

HIGHLIGHTS OF THE YEAR

Research

Cancer

During the past few years, researchers have discovered that naturally occurring molecular snippets called “microRNAs” influence normal human growth and development. In 2005, CSHL scientists Greg Hannon, Scott Lowe, Scott Powers, and their colleagues discovered that microRNAs can also have an important role in cancer. It is a remarkable example of the progress that can be made when researchers working from different approaches collaborate closely on a project (in this case, Hannon, Lowe, and Powers working on microRNAs, animal models of cancer, and cancer genomics, respectively).

The study focused on a segment of human chromosome 13 that was known to be “amplified” or present in excess copies in several tumor types including B-cell lymphoma. The researchers observed that five microRNAs encoded by this DNA segment—referred to as the “mir-17-92 cluster”—are present at abnormally high levels in human B-cell lymphoma cell lines, as well as in biopsies of human lymphomas and colorectal carcinomas. These discoveries indicated that misregulated microRNAs might contribute to human cancer, particularly to B-cell lymphoma, but also to other forms of the disease. To test whether increased levels of the microRNAs could indeed contribute to cancer, the researchers engineered mouse cells to have high levels of the microRNAs. They found that the microRNAs accelerated tumor development and decreased survival in a mouse model of B-cell lymphoma. Moreover, lymphomas engineered to have high levels of the microRNAs consistently invaded organs including liver, lung, and kidney and lacked the extensive “programmed cell death” that otherwise keeps tumors in check. The observations suggest that microRNAs promote metastasis.

The Cancer Genome Atlas pilot project recently announced by the National Cancer Institute (NCI), in response to the recommendations of an NCI advisory committee of which I was a member, aims to find all of the major human cancer genes in specific types of cancers. Now, with the knowledge that genes encoding RNA can be among the set that promote cancer, the Cancer Genome Atlas has additional challenges to discover how widespread this phenomenon is.

In other work aimed at investigating cancer progression, Alea Mills and her colleagues have discovered that the loss of a gene called *p63* accelerates aging in mice. Similar versions of

the gene are present in many organisms, including humans. The *p63* gene is thus likely to have a fundamental role in aging. Aging and cancer are two sides of the same coin. In one case, cells stop dividing. In the other, they cannot stop dividing. Therefore, Alea suspects that having the right amount of the *p63* protein in the right cells at the right time normally creates a balance that enables organisms to live relatively cancer-free for a reasonably long time.

To study how the *p63* gene works, the researchers devised a system for eliminating it from adult mouse tissues. What struck them right away was that the *p63*-deficient mice were aging prematurely. The effects of premature aging observed in these mice were hair loss, reduced fitness and body weight, progressive curvature of the spine, and shortened lifespan. The *p63* gene has been studied since it was discovered in 1997, but this is the first time it has been implicated in aging. A related protein called *p53* is perhaps the most commonly mutated gene in human cancers and acts to suppress



Alea Mills

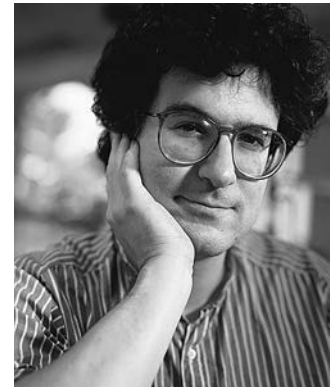
tumor formation. Both p63 and p53 bind to specific sequences in DNA, and thus the interplay between them, as well as a third related protein p73, may set up a regulatory network that creates a balance between aging and cancer progression.

Genomics and Bioinformatics

Bioinformatics researcher Lincoln Stein and his colleagues are part of a public-private effort—the International HapMap Consortium—whose aim is to chart the patterns of genetic variation that are common in the world's human population. In 2005, the researchers published the first comprehensive collection of their results called a “haplotype map” or HapMap. Comprising more than 1 million unique markers of human genetic variation, this first version of the HapMap is already accelerating the search for genes involved in common diseases including cancer, heart disease, diabetes, asthma, and macular degeneration. The HapMap may also be used to identify genetic factors that contribute to good health, such as those protecting against infectious diseases or other disorders.

In addition to its principal use as a resource for studies of human health and disease, the HapMap is yielding intriguing clues about how our species evolved over time and the evolutionary forces that were important as the human population spread around the globe. The HapMap is built on a foundation laid by the completion of the 3-billion-letter human genome sequence in 2003. As was the case with all of the data generated by the Human Genome Project, the data from the International HapMap Consortium are being made freely available to the world's scientists without restrictions.

