» CSHL Powers Panel on Alternative Fuels
» Bungtown Botanical Garden
» Degrees for Paul Allen, Eric Kandel & Oliver Sacks
» A Tribute to JDW

The Dawn of a New Era in Neuroscience at CSHL
A New Era in Neuroscience

» In this edition of the Harbor Transcript we share with you how our scientists are leading Cold Spring Harbor Laboratory into a new era of neuroscience research focused on how the brain computes and how this goes wrong in disorders such as autism, schizophrenia and bipolar behavior. A major shift in focus of our neuroscience program has occurred over the last four to five years, primarily driven by the development of new techniques in human genetics and the establishment of a dedicated program in understanding cognition. How this has happened is a good example of how scientific progress happens and how new results can shape our institutional focus.

Scientific research often sets its own path, moving with its own logic from one discovery to the next. But that is not the full story. In fact, major research efforts like the one we are embarking upon in neuroscience are the product of deliberate decisions made at many levels by investigators, the collective institution, and public and private funding organizations.

As described in our cover story, we are now in an excellent position to focus productively on critical questions about how the brain functions, both in health and in illness. This follows in an interesting way from past successes our scientists have had in the field of cancer research. The fact that technologies and tools originally developed in our pursuit of fundamental knowledge about cancer biology are now proving useful in our quest to understand the biology of mental illness exemplifies the contingent aspect of research. The adaptation of methods from one field to another would not have occurred had we not planned to raise funds and organize projects around the idea.

We are quite confident of our ability, within the next decade, to make discoveries at the genetic level that will foster the development of simple and reliable diagnostics for serious mental illnesses — tests that don’t exist today, much to the consternation of families affected by mental illness, especially those with children who show early signs of affected behaviors. In order to fulfill this “within a decade” objective, it will be essential for our scientists to assemble a comprehensive catalog of genes that play causal roles in a range of mental illnesses.

In parallel with the new studies on human genetics, independent studies on the development of new behavioral methods to study cognition in rodents and the application of genetic manipulation to such studies has opened the door to understanding higher brain function, such as decision making, attention and working memory. In the future, we expect to be able to identify specific genes that are associated with cognitive disorders and determine the effect of these genes on brain development, anatomy and function. Such a quest is driving the need to integrate new technologies and approaches in our neuroscience program to complement the research of our existing scientists. Helping in the endeavor are the research buildings that will be completed in late spring of 2009.

In developing a new area of science, it is important to keep in mind that we do not know today the kind of results that will be obtained next month or next year. New results will certainly influence how we proceed. But one thing is certain: we now have the technologies and the people to make rapid progress on many fronts in our effort to understand the genetics and biology of mental illness. Philanthropists Veda and Ted Stanley and Marilyn and Jim Simons — whose contributions are discussed in the pages of this issue — have provided us the means with which to pursue this important work. The science moves steadily forward, but it could not be done without their support and the support from many of our annual fund donors who each year provide essential, unrestricted monies to advance this research. Finally, the expansion of this research could not have been possible without the support of many who helped create the new facilities that we look forward to opening in 2009.
Contents

p. 2 » Next-Generation Neuroscience Takes Shape at CSHL
CSHL is tracking the holy grail for neuroscientists, following the path from aberrant genes to perturbed biology to anomalous behaviors in people with mental illness
Peter Tarr

p. 6 » Trustee Profile
Prize-winning author Andrew Solomon is an advocate for CSHL’s neuroscience research
Kiryn Haslinger

p. 8 » President’s Council: CSHL Powers Panel on Alternative Fuels
A benefit of membership in the President’s Council: a ring-side seat in the national discussion on biofuels
Diane Fagiola

p. 10 » Watson School Commencement: Graduates Get Inspiration from the Stars
Seven new Ph.D.s receive degrees and gain insights from a co-founder of Microsoft, a Nobel Prize-winning neuroscientist, and a cultural icon
Hema Bashyam

p. 14 » James D. Watson: 40 Years in Retrospect
Over four decades, Jim Watson’s contributions to the Laboratory have been immense. A tribute, based on interviews with those who have known him best.

p. 16 » Women’s Partnership Luncheon: A Sound-side Organic Education
Dolan DNA Learning Center enlightens CSHL supporters on the biology of organic food and discusses issues surrounding genetically engineered food
Hema Bashyam

p. 17 » A Personal Tour of Bungtown Botanical Garden
A new book written by Liz Watson showcases CSHL’s landscapes with stunning photography of the resident flora and fauna
Jessica Toner

back cover » Save the Date…with a CSHL Calendar/Become a CSHL Association member today!

