

EZRA

CORNELL'S QUARTERLY MAGAZINE WINTER 2009

A glass pipette is shown against a blue background. The bulb of the pipette contains a drop of liquid that perfectly reflects a modern, multi-story building with a curved facade and many windows. The pipette is tilted, and the drop is suspended at the tip.

STRUCTURES OF LIFE

ADVANCED BUILDINGS
FOSTER RESEARCH,
COLLABORATION AND
DISCOVERY



Although this is the second issue of Ezra, Cornell's quarterly magazine, it is the first full-size issue, with 32 pages, four more than our fall inaugural issue. We are debuting several new standing features: In addition to our cover story package, you will find two new sections, Arts & Humanities and Research Spotlight, which will appear in each future issue.

An update on Ezra's fall issue cover story, which took an in-depth look at Cornell's new financial aid initiative: As our story on Page 3 details, that package has now been enhanced even further. Increasing our investment in need-based student financial aid is

especially important in today's economic climate, but it is even more crucial for us to make Cornell affordable for as many students as possible.

This issue's cover story is about an investment of a different kind: the newly opened Weill Hall, a complex research facility that brings life scientists together from across campus and uses proximity, collaboration and lots of open space to position Cornell at the forefront of life sciences research. Facilities like Weill Hall are important not just because they encourage cutting-edge science, but also because they help attract promising young scientists and researchers – as well as giving established scientists room to grow.

The stories that appear in Ezra come from quite a few of Cornell's talented writers. In particular, I want to thank our student writers, such as Jennifer Wholey '10, whose talents are indispensable to the success of this fledgling publication.

A handwritten signature in black ink that reads "Tommy Bruce". The signature is fluid and cursive.

Thomas W. Bruce
Vice President, University Communications

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BY RENNY LOGAN

Engineering Dean Kent Fuchs named CU's 15th provost

W. Kent Fuchs, the Joseph Silbert Dean of Engineering at Cornell since 2002, will be the university's next provost. Fuchs (pronounced "Fox") will assume the office Jan. 1, 2009.

President David Skorton made the announcement in his State of the University address at the annual meeting of the Cornell Board of Trustees and Cornell University Council in October. "Kent brings to this post great knowledge of Cornell, strong leadership abilities and a clear vision of the future," he said.

Fuchs said that among his top priorities will be to bolster individual academic departments and to encourage optimism across campus.

"I will have a slightly different focus than we've had as an institution explicitly in the past 10 years,"



W. Kent Fuchs

said Fuchs. "The department and school are the academic home for faculty and students, and it's where teaching occurs and scholarship is conducted. My personal goal is to understand the aspirations

of the faculty and students in those departments, to encourage departments and schools to develop plans – explicit aspirations – and make sure that the provost's office is supporting them," he said.

While the new provost's long-term focus will include leading efforts to implement Cornell's strategic plan, among the issues that will take his immediate attention will be careful understanding and management of the budget in the midst of economic uncertainty. In this, he said, it is important to include Weill Cornell Medical College and the rest of Cornell's New York City campus in leading and planning on budget issues as one institution.

As Cornell's 15th provost, Fuchs will succeed Carolyn "Biddy" Martin, who held the position for eight years – the longest term for any provost in

Cornell history – before accepting the chancellorship of the University of Wisconsin-Madison in May.

David Harris, who had been serving as interim provost, will resume his deputy provost position Jan. 1.

"I am delighted that Kent Fuchs has accepted the challenge of being Cornell's next provost," Skorton said. "He is a strong and respected administrator who has led the Engineering College with foresight, vitality and innovation – attributes he will bring to his new appointment. I look forward to benefiting from his leadership and insight as Cornell's academic enterprise moves into an even brighter future."

Christopher K. Ober, Cornell's Francis Bard Professor of Materials Science and Engineering, will begin serving as interim dean of the College of Engineering on Jan. 1.

Rhodes to serve on board of new Saudi university that will introduce new ideas into kingdom



Cornell President Emeritus Frank H.T. Rhodes



KAUST

King Abdullah University of Science and Technology (KAUST), funded with a \$10 billion endowment from the king, is slated to open in September 2009 as nation's first independent, international graduate-level research university.

Cornell President Emeritus Frank H.T. Rhodes has been named to the board of trustees of King Abdullah University of Science and Technology (KAUST) in Saudi Arabia. Set to open in September 2009 with up to 350 international and Saudi students, KAUST will train a cohort of graduate students, all on full scholarships. It will be co-educational and have women on its faculty, which will be guaranteed academic freedom. Instruction will be in English.

Rhodes' involvement with KAUST began a couple of years ago when he was asked to write a charter and bylaws for the new university.

"King Abdullah – who is financing this and whose name it bears – wanted to build a university that

would advance the interests of the people of Saudi Arabia in the era when petroleum is no longer the dominant basis of the economy," Rhodes said. King Abdullah bin Abdul Aziz Al Saud, who also serves as prime minister, has been the royal head of the kingdom since 2005.

Rhodes consulted the constitutions of many universities, and produced a document that introduced such new ideas into Saudi higher education as co-education and women faculty; an independent, self-electing board of trustees; strong guarantees of academic freedom; and endowment income free of the influence or control of government ministries.

"King Abdullah has a very elevated vision for a great university that

could become world-class in science and engineering," Rhodes said.

Serving on the 20-member board with Rhodes are Mary Robinson, the former president of Ireland; Elias Zerhouni, director of the National Institutes of Health; Rolf-Dieter Heuer, incoming director general of CERN; Shirley Tilghman, president of Princeton University; Jie Zhang, president of Shanghai Jiao Tong University; and Cornell trustee Lubna Suliman Olayan. "It's an impressive international spread," said Rhodes, who led Cornell from 1977 to 1995.

The king has provided the university with a \$10 billion endowment – among the largest for any university (about double Cornell's endowment) – and separate funds to build a cam-

pus that will function as its own city. Some 20,000 workers are building the campus, which is located on the Red Sea north of Jeddah in a former fishing village called Thuwal.

KAUST has formed research arrangements with universities and corporations around the world, including Cornell, which has a \$25 million partnership. Other projects under way: General Electric working on wind and solar power; IBM building a massive supercomputer; Monsanto developing salt-resistant crops; and Woods Hole Oceanographic Institution helping to preserve the coral reef offshore of the KAUST campus.

— George Lowery

Cornell confronts economy's impact with hiring pause, construction delays

President David Skorton issued a statement to the Cornell community Oct. 30 in which he announced that, due to the national and international economic crisis, the university will institute a five-month "hiring pause" and a 90-day pause in construction. At the same time he launched a 45-day universitywide review of ways to contain costs and streamline operations.

Cornell "will remain focused on the need to attract and retain the best and brightest students, faculty and staff," Skorton said. "To this end, we will maintain our commitment to our students and their families by strengthening our financial aid programs (see sidebar); sustain competitive market-based faculty and staff pay programs; make critical and cost-effective capital and infrastructure investments; and support our land-grant mission for the state of New York."

