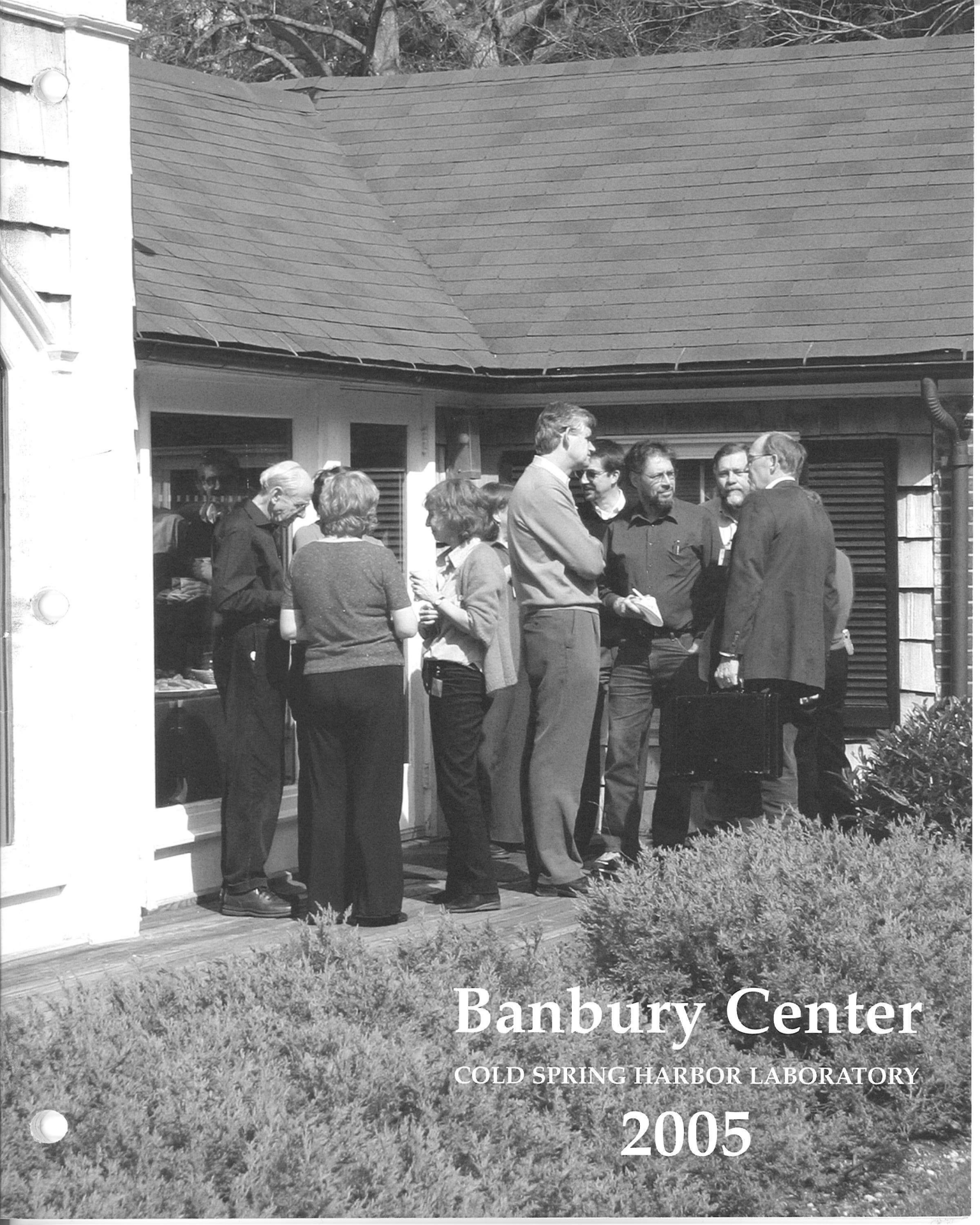

Banbury Center

COLD SPRING HARBOR LABORATORY

2005

BANBURY CENTER

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

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

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

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BANBURY CENTER
EXECUTIVE DIRECTOR'S REPORT

The year 2005 was remarkable for the Banbury Center, with record numbers of events and participants. The number of scientific meetings rose 33% from 2004, from 18 to 24, and the Center was used for 11 other events, for a total of 35. The increase in participants paralleled the increase in meetings, with 806 participants compared to 568 in 2004. The proportion of participants from the United States remained the same at 80%, drawn from 35 states, with New York, California, Massachusetts, and Maryland leading the way. Foreign participants came from 30 countries, and we were particularly pleased to welcome participants from eight African countries who came for the Albert B. Sabin vaccine meeting.

There were three very significant staffing changes in 2005. Katya Davey retired after 26 years as hostess at Robertson House. Katya was one of the first staff members at Banbury and is known to tens of thousands of scientists throughout the world for her kindness and helpfulness. She has been an icon of the Banbury Center and her character and personality will be greatly missed. We were fortunate in finding Barbara Polakowski who now has the formidable task of looking after the scientists staying on the Banbury estate. The third of the changes was the appointment of Sydney Gary as Assistant Director. She is a neuroscientist who worked with Susan Hockfield at Yale. Sydney has come to develop the neuroscience and mental health meetings and courses programs at Banbury and on the main campus.

Katya Davey

One meeting at Banbury in 2005 broke new ground for Banbury Center meetings, and for Cold Spring Harbor Laboratory in general. Mila Pollack, Director of Libraries and Archives here at the Laboratory, and Darwin H. Stapleton, Director of the Rockefeller Archives, organized a meeting on *History of Science: Archives and Oral History.* This was the first occasion on which a history of science meeting has been held here and it was a great success. Participants reviewed contentious issues such as the preservation of letters and communications in the age of e-mail, and whether archives should be digitized and made available via the Internet. They also described how they deal with these issues at their own institutions. The discussion meeting was particularly useful in helping to promote the Laboratory's initiative in developing a history of molecular biology and molecular genetics program, building on the collection donated by Jim Watson.

Five meetings were held relating to cancer, four dealing with specific types of cancer and the fifth covering a new and potentially very important topic: cancer stem cells. Despite the fact that B-cell chronic lymphocytic leukemia (B-CLL) is the most common leukemia in the western hemisphere, the cause of the disease remains enigmatic and the treatments inadequate. However, recent advances using a variety of techniques and approaches led to a meeting, *Chronic Lymphocytic Leukemia,* organized by Nicholas Chiorazzi and Kanti R. Rai (Institute for Medical Research, North Shore–LIJ Health System) and Michael Wigler (Cold Spring Harbor Laboratory). Participants included investigators using immunological, molecular biological, and genetic approaches, as well as physicians with expertise in the study and treatments of B-CLL patients. The meeting structure was ambitious, with multiple short presentations providing an opportunity for participants to contribute to more than one session.

Banbury Center conference room, summer

The Biology of Neuroendocrine Tumors, organized by Arnold J. Levine (Institute for Advanced Studies) and Evan Vosburgh (Verto Institute), focused on several topics: Genetic studies using whole-genome allelotyping, SNPS in the *p53* pathway, and LINE1 retrotransposon studies of human cell lines and tumor samples. These

are beginning to identify specific genetic regions of interest and to characterize the genomic instability of this class of tumors. The roles of the tumor suppressors, menin and parafibromin, were discussed. Menin is involved in signaling pathways, proliferation, and cell death, whereas parafibromin is associated with RNA polymerase and plays a part in histone modifications. Translational research on EGFR and VEGF/VEGFr was complimented by presentations of early clinical studies of anti-EGFR and anti-VEGF therapies.

Kevin M. Shannon (University of California, San Francisco) and Kim Hunter-Schaedle (Children's Tumor Foundation) were the organizers of *Barriers and Solutions in the Use of Mouse Models to Develop Therapeutic Strategies for NF1- and NF2-associated Tumors.* Mice are used extensively for the development and assessment of cancer therapies, but there are questions about how best to model human tumors in mice. Participants examined the advantages, limitations, and potential new directions of using mouse models of neurofibromatosis 1 and neurofibromatosis 2 in developing therapeutics for neurofibromatosis.

Dorothea Becker (University of Pittsburgh) and Martin McMahon (University of California, San Francisco) organized *A Critical Review of Melanoma: Genomic Approaches with Therapeutic Promise*. The meeting brought together investigators who are using array profiling, SAGE technology, proteomics, and optical imaging, as well as basic scientists and physicians who focus on the identification and characterization of genes that govern important functions in early and advanced-stage melanoma and precursor lesions. The goal of the meeting was to outline new strategies for gaining further insights into the molecular pathways of melanoma in light of a critical review of current research and targeted therapies for melanoma.

An important new area of cancer research concerns whether stem cells present in adult tissues might be the sources of cancers. This is not a new idea and was a popular theory of cancer at the end of the 19th century when it was proposed that embryonic cells, "rests," persisted into the adult and that these cells could be reactivated and grow in the adult. Now, we have the molecular tools and the intellectual background to reinvestigate this idea, as was evident in the *Cancer Stem Cells* meeting, organized by Max Wicha (University of Michigan) and Jeffrey M. Rosen (Baylor College of Medicine). Discussions ranged from signaling pathways investigated in embryos, through what is known of stem cells in leukemias and other cancers, to how this knowledge could change current approaches to cancer treatments. Current cancer therapies, which have been developed on the basis of their ability to cause tumor regression, might selectively target these differentiated cells and spare the cancer stem cell component. The latter may contribute to a tumor recurrence.

Banbury Center held a meeting on scientific fraud in 1989 and a meeting on nuclear transfer (cloning) in 2000. I had not thought that the two topics would come together, but circumstances following the 2005 meeting, *The Biology and Practice of Mammalian Cloning: A Reassessment,* dictated otherwise. Organized by Peter Mombaerts (The Rockefeller University) and Ian Wilmut (University of Edinburgh), it was a follow-up to the meeting on cloning of mammals held in 2000, just 4 years after the cloning of Dolly. Topics covered included nuclear transfer experiments in mice, rats, rabbits, and cattle, as well as human beings. We were very pleased that the leading exponent of nuclear transfer in human beings, Woo-Suk Hwang from South Korea, was participating. Now it appears that all of the work done by Hwang's laboratory on human embryonic stem cells was fabricated. There is no doubt that the basic premise and promise of human stem cell therapy were not diminished by this scandal but it is a setback to the field.

Banbury continues to hold meetings on human genetic disorders because much needs to be done to capitalize on the disease gene discoveries that were so successful in the 1990s. Therapies are still elusive for so many of these disorders. *Translational Approaches to Fragile-X Syndrome: Turning Basic Research Findings into Therapeutic Targets* (organized by Elizabeth Berry-Kravis, Rush Children's Hospital; William T. Greenough, University of Illinois; and Katie Clapp, FRAXA Research Foundation) tackled this issue head-on. The participants focused on strategies for translation of basic science knowledge about phenotypes and therapeutic targets in Fragile-X syndrome and its animal models to clinical treatment trials in patients. They discussed how to determine treatment targets and methods of assessing the efficacy of treatments in animal models.

The meeting, *Spinal Muscular Atrophy: Neuronal Rescue and Repair from Laboratory to Clinic,* examined the potential of therapies and how they might be made available. Held at Banbury, March 13–16, the organizers were Loren Eng (Spinal Muscular Atrophy Foundation, New York), Thomas M. Jessell (Columbia University), Alex E. MacKenzie (Children's Hospital of Eastern Ontario), Kay E. Davies (University of Oxford), and Cynthia Joyce (SMA Foundation). The discussions ranged widely from the biochemistry and cell biology of SMA and what these can tell us of potential drug targets, to SMA genetics and how this knowledge can be used in the development of animal models, and, finally, to a discussion of strategies.

Researchers and clinicians working on amyotrophic lateral sclerosis (ALS) are investigating the therapeutic potential of stem cells. Lucie Bruijn (The ALS Association), Stephen M. Strittmatter (Yale University), and Clive N. Svendsen (University of Wisconsin) organized the meeting *Stem Cells and Axonal Regeneration: Strategies for the Treatment of ALS*. In vitro studies have been carried out examining stem cells that may differentiate and replace dying neurons and/or sick astrocytes in SMA. Another approach might be to stimulate the proliferation of endogenous stem cells to replace dying cells. Participants also discussed how any new cells would establish appropriate connections and reviewed current knowledge of axonal guidance cues.

The genetics of epilepsy are not as advanced as those for Fragile-X or SMA, but the mechanisms of drugs that have empirically been shown to be effective in epilepsy may provide leads. Norman Delanty (Royal College of Surgeons in Ireland), David B. Goldstein (Duke Institute for Genome Sciences and Policy), Ley Sander (University College, London), and Sanjay M. Sisodiya (University College London) organized *Epilepsy Genetics and Pharmacogenetics*. Some new developments, including the availability of HapMap data and a growing understanding of the action of many anti-epileptic drugs, made this the right moment to bring together those involved in different aspects of epilepsy genetics to identify research priorities and strategies, and to foster collaborations among groups with different clinical resources.

Parkinson's disease (PD) is one of the most common movement disorders, afflicting individuals from all walks of life. It is becoming the subject of increasing research because of the severity of the disorder and increasing public awareness. *Parkinson's Disease: Basic Mechanisms and Therapies* (organized by Rodolfo Llinas, New York University Medical Center, and Ali Rezai, The Cleveland Clinic Foundation) critically reviewed the latest findings on the pathophysiology of PD, therapies based on drug treatment and, most especially, the degree to which surgical interventions ameliorate the movement disturbances.

Mitochondria are the powerhouses of cells, and, not surprisingly, illness results when they fail or work inefficiently. It is becoming clear that mitochondria may be involved in a much broader range of disorders than had been suspected, and *Mitochondria in Neurological Disease and Aging* critically reviewed the evidence for mitochondrial involvement in these processes. Organized by M. Flint Beal (Cornell University) and Douglas C. Wallace (University of California, Irvine), the topics ranged from research on the biochemistry and physiology of mitochondria, through animal models of mitochondrial disease, to specific diseases, including Friedreich ataxia, ALS, Huntington's disease, Parkinson's disease, and Alzheimer's disease.

Banbury Center conference room, winter

One of the most fascinating stories in modern biology concerns prions, abnormal proteins with no associated DNA or RNA that can be transmitted among animals. The diseases they cause were known as scrapie in sheep and wasting disease in elk, but they came to public attention when, in the early 1980s, cases of a formerly very rare human disorder—Creutzfeld-Jakob disease (CJD)—appeared in the United Kingdom. Investigation showed that these were a variant form of CJD (vCJD) and were caused by prions that had been transmitted to human beings who ate contaminated beef. Much still remains mysterious about prions, and we held a meeting *Prion Biology: Puzzles and Paradoxes* organized by John Collinge (University College, London) and Charles Weissmann (The Scripps Institute).

There was extended discussion about whether synthetic prions, which are devoid of nucleic acid, have been made, and needless to say, much still remains to be resolved. The meeting did set a new record for a Banbury Center meeting—three of the participants, 12%, were Nobel laureates!

The Banbury conference on *The GABAergic System* was organized by Josh J. Huang (Cold Spring Harbor Laboratory) and György Buzsáki (Rutgers University) and took place October 30–November 2. GABA is one of the major neurotransmitters and the only mediator of inhibition in the brain. GABA dysfunction has been implicated in a range of neurological, neurodevelopmental, and psychiatric disorders. Progress in understanding the genetic design, construction, and mode of operation of the GABAergic system will significantly advance our knowledge of brain development and function. The Banbury meeting brought together scientists using molecular and genomic approaches, and developmental neurobiologists, physiologists, system neuroscientists, and clinicians to foster future work in this critical domain of research.

The most fascinating area of neuroscience research concerns the interface between biology and higher-level processes. *Neurobiology of Decision-making,* organized by Carlos Brody (Cold Spring Harbor Laboratory), Michael N. Shadlen (University of Washington), and Xiao-Jing Wang (Brandeis University), considered such questions as: What are the key computations involved in making a decision? How are they implemented by neurons? Can we quantitatively formulate the probabilistic nature of decision-making? What is the predominant source of randomness intrinsic to the brain? Can the importance of noise in decision-making behavior be tested experimentally? The meeting included investigators who employ high-level abstract mathematical psychology descriptions, neural network modeling, and experimental approaches.

The theme of *The Intracellular Molecular Environment* (David Spector, Cold Spring Harbor Laboratory, and Jason Swedlow, University of Dundee) can be summarized in the rather naive question: What would it be like to be a molecule inside the cell? And from this question, others arise: How crowded would it be? How would I get to where I needed to be? If I am part of a complex, how do I find the members of the complex? How do data from in vitro experiments relate to similar processes in the cell? The meeting brought together scientists who use theoretical and experimental analyses employing a variety of techniques, including biophysical, biochemical, mathematical, imaging, and cell biological experimentation.

Plants are remarkable in that they are frequently polyploid, i.e., they have two or more copies of their genome. Such polyploidy is important for plant functions and evolution. *Polyploidy, Heterosis, and Genomic Balance* was organized by Jim A. Birchler (University of Missouri, Columbia) and Luca Comai (University of Washington). The participants discussed gene expression in aneuploidy, polyploidy, or hybrid states (heterosis and species hybrids); the molecular basis of quantitative traits; gene regulatory circuits; the relationship of epigenetic phenomena to gene regulatory mechanisms; and the evolution of gene regulation.