The HapMap data are a collection of single-base changes, or SNPs, in the DNA that vary among individuals. These SNPs are inherited in blocks along chromosomes. They are a source of human genetic variation, but not the only source. Last year, Jonathan Sebat and Michael Wigler and their colleagues reported the discovery of a large number of deletions and amplifications of segments of the human genome. Called copy-number polymorphisms or CNPs, these also contribute to human genetic variation and to evolution of our species. Thus, we are now beginning to have a fairly robust view of how we as individuals differ from each other.



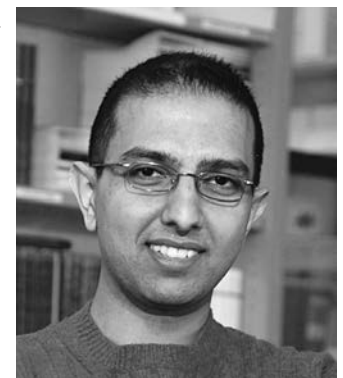
Lincoln Stein

Infectious Disease

By determining the molecular structure of a protein that enables malaria parasites to invade human red blood cells, structural biologist Leemor Joshua-Tor and her student Niraj Tolia have uncovered valuable clues for rational antimalarial drug design and vaccine development. Niraj is a native of Kenya where malaria is endemic and a major medical problem, so he pursued this project with first-hand knowledge that something needs to be done about this devastating disease.

Malaria causes approximately 400 million clinical cases and 2 million deaths annually, with more than 80% of deaths occurring among children. The disease is caused by mosquito-borne parasites of the genus *Plasmodium*. A major pathway through which malaria parasites invade red blood cells is the binding of a particular protein on the surface of parasites (EBA-175) to a receptor protein on the surface of red blood cells (glycophorin A). Consequently, drugs or vaccines that block the binding of EBA-175 to glycophorin A could be effective therapies for controlling malaria.

As a first step toward developing such therapies, Leemor's group used X-



Niraj Tolia

ray crystallography to determine the atomic structure of a key portion of the EBA-175 protein. The results revealed precisely how the malaria parasite protein is likely to bind to human glycoprotein A. This discovery enables researchers to take rational, structure-based approaches to designing antimalarial drugs and vaccines.

Cell Biology

David Spector and his colleagues have discovered a new molecular mechanism that is likely to control the production of many proteins in humans and other organisms. A deeper understanding of this rapid response, “cut and run” mechanism is predicted to have broad implications for biology and biomedical research. A few years ago, members of David’s group noticed that under standard growth conditions, a particular subset of messenger RNA molecules lingered in the nucleus indefinitely (in structures called “speckles”) and never reached the cytoplasm as they typically do. Spearheaded by the work of Kannanganattu Prasanth in David’s group, a new paradigm of gene regulation was discovered that explains why such atypical messenger RNAs linger in the nucleus instead of being used immediately to produce protein.

First, they found that a mouse gene called *mCAT2* encodes two different kinds of messenger RNAs: a standard protein-coding version that is exported to the cytoplasm soon after it is produced in the nucleus and an atypical version that lingers in the nucleus. These observations led David and his colleagues to propose that when cells are stressed (e.g., by viral infection), perhaps the lingering *mCAT2* messenger RNAs are rapidly released from the nucleus and exported to the cytoplasm, thus circumventing the time-consuming process of producing new messenger RNA needed for stress response.

Confirming this idea, they discovered that the atypical *mCAT2* messenger RNAs in the nucleus were rapidly cleaved in response to interferon treatment (which mimics the effect of viral infection) and that the protein-coding portion of the messenger RNAs was indeed then rapidly exported to the cytoplasm and translated into protein. David has reason to believe that many genes in humans and other organisms that need to be rapidly induced are regulated in this way.

Because the protein-coding regions of most mammalian genes are interrupted by large segments of DNA (called introns), a phenomenon discovered at CSHL in 1977, leading to a Nobel Prize, it can take many hours to copy the DNA into mRNA. The new mechanism of gene regulation discovered by David and his colleagues may explain how genes can be rapidly expressed when cells receive an appropriate signal.

Plant Molecular Genetics



Rob Martienssen

In 1909, while harvesting a typical corn crop (*Zea mays*) in Illinois, a field worker noticed a plant so unusual that it was thought to be a new species. Its “peculiarly shaped ear” was “laid aside as a curiosity.” The specimen was designated *Zea ramosa* (from the Latin *ramosus*, “having many branches”). Owing to the natural alteration of a single gene—later dubbed *ramosa1*—both the ear and the tassel of the *Zea ramosa* specimen were much more branched than those of typical corn plants, resulting in loose, crooked cobs and a far bushier than usual tassel.

Solving this enduring genetic mystery, Rob Martienssen and his colleagues recently isolated the *ramosa1* gene and discovered how it governs the architecture of corn plants. The discovery also explains why rice, other cereal crops, and even popular ornamental grasses look the way they do. The study was a

cover story of the international journal *Nature*. As part of the study revealed, to produce increasingly larger ears, primitive farmers almost certainly selected corn progenitors that bore special versions of the *ramosa1* gene: versions that restrained branching in the ear, thus enabling more rows of kernels to form.