Following the announcement, Skorton hosted two public forums at which he explained the university's



President David Skorton answers a question during a public forum on cost-saving measures, held Nov. 6.

planned cost-saving measures and took questions from faculty and staff members. The university, he said, is following four principles in grappling with the economic situation: a review of operations, engagement with the

Cornell community, and the pauses in external hires and construction.

At the forums, Skorton pledged to protect the university's "human capital," to step up fundraising efforts and to look at improving

efficiencies throughout Cornell. "I'm going to be looking carefully and skeptically at anything that says, 'We need to spend a little more money to get this done,' at a time when I'm worried about people's jobs," he told one forum audience. "That's the first thing on my mind when I get up in the morning and the last thing on my mind when I go to bed at night."

Four sources of Cornell's income have been hardest hit by the economic downturn, Skorton said: He predicted that New York state will reduce its funding, while federal dollars for research will, at best, remain at last year's levels. The university's endowment has shrunk because of the economic downturn, and, finally, the university must moderate its ability to raise tuition so as to maintain Cornell's socioeconomic diversity.

Cornell must increase its revenue streams, Skorton said. "We cannot cut our way out of this dilemma. We have to grow our way out."

Cornell boosts financial aid for undergrads

On the heels of an initiative announced nearly a year ago that greatly reduced student loan burdens, Cornell has announced that it will further bolster its financial aid program for undergraduate students by eliminating parental contributions for families with incomes below \$60,000 and by further reducing student loans.

Together with work-study and other grant programs already in place, Cornell's neediest students will graduate debt free.

"In the current volatile and difficult economic circumstances, many current and prospective college students and their families are concerned about the affordability of a university education. Particularly at this unsettling time, Cornell must open its doors even wider," said President David Skorton on Nov. 13.

"Our new policy will allow students, despite the current economic conditions, to be able to choose Cornell and to thrive here. With these enhancements, we will have the best chance each year to attract the strongest class," said Interim Provost David Harris.

The three components of the new financial aid initiative are:

- Eliminating parental contributions for students from families with annual incomes below \$60,000 and assets below \$100,000;
- Capping need-based student loans at \$7,500 annually for students who have financial need and whose families have annual incomes above \$120,000;

- Reducing parental contributions for selected students who have financial need and whose families have annual incomes above \$60,000.

Cornell already eliminates need-based loans for students from families with incomes below \$60,000 (the income level will rise to \$75,000 in fall 2009) and annually caps need-based student loans at \$3,000 for families with incomes between \$60,000 and \$120,000.

Like many other universities, Cornell has had to respond to the current economic downturn, but the university has maintained its commitment to supporting a need-based financial aid program.

"Ensuring that Cornell remains accessible to students from diverse economic backgrounds remains one of our top priorities," said Doris Davis, associate provost for admissions and enrollment.

When considering how to enhance financial aid, Cornell has a unique set of challenges, Harris said. Not only is Cornell larger than many of its peers, it is also more socioeconomically diverse. In fall 2007, Cornell had 1,863 undergraduates receiving Pell Grants – federal grants for families with less than \$45,000 income. That is about 13.8 percent of Cornell's undergraduates, and, as Harris pointed out, roughly the same number of Pell Grant recipients enrolled at Yale, Princeton and Harvard combined.

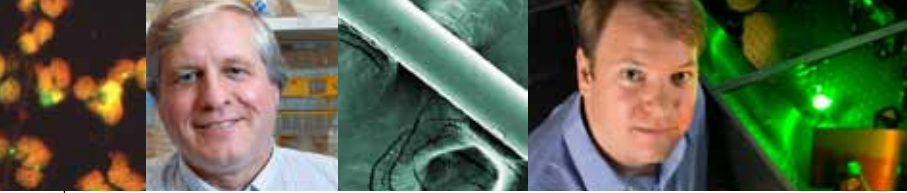
Cornell plans to spend \$138.9 million of its own resources on undergraduate financial aid in 2008–09, 97 percent of which will be spent on grant aid that does not have to be repaid to the institution.

IN OUR SPRING ISSUE:

Cornell, like many other universities, is in the midst of a faculty hiring challenge. Competition is high to recruit young, talented faculty to take the place of many retiring baby boomers. What resources and strategies are at Cornell's disposal not only to hire the best new faculty, but also to hold onto faculty already here who might be recruited by other universities?

STRUCTURES OF LIFE

Ever more complex buildings are crucibles of ideas



DESIGNERS AND FACULTY planners at Cornell University's Ithaca campus have created the intellectual crucible that was once the stuff of life scientists' dreams: a state-of-the-art facility with open, overlapping laboratory areas, light-filled rooms and hallways, a commanding atrium and a high-tech audiovisual facility for presentations and long-distance videoconferencing. And to encourage conversations that could lead to new ideas and collaborations, parts of various departments are strategically located near each other.

Completion of architect Richard Meier's life sciences building, Weill Hall – which had its official opening Oct. 16 – marks a giant leap toward advancing Cornell's leadership nationally and internationally in the biological sciences revolution. And it will be well positioned to be at the center of a fertile era of research breakthroughs. As researcher Scott Emr observes, "The next 10 years will be an awesome period of discovery in the biomedical sciences."

Emr is the director of the Joan and Sanford I. Weill Institute for Cell and Molecular Biology, a key occupant in the \$162 million, 265,000-square-foot building. "The space is wonderful," he said. "It's open, it's bright and it's very conducive to collaboration" with its large, open labs.

The building is also a key component of Cornell's four-building commitment to research – the others are Duffield Hall (opened in 2004), the East Campus Research Facility (opened in 2007) and the Physical Sciences Building, which is scheduled to be completed in 2012.

Cornell is far from alone in building modern collaborative research facilities to not only advance scientific research, but also to attract and retain top faculty researchers and their research programs. Weill Hall is now among the largest research facilities in New York state, but it is one of numerous new structures that have gone up on college campuses across the nation in the past few years. The word is out, it seems, that big science and its promise of major breakthroughs in health, energy and the basic building blocks of matter require big and bigger buildings.

"Many top universities have launched new initiatives in the life sciences to enhance their efforts in these important areas of research," Emr said. "Beautiful new buildings, top-notch facilities and financial resources have been used to establish and enhance basic science research programs."

Among the most notable: The \$230 million Life Sciences Institute at the University of Michigan; the Lewis-Sigler Institute for Integrative Genomics at Princeton University; the Anlyan Center for Medical Research, the largest building ever at Yale School of Medicine; the \$150 million James H. Clark Center at



From left, Board of Trustees Chairman Peter Meinig, President David Skorton, Joan Weill, Sandy Weill and architect Richard Meier attend the dedication of Weill Hall, Oct. 16.



and innovation



Stanford University; the Leichtag Biomedical Research building at the University of California-San Diego Medical Center; and planned for 2011 is the \$145 million Genome Science Laboratory Building at the University of North Carolina-Chapel Hill.

"Each of these top schools is competing for the best faculty, postdocs and students," Emr said. And these mega-research buildings are not limited to universities. New York City's Memorial Sloan-Kettering Cancer Center, the world's oldest and largest private cancer center, nearly doubled the size of its research facilities in 2006 with the opening of the Mortimer B. Zuckerman Research Center building as the first part of a \$503 million research complex.