There were four meetings related to infectious diseases. A rather unusual topic of a Banbury Center meeting was *Computational Approaches for Biomarker Discovery* (Suzanne Vernon and William Reeves, Centers for Disease Control and Prevention). Hiding behind this rather unremarkable title was a fascinating meeting on a Centers for Disease Control project examining chronic fatigue syndrome (CFS). This is not an easy subject to study—diagnosis is difficult, laboratory diagnostic tests are not available, and multiple factors likely contribute to its pathogenesis. CDC has examined a large cohort of individuals from Wichita Falls, subjecting them to a battery of physical, psychiatric, and laboratory tests, including gene expression analysis using microarrays. The expectation is that analysis of this mass of data will reveal patterns common to individuals with CFS. However, this is not a simple task—it requires the integration of many different kinds of data. Participants included mathematicians, engineers, computer scientists, as well as biologists, trying to develop the most informative ways of handling the data.

Bioterrorism continues to be an important topic, and Banbury had two meetings on viral and microbial forensics. The title of the first meeting, *Pathogenesis and Early Events in Viral Infection* (organized by Roger Breeze and Floyd Horn, Institute for Comparative Genomics; William Laegreid, USDA; and Daniel L. Rock, University of Illinois), would not have been out of place for the Laboratory in the 1970s,

when tumor viruses such as SV40 and adenovirus were the subjects of intense research here. However, the viruses that were the focus of attention for this meeting would not have been studied at Cold Spring Harbor. They included West Nile virus, rinderpest, and dengue, ebola, and Marburg hemorrhagic fever viruses. The second meeting dealt with an ostensibly much more prosaic topic: *Microbial Forensics 2005: Sample Management* (organized by Steven Schutzer, UMDNJ; Bruce Budowle, Federal Bureau of Investigation; and James P. Burans, U.S. Department of Homeland Security). However, procedures that are commonplace in ordinary investigations (e.g., maintaining chain of custody) may be unfamiliar or difficult to achieve with biological samples. Or suppose that a test or extraction procedure for one chemical precludes other tests. How should priorities be determined?

The Albert B. Sabin Foundation Colloquium on *Introduction and Sustainable Use of Vaccines in Developing Countries* was organized by Kevin Reilly (Sabin Vaccine Institute) and Francisco F. Songane (Ministerio da Saude, Mozambique). Participants reviewed the most critical issues facing financiers, government, industry, and the developing countries that are in need of funds for vaccine purchase and delivery; defined the performance criteria that will help benefactors and beneficiaries measure the progress of the developing countries; and made realistic recommendations that best enhance the prospects for sustained use of needed vaccines in developing countries. A highlight of the meeting was a talk by Sir George Alleyne of the Pan American Health Organization, Washington, D.C.

Two groups took the opportunity of Banbury meetings to hold associated policy meetings. The National Cancer Institute–International Workshop on CLL Group and the NSF Polyploidy Group held premeetings.

In addition to the meetings, Banbury hosted several courses. There were the regular summer courses and a 2-week workshop on schizophrenia. The Watson School of Biological Sciences held two Topics in Biology courses for its students. Banbury also hosted two courses for outside groups. The Boehringer Ingelheim Foundation held a course on the conduct of science for its North American fellows, and David Micklos and I, together with Ken Culver, provided a genetics course for part of the oncology group of Novartis.

Sydney Gary and Barbara Polakowski

The Banbury Center continues to make a unique contribution to the world of biology, fulfilling the goals and aspirations set by Charles Robertson and Jim Watson almost 30 years ago. It does so through the efforts of many people at Cold Spring Harbor: Bea Toliver, Ellie Sidorenko, Sydney Gary, Barbara Polakowski, Chris McEvoy, and Joe Ellis at Banbury, and the staff of audiovisual, the meetings office, and the housekeeping department, and Blackford.

Jan Witkowski
Executive Director

Parkinson's Disease: Basic Mechanisms and Therapies

January 16–18

FUNDED BY **The Thomas Hartman Foundation For Parkinson's Research**

ARRANGED BY **R. Llinas**, New York University Medical Center
A. Rezai, The Cleveland Clinic Foundation

Introduction: **J.A. Witkowski**, Banbury Center, Cold Spring Harbor Laboratory
R. Llinas, New York University Medical Center
A. Rezai, The Cleveland Clinic Foundation

SESSION 1: Morphology and Anatomical Basis of Parkinson's Disease
Chairperson: A. Beric, Hospital for Joint Diseases, New York

E.G. Jones, University of California, Davis: Cortical-thalamic pathways.

A. Graybiel, Massachusetts Institute of Technology, Cambridge: Cortical-basal ganglia-thalamic pathways.

SESSION 2: Physiology and Pathophysiology: Thalamus, Basal Ganglia, and Cortex
Chairperson: A.-L. Benabid, l'Universite Joseph Fourier, Grenoble, France

R. Llinas, New York University Medical Center: Thalamo-cortical rhythm: Function and pathology.

A.M. Lozano, Toronto Western Hospital Research Institute, Canada: Neurophysiological attributes of Parkinson's disease: Insights from intraoperative single neuronal recordings.

F. Lenz, The Johns Hopkins Hospital, Baltimore, Maryland: Feedback control in Parkinsonian symptoms of tremor and dystonia: Abnormal gain and phase of thalamic transfer functions.

R. Llinas, A. Grabil, B. Kopell

SESSION 3: Diagnostics and Imaging of Parkinson's Disease
Chairperson: R. Llinas, New York University Medical Center

J. Volkmann, Christian-Albrechts-University, Kiel, Germany: Clinical neurophysiology of the interaction between basal ganglia, brain stem, and spinal pathways in Parkinson's disease.
D. Eidelberg, North Shore University Hospital, Manhasset, New York: Imaging and pathophysiology.
A.Y. Mogilner, North Shore University Hospital, Manhasset, New York: Anatomic imaging and surgical targeting.
B. Kopell, Medical College of Wisconsin, Milwaukee: The postoperative role in imaging in DBS and neurostimulation surgery.

SESSION 4: Surgery for Parkinson's Disease
Chairperson: A. Rezai, The Cleveland Clinic Foundation, Ohio

D. Jeanmonod, University Hospital Zurich, Switzerland: Targets and role of lesioning.
A.-L. Benabid, l'Universite Joseph Fourier, Grenoble, France: Targets and electrical stimulation.
A.M. Lozano, Toronto Western Hospital Research Institute, Canada: Intraparenchymal brain delivery of therapeutic compounds for Parkinson's disease.
M.G. Kaplitt, Weill Medical College of Cornell University, New York/N. Boulis, The Cleveland Clinic Foundation, Ohio: Targets and gene therapy/neurotransplantation.

SESSION 5: Emerging Surgical Approaches for Neurological and Psychiatric Disorders and Next Steps
Chairpersons: R. Llinas, New York University Medical Center; **A. Rezai,** The Cleveland Clinic Foundation, Ohio

B.D. Greenberg, Butler Hospital, Providence, Rhode Island: Surgery for psychiatric disorders.
A. Rezai, The Cleveland Clinic Foundation, Ohio: Surgical intervention: Emerging technology and applications—Chronic pain, cluster headaches, epilepsy, stroke, Tourette's aggression, obesity.

Summary/Future Steps

Chronic Lymphocytic Leukemia

February 6–9

FUNDED BY **The Karches Foundation**

ARRANGED BY **N. Chiorazzi,** The Institute for Medical Research, North Shore–LIJ Health System
K.R. Rai, The Institute for Medical Research, North Shore–LIJ Health System
M. Wigler, Cold Spring Harbor Laboratory

Introduction: **J.A. Witkowski**, Banbury Center, Cold Spring Harbor Laboratory
B. Stillman, Cold Spring Harbor Laboratory
N. Chiorazzi, The Institute for Medical Research, North Shore–LIJ Health System, Manhasset, New York

SESSION 1
Chairperson: N. Chiorazzi, The Institute for Medical Research, North Shore–LIJ Health System, Manhasset, New York

K.R. Rai, The Institute for Medical Research, North Shore–LIJ Health System, New Hyde Park, New York: B-CLL and the major unanswered questions.
P. Hillmen, Pinderfields Hospital, Wakefield, United Kingdom: "Preleukemic" cells that circulate in normal individuals.
F. Caligaris-Cappio, Universita Vita-Salute San Raffaele, Milano, Italy: Monoclonal $CD5^+$ and $CD5^-$ B-cell expansions in the peripheral blood of the elderly.
M.D. Cooper, HHMI, University of Alabama, Birmingham: B-lymphocyte development and subsets in man.
J. Monroe, University of Pennsylvania School of Medicine, Philadelphia: B-cell development.
R. Davis, University of Alabama, Birmingham: Biological potential of Fc receptor homologs on B lineage cells.
F. Caligaris-Cappio, Universita Vita-Salute San Raffaele, Milano, Italy: CLL cells think B and speak T.
M. Ferrarini, Instituto Nazionale per la Ricerca sul Cancro, Genova, Italy: The B-CLL cell: Identification and characteristics.
U. Klein, Columbia University, New York: Is the normal cell equivalent of CLL a memory cell?
F. Caligaris-Cappio, Universita Vita-Salute San Raffaele, Milano, Italy: Expression of ZAP-70 in normal human mature B cells.

SESSION 2
Chairperson: E. Montserrat, University of Barcelona, Spain

J. Monroe, University of Pennsylvania School of Medicine, Philadelphia: Positive and negative selection of the B-cell repertoire.
N. Chiorazzi, The Institute for Medical Research, North Shore–LIJ Health System, Manhasset, New York: Structure of the BCR in B-CLL cells.
F. Caligaris-Cappio, Universita Vita-Salute San Raffaele, Milano, Italy: Geographical patterns and pathogenetic implications of IGHV3-21 gene usage.

J. Monroe, M. Keating, T. Kipps

T.J. Kipps, University of California, San Diego: Function of the BCR in B-CLL cells.
E. Montserrat, University of Barcelona, Spain: ZAP-70 expression and prognosis in B-CLL.
M. Ferrarini, Instituto Nazionale per la Ricerca sul Cancro, Genova, Italy: Differential triggering through the BCR in B-CLL.
T. Honjo, Kyoto University, Japan: BCR signaling and AID function.

SESSION 3
Chairperson: T.J. Kipps, University of California, San Diego

S. Lowe, Cold Spring Harbor Laboratory: Apoptosis.
T.J. Kipps, University of California, San Diego: Apoptosis in B-CLL.
F. Caligaris-Cappio, Universita Vita-Salute San Raffaele, Milano, Italy: Role of T cell and cytokines in apoptosis regulation in B-CLL.
M. Ferrarini, Istituto Nazionale per la Ricerca sul Cancro, Genova, Italy: Apoptosis in B-CLL.
N. Kay, Mayo Clinic, Rochester, Minnesota: Apoptosis and green tea extract in B-CLL.

SESSION 4
Chairperson: N. Kay, Mayo Clinic, Rochester, Minnesota

N. Kay, Mayo Clinic, Rochester, Minnesota: Microenviromental considerations in B-CLL.
H. Schreiber, University of Chicago, Illinois: Role of the micro-environment in supporting lymphoid cell development and growth.
M. Lipp, Max Delbrück Center for Molecular Medicine, Berlin, Germany: Role of chemokines and cytokines in supporting lymphoid cell development and growth.
F. Caligaris-Cappio, Universita Vita-Salute San Raffaele, Milano, Italy: Role of the microenvironment in supporting B-CLL cell development and growth.
T.J. Kipps, University of California, San Diego: Role of nurse cells in nurturing B-CLL cells.
M. Lipp, Max Delbrück Center for Molecular Medicine, Berlin, Germany: Ectopic lymphoid follicle formation.

SESSION 5
Chairperson: M. Wigler, Cold Spring Harbor Laboratory

U. Klein, Columbia University, New York: Gene expression profiling in B-CLL and other B-cell lymphoproliferative disorders.
J.G. Gribben, Barts and Royal London School of Medicine, United Kingdom: Gene expression profiling of T cells in B-CLL.
M. Keating, M.D. Anderson Cancer Center, Houston, Texas: Difference in gene expression between B-CLL and normal B cells.
C.M. Croce, Ohio State University Medical Center, Columbus: Role of micro-inhibitory RNAs in B-CLL.
L. Pasqualucci, Columbia University, New York: Role of Bel-6 in non-Hodgkin's lymphoma.

SESSION 6
Chairperson: P. Hillmen, Pinderfields Hospital, Wakefield, United Kingdom

M. Wigler, Cold Spring Harbor Laboratory: Genome-wide genomic screening using ROMA.
P. Lichter, German Cancer Research Center, Heidelberg, Germany: Genome-wide screening in B-CLL.
C.M. Croce, Ohio State University Medical Center, Columbus: Tel-1 in B-CLL.
M. Wabl, University of California, San Francisco: Murine leukemia virus system to generate genomic deletions.
H. Schreiber, University of Chicago, Illinois: Inflammation as a tumor promoter in cancer induction.

SESSION 7
Chairperson: C.M. Croce, Ohio State University Medical Center, Columbus

T. Honjo, Kyoto University, Japan: Activitation-induced cytidine deaminease: Structure and function.
M. Nussenzweig, The Rockefeller University, New York: Activation-induced cytidine deaminase: Structure and function.
M.D. Cooper, HHMI, University of Alabama, Birmingham: Somatic diversification of variable lymphocyte receptors in lower species.
N. Chiorazzi, Institute for Medical Research North Shore–LIJ Heath System, Manhasset, New York: AID expression in B-CLL.
M. Keating, M.D. Anderson Cancer Center, Houston, Texas: Expression of AID and its splice variants in B-CLL.
M. Wabl, University of California, San Francisco: Genome-wide somatic hypermutation.
L. Pasqualucci, Columbia University, New York: Role of somatic hypermutation in the pathogenesis of B-cell neoplasms.

SESSION 8
Chairperson: S.L. Allen, The Institute for Medical Research, North Shore–LIJ Health System, Manhasset, New York

M. Hallek, Universitaet zu Koeln, Germany: History and state of the art of pharmacologic therapy.
M. Keating, M.D. Anderson Cancer Center, Houston, Texas: Monoclonal antibody therapy in B-CLL.
P. Hillmen, Pinderfields Hospital, Wakefield, United Kingdom: Monoclonal antibody therapy in B-CLL.
R. Berenson, Xcyte Therapies, Inc., Seattle, Washington: Adoptive T-cell immunotherapy.
R. Damle, Institute for Medical Research North Shore–LIJ Health System, Manhasset, New York: Telomere length and telomerase expression in B-CLL cells.
C.B. Harley, Geron Corporation, Menlo Park, California: Telomerase inhibition, cancer, and GRN163L.
M. Lipp, Max Delbrück Center for Molecular Medicine, Berlin, Germany: Chemokine receptors as potential therapeutic targets.

SESSION 9
Chairperson: K.R. Rai, The Institute for Medical Research, North Shore–LIJ Health System, New Hyde Park, New York

D. Valmori, Columbia University, New York: Vaccination in B-CLL.
T.J. Kipps, University of California, San Diego: Gene therapy in B-CLL.
M. Hallek, Universitaet zu Koln, Germany: Use of adeno-associated viral vectors for gene therapy.
J.G. Gribben, Barts and Royal London School of Medical, United Kingdom: Stem cell transplantation in B-CLL.
E. Montserrat, University of Barcelona, Spain: Allo- and auto-transplantation in B-CLL.
T. Honjo, Kyoto University, Japan: Role of PD-1 in tumor immunity.

Translational Approaches to Fragile-X Syndrome: Turning Basic Research Findings into Therapeutic Targets

February 27–March 2

FUNDED BY **NIH–National Institute of Mental Health (through a grant to the University of Illinois)**

ARRANGED BY **E. Berry-Kravis**, Rush Children's Hospital
W.T. Greenough, University of Illinois
K. Clapp, FRAXA Research Foundation

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

SESSION 1: Phenotype of Fragile X
Chairperson: R.J. Hagerman, University of California, Davis Health System, Sacramento

K. Clapp, FRAXA Research Foundation, Newburyport, Massachusetts: A parent's perspective on Fragile X.
M.R. Tranfaglia, FRAXA Research Foundation, Newburyport, Massachusetts: Psychiatric symptoms of Fragile X.
W.T. Greenough, University of Illinois, Urbana: Neuroanatomical phenotype of FXS and role of the absence of FMRP.
R.E. Paylor, Baylor College of Medicine, Houston, Texas: Behavioral phenotypes in mouse model of Fragile X.
B.A. Oostra, Erasmus Universiteit Rotterdam, The Netherlands: Eye-blinking experiments in mice and humans.
K. Broadie, Vanderbilt University and Medical School, Nashville, Tennessee: A *Drosophila* model of Fragile-X syndrome.

J. Weiler, J. Lauterborn

SESSION 2: Drug Trials: Outcome Measures for Trials in Man
Chairperson: F. Gasparini, Novartis Pharma AG, Basel, Switzerland

S.W. Porges, University of Illinois, Chicago: The Polyvagal Theory: Insights into the selection of outcome measures.
J.T. McCracken, University of California, Los Angeles Neuropsychiatric Institute: Lessons from drug therapy of autism for Fragile X: Measurement challenges.
I. Boutet, University of Toronto, Scarborough, Canada: Novel behavioral tests to evaluate treatment outcome in Fragile-X syndrome.
E. Berry-Kravis, Rush Children's Hospital, Chicago, Illinois: Safety and efficacy of ampakine CX516 in Fragile-X syndrome.
R.J. Hagerman, University of California, Davis Health System, Sacramento: A multicenter trail of lithium for treatment of Fragile-X syndrome.

