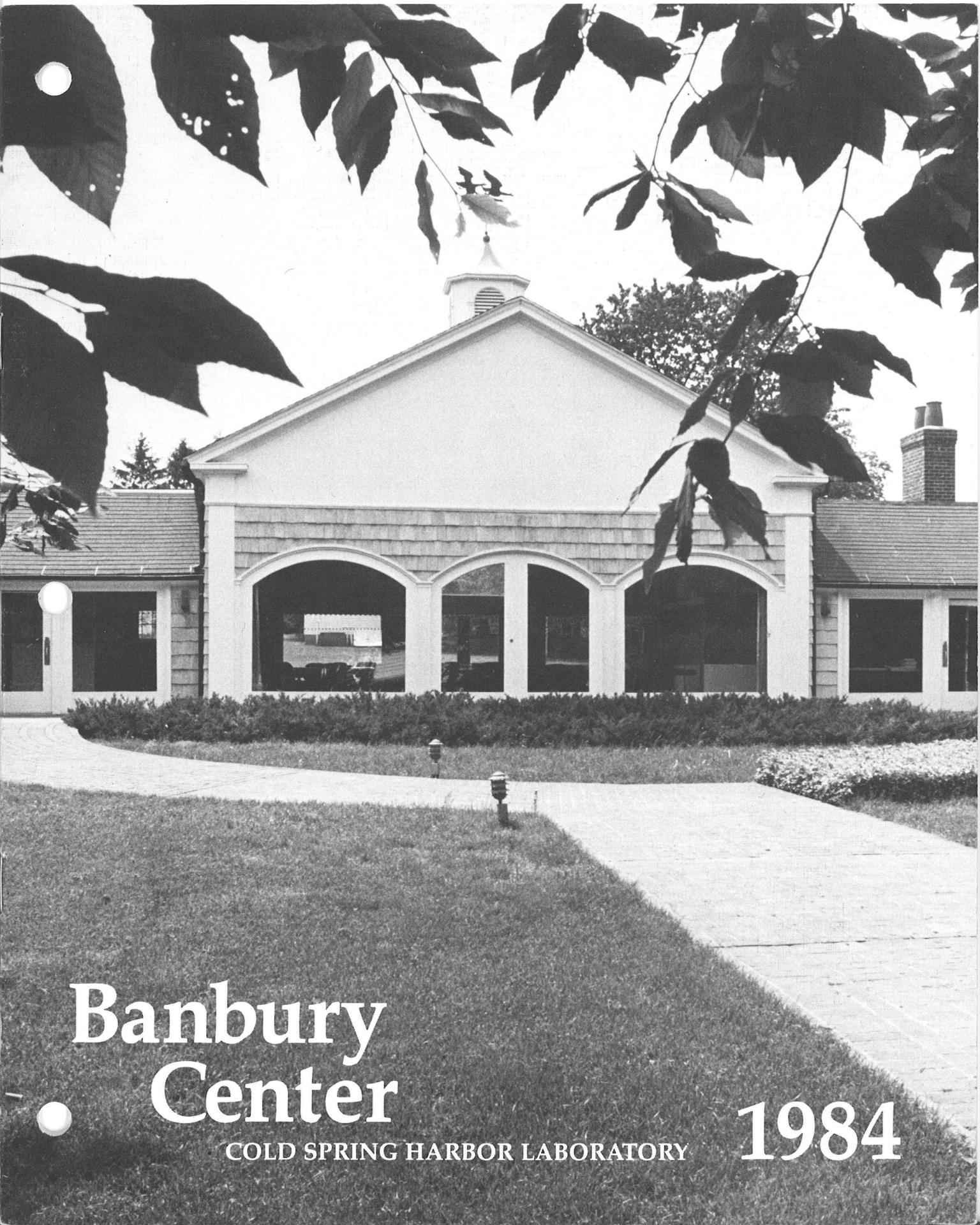


Banbury Center

COLD SPRING HARBOR LABORATORY

1984

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 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) Meeting House.

BANBURY CENTER DIRECTOR'S REPORT

This was the seventh consecutive year of operation of the Banbury Center of Cold Spring Harbor Laboratory. Throughout this period, there has been a continual expansion of the Center's conference programs and publications, particularly in the realms of health risk assessment and carcinogenesis, as well as in the impact upon these areas of recent developments in molecular biology. That this program has been able to flourish during a period when governmental support has become increasingly scarce and problematic is due, to a large extent, to the response the Center has been fortunate in eliciting from private sector sources. A particularly important step in 1984 was the partial consolidation of such support under the Cold Spring Harbor Laboratory Corporate Sponsor Program. This and the ongoing essential contributions from Core Supporters of the Banbury Center and specific corporate contributions toward particular programs remain crucial for the continuance and further development of the Banbury program.

It is perhaps fitting that the 1984 schedule began with the first meeting of the newly initiated Corporate Sponsor Program. This, the first of three such Sponsor meetings, was on Site-directed Mutagenesis and Protein Structure and Function. The meeting was almost prototypic of those to be held within this program, which enables the development of small scientific conferences in the rapidly developing field of molecular biology, especially in the area of recombinant DNA methodologies and their applications. These emphases were reflected in the remaining two Sponsor meetings of the year, a June conference on Yeast Expression Vectors and a November meeting on Transport and Secretion of Proteins.

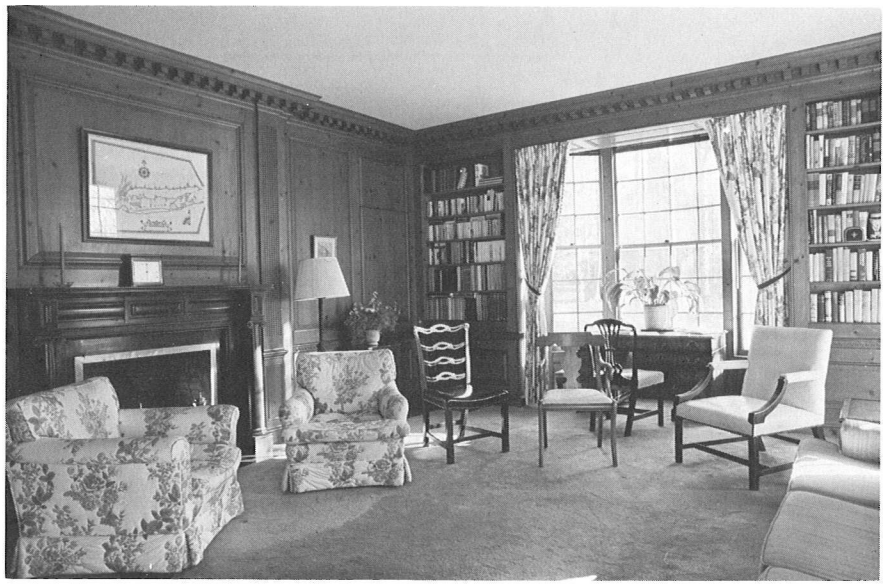
Robertson House provides housing and dining accommodations at Banbury Center

Sammis Hall, guest house

The Sponsor Program thus acted as a rich complement to the ongoing Banbury concern with human health risk assessment in addition to the Center's increasing interest in newly emerging areas in the biological sciences that may particularly bear social or regulatory implications. The first major conference of the year in these areas was an April conference on the Biological Mechanisms of Dioxin Action. Organized jointly by Dr. Alan Poland (McArdle Laboratory of the University of Wisconsin) and Dr. Renate Kimbrough (Centers for Disease Control), this conference focused on the specific mechanisms by which the dioxins and closely related halogenated aromatic hydrocarbons bring about their broad range of biological effects. These compounds represent potentially far-reaching human health consequences and are among the most highly publicized and incitive of environmental pollutants. Bringing epidemiological and public health points of view together with major cellular and molecular research approaches, in the nonadversarial yet highly interactive setting of a small Banbury conference, was the impetus for this important conference. The papers and discussions of this meeting will appear early in 1985 as volume 18 in the Banbury Reports series.

The second major risk assessment conference of the year, to be published in 1985 as Banbury Report 19, was a mid-May conference on Risk Quantitation and Regulatory Policy. Organized by Dean Richard Merrill (University of Virginia School of Law) and Dr. David Hoel (Director of the Biometry and Risk Assessment Program of the National Institute of Environmental Health Sciences), this conference brought together legal, regulatory, and research representatives to consider the most efficacious ways to make the evolving science of risk assessment accessible and amenable to incorporation into regulatory policy formulations. The papers and discussions of this meeting proved a most useful compendium of centralized information and ideas in an area that has otherwise become a frequent source of public consternation and institutional conflict.