This is "a very exciting time in biomedical research," Emr said in explaining the building boom. "Universities and biotech companies are making key discoveries of novel targets for the development of new therapeutics that will more effectively treat devastating diseases like cancer, Alzheimer's disease and AIDS."

Design fosters a collaborative culture

With the opening of Cornell's Weill Hall and the Weill Institute for Cell and Molecular Biology, Cornell has been



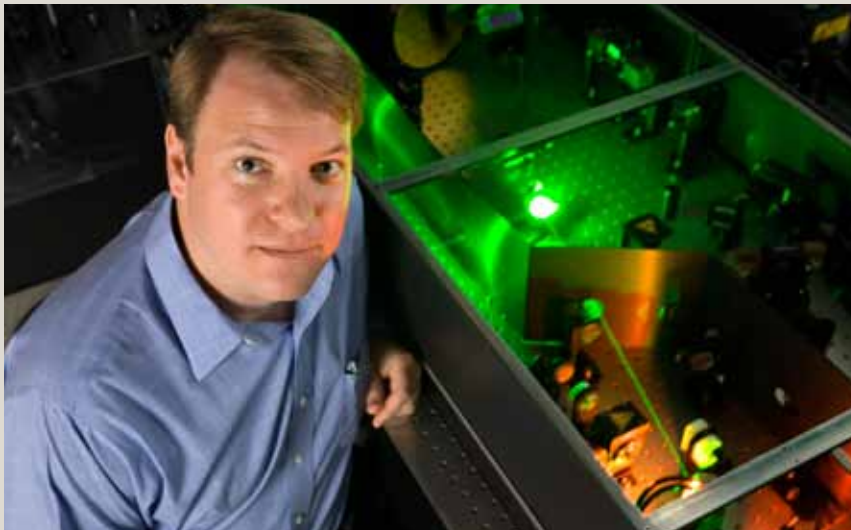
Chris Fromme, assistant professor of molecular biology and genetics.

COLLABORATION BETWEEN ITHACA AND NEW YORK CITY IS CENTRAL

BY LAUREN GOLD

With its open plan, shared facilities and top-of-the-line videoconferencing equipment, Weill Hall is designed for big-picture scientists: researchers who think beyond the confines of their field to tackle challenges in creative new ways.

This principle – that some of the most innovative ideas come from scientists who work together across disciplinary boundaries – has been a central Cornell strength for decades. So despite Weill Hall's newness, the faculty and students inhabiting it are already savvy to the rewards of cooperation.



Chris Schaffer, assistant professor of biomedical engineering.

"One of the main reasons I came to Cornell was that it was such a collaborative environment – much more so than other institutions of similar caliber across the nation," said Chris Schaffer, assistant professor of biomedical engineering.

Schaffer has several ongoing collaborative projects with colleagues on campus in Ithaca and at Weill Cornell Medical College in New York City, including a study of the role of small strokes in initiating or exacerbating Alzheimer's disease. Another research project is to develop a laser-based therapy for epilepsy.

"A lot of the projects I'm on, we're collaborating not because I have something the other faculty needs and they have something I need, but because it would be a project that would be fun to do together," said Schaffer. "That's something very unique about Cornell as compared to other top-tier universities. At some places I've been in the past, collaboration was viewed as a sign of weakness. [But] here at Cornell it's actively encouraged."

Collaboration is vital for biomedical engineers, said Michael Shuler, the Samuel B. Eckert Professor of Chemical and Biomolecular Engineering and the James and Marsha McCormick Chair of Biomedical Engineering.

"We look at ourselves as an intellectual bridge between engineering and medicine, so for us to be as competitive and successful as we can be, the interaction with the medical school has to be good," said Shuler.

able to recruit talented new faculty members and retain many of its top research scientists. Weill Hall's goal of facilitating interdisciplinary research is intrinsic to its design, exemplified by the open labs that run the length of each floor of the building's south wing as well as one floor of the north wing.

Chris Fromme, a new assistant professor who studies the relationships between structure and function of proteins, has a lab that ends where Emr's lab begins. As a result, he already has become familiar with two of Emr's postdocs.

"I'm only a few months removed from being a postdoc myself," said Fromme, who hails from the University of California-Berkeley. "Within two weeks of being here I already had two collaborations with these postdocs, and that is pretty remarkable."

"We wanted a facility that was going to foster collaboration and innovations and creativity that we didn't think about 10 years ago," said Stephen Kresovich, Cornell's vice provost for the life sciences. "In the long run, we'll be measured by how this building, as a keystone, impacts all of life sciences at Cornell."

Cornell's New Life Sciences Initiative has always involved innovation by researchers from various

disciplines working together. That's why faculty planners decided to place parts of different departments on the same floor. The Weill Institute, the Department of Biomedical Engineering, a business incubator scheduled to open later this year and select faculty and students from the Department of Biological Statistics and Computational Biology and the Division of Nutritional Sciences all share the building, spreading out across four floors.

Another forward-thinking feature of the building is its gold rating under the U.S. Green Building Council's Leadership in Energy and Environmental Design program (see sidebar, p. 17).

"This is the beginning of an experiment, and I am excited about the opening," said Kresovich. "But I'd also be excited to come back in 50 years to see how it turns out."

Facilitating research

The ultramodern building's two-acre basement includes a low-vibration space built on separate floor plates for imaging research; a 20,000-square-foot vivarium; \$3 million worth of controlled-environment chambers for plant research; and tunnels to the Plant Science and Biotechnology buildings. The basement also holds a



WEILL HALL BY THE NUMBERS

MORE THAN 31,000 SEDUM PLANTS COVER THE TWO GREEN ROOFS ON WEILL HALL'S WEST SIDE.

THERE ARE ABOUT 700 DOORS IN WEILL HALL.

Every tenure-track faculty member in the biomedical engineering department is involved in at least one collaborative research project, he added, with some working on as many as five. The department, whose far-flung units have been pulled together for the first time in Weill Hall, is also linked to the medical school through interdisciplinary courses, annual retreats and conferences.

Said Schaffer: "I've been [at Cornell] about three years and until this year, the biomedical engineering department was spread throughout 12 buildings. Now we have a home. We have a place where we all go and where we bump into each other for coffee and to talk. The building has made an enormous difference."

Collaboration is also encouraged for researchers at the Weill Institute for Cell and Molecular Biology, an interdisciplinary research center focusing on cell signaling and molecular dynamics, which occupies parts of three floors of Weill Hall.

"The most productive collaborative efforts are being developed from interactions at yearly symposia and joint topical meetings being held together with our colleagues at the medical school," said Scott Emr, the institute's Frank H.T. Rhodes Class of '56 Director. "Each year, scientists from the medical school who share common interests with faculty here in Ithaca visit with us for three days, or vice versa. Out of these meetings, important collaborative research projects have been initiated."



Michael Shuler, the Samuel B. Eckert Professor of Chemical and Biomolecular Engineering and the James and Marsha McCormick Chair of Biomedical Engineering.

For Schaffer, the move into Weill Hall is also paying off by giving him and colleagues a greater sense of community and shared goals. "The research space is fantastic – world-class space that I think is going to be a great environment for myself and members of my lab to work in."