Rob's group found that rice, corn, and other grasses have either none, some, or a comparatively large amount of *ramosa1* gene activity and that the levels and timing of this activity have a major impact on the architectural and agricultural yield of plants. It is a prime example of how selection by humans can influence the evolution of plant species. But importantly, the study also shows that considerable variation in plant structure can be caused by relatively small changes in the genomic DNA. Such simple variation in one or a few genes may also underlie the vast physical differences in domestic dogs that were also selected by man.

Neuroscience

According to a study by neuroscientist Partha Mitra and his colleagues, sleep helps young birds master the art of song, and it does so in a surprising way. The study revealed that when young zebra finches first awaken, instead of “picking up where they left off” in their vocal learning and memory, they are actually dramatically worse singers than they were at the end of the previous day. However, the quality of the birds' songs was found to improve after intense morning rehearsal such that by the end of each new day, their vocal performances are indeed better than the previous day.

More work is needed to explain this “one step back, two steps forward” effect of sleep on the brain circuits that govern vocal learning and memory consolidation. In the meantime, a useful analogy is the tempering of steel, in which to gain its ultimate structure and strength, it is first weakened. Vocal learning in songbirds is similar to speech acquisition in humans: Young birds go through a period of “screeching” before learning to imitate adult songs accurately, much as babies babble before grasping words. Therefore, to extend the significance of his discoveries to human development, Partha has begun to study the vocalizations of infant children in a rigorous, quantitative way. From this work, he expects to learn, among other things, how sleep affects learning and memory in humans.

To collect the data used in the zebra finch study, behavioral neuroscientists Ofer Tchernichovski and Sébastien Derégnaucourt of City College of New York recorded every sound—approximately 1 million syllables per bird—made by young zebra finches over several months as the birds learned to imitate and perfect their own renditions of recorded adult zebra finch songs. To measure how the vocal learning and memory of the birds changed over time, Partha developed mathematical algorithms that became the basis of powerful software he and Ofer created for analyzing the structure and patterns of recorded sounds (Sound Analysis Pro). Using this software, the vast amount of data was now accessible for interpretation, leading to their surprising discovery. Partha is a member of the Swartz Center for Computational Neuroscience, which supports research on development of theory and computational analysis of complex neuroscience data sets.

Another member of the Swartz Center, Mitya Chklovskii has made a significant advance in understanding the wiring of an entire nervous system of an animal. In the 1960s, Sydney Brenner started research at Cambridge University on the small worm *Caenorhabditis elegans*. This early beginning established the worm as one of the major model organisms for research on genetics, development, genomics, and neurobiology. For example, the entire lineage of cell divisions and cell deaths during development was determined by John Sulston



Partha Mitra

and colleagues, leading to the first description of how an animal grows from a fertilized egg and also led to the discovery of programmed cell death. Electron micrographs of the entire worm were collected as part of this project. Mitya and his colleagues used these to update and complete an analysis of the neurons and synaptic connections, thereby creating a wiring diagram of the worm's nervous system.

Previous research by Mitya and his colleagues had hypothesized that wiring of the nervous system was guided by placement of the neurons in the animal so that the wiring diagram minimized the length of the neuronal projections. This so-called wiring minimalization was proposed to be a strong evolutionary force in development of the worm brain, but also for neurons in our own cortex. Now, they have been able to test their model and, remarkably, find that their computer model fits the actual wiring of a majority of the worm's nervous system. Thus, computational predictions of how a nervous system is established can have a major role in understanding how neuronal networks come into being and how they function.

Cold Spring Harbor Laboratory Board of Trustees

As is customary, there were a number of new additions and departures to our Board of Trustees this year. We were pleased to appoint Dr. Robert Tjian, Howard Hughes Medical Institute Investigator and Professor in the Department of Molecular and Cellular Biology at the University of California, Berkeley, to our Scientific Trustees and Henry Wendt, III as our newest Honorary Trustee. Stephen M. Lessing, Managing Director, Lehman Brothers; David M. Rubenstein, Managing Director, The Carlyle Group; Alan Seligson, NAK International; and Andrew Solomon also began their terms as Individual Trustees this year.

Sadly, we said good-bye to Honorary Trustee H. Bentley Glass who passed away in January 2005 at the age of 98. Dr. Glass, one of the Nation's leading biologists, served as Chairman of the Board of Trustees in the 1960s, during a period of great expansion at CSHL, and actually convinced Jim Watson to join the Laboratory as its then new Director.