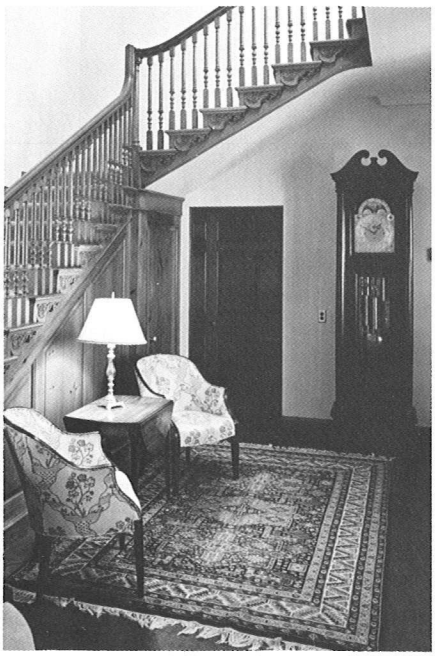
The final 1984 conference, also to be published in the Banbury series, was an October meeting organized by Dr. Frank Costantini (Columbia University) and Dr. Rudolph Jaenisch (now of the Whitehead Institute) on the Genetic Manipulation



Robertson House Library

of the Mammalian Ovum and Early Embryo. This relatively new and rapidly advancing research area has already received considerable public attention. Yet this attention has rarely focused on the new abilities that such advances have been bringing to current approaches toward an understanding of gene regulation and the genetic control of development. Given the nature and potentially far-reaching impact of this field, a present-state assessment and consideration of its likely future developments seemed especially appropriate at this particular time.

The 1984 Banbury program was rounded out by a full complement of summer courses and a series of smaller workshops held throughout the year. Among these smaller workshops was one held in early spring on the large T antigen of the SV40 oncogenic virus, followed by a National Institute of Mental Health Workshop on Single Unit Activity and Behavior, an Alfred P. Sloan Foundation Computational Neuroscience Workshop, and a late October workshop on the Structure and Function of Gap Junctions. The meeting year concluded at the end of November with a further Journalists' Workshop in the series held under the auspices of an ongoing grant from the Alfred P. Sloan Foundation. As previously mentioned, public confusion and concern often arises over issues of environmental health risk assessment. This is especially true in areas of occupational and environmental carcinogenesis. This year's journalists' workshop topic was thus "Assessing Risk Assessment". The workshop again proved to be both an intense and enjoyable few days, leading to considerably greater journalistic sophistication concerning the strengths and weaknesses in the quantitation of risk.



Robertson House hall

1984 Support

As noted earlier, the ability to carry on such an overall program is due largely to support that the Banbury Center has been fortunate to receive from private sector sources. The donation to Cold Spring Harbor Laboratory of the Banbury estate by Charles S. Robertson generously included an endowment for the maintenance of the grounds and of Robertson House. Funding of actual programs,

Banbury Center Meeting House

however, as well as maintenance and operation of the Meeting House and of Sammis Hall remain the responsibility of the Banbury Center itself. It is thus with considerable gratitude that I take this opportunity to thank the Corporate Sponsors and Core Supporters of the Center. The names of these companies are listed separately in this report. It is also with great thanks that I acknowledge the support of specific programs from the following sources: Biological Mechanisms of Dioxin Action was supported by contributions from Hoffmann-La Roche Inc., Monsanto Company, the Dow Chemical Company, and Diamond Shamrock Corporation; Risk Quantitation and Regulatory Policy was supported in part by a grant from the U.S. Department of Energy, together with contributions from the Monsanto Company and National Distillers and Chemical Corporation; and Genetic Manipulation of the Mammalian Ovum and Early Embryo was held under grants from the March of Dimes Birth Defects Foundation, the Fogarty International Center, and the National Institute of Child Health and Human Development.

Michael Shodell

MEETINGS

SV40 Large T Antigen

March 8–March 11

ARRANGED BY

E. Harlow, Cold Spring Harbor Laboratory, New York

SESSION 1 MUTANTS

Chairperson: P. Tegtmeyer, State University of New York, Stony Brook

C. Cole, Dartmouth Medical School, Hanover, New Hampshire
D. Kalderon, MRC National Institute for Medical Research, London, England
R. Lanford, Baylor College of Medicine, Houston, Texas
M. Manos, Cold Spring Harbor Laboratory, New York
K. Peden, Johns Hopkins University, Baltimore, Maryland
T. Shenk, State University of New York, Stony Brook
A.E. Smith, MRC National Institute for Medical Research, London, England

SESSION 2 TRANSFORMATION

Chairperson: C. Prives, Columbia University, New York, New York

R. Baserga, Temple University Medical School, Philadelphia, Pennsylvania
F. Birg, INSERM, Marseille, France
M. Botchan, University of California, Berkeley
J. Feunteun, Institut de Recherches Scientifiques sur le Cancer, Villejuif, France
J. Pipas, University of Pittsburgh, Pennsylvania
R. Pollack, Columbia University, New York, New York
P. Rigby, Imperial College, London, England
L. Sompayrac, University of Colorado, Boulder

SESSION 3 SURFACE T

Chairperson: E. Harlow, Cold Spring Harbor Laboratory, New York

J. Butel, Baylor College of Medicine, Houston, Texas
W. Deppert, Universität Ulm, Federal Republic of Germany
L. Gooding, Emory University, Atlanta, Georgia
B. Knowles, Wistar Institute, Philadelphia, Pennsylvania
S. Tevethia, Pennsylvania State University, Hershey

SESSION 4 EXPRESSION SYSTEMS

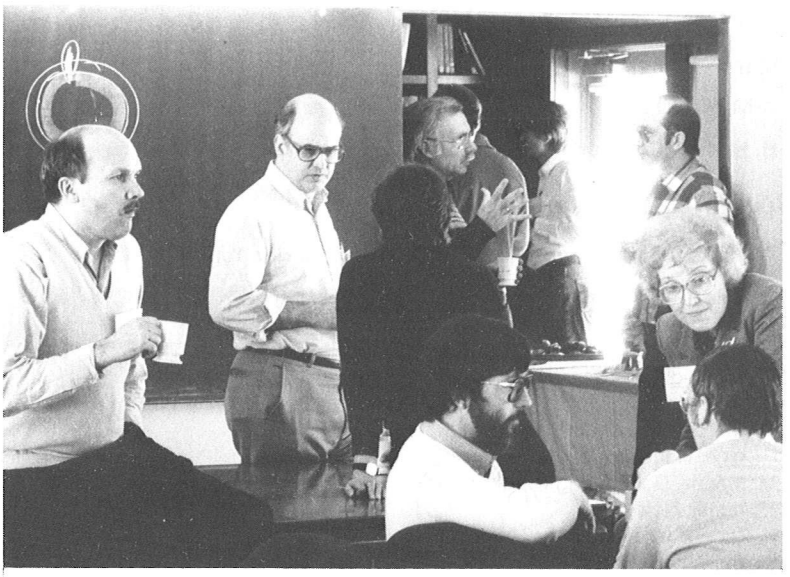
Chairperson: E. Harlow, Cold Spring Harbor Laboratory, New York

Y. Gluzman, Cold Spring Harbor Laboratory, New York
T. Grodzicker, Cold Spring Harbor Laboratory, New York
D. Rio, University of California, Berkeley

SESSION 5 DNA BINDING AND REGULATION

Chairperson: T. Shenk, State University of New York, Stony Brook

J.C. Alwine, University of Pennsylvania, Philadelphia
J. Brady, Laboratory of Molecular Virology, National Institutes of Health, Bethesda, Maryland
R. Dixon, Merck Sharp & Dohme, West Point, Pennsylvania
E. Fanning, Ludwig Maximillian University, Munich, Federal Republic of Germany
D.P. Lane, Imperial College, London, England
D.M. Livingston, Sidney Farber Cancer Institute, Boston, Massachusetts
J.L. Manley, Columbia University, New York, New York
D. Rio, University of California, Berkeley
J. Stringer, University of Cincinnati, Ohio
P. Tegtmeyer, State University of New York, Stony Brook



SESSION 6 MODIFICATIONS WORKSHOP

Chairperson: D.M. Livingston, Sidney Farber Cancer Institute, Boston, Massachusetts

R.B. Carroll, New York University Medical Center, New York
W. Deppert, Universität Ulm, Federal Republic of Germany
R. Henning, Universität Ulm, Federal Republic of Germany
E. May, Institut de Recherches Scientifiques sur le Cancer, Villejuif, France
D. Simmons, University of Delaware, Newark
G. Walter, University of California, San Diego, La Jolla

SESSION 7 ANTIBODIES WORKSHOP

Chairperson: D.P. Lane, Imperial College, London, England

L. Gooding, Emory University, Atlanta, Georgia
E. Gurney, Institut de Recherches Scientifiques sur le Cancer, Villejuif, France
E. Paucha, MRC National Institute for Medical Research, London, England

SESSION 8 SEQUENCES WORKSHOP

Chairperson: S. Weissman, Yale University, New Haven, Connecticut

Site-directed Mutagenesis and Protein Structure and Function

March 18–March 21

ARRANGED BY

R.T. Sauer, Massachusetts Institute of Technology, Cambridge

SESSION 1 ALTERATIONS OF ENZYMATIC PROPERTIES I

Chairperson: M. Smith, University of British Columbia, Vancouver, Canada

M. Smith, University of British Columbia, Vancouver, Canada: Oligonucleotide mutagenesis and the study of heme proteins.

S.J. Benkovic, Pennsylvania State University, Hershey: Strategies for mutagenesis: Preliminary results on dihydrofolate reductase.