WEILL HALL BY THE NUMBERS

15,300 3-BY-3-FOOT WHITE PANELS COVER THE OUTSIDE OF THE BUILDING.

NEARLY 70,000 CUBIC YARDS OF DIRT WERE EXCAVATED FOR THE TWO-ACRE, 20-FOOT-DEEP BASEMENT. IT TOOK ABOUT 5,000 TRUCKLOADS TO MOVE THE DIRT OFF THE SITE. FORTY PERCENT OF THE LOW-GRADE SOIL WAS USED TO CREATE ATHLETIC FIELDS ON GAME FARM ROAD.

THE FIVE-STORY BUILDING WAS BUILT WITH 25,000 CUBIC YARDS OF CONCRETE.

centralized glass washroom that makes such mundane but essential activities as cleaning and sterilizing lab ware more efficient.

Each research area in the building is divided into four distinct sections: One is for faculty and student offices; a second is a card-key-protected, windowless equipment corridor, complete with common-use centrifuges, freezers, mixers, cold rooms with shelves and counter space, and dark rooms for processing X-ray film for experiments with radioactive markers; the third, entered through 4-foot-wide doorways, holds support rooms that contain specialized instruments including microscopes, tissue culture facilities, mass spectrometers, and robots for protein crystallization assays; this leads to the fourth section, a surprisingly quiet area of open laboratory spaces where students, postdoctoral fellows and technicians are actively doing experiments at the bench.

Weill Institute associate director Tony Bretscher said he was initially concerned that the open labs would be noisy, but “in fact, they are quieter than the lab we were in previously,” he said, pointing out that most of the loud,

buzzing equipment is out in the middle corridor while the architect’s use of noise-absorbing materials in the labs muffles other sounds.

Labs are also fitted with modular furniture and gas and electric outlets in the ceilings, so researchers can modify their space at any time. Fromme, for example, required constant temperature settings for growing protein crystals in a lab support room. The crystallized forms allow him to view a protein’s atomic structure, which, in turn, offers clues to understanding a protein’s function. But creating such crystals is trial and error, involving incubators and a robot that mixes chemicals around the clock. Solutions may sit for weeks, and temperature fluctuations can disrupt the crystals from forming. To set the room at a constant 68 degrees Fahrenheit, building manager Todd Pfeiffer reset the settings for the detectors that automatically control lights, air flow and temperature in the room to the new desired setting using the central building operations computer located in his office.

VISIONARY BUILDING BECAME A REALITY THROUGH THE VISION OF ITS LEADING DONORS

BY BRYCE T. HOFFMAN



Joan and Sanford I. '55 Weill



Samuel C. '62 and Nancy M. Fleming



Nancy L. '62 and H. Laurance '60 Fuller

Even for a major research university like Cornell, building and outfitting a cutting-edge research and educational facility like Weill Hall is extraordinarily, almost prohibitively, expensive.

But Weill Hall is here, and it is because Cornell had help – lots of it – from the state of New York and from individual philanthropists who backed the project with millions of dollars and their belief in its potential to generate breakthrough discoveries and economic benefit.

“Facilities of this type, because they are highly specialized and serve a broad community of investigators across a range of disciplines, require lead donors who are visionary and innovative in their thinking,” said Stephen Kresovich, vice provost for the life sciences.

New York state was the first to stand behind Weill Hall with a \$25 million commitment from its

Gen*NY*Sis biotechnology economic development program. Joseph Bruno, former state senate majority leader, was a pivotal player in securing its approval, said Stephen Philip Johnson, vice president for government and community relations.

Public dollars helped to make the case for private support. As of today, a handful of lead donors have contributed nearly \$75 million toward the building’s \$163 million cost, and many have made additional gifts toward professorships, scholarships and research fellowships:

- Sanford I. '55 and Joan Weill extended their legacy among Cornell’s most generous supporters in June 2007 with a historic commitment to the life sciences at Cornell’s Ithaca campus and at Weill Cornell Medical College. In recognition, Weill Hall bears their name as does the Weill Institute for Cell and Molecular Biology, which is housed on

WITHOUT INTERRUPTING TRAFFIC IN JUNE 2007, CONSTRUCTION WORKERS PUSHED OUT A 90-FOOT SECTION OF A 300-FOOT TUNNEL THAT RUNS UNDER TOWER ROAD AND CONNECTS WEILL HALL TO THE PLANT SCIENCE BUILDING.

DUE TO HIGHLY EFFICIENT FIXTURES AND A GRAYWATER RECLAMATION SYSTEM, THE BUILDING SAVES MORE THAN 450,000 GALLONS OF WATER PER YEAR (EQUAL TO APPROXIMATELY 100 LITERS OF WATER FOR EVERY CORNELL UNDERGRAD).

Weill Institute

The Weill Institute lies at the very center of Cornell's New Life Sciences Initiative. Fittingly, the institute has the strongest presence in Weill Hall and fills the south wing on three floors.

The institute focuses on advancing the understanding of how a cell works, including such aspects as signaling, membrane trafficking – how proteins are shuttled across cellular membranes (an area in which Emr is a world leader due to his use of a yeast cell model to study membrane trafficking, which applies to all cells) – and how a cell is shaped and internally organized (which is Bretscher's area of expertise).

"The institute represents efforts to address fundamental problems in cell biology using the latest technologies and the most amenable model organisms," said Emr. "We're doing studies with flies, with worms, with yeast. The basic biology of a yeast cell is the same as the basic biology of a human cell."

The institute's directors and advisory committee are in the process of hiring a total of 10 faculty members.



Lisa and Kevin M. '70 McGovern

John A. Swanson '61

parts of the second, third and fourth floors. "It's not just about money; it's about a passion and the brainpower to do something different," Sandy Weill said at the time of his gift announcement. "What we can do in medical research can make a difference in this world." The former chairman and CEO of Citigroup, Sandy Weill is a trustee emeritus, presidential councillor and chair of the Weill Cornell Medical College Board of Overseers.

- Samuel C. '62 and Nancy M. Fleming provided one of the first private gifts to the building to name a lecture hall. They also endowed a professorship and three postdoctoral fellowships in the Weill Institute and a fellowship to support research between the Ithaca campus and Weill Cornell Medical College. Sam Fleming chairs Cornell's Life Sciences Advisory Board and is vice chair of the board of trustees.
- H. Laurance '60 and Nancy L. '62 Fuller made a generous commitment in support of the two-story learning center that is the educational and outreach focal point of Weill Hall. Larry Fuller is a

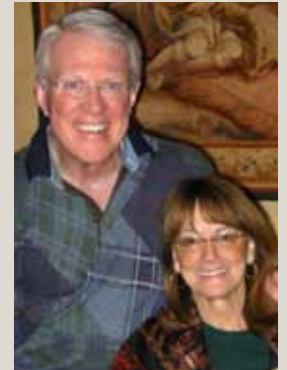
trustee emeritus, and Nancy Fuller served on the Cornell University Council for four years.