SESSION 3: Biology and Regulation of FMRP/FMR1: Phenotype Emanating from Molecular Studies
Chairperson: S.T. Warren, Emory University School of Medicine, Atlanta, Georgia

J. Darnell, The Rockefeller University, New York: RNA targets of the KH2 domain of FMRP and their role in translation.
J.R. Fallon, Brown University, Providence, Rhode Island: Regulation of *Fmr1* gene expression.
E. Klann, Baylor College of Medicine, Houston, Texas: Alteration in protein expression in *Fmr1* knockout mice.
I.J. Weiler, University of Illinois, Urbana-Champaign: Translational pathways: A diagnostic tool?

SESSION 4: mGluR Regulation at the Synapse in FXS
Chairperson: W.T. Greenough, University of Illinois, Urbana

M. Hayashi, Massachusetts Institute of Technology, Cambridge: An interaction between FMRP and p21-activated kinase (PAK).
M.F. Bear, HHMI/Massachusetts Institute of Technology, Cambridge: The mGluR theory of Fragile X.
R.P. Bauchwitz, Columbia University, New York: Further evidence for involvement of mGluR signaling in Fragile-X syndrome.
R. Denman, New York State Institute for Basic Research, Staten Island: FMRP: A regulator of mGluR5 mRNA?
K. Huber, University of Texas Southwestern Medical Center, Dallas: Role of FMRP in synaptic transmission and plasticity.
G.J. Bassell, Albert Einstein College, Bronx, New York: Metabotropic glutamate receptor regulation of FMRP trafficking and morphological plasticity.
P.W. Vanderklish, Scripps Research Institute, La Jolla, California: Regulatory interactions between synaptic structure and local translation.
R.K.S. Wong, State University of New York–Health Science Center, Brooklyn: Signaling pathway for neuronal plasticity in mGluR-induced epileptogenesis.

SESSION 5: Potential Drug Targets and Treatment Strategies
Chairperson: E. Berry-Kravis, Rush Children's Hospital, Chicago, Illinois

T.A. Jongens, University of Pennsylvania School of Medicine, Philadelphia: Pharmacological rescue of the *Drosophila* Fragile-X model.
W. Spooren, F. Hoffmann–La Roche, Basel, Switzerland: A comparison of the effects of MPEP and diazepam in rodent models of anxiety and cognition.
M. Toth, Cornell University Medical College, New York: GABA(B) receptor hypersensitivity and reversal of the Fragile-X phenotype by baclofen in mice.
J. Lauterborn, University of California, Irvine: AMPA receptor up-modulators and mental retardation in Fragile X.
F. Gasparini, Novartis Pharma AG, Basel, Switzerland: Identification and profiling of PET imaging agents for the mGlu5 receptor.
K. Shiosaki, Sention, Inc., Providence, Rhode Island: Development of mGluR receptor antagonist for Fragile X.

General Discussion/Wrap Up and Strategy

Spinal Muscular Atrophy: Neuronal Rescue and Repair From Laboratory to Clinic

March 13–16

FUNDED BY **Spinal Muscular Atrophy Foundation**

ARRANGED BY **K.E. Davies**, University of Oxford
L. Eng, Spinal Muscular Atrophy Foundation
T.M. Jessell, Columbia University
C. Joyce, Spinal Muscular Atrophy Foundation
A.E. MacKenzie, Children's Hospital of Eastern Ontario

Welcome and Introduction of Speaker: T.M. Jessell, Columbia University, New York
D.C. De Vivo, The Neurological Institute, Columbia University Medical Center, New York: Discussion of clinical manifestations of SMA and implications for therapeutic development.

Introduction: **J.A. Witkowski,** Banbury Center, Cold Spring Harbor Laboratory
D. Singh, Spinal Muscular Atrophy Foundation, New York

SESSION 1: Biochemistry of SMN
Chairperson: A.E. MacKenzie, Children's Hospital of Eastern Ontario, Canada: Introduction of session topic.

G. Dreyfuss, HHMI/University of Pennsylvania School of Medicine, Philadelphia: The SMN complex.
J.L. Manley, Columbia University, New York: Mechanism of SMN2 exon 7 splicing inhibition.
A. Krainer, Cold Spring Harbor Laboratory: SMN2 splicing as a target.

General Discussion: B. Wirth, University of Cologne, Germany
G.J. Bassell, Albert Einstein College, Bronx, New York
D.W. Cleveland, University of California, San Diego, La Jolla

Key Points
Summary: A.E. MacKenzie, Children's Hospital of Eastern Ontario, Canada

SESSION 2: Druggable Targets Evolving from SMA Biology
Chairperson: S.C. Landis, NINDS/National Institutes of Health, Bethesda, Maryland: Introduction of session topic.

L.L. Rubin, Curis, Inc., Cambridge, Massachusetts: Motor-neuron-based screening for small molecules that increase SMN levels.
B.R. Stockwell, Columbia University, New York: Diagramming disease networks with chemical and biological tools.
A. Sands, Lexicon Genetics, The Woodlands, Texas: Mining the druggable genome for SMA targets.

General Discussion: G. O'Neill, Biogen IDEC, Cambridge, Massachusetts
C. Keith, CombinatoRx Inc., Boston, Massachusetts
K.W. Klinger, Genzyme Genetics Inc., Framingham, Massachusetts
D.W. Cleveland, University of California, San Diego

Key Points
Summary: D.W. Cleveland, University of California, San Diego, La Jolla

A. Krainer, D. DeVivo

SESSION 3: Cell Biology and Motor Neuron Function
Chairperson: K.H. Fischbeck, NINDS/National Institutes of Health, Bethesda, Maryland: Introduction of session topic.

G.J. Bassell, Albert Einstein College, Bronx, New York: Transport of an SMN-Gemin complex in neurons.
M. Sendtner, Universitat Wuerzburg, Germany: Functional and morphological alterations in isolated motor neurons from SMN-deficient mice.
E.M.C. Fisher, National Hospital for Neurology and Neurosurgery, London, United Kingdom: Crossing the Loa Dynein mutant mouse to a sod transgenic that models motor neuron diseases/ALS.

General Discussion: Z. He, Children's Hospital, Boston, Massachusetts
A.J. Tobin, MRSSI/High Q Foundation, New York
G. Davis, University of California, San Francisco

Key Points
Summary: C. Henderson, Institute of Marseille, Universite de la Mediterranee, France

SESSION 4: Topic A: Model Organisms and SMA Genetics
Chairperson: K.E. Davies, University of Oxford, United Kingdom: Introduction of session topic.

W. Thompson, University of Texas, Austin: Why Schwann cells are of interest in the pathology of SMA.
G. Davis, University of California, San Francisco: Identification of new mutations that cause synapse retraction and new mutations that prevent synapse retraction.
M. van den Heuvel, University of Oxford, United Kingdom: Use of *Drosophila melanogaster* as a model for SMA function.

General Discussion: B. McCabe, Columbia University, New York
A.H. Burghes, Ohio State University, Columbus
U.R. Monani, Columbia University, New York
J. Melki, INSERM, Evry, France

SESSION 5: Topic B: Therapeutic Implications Evolving from Genetics and Cell Biology
Chairperson: K.E. Davies, University of Oxford, United Kingdom: Introduction of session topic.

A.H.M. Burghes, Ohio State University, Columbus: Is SMN2 a good target for therapy in spinal muscular atrophy?
D.W. Cleveland, University of California, San Diego, La Jolla: A molecular therapy for familial ALS.
Z. He, Children's Hospital, Boston, Massachusetts: Axon regeneration and SMA.

General Discussion: R. Pacifici, MRSSI Inc., New York
J. Jareck, Families of SMA, Libertyville, Illinois
J. Melki, INSERM, Evry, France

Key Points
Summary: K.E. Davies, University of Oxford, United Kingdom

SESSION 6: Summary
Chairperson: T.M. Jessell, Columbia University, New York

Discussants: A.E. MacKenzie, Children's Hospital of Eastern Ontario, Ottawa, Canada
C. Henderson, Universite de la Mediterranee, Marseille, France
K.E. Davies, University of Oxford, United Kingdom
D.W. Cleveland, University of California, San Diego, La Jolla.

Discussion/Next Steps

A Critical Review of Melanoma: Genomic Approaches with Therapeutic Promise

March 20–23

FUNDED BY **Ann L. and Herbert J. Siegel Fund of the Jewish Communal Fund; Melanoma Research Foundation; Chiron Corporation; Agencourt Bioscience Corporation; PICO Atlantic**

ARRANGED BY **D. Becker**, University of Pittsburgh
M. McMahon, University of California

Introduction and Overview of Meeting: **J.A. Witkowski**, Banbury Center, Cold Spring Harbor Laboratory
D. Becker, University of Pittsburgh, Pennsylvania
M. McMahon, University of California, San Francisco

SESSION 1: Genomic Strategies to Identify Novel Genes in Melanoma and Nevi I
Chairperson: D. Pinkel, University of California, San Francisco

R. Lucito, Cold Spring Harbor Laboratory: ROMA, CNPs, and cancer.
P. Lichter, DKFZ, Heidelberg, Germany: Matrix-based CGH for tumor progression and diagnostics.
B. Bastian, University of California, San Francisco: Genetic classification of melanoma.
R. Halaban, Yale University School of Medicine, New Haven, Connecticut: Differential gene expression analysis revealing new pathways, associations, and directions for melanoma.

General Discussion and Key Points of Session

SESSION 2: Genomic Strategies to Identify Novel Genes in Melanomas and Nevi II
Chairperson: D. Becker, University of Pittsburgh, Pennsylvania

D. Becker, University of Pittsburgh, Pennsylvania: Analysis of genes identified in melanoma and nevus SAGE libraries and by microarrays.
D.E. Elder, Hospital of University of Pennsylvania, Philadelphia: Gene expression profiling in melanocytic lesions.
F. Marincola, National Institutes of Health, Bethesda, Maryland: cDNA arrays and melanoma immune responsiveness.
S. Hewitt, National Cancer Institute, Bethesda, Maryland: Tissue microarrays in translational research.
T. Kapoor, The Rockefeller University, New York: Chemical genetic analysis of chromosome segregation.
M. McManus, University of California, San Francisco: Mammalian RNA interference pathways from the perspective of a mouse.

General Discussion and Key Points of Session

SESSION 3: Melanoma Markers, Protein Targets, and Optical Imaging
Chairperson: D.E. Elder, Hospital of University of Pennsylvania, Philadelphia

N. Gruis, Leiden University Medical Centre, The Netherlands: Tumor markers in uveal melanoma identified by gene expression profiling.
G.P. Nolan, Stanford University School of Medicine, California: Potentiated single-cell cancer proteomics define patient network response to therapy.
A. Gudkov, Lerner Research Institute, Cleveland, Ohio: Why melanomas frequently maintain wild-type p53.
S. Simon, The Rockefeller University, New York: Tracking metastatic tumor cell extravasation by opitcal imaging and application of quantum dots.
I.J. Bigio, Boston University, Massachusetts: Optical scattering spectroscopy to noninvasively distinguish nevi.

General Discussion and Key Points of Session

SESSION 4: Gene Targeting and Analysis of Melanoma
Chairperson: M. McMahon, University of California, San Francisco

E. Dupin, CNRS, Nogent-sur-Marne, France: Neural crest stem cells in the development and maintenance of pigment cells.
S. Johnson, University of Washington School of Medicine, St. Louis, Missouri: Melanocyte stem cells in the zebra fish.
D.E. Fisher, Dana-Farber Cancer Institute, Boston, Massachusetts: Regulation of the melanoma prognostic marker, melastatin, in melanocytes and melanoma.
M. McMahon, University of California, San Francisco: Oncogenic transformation of mammalian cells by BRAF.
C.R. Goding, Marie Curie Research Institute, Surrey, United Kingdom: The Brn2-BRAF connection in melanoma.
L. Schuchter, University of Pennsylvania, Philadelphia: Melanoma therapy: High-dose, low-dose, no dose, which dose?

General Discussion and Key Points of Session

SESSION 5: Insights into Melanoma Gene Regulation
Chairperson: G. Merlino, National Cancer Institute, Bethesda, Maryland

G. Merlino, National Cancer Institute, Bethesda, Maryland: UV induction of melanoma: What the mouse can tell us.
Z.A. Ronai, The Burnham Institute, La Jolla, California: Transcription factors as targets for melanoma therapy.
B. Felding-Habermann, The Scripps Research Institute, La Jolla, California: Targeting adhesive mechanisms in melanoma metastasis.
M. Bar-Eli, M.D. Anderson Cancer Center, Houston, Texas: AP-2 expression in melanoma TMAs: Inverse correlation with progression.
J. Dong, Mount Sinai Medical Center, New York: Effects on proliferation and melanogenesis by inhibition of mutant BRAF and expression of wild-type INK4A in melanoma cells.

Future Avenues and Goals of Melanoma Research

R. Halaban, M. Bar-Eli

History of Science: Archives and Oral History

April 3–5

FUNDED BY **The Rockefeller Archive Center and Cold Spring Harbor Laboratory**

ARRANGED BY **M. Pollock,** Cold Spring Harbor Laboratory
D.H. Stapleton, The Rockefeller Archive Center

Introduction: **J.A. Witkowski**, Banbury Center, Cold Spring Harbor Laboratory
M. Pollock, Cold Spring Harbor Laboratory
D.H. Stapleton, The Rockefeller Archive Center, Sleepy Hollow, New York

SESSION 1: Owning the Past, Serving the Future
Chairperson: L.R. Hiltzik, The Rockefeller Archive Center, Sleepy Hollow, New York

J. Sheppard, Wellcome Library for the History and Understanding of Medicine, London, United Kingdom: The transition of ownership: Players and stakes.
P.B. Hirtle, Cornell University, Ithaca, New York: Copyright ownership in scientific archives.
S.S. Hodson, The Huntington Library, San Marino, California: Secrets revealed or sealed: Privacy in collections of personal papers.
T.J. Connors, University of Maryland, College Park: Scientific information in the federal government—The emerging partisan divide: A citizen-archivist's impressions.

J. Sheppard, R. Olby

SESSION 2: Coping with the Digital Era in Scientific Research
Chairperson: R. Burian, Virginia Polytechnic Institute and State University, Blacksburg

T. Rosko, Massachusetts Institute of Technology, Cambridge: Challenges of collecting and preserving scientific records in the digital age.
D.H. Stapleton, The Rockefeller Archive Center, Sleepy Hollow, New York: Just doing it: The Smithsonian Institution Archives–Rockefeller Archive Center Collaborative Electronic Records Project.
R. Moore, University of California, San Diego, La Jolla: Preservation of scientific collections using data grid technology.

SESSION 3: Different Perspectives: Historians, Scientists, and Institutions Views of Archives
Chairperson: M. Sniffin-Marinoff, Harvard University, Cambridge, Massachusetts

M.L. Levitt, American Philosophical Society Library, Philadelphia, Pennsylvania: Primary sources: Expectations of historians vs. operational realities in archives.
S. de Chadarevian, Max-Planck Institute for the History of Science, Berlin, Germany: A historian's experience working on current science.
R.C. Olby, University of Pittsburgh, Pennsylvania: A biographer's hopes and the subject's expectations.
P.J. Wosh, New York University, New York: Institutional perspectives.
C.S. Mead, Oregon State University, Corvallis: Digital collections with narrative: Expanding our constituencies.
M. Pollock, Cold Spring Harbor Laboratory/D.H. Stapleton, The Rockefeller Archive Center, Sleepy Hollow, New York: General discussion.

SESSION 4: Oral History and Science
Chairperson: N.C. Comfort, Johns Hopkins Medical Institutions, Baltimore, Maryland

V. Dawson, History Enterprises, Inc., Cleveland, Ohio: Oral history as investigative tool.
R.E. Doel, Oregon State University, Corvallis: Voices in a discordant chorus: Oral history and the recent history of scientific institutions.
M. Pollock, Cold Spring Harbor Laboratory: Recording science and life through (oral) autobiography.
E.M. Tansey, Wellcome Trust Centre for the History of Medicine, London, United Kingdom: Who is oral history for? Reflections on witness seminars in modern biomedicine.

SESSION 5: Discussion on Major Issues of the Meeting

D.H. Stapleton, The Rockefeller Archive Center, Sleepy Hollow, New York
P.B. Hirtle, Cornell University, Ithaca, New York

Key Points

R. Burian, W. Summers, B. Stillman

Polyploidy, Heterosis, and Genomic Balance

April 10–13

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

ARRANGED BY **J.A. Birchler**, University of Missouri
L. Comai, University of Washington

Introduction: **J.A. Witkowski,** Banbury Center, Cold Spring Harbor Laboratory
J.A. Birchler, University of Missouri, Columbia
L. Comai, University of Washington, Seattle

SESSION 1
Chairperson: J.A. Birchler, University of Missouri, Columbia

J. Silverthorne, The National Science Foundation, Arlington, Virginia: Polyploidy, heterosis, and genomic balance: The NSF perspective.

G.C. Gibson, North Carolina State University, Raleigh: Estimating heritability and nonadditivity in fly and human expression profiles.