S.A. Benner, Harvard University, Cambridge, Massachusetts: Synthetic genes for fundamental studies in protein chemistry.

G.A. Petsko, Massachusetts Institute of Technology, Cambridge: Site-directed alteration of enzymatic properties.

M.L. Sinnott, University of Bristol, England: The catalytic consequences of experimental evaluation of the *ebg* gene of *E. coli.*

J.N. Abelson, California Institute of Technology, Pasadena.

J. Kraut, University of California, San Diego, La Jolla: Site-directed mutagenesis of *E. coli* dihydrofolate reductase.

W.J. Rutter, University of California, San Francisco: Altering trypsin proteolytic specificity.

SESSION 2 ALTERATIONS OF ENZYMATIC PROPERTIES II

Chairperson: J.R. Knowles, Harvard University, Cambridge, Massachusetts

J.R. Knowles, Harvard University, Cambridge, Massachusetts: Regional mutagenesis in the signal codons of the β-lactamase gene.

A.R. Fersht, Imperial College of Science and Technology, London, England: Structure and activity of tyrosyl-tRNA synthetase.

M. Zoller, Cold Spring Harbor Laboratory, New York: Specific DNA/protein interactions in yeast. Point mutations in the DNA recognition sequence of the "HO" endonuclease.

P.R. Schimmel, Massachusetts Institute of Technology, Cambridge: Domain structure of amino acyl tRNA synthetase.

R. Wetzel, Genentech, Inc., South San Francisco, California: Thermostability of phage T4 lysozyme.

J.H. Richards, California Institute of Technology, Pasadena: β-lactamase: Mutagenic strategies and properties of mutants—Processing, secretion, stability, catalysis.

J.A. Gerlt, Yale University, New Haven, Connecticut: Genetic studies of nucleotidyl transferases.

D. Shortle, State University of New York, Stony Brook: Physical chemical genetics of staphylococcal nuclease.

SESSION 3 NONENZYME STRUCTURE/ACTIVITY CORRELATIONS

Chairperson: H.O. Smith, Johns Hopkins University School of Medicine, Baltimore, Maryland

P.B. Berget, University of Texas Medical School, Houston: Structure/function relationships in the bacteriophage P22 tail protein.

J.M. Pipas, University of Pittsburgh, Pennsylvania: The large tumor antigen of simian virus 40—Genetic analysis of a viral oncogene.

G.K. Ackers, Johns Hopkins University, Baltimore, Maryland: Hemoglobin mutants and cooperative energies.

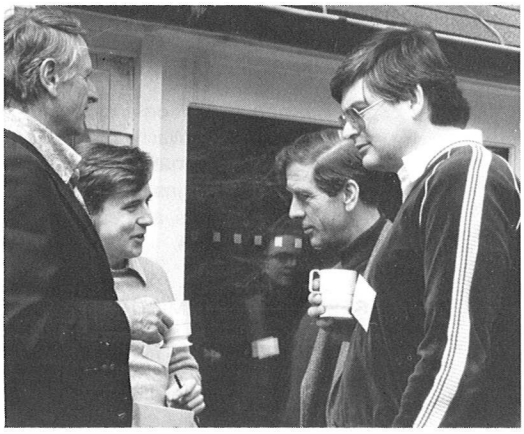
P.A. Youderian, University of Southern California, Los Angeles: Altering DNA-binding specificities of repressor proteins.

R.T. Sauer, Massachusetts Institute of Technology, Cambridge: Using mutants to probe the stability and activities of DNA-binding proteins.

R.H. Ebright, Harvard Medical School, Boston, Massachusetts: Mutations that alter the DNA sequence specificity of the catabolite gene activator protein of *E. coli.*

M. Ptashne, Harvard University, Cambridge, Massachusetts: Repressors and *cro* proteins—Structure and function.

S.C. Harrison, Harvard University, Cambridge, Massachusetts: Structural organization of spherical plant viruses.



SESSION 4 PROTEIN FOLDING DYNAMICS AND STABILITY

Chairperson: R.L. Baldwin, Stanford University Medical Center, California

R. Matthews, Stanford University Medical Center, California: Protein alteration and folding of dihydrofolate reductase.

B.T. Nall, University of Texas Medical School, Houston: Folding of yeast cytochrome *c*.

I.B. Kingston, MRC Laboratory of Molecular Biology, Cambridge, England.

M. Karplus, Harvard University, Cambridge, Massachusetts: Protein folding: Some model studies.

M. Levitt, Weizmann Institute of Science, Rehovot, Israel: Computer modeling of mutant proteins.

J.B. Matthew, Genex Corporation, Gaithersburg, Maryland: Electrostatic contribution to protein stability and macromolecular assembly.

G. Rose, Pennsylvania State University, Hershey: Toward a taxonomy of protein structure.

H.A. Scheraga, Cornell University, Ithaca, New York: Molecular recognition in proteins.

SESSION 5 NOVEL PEPTIDES

Chairperson: M.F. Perutz, MRC Laboratory of Molecular Biology, Cambridge, England

M. Eigen, Max-Planck-Institut für biophysikalische Chemie, Gottingen, Federal Republic of Germany: Evolving systems.

E.T. Kaiser, Rockefeller University, New York, New York: Amphiphilic secondary structures—The design of biologically active peptides.

C.O. Pabo, Johns Hopkins Medical School, Baltimore, Maryland: Designing novel peptides.

J.S. Richardson, Duke University, Durham, North Carolina: Design criteria for inventing a protein.

SESSION 6 HEMOGLOBIN AND PROTEIN EVOLUTION

Chairperson: M.F. Perutz, MRC Laboratory of Molecular Biology, Cambridge, England

M.F. Perutz, MRC Laboratory of Molecular Biology, Cambridge, England: The structural basis of protein evolution.

R.F. Doolittle, University of California, San Diego, La Jolla: Evolving proteins with novel functions.

Biological Mechanisms of Dioxin Action

April 1–April 4

ARRANGED BY

A. Poland, University of Wisconsin, Madison
R.D. Kimbrough, Centers for Disease Control, Atlanta, Georgia

SESSION 1 CHEMISTRY AND GENERAL PATHOLOGY I

Chairperson: R.D. Kimbrough, Centers for Disease Control, Atlanta, Georgia

D. Firestone, U.S. Food and Drug Administration, Washington, D.C.: Chlorinated aromatic compounds and related dioxins and furans—Production, uses, and environmental exposure.

C. Rappe, University of Umea, Sweden: Chemistry and analysis of polychlorinated dioxins and dibenzofurans in biological samples.

E.E. McConnell, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina: Clinicopathologic concepts of dibenzo-*p*-dioxin intoxication.

SESSION 2 CHEMISTRY AND GENERAL PATHOLOGY II

Chairperson: J.A. Moore, Environmental Protection Agency, Washington, D.C.

H. Poiger, Federal Institute of Technology and the University of Zurich, Switzerland: The metabolism of TCDD in the dog and rat.

R.A. Neal, Chemical Industry Institute of Toxicology, Research Triangle

Park, North Carolina: Metabolism of TCCD intoxication.

R.M. Pratt, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina: Mechanism of TCDD-induced cleft palate in the mouse.

R.J. Kociba, Dow Chemical USA, Midland, Michigan: Evaluation of the carcinogenic and mutagenic potential of TCDD and other chlorinated dioxins.

SESSION 3 RECEPTOR BINDING

Chairperson: A. Poland, University of Wisconsin, Madison

D.R. Koop, University of Michigan Medical School, Ann Arbor: Identity of cytochromes P-450 induced by diverse xenobiotics.