Front Cover: New facilities at CSHL will be home to investigations that could yield the first reliable diagnostics, as well as novel treatments and insights, about how certain mental illnesses can be halted or prevented altogether.
Concept: Margot Bennett
Photo illustration & design: John Verity
Photos: ©Constance Brukin, 2008 & ©ISM/Phototake
1930s First CSHL investigations of electrical properties of nerve cells, under rubric of "biophysics."


1968–1971 As molecular biology tackles gene regulation, some researchers aspire to apply molecular approaches to neurobiology. Seminal CSHL laboratory courses are established by CSHL director James Watson.

1971 The abandoned Animal House is renovated as neurobiology teaching lab and renamed McClintock Laboratory.

Takes Shape at CSHL
For several years the pieces have been falling into place, one by one. But only in recent months has it been possible to see the broad implication: A new era in neuroscience research is dawning at Cold Spring Harbor Laboratory (CSHL).

The new thrust in neuroscience has some exciting objectives, including the discovery of markers that will permit development of simple diagnostic tests for common neuropsychiatric illnesses such as schizophrenia, autism and bipolar disorder. (See story about Stanley Center, p. 5) Such tests do not presently exist and are urgently needed to bring care at the earliest possible moment to those who manifest preliminary signs and symptoms. Clinical data show that patients often fare better if treated when their illness is in its initial stages.

The emergence of reliable diagnostics is only one aim of a multifaceted effort that will eventually involve nearly 20 distinct laboratories at CSHL and an expansion of neuroscience faculty by some 40 percent, according to Director of Research David L. Spector. New faculty members have begun to arrive on campus, including, this fall, Associate Professor Pavel Osten, Assistant Professor Bo Li and CSHL Fellow Dinu Albeanu, and, next spring, Assistant Professor Stephen Shea. (See pictures, pp. 4–5)

As the program expands beyond its current base in the Beckman and Marks Buildings into the impressive Wendt Family Building and Donald Axinn Building for Learning and Cognition — scheduled to open their doors for the first time next summer — CSHL scientists will attempt to trace the process by which the developing brain gives rise to immensely complex neural networks; catalog the full range of human genes implicated in mental illness; and demonstrate with great precision — both in animals and humans — how genetic mutations and a host of related cellular anomalies give rise to disease-specific pathologies.

It is hoped that these investigations will not only make possible the first reliable diagnostics but will also indicate novel paths to more effective treatments and perhaps provide insights about how certain mental illnesses can be halted in their early stages or prevented altogether.

A Fertile Moment

“It’s a very fertile moment for neuroscience, full of new opportunities,” says CSHL President Bruce Stillman. Some of these opportunities are the product of significant progress that CSHL neuroscientists have made over the last decade in bringing together high-resolution imaging and innovative genetic methods to understand mechanisms of learning and memory in flies and rodents. (See timeline, pp. 2–5)

“These methods have by now spread throughout the field and have revolutionized it, permitting researchers to observe the functioning brain in living animals down to the level of individual neurons — quite an astonishing achievement,” Stillman says. In the period just ahead, teams led by Professors Anthony Zador and Yi Zhong, and Assistant Professors Josh Dubnau, Glenn Turner, Adam Kepecs and others will continue using these methods to understand memory and basic cognitive processes in model organisms. As members of the Swartz Center for Computational Neuroscience at CSHL, they will also employ advanced mathematical methods to achieve the larger aim of understanding neural circuits whose activity makes possible complex behaviors.

CSHL neuroscientists want to learn how these circuits are physically configured and assembled — work that Professors Partha Mitra, Josh Huang and others are taking on — but also how the brain as an ensemble of circuits responds to external stimuli and how the processing of these stimuli serves as the basis for decision making. Understanding cognitive processes in the brains of simpler organisms like flies and rodents forms a basis for understanding how the vastly more complex human brain processes information and interprets the surrounding world.

What Goes Wrong in Key Genes

Next-generation neuroscience at CSHL also involves the integration of a wholly independent line of research centering on the human genetics of cognitive dysfunction. This research represents an extension of concepts developed over the last
decade in CSHL’s cancer research program, which has generated an impressive body of new knowledge about the linkages between genetic and biological dysfunction.

The laboratories of Professor Michael Wigler and Associate Professor Jonathan Sebat, in collaboration with those of Professors W. Richard McCombie and Gregory Hannon, have already begun to apply advanced genome-scanning techniques to the study of the genetic causes of schizophrenia, bipolar disorder and autism. In the coming years, they and others at CSHL will attempt to specify the total set of human genes that malfunction in these illnesses.