- Kevin M. McGovern '70, his wife, Lisa, and their children, Jarrett '03 and Ashley '08, gave a substantial gift for the Kevin M. McGovern Family Center for Venture Development in the Life Sciences.
- John A. Swanson '61 provided a gift to name the biomedical engineering north laboratory suite on Weill Hall's third floor. Swanson also has provided generous support for positions in the life sciences.
- Philip M. '62 and Nancy H. '62 Young provided a gift to name the teleconference room in the Fuller Learning Center. Philip Young is a Cornell trustee.
- David G. '56 and Jane W. '57 Pyle named the second-floor north break room in honor of their sons, Stuart G. Pyle '82 and Stephen F. Pyle '85.

All of these gifts have made Weill Hall a reality, but fundraising will continue not only for this facility but also in support of other life sciences priorities, especially graduate fellowships and endowed professorships, said Jim Mazza '88, director of Far Above ... The Campaign for Cornell.

Weill Hall has already become a focal point for attracting top scholars, as it will provide a crossroads for them to interact, challenge one another and generate awe-inspiring discoveries, Kresovich said.

"The building is the keystone facility for the Life Sciences Initiative," he said. "Once you come into Weill Hall, you realize the promise of life sciences is not a distant reality. It is here, today."



Philip M. '62 and Nancy H. '62 Young



Jane W. '57 and David G. '56 Pyle

WEILL HALL BY THE NUMBERS

THE BUILDING USES MORE THAN 30 PERCENT LESS ENERGY THAN A STANDARD BUILDING OF THE SAME SIZE. THIS IS EQUIVALENT TO 6,000 TONS OF GREENHOUSE GAS EMISSIONS PER YEAR.

Three assistant professors (including Fromme) and one research scientist arrived in Ithaca in August. Emr and colleagues posted advertisements in the fall in prominent journals for two more hires.

“New buildings really help in recruitment efforts for new faculty,” said Carlos Bustamante, professor of biological statistics and computational biology, who has an office in Weill Hall. “Many of the major universities we compete against to hire new faculty have taken similar initiatives in growth and development, so in order to attract the top people it really helps to have new, modern and beautiful facilities.”

Emr noted “four key stimulants to recruiting”: scientific interactions at the school, access to excellent students and postdocs, the laboratory space provided, and the funding and equipment made available to a candidate.

Biomedical engineering

The biomedical engineering department used to be housed in 12 buildings across campus but has now moved almost in its entirety to Weill Hall.

“It’s tremendous for us to all be in the same building,” said Michael Shuler, professor and chair of the biomedical engineering department, which seeks to use engineering methods and tools to understand the human body and works to design therapies, devices and diagnostics for improving human health.

During her first year-and-a-half at Cornell, biomedical engineer Claudia Fischbach-Teschl was



Claudia Fischbach-Teschl, assistant professor of biomedical engineering.

assigned a newly renovated lab off campus in the Baker Institute for Animal Health, a facility with trees and deer outside but which required a car or a bus trip and a walk to get to campus. Now, Fischbach-Teschl has bright new offices and open lab space to continue perfecting the use of 3-D scaffolding for growing tumor cells, a setup that mimics how those cells behave and assemble within the body.

“While the Baker Institute has been a great environment to get my research program under way, the

SMALL BUSINESS, BIG POTENTIAL: NEW INCUBATOR WILL BRING TECHNOLOGY TO LIFE

BY JENNIFER CAMPBELL



Charles Phlegar, left, vice president for alumni affairs and development, with Lisa and Kevin McGovern '70.

Illuminaria makes a hand-held screener that takes less than 60 seconds to identify such contaminants as anthrax, *E. coli* and *Listeria*. AppleBoost produces supplements and snacks containing antioxidant-rich apple-peel powder. e2e Materials manufactures petroleum-free, biodegradable plastics from soy, bamboo, jute, flax and kenaf. GenVec develops drugs and vaccines for certain cancers as well as for HIV, malaria and influenza.

These are just some of the companies that market innovations by Cornell life scientists. More

companies, growing from life sciences research, are on the way, and they will have a powerful new ally: The Kevin M. McGovern Family Center for Venture Development in the Life Sciences.

The center, named in honor of a \$7.5 million gift made by McGovern '70, his wife, Lisa, and their two children, Jarrett '03 and Ashley '08, is Cornell's first-ever life sciences business incubation lab.

“What I do in business is no different from what this center is doing,” McGovern said. “It’s taking scientific ideas and gathering people who are skilled in how to apply those ideas – whether businessmen or craftsmen or people who know how to distribute product.”

Cornell's Entrepreneur of the Year in 2007, McGovern is a university trustee and member of the Life Sciences Advisory Board and the Cornell University Technology Transfer Advisory Committee. He is also chairman of the Executive Committee of the Entrepreneurship@Cornell Council.

His firm, McGovern Capital, owns a number of biotechnology- and nanotechnology-based companies. “Kevin really sees the value of research and how it could benefit people and economies,” said Stephen Kresovich, vice provost for the life sciences.

On the whole, Cornell is competitive at technology transfer – securing intellectual property and patent

new building primarily enhances my work because it's much easier for undergraduate and graduate students to be here on campus [as opposed to off campus]," said Fischbach-Teschl. "I have the impression that they like coming in much more than they used to."

The department also may be one of the most collaborative on campus, with every faculty member carrying at least one joint project with a colleague at Weill Cornell Medical College, and some juggling as many as five. Also, "a lot of the faculty are motivated to see their ideas have an impact on people, and in many cases, that involves seeing their ideas in the commercial sector," said Shuler. For this reason, there is interest among some faculty members in the eventual opening later this year of Weill Hall's business incubator, the Kevin M. McGovern Family Center for Venture Development in the Life Sciences.

The department also has a strong presence in the low-vibration imaging facility in Weill Hall's basement, a quartile that is set on separate concrete slabs with a seam to reduce vibrations that can interfere with extremely sensitive imaging equipment. For example, biomedical engineering faculty members Chris Schaffer and Warren Zipfel both required these highly specialized features to conduct their work.

Schaffer studies very small strokes in mice and how those strokes affect brain health and function. He uses very delicate lasers with short pulses that are only 100 femtoseconds (1 femtosecond is one-billionth of one-



Stephen Kresovich, vice provost for the life sciences.

protections, turning innovations into products and services, and finding investors for business startups. But especially in life sciences technology, Cornell is aiming for more.

Stronger tech transfer performance will increase revenue from licensing agreements and related royalties and build the reputation of the university and its faculty while speeding life-improving innovations to market. And it will generate regional economic growth as technology companies take root. Robert Buhrman, senior vice provost for research, noted that the growth may also improve faculty recruitment by improving the overall job outlook for dual-career couples moving to the area.

The university starts with several advantages, most notably a powerhouse combination of nationally ranked engineering, veterinary medicine, human medicine, law and business schools. It has successful business alumni who give both their money and their knowledge to Cornell's startups. It also has a famously deep-rooted commitment to collaborative research.

While Cornell's small-town setting may be great for fostering an intellectual community, it's not as good for attracting venture capitalists, who typically look for opportunities in larger markets like Boston or San Francisco where the technology labor pool and business infrastructure are already developed, said Alan Paau, vice provost for technology transfer and economic development and director of the Cornell Center for Technology, Enterprise and Commercialization (CCTEC).