B.A. Taylor, Jackson Laboratory, Bar Harbor, Maine: The aryl hydrocarbon hydroxylase inducibility locus (*Ah*) of the mouse, a genetic perspective.

A. Poland, University of Wisconsin, Madison: Reflections on the mechanisms of action of halogenated aromatic hydrocarbons.

J.A. Goldstein, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina: Regulation of a multigene family of P-450 isozymes by TCDD and related compounds.

S.H. Safe, Texas A&M University, College Station: Binding to the TCDD receptor and AHH/EROD induction—In vitro QSAR.

SESSION 4 ENZYME INDUCTION

Chairperson: J.A. Goldstein, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina

J.-A. Gustafsson, Huddinge University Hospital, Sweden: Physicochemical characteristics of the TCDD receptor.

T.A. Gasiewicz, University of Rochester Medical Center, New York: Evidence for a homologous nature of *Ah* receptors among various mammalian species.

A. Schecter, State University of New York, Binghamton: Ultrastructural alterations of liver mitochondria in response to dioxins, furans, PCBs, and biphenylenes.

J.P. Whitlock, Jr., Stanford University School of Medicine, California: TCDD regulates cytochrome P_1-450 gene expression.

H.J. Eisen, National Institute of Child Health and Human Development, Bethesda, Maryland: The nuclear TCDD *Ah* receptor complex and the induction of cytochrome P_1-450 mRNA.

SESSION 5 BIOCHEMICAL CHANGES IN LIVER

Chairperson: J.B. Greig, MRC Toxicology Unit, Carshalton, England

S. Sassa, Rockefeller University, New York, New York: Inhibition of uroporphyrinogen decarboxylase activity in polyhalogenated aromated hydrocarbon poisoning.

G.D. Sweeney, McMaster University, Hamilton, Canada: Mechanisms underlying the hepatotoxicity of TCDD.

S.J. Stohs, University of Nebraska Medical Center, Omaha: Induction of lipid peroxidation and inhibition of glutathione peroxidase by TCDD.

A.B. Rifkind, Cornell University Medical Center, New York, New York: The chick embryo as a model for PCB and dioxin toxicity—Evidence of cardiotoxicity and increased prostaglandin synthesis.

F. Matsumura, Michigan State University, East Lansing: Toxicological significance of pleiotropic changes of plasma membrane functions, particularly that of EGF receptor caused by TCDD.

SESSION 6 LIPID METABOLISM AND WASTING DISEASE

Chairperson: R.E. Peterson, University of Wisconsin, Madison

R.E. Peterson, University of Wisconsin, Madison: The wasting syndrome in TCDD toxicity—Basic features and their interpretation.

S.D. Aust, Michigan State University, East Lansing: On the mechanism of anorexia and toxicity of TCDD and related compounds.

C.M. Schiller, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina: Metabolic impairment associated with a low dose of TCDD in adult male Fischer rats.

T. Thunberg, Karolinska Institute, Stockholm, Sweden: Effect of TCDD on vitamin A and its relation to TCDD toxicity.

K.K. Rozman, University of Kansas Medical Center, Kansas City: Role of thyroid hormones and brown adipose tissue in the toxicity of TCDD.

SESSION 7 SKIN AND IN VITRO RESPONSES

Chairperson: E.E. McConnell, National Insitute of Environmental Health Sciences, Research Triangle Park, North Carolina

R.D. Kimbrough, Centers for Disease Control, Atlanta, Georgia: Skin lesions in animals and humans: A brief overview.

W.F. Greenlee, Chemical Industry Institute of Toxicology, Research Triangle Park, North Carolina: Studies on the mechanisms of toxicity of TCDD to human epidermis.

R.H. Rice, Harvard School of Public Health, Boston, Massachusetts: Response of malignant epidermal keratinocytes to TCDD.

J. Knutson, University of Wisconsin, Madison: XB cells—An in vitro model for the differentiation and proliferation response to TCDD.

J.B. Greig, MRC Toxicology Unit, Carshalton, England: Differences between skin and liver toxicity of TCDD in mice.

SESSION 8 IMMUNOLOGICAL MECHANISMS

Chairperson: J.G. Vos, National Institute of Public Health, Bilthoven, The Netherlands

J.G. Vos, National Institute of Public Health, Bilthoven, The Netherlands: Dioxin-induced thymic atrophy and suppression of thymus-dependent immunity.

M.I. Luster, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina: In vivo and in vitro effects of TCDD on stem cell and B cell differentiation.

G.D. Sweeney, McMaster University, Hamilton, Canada: Dose response, time-course, and mechanism for suppression of cytotoxic T cell generation by TCDD.

W.F. Greenlee, Chemical Industry Institute of Toxicology, Research Triangle Park, North Carolina: A proposed model for the actions of TCDD on epidermal and thymic epithelial target cells.

SESSION 9 EPIDEMIOLOGY

Chairperson: N. Nelson, New York University Medical Center, New York

H. Falk, Centers for Disease Control, Atlanta, Georgia: A pilot epidemiologic study of health effects due to TCDD contamination in Missouri.

M.A. Fingerhut, National Institute for Occupational Safety and Health, Cincinnati, Ohio: An evaluation of reports of dioxin exposure and soft tissue sarcoma pathology in U.S. chemical workers.

G.D. Lathrop, Brooks Air Force Base, San Antonio, Texas: An epidemiologic investigation of health effects in Air Force personnel following exposure to herbicides.

Risk Quantitation and Regulatory Policy

May 13–May 16

ARRANGED BY

D. Hoel, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina
R.A. Merrill, University of Virginia, Charlottesville
M.C. Pike, Imperial Cancer Research Fund, Oxford, England

SESSION 1 REGULATORY PROGRAMS UTILIZING RISK ASSESSMENT

Chairperson: L.B. Lave, Carnegie-Mellon University, Pittsburgh, Pennsylvania

L.B. Lave, Carnegie-Mellon University, Pittsburgh, Pennsylvania: Quantitative risk assessment in regulation.

P.B. Hutt, Covington & Burling, Washington, D.C.: Use of quantitative risk assessment in regulatory decision making under federal health and safety statutes.

M.R. Taylor, King & Spalding, Washington, D.C.: The use of risk assessment in food safety decision making: The scope of FDA's discretion and the safeguards against abuse.

R.A. Merrill, University of Virginia School of Law, Charlottesville: The significance of risk quantitation in health and environmental regulation.

SESSION 2 EPIDEMIOLOGY IN RISK ESTIMATION I

Chairperson: M.C. Pike, Imperial Cancer Research Fund, Oxford, England

M.C. Pike, Imperial Cancer Research Fund, Oxford, England: Epidemiology and risk assessment: Estimation of GI cancer risk from asbestos in drinking water.

P. Landrigan, National Institute for Occupational Safety and Health, Cincinnati, Ohio: Approaches to the evaluation of dose in occupational epidemiology.

SESSION 3 EPIDEMIOLOGY IN RISK ESTIMATION II

Chairperson: M.C. Pike, Imperial Cancer Research Fund, Oxford, England

J.M. Kaldor, International Agency for Research on Cancer, Lyon, France: The use of epidemiological data for the assessment of human cancer risk.

J. Peto, Institute of Cancer Research, Sutton, England: Limitations in the quantitation of carcinogenic risk—The asbestos data base.

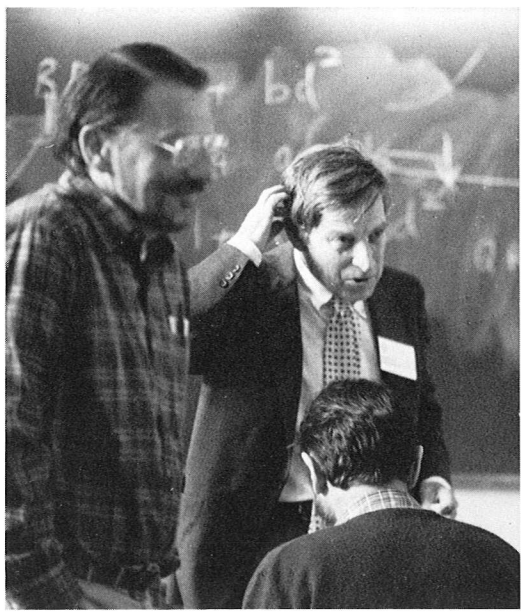
SESSION 4 MODELING AND EXTRAPOLATION

Chairperson: R. Wilson, Harvard University, Cambridge, Massachusetts

M.D. Hogan, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina: Risk estimation models in epidemiology studies.

J. Van Ryzin, Columbia University School of Public Health, New York, New York: Consequences of non-linear kinetic dose response models on carcinogenic risk assessment.