C. Disteche, University of Washington, Seattle: The complex regulation of the mammalian X chromosome: Up-regulation and inactivation.

B. Oliver, NIDDK/National Institutes of Health, Bethesda, Maryland: X-chromosome dosage compensation in the *Drosophila* germ line.

R.H. Reeves, The Johns Hopkins University, Baltimore, Maryland: The DSCR is not critical for Down's syndrome.

B. Dilkes, D. Soltis, J. Wendel, K. Adams

SESSION 2
Chairperson: R.W. Doerge, Purdue University, West Lafayette, Indiana

D.N. Duvick, Iowa State University, Ames: Contributions of heterosis to maize yield, plant height, and maturity, during six decades of breeding.
D. Zamir, Hebrew University of Jerusalem, Rehovot, Israel: Heterotic QTLs in tomato are limited to traits associated with reproductive success.
D. Jackson, Cold Spring Harbor Laboratory: Candidate genes for quantitative traits underlying inflorescence architecture in maize.
J.F. Wendel, Iowa State University, Ames: Genome evolution in polyploid cotton.
K. Adams, University of British Columbia, Vancouver, Canada: Organ-specific gene silencing in polyploids and hybrids.

SESSION 3
Chairperson: R. Martienssen, Cold Spring Harbor Laboratory

T.C. Osborn, University of Wisconsin, Madison: Phenotypic effects of polyploidy-induced variation in homologous allele dosage.
L. Comai, University of Washington, Seattle: Polyploidy and dosage in plants: A matter of chromatin regulation?
R. Scott, University of Bath, United Kingdom: Genomic balance in *Arabidopsis thaliana* and its relatives.
B. Dilkes, University of Washington, Seattle: Dosage effects in interploidy crosses of *Arabidopsis thaliana*.
O. Mittelsten Scheid, Gregor Mendel Institute of Molecular Plant Biology, Vienna, Austria: Formation of epialleles: Their maintenance and interaction in polyploid *Arabidopsis*.
C.S. Pikaard, Washington University, St. Louis, Missouri: Chromosomal rearrangements and gene-silencing events affecting NORs and rRNA genes in *suecica*.

SESSION 4
Chairperson: T. C. Osborn, University of Wisconsin, Madison

J.C. Pires, University of Wisconsin, Madison: Novel genotypic and phenotypic changes among resynthesized Brassica allopolyploids.
B. Chalhoub, INRA/CNRS-URGV, France: Molecular basis of polyploidy-related gene loss in wheat species (*Triticum* and *Aegilops*).
A.A. Levy, Weizmann Institute of Science, Rehovot, Israel: Bread as a model system to study polyploidy and interspecific hybrids.
A. Paterson, University of Georgia, Athens: Polyploidy and angiosperm comparative genomics.
D.E. Soltis, University of Florida, Gainesville: Genetic and genomic consequences of recent and recurring allopolyploidy in *Tragopogon* (Asteracease).

SESSION 5
Chairperson: L. Comai, University of Washington, Seattle

R.W. Doerge, Purdue University, West Lafayette, Indiana: Locating QTL in polyploids: The things to think about... .
Z.J. Chen, Texas A&M University, College Station: Transcriptome divergence and mechanisms of nonadditive gene regulation in *Arabidopsis*.
R. Martienssen, Cold Spring Harbor Laboratory: Epigenomic variation.
J.A. Birchler, University of Missouri, Columbia: Biological implications of regulatory gene balance with special reference to studies in maize and *Drosophila*.

General Discussion/Key Points of Meeting

Neurobiology of Decision-making

May 22–25

FUNDED BY **The Swartz Foundation**

ARRANGED BY **C. Brody**, Cold Spring Harbor Laboratory
M.N. Shadlen, HHMI/University of Washington
X.-J. Wang, Brandeis University

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

SESSION 1
Chairperson: M.N. Shadlen, HHMI/University of Washington, Seattle

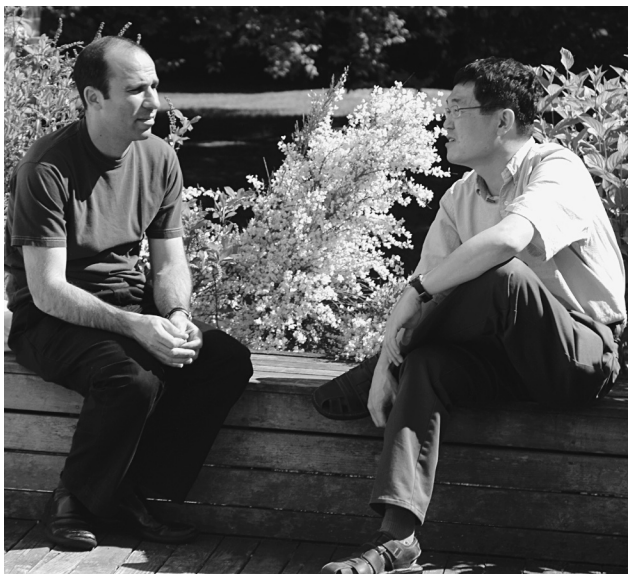
R. Gallistel, Rutgers University, New Brunswick, Piscataway, New Jersey: The irrelevance of the law of effect in unconstrained free choice with random rewards.
D. Lee, University of Rochester, New York: Computation of values in the primate frontal cortex.
P.W. Glimcher, New York University, New York: Physiological and economic models of decision-making.
W. Schultz, University of Cambridge, United Kingdom: Reward responses as potential input signals for decision-making.
P.R. Montague, Baylor College of Medicine, Houston, Texas: Neural correlates of policy adjustment in a dynamic economic game.

SESSION 2
Chairperson: C. Brody, Cold Spring Harbor Laboratory

H.R. Heekeren, Humboldt University, Berlin, Germany: A general mechanism for perceptual decision-making in the human brain.
M.N. Shadlen, HHMI/University of Washington, Seattle: How does the brain combine evidence with prior probability?
X.-J. Wang, Brandies University, Waltham, Massachusetts: A neuronal microcircuit model for reaction time behavior.
R. Ratcliff, Ohio State University, Columbus: An analysis of the effects of aging in two choice tasks using sequential sampling models.
J.D. Schall, Vanderbilt University, Nashville, Tennessee: Choice, decision, and action investigated with visually guided saccades.

SESSION 3
Chairperson: G.D. Logan, Vanderbilt University, Nashville, Tennessee

J. Gold, University of Pennsylvania, Philadelphia: Multiple roles of experience in neural circuits that form perceptual decisions.
P. Holmes, Princeton University, New Jersey: What's optimal about decision-making for two and more choices?
K. Krug, University Laboratory of Physiology, Oxford, United Kingdom: Controlled intervention in perceptual decision-making.
P.L. Smith, The University of Melbourne, Victoria, Australia: An integrated model of decision-making and visual attention.
S. Deneve, Institut des Sciences Cognitives, Bron, France: Explicit neural space and implicit probability space.



P. Glimcher, D. Lee

SESSION 4
Chairperson: X.-J. Wang, Brandeis University, Waltham, Massachusetts

Z.F. Mainen, Cold Spring Harbor Laboratory: Neural circuits underlying olfactory decisions in the rat.
O. Hikosaka, National Eye Institute, Bethesda, Maryland: Basal ganglia mechanisms of reward-oriented eye movement.
M. Basso, University of Wisconsin, Madison: Basal ganglia microstimulation affects memory and movement.
A. Koulakov, Cold Spring Harbor Laboratory: How to define command neurons?
W.B. Kristan, University of California, San Diego: The dynamics of decision-making by leech neurons.

SESSION 5
Chairperson: J.D. Schall, Vanderbilt University, Nashville, Tennessee

J.D. Cohen, Princeton University, New Jersey: Role of locus coeruleus in adaptive adjustments of gain and optimal performance in simple decision-making tasks.
C. Brody, Cold Spring Harbor Laboratory: Combining working memory and decision-making in a simple neural model of prefrontal cortex.
M. Platt, Duke University Medical Center, Durham, North Carolina: Neural mechanisms of social decision-making.
A. Kacelnik, Oxford University, United Kingdom: Decision-making under risk: Biological perspectives.
S. Makeig, Swartz Center for Computational Neuroscience, University of California, San Diego, La Jolla: Decisions have consequences.

General Discussion/Key Points of Meeting

Stem Cells and Axonal Regeneration: Strategies for the Treatment of ALS

September 11–14

FUNDED BY **The ALS Association**

ARRANGED BY **L. Bruijn**, The ALS Association
S.M. Strittmatter, Yale University
C.N. Svendsen, University of Wisconsin

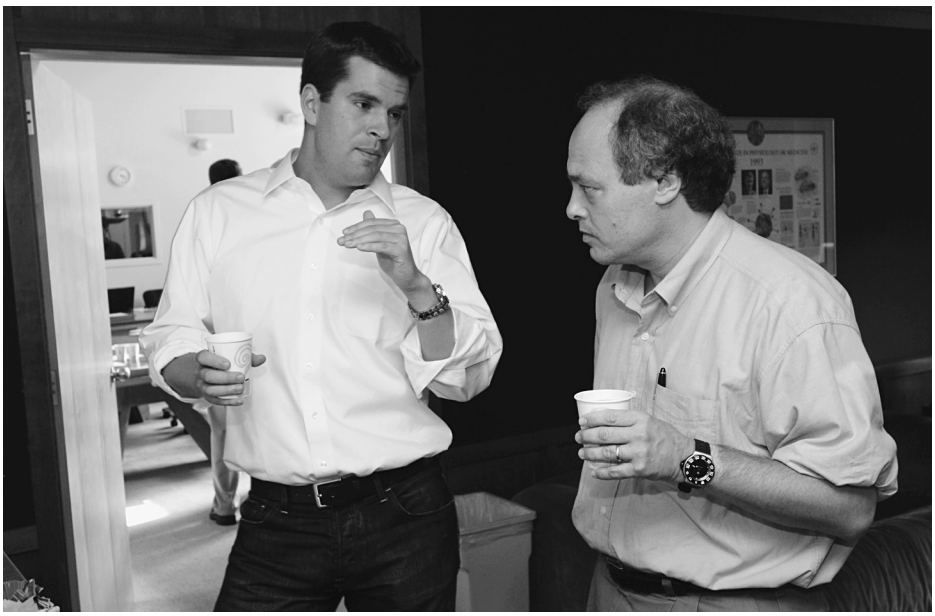
Introduction: **J.A. Witkowski**, Banbury Center, Cold Spring Harbor Laboratory
L. Bruijn, The ALS Association, Palm Harbor, Florida

SESSION 1: Introductory Session
Chairperson: L. Bruijn, The ALS Association, Palm Harbor, Florida

S.L. Pfaff, Salk Institute, La Jolla, California: Overview of motor neuron development and cell specification and cell fate.
S.A. Goldman, University of Rochester Medical Center, New York: Overview of stem cell biology.
S.M. Strittmatter, Yale University School of Medicine, New Haven, Connecticut: Overview of regeneration, axonal guidance cues, and inhibitory molecules.

SESSION 2: Neural Stem Cells
Chairperson: C.N. Svendsen, University of Wisconsin, Madison

P. Horner, University of Washington, Seattle: Endogenous stem cells in spinal cord and repair.
H. Wichterle, Columbia University, New York: Control of embryonic stem-cell-derived motor neuron subtype identity.
J.D. Macklis, Harvard Medical School, Massachusetts General Hospital, Boston: Molecular cues for upper motor neuron development.
A.R. Kriegstein, University of California, San Francisco: Neural stem and progenitor cells in the embryonic brain.
M.V. Sofroniew, University of California, Los Angeles: Are astrocytes stem cells?
N. Gaiano, Johns Hopkins University Medical School, Baltimore, Maryland: Embryonic neural stem cell heterogeneity.



K. Eggan, S. Goldman

SESSION 3: Axonal Regeneration
Chairperson: S.M. Strittmatter, Yale University School of Medicine, New Haven, Connecticut

M. Filbin, Hunter College of CUNY, New York: Myelin inhibitors of regeneration: How they work and how to overcome them.

J. Lichtman, Harvard University, Cambridge, Massachusetts: Monitoring growth and retraction of axons in situ.

SESSION 4: Stem Cells and Neurodegenerative Diseases
Chairperson: M. Swash, Royal London Hospital, United Kingdom

C.N. Svendsen, University of Wisconsin, Madison: Overview of stem cells and neurodegenerative diseases: Lessons for ALS from PD.

S.-C. Zhang, University of Wisconsin, Madison: Generation of human motor neurons: Applications for ALS studies.

P. Aebischer, Integrative Bioscience Institute, Swiss Federal Institute of Technology, Lausanne, Switzerland: Lentivirus-mediated gene silencing of SOD-1 for the treatment of ALS.

SESSION 5: Axonal Regeneration
Chairperson: M. Filbin, Hunter College of CUNY, New York

B.A. Barres, Stanford Medical School, California: Why is Wallerian degeneration so slow in the CNS?

J.D. Milbrandt, Washington University, St. Louis, Missouri: Wallerian degeneration, neurotrophins, and axonal growth.

SESSION 6: Application of Stem Cell Technologies in Understanding Disease
Chairperson: S.A. Goldman, University of Rochester Medical Center, New York

I. Wilmut, Roslin BioCentre, Midlothian, United Kingdom: Cells from cloned human embryos in studies of ALS.

K. Eggan, Harvard University, Cambridge, Massachusetts: Cloning and stem cells: Building cell-based models of ALS.

L. Goldstein, HHMI/University of California, San Diego School of Medicine, La Jolla: Identifying cells to be replaced in ALS.

Y. Zou, University of Chicago, Illinois: Guidance of axons along the rostral-caudal axis of the spinal cord.

SESSION 7: Stem Cells and Neurodegenerative Diseases
Chairperson: T. Miller, University of California, San Diego

M. Swash, Royal London Hospital, United Kingdom: Overview of clinical challenges in ALS.

L.J. Martin, The Johns Hopkins University, Baltimore, Maryland: Adult stem cells and ALS models.

D. Kerr, The Johns Hopkins University, Baltimore, Maryland: Overview of current efforts in model systems for ALS.

N. Boulis, The Cleveland Clinic Foundation, Ohio: Neurosurgical challenges for invasive therapies for ALS.

O. Isacson, Harvard Medical School, Belmont, Massachusetts: Neuronal replacement therapy for neurodegeneration using stem cells.

General Discussion/Future Directions

Closing Remarks: R.V. Abendroth, Milwaukee, Wisconsin

From Markers to Models: Integrating Data to Make Sense of Biologic Systems

September 18–21

FUNDED BY **Centers for Disease Control & Prevention; CFIDS Association of America**

ARRANGED BY **S.D. Vernon**, Centers for Disease Control and Prevention
W.C. Reeves, Centers for Disease Control and Prevention

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

SESSION 1
Chairperson: W.C. Reeves, Centers for Disease Control and Prevention, Atlanta, Georgia

S.D. Vernon, Centers for Disease Control and Prevention, Atlanta, Georgia: C3: Progress toward the CFS interaction map.

S.M. Lin, Northwestern University, Chicago, Illinois: Lessons learned from 5 years of CAMDA.

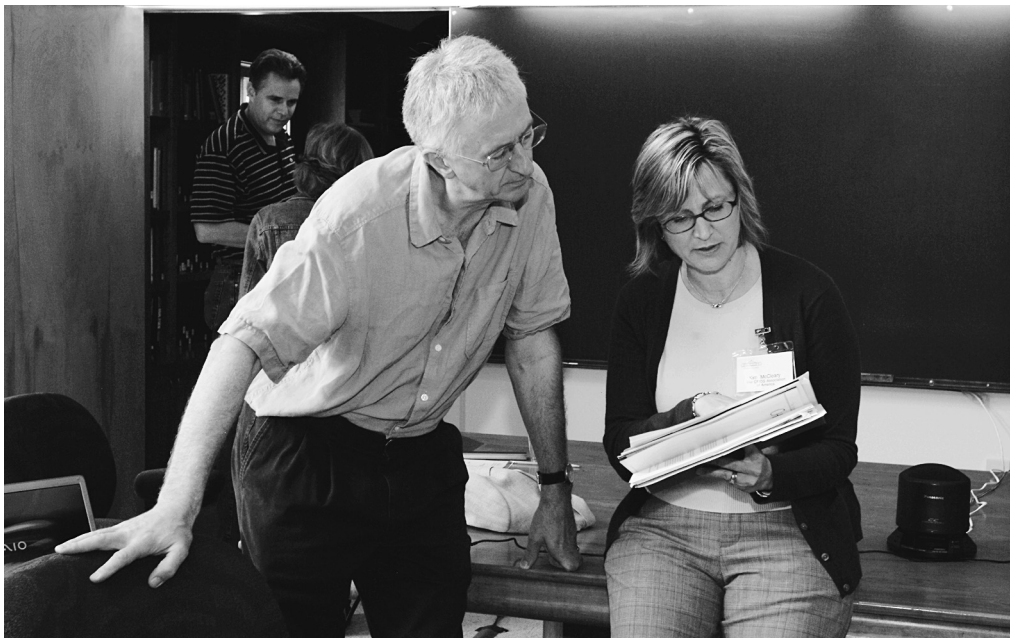
Team 1: Toward the Nosology of Chronic Unexplained Fatigue
1. Initial data perusal to direct hypothesis-driven analysis
2. Analytical approach(es)
3. Results and biological interpretation

B. Mishra, New York University: Computational and experimental framework to understand disease pathogenesis.

Team 2: CFS: From Constructs to Mechanisms
1. Initial data perusal to direct hypothesis-driven analysis
2. Analytical approach(es)
3. Results and biological interpretation

J. Shoemaker, Duke University Medical Center, Durham, North Carolina: Mathematical and statistical challenges for high-throughput data.