“We’ve known for decades that there is an important genetic component at work in varying degrees in all of these diseases,” Stillman notes. “But common mental illnesses are highly complex, by which we mean that they are caused not by a single malfunctioning gene, but by multiple genes acting in varying combinations and in the presence of environmental factors. The linkages among these various components have been notoriously difficult to pin down.”

So-called gene-association studies — which show the prevalence of specific genetic mutations in samples of people known to have mental illnesses — have turned up a plethora of “candidate genes.” Literally hundreds of such genes have been proposed for schizophrenia alone. Yet costly efforts in labs around the world to perform such identifications, while important, have been inconclusive. CSHL geneticists will try to address what gene-association studies so far have not been able to reveal. How precisely do mutations in a candidate gene such as DISC1 — associated with the emergence of schizophrenia in a subset of patients — perturb brain biology, contributing to an emergent pathology?

An Unexplored Continent

Between dysfunctional genes such as DISC1 and the set of anomalous behaviors that we associate clinically with schizophrenia lies a veritable continent of basic biology. This is the vast and still unfamiliar terrain that CSHL scientists — both genetic researchers and cognitive neuroscientists — are now setting out to explore,

Neuroscience @ CSHL

c. 1997 Karel Svoboda brings two-photon laser-scanning imaging system to CSHL, making possible observation of individual neurons in the living brain. Roberto Malinow uses cooled CCD cameras to measure synaptic function.

1999 CSHL neuroscientists occupy the newly dedicated Marks Laboratory, where excitation laser microscopy work is carried forward. Marks Lab becomes national center where visiting scientists learn new imaging techniques.

early 2000s Anthony Zador, Zachary Mainen and others begin to explore decision making and auditory attention in the living brain. Partha Mitra uses computational and experimental methods to explore the brain’s architecture.

2003 Michael Wigler uses ROMA genome-scanning technology to demonstrate ubiquity in humans of a type of genetic mutation called copy number variation, or CNV.

2004 Swartz Center for Computational Neuroscience at CSHL established to support neuroscience research projects utilizing physical and mathematical techniques.
in schizophrenia, bipolar disorder, autism and other neurodevelopmental disorders, with tools and scientific insights not previously available.

The bet is that fundamental knowledge about cognition and behavior in the healthy brain, gleaned in part from work with animal models, will shed new light on what occurs in the human brain, during development and in the adult brain. If the bet pays off, this knowledge will enable neuroscientists to understand with unprecedented specificity how perturbation of genes can lead to complex and devastating behavioral abnormalities.

Consider the brain circuitry engaged when a person tries to focus his or her attention — a basic faculty that is disturbed in different ways in autism and schizophrenia. CSHL scientists including Zador, Osten, Li and Huang will be asking: What are the vital components of such circuits? What happens when a given malfunction occurs in a gene or an encoded protein? Do the discovered genetic anomalies vary in potency, and if so, under what conditions? In parallel with such basic scientific work, innovative studies by Professor Linda Van Aelst and Assistant Professor Hiro Furukawa in intracellular signaling should shed light on the molecular "cascades" specifically implicated in mental illness. What impact do signaling anomalies have on the underlying biology of the brain, and how do these correlate with clinical manifestations of mental illnesses?

Jonathan Sebat calls research that seeks answers to basic questions of this kind “connecting the dots.” Being able to follow the path from aberrant genes to perturbed biology to anomalous behaviors in people with mental illness is a kind of holy grail for neuroscientists. A decade hence, current efforts of CSHL scientists including Zador, Osten, Li and Huang will be asking: What are the vital components of such circuits? What happens when a given malfunction occurs in a gene or an encoded protein? Do the discovered genetic anomalies vary in potency, and if so, under what conditions? In parallel with such basic scientific work, innovative studies by Professor Linda Van Aelst and Assistant Professor Hiro Furukawa in intracellular signaling should shed light on the molecular “cascades” specifically implicated in mental illness. What impact do signaling anomalies have on the underlying biology of the brain, and how do these correlate with clinical manifestations of mental illnesses?

Considerable progress already has been made. Under the Stanley’s first gift, a project led by Sebat called the GEM study in schizophrenia, autism and bipolar disorder began almost immediately. GEM is devoted to understanding the genetics of what doctors call early-onset mania, a condition that often leads to severe, full-blown bipolar disorder. Several collaborative projects at the Institute led by CSHL Professor W. Richard McCombie focus on sequencing genes associated with psychiatric illnesses. The first of these is to “deep-sequence” a large gene called DISC1 implicated in schizophrenia. To facilitate other sequencing projects, CSHL Professor Gregory Hannon has honed a highly efficient and low-cost method of selectively targeting highly relevant portions of the genome for sequencing. Hannon is also applying his expertise in small RNAs to research on the brain.