R. Wilson, Harvard University, Cambridge, Massachusetts: Expression of uncertainty in risk assessment.



SESSION 5 MUTAGENIC RISK IN HUMAN POPULATIONS

Chairperson: F.P. Perera, Columbia University School of Public Health, New York, New York

M.F. Lyon, MRC Radiobiology Unit, Harwell, England: Attempts to estimate genetic risks caused by mutagens to later generations.

J.V. Neel, University of Michigan Medical School, Ann Arbor: How do we get better human genetic risk data, and how then do we use the data?

SESSION 6 TOXICOLOGY AND BIOLOGICAL MECHANISMS I

Chairperson: I.B. Weinstein, College of Physicians & Surgeons, Columbia University, New York, New York

I.F.H. Purchase, Imperial Chemical Industries PLC, Macclesfield, England: The toxicologist's contribution to risk quantitation.

R.L. Dedrick, National Institutes of Health, Bethesda, Maryland: Application of model systems in pharmacokinetics.

J.R. Gillette, National Institutes of Health, Bethesda, Maryland: Biological variation: The unsolvable problem in quantitative extrapolations from laboratory animals and other surrogate systems to human populations.

F.P. Perera, Columbia University School of Public Health, New York, New York: Methods of measuring biologically effective doses of carcinogenic substances—Monitoring using DNA adducts.

SESSION 7 TOXICOLOGY AND BIOLOGICAL MECHANISMS II

Chairperson: B.D. Goldstein, Environmental Protection Agency, Washington, D.C.

I.B. Weinstein, College of Physicians & Surgeons, Columbia University, New York, New York: Relevance of mechanisms of action of tumor promoters to risk assessment.

R.H. Reitz, Dow Chemical Company, Midland, Michigan: Mechanistic considerations in the formulation of carcinogenic risk estimations.

SESSION 8 SPECIFIC CASE HISTORIES

Chairperson: P.W. Preuss, Consumer Product Safety Commission, Bethesda, Maryland

J.A. Swenberg, Chemical Industry Institute of Toxicology, Research Triangle Park, North Carolina: A scientific approach to formaldehyde risk assessment.

M. Cohn, Consumer Product Safety Commission, Bethesda, Maryland: Risk assessment and the formaldehyde data base.

M. Corn, Johns Hopkins University, Baltimore, Maryland: Human exposure estimates in hazardous waste site risk assessment.

B.D. Goldstein, Environmental Protection Agency, Washington, D.C.: Risk assessment and risk management of benzene by the EPA.

SESSION 9 RISK QUANTITATION AND THE DYNAMICS OF POLICY FORMULATION

Chairperson: R.S. Merrill, University of Virginia School of Law, Charlottesville

R.E. Albert, New York University Medical Center, New York: Issues of concern in the revision of the U.S. EPA's guidelines for carcinogen risk assessment.

P.W. Preuss, Consumer Product Safety Commission, Bethesda, Maryland: The changing role of risk assessment in Federal regulation.

Yeast Expression Vectors

June 21–June 24

ARRANGED BY

J. Strathern, Cold Spring Harbor Laboratory, New York
J.R. Broach, State University of New York, Stony Brook

SESSION 1 VECTORS

M.V. Olson, Washington University School of Medicine, St. Louis, Missouri

R. Rothstein, New Jersey Medical School, Newark

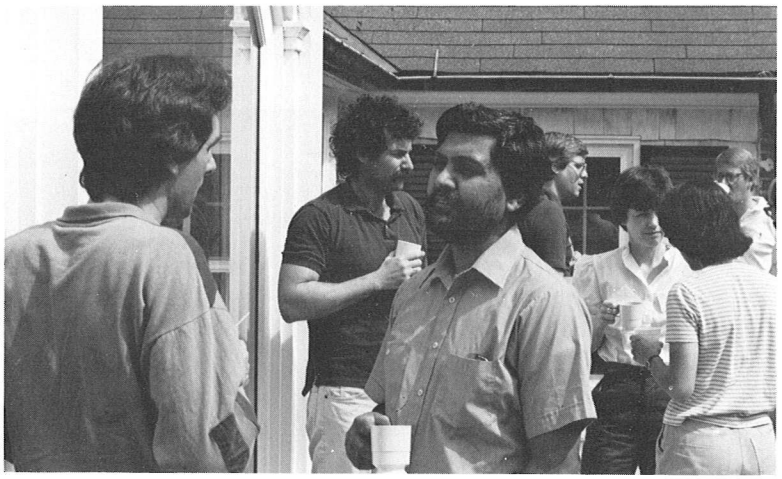
S. Weisbrod, Cold Spring Harbor Laboratory, New York

K. Bloom, University of North Carolina, Chapel Hill

R.W. Davis, Stanford University Medical Center, California

C.P. Hollenberg, Universitat Dusseldorf, Federal Republic of Germany

V.A. Zakian, Fred Hutchinson Cancer Research Center, Seattle, Washington



SESSION 2 PROMOTERS I

L.P. Guarente, Massachusetts Institute of Technology, Cambridge
A. Hinnen, Ciba-Geigy AG, Basel, Switzerland
F. Sherman, University of Rochester School of Medicine, New York
J. Hopper, Pennsylvania State University, Hershey
J.R. Broach, State University of New York, Stony Brook
S. Fields, University of California, San Francisco, School of Medicine

SESSION 3 PROMOTERS II

P. Silver, Harvard University, Cambridge, Massachusetts
A. Kingsman, University of Oxford, England
G.R. Fink, Massachusetts Institute of Technology, Cambridge
K. Nasmyth, Laboratory of Molecular Biology, Cambridge, England
J. Abraham, California Biotechnology, Inc., Palo Alto

SESSION 4 PROTEIN LOCALIZATION AND SECRETION

J. Thorner, University of California, Berkeley
R.W. Schekman, University of California, Berkeley
S. Emr, California Institute of Technology, Pasadena
G. Sprague, Jr., University of Oregon, Eugene
L. Hereford, Dana-Farber Cancer Institute, Boston, Massachusetts
K. Bostian, Brown University, Providence, Rhode Island

SESSION 5 EXPRESSION SYSTEMS

R.A. Hitzeman, Genentech, Inc., South San Francisco, California
G.A. Bitter, Applied Molecular Genetics, Inc., Thousand Oaks, California
M. Duncan, Collaborative Research, Inc., Lexington, Massachusetts
G. Ammerer, ZymoGenetics, Inc., Seattle, Washington

U.S. Environmental Protection Agency Workshop on "Possible Short-term Evolutionary Consequences of Biotechnology"

August 28–August 31

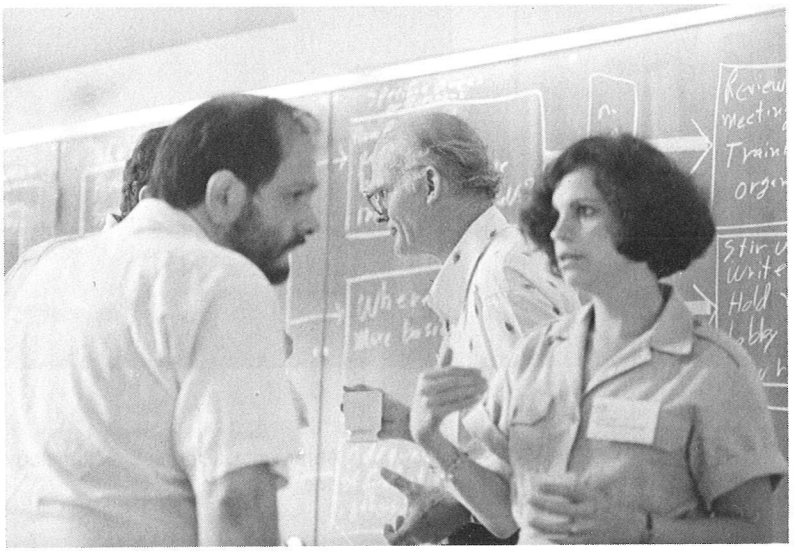
ARRANGED BY

J.R. Fowle III, U.S. Environmental Protection Agency, Washington, D.C.

Chairperson: P. Regal, University of Minnesota, Minneapolis

PARTICIPANTS

D. Archer, Food and Drug Administration, Washington, D.C.
F. Betz, U.S. Environmental Protection Agency, Washington, D.C.
R. Bierbaum, Office of Technology Assessment, Washington, D.C.
A.W. Bourquin, U.S. Environmental Protection Agency, Gulf Breeze, Florida
J. Brown, University of Arizona, Tucson
E. Carlson, State University of New York, Stony Brook
R. Colwell, University of California, Berkeley
M.A. Danello, Food and Drug Administration, Washington, D.C.
J.R. Fowle III, U.S. Environmental Protection Agency, Washington, D.C.



