller, University of California, Los Angeles
C.T. Caskey, Baylor College of Medicine, Texas

SESSION 1 *Genomic Rearrangements*

J. Cairns, Harvard School of Public Health, Boston, Massachusetts.
M. Botchan, University of California, Berkeley.
W.R. Engels, University of Wisconsin, Madision.
G. Fink, Massachusetts Institute of Technology, Cambridge.
T.D. Tlsty, Stanford University, California.
R.T. Schimke, Stanford University, California.
M. Wigler, Cold Spring Harbor Laboratory, New York.

SESSION 2 *Mutagenesis in Prokaryotes*

J.H. Miller, University of California, Los Angeles.
F. Hutchinson, Yale University, New Haven, Connecticut.
J.E. LeClerc, University of Rochester, New York.
G.C. Walker, Massachusetts Institute of Technology, Cambridge.
E. Eisenstadt, Harvard School of Public Health, Boston, Massachusetts.
P.L. Foster, Harvard School of Public Health, Boston, Massachusetts.
L.A. Loeb, University of Washington, Seattle.

SESSION 3 *Origins of Eukaryotic Mutation I*

C.T. Caskey, Baylor College of Medicine, Houston, Texas.
M. Calos, Stanford University, California.
D.F. Barker, University of Utah, Salt Lake City.
R.J. Albertini, University of Vermont, Burlington.
D. Martin, Jr., Genentech, Inc., South San Francisco, California.
D. Patterson, Eleanor Roosevelt Institute for Cancer Research, Inc., Denver, Colorado.
F. Sherman, University of Rochester, New York.
L. Prakash, University of Rochester, New York.

SESSION 4 *Origins of Eukaryotic Mutation II*

J.F. Crow, University of Wisconsin, Madison.
S.M. Weissman, Yale University, New Haven, Connecticut.
F. Vogel, Ruprecht-Karls-Universität, Heidelberg, Federal Republic of Germany.
L.S. Lerman, State University of New York, Albany.
A.C. Wilson, University of California, Berkeley.
T. Maniatis, Harvard University, Cambridge, Massachusetts.
R.A. Flavell, Biogen Research Corporation, Cambridge, Massachusetts.

SESSION 5 *Directed Mutagenesis*

M. Smith, University of British Columbia, Vancouver, Canada.
D. Shortle, State University of New York, Stony Brook.
R.B. Wallace, City of Hope Research Institute, Duarte, California.
M. Inouye, State University of New York, Stony Brook.
M. Grunstein, University of California, Los Angeles.

THE ROLE OF GENETIC PREDISPOSITION IN RESPONSES TO CHEMICAL EXPOSURE, October 2–October 5

Organizers: G.S. Omenn, University of Washington, Seattle
H. Gelboin, National Institutes of Health

INTRODUCTION

G.S. Omenn, University of Washington, Seattle: From pharmacogenetics to ecogenetics.
W. Kalow, University of Toronto, Canada: A pharmacologist looks at pharmacogenetics and ecogenetics.

SESSION 1 *P-450 Systems*

Chairperson: G.S. Omenn, University of Washington, Seattle

R.N. Hines, University of Nebraska, Omaha: Regulation of expression of cytochrome P-450.
M.J. Coon, University of Michigan, Ann Arbor: P-450—Multiplicity of inducers, isozymes, and substrates.
H. Gelboin, National Institutes of Health, Bethesda, Maryland: Phenotyping cytochrome P-450 by monoclonal-antibody-directed enzyme inhibition and radioimmunoassay.
F.P. Guengerich, Vanderbilt University, Nashville, Tennessee: Purification and characterization of a rat liver microsomal cytochrome P-450 involved in debrisoquine 4-hydroxylation, a prototype for genetic polymorphism in drug metabolism.

SESSION 2 *Drug and Carcinogen Metabolism*

Chairperson: W.F. Bodmer, Imperial Cancer Research Fund Laboratories, London, England

D.S. Davies, University of London, England: Studies of the substrate specificity of human cytochrome P-450.

J.R. Idle, University of London, England: Lung cancer—Consequence of habit and inheritance?

C. Von Bahr, Huddinge University Hospital, Sweden: In vitro metabolism by human liver in relation to polymorphic drug oxidation.

E.S. Vesell, Pennsylvania State University, Hershey: Impact of multiple dynamically interacting genetic and environmental factors on methods to detect new polymorphisms of hepatic drug oxidation.