This year, Trudy Calabrese concluded her term as President of Cold Spring Harbor Laboratory Association (CSHLA), and therefore, her term as a member of the Board of Trustees. During her term, we saw the Annual Fund reach—and surpass—the \$1 million mark, and we will always be grateful for her dedication and commitment to our organization. Stepping in to assume the role as President of the CSHLA, we welcomed Joseph T. Donohue, Managing Director of Gleacher Partners, LLC, to the Board of Trustees.

Hillside Campus Construction

2005 was a watershed year for construction projects at the Laboratory. After more than three years of planning and legal groundwork, led by Chief Facilities Officer Art Brings, the Laboratory's Hillside Campus Project began. Art's fantastic work, particularly with the Trustees of the Village of Laurel Hollow, has enabled the beginning stages of our construction to run smoothly. Construction progress for the entire project is on schedule, with a targeted completion date toward the end of 2008. 2005 saw the installation of much of the infrastructure for the entire project. This includes new roads, electricity, and water access and the construction of a series of drainage sumps that prevent water from directly running off our campus into the inner harbor of Cold Spring Harbor. This large drainage project reflects the long-time commitment by the Laboratory to protect the beautiful waterway that is our namesake.

Senators Dean Skelos, Kemp Hannon, and Carl Marcellino, and Charles A. Gargano, Chairman of Empire State Development, were in attendance at a groundbreaking ceremony



(Left to right) Henry Mund, Charles Gargano, James Watson, Bruce Stillman, Dean Skelos, Carl Marcellino, John Cleary, Dill Ayres, and Harry Anand at the groundbreaking ceremony

on July 14 to begin construction on The Center for Bioinformatics at CSHL, solidifying the efforts to boost the biotech industry on Long Island and celebrating the economic and employment opportunities created by this funding for all Long Islanders.

In preparation for our expansion, we have reconstructed our Development Office to prepare for the task of raising funds to build our new space. Chief Development Officer Charles V. Prizzi has done a remarkable job in directing our new efforts to raise funds, increasing our donor base and exploring new directions in fund-raising, and the department is now running very efficiently and most effectively.

Cancer Center Renewal

The NCI created a network of NCI-designated “Cancer Centers” to spearhead its efforts as the nation’s leading agency that supports cancer research. In 1987, CSHL was approved to become an NCI-designated Cancer Center to allow expansion of the highly successful cancer research program initiated by Jim Watson when he came to Cold Spring Harbor in 1968. Since then, the CSHL Cancer Center has been one of the leading cancer research centers in the United States. The large NCI grant must be renewed every 5 years, and I am happy to report that the CSHL Cancer Center was reviewed again this year and approved for another 5 years of funding. The review characterized virtually all aspects of our Cancer Center as either “outstanding” or “excellent” and yielded the grant’s highest ever priority score. For their efforts in this vital grant application process, I wish to acknowledge the enormous amount of effort from Scott Lowe (Professor and Deputy Director, CSHL Cancer Center), Denise Roberts (Deputy Director of Administration) and her assistant Denise Moller, together with Program Leaders Greg Hannon, Nick Tonks, and David Spector. I also thank Peter Sherwood (Director of Research Communications) who assisted with the writing of the introduction and the many Cancer Center members and staff who contributed to this successful grant renewal.

Awards and Honors



Greg Hannon

This year, Gregory Hannon and Scott Lowe were among the 43 biomedical scientists named Howard Hughes Medical Institute (HHMI) Investigators. The new Investigators were selected from more than 300 nominations drawn from 31 institutions nationwide, representing traditional biomedical research disciplines, as well as engineering, physics, chemistry, and computer science. In addition, both Greg and Scott were honored elsewhere this year. Scott received Memorial Sloan-Kettering Cancer Center's 2005 Paul Marks Prize for Cancer Research. This significant award recognizes researchers under the age of 45 for their major accomplishments in cancer research. Greg was named the 2005 recipient of the AACR Award for Outstanding Achievement in Cancer Research, which is given annually to recognize a young investigator on the basis of meritorious achievement in cancer research. *Esquire Magazine* also listed Greg as one of "America's Best & Brightest" in its year-end cover story.

Tatsuya Hirano and I were elected this year as Fellows of the American Association for the Advancement of Science.

CSHL neuroscientist and Director of Research Holly Cline was selected as a recipient of the 2005 NIH (National Institutes of Health) Director's Pioneer Award. Holly was among only 13 winners chosen from a pool of 840 scientists who underwent a rigorous selection process.

For the fifth consecutive year, the philanthropic evaluator *Charity Navigator* has bestowed their highest four-star rating on CSHL for its sound financial practices. This distinction ranks CSHL among the most responsible of more than 1.5 million philanthropic organizations that exist in America to date.

Barbara McClintock, the Nobel laureate who spent 50 years doing research at CSHL, was one of four scientists honored this year with a stamp from the United States Post Office. Dr. McClintock's work on transposable elements launched a new era of genetic discovery and this unique honor was well-deserved.