Team 3: Challenges of Elucidating Pathophysiology in Complex Disorders
1. Initial data perusal to direct hypothesis-driven analysis
2. Analytical approach(es)
3. Results and biological interpretation



P. White, K. McCleary

SESSION 2
Chairperson: A.H. Miller, Emory University School of Medicine, Atlanta, Georgia

M. Demitrack, Neuronetics, Inc., Malvern, Pennsylvania: Clinical perspectives on therapeutic interventions for CFS.
J. DiStefano, University of California, Los Angeles: Dynamic systems modeling and thyroid hormone regulation and metabolism in mammals.

Team 4: Bridging the Gap between the Neuroendocrine and Immune Systems
1. Initial data perusal to direct hypothesis-driven analysis
2. Analytical approach(es)
3. Results and biological interpretation

SESSION 3: Breakout Session for Non-C3 Participants to Evaluate and Summarize Team Approach

B. Mishra, New York University/M. Demitrack, Neuronetics, Inc., Malvern, Pennsylvania: Report on Team 1.
J. Shoemaker, Duke University Medical Center, Durham, North Carolina: Report on Team 2.
S.M. Lin, Northwestern University, Chicago, Illinois/W.C. Reeves, Centers for Disease Control and Prevention, Atlanta, Georgia: Report on Team 3.
J. DiStefano, University of California, Los Angeles/A.H. Miller, Emory University School of Medicine, Atlanta, Georgia: Report on Team 4.

SESSION 4: Team Breakout Session: Next Steps for Each Team

- Regroup?
- Complete Analysis?
- Delegate?
- Publication(s) Plan?

Next Steps
- Computational and Biologic Validation
- Publications

Pathogenesis and Early Events in Viral Infection

September 25–28

FUNDED BY **U.S. Defense Department (through a grant to the Institute for Comparative Genomics)**

ARRANGED BY **R. Breeze**, Institute for Comparative Genomics
F. Horn, Institute for Comparative Genomics
W. Laegreid, USDA Agricultural Research Service
D.L. Rock, University of Illinois

Introduction and Charge for Meeting: J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory
R. Breeze, Institute for Comparative Genomics, Washington, D.C.

SESSION 1: Early Events in Virus Infection

J.A. Hiscox, University of Leeds, United Kingdom: The nucleolus as a gateway to virus infection.

G. Sutter, Paul-Ehrlich-Institut, Langen, Germany: Control of apoptosis and translation mark essential early checkpoints in the vaccinia virus MVA.

E. Tulman, University of Connecticut, Storrs: Comparative viral genomics for identification of host-range determinants and virulence factors.

SESSION 2: Host Resistance

A.A. Ashkar, McMaster University Health Science Center, Hamilton, Canada: Induction of innate antiviral immunity by TLR agonists/ligands.

A. Garcia-Sastre, Mount Sinai School of Medicine, New York: Reverse-genetics-derived influenza viruses.

H.W. Virgin, Washington University School of Medicine, St. Louis, Missouri: New approaches to defining mechanisms of virus resistance and pathogen discovery.

M. Brinton, Georgia State University, Atlanta: Comparison of the responses of MEFs from congenic flavivirus-resistant and -susceptible mice to West Nile virus.

A. Perelson, T. Endy, A. Garcia-Sastre

SESSION 3: Pathogenesis

T. Barrett, Institute for Animal Health, Surrey, United Kingdom: Molecular determinants of pathogenesis by rinderpest virus.

T.P. Endy, Walter Reed Army Institute of Research, Silver Spring, Maryland: Pathogenesis and early events in acute dengue virus infection.

J.N. MacLachlan, University of California, Davis: Role of vascular epithelium in selected animal virus infections: Villain or victim?

A. Alcami, Centro Nacional de Biotecnologia, Madrid, Spain: Immune modulation by cytokine receptors from variola and ectromelia viruses.

L. Hensley, U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland: Temporal analysis of ebola and Marburg hemorrhagic fever in cynomologus macaques.

SESSION 4: Pathogenesis

E.S. Mocarski, Stanford University School of Medicine, California: Virus-mediated recruitment of host cells for systemic dissemination within the host.

C. Jones, University of Nebraska, Lincoln: Analysis of α-herpesvirus genes expressed in latently infected neurons.

E. Ivanovna Ryabchikova, State Research Center of Virology and Biotechnology, Koltsovo, Russia: Laboratory accident of ebola hemorrhagic fever: Diagnostics, clinical course, and treatment.

G. Keil, Friedrich-Loeffler Institut, Greitswald-Insel Riems, Germany: Engineering glycoprotein B of bovine herpesvirus 1 as transporter for biologically active secreted proteins.

SESSION V: Pathogenesis

A.S. Perelson, Los Alamos National Laboratory, New Mexico: Modeling the kinetics of acute virus infection.

J. Paragas, U.S. Army Medical Research Institute of Infectious Disease, Fort Detrick, Maryland: A bright light in biodefense for orthopox viruses.

R. Breeze, Institute for Comparative Genomics, Washington, D.C.: Summary and discussion.

Mitochondria in Neurological Disease and Aging

October 2–5

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

ARRANGED BY **M.F. Beal**, Weill Medical College of Cornell University
D.C. Wallace, University of California

Introduction: **J.A. Witkowski**, Banbury Center, Cold Spring Harbor Laboratory
M.F. Beal, Weill Medical College of Cornell University, New York
D.C. Wallace, University of California, Irvine

SESSION 1: Genetics and Pathophysiology
Chairperson: M.F. Beal, Weill Medical College of Cornell University, New York

G. Attardi, California Institute of Technology, Pasadena: Termination-factor-mediated DNA looping controls human mitochondrial rRNA synethesis.
J.A.M. Smeitink, Radbound University Medical Center, Nijmegan, The Netherlands: Cell biological consequences of human complex-1 deficiency.
B.M. Spiegelman, Dana-Farber Cancer Institute, Boston, Massachusetts: Regulation of mitochondria biogenesis and bioenergetics through the PGC-1 coactivators.
R.C. Scarpulla, Northwestern University Medical School, Chicago, Illinois: PGC-1-related coactivator (PRC): A potential link between cell proliferation and respiratory chain expression.

SESSION 2: Biochemistry and Physiology
Chairperson: B.N. Ames, University of California, Berkeley

R.A. Capaldi, University of Oregon, Eugene: Measurement of oxidative damage to OXPHOS proteins in neurodegeneration: Toward identification of biomarker for Alzheimer's and Parkinson's diseases.
P. Giuseppe Pelicci, European Institute of Oncology, Milan, Italy: Regulation of ROS metabolism by p66Shc.
P. Bernardi, University of Padova, Italy: The mitochondrial permeability transition in degenerative diseases and aging.

SESSION 3: Animal Models
Chairperson: B.M. Spiegelman, Dana-Farber Cancer Institute, Boston, Massachusetts

T. Prolla, University Wisconsin, Madison: Aging, oxidative stress, and apoptosis in mitochondrial mutator mice.
C.T. Moraes, University of Miami, Florida: A mouse model of COX deficiency in the CNS.
D. Walker, California Institute of Technology, Pasadena: Mitochondrial dysfunction in *Drosophila.*

SESSION 4: Brain Disease and Aging
Chairperson: D.C. Wallace, University of California, Irvine

M.F. Beal, Weill Medical College of Cornell University, New York: Therapeutic approaches to mitochondrial dysfunction in neurodegenerative diseases.
B.N. Ames, University of California, Berkeley, Oakland: Delaying (or accelerating) the mitochondrial decay of aging.
L.P. Guarente, Massachusetts Institute of Technology, Cambridge: Function of mitochondrial sirtuin Sirt4.

SESSION 5: Friedreich Ataxia, ALS, and AD
Chairperson: A.D. Roses, GlaxoSmithKline, Research Triangle Park, North Carolina

G. Isaya, Mayo Clinic, Rochester, Minnesota: Anti-oxidant functions of frataxin: Roles in Friedreich ataxia and other age-related conditions.
R.B. Wilson, University of Pennsylvania, Philadelphia: Mitochondrial dysfunction in Friedreich ataxia.
P. Pasinelli, Massachusetts General Hospital, Charlestown:

SOD1/BCl-2 complex: A role in the regulation of mitochondria cell death.

D.W. Cleveland, University of California, San Diego: Mitochondrial involvement in familial ALS.

G. Manfredi, Cornell University, New York: Mitochondrial involvement in SOD1–familial ALS.

A.D. Roses, GlaxoSmithKline, Research Triangle Park, North Carolina: An apoE4 isoform-specific mechanism for altered energy metabolism in Alzheimer's disease.

M. Ankarcrona, Karolinska Institutet, Huddinge, Sweden: Mechanisms of cell death in Alzheimer's disease: Focus on γ-secretase and mitochondria.

A. Kontush, Hopital de la Pitie, Paris, France: Amyloid-β peptide and mitochondria in Alzheimer's disease: Is there a link mediated by oxidative stress?

D.C. Wallace, University of California, Irvine: A mitochondrial paradigm for metabolic and degenerative diseases, cancer, and aging.

SESSION 6: Huntington's Disease and Parkinson's Disease
Chairperson: M.F. Beal, Weill Medical College of Cornell University, New York

G.V.W. Johnson, University of Alabama, Birmingham: Mutant Huntington compromises mitochondrial function.

R.L. Nussbaum, National Human Genome Research Institute, Bethesda, Maryland: Role of α-synuclein in lipid metabolism and mitochondrial function.

A. Abeliovich, Columbia University College of Physicians and Surgeons, New York: Oxidative stress and dopamine neuron survival: The role of DJ-1.

J.M. Vance, Duke University Medical Center, Durham, North Carolina: Mitochondria and late-onset Parkinson's disease.

M. Cookson, National Institutes of Health, Bethesda, Maryland: PINK1 and DJ-1, associated with recessive parkinsonism, delineate mitochondrial pathways important in neuronal survival.

Discussion:
Common Themes
Mitochondria
Neurological Diseases

Microbial Forensics 2005: Sample Management

October 16–19

FUNDED BY **U.S. Department of Homeland Security**

ARRANGED BY **S.E. Schutzer**, UMDNJ–New Jersey Medical School
B. Budowle, Federal Bureau of Investigation
J.P. Burans, U.S. Department of Homeland Security

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

Overview and Goals: B. Budowle, Federal Bureau of Investigation, Washington, D.C.

SESSION 1: Sampling/Collection Strategies I
Chairperson: B.L. Marrone, Los Alamos National Laboratory, New Mexico

D. Beecher, FBI Laboratory, Quantico, Virginia: Strategies for collection and sampling (known/unknown pathogen).
J. Fletcher, Oklahoma State University, Stillwater: Sampling issues for plant pathogens.
L.L. Rodriquez, ARS, USDA Plum Island Animal Disease Center, Greenport, New York: Sampling issues for animal pathogens.
J.E. LeClerc, Food and Drug Administration, Laurel, Maryland: Sampling issues for food pathogens.

SESSION 2: Sampling/Collection Strategies II
Chairperson: J.P. Burans, U.S. Department of Homeland Security, Frederick, Maryland

F.P. Keller, Federal Bureau of Investigation, Quantico, Virginia: FBI protocols for sample collection.
N. Valentine, Pacific Northwest National Laboratory, Richland, Washington: Protocols for collecting from substrates.

S. Schutzer, J. Fletcher, B. Budowle, M. Wilson

SESSION 3: Sampling/Collection Strategies III
Chairperson: B. Budowle, Federal Bureau of Investigation, Washington, D.C.

M. Hale, U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland: Sampling issues/protocols for toxins.
T.G. Ksiazek, Centers for Disease Control and Prevention, Atlanta, Georgia: Sampling strategies for BSL3/4 agents.
L. Lindler, U.S. Department of Homeland Security, Frederick, Maryland: Sampling strategies for bacteria.
J.P. Burans, U.S. Department of Homeland Security, Frederick, Maryland: Sampling strategies and impact on downstream analyses.

SESSION 4: Sampling/Collection Strategies IV
Chairperson: P.T. Pesenti, U.S. Department of Homeland Security, Washington, D.C.

M.A. Heitkamp, Savannah River National Laboratory, Aiken, South Carolina: Collecting background controls.
B.L. Marrone, Los Alamos National Laboratory, New Mexico: The GAO report and beyond anthrax spores.

SESSION 5: Packaging, Shipping, and Storage (Integrity, Preservation, Safety, Regulations)
Chairperson: S.P. Velsko, Lawrence Livermore National Laboratory, California

W.T. Cobb, Cobb Consulting Services, Kennewick, Washington: Forensic plant issues.
Y.A. Lue, Quest Diagnostics Laboratories, Teterboro, New Jersey: Preservation of samples during shipping.
M. Hevey, NBFAC Research & Spoke Lab Program, Frederick, Maryland: Storage and preservation in the laboratory.

SESSION 6: Extraction/Preparation Strategies (Maintaining Integrity of Signatures) I
Chairperson: M.R. Wilson, FBI Academy, Quantico, Virginia

S.P. Velsko, Lawrence Livermore National Laboratory, California: Collection and preservation of samples for chemical and physical analysis.
K.L. Wahl, Pacific Northwest National Laboratory, Richland, Washington: Extraction strategies for proteins and other organic molecules.
C.R. Kuske, Los Alamos National Laboratory, New Mexico: Extraction strategies for nucleic acids.

SESSION 7: Extraction/Preparation Strategies (Maintaining Integrity of Signatures) II
Chairperson: S.E. Schutzer, UMDNJ–New Jersey Medical School, Newark

M.R. Wilson, FBI Academy, Quantico, Virginia: Nucleic acid concentration techniques.
J. Dunbar, Los Alamos National Laboratory, New Mexico: Removing or neutralizing inhibitors (of nucleic acid analyses).
M. Lipton, Pacific Northwest National Laboratory, Richland, Washington: Microbial extraction from dirt: Examples and complete proteomic analysis.

SESSION 8: Wrap-up Sessions
Chairperson: B. Budowle, Federal Bureau of Investigation, Washington, D.C.

M. Eshoo, Isis Pharmaceuticals, Carlsbad, California: Whole-genome amplification strategies and issues.
T. Cebula, U.S. Food and Drug Administration, Laurel, Maryland: Collating methods, value, and preparedness.
P.T. Pesenti, U.S. Department of Homeland Security, Washington, D.C.: New technologies on the horizon.
B.L. Marrone, Los Alamos National Laboratory, New Mexico: Research needs.

SESSION 9: Summary and Review
Chairperson: S.E. Schutzer, UMDNJ–New Jersey Medical School, Newark

B. Budowle, Federal Bureau of Investigation, Washington, D.C./ S.E. Schutzer, UMDNJ–New Jersey Medical School, Newark: Review of meeting and strategies for addressing gaps.

Introduction and Sustainable Use of Vaccines in Developing Countries

October 19–21

FUNDED BY **Albert B. Sabin Vaccine Institute, with the support from the Bill & Melinda Gates Foundation**

ARRANGED BY **K. Reilly**, Sabin Vaccine Institute
F.F. Songane, Ministerio da Saude

Welcome and Introduction of Speaker: **H.R. Shepherd**, Albert B. Sabin Vaccine Institute, New Canaan, Connecticut
G. Alleyne, Pan American Health Organization. Washington, D.C.: Immunization for all: A condition for health and development.
K. Reilly, Sabin Vaccine Institute, Rosemont, Pennsylvania and **F.F. Songane**, Ministerio da Saude, Maputo, Mozambique: Charge to the Conference.

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

R.A. MacDougall, Albert B. Sabin Vaccine Institute, Washington, D.C.: Review of Delphi Survey

SESSION 1: Review of Current Immunization Status in Developing Countries
Moderators: K. Reilly, Sabin Vaccine Institute, Rosemont, Pennsylvania, and **F.F. Songane**, Ministerio da Saude, Maputo, Mozambique

Panel
J.-M. Okwo Bele, World Health Organization, Geneva, Switzerland
N. Antwi Agyei, Ghana Health Service, Accra
N. Van Cuong, National Expanded Programme on Immunisation (EPI), Hanoi, Vietnam

Open Discussion and Consensus
What lessons can be learned from the current situation?

SESSION 2: Financial Resources to Support Immunization: What Is Available, What Is Needed?
Moderators: K. Reilly, Sabin Vaccine Institute, Rosemont, Pennsylvania, and **F.F. Songane**, Ministerio da Saude, Maputo, Mozambique

Panel

J. Lob-Levyt, UNICEF, Geneva, Switzerland
I. Makumbi, Ministry of Health, Uganda
R. Levine, Center for Global Development, Washington, D.C.
G. Lamb, World Bank, Washington, D.C.
M. Harvey, USAID, Washington, D.C.