A.H. Conney, Hoffmann-La Roche, Inc., Nutley, New Jersey: Variability in chemical biotransformations in human beings.

R.E. Kouri, Microbiological Associates, Bethesda, Maryland: Variations in aryl hydrocarbon hydroxylase levels in mitogen-activated human lymphocytes.

W.F. Bodmer, Imperial Cancer Research Fund Laboratories, London, England: DNA polymorphisms in population and family studies—Examples from the HLA system.

SESSION 3 *Polymorphisms of Metabolizing Enzyme Systems*

Chairperson: A.H. Conney, Hoffmann-La Roche, Inc., Nutley, New Jersey

S.P. Spielberg, Hospital for Sick Children, Toronto, Canada: Pharmacogenetic susceptibility to toxic drug metabolites in man.

B.N. La Du, Jr., University of Michigan, Ann Arbor: Could the human paraoxonase polymorphism account for different responses to certain environmental chemicals?

A.G. Motulsky, University of Washington, Seattle: Biochemical genetics of paraoxonase polymorphism.

F. Oesch, University of Mainz, Federal Republic of Germany: Variations in epoxide hydrolase activities in human liver and blood.

E. Beutler, Scripps Clinic and Research Foundation, La Jolla, California: Sensitivity to drug-induced hemolytic anemia in glucose-6-dehydrogenase deficiency.

E.J. Calabrese, University of Massachusetts, Amherst: Animal model for blood hereditary disorders—Environmental applications.

SESSION 4 *Oncogene Activation and DNA and Chromosomal Markers*

Chairperson: J.E. Cleaver, University of California, San Francisco

R.A. Weinberg, Massachusetts Institute of Technology, Cambridge: Oncogenes and human carcinogenesis.

A. Pellicer, New York University, New York: A chemical carcinogen activates in vivo a mouse *c-ras* oncogene.

A. Balmain, Beatson Institute for Cancer Research, Glasgow, Scotland: Activation of oncogenes at stages of chemical carcinogenesis in different mouse strains.

C.C. Harris, National Cancer Institute, Bethesda, Maryland: Carcinogenesis studies using cultured human tissues and cells.

T. Kakunaga, National Cancer Institute, Bethesda, Maryland: Mutations associated with neoplastic transformation by chemical carcinogens.

J. Garrels, Cold Spring Harbor Laboratory, New York: Use of two-dimensional gel electrophoresis for detection of proteins indicating genetic risk.

SESSION 5 *Immunological and Molecular Genetic Approaches*

Chairperson: H. Gelboin, National Institutes of Health, Bethesda, Maryland

B. Dupont, Memorial Sloan-Kettering Cancer Center, New York, New York: Disease susceptibility genes in the HLA complex.

P.C. White, Memorial-Sloan Kettering Cancer Center, New York, New York: Cloning and expression of cDNA encoding an adrenal cytochrome P-450 specific for steroid-21 hydroxylation.

H. Erlich, Cetus Corporation, Emeryville, California: HLA DNA polymorphisms—Use as genetic markers in control and disease populations.

S. Wolff, University of California, San Francisco: Use of sister chromatid exchanges to determine possible genetic predisposition in response to chemical exposure.

M.-C. King, University of California, Berkeley: Genetic and epidemiologic approaches for detecting susceptibility in populations.

SESSION 6 *Population Correlations*

Chairperson: C.C. Harris, National Cancer Institute, Bethesda, Maryland

F. Kueppers, Temple University, Philadelphia: Effect of smoking on the development of emphysema in alpha-1 antitrypsin deficiency.

R.A. Cartwright, Yorkshire Regional Cancer Organisation, Leeds, England: Epidemiological studies on *N*-acetylation and C-center ring oxidation in neoplasia.

P.G. Archer, University of Colorado, Denver: Some statistical and methodological issues in cytogenetic testing.

COFFEE AND HEALTH, October 30–November 2

Organizers: T. Sugimura, National Cancer Center Research Institute, Tokyo
B. MacMahon, Harvard School of Public Health

SESSION 1 *The Coffee Product*

Chairperson: R.G. Bost, General Foods Corporation, White Plains, New York

G.E. Boecklin, National Coffee Association of USA, Inc., New York, New York: Coffee—A social history.

A.F. Beltrao, International Coffee Organisation, London, England: Coffee in the world economy.

W.P. Clinton, General Foods Corporation, White Plains, New York: Chemistry of coffee.

S.N. Katz, General Foods Corporation, Hoboken, New Jersey: Decaffeination of coffee.