Scott Lowe

Dolan DNALC and Cold Spring Harbor High School Launch Partnership Program

This fall, Dolan DNALC Executive Director David Micklos initiated a new yearlong course in molecular genetics in collaboration with Cold Spring Harbor High School. The course is an advanced lecture and laboratory program open to high school seniors nominated by Cold Spring Harbor High School's science faculty. *Partnership* students learn the theory of molecular biology in the classroom and visit the Dolan DNALC every other day to put what they have learned into practice in the lab.

Development

Fund-raising this year set new heights, and we gratefully acknowledge the following for their major support of our campus expansion for research infrastructure and education: The Starr Foundation; The Frederick & Nancy DeMatteis Charitable Trust; Clay Mathematics Institute; Mrs. Leslie C. Quick, Jr. and family; Jeff Hawkins; Nancy Marks; Laurie J. Landeau; Eduardo Mestre; The William Stamps Farish Fund; William Randolph Hearst Foundation; Gladys and Roland Harriman Foundation; Francis Goelet Trust; Mr. and Mrs. Robert D. Lindsay; Mr. and Mrs. Donald Everett Axinn; Mary D. Lindsay; Mr. and Mrs. Gerard Leeds; The Koshland Foundation; Mr. and Mrs. John P. Cleary; and Edward A. Chernoff.

Private funding is also essential to maintain our vigorous research programs, enabling successful projects that are too innovative for public funding. For this reason, we are especially appreciative to those supporters who made major gifts in 2005 to our cancer and neuroscience research programs. We gratefully acknowledge donors of \$100,000 or more to our cancer program: The Simons Foundation; The Karches Foundation for CLL Research; Fannie E. Rippel Foundation for Ovarian Cancer Research; The Frederick & Nancy DeMatteis Charitable Trust for Colon Cancer Research; Joan's Legacy: The Joan Scarangelo Foundation to Conquer Lung Cancer; and The Miracle Foundation.

We also acknowledge the generous support to our neuroscience program including \$100,000+ gifts from Mr. and Mrs. Theodore R. Stanley for schizophrenia research; The Swartz Foundation for neuroscience research; The Forrest C. Lattner Foundation for Schizophrenia Research; The Thomas Hartman Foundation; and Jo-Ellen and Ira Hazen.

President's Council

The President's Council brings together leaders from business, research, and biotechnology who share an interest in science and CSHL's research. Specifically, Council members support Cold Spring Harbor Laboratory Fellows—exceptional young and recently graduated Ph.D. or M.D. students who perform independent research at Cold Spring Harbor for a period of 3 years. This year, President's Council members raised an impressive \$400,000 and established a new record for the annual contributions to this Fund. On page 426 we gratefully acknowledge all of the men and women who made this possible.

Robertson Research Fund

The Robertson Research Fund has been the primary in-house support for our scientists for more than three decades. During 2005, Robertson Funds supported research in the labs of Alea Mills, Cordula Schultz, Leemor Joshua-Tor, Rui-Ming Xu, and Wolfgang Lukowitz. In addition, the Robertson Fund supported the annual CSHL In-House Symposium and our programs for postdoctoral fellows and graduate students.

Sadly, we lost Carl Schafer this year to cancer. Carl was a long-time financial advisor to the Robertson family and Chairman of the Robertson Research Fund Committee here at CSHL. We all appreciated his positive and even-handed approach to various issues that arose over the years in connection with the management of the Robertson Research and Maintenance Funds. He represented the Robertson family well while, at the same time, making it clear that he also had the best interests of the Laboratory at heart. We are appreciative of all of his efforts on behalf of CSHL and his years of friendship.

Watson School of Biological Sciences

Support of the Dean's Chair, fellowships, and lectureships enable the Watson School to continue to grow and influence the field of biological sciences. We appreciate new gifts of \$100,000 or more made this year by The Arnold and Mabel Beckman Foundation; Curt Englehorn; Bristol-Myers Squibb Foundation; the Lita Annenberg Hazen Foundation; and the Starr Foundation.

Dolan DNA Learning Center

Thanks to a very generous gift from the William and Flora Hewlett Foundation, progress can continue to be made on Dolan DNALC's newest addition to their Web portal: *Genes to*

Cognition (G2C) Online: A Network-driven Internet Site on Modern Brain Research. In addition, the Dolan DNALC received significant support from the Amgen Foundation for the Amgen Leadership Program.