SESSION 3: Procurement and Supply of Existing and New Vaccines
Moderators: K. Reilly, Sabin Vaccine Institute, Rosemont, Pennsylvania, and **F.F. Songane,** Ministerio da Saude, Maputo, Mozambique

Panel

S. Jarrett, UNICEF, New York
J.K. Andrus, Pan American Health Organization, Washington, D.C.
F. Valente, Ministry of Health, Angola
W. Vandermissen, GlaxoSmithKline Biologicals, Rixensart, Belgium

SESSION 4: Review of Discussions and Consensus on Key Points
Moderators: K. Reilly, Sabin Vaccine Institute, Rosemont, Pennsylvania, and **F.F. Songane**, Ministerio da Saude, Maputo, Mozambique

SESSION 5: Opportunities and Recommendations for Sustainable Performance Levels in Immunization
Moderators: K. Reilly, Sabin Vaccine Institute, Rosemont, Pennsylvania, and **F.F. Songane**, Ministerio da Saude, Maputo, Mozambique

Panel

T. Belaye, Federal Democratic Republic of Ethiopia, Addis Ababa
G. Aslanyan, Canadian International Development Agency, Quebec, Canada
H. Sunman, Department of International Development, London, United Kingdom
A. Mahmoud, Merck & Co., Inc., Whitehouse Station, New Jersey
J.-M. Okwo-Bele, World Health Organization, Geneva, Switzerland

Conference Wrap Up/Next Steps

L.A. Miller, WentzMiller & Associates, Darien, Connecticut
K. Reilly, Sabin Vaccine Institute, Rosemont, Pennsylvania
F. Songane, Ministerio da Saude, Maputo, Mozambique

M. Kitambi, M. Harvey, T. Belaye

Epilepsy Genetics and Pharmacogenetics

October 23–26

FUNDED BY **UCB Pharma and the National Society for Epilepsy**

ARRANGED BY **N. Delanty**, Royal College of Surgeons in Ireland
D.B. Goldstein, Duke Institute for Genome Sciences and Policy
L. Sander, University College, London
S.M. Sisodiya, University College, London

Introduction: **J.A. Witkowski**, Banbury Center, Cold Spring Harbor Laboratory
D.B. Goldstein, Duke Institute for Genome Sciences and Policy, Durham, North Carolina

SESSION 1: Epilepsy: Epidemiological and Clinical Context
Chairperson: L. Sander, University College London, United Kingdom

S.M. Sisodiya, University College London, United Kingdom: Epilepsy: Setting the stage.
L. Sander, University College London, United Kingdom: Epidemiological considerations.
A. Lascelles, National Society for Epilepsy, London, United Kingdom: Perspectives from patients and family.

SESSION 2: Phenotyping and Genotyping: Issues
Chairperson: S.M. Sisodiya, University College London, United Kingdom

N. Delanty, Royal College of Surgeons in Ireland, Dublin: The promise and perils of epilepsy phenotyping?
J. Mulley, Women's and Children's Hospital, North Adelaide, Australia: The genetics of "simple" and complex idiopathic epilepsies.
D.H. Lowenstein, University of California, San Francisco: Large-scale phenotyping of epilepsy.

L. Sander, D. Goldstein, S. Sisodyia

SESSION 3: Epilepsy Genetics I
Chairperson: L. Sander, University College London, United Kingdom

M. Weale, University College London, United Kingdom: Representing genetic variation in a large-scale epilepsy genetic association study.
J. Hirschhorn, Children's Hospital, Boston, Massachusetts: Performing and interpreting association studies for complex traits.
J.O. McNamara, Duke University Medical Center, Durham, North Carolina: Genetic and molecular mechanisms of epileptogenetics.
J.L. Noebels, Baylor College of Medicine, Houston, Texas: Large-scale resequencing of ion channels in epilepsy: The Human Channelopathy Project.
D.L. Burgess, Baylor College of Medicine, Houston, Texas: Large-scale resequencing of ion channels in epilepsy: Design, implementation, and progress.
P.B. Crino, University of Pennsylvania Medical Center, Philadelphia: Somatic mutations during brain development that lead to sporadic brain malformations associated with epilepsy.

SESSION 4: Epilepsy Genetics II
Chairperson: N. Delanty, Royal College of Surgeons in Ireland, Dublin

R. Ottman, Columbia University, New York: Genetic epidemiology of the epilepsies.
O. Chiba-Falek, Human Genome Research Institute, NIH, Bethesda, Maryland: Regulation of α-synuclein (SNCA) expression in Parkinson's disease: Identification of regulatory polymorphisms.
G. Cavalleri, University College London, United Kingdom: BRD2 as a risk factor for JME.
C. Depondt, Universite Libre de Bruxelles, Belgium: Role of SCNIA in sporadic epilepsy and epilepsy pharmacogenetics.
C.P. Doherty, Royal College of Surgeons in Ireland, Dublin: The potential for endophenotypic description in epilepsy syndromes.
A. Escayg, Emory University School of Medicine, Atlanta, Georgia: Role of the voltage-gated sodium channels in inherited epilepsy.

SESSION 5: Epilepsy Pharmacogenetics I
Chairperson: S.M. Sisodiya, University College London, United Kingdom

D.B. Goldstein, Duke Institute for Genome Sciences and Policy, Durham, North Carolina: Epilepsy pharmacogenetics: Where are we headed?
D.L. Kroetz, University of California, San Francisco: Expression of multidrug resistance transporters in human brain and relationship to MDR polymorphisms.
D. Weinshenker, Emory School of Medicine, Atlanta, Georgia: Noradrenergic control of seizure susceptibility and anticonvulsant drug efficacy.
C. Szoeke, The University of Melbourne, Australia: Pharmacogenetics in anti-epilepsy medications: An Australian prospective study in newly treated patients.

SESSION 6: Epilepsy Pharmacogenetics II
Chairperson: D.B. Goldstein, Duke Institute for Genome Sciences and Policy, Durham, North Carolina

M. Pirmohamed, University of Liverpool, United Kingdom: Epilepsy pharmacogenetics.
R.A. Radtke, Duke University Medical Center, Durham, North Carolina: Defining treatment response in epilepsy pharmacogenetics.
A.C. Need, Duke Institute for Genome Sciences and Policy, Durham, North Carolina: Pharmacogenetics of topiramate-induced cognitive deficits in epilepsy patients.
A. Malhotra, The Zucker Hillside Hospital, Glen Oaks, New York: Genes for neurocognitive function: Implications for treatment.

The GABAergic System

October 30–November 2

FUNDED BY **Marie Robertson Memorial Fund**

ARRANGED BY **Z.J. Huang**, Cold Spring Harbor Laboratory
G. Buzsáki, Rutgers, The State University of New Jersey

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

SESSION 1: Cell Types: From Genomics (Genotypes) to Phenotypes
Chairperson: B. Connors, Brown University, Providence, Rhode Island

H. Markram, Brain & Mind Institute, Lausanne, Switzerland: Reconstructing the neocortical microcircuit with a diversity of GABAergic interneurons.

S. Nelson, Brandeis University, Waltham, Massachusetts: Physiological genomics of cortical interneurons

SESSION 2: Development
Chairperson: D.A. McCormick, Yale University School of Medicine, New Haven, Connecticut

G.J. Fishell, Skirball Institute, New York: The developmental origin of cortical interneurons predicts their mature physiological properties.

S.A. Anderson, Weill Medical College of Cornell University, New York: Specification of cortical interneurons in the medial ganglionic eminence.

A. Represa, INMED/INSERM, Marseille, France: GABA is the pioneering transmitter in developing hippocampus.

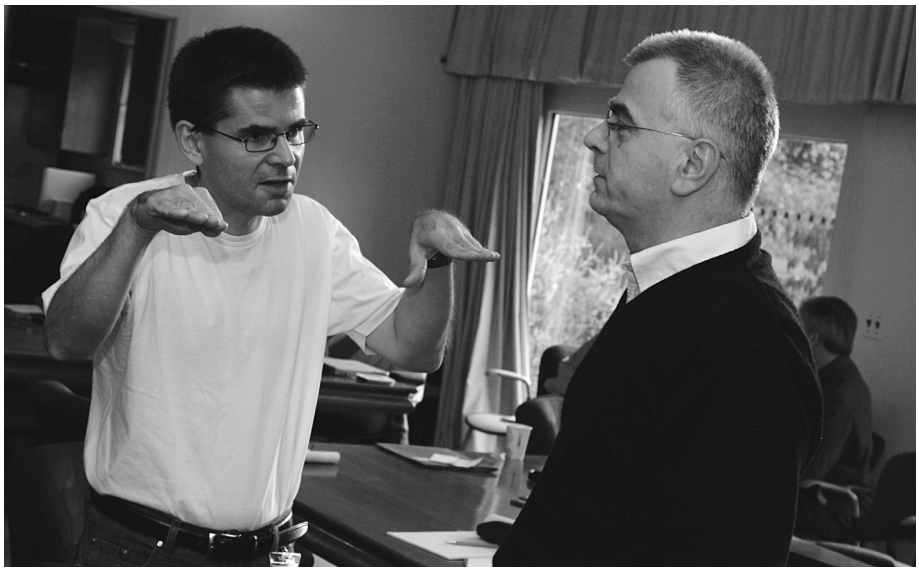
SESSION 3: GABA Synthesis and Release, Transport
Chairperson: I. Mody, University of California, Los Angeles

Z.J. Huang, Cold Spring Harbor Laboratory: A novel function of GABA in regulating GABAergic synapse and circuit development.

K. Behar, Yale University School of Medicine, New Haven, Connecticut: Measurements of GABA synthesis and GABA/glutamine cycling in relation to the GAD isoforms in rat cerebral cortex using magnetic resonance spectroscopy.

Y. Zilberter, Institute de Neurobiologie de la Mediterranee, Marseille, France: Pyramidal cell and interneurons in layer 2/3 of the juvenile neocortex: Multifaceted relations.

D. Attwell, University College London, United Kingdom: Reversal of GABA transporters and plasticity of GABA receptor signaling in brain ischemia.



P. Jonas, G. Buzsaki

SESSION 4: GABA Receptors I
Chairperson: D. Attwell, University College London, United Kingdom

R.W. Olsen, University of California, Los Angeles: GABA-A receptors: Identification of the alcohol receptor as an extrasynaptic subtype of GABA-A receptors.
U. Rudolph, University of Zurich, Switzerland: GABA-A receptor subtypes: Targets for novel anxiolytic and antipsychotic drugs.
I. Mody, University of California, Los Angeles: Distinct modulation of tonic and phasic inhibitions.

SESSION 5: GABA Receptors II
Chairperson: D.M. Kullman, University College London, United Kingdom

S. Moss, University of Pennsylvania, Philadelphia: Molecular mechanisms that regulate the membrane trafficking and function of GABA receptors.
B. Bettler, Universital Basel, Switzerland: Genetic dissociation of GABA-B functions.
W. Sieghart, Center for Brain Research, Vienna, Austria: Defining the role of neuronal circuits: Fast and reversible regulation of selected cell types.

SESSION 6: Cellular Physiology 1
Chairperson: M. Hausser, University College London, United Kingdom

D.A. McCormick, Yale University School of Medicine, New Haven, Connecticut: GABAergic systems critically control spike rate and timing in cortical networks.
B.W. Connors, Brown University, Providence, Rhode Island: Coordinating GABAergic networks with chemical and electrical synapses.
A.M. Thomson, University of London, United Kingdom: Interneurons and inhibitory circuitry in cortical regions.

SESSION 7: Cellular Physiology II
Chairperson: S. Andersen, Weill Medical College of Cornell University, New York

M. Hausser, University College London, United Kingdom: Functional properties of inhibitory circuits in the cerebellar cortex.
E.M. Callaway, The Salk Institute for Biological Studies, La Jolla: Fine-scale and inhibitory cell-type specificity of cortical connections.
P. Jonas, Universitat Freiburg, Germany: Fast, strong, and shunting inhibitory synapses improve the robustness of γ oscillations in hippocampal interneuron networks.

SESSION 8: Plasticity
Chairperson: A. Graybiel, Massachusetts Institute of Technology, Cambridge

M.-M. Poo, University of California, San Diego: Plasticity of GABAergic transmission.
D.M. Kullmann, University College of London, United Kingdom: Plasticity of GABAergic inhibition of hippocampal interneurons.
C. McBain, NICHD, Bethesda, Maryland: Plasticity at hippocampal mossy fiber interneuron synapses: What goes down sometimes must go back up!

SESSION 9: Network, System, Behavior - Part 1
Chairperson: M.-M. Poo, University of California, San Diego

G. Buzsáki, Rutgers, The State University of New Jersey, Newark: Functions and cost of inhibition: Questions for the future.
H. Monyer, University of Heidelberg, Germany: Molecular approaches to study GABAergic interneurons at the cellular and systems level.
X. Wang, Brandeis University, Waltham, Massachusetts: Interneuron actions in a working memory network: To inhibit or disinhibit?

SESSION 10: Network, System, Behavior: Part 2 (Striatum, Basal Ganglia, and "Other Systems")
Chairperson: K. Behar, Yale University School of Medicine, New Haven, Connecticut

B. Rudy, New York University: Molecular determinants of fast-spiking cell function.
A. Graybiel, Massachusetts Institute of Technology, Cambridge: Inhibition in the basal ganglia.
D.A. Lewis, University of Pittsburgh, Pennsylvania: Cortical GABA neurons and the pathophysiology of schizophrenia.
G. Buzsáki, Rutgers, The State University of New Jersey, Newark: Summary.

Barriers and Solutions in the Use of Mouse Models to Develop Therapeutic Strategies for NF1- and NF2-associated Tumors

November 3–5

FUNDED BY **U.S. Department of Defense (through a grant to the Children's Tumor Foundation)**

ARRANGED BY **K.M. Shannon**, University of California
K. Hunter-Schaedle, Children's Tumor Foundation

SESSION 1: Setting the Stage
Chairperson: K.M. Shannon, University of California

K.M. Shannon, University of California, San Francisco: Overview of meeting purpose and goals: "Throwing down the gauntlet."
M. Kaime, Congressionally Directed Medical Research Program, Fort Detrick, Maryland: Plans for the formation of a Neurofibromatosis Clinical Research Consortium.
S. Lowe, Cold Spring Harbor Laboratory: The use of mouse models to probe drug sensitivity and resistance.
D.A. Tuveson, University of Pennsylvania School of Medicine, Philadelphia: A prototype mouse hospital for performing preclinical trials.

Discussion moderated by K.M. Shannon, University of California, San Francisco

N. Ratner, A. Bernards

SESSION 2: NF1- and NF2-associated Tumors: Clinical and Pathologic Features and Current Treatments
Chairperson: D.W. Clapp, Indiana University School of Medicine, Indianapolis

M. MacCollin, Massachusetts General Hospital, Charlestown: Clinical aspects of neurofibromatosis demanding attention.
B. Welling, The Ohio State University, Columbus: Barriers and solutions in the use of mouse models to develop strategies for NS1- and NS2-associated tumors.
S. Blaney, Baylor College of Medicine, Houston, Texas: Challenges in clinical trial development for childhood cancers and applicability to neurofibromatosis-related tumors.
A. Stemmer-Rachamimov, Massachusetts General Hospital, Boston: Of mice and men: Pathology of neurofibromatosis-associated lesions.
B. Widemann, National Cancer Institute, Bethesda, Maryland: Endpoints for clinical trials in NF.

Discussion moderated by W. Clapp, Indiana University School of Medicine, Indianapolis

SESSION 3: Therapeutic Targets and Drug Discovery in NF1: Part 1
Chairperson: M. MacCollin, Massachusetts General Hospital, Charlestown

A. Bernards, Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown: NF1 drug targets from a fly's perspective.
N. Ratner, Children's Hospital Medical Center, Cincinnati, Ohio: Transgenic and cell culture models of NF1.

SESSION 4: Target and Drug Discovery in NF1: Part 2
Chairperson: B. Widemann, National Cancer Institute, Bethesda, Maryland

K. Cichowski, Brigham & Women's Hospital and Harvard Medical School, Boston, Massachusetts: mTOR as a potential therapeutic target in NF1.
J. Gibbs, Merck & Co., Inc., Boston, Massachusetts: Thinking beyond Ras GTPase.
G. Bollag, Plexxikon, Berkeley, California: Kinase inhibitors for the potential treatment of NF1.

Discussion moderated by M. MacCollin, Massachusetts General Hospital, Charlestown, and **B. Widemann,** National Cancer Institute, Bethesda, Maryland

SESSION 5: Therapeutic Targets and Drug Discovery in NF2
Chairperson: B. Welling, The Ohio State University, Columbus

J. Chernoff, Fox Chase Cancer Center, Philadelphia, Pennsylvania: A search for allosteric inhibitors of p21-activated kinases.
A. McClatchey, Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown: Preclinical therapeutics for NF2: Are we ready?
R. Chen, NexGenix Pharmaceuticals, LLC, Burlingame, California: Small-molecule inhibitors of Pak for the treatment of NF2.

Discussion moderated by B. Welling, The Ohio State University, Columbus

SESSION 6: Mouse Models and Preclinical Data
Chairperson: B.R. Korf, University of Alabama, Birmingham

E. Holland, Memorial Sloan-Kettering Cancer Center, New York: Gliomas.
D. Gutmann, Washington University School of Medicine, St. Louis, Missouri: Mouse models of NF-1-associated optic glioma.
D.W. Clapp, Indiana University School of Medicine, Indianapolis: The use of PET/CT imaging to detect the development of plexiform neurofibromas in Krox20; Nf1flox/-mice.
K. Shannon, University of California, San Francisco: Stage-specific response of NF1 mutant myeloid malignancies to a targeted agent.
M. Giovannini, "Génomique Fonctionnelle des Tumeurs Solides," Paris, France: Understanding F2: Insights from mouse models.