Unambiguous Diagnosis Within a Decade

The Stanley Institute for Cognitive Genomics: 
Unambiguously diagnosing illnesses such as schizophrenia and bipolar disorder within a decade’s time.

The Stanley Institute for Cognitive Genomics

The great suffering caused by serious neuropsychiatric illnesses such as schizophrenia, autism and bipolar disorder has given rise to a fierce desire among affected families to support research. A generous gift from Marilyn and Jim Simons, whose own family has been touched by autism, provided support for research in Professor Michael Wigler’s lab at CSHL that recently culminated in the discovery, with Jonathan Sebat, of the role of spontaneous DNA mutations in autistic children.

While this work was in progress, Dr. James Watson — who, with his wife Elizabeth, raised a son with schizophrenia and has a nephew with bipolar illness — encouraged Vada and Ted Stanley to support expanded efforts at CSHL to understand the genetic roots of mental illness. After a visit to CSHL, the Stanleys responded almost immediately with a gift of $5 million and, not long after, $25 million more, to launch an Institute for Cognitive Genomics. The institute has grown into a hub of collaborative efforts at CSHL and several partnering institutions including Zucker Hillside-North Shore-LIJ, Johns Hopkins, the NIMH and the University of Edinburgh. The bold first objective: to develop means of unambiguously diagnosing illnesses such as schizophrenia and bipolar disorder within a decade’s time.

Considerable progress already has been made. Under the Stanley’s first gift, a project led by Sebat called the GEM study in schizophrenia, autism and bipolar disorder began almost immediately. GEM is devoted to understanding the genetics of what doctors call early-onset mania, a condition that often leads to severe, full-blown bipolar disorder. Several collaborative projects at the Institute led by CSHL Professor W. Richard McCombie focus on sequencing genes associated with psychiatric illnesses. The first of these is to “deep-sequence” a large gene called DISC1 implicated in schizophrenia. To facilitate other sequencing projects, CSHL Professor Gregory Hannon has honed a highly efficient and low-cost method of selectively targeting highly relevant portions of the genome for sequencing. Hannon is also applying his expertise in small RNAs to research on the brain.
Cold Spring Harbor Laboratory (CSHL) trustee Andrew Solomon never expected to think about chemistry and biology after high school. “I thought of myself as a literature and arts person,” says Solomon, who dreamed of becoming an accomplished author. In 2001 Solomon achieved this goal, winning the National Book Award. But it turned out that his book and most of the articles he wrote for *The New Yorker, New York Magazine* and *The New York Times Magazine* were steeped in science. “Strangely,” he continues, “my life now consists of writing about subjects that are rooted in these areas.”

What draws Solomon to science is a deep interest in neurobiological disorders and the way individuals and society cope with them. He is inspired by his own experience, the topic of his international bestseller,
The Noonday Demon: An Atlas of Depression. After surviving multiple episodes of severe depression in his early 30s, he found “There were all these different writings about depression, but there was nothing that pulled it all together. There was chaos and a need for a unified field theory. I wanted to combine all of the different languages that were used to talk about depression.”

Solomon has embarked on a Ph.D. in psychology at Cambridge University and continues bridging science and popular culture with his in-depth articles on health. He has appeared on a number of television programs on depression, including the acclaimed 2008 PBS series, “Depression: Out of the Shadows.”

When describing his depression, Solomon expresses deep affection for his father, his closest ally and primary caretaker during his episodes. “My father was unflagging in his efforts to give me the sense that I was loved and that there was a good life to be had on the other side of this illness.”

It was Andrew’s father, Howard Solomon, chairman and CEO of Forest Laboratories since 1977, who introduced him to CSHL. Today, Andrew is a leading advocate for CSHL’s neuroscience research. He has interviewed CSHL scientists for articles on depression and autism, and he hosted a spring cocktail party for CSHL benefactors at the historic Greenwich Village townhouse he shares with his husband, John Habich Solomon. “Cold Spring Harbor Laboratory is doing more than almost any other place to increase our fundamental knowledge and understanding of human beings and how we function in the world,” Solomon says. “I am involved in a variety of philanthropic activities, but none is making more of a difference in the world than CSHL.”

“These experiences of darkness make the light more beautiful. The pain of being acutely depressed allows you to experience an unbelievable happiness every day when you aren’t depressed and a sense of those days as a gift. That’s the real message of hope: that you can get better and when you get better, not that you will look back on it with great longing, but you may look back on it and think, ‘I learned a lot by going through that, and I am a better person because of it.’”