Carnegie Library

In 2005, a grant from the Mellon Foundation provided consultants from two major library firms to assess our library systems and archival collection and to recommend software and computer systems to facilitate our digitization project. In addition, a 2-year \$500,000 grant—*Preserving the Past and Present, Looking to the Future: Preserving and Digitizing the Cold Spring Harbor Laboratory Archives Collections*—from the Macy Foundation will allow us to create an integrated metadata database to provide worldwide online access to our digitized collection to scholars, students, and all other users. This year, Mila Pollock, our Librarian and Archivist, organized with Darwin Stapleton from The Rockefeller University and Jan Witkowski, Executive Director of our Banbury Center, a very successful international archives meeting. This meeting discussed approaches to maintaining archives in the modern electronic age and ways of funding the process. We also plan to establish a center for the history of Molecular Biology and Biotechnology at Cold Spring Harbor as part of our archives program, housing some of the most important archives at a place that has had a major role in these fields.

Additional Support

The Laboratory was fortunate to receive support for many ongoing projects in 2005 including a gift from Herbert J. Siegel for the Weghorn House; a gift from the Francis Goelet Trust for the Francis Goelet Fellowship in Biomathematics; a gift from the Gerber Foundation for congenital heart disease research; and a gift from the estate of Florence Strelkowski. We were also pleased to host a special concert given in Grace Auditorium by Manhattan School of Music students Victoria Sbarro and Evan Kory on October 16. “Playing for Parkinson’s” benefited the Thomas Hartman Foundation for Parkinson’s Research, which funds several of our neuroscience faculty as they investigate possible causes and cures for Parkinson’s disease.

Breast Cancer Research Support

An essential aspect to our very successful breast cancer research program is the support we receive from local grassroots groups who provide direct research support for our program, in addition to the wonderful services they provide to the breast cancer community. This year, we were fortunate to receive support from the Breast Cancer Research Foundation; the Miracle Foundation; the Pierre and Pamela Omidyar Fund; 1 in 9: The Long Island Breast Cancer Action Coalition; Breast Cancer Help, Inc.; the Cold Spring Harbor Main Street Association; Dunkin Brands; Find A Cure Today (F.A.C.T.); The Islip Breast Cancer Coalition; The Long Island 2-Day Walk to Fight Breast Cancer, Inc.; Long Islanders Against Breast Cancer (L.I.A.B.C.); the Manhasset Women’s Coalition Against Breast Cancer; Breast Cancer Awareness Day in memory of Elizabeth McFarland; the Waldbaum Foundation; the Judi Shesh Memorial Foundation; and the West Islip Breast Cancer Coalition.

Building Projects

In addition to the planned new construction, the Laboratory has completed several building projects during 2005. The student and postdoctoral fellow housing units at Uplands Farm

were completed after 2 years of construction and named in memory of long-time Laboratory friend and supporter Elisabeth (Betty) Livingston. In addition, two existing houses on Uplands Farm and another across the harbor from our main campus were named for other long-time supporters William and Irene Miller, Wendy Vander Poel Russell, and George Cutting. These residences enable our young scientists to live near the campus in affordable and attractive housing. The Laboratory also purchased a single-family residence adjoining its campus, renovated it, and rededicated it as the Garden House for use as faculty housing.

Other ongoing projects made significant progress during the year. At Banbury Center, the pool was reconstructed and the hostess quarters of the Robertson House were renovated. More than half of the extensive renovations planned for the James Laboratory have been completed, with the remainder scheduled to be completed in 2006. The renovation of the Demerec Tissue Culture Facility was completed. The bluestone patios at the front and rear of the Grace Auditorium were replaced, improving the spaces for our meetings visitors.

Special Events

Symposium

The 70th Symposium—"Molecular Approaches to Controlling Cancer"—once again included the annual Dorcas Cummings lecture. Charles Sawyers' outstanding lecture on "Making Progress through Molecular Attacks on Cancer" was presented to a mixed audience of scientists and lay friends and neighbors of the Laboratory. Following the lecture, more than 20 of our neighbors graciously opened their homes and hosted dinner parties for Symposium participants and Laboratory friends alike.

Gavin Borden Visiting Fellows

The 11th Annual Gavin Borden Visiting Fellow Lecture—in memory of the publisher of *Molecular Biology of the Cell*—was held on Wednesday, March 9. Dr. Huda Zoghbi, a Professor of Pediatrics, Neurology, Neuroscience, and Molecular and Human Genetics at the



Huda Zoghbi, Bruce Stillman, Lilian Clark Gann

Baylor College of Medicine, gave this year's lecture entitled "Cross-species Studies to Unfold the Pathogenesis of a Neurodegenerative Disease."

Public Lectures

The CSHL Cultural Series is a tradition in which an eclectic mix of artists, writers, and scientists present lectures, concerts, and exhibits that provide compelling glimpses of how we experience, discover, live in, and make sense of our world. Open to the public, the aim of the Cultural Series is to stimulate, inspire and entertain.