R.G.K. Strobel, Procter & Gamble Company, Ohio: Chemistry of instant coffee.

A. Leviton, Harvard Medical School, Boston, Massachusetts: Correlates of coffee consumption.

SESSION 2 *Coffee Mutagenesis—Experimental Approaches*

Chairperson: L.W. Wattenberg, University of Minnesota, Minneapolis

T. Sugimura, National Cancer Center Research Institute, Tokyo, Japan: Mutagens in coffee—Background and present knowledge of mutagens and carcinogens produced by pyrolysis.

M. Nagao, National Cancer Center Research Institute, Tokyo, Japan: Mutagens in coffee.

H.P. Wurzner, Nestle Products Technical Assistance Co. Ltd., Orbe, Switzerland: Preliminary findings of a carcinogen bioassay of coffee in mice.

H.-U. Aeschbacher, Nestle Products Technical Assistance Co. Ltd., Orbe, Switzerland: Risk evaluation of coffee based on in vitro and in vivo mutagenicity testing.

S. Takayama, Japanese Foundation for Cancer Research, Tokyo: Long-term carcinogenicity studies on caffeine, instant coffee, and methylglyoxal in rats.

SESSION 3 *Coffee and Human Carcinogenesis I*

Chairperson: T. Sugimura, National Cancer Center Research Institute, Tokyo, Japan

Pancreatic Cancer

B. MacMahon, Harvard School of Public Health, Boston, Massachusetts: Coffee and cancer of the pancreas—A review.

Bladder and GI Tract Cancer

L. Gordis, Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland: Coffee and pancreatic cancer.

A.S. Morrison, Harvard School of Public Health, Boston, Massachusetts: Control of cigarette smoking in evaluating the association of coffee drinking and bladder cancer.

L.W. Wattenberg, University of Minnesota, Minneapolis: Protective effects of coffee constituents on carcinogenesis in experimental animals.

SESSION 4 *Coffee and Human Carcinogenesis II*

Chairperson: R. Saracci, International Agency for Research on Cancer, Lyon, France

Ovarian Cancer

D. Trichopoulos, University of Athens School of Medicine, Greece: A case-control investigation of a possible association between coffee consumption and ovarian cancer in Greece.

S. Shapiro, Boston University School of Medicine, Cambridge, Massachusetts: Ovarian cancer and coffee drinking.

Breast Cancer and Fibrocystic Disease

V.L. Ernster, University of California, San Francisco: Epidemiological studies of coffee and breast disease.

F. Lubin, Chaim Sheba Medical Center, Tel-Hashomer, Israel: Coffee and methylxanthine in benign and malignant breast disease.

L. Rosenberg, Boston University School of Medicine, Cambridge, Massachusetts: Breast cancer and coffee drinking.

E.M. Grossman, General Foods Corporation, Tarrytown, New York: Caffeine and benign breast disease—A proposed clinical trial.

SESSION 5 *Physiological and Behavioral Effects*

Chairperson: S.R. Tannenbaum, Massachusetts Institute of Technology, Cambridge

G.D. Friedman, The Permanente Medical Group, Inc., Oakland, California: Coffee and coronary heart disease—Are there grounds for concern?

L. Welin, University of Gothenburg, Sweden: Coffee, traditional risk factors, coronary heart disease, and mortality.

A. Sivak, Arthur D. Little, Inc., Cambridge, Massachusetts: Chronic experimental animal studies with coffee.

BIOLOGICAL IMAGING AND NUCLEAR MAGNETIC RESONANCE (CONGRESSIONAL WORKSHOP),

December 2–December 4

Organizer: M. Shodell, Banbury Center

INTRODUCTION

B. Chance, University of Pennsylvania, Philadelphia

OVERVIEW

P.C. Lauterbur, State University of New York, Stony Brook

SESSION 1

T. Brady, Massachusetts General Hospital, Boston, Massachusetts: Molecules in magnetic fields.

M. Ter-Pogossian, Washington University Medical School, St. Louis, Missouri: Positron emission tomography.

SESSION 2

B. Chance, University of Pennsylvania, Philadelphia: In vivo nuclear magnetic resonance.

C. Higgins, University of California, San Francisco, Medical School: Proton imaging and computed tomography.

SESSION 3

T. Budinger, University of California, Berkeley: Comparative and safety aspects.

P.C. Lauterbur, State University of New York, Stony Brook, and B. Chance, University of Pennsylvania, Philadelphia: Summary discussion.

Congressional redirect.

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