M. Gough, Office of Technology Assessment, Washington, D.C.
L.L. Greenlee, Agrigenetics Corp., Boulder, Colorado
F. Harris, National Science Foundation, Washington, D.C.
A. Hollander, U.S. Environmental Protection Agency, Washington, D.C.
D. Kamely, U.S. Environmental Protection Agency, Washington, D.C.
D. Kaplan, Dow Chemical Company, Midland, Michigan
R. Lensky, University of Massachusetts, Amherst
B.R. Levin, University of Massachusetts, Amherst
M. Levin, House Subcommittee on Investigations and Oversight, U.S. Congress, Washington, D.C.
M. Lloyd, University of Chicago, Illinois
D. MacKenzie, Louisiana State University, Baton Rouge
B. McClintock, Cold Spring Harbor Laboratory, New York
A. McDaniels, U.S. Environmental Protection Agency, Washington, D.C.
E. Milewski, National Institutes of Health, Washington, D.C.
S. Panem, U.S. Environmental Protection Agency, Washington, D.C.
J. Rissler, U.S. Environmental Protection Agency, Washington, D.C.
A. Rose, Department of Health and Human Services, Washington, D.C.
D. Simberloff, Florida State University, Tallahassee
Z. Vaituzis, U.S. Environmental Protection Agency, Washington, D.C.

National Institute of Mental Health Workshop on "Single Unit Activity and Behavior"

September 9–September 11

ARRANGED BY

R. Schoenfeld, National Institute of Mental Health, Rockville, Maryland

Chairpersons: **B.S. Bunney,** Yale University School of Medicine, New Haven, Connecticut
B.L. Jacobs, Princeton University, New Jersey

PARTICIPANTS

N. Bernick, National Institute of Mental Health, Rockville, Maryland
M.R. DeLong, Johns Hopkins Hospital, Baltimore, Maryland
P.S. Goldman-Rakic, Yale University School of Medicine, New Haven, Connecticut
M. Konishi, California Institute of Technology, Pasadena
S.H. Koslow, National Institute of Mental Health, Rockville, Maryland
I. Kupfermann, College of Physicians & Surgeons, Columbia University, New York, New York
J.B. Ranck, State University of New York, Downstate Medical Center, Brooklyn
R. Schoenfeld, National Institute of Mental Health, Rockville, Maryland
R.F. Thompson, Stanford University, California
T.N. Wiesel, Rockfeller University, New York, New York
D.J. Woodward, University of Texas Health Science Center, Dallas

Alfred P. Sloan Foundation Computational Neuroscience Workshop

September 28–September 30

ARRANGED BY

E. Wanner, Alfred P. Sloan Foundation, New York, New York

SESSION 1 VISION

Organizers: **T. Poggio,** Massachusetts Institute of Technology, Cambridge
T. Sejnowski, Johns Hopkins University, Baltimore, Maryland

PARTICIPANTS

D. Ballard, University of Rochester, New York
H.B. Barlow, Cambridge University, England
C. Gilbert, Rockefeller University, New York, New York
D.A. Glaser, University of California, Berkeley
E. Hildreth, Massachusetts Institute of Technology, Cambridge
A.J. Movshon, New York University, New York
G.F. Poggio, Johns Hopkins University School of Medicine, Baltimore, Maryland
T. Poggio, Massachusetts Institute of Technology, Cambridge
T. Sejnowski, Johns Hopkins University, Baltimore, Maryland
C.F. Stevens, Yale University School of Medicine, New Haven, Connecticut
V. Torre, Universita di Genova, Italy
S. Ullman, Massachusetts Institute of Technology, Cambridge

SESSION 2 VESTIBULO-OCULAR PROCESSING

Organizer: **D.A. Robinson,** Johns Hopkins Hospital, Baltimore, Maryland

PARTICIPANTS

A.F. Fuchs, University of Washington, Seattle
H. Galiana, McGill University, Montreal, Canada
E.L. Keller, Medical Research Institute of San Francisco at Pacific Medical Center, California
G.E. Loeb, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland
L.M. Optican, National Eye Institute, Bethesda, Maryland
D.A. Robinson, Johns Hopkins Hospital, Baltimore, Maryland

SESSION 3 MOTOR CONTROL

Organizers: **E. Bizzi,** Massachusetts Institute of Technology, Cambridge
J.M. Hollerbach, Massachusetts Institute of Technology, Cambridge

PARTICIPANTS

E. Bizzi, Massachusetts Institute of Technology, Cambridge
E.V. Evarts, National Institutes of Health, Bethesda, Maryland
L. Finkel, Rockefeller University, New York, New York
C. Ghez, College of Physicians & Surgeons, Columbia University, New York, New York
N. Hogan, Massachusetts Institute of Technology, Cambridge
J.M. Hollerbach, Massachusetts Institute of Technology, Cambridge
J.C. Houk, Northwestern University, Chicago, Illinois
R.W. Mann, Massachusetts Institute of Technology, Cambridge
M.H. Raibert, Carnegie-Mellon University, Pittsburgh, Pennsylvania

Genetic Manipulation of the Mammalian Ovum and Early Embryo

October 7–October 10

ARRANGED BY

F. Costantini, Columbia University, New York, New York
R. Jaenisch, Heinrich-Pette-Institut, Hamburg, Federal Republic of Germany

SESSION 1 DEVELOPMENTAL GENETICS

Chairperson: L. Silver, Princeton University, New Jersey

L. Silver, Princeton University, New Jersey: The origin and evolution of mouse *t* haplotypes.
V.E. Chapman, Roswell Park Memorial Institute, Buffalo, New York: X-chromosome regulation in female mammals.
S.M. Tilghman, Fox Chase Cancer Center, Philadelphia, Pennsylvania: Tissue-specific expression of cloned AFP genes in cells and mice.
M.J. Evans, University of Cambridge, England: EK cell contribution to chimaeric mice: From tissue culture to sperm.
D. Solter, The Wistar Institute of Anatomy and Biology, Philadelphia, Pennsylvania: Capacity of nuclei from preimplantation mouse embryos to support normal development.
A. Surani, Institute of Animal Physiology, Cambridge, England: Regulation of embryogenesis by maternal and paternal genomes in the mouse.

K. Willison, Chester Beatty Laboratory, London, England: Haploid gene expression and the mouse *t* complex.

SESSION 2 ENDOGENOUS VIRUSES AND VIRAL VECTORS

Chairperson: **P.W.J. Rigby,** Imperial College of Science and Technology, London, England

N.A. Jenkins, University of Cincinnati College of Medicine, Ohio: Instability of ecotropic proviruses in RF/J-derived hybrid mice.
N.G. Copeland, University of Cincinnati College of Medicine, Ohio: Molecular genetic approaches to the study of murine lymphoid cell neoplasms.
R. Jaenisch, Heinrich-Pette-Institut, Hamburg, Federal Republic of Germany: Recombinant viral probes of gene regulation and methylation patterns in the mouse.
E.F. Wagner, European Molecular Biology Laboratory, Heidelberg, Federal Republic of Germany: Introducing and expressing genes in stem cells and mice.

SESSION 3 INTRODUCTION OF CLONED GENES INTO THE MAMMALIAN GERM LINE I

Chairperson: F.H. Ruddle, Yale University, New Haven, Connecticut

R.L. Brinster, University of Pennsylvania, Philadelphia: Introduction of SV40 genes into mice.
R.D. Palmiter, University of Washington, Seattle: Expression of growth-hormone genes in mice.
D. Hanahan, Cold Spring Harbor Laboratory, New York: Expression of insulin-SV40 T-antigen hybrid genes in transgenic mice.
T.A. Stewart, Genentech, Inc., South San Francisco, California: Transgenic mice carrying MTV/*myc* fusion genes develop mammary adenocarcinomas.
R. Evans, Salk Institute, San Diego, California: Novel tissue-specific expression of growth-hormone genes in transgenic animals.

SESSION 4 INTRODUCTION OF CLONED GENES INTO THE MAMMALIAN GERM LINE II

Chairperson: A.J. Levine, Princeton University, New Jersey

F. Costantini, Columbia University, New York, New York: Regulated expression of a foreign β-globin gene in transgenic mice.

D. Baltimore, Massachusetts Institute of Technology, Cambridge: Tissue-specific expression of immunoglobulin genes in transgenic mice and cultured cells.