Rodney Brooks

April 19 Nina Federoff, Evan Pugh Professor at Penn State University: *Mendel in the Kitchen: Myths & Realities of Genetically Modified Food.*

May 16 Don Axinn, author of seven volumes of poetry and two novels: *Discussion & Screening of the Film SPIN.*

May 17 Rodney Brooks, director of the MIT Computer Science and Artificial Intelligence Laboratory and the Fujitsu Professor of Computer Science at MIT: *Flesh & Machines: How Robots Will Change Us.*

May 23 Sherwin Nuland, Clinical Professor of Surgery at the Yale University School of Medicine and Fellow of the university's Institution for Social and Policy Studies: *The Artist Looks at the Doctor: A Millennium of Clinical Observation.*

May 31 Cynthia Rosenzweig, Senior Research Scientist at the Columbia University Earth Institute and a professor of environmental sciences at Barnard College: *The Heat is On: Present & Future Impacts of Global Warming.*

Sept. 13 William Li, President, Medical Director and Cofounder, the Angiogenesis Foundation: *Canines & Cancer: New Therapies from & for Man's Best Friend.*

Sept. 20 Stephen S. Hall, contributing writer and editor at *The New York Times Magazine*: *Short People: Biological, Psychological, and Cultural Considerations.*

Sept. 27 Diana Reiss, Director of Marine Mammal Research and Conservation at the New York Aquarium of the Wildlife Conservation Society: *Exploring the Dolphin Mind.*

Oct. 11 Steve Squyres, Professor of Astronomy at Cornell University and the Principal Investigator on the Mars Exploration Rover Project: *Life on Mars: Lessons from the Rovers Spirit & Opportunity.*

Concerts

- April 24** Gilles Vonsattel, piano
- April 30** Benjamin Loeb and Joseph Lin, piano and violin
- May 7** Jennifer Check and Ken Noda, soprano and piano
- May 21** Jose Franch-Ballester, clarinet
- August 27** Anton Barakhovsky and Sonya Ovrutsky, violin and piano
- September 10** Timothy Fain, violin
- September 17** Dmitri Berlinsky, Elena Baksht, and Suren Bagratuni, violin, piano and cello
- September 24** Elizabeth Joy Roe and Greg Anderson, four-hands piano
- October 8** Jean-Efflam Bavouzet, piano
- October 29** Daxun Zhang, bass



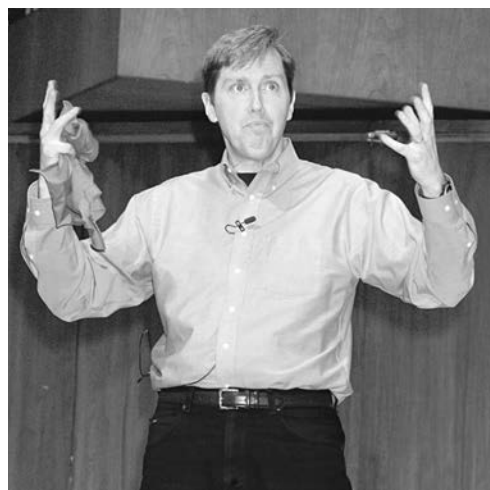
Joseph Lin and Benjamin Loeb

Other Lectures

Laboratory Trustee Jeff Hawkins (creator of the Palm Pilot, the Treo smart phone, and other handheld devices) presented a fascinating lecture, *The World Is a Song: How Music Led to a Theory of Human Intelligence*, based on his latest book, *On Intelligence*. The lecture was held in February at The Juilliard School in New York City.

A panel discussion on *Memory—and How to Keep It!*—featuring Ronald Hedgepath, Ph.D., neuropsychologist at St. Johnland Nursing Center; Zach Mainen, Ph.D., Associate Professor at CSHL; Tracey J. Shors, Ph.D., Professor at Rutgers University; and Trey Sunderland, M.D., Director, Litwin-Zucker Alzheimer's Research Center, North Shore-LIJ Health System was held in Grace Auditorium on July 26.

A Memory Board advisory committee, which included Liz Watson and several community and library staff members, held an event entitled "Memories under the Moonlight," on July 28 to promote the Library and Archives' new Memory Board Web site. After a brief presentation by Tim Tully on the scientific aspects of memory, Mila Pollock described how to navigate the memory board site. The audience had the opportunity to relate their own humorous or poignant anecdotes of the Laboratory, evoking heartfelt emotions from both Laboratory and local community members, including Jim Watson and CSHL Honorary Trustee David Luke.



Jeff Hawkins

Craig Hinkley (“Gene Recipes: How Much Is a Pinch of RNA”), Partha Mitra (“How the Song Bird Sings”), Sandra Kulhman (“Rhythms in Nature and Our Body: Why Does Your Stomach Growl at Noon”), and Wolfgang Lukowitz (“Everything You Wanted to Know About Flowers [But Were Afraid to Ask]”) all participated in our lecture series for fourth- to sixth-grade students and their parents, co-hosted with the Cold Spring Harbor School District, at the Dolan DNALC.