The McGovern Center looks to change the equation by providing affordable one-stop support for life sciences startups.

Occupying 6,700 square feet in Weill Hall, the center offers wet labs, offices and conference facilities for six to 10 companies. In a small market, commercial spaces like these are hard to come by, said Paau. "In the life sciences, there are organic solvents, chemicals, radioactive isotopes and biological samples. You need permits and specialized storage and lab equipment," he noted. "Getting a new product off the ground can be prohibitively expensive."

Initial plans suggest companies may need one or two years in the center to prove their concepts and business models before moving to an independent location.

"These will be the embryonic stages of a company," Kresovich said. "Our faculty have the science skills, but they don't necessarily know how to write a business plan or make their ideas attractive to investors."

That is why as researchers proceed with their work at the McGovern Center, CCTEC will set them up with investor and management leads; Johnson School faculty and students will advise on business plans and marketing; the Cornell Law School will offer intellectual property and patent advice; and experienced innovators and alumni will mentor them.

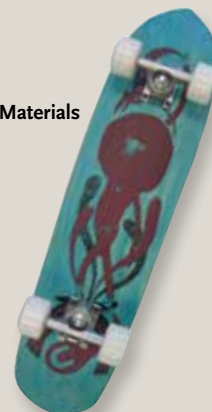
Assembling the staff, including a "go-getter" director, is the next step, Buhrman said. The university hopes to approve the first ventures for residency in the center by the end of the academic year.



AppleBoost



Illuminaria's "nanoDETECT"



e2e Materials



Seats in one of the video-conferencing rooms in the Fuller Learning Center.

millionth of a second) long to create and image the minute strokes and study their effects.

“The ratio of 100 femtoseconds to a minute is the same as the ratio of a minute to the age of the universe,” he said. Given the sensitivity of such work, the slightest vibration can lead to mechanical disruptions. Furthermore, the imaging labs are temperature- and humidity-controlled. To eliminate electrical interference, designers used copper overhead piping instead of stainless steel and insulated sleeves on the metal rods that hold the ceiling panels in place. Free of electrical interference, Schaffer can accurately study brain functions by inserting small electrodes into the mice brains to sense minute electrical action potentials in their neurons.

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Biological statistics and computational biology

In the past six years, the Department of Biological Statistics and Computational Biology has nearly doubled in faculty size and more than tripled its number of support staff, students and postdocs. So, faculty members have been hoping for more room to work.

“Our department was crammed into limited space before,” said assistant professor Adam Siepel. “We have two open faculty positions, including the joint position we are advertising with the Weill Institute.”

Currently, Bustamante is the only faculty member from the biological statistics and computational biology department in Weill Hall. Along with Bustamante, several postdocs, graduate students, staff members and some undergraduates are also working in the Weill suite. Also, both new faculty members will be located in Weill Hall.

“Even those of us not housed in the building will make use of the conference rooms, teleconferencing facilities, the cafeteria,” added Siepel.

Fuller Learning Center

The H. Laurance and Nancy Fuller Learning Center provides unsurpassed videoconferencing and presentation capabilities on campus and “the most advanced capabilities to connect with the medical college,” a use that is given priority over other uses, said Greg Bronson, technology project leader for classroom technologies at Cornell Information Technologies. The center’s main

WHAT BEGAN AS AN INTELLECTUAL EXERCISE NOW BRIMS WITH CUTTING-EDGE RESEARCH

BY RICK CERIONE



Rick Cerione

As is often the case for ideas that end up becoming something truly special, the creation of the Weill Institute for Cell and Molecular Biology had an inauspicious start. The concept was born out of whiteboard discussions between a small group of Cornell faculty members that included Tony Bretscher, Brian Crane, Ken Kemphues, John Lis, June Nasrallah, Ron Harris-Warrick and me.

We had been assigned an intellectual exercise of sorts by the external Life Sciences Advisory

Committee, headed by Harold Varmus (president of Memorial Sloan-Kettering Cancer Center) and by our provost, Biddy Martin (now chancellor of the University of Wisconsin-Madison), to come up with an idea for dramatically changing the landscape of cell and molecular biology at Cornell. The concept that emerged was a relatively simple one – to establish an institute made up of 12 world-class investigators who would be newly recruited to Cornell to address questions of fundamental importance to cellular function. Admittedly, the idea began as little more than a pipe dream, a “castle in the sky.” However, with the dedicated support of Martin and Vice Provost for the Life Sciences Steve Kresovich, and through generous financial contributions from alumni like Sam Fleming and Sandy Weill, things began to take shape.

Certainly a key step in helping this dream become a reality was the identification and recruitment of an institute director. We sought an individual who not only possessed an outstanding scientific reputation, but also exhibited great scientific taste in order to identify top-flight investigators addressing some of the most exciting research questions in cell biology. Fortunately, we were able to attract just the right individual in Scott Emr, who at the time was a



A view of one of Weill Hall's open lab areas.

offerings include two high-tech conference rooms that are free to Weill Hall users and available for an hourly rate to other Cornell departments.

A 64-seat conference room, the Nancy M. and Samuel C. Fleming Lecture Hall, is set up for presentations with a wide screen that can be split into two frames for separate content. It is fitted with cameras for long-distance audiences. In addition, the center features a 30-seat tiered room with stadium seating and a curved screen, which optimizes sight lines, using similar principles as IMAX technology. The room makes use of a new suite of tools based on a system called Access Grid, which allows a savvy presenter or a technician to seamlessly project tens of frames on the screen, each with separate content. Workshop participants, for example, may view a wide screen filled with numerous video feeds showing participants from off-campus locations and multiple frames with Web pages and slides, all simultaneously. Viewers off campus can also view the screens via a video feed. Seats are equipped with built-in microphones. When a speaker presses the microphone's button, cameras in the room pan to his or her seat. CIT technicians are available to man events from a control room between the two conference rooms.

Each room supports high-definition video, and the 30-seat room was planned with the capacity for future upgrades to 3-D viewing.

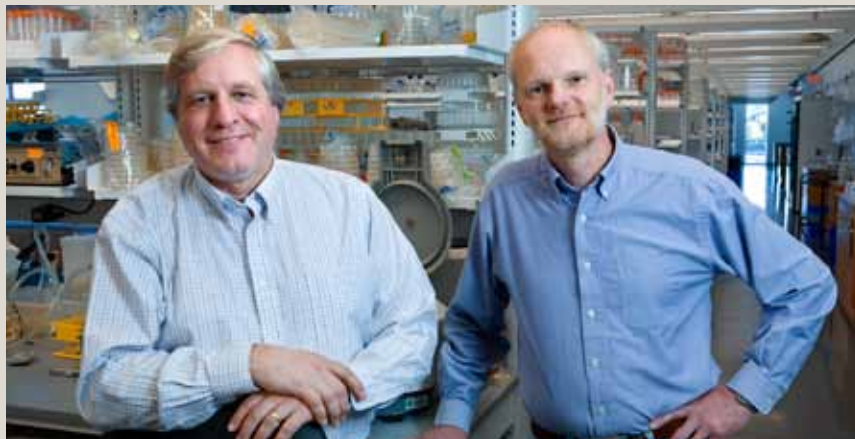
"These rooms were designed with knowledge of where the technology is headed," added Bronson. ■

Howard Hughes investigator at the University of California–San Diego. Emr, a member of the National Academy of Sciences, is a highly acclaimed researcher who has been honored for his research on the trafficking of proteins throughout the cell.