U. Storb, University of Washington, Seattle: Expression of a microinjected immunoglobulin κ gene in transgenic mice.

C.T. Caskey, Baylor College of Medicine, Houston, Texas: Elevated expression of human HPRT in CNS of transgenic mice.

D.C. Kraemer, Texas A&M University, College Station: Gene transfer in cattle and sheep.

C. Polge, Institute of Animal Physiology, Cambridge, England: Gene transfer approaches in farm animals.

SESSION 5 NONMAMMALIAN SYSTEMS

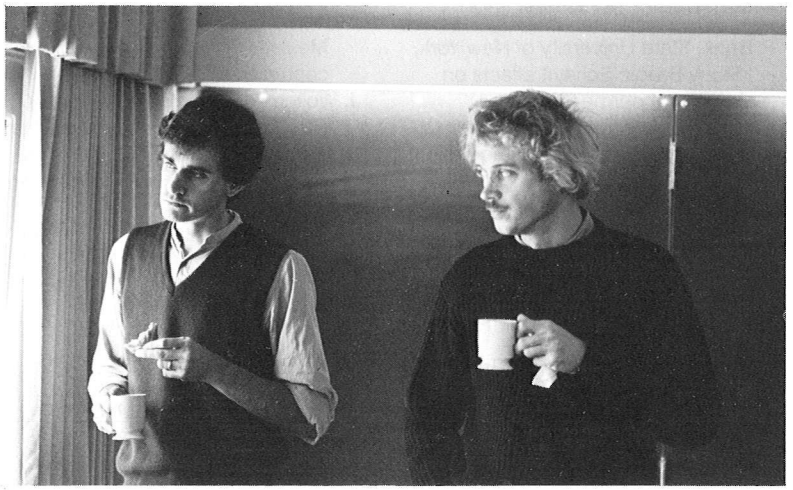
Chairperson: E. Davidson, California Institute of Technology, Pasadena

E. Davidson, California Institute of Technology, Pasadena: Transfer and expression of cloned sequences in the sea urchin embryo.

J. Newport, University of California, San Diego: Nuclear formation in the *Xenopus* embryo.

D.T. Stinchcomb, Harvard University, Cambridge, Massachusetts: DNA transformation of *C. elegans;* extrachromosomal arrays are replicated, segregated, and expressed.

T. Maniatis, Harvard University, Cambridge, Massachusetts: Analysis of *Drosophila* alcohol dehydrogenase gene expression by P-element transformation.



Gap Junctions

October 21–October 24

ARRANGED BY

M.V.L. Bennett, Kennedy Center, Bronx, New York

SESSION 1 STRUCTURE

Chairperson: M.V.L. Bennett, Kennedy Center, Bronx, New York

L. Makowski, College of Physicians & Surgeons, Columbia University, New York, New York: Structural domains in gap junctions and implications for gating.

G. Zampighi, University of California, Los Angeles, School of Medicine: Structure of lens and liver junctional proteins.

R. Hanna, State University of New York College of Environmental Science and Forestry, Syracuse, New York: Fast-frozen gap junctions.

S.B. Yancey, and J.-P. Revel, California Institute of Technology, Pasadena: Organization of junctional proteins in the membrane as deduced from sequence data.

E. Page, University of Chicago, Illinois: Structure and protein composition of cardiac gap junctions.

SESSION 2 BIOCHEMISTRY

Chairperson: J.-P. Revel, California Institute of Technology, Pasadena

E.L. Hertzberg, Baylor College of Medicine, Houston, Texas: Tissues and species specificity of gap junctional proteins.

K. Willecke, Universitat Essen, Federal Republic of Germany: Immunochemical characterization of gap junction protein from different mammalian tissues.

M. Finbow, Beatson Institute for Cancer Research, Glasgow, Scotland: Tissue, species, and phylogenetic variation of gap junctional proteins.

R.G. Johnson, University of Minnesota, St. Paul: Lens junctions—Antibodies to and phosphorylation of MP26.

D. Paul, Harvard University Medical School, Boston, Massachusetts: Proteolytic cleavage of junctional proteins from lens and liver.

SESSION 3 BIOPHYSICS

Chairperson: R. Llinas, New York University Medical Center, New York

P. Brink, State University of New York, Stony Brook: Solvent effects on junctional permeability.

D.C. Spray, Kennedy Center, Bronx, New York: Gating by voltage and chemical agents.

F. Ramon, Centro de Investigacion y de Estudios Avanzados Del IPN, Mexico City, Mexico: Physiological control mechanisms.

J. Wojtchak, Rockefeller University, New York, New York: Electrical uncoupling induced by general anesthetics—A calcium independent process?

J.E. Hall, University of California, Irvine: Channel reconstitution from junctional proteins.

C. Peracchia, University of Rochester Medical School, New York: Phosphorylation and reconstitution of lens junctions.

SESSION 4 CONTROL OF FORMATION

Chairperson A. Warner, University College London, England

J. Sheridan, University of Minnesota, Minneapolis: Altered junctional permeability between virally transformed cells.

J.D. Pitts, Beatson Institute for Cancer Research, Glasgow, Scotland: Tissue specificity.

W. Coles, McMaster University, Hamilton, Canada: Alterations in coupling in uterine muscle.

J. Kessler, Kennedy Center, Bronx, New York: Coupling between cultured vertebrate neurons.

S.B. Kater, University of Iowa, Iowa City: Specificity of coupling at molluscan neurons.

SESSION 5 ROLE IN INTERCELLULAR COMMUNICATION AND DEVELOPMENT

Chairperson: J.D. Pitts, Beatson Institute for Cancer Research, Glasgow, Scotland

C.W. Lo, University of Pennsylvania, Philadelphia: Compartmentalization in embryos.

S. Caveney, University of Western Ontario, London, Canada: Control of molecular movement within and between developmental compartments.

A. Warner, University College London, England: Antibodies to gap junction proteins—Probes for studying development.

W.J. Larsen, University of Cincinnati College of Medicine, Ohio: Relationships of gap junction modulation to cell and tissue function.

W. Beers, New York University, New York: Gap junctions and ovulation.

O.H. Petersen, University of Liverpool, England: Communication in secretory epithelia.

SESSION 6 ELECTROTONIC SYNAPSES

Chairperson: D.C. Spray, Kennedy Center, Bronx, New York

F.E. Dudek, Tulane University School of Medicine, New Orleans, Louisiana: Electrical interactions and synchronization of hippocampal neurons—Electrotonic coupling vs. field effects.

R. Llinas, New York University Medical Center, New York: Functional significance of coupling in the inferior olive.

M.V.L. Bennett, Kennedy Center, Bronx, New York: Interactions among chemical and electrotonic synapses.

C. Giaume, Institut Pasteur, Paris, France: The rectifying electrotonic synapse of crayfish.

H.M. Gerschenfeld and J. Neyton, École Normale Supérieure, Paris, France: Dopaminergic control of coupling between horizontal cells.

E. Lasater and J. Dowling, Harvard University, Cambridge, Massachusetts: Characteristics of coupling between pairs of cultured horizontal cells.

Transport and Secretion of Proteins

November 7–November 10

ARRANGED BY

M.-J. Gething, Cold Spring Harbor Laboratory, New York

SESSION 1 TRANSLOCATION OF PROTEINS ACROSS THE LIPID BILAYER

Chairperson: G. Blobel, Rockefeller University, New York, New York

P. Walter, University of California, San Francisco: Targeting of nascent secretory proteins to the endoplasmic reticulum membrane.

D. Meyer, European Molecular Biology Laboratory, Heidelberg, Federal Republic of Germany: Factors mediating protein translocation in the endoplasmic reticulum—The docking protein and beyond.

R. Gilmore, Rockefeller University, New York, New York: Evidence for the existence of a signal receptor in the microsomal membrane.

S. Benson, Princeton University, New Jersey: Intragenic information required for the export of LamB to the outer membrane of *E. coli*.

W. Wickner, University of California, Los Angeles, School of Medicine—Mechanisms of bacterial cell-surface assembly.

S. Ferro-Novick, Harvard Medical School, Boston, Massachusetts: Genetic evidence for the coupling of the synthesis and secretion of proteins in *E. coli*.

M. Inouye, State University of New York, Stony Brook: Functional and structural analysis of the signal peptide.

C. Kaiser, Massachusetts Institute of Technology, Cambridge: Mutations in the signal sequence affecting the localization of invertase.

SESSION 2 TRANSPORT FROM THE ENDOPLASMIC RETICULUM TO THE PLASMA MEMBRANE

Chairperson: **H.F. Lodish,** Whitehead Institute for Biomedical Research, Cambridge, Massachusetts

I. Schauer, University of California, Berkeley: Invertase sequence substitutions interfere with transport of active enzyme from the ER.