~ from Depression: Out of the Shadows

[Editor’s note: Watch the program or a preview, or read the transcript at www.pbs.org/wgbh/takeonestep/depression. Learn about the book at www.noondaydemon.com.]

Kiryn Haslinger
At no time since the late 1970s has our national discussion turned as consistently as it did in 2008 to the subject of fuel consumption and alternative energy technologies. As the price of a barrel of crude oil soared to nearly $150 at the height of the summer season, the energy issue was thrust, welcome or not, directly into 2008 election politics.

In forums across the nation, energy policy provided occasion for scientists, entrepreneurs and other innovators to bring to public attention a plethora of new ideas and vital information essential for the formation of responsible opinion about America’s and the world’s latest energy “crisis.”

One notable instance was a fall meeting of Cold Spring Harbor Laboratory’s (CSHL) President’s Council. Following a spring gathering that focused productively on the issue of plant research in the context of ever-growing world food demands, the council’s fall assembly brought impressive brain power to bear on the subject of alternative fuels. “With energy costs on everyone’s mind, the subject couldn’t have been more timely. I’d wager we all learned more about the science of biofuels, and the prospects for their use, than we might have expected in a single weekend. I certainly did,” concluded Jim Stone, chairman of The Plymouth Rock Company, who serves as co-Chair of the President’s Council.
Comprising distinguished individuals in a broad spectrum of endeavors, the council has the vital function of funding, through its members’ annual contributions of no less than $25,000 each, a group called the CSHL Fellows. Through this fellowship program outstanding young Ph.D.s are awarded the resources to begin independent research at the earliest stage of their careers. The program jump starts their research careers and accelerates their innovative contributions to biomedical science.

At the council’s October meeting on the Banbury campus, keynote speaker John Hofmeister, among the world’s most knowledgeable energy consumption experts and the recently retired president of Shell Oil Company, spoke about the launch of an important not-for-profit organization, Citizens for Affordable Energy. This grassroots-based initiative seeks to disseminate unbiased information about energy resources, including oil, coal, clean coal power, natural gas, biofuels, solar, wind, hydrogen and nuclear energy production, so that all Americans will have the knowledge to form rational opinions about national energy policy.

In a talk the following day, CSHL Professor Rob Martienssen, a world-renowned expert on plant genetics and epigenetics, reviewed biofuel types for council members: biodiesel from plant oils, ethanol from starch/sugar, ethanol from cellulose (biomass), and diesel and petrol from cellulose/sugar. Dr. Martienssen focused on issues associated with growing biofuel crops, detailing steps that are being taken to extend fertility and yield.

A question raised by the decision to devote croplands to fuel production was explored in a panel discussion, “Food vs. Fuel: A Necessary Trade-Off?” led by Jim Garrels, CEO of Garbrook Knowledge Resources. Panelist Barbara Wells, president and CEO of ArborGen, spoke of the advantages of forests as a biomass resource, particularly with today’s technologies for improving yield, stress tolerance and wood quality. William Hitz, a senior research fellow at Dupont/Pioneer, discussed converting corn crop waste to ethanol.

A second panel, “Mining for Oil in Unlikely Places,” was led by William Haseltine, founder of numerous biotechnology companies and a former chairman of CSHL’s President’s Council. Harrison Dillon, president and chief technology officer of Solazyme Inc., discussed how his renewable oil production company harnesses the power of microalgae to produce clean fuels, chemicals, food oils, and health and wellness products. Robert T. Do, CEO of Solena Group, Inc., offered an overview of the correlation between CO₂ and global temperature. The Solena Group’s aim is to reduce greenhouse gases using plasma technology and algae systems to produce electricity.

At the conclusion of these substantive discussions, council members headed out into the bright sunshine to CSHL’s Uplands Farm, about a mile from the main campus, for a tour of greenhouses and corn fields, where, along the way, they were reminded of an important bit of history. Timothy Mulligan, the farm’s manager, regaled the group with stories of CSHL’s Nobel Prize-winning discoverer of “jumping genes,” Barbara McClintock. It was a moment in which to reflect on how the work of one of CSHL’s most honored scientists set the stage for so many contemporary innovations in plant genetics, including those that will help the next generation of alternative-energy pioneers. Diane Fagiola

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Jim Stone

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On April 13, 2008, seven students from the Watson School of Biological Sciences (WSBS) donned caps and gowns and strode into the school’s Grace Auditorium to receive their doctoral degrees at the school’s fifth convocation ceremony. For these students, the event marked the triumphant end to a challenging journey through courses, exams, laboratory experiments and thesis dissertations. And as the graduates prepared to set out on the next stage of their careers, this year’s honorary degree recipients — three wise men renowned for their contributions to science and society — were on hand to provide them with sage counsel.