Emr's first decision was to name Bretscher, an outstanding cell biologist in his own right, as associate director to help the institute make a seamless transition into the Cornell community. Within a remarkably short period of time, Emr and Bretscher have been able to recruit four outstanding young investigators to Cornell (Yuxin Mao, Marcus Smolka, Chris Fromme and Fenhua Hu) to form the inaugural core of the Weill Institute for Cell and Molecular Biology. Consequently, Weill Hall, which opened just a few short months ago, is already brimming with cutting-edge research activity.

One of the major goals ahead will be to successfully bridge the research activity in the institute with the studies being pursued in other biology laboratories throughout the campus and, perhaps most important, with the work of physicists, chemists and engineers at Cornell. It is becoming widely appreciated that an understanding of how cells function normally and what goes wrong at the cellular level in diseases like cancer or in neurodegenerative disorders will require the cooperative efforts of a broad range of scientific disciplines.

Especially important will be applications from the areas of nanoscience and microfluidics, the generation of novel approaches for imaging cells and solving the 3-D structures of proteins by X-ray



Scott Emr, left, director of the Weill Institute for Cell and Molecular Biology, and Tony Bretscher, associate director.

crystallography and the development of new chemical strategies for the discovery of drugs. Cornell has outstanding strengths in the engineering and physical/chemical sciences that can help drive these developments and bring them to bear on the most pressing questions in cell biology. The ability of the Weill Institute to leverage these strengths will be paramount to ensuring its future impact and success.

It is always easiest to identify major milestones in hindsight. Thus, only time will tell whether the creation of the Weill Institute will mark a seminal turning point for the life sciences at Cornell. However, given its impressive start, there now is every reason to believe that our new institute, once only a dream, will indeed become a premier center for cutting-edge research.

Rick Cerione is the Goldwin Smith Professor of Pharmacology and Chemical Biology in the Department of Molecular Medicine in the Vet College, and in the Department of Chemistry and Chemical Biology in the Arts College. He chaired the committee that developed the concept for the Weill Institute.

Lifting the lid on Weill Hall

- Weill Institute
- Biomedical Engineering
- McGovern business incubator
- Nutritional Sciences
- Computational Biology

Atrium lounges
with natural light on four levels

Green roof
over basement level of building
on both sides of front courtyard
quad and over rear quad

Basement level
connects to Plant Science, Biotech,
Corson-Mudd and loading dock by
tunnels

Basement spaces
include imaging labs, controlled-
environment plant, functional
genomics chambers, vivarium

Centralized roof
filtration system
heat-recovery units

Open lab space with
natural light, configurable lab
benches and quick-connect
fittings in ceiling panels

Cold room

Easy access for
heavy equipment
via central freight elevator

Equipment room with
3-tier wire molding (standard AC,
emergency power and data ports)

Zoned motion sensors adjust
light and ventilation in real time as
personnel enter or leave an area.

Office units located
directly across the hall from
lab spaces on all floors

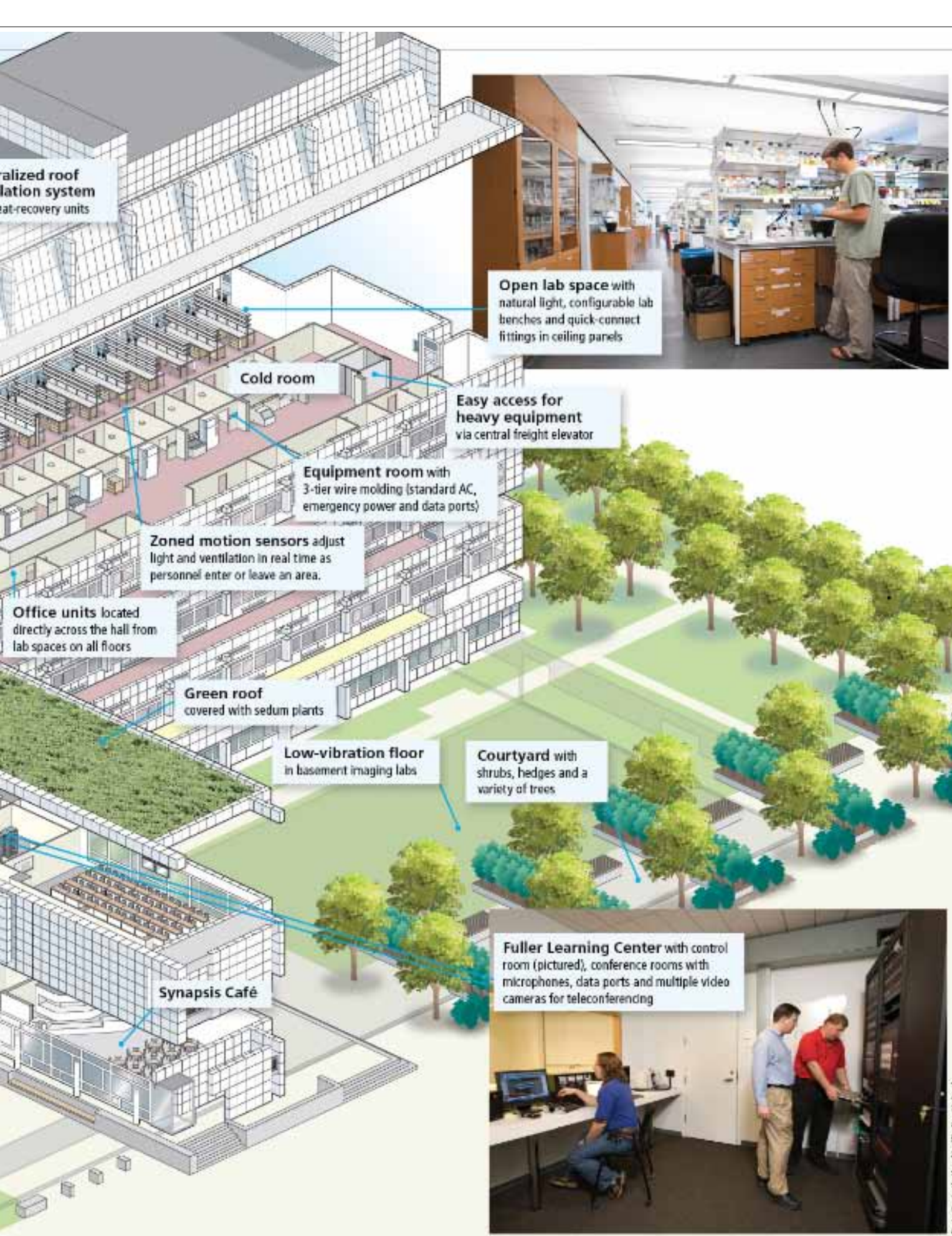
Green roof
covered with sedum plants

Low-vibration floor
in basement imaging labs

Courtyard with
shrubs, hedges and a
variety of trees

Synopsis Café

Fuller Learning Center with control
room (pictured), conference rooms with
microphones, data ports and multiple video
cameras for teleconferencing



ARCHITECT MEIER SPEAKS ABOUT CREATING A SPACE WHERE PEOPLE ARE HAPPY WORKING TOGETHER

Weill Hall architect Richard A. Meier '56, B.Arch. '57, is one of Cornell's most famous alumni. Celebrated for their modernist aesthetic, his works include the Getty Center arts complex in Los Angeles, the High Museum of Art in Atlanta, and Jubilee Church (Dio Padre Misericordioso), his contribution to the Archdiocese of Rome's Millennium Project. Meier has received top honors in his field, including the 1984 Pritzker Prize and the 2008 American Academy of Arts and Letters gold medal in architecture.