J. Sambrook, Cold Spring Harbor Laboratory, New York: How to get SV40 T antigen into membranes.

J. Rose, Salk Institute, San Diego, California: Redesigning transport signals in the VSV glycoprotein.

P. Berman, Genentech, Inc., South San Francisco, California: Processing and export of membrane-bound and secreted forms of cloned HSV-1 glycoprotein D in continuous cell lines.

M.-J. Gething, Cold Spring Harbor Laboratory, New York: Site-directed mutagenesis of the hemagglutinin of influenza virus—Effects on transport through the cell.

A. Brake, Chiron Corporation, Emeryville, California: Sequence of two genes encoding precursors to the yeast peptide mating pheromone *a* factor.

J. Thorner, University of California, Berkeley: Cell biology and enzymology of the specific endopeptidase required for processing of yeast precursor proteins at pairs of basic residues.

SESSION 3 STRUCTURES INVOLVED IN TRANSPORT AND ENDOCYTOSIS

Chairperson: **G.E. Palade,** Yale University School of Medicine, New Haven, Connecticut

P.W. Robbins, Massachusetts Institute of Technology, Cambridge: Protein glycosylation.

M.G. Farquahar, Yale University School of Medicine, New Haven, Connecticut: Receptor traffic to Golgi subcompartments.

W.S. Sly, St. Louis University School of Medicine, Missouri: Mannose-6-P receptor-mediated sorting and transport of lysosomal enzymes.

I. Mellman, Yale University School of Medicine, New Haven, Connecticut: Fc receptor transport, proton transport, and the control of intracellular membrane traffic.

G. Warren, European Molecular Biology Laboratory, Heidelberg, Federal Republic of Germany: Reconstruction of an endocytic fusion event in a cell-free system.

S. Schmid, Stanford University School of Medicine, California: Enzymatic recycling of clathrin from coated vesicles.

P.C. Tai, Boston Biomedical Research Institute, Massachusetts: Clathrin in *B. subtilis?* Bacterial protein translocation.

SESSION 4 DIRECTED TRANSPORT I

Chairperson: **D. Sabatini,** New York University Medical Center, New York

D. Sabatini, New York University Medical Center, New York: Intracellular sorting and distinct recycling patterns of viral glycoproteins in polarized epithelial cells.

K. Mostov, Whitehead Institute for Biomedical Research, Cambridge, Massachusetts: Transepithelial transport of IgA and IgM.

H.-P. Moore, University of California, San Francisco: Sorting and transport of proteins in regulated secretory cells.

J.-P. Kraehenbuhl, University of Lausanne, Switzerland: Biogenesis of (Na^+,K^+)-ATPase in ion-transporting epithelia.

D. Louvard, Institut Pasteur, Paris, France: Basolateral membrane protein markers are expressed at the surface of undifferentiated precursors of enterocytes in vitro, whereas transport of apical markers is abortive.

E. Rodriguez-Boulan, Cornell University Medical College, New York, New York: Vectorial exocytosis of plasma membrane glycoproteins in epithelial cells.

K. Simons, European Molecular Biology Laboratory, Heidelberg, Federal Republic of Germany: Sorting of apical and basolateral proteins in MDCK cells.

SESSION 5 DIRECTED TRANSPORT II

Chairperson: D. Botstein, Massachusetts Institute of Technology, Cambridge

S.D. Emr, California Institute of Technology, Pasadena: Use of gene fusions to study protein traffic in yeast.

T.H. Stevens, University of Oregon, Eugene: Yeast mutants defective in the sorting of vacuolar proteins.

M.N. Hall, University of California, San Francisco: Studies on the mechanism of nuclear protein localization in yeast.

E.C. Hurt, University of Basel, Switzerland: Import of proteins into mitochondria.

J. Kaput, Rockefeller University, New York, New York: Translocation of nuclearly encoded mitochrondrial proteins translated from SP6-promoted transcripts.

M.G. Douglas, University of Texas Health Sciences Center, San Antonio: The biochemistry and genetics of protein import into mitochondria.

Journalists' Workshop on "Assessing Health Risk Assessment"

November 28–November 30

ARRANGED BY

M. Shodell, Banbury Center, Cold Spring Harbor Laboratory, New York

SESSION 1

D.P. Rall, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina: An introduction to the principles of risk assessment.

J.A. Swenberg, Chemical Industry Institute of Toxicology, Research Triangle Park, North Carolina: Models in biological risk assessment.

SESSION 2

I.C.T. Nisbet, Clement Associates, Inc., Arlington, Virginia: Assessing the models used for assessing risk.

F.P. Perera, Columbia University School of Public Health, New York, New York: New approaches in risk assesssment.

SESSION 3

R.E. Albert, New York University Medical Center, New York, New York: Risk assessment in the regulation of carcinogens.

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Banbury Report 2 Mammalian Cell Mutagenesis
Banbury Report 3 A Safe Cigarette?
Banbury Report 4 Cancer Incidence in Defined Populations
Banbury Report 5 Ethylene Dichloride: A Potential Health Risk?
Banbury Report 6 Product Labeling and Health Risks
Banbury Report 7 Gastrointestinal Cancer: Endogenous Factors
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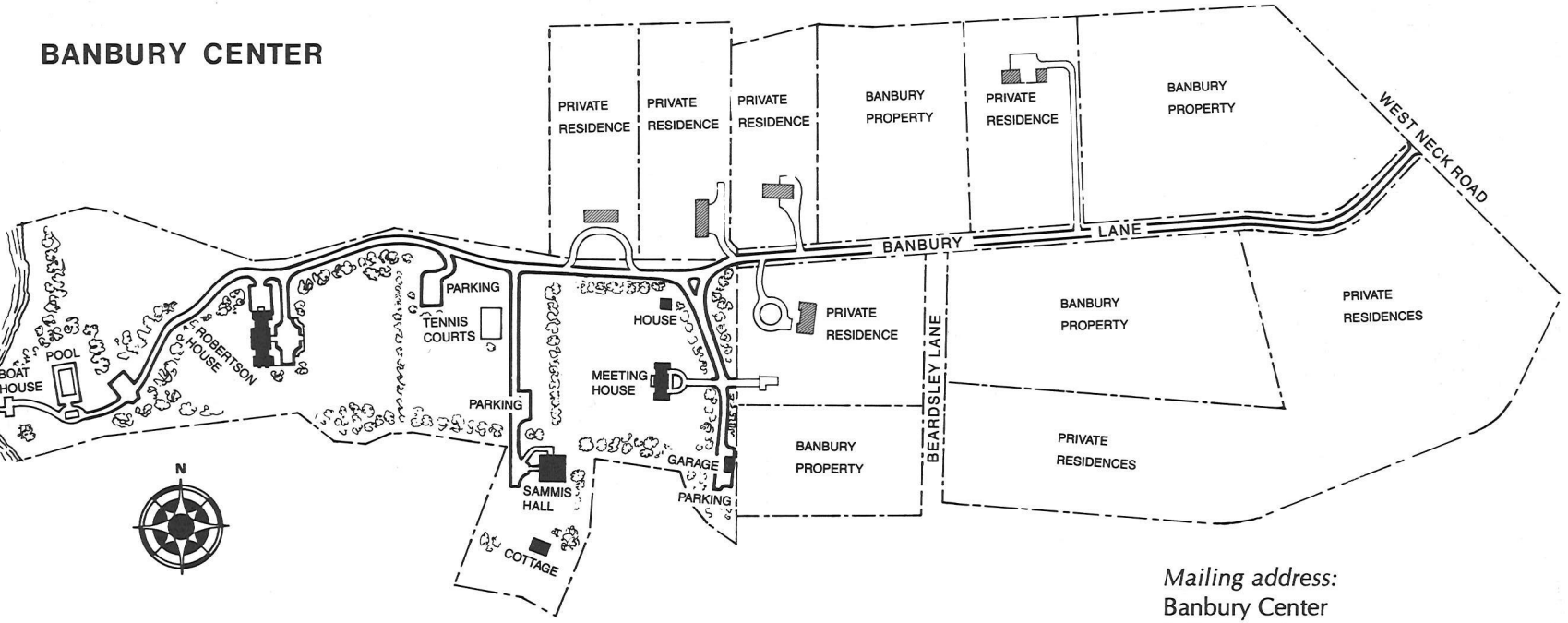
Banbury Report 19 Risk Quantitation and Regulatory Policy

Gene Therapy/Fact and Fiction in Biology's New Approaches to Disease by Theodore Friedmann, M.D.

BANBURY CENTER



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