Six graduates — Hiroki Asari, Rebecca Bish, Monica Dus, Angelique Girard, Christopher Harvey and Wei Wei — have accepted prestigious postdoctoral positions in leading laboratories. And François Bolduc has been appointed assistant professor at the University of Alberta. Since the Watson School’s accreditation as a Ph.D.-granting institution in 1998, the school has produced 30 exceptionally talented graduates who have finished the program in four years.

Dr. Bruce Stillman, president of Cold Spring Harbor Laboratory (CSHL), remarked on the students’ successful yet speedy progress toward completing the Watson School’s tough curricular requirements. “Time flies when you’re having fun,” was his way of characterizing their experience here. “Continue to learn and to be curious,” he exhorted the graduates, citing the school’s 2008 honorary degree recipients as living proof of his mandate.

This year’s list of honorees was indeed a stellar lineup of personalities whose professional achievements have had a transformative impact on society as a whole. It included one of the world’s most successful entrepreneurs, a Nobel Prize-winning neuroscientist, and a clinician whose ability to translate the complexities of the brain’s biology into household concepts has
made him a cultural icon. Paul Allen, Dr. Eric Kandel and Dr. Oliver Sacks, respectively, all spoke to the graduates about the rewards to be reaped from hard work, teamwork and from engaging with the world at large.

Allen, who co-founded Microsoft with Bill Gates, is also a philanthropist who has channeled his entrepreneurial success into initiating billion-dollar projects aimed at improving the way people live. He emphasized the importance of teamwork and intellectual exchange by saying, “Scientific progress is the sum of everyone’s work — both large and small — that creates change, improves life, finds treatments for disease and takes life in new directions.”

This sentiment resonated with the graduates, who partly attribute their success to the spirit of cooperation that pervades the Laboratory. Despite being a small and closely knit community of about 400 scientists, CSHL plays host to hundreds of visiting scientists who come here to attend meetings and conferences each year. To young researchers embarking on competitive careers, the knowledge and collaborative opportunities brought by such widely attended symposia are an invaluable supplement to their formal education.

Kandel, who called the Laboratory “an international university that is home to all of the world’s scientists,” has made many profound discoveries about the role of experience in modifying behavior. He told the students that he considered them to be extremely privileged because “it was difficult to think of a future more attractive than a future in science.” He urged them to “pick important problems [to work on] and drive them into the ground,” and challenged them to “equal or exceed the achievements of the honorary awardees.”

While his words might have inspired the new graduates to run straight back into their labs, they were urged by the next speaker to “stay with whatever idiosyncrasies or avocations that may seem like distractions but will be rewarding in unexpected ways.” This piece of wisdom came from Sacks, who is widely known as the “poet laureate of medicine.”

Famous for his neurological case studies and books such as Awakenings and The Man Who Mistook His Wife for a Hat, Sacks drew on his own experiences in life and lab to frame an eloquent message for the graduates. “Be prepared for the surprises, adventures and serendipities of an academic life,” he said. “You have, as Pasteur would say, ‘prepared’ minds, but not ‘programmed minds,’ and so be prepared to see significance in the unexpected, and then to swoop down and seize the prize.” For the seven eager scholars on the verge of striking out on their own, these were valuable words indeed. Hema Bashyam
Hiroki Asari
University of Tokyo
Farish-Gerry Fellow
Entering class of 2003
“Auditory System Characterization”

Rebecca A. Bish
Massachusetts Institute of Technology
David H. Koch Fellow
Entering class of 2003
“A Novel Role for the Ubiquitin-binding Zinc Finger Domain in DNA Repair”

François Bolduc
McGill University
William R. Miller Fellow
Entering class of 2003
“Role of Drosophila Fragile X Mental Retardation Protein and the RNA Interference Pathway in Drosophila Learning and Memory”

Monica Dus
University of Redlands, Johnston Center
Engelhorn Scholar
Entering class of 2003
“Beyond Classical RNAi: Towards an Understanding of Germ Cell Development and Transposon Control in the Fruit Fly D. melanogaster”
École Polytechnique
Florence Gould Fellow
Entering class of 2003

“Mammalian Piwi Proteins and Transposon Control in the Male Germline”

Angélique Girard

Vanderbilt University
David and Fanny Luke Fellow
Entering class of 2003

“Dynamics of Plasticity and Signaling at Individual Synapses”

Christopher D. Harvey

University of Melbourne
Leslie C. Quick, Jr. Fellow
George A. and Marjorie H. Anderson Fellow
Entering class of 2003

“The Interplay Between Amyloid-β and Neural Activity”

Wei Wei
This tribute to James Watson, acknowledging his diverse and indispensable contributions over 40 years, is a compilation based on interviews with several on campus who know him and his achievements intimately.