Discussion moderated by B.R. Korf, University of Alabama, Birmingham

K. Hunter-Schaedle, Children's Tumor Foundation, New York: Children's Tumor Foundation Drug Discovery Partnerships: A proposed partnering and funding initiative.

SESSION 7: Breakout Sessions
Introduction by Moderators: K.M. Shannon, University of California, San Francisco, and **D.H. Gutmann,** Washington, University School of Medicine, St. Louis, Missouri

Each participant was assigned by the organizers to a breakout session as follows:

Group 1: What additional information do we need to have regarding drug targets in NF1 and NF2? How can we use tissues from genetically engineered mice to address this problem?
Assigned Moderator: A. Bernards, Massachusetts General Hospital Cancer Center, Charlestown

J. Chernoff, Fox Chase Cancer Center, Philadelphia, Pennsylvania
K. Chichowski, Brigham & Women's Hospital, Boston, Massachusetts
A. McClatchey, Massachusetts General Hospital Cancer Center, Charlestown
N. Ratner, Children's Hospital Medical Center, Cincinnati, Ohio

Group 2: What are the major barriers to conducting therapeutic trials in NF patients?
Assigned Moderator: G. Bollage, Plexxicon, Berkeley, California

M. MacCollin, Massachusetts General Hospital, Charlestown
A. Stemmer-Rachamimov, Massachusetts General Hospital, Charlestown
P. Bellermann, Children's Tumor Foundation, Sherman, Texas

Group 3: What questions can we address with mouse models that we cannot address by studying human tumors?
Assigned Moderator: M. Giovannini, "Génomique Fonctionnelle des Tumeurs Solides," Paris, France
D.H. Gutmann, Washington University School of Medicine, St. Louis, Missouri
M. McLaughlin, Massachusetts Institute of Technology Center for Cancer Research, Cambridge
D.W. Clapp, Indiana University School of Medicine, Indianapolis

Group 4: How can we maximize interactions with industry to identify and evaluate new therapies for NF?
Assigned Moderator: J.B. Gibbs, Merck & Co., Inc., Boston, Massachusetts

R.-H. Chen, NexGenix Pharmaceuticals LLC, Burlingame, California
E. Holland, Memorial Sloan-Kettering Cancer Center, New York
C. Marks, National Cancer Institute, Bethesda, Maryland
K. Hunter-Schaedle, Children's Tumor Foundation, New York

Group 5: How can we design preclinical trials to provide useful information for human clinical trials?
Assigned Moderator: S. Blaney, Baylor College of Medicine, Houston, Texas

K.M. Shannon, University of California, San Francisco
D.A. Tuveson, University of Pennsylvania School of Medicine, Philadelphia
B. Widemann, National Cancer Institute, Bethesda, Maryland
J. Heemskerk, NINDS, NIH, Bethesda, Maryland

SESSION 8: Final Recommendations

Open Discussion and Final Recommendations
Moderators: K.M. Shannon, University of California, San Francisco, and **D.H. Gutmann,** Washington University School of Medicine, St. Louis, Missouri

A. Bernards, Massachusetts General Hospital Cancer Center, Charlestown: Group 1 report.
D. Ingram, Indiana University School of Medicine, Indianapolis: Group 2 report.
M. Giovannini, "Génomique Fonctionnelle des Tumeurs Solides," Paris, France: Group 3 report,
J.B. Gibbs, Merck & Co., Inc., Boston, Massachusetts: Group 4 report.
S. Blaney, Baylor College of Medicine, Houston, Texas: Group 5 report.

The Biology and Practice of Mammalian Cloning: A Reassessment

November 8–11

FUNDED BY **Richard Lounsbery Foundation, Inc.**

ARRANGED BY **P. Mombaerts**, The Rockefeller University
I. Wilmut, University of Edinburgh

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

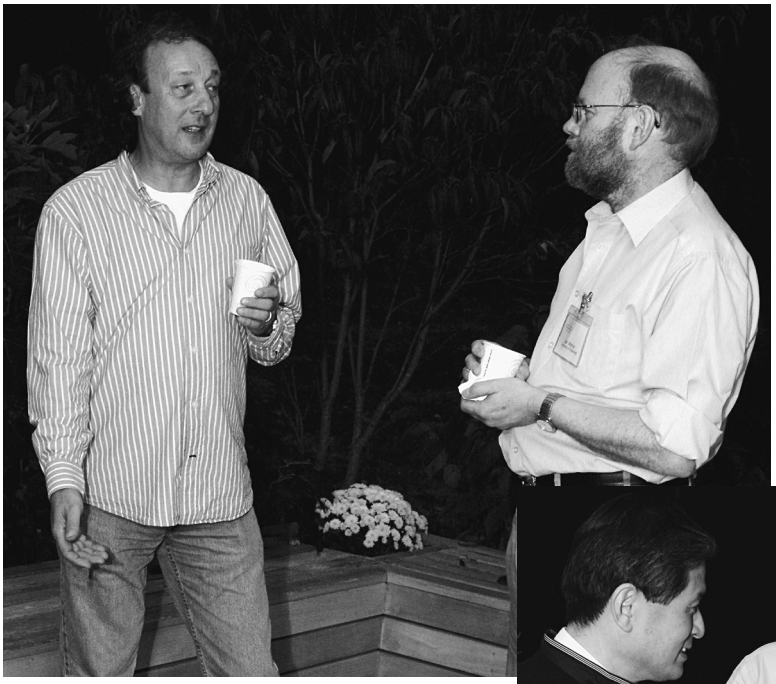
SESSION 1: Introduction

S. Willadsen, Saint Barnabas Medical Center, Livingston, New Jersey: Cloning and interspecific chimeras.

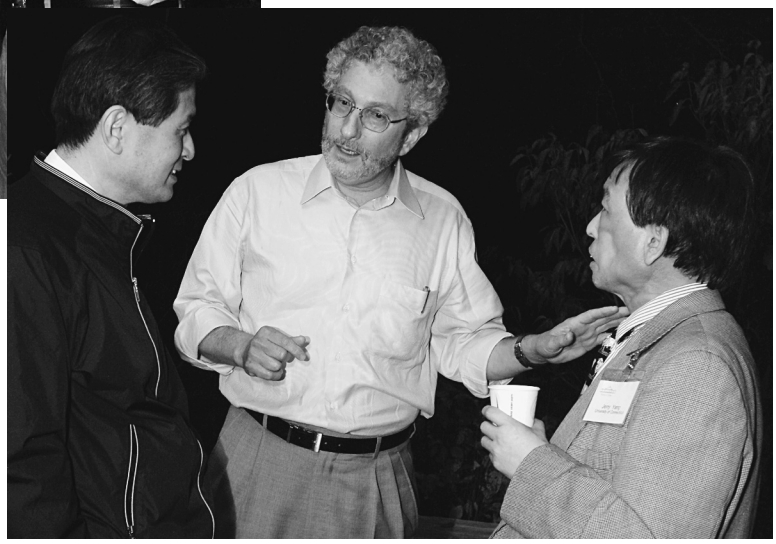
I. Wilmut, University of Edinburgh, United Kingdom: Cells from cloned embryos: Implications of observations in livestock.

A. Trounson, Monash Immunology and Stem Cell Laboratories, Clayton, Victoria, Australia: Cloning by modification of donor cells and cell fusion techniques.

M.E. Westhusin, Texas A&M University, College Station: An update on cloning at Texas A&M: White-tailed deer and transgenic goats.



K. Campbell, I. Wilmut



W.-S. Hwang, G. Schatten, X. Yang

SESSION 2: Human Nuclear Transfer and Embryonic Stem Cells

W.-S. Hwang, Seoul National University, Korea: Human nuclear transfer I: Background and status.
S.K. Kang, Seoul National University, Korea: Human nuclear transfer II: Technical advances.
G.E. Schatten, University of Pittsburgh, Pennsylvania: Scientific frontiers enabled by patient-specific, disease-specific, and primate-specific stem cells established using nuclear transfer: How to accelerate stem cell biomedical breakthroughs globally.
L. Studer, Memorial Sloan-Kettering Cancer Center, New York: Human embryonic stem cells and therapeutic cloning.
A.H. Brivanlou, The Rockefeller University, New York: In vivo assay of human ES cells.

SESSION 3: Mechanisms of Reprogramming

M. Boiani, Max-Planck Institut für Molekulare Biomedizin, Munich, Germany: Is it all about epigenetics? A look at nuclear organization, chromosome transmission, and genetic mutation in clonal mouse embryos.
A. Bortvin, Carnegie Institution of Washington, Baltimore, Maryland: Development of the next generation of experimental approaches to the epigenetic regulation of the genome.
K. Campbell, University of Nottingham, United Kingdom: Oocyte kinase and development in ovine nuclear transfer embryos.
P. Collas, University of Oslo, Norway: In vitro manipulation of donor nuclei and cells prior to cloning.

SESSION 4: Mouse and Rat

P. Mombaerts, The Rockefeller University, New York: Olfaction targeted.
K. Eggan, Harvard University, Cambridge, Massachusetts: Cloning and stem cells: Interrogating development and disease by nuclear transplantation.
K. Inoue, RIKEN, Tsukuba, Ibaraki, Japan: Cloning mice from differentiated and undifferentiated cells.
T. Yagi, Osaka University, Japan: Mouse cloning with neuronal nuclei.
P.M. Iannaccone, Northwestern University Medical School, Chicago, Illinois: The isolation and use of rat ES as potential nuclear donor cells in NT cloning of the rat.

SESSION 5: Other Species, Ethics

J. Cibelli, Michigan State University, East Lansing: Gene expression of reprogrammed bovine NT embryos.
C. Galli, Universita Di Bologna, Cremona, Italy: Reprogramming somatic cells for embryonic, fetal, and offspring development in large animals.
X. Yang, University of Connecticut, Storrs: The health status of our cloned cattle as well as their offspring and their organ/product compositions.
Y. Hosoi, Kinki University, Naga, Wakayama, Japan: In vitro development of macaca-rabbit-cloned embryos and trials of establishment of their cell lines.
D. Spar, Harvard Business School, Boston, Massachusetts: The business of stem cells.

The Intracellular Molecular Environment

November 13–16

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

ARRANGED BY **D. Spector**, Cold Spring Harbor Laboratory
J. Swedlow, University of Dundee

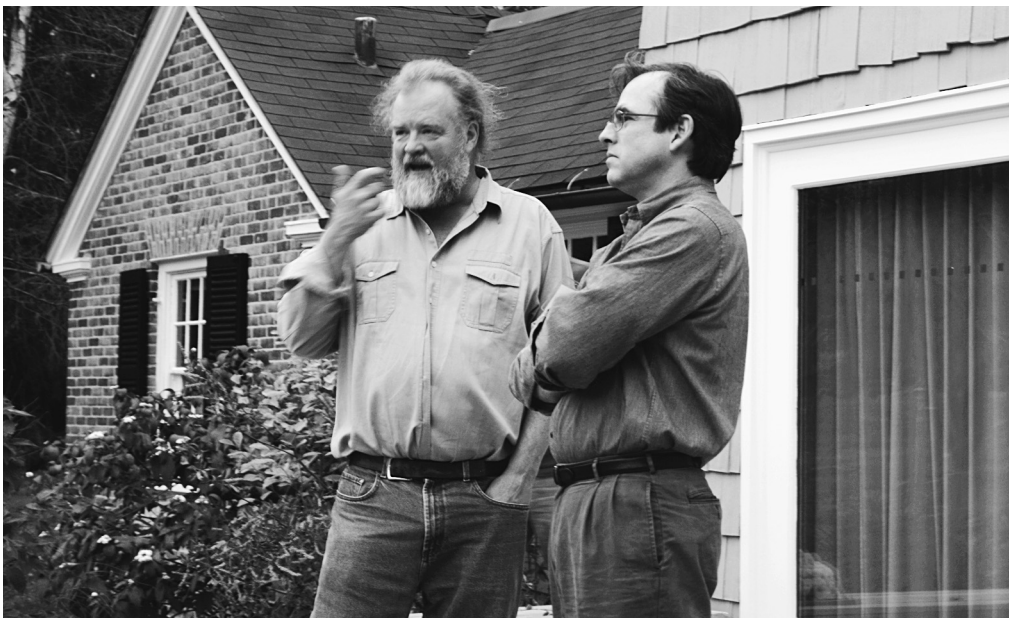
Introductory Remarks: J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

SESSION 1: Nuclear Dynamics and Organization
Chairperson: T. Pederson, University of Massachusetts Medical School, Worcester

J. Gall, Carnegie Institution of Washington, Baltimore, Maryland: Some physical properties of the nucleoplasm and nuclear organelles.
T. Cremer, Ludwig-Maximilians-Universität München, Germany: Mapping nuclear architecture in space and time.
A. Belmont, University of Illinois, Urbana-Champaign: Large-scale chromatin structure and dynamics.
D. Spector, Cold Spring Harbor Laboratory: Nuclear dynamics.
T. Pederson, University of Massachusetts Medical School, Worcester: Matriculation of mRNA in the nucleus: The movements are in the medium.
R. Hancock, Laval University, Canada: The crowded nucleus.

SESSION 2: Interpreting Intracellular Movement
Chairperson: K. Luby-Phelps, University of Texas Southwestern Medical Center, Dallas

K. Luby-Phelps, University of Texas Southwestern Medical Center, Dallas: Physical constraints on the biochemistry of the cell interior.
M. Saxton, University of California, Davis: A biological interpretation of anomalous subdiffusion.
S. Schnell, Indiana University, Bloomington: Deterministic and stochastic kinetics of reactions occurring in crowded intracellular environments.
M. Weiss, Deutsches Krebsforschungszentrum, Heidelberg, Germany: Anomalous diffusion caused by molecular crowding.
A. Elcock, University of Iowa, Iowa City: Molecular simulations of diffusion and association under pseudocellular conditions.
G. Odell, University of Washington, Seattle: Mathematical/computer modeling as a tool for comprehending cytoskeletal dynamics.



G. Odell, P. Sorger

SESSION 3: Cytoplasmic Dynamics and Signaling
Chairperson: P. Sorger, Massachusetts Institute of Technology, Cambridge

J. Marko, University of Illinois, Chicago: Mechanics of DNA-protein complexes and whole chromosomes.
M. Engstler, Ludwig-Maximilians-Universität, München, Germany: Navigation within a tiny but tidy cell: What can we learn from trypanosomes?
C. Weijer, University of Dundee, United Kingdom: Signaling to the cytoskeleton during chemotactic cell movement.
S. Altschuler, University of Texas Southwestern Medical Center, Dallas: Creating and maintaining asymmetries.
P. Sorger, Massachusetts Institute of Technology, Cambridge: Modeling cell signaling circuits.

SESSION 4: Modeling Dynamic Movements
Chairperson: G. Danuser, Scripps Research Institute, La Jolla, California

D. Eggers, San José State University, California: Amplified hydration effects on binding equilibria in vivo.
E. Siggia, The Rockefeller University, New York: Fluctuations in the cell cycle in yeast.
K. Schulten, University of Illinois, Urbana-Champaign: In situ molecular modeling of cellular processes.
G. Danuser, Scripps Research Institute, La Jolla, California: The dynamic regulation of two colocalized, yet functionally distinct actin arrays in cell migration.
R. Singer, Albert Einstein College of Medicine, Bronx, New York: Diffusion vs. transport: Where and when?

SESSION 5: Photons, Electrons, and Protons: Visualizing Intracellular Dynamics
Chairperson: M. Ellisman, University of California, San Diego

G. Dunn, King's College, London, United Kingdom: Using FLAP to find out how molecules get to where they are needed.
M. Ellisman, University of California, San Diego: Toward the visible cell: Collecting and connecting mesoscale data.
G. Pielak, University of North Carolina, Chapel Hill: In-cell NMR.
J. Swedlow, University of Dundee, United Kingdom: Mechanistic studies of nuclear and chromosome dynamics.

The Biology of Neuroendocrine Tumors

November 20–22

FUNDED BY **Verto Institute**

ARRANGED BY **A.J. Levine**, Institute for Advanced Study
E. Vosburgh, Verto Institute

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

SESSION 1: Biology
Chairperson: A.J. Levine, Institute for Advanced Study, Princeton, New Jersey

S.K. Kim, Stanford University School of Medicine, California: Mechanism of islet tumor suppression by MEN-1.
O. Rosen, Dana Farber Cancer Institute, Boston, Massachusetts: Chromatin-modifying and RNA processing complexes of the parafibromin neuroendocrine tumor suppressor protein.
X. Hua, University of Pennsylvania, Philadelphia: Coordinated regulation of cell proliferation and apoptosis in endocrine cells by the tumor suppressor menin.
M. Yen, Stanford University Medical Center, California: Hormonal regulation of menin: Opportunities for therapy?
C.J. Barnstable, Yale University School of Medicine, New Haven, Connecticut: Therapeutic potential of PEDF in controlling the growth of neural tumors.
J. Tobram-Tink, University of Missouri, Kansas City: PEDF blocks VEGFR2 signaling and angiogenesis: Potential for reducing tumor growth and metastasis.