Rounding out our year, Dr. Kanta Subbarao, Senior Investigator in the Laboratory of Infectious Diseases at the National Institute of Allergy and Infectious Diseases, presented a timely and relevant public lecture, *Bird Flu and the Global Threat of Emerging Respiratory Diseases* on December 3.

Exhibits

The 2004 Photographer-in-Residence Reuben Cox exhibited his works in Bush Auditorium throughout the month of July. The large-scale photographs of many CSHL researchers were captured during his residency the previous summer.

Laboratory Employees

Chancellor News

CSHL Chancellor Jim Watson spent a great deal of time this year traveling to raise funds for CSHL research. In addition, Jim edited and wrote the foreword to *Darwin: The Indelible Stamp; The Evolution of an Idea*, a seminal volume on the famous biologist. Jim appeared on *The Charlie Rose Show* with Edward O. Wilson, the author of another recently released book about Darwin entitled *From So Simple a Beginning: The Four Great Books of Charles Darwin*, to discuss creationism, Darwinism, and science education. It was a riveting and very well-received program.



Jim Watson

New Staff

Sydney Gary, a neuroscientist who worked with Susan Hockfield at Yale, joined the Laboratory as Assistant Director of the Banbury Center. Sydney is working on developing the neuroscience and mental health meetings and courses programs, at Banbury and on the main campus.

Promotions

A number of faculty members were promoted in 2005, including Leemor Joshua-Tor, William Tansey, and Rui-Ming Xu, to Professor; Carlos Brody, Josh Huang, Alea Mills, and Marja Timmermans to Associate Professor; and Jonathan Sebat to Assistant Professor. Uwe Hilgert was also named Assistant Director of the Dolan DNALC.

Departures

As was announced last year, Professors Nouria Hernandez and Winship Herr moved to Switzerland to become professors at a new institute in Lausanne. During the year, Nouria was named director of the Center for Integrative Genomics. Assistant Professor Masaaki Hamaguchi left the Laboratory to assume a position at Fordham University.

This year saw the departure of Katya Davies, the long-term hostess at Robertson House at our Banbury Center. Katya was at the laboratory for 26 years and was known to many scientists who visited Banbury to attend meetings and courses. Katya created her own style of welcome for the numerous visitors that will long be remembered. We wish her well in retirement in Maine.

Community Outreach

CSHL sent a team to the fifth annual Pancreatic Cancer Walk at Old Westbury Gardens on July 31. The walk benefited The Lustgarten Foundation, a generous supporter of CSHL's research.

A group of volunteers manned a rest stop at the Long Island 2-Day Walk to Fight Breast Cancer, a 35-mile walk to benefit several groups across Long Island including CSHL. Our volunteers passed out water and raised spirits during the last legs of their journey.

Laboratory employees donated 489 pounds of assorted food through a food drive run by the Hauppauge Industrial Association to benefit Long Island Cares. We continued to support the Ronald McDonald House at Schneider Children's Hospital in New Hyde Park throughout the year by collecting empty printer, fax, and copy machine ink and toner cartridges, as well as old cell phones, for the foundation. Proceeds from the sale of these items went directly to the Ronald McDonald House at Schneider.

Long-term Service

The following employees celebrated milestone anniversaries in 2005:

35 years	Madeline Wisnewski
25 years	Bruce Fahlbusch, Michael Riggs, Linda Rodgers, Marlene Rubino, Andrea Stephenson
20 years	Frank Carberry, Lisa Manche, David Spector, Wanda Stolen, Harry Wozniak



(First row, left to right) Michael Riggs, Danuta Slodkowska, Karen McKeon, Barbara Purcell, Dora Merlino, Marlene Rubino, Lisa Manche, Linda Rodgers, Holly Cline. (Second row, left to right) David Spector, Harry Wozniak, James Watson, Madeline Wisniewski, Bruce Stillman, Ronald Romani, Frank Carberry, George Newell, Bruce Fahlbush

15 years June Blanchford, Clare Bunce, Edward Campodonico, Karen McKeon, Dora Merlino, George Newell, Natalia Peunova, Barbara Purcell, Ronald Romani, Danuta Slodkowska, Yew Yeo, Nicholas Tonks

Looking Forward

Our new research buildings at CSHL will be in the elegant style that has established the Laboratory as one of the most attractive research institutes in the world. Although the next few years of construction will be partially disruptive of our idyllic life of research and scholarship on the shores of Cold Spring Harbor, we look forward to the new facilities providing much needed research space for our outstanding research programs. I cannot wait until the new addition to our campus is completed and landscaped.

Bruce Stillman, Ph.D., F.R.S.
President