Ensuring the Laboratory’s Stability

Jim Watson’s immense contributions to Cold Spring Harbor Laboratory (CSHL) span every aspect of the Laboratory’s life. It is impossible, as we look at the Laboratory today, to imagine how it was in the mid-1960s. For many years, little attention had been paid to the infrastructure, and when Jim became director in 1968, the Laboratory’s finances were also in a grave state. His first priority was to find money. In 1969, a five-year grant of $1.6 million was secured for a tumor virus program, to be based in James Laboratory. In 1970, a $500,000 grant from the Sloan Foundation supported a summer neurobiology course. In 1971, CSHL received the first of its Cancer Center grants — $5 million over five years. In 1973, Charles Robertson’s gift of $8 million marked the turning point in the Laboratory’s fortunes. For the first time, there was a reliable source of income, independent of the vagaries of federal grants, to provide a foundation for research and educational activities.
The Grounds

Greater financial stability made it possible to look to upkeep of the grounds. Jim and Liz Watson undertook to renovate and preserve the wonderful buildings on campus and to make sure that the lawns were cut, flowers planted and trees kept trimmed. It was important, Jim said, to provide a beautiful environment for the enjoyment of the researchers and to persuade donors that they were dealing with a financially sound institution.

Expanding Research

CSHL’s 1968 Annual Report lists only three scientific research topics and 18 full-time staff. By 1973, there were nine areas of research with more than 80 staff. Jim’s first major innovation was to introduce cancer research. He had decided, while still at Harvard, that tumor viruses were likely to provide key molecular insights into what happens when a normal cell becomes a cancer cell. The Tumor Virus Group rapidly became the largest research group on campus. In subsequent years, the research agenda expanded to include neurobiology, cell biology, nucleic acid chemistry and molecular genetics. A decade after Jim became director, CSHL had been transformed from a rather quiet and quaint institution to one taking a leading role on the world’s biomedical research stage.

Promoting Professional Education

Jim believes heartily that participating in meetings is an essential part of doing science — presenting data to the critical scrutiny of one’s peers, and mixing informally with friends and enemies. Convinced that the Laboratory had to do more if it was to retain its long-standing position as the leading venue for meetings, he supported expansions of meetings, courses and programs over a period of decades. Aided by the gift of the Banbury estate in 1976, he established a program of workshop-style meetings. Modeled on those that he had attended at the CIBA Foundation in London, they would bring together small groups of scientists in a setting where they could talk freely. Jim also initiated an expansion of the CSHL Press’s book publishing program, taking advantage of the Laboratory’s contacts with potential authors who attended meetings and taught courses. The resulting CSHL Monograph Series and CSHL laboratory manuals have informed and educated untold numbers of researchers worldwide.

Education for Students

Perhaps the most significant innovation in education at the Laboratory is the DNA Learning Center. The inspiration of David Micklos, the concept was fully recognized and supported by Jim: introducing high school students to the exciting world of recombinant DNA. Jim’s support has been unflagging over 20 years, as the DNALC has grown and diversified to reach new audiences, in both real and virtual space. Jim achieved another goal with the creation of the Laboratory’s graduate program, the Watson School of Biological Sciences. The School is at the forefront of graduate education, competing for students with the likes of Princeton, Harvard and Stanford.

It is no exaggeration to say that the Laboratory is what it is today because of Jim Watson’s intelligence, drive and vision. It is hard to imagine where we would be without him.
What exactly is “organic food” and how is it raised? Is it genetically modified? Is it safe? On June 22, 150 women gathered on the lawns of a beautiful seaside estate in Lattingtown, Long Island, to learn the answers to these questions and to try their hand at their very own lunchtime genetic experiment.

At this year’s Women’s Partnership for Science event, the luncheon tables on which the attendees learned to extract DNA from banana baby food were graced with cornstalk centerpieces — a poignant touch that evoked the spirit of the late Dr. Barbara McClintock. A pathbreaking Nobel Prize-winning scientist — the third ever to be honored with the coveted Prize in Physiology or Medicine — McClintock helped establish Cold Spring Harbor Laboratory (CSHL) as a global focal point of genetics research. No doubt she would have been proud to note the enthusiasm of this year’s guests as they participated in the scientific lectures and discussion that followed.

Hosted by CSHL Trustee Kristina Perkin Davison, the luncheon, held at the Davison family estate at Peacock Point, has been an annual event since 2002. As in past years, guests were invited to spend a summer afternoon learning about science and research at CSHL. Proceeds from the luncheon help to promote women pursuing careers in biomedicine and provide mentorship to undergraduate, high school and middle school students.