R. Sackler, S. Kaufer

Keynote Speaker: J. Mendelsohn, University of Texas M.D. Anderson Cancer Center, Houston: EGF receptors: A target for cancer therapy.

SESSION 2: Genetics
Chairperson: E. Vosbugh, Verto Institute, Stamford, Connecticut

A.J. Levine, Institute for Advanced Study, Princeton, New Jersey: IAS/CINJ: SNPs in the *p53* pathway.
A. Rashid, University of Texas M.D. Anderson Cancer Center, Houston: Genome-wide SNP allelotyping in carcinoid tumors and pancreatic endocrine tumors.
E. Freed, Dana-Farber Cancer Institute, Boston, Massachusetts: Use of SNPs to identify genes in neuroendocrine tumor growth and development.
M. Essand, Uppsala University, Sweden: Gene therapy and immunotherapy of gastrointestinal neuroendocrine tumors.
F. Leu, Verto Institute, Princeton, New Jersey: CINJ: SSTR1-5 antibodies.
C. Harris, Verto Institute, Princeton, New Jersey: CINJ: LINE 1 retrotransposons and genomic stability, role in neuroendocrine tumors?
C. Kuperwasser, Tufts University, Boston, Massachusetts: Novel xenograft models of human breast cancer.

SESSION 3: Progress in the Treatment of Carcinoid Tumors
Chairperson: L.K. Kvols, University of South Florida, Tampa

D. Hochhauser, Royal Free & University College Medical School, London, United Kingdom: Modulation of chemotherapy by EGFR inhibition.
R.V. Lloyd, Mayo Clinic, Rochester, Minnesota: EGFR studies in GI carcinoids and pancreatic tumors and response to therapy.
L.K. Kvols, University of South Florida, Tampa: Clinical updates in carcinoid therapy.
J. Yao, Gastrointestinal Medical Oncology, Houston, Texas: Translational research at M.D. Anderson.
M.H. Kulke, Dana-Farber Cancer Institute, Boston, Massachusetts: Results of the phase II trial of SU11248 in metastatic neuroendocrine tumors.

Prion Biology: Puzzles and Paradoxes

November 27–30

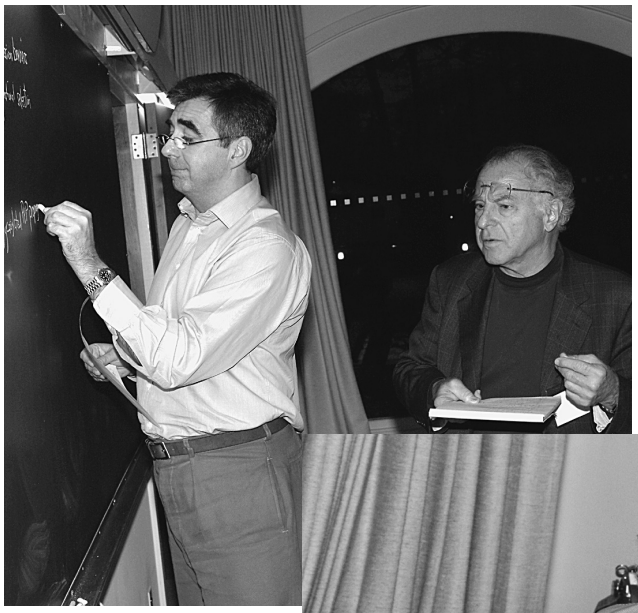
FUNDED BY **Cold Spring Harbor Laboratory Corporate Sponsor Program**

ARRANGED BY **J. Collinge,** University College
C. Weissmann, The Scripps Institute

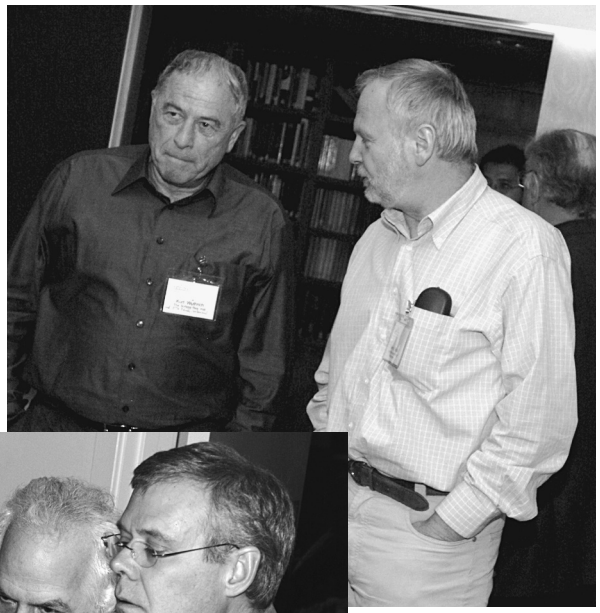
Introductory Remarks: J.A. Witkowski, Banbury Center, Cold Spring Harbor Laboratory

SESSION 1: The Species Barrier and Prion Strains
Chairperson: J. Collinge, National Hospital for Neurology & Neurosurgery, London, United Kingdom

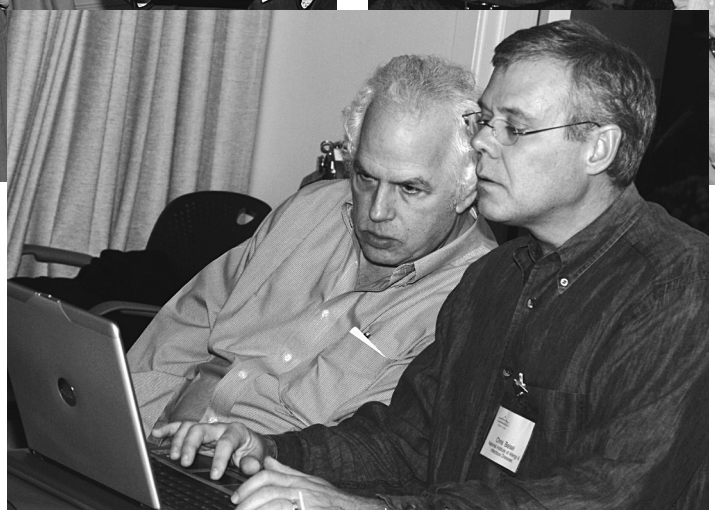
K. Wuthrich, The Scripps Research Institute, La Jolla, California: Structural biology of the cellular form of prion proteins.
J. Wadsworth, MRC Prion Unit, University College, London, United Kingdom: Molecular basis of species- and strain-dependent barriers in transmissibility of mammalian prions.
J. Manson, Institute for Animal Health, Edinburgh, United Kingdom: Control of TSEs by host PrP.
M.H. Groschup, Friedrich-Loeffler Institute, Greifswald-Insel Riems, Germany: Atypical scrapie cases in small ruminants carry abnormal PrP with unusual biochemical features.
W.K. Surewicz, Case Western Reserve University, Cleveland, Ohio: Molecular basis of species and strain-dependent barriers in transmissibility of mammalian prions.



J. Collinge, C. Weissmann



K. Wuthrich, H. Michel



S. Prusiner, C. Beisel

SESSION 2: How Did Prions Evolve and Epidemics Originate?
Chairperson: C. Weissmann, The Scripps Institute, Jupiter, Florida

S. Mead, MRC Prion Unit, University College, London, United Kingdom: The genetic consequences of prion disease epidemics.
R.B. Wickner, National Institutes of Health, Bethesda, Maryland: Transformation of (URE3) by amyloid from recombinant Ure2p transmits three prion variants.
S.L. Lindquist, Whitehead Institute, Cambridge, Massachusetts: Structural insights into yeast prion conversion.
L.B. Schonberger, DVRD, NCID, CDC, Atlanta, Georgia: Surveillance of Creutzfeldt-Jakob disease in the United States.

SESSION 3: Key Issues Arising from the Day

SESSION 4: Synthetic Prions: Have We Made Them?
Chairperson: C. Weissmann, The Scripps Institute, Jupiter, Florida

S.B. Prusiner, University of California, San Francisco: Mouse synthetic prions I.
G. Legname, University of California, San Francisco: Mouse synthetic prions II.
I. Baskakov, University of Maryland Biotechnology Institute, Baltimore: Mechanisms of PrP polymerization into amyloid fibrills.
G. Jackson, National Hospital for Neurology & Neurosurgery, London, United Kingdom: Assaying for synthetic prions.
G. Telling, University of Kentucky, Lexington: Transgenic studies of CWD and mechanisms controlling prion transmission.
B. Caughey, NIAID, National Institutes of Health, Hamilton, Montana: Particle size and infectivity in TSE diseases.
S. Supattapone, Dartmouth Medical School, Hanover, New Hampshire: PrPres formation from purified substrates in vitro.
C. Soto, University of Texas Medical Branch, Galveston: Generation of prions, species barrier, and prion strains.

SESSION 5: Key Issues Arising From the Day

SESSION 6: Neurotoxicity and Therapeutics in Neurodegenerative Disease
Chairperson: J. Collinge, MRC Prion Unit, University College, London, United Kingdom

C.I. Lasmezas, The Scripps Institute, Jupiter, Florida: Mechanisms of prion-induced neurodegeneration.
D. Caspar, Florida State University, Tallahassee: Prion amyloid fibrils and cross-β confusion.
D.B. Teplow, David Geffen School of Medicine at UCLA: Amyloid B-protein asembly and neurodegeneration: When the core of the problem is not the “core.”

SESSION 7: Key Issues for Future Research

Cancer Stem Cells

December 4–7

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

ARRANGED BY **M. Wicha**, University of Michigan
J. M. Rosen, Baylor College of Medicine

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

Key Questions To Be Addressed: J.M. Rosen, Baylor College of Medicine, Houston, Texas

SESSION 1: Key Signaling Pathways and Mechanisms in Stem Cell Self-renewal
Chairperson: T.D. Tlsty, University of California, San Francisco

R. Nusse, Stanford University Medical School, California: *Wnt* signaling and stem cell control.
P. Beachy, Johns Hopkins University, Baltimore, Maryland: *Hedgehog* signaling in tissue repair, neoplasia, and metastasis.
P. Polakis, Genentech, Inc., San Francisco: Therapeutic intervention of *Wnt* signaling in cancer.
J. Sherley, Massachusetts Institute of Technology, Cambridge: Adult stem cells as sites of carcinogenesis.
I.R. Lemischka, Princeton University, New Jersey: Functional genomics and stem cells.
M. van Lohuizen, The Netherlands Cancer Institute, Amsterdam: Polycomb repressors controlling stem cell fate: Implications for cancer and development.

SESSION 2: Role of the Microenvironment and the Stem Cell Niche
Chairperson: R.J. Jones, Johns Hopkins University, Baltimore, Maryland

G.H. Smith, NCI/National Institutes of Health, Bethesda, Maryland: The influence of the mammary stem cell niche on borrowed stem cells.
T.D. Tlsty, University of California, San Francisco: Early epigenetic and genetic events in carcinogenesis.

M. Wicha, J. Chang

SESSION 3: Hematopoietic Stem Cells, Leukemias, and Myeloma
Chairperson: M. van Lohuizen, The Netherlands Cancer Institute, Amsterdam

M. Goodell, Baylor College of Medicine, Houston, Texas: Regulation of hematopoietic stem cell self-renewal.
J.E. Dick, Princess Margaret Hospital, Toronto, Canada: Cancer stem cells: Lessons from leukemia.
S.J. Morrison, University of Michigan Medical School, Ann Arbor: Role of *Pten* in the self-renewal of normal and leukemic stem cells.
G. Morrone, University of Catanzaro, Italy: Dissecting leukemogenesis: Primary leukemic stem cells and gene-transfer-mediated models of leukemogenesis.
T. Look, Dana Farber Cancer Institute, Boston, Massachusetts: del(5q) and epigenetic suppression of α-caterin (CTNNA1) in CD34+CD38 human AML-initiating cells.
C. Jordan, University of Rochester School of Medicine, New York: Novel strategies for selective eradication of leukemia stem cells.
R.J. Jones, Johns Hopkins University, Baltimore, Maryland: Cancer stem cells: Clinical implications.

SESSION 4: Solid Cancers 1
Chairperson: J.M. Rosen, Baylor College of Medicine, Houston, Texas

O.N. Witte, University of California, Los Angeles: Prostate stem cells and prostate cancer.
J.M. Bishop, University of California, San Francisco: Progenitor cells and tumorigenesis in the liver and breast: A study with mouse models.
P. Dirks, Hospital for Sick Children, Toronto, Canada: Human brain-tumor-initiating cells.

SESSION 5: Clinical Implications
Chairperson: J.M. Rosen, Baylor College of Medicine, Houston, Texas

L. Norton, Memorial Sloan-Kettering Cancer Center, New York: Is cancer a disease of self-seeding (by cancer stem cells?).
J. Chang, Baylor College of Medicine, Houston, Texas: Breast cancer stem cells and therapeutic resistance.
G.V. Glinsky, Ordway Research Institute, Inc., Albany, New York: A death from cancer pathway and stem cell cancer hypothesis.

SESSION 6: Solid Cancers 2
Chairperson: M. Wicha, University of Michigan, Ann Arbor

C. Alexander, University of Wisconsin, Madison: Mouse mammary development and neoplasia.
M.T. Lewis, Baylor College of Medicine, Houston, Texas: Hedgehog regulation of mammary epithelial stem/progenitor cells in the mouse.
M.F. Clarke, University of Michigan Health System, Ann Arbor: Identification and molecular characterization of epithelial cancer stem cells in human and mouse solid tumors.
F.M. Watt, Cancer Research, United Kingdom, London: Role of stem cells and differentiated cells in epidermal carcinogenesis.
M. Wicha, University of Michigan, Ann Arbor: Role of Hedgehog and Bmi-1 signaling in mammary stem cell self-renewal.
R. Clarke, Christie Hospital Trust, Manchester, United Kingdom: Isolation and characterization of human breast stem cells.
A.A. Dlugosz, University of Michigan, Ann Arbor: Hedgehog signaling in tumor initiation and maintenance.
R. McKay, NINDS/National Institutes of Health, Bethesda, Maryland: Stem cell survival mechanisms in regeneration and cancer.

SESSION 7: Key Issues of the Meeting
Moderators: M. Wicha, University of Michigan, Ann Arbor and **J.M. Rosen,** Baylor College of Medicine, Houston, Texas

BANBURY CENTER GRANTS

Grantor	*Program/Principal Investigator*	*Duration of Grant*	*2005 Funding*+
FEDERAL SUPPORT			
Centers for Disease Control and Prevention (CDC)	From Markers to Models: Integrating Data to Make Sense of Biologic Systems	2005	$ 30,000*
NIH–National Institute of Mental Health (through a grant to University of Illinois)	Translational Approaches to Fragile-X Syndrome: Turning Basic Research Findings into Therapeutic Targets	2005	36,802*
U.S. Department of Defense (through a grant to Children's Tumor Foundation)	Barriers and Solutions in the Use of Mouse Models to Develop Therapeutic Strategies for NF1- and NF2-associated Tumors	2005	20,573*
U.S. Department of Defense (through a grant to Institute of Comparative Genomics)	Pathogenesis and Early Events in Viral Infection	2005	45,878*
U.S. Department of Homeland Security (through a grant to UMDNJ–New Jersey Medical School)	Microbial Forensics 2005: Sample Management	2005	37,500*
NONFEDERAL SUPPORT			
Meeting Support			
Agencourt Bioscience Corporation	A Critical Review of Melanoma: Genomic Approaches with Therapeutic Promise	2005	1,000*
The ALS Association	Stem Cells and Axonal Regeneration: Strategies for the Treatment of ALS	2005	42,174*
CFIDS Association of America	From Markers to Models: Integrating Data to Make Sense of Biologic Systems	2005	5,000*
Chiron Corporation	A Critical Review of Melanoma: Genomic Approaches with Therapeutic Promise	2005	5,000*
The Thomas Hartman Foundation for Parkinson's Research	Parkinson's Disease: Basic Mechanisms and Therapies	2005	28,907*
Ann L. and Herbert J. Siegel Fund of the Jewish Communal Fund	A Critical Review of Melanoma: Genomic Approaches with Therapeutic Promise	2005	25,000*
The Karches Foundation	Chronic Lymphocytic Leukemia	2005	34,301*
Richard Lounsbery Foundation, Inc.	The Biology and Practice of Mammalian Cloning: A Reassessment	2005	54,040*
Melanoma Research Foundation	A Critical Review of Melanoma: Genomic Approaches with Therapeutic Promise	2005	15,000*
PICO Atlantic	A Critical Review of Melanoma: Genomic Approaches with Therapeutic Promise	2005	1,500*
Marie Robertson Memorial Fund	The GABAergic System	2005	20,000
Albert B. Sabin Vaccine Institute, with support of the Bill & Melinda Gates Foundation	Introduction and Sustainable Use of Vaccines in Developing Countries	2005	28,287*
Spinal Muscular Atrophy Foundation	Spinal Muscular Atrophy: Neuronal Rescue and Repair from Laboratory to Clinic	2005	42,448*
The Swartz Foundation	Neurobiology of Decision-making	2005	48,032*
National Society for Epilepsy, with support of UCB Pharma	Epilepsy Genetics and Pharmacogenetics	2005	44,647*
Verto Institute, LLC	Recent Advances in Neuroendocrine Tumor Biology	2005	28,121*

+Includes direct and indirect costs
*New grants awarded in 2005

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