This year’s luncheon included guests from the neighboring community as well as from places farther afield, such as New York City and Greenwich, Conn. Erin McKechnie and Elna Gottlieb, two young instructors from CSHL’s Dolan DNA Learning Center (DNALC), gave the attendees a fascinating glimpse into the biology of organic food and the experiences that cemented their own passion for science. They also led a discussion with the guests about the social concerns and implications of genetically engineered food.

The attendees then dabbled in DNA. With step-by-step instructions from the science instructors, guests proceeded to turn baby food into research raw material and then purified DNA from mashed banana!

The afternoon’s events were not all about science, however. The amateur scientists then kicked back and were treated to a trunk show by designer Allegra Hicks and a raffle featuring wares from some of the area’s well-known merchants.

“This annual event is a wonderful way for women to support other women as they strive to enter and succeed in the biomedical research field,” explained Mrs. Davison. “With a jewel like CSHL in our own backyard, it is the perfect beneficiary for our support.”

The 2008 luncheon raised more than $75,000 to help CSHL attract more women into the arena of scientific research.

Hema Bashyam
A Personal Tour of Bungtown Botanical Garden

The attractive setting of Cold Spring Harbor Laboratory, where nature meets knowledge, has long impressed its many visitors. The magnificent trees, historic architecture, captivating sculptures and splendid vistas of the harbor offer a retreat from the city, a refuge from the hustle and bustle of Long Island, and a sanctuary for researchers to conduct the best science in the world.

The Laboratory’s landscapes are the focus of a beautiful new book, Grounds for Knowledge, written by historic preservationist and tree enthusiast Liz Watson, who has lived in various homes along Bungtown Road for nearly four decades with her husband, Jim, and two children.

Grounds for Knowledge is an inspiring journey through the campuses of Cold Spring Harbor Laboratory, a trip to its buildings both historic and new, and to the striking landscape and vegetation that surrounds them. The book’s first five chapters cover all parts of the main campus, which extends along the western shore of Cold Spring Harbor in the Incorporated Village of Laurel Hollow. Three subsequent chapters cover the nearby campuses in Woodbury, Lloyd Harbor and Cold Spring Harbor village.

The book’s grand tour of Laboratory property includes a brief history of each building, the common and scientific names of the surrounding woody trees and shrubs, and descriptions of sculptures, plantings and water features, as well as detailed maps that invite first-hand exploration. Even readers who are familiar with the grounds — perhaps those readers most of all — will learn of new sights to see. For instance, they will learn of the “Bungtown Botanical Garden,” which was recently established through the Public Gardens Association of America on the main campus thanks to Watson’s initial efforts, as well as ongoing work by Laboratory staff, neighbors and professional horticulturists.

The book’s appendices contain building and bird checklists, a guide to the seasonal changes of vegetation, and recommended strolls through the Laboratory, certain to enhance the experience of casual visitors and campus regulars alike.

Elizabeth Watson takes tremendous pride in the grounds of the Laboratory, as does Peter Stahl, the Laboratory’s director of facilities, whose stunning photography graces the pages of this full-color book. Jessica Toner

Landscape photography by Peter Stahl
©2008, Cold Spring Harbor Laboratory Press
208 pp., illus., maps, appendices, bibliography, index
Hardcover, $29, ISBN 978-087969799-0
http://www.cshlpress.com/link/grounds.htm

[Editor’s Note: For a schedule and details about the walking tours, see http://events.cshl.edu/tours.html]
CSHL Association

The Cold Spring Harbor Laboratory Association comprises some 1,000 neighbors and friends who contribute to the Annual Fund, an essential source of unrestricted support for outstanding young scientists and their promising, early-stage research projects. Association members get to know CSHL scientists at lectures, concerts, dinners and other social events that support the Laboratory. Membership levels start at $100 per year. For more information, please contact Diane Fagiola, director of development, at 516-367-8471 or fagiola@cshl.edu

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Save the Date…
…with a CSHL Calendar!

» How can you ‘save the date’ and help support biomedical research? It’s easy: buy a 2009 CSHL wall calendar!

The photographic talents of CSHL’s diverse staff, students, scientists and administrators are showcased in a calendar featuring unique photos of the Bungtown Botanical Garden throughout the seasons. [See p. 17 of this Harbor Transcript for an article about CSHL’s latest designation.]

To purchase your calendar call 516-367-8844 or visit https://www.cshl.edu/calendar/. Each calendar costs $15.00 (includes shipping and handling). CSHL researchers thank you for your support!