Ezra writer Daniel Aloï interviewed Meier by phone from his Manhattan office about the design of Weill Hall in relation to the campus and the community.

Is Weill Hall your first building for Cornell?

My first built building. I designed some dormitories for the campus many years ago, but they were never built.

One of the initial impressions of being inside Weill Hall is the flow of the building. There are direct sightlines through long rows of labs and work areas and several communal spaces.

The labs and the offices are fairly straightforward. What's important to me is how people get together – how they congregate, and how they see one another and interact with one another in the building, and how to create an ambience in which there is an interdisciplinary conversation. There's interdisciplinary work, of course, but this should be a place where not only are people happy working together, but also happy being in the building together.

The great thing about Cornell – and I remember this from when I was a student – [is that] you may be at a certain college, or in a certain discipline, but you have the opportunity to mix and meet with people in all different areas, students and professors as well. You get a wider view of the world because of this kind of openness that exists at Cornell. That's something we wanted to foster here in the building. The building is a place unto itself, but it's also part of a larger area, with people from biological and physical sciences, engineering and computer science.

We also wanted to create places where people not necessarily working in the building could come together. The plaza spaces and communal spaces are really for everyone.



Meier designed the Jubilee Church on the outskirts of Rome.

Another striking aspect is the amount of natural light flooding into the building.

That's always a controversy. If you're in a lab, you don't want the light to interfere with your research. And it has to be sort of a balance between having natural light and looking out and seeing that incredible landscape around you, and being able to focus on your research. I'm a proponent of natural light – there can never be enough light for me, but not everyone agrees with me.

How important is the human factor in your design work?

It's very important. As an architect, you make space – space you move through, space that you live in, space that you work in. And that space is related to human scale.

Another feature is a row of outer laboratories for equipment. Scientists say the adjacent research labs are especially quiet. Was that requested as part of the design?

Yes, it was. It was a very close collaboration with the people [who would occupy] the building, and a lot of input and a lot of requests that were accommodated in the design. It was a fairly straightforward, linear process. I think that has a lot to do with all the people who were involved with it.

How do you see your building working in its surroundings, interacting with near and more distant aspects of the campus?

The surroundings are a given. The buildings around it are a given; the location is a given. This is a terrific site, and really, from our perspective, it's like a gateway to the university as you come down Tower Road, and a gateway to the buildings on the other side. We wanted to address that aspect of it.

The footprint of the building also makes three significant spaces around it. What do you think will be the nature of those spaces?

This is a building that has two fronts and no rear. Seeing the location and the site, it demanded that.

In Ithaca, the weather is such that a lot of outdoor space doesn't get used that much. I think the area of the court-





BY GOING GREEN, WEILL HALL MEETS THE GOLD STANDARD

In the world of finance, green is as good as gold. So it is with environmentally friendly construction standards. And as a result, Weill Hall has become one of only six university laboratory buildings to be gold certified by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, as judged by the U.S. Green Building Council.

“The LEED gold certification is a welcome recognition of Cornell’s leadership in creating an environmentally friendly, sustainable campus,” said Cornell President David J. Skorton. “The new building is a testament to the extraordinary skills of [architect] Richard Meier and highlights the university’s commitment to sustainability in our academic initiatives and in our institutional stewardship.”

Originally the building’s plans met LEED silver standards, but as construction progressed, Weill Hall reached the gold standard, in part because it will use 30 percent less energy than a standard building of the same size.

The building features a living “green roof,” where plants absorb rainwater runoff, reduce heating and cooling costs and filter out airborne pollutants and carbon dioxide. Highly efficient plumbing fixtures and a gray-water reclamation system reduce the building’s annual wastewater generation by more than 40 percent, about 450,000 gallons a year, compared with a standard building.

In addition, more than 65 percent of construction waste was recycled or reused, and more than 60 percent of the wood products used in construction originated from sustainably managed forests.

Cornell’s Lake Source Cooling project also greatly reduces the energy required to cool the building, saving more than 880,000 gallons of water annually that would have been lost by a traditional cooling system.

yard on one side is more protected than other spaces on campus because it has buildings on four sides of it: the field house, the two wings of Weill Hall and the Biotechnology Building. Hopefully that space will be used by everyone at the university. The plaza space I hope will be used for activities. The path is also a garden, so that on sunny spring days students can lie out on the lawn and enjoy it. I hope they get a lot of use out of it.

This is from your Pritzker Prize acceptance speech in 1984: “Fundamentally, my meditations are on space, form, light and how to make them. My goal is presence, not illusion.” When did your design philosophy evolve?

It happened over the years. My education at Cornell gave me a good grounding, but it sort of evolved as I went from tiny projects to a little bit larger projects to even larger projects.

How involved are you in a project once you’ve completed the design?

I get involved in the initial stages, during the design phase and the design development stage. Once we get into construction documents ... I see photographs, but I don’t go to the site because I don’t have anything to contribute once it’s under construction. By the time I get to say anything, it’s too late.

If this stage could talk:

Schwartz Center turns 20



After hundreds of performances by thousands of students, the Sheila W. and Richard J. Schwartz Center for the Performing Arts is still a very young member of the Cornell family.

When it opened in 1988 as the Center for Theatre Arts, it provided much-needed space for productions and class work, from the spacious proscenium Kiplinger Theatre to the Film Forum, Dance Theatre, editing rooms and Black Box Theatre below deck. Not to mention offices for the Department of Theatre, Film and Dance, and space to build elaborate sets.

Previously, shows on campus were staged in more cramped quarters, including the 300-seat Willard Straight Theatre and the even tinier Drummond Theatre in Lincoln Hall. Larger

productions had to go downtown to the Lyceum.

The multiple uses of the center for education, professional training and public performance have made it unique. "I think it's become a model in the country for an apprenticeship training program for theater," said longtime theater professor Bruce Levitt. "There are anywhere from 50 to 150 students involved onstage and backstage in any one of our productions."

The building itself is a magnet for creative students.

"Once a student came into the building and asked how she could sign up for dance," artistic director David Feldshuh said. "I asked her how she heard about the program. She said she was in Collegetown, looked up and saw people dancing in the

window, and it made her want to dance."

The Schwartz Center's story began, appropriately, with a song.

"When the decision was made to build the performing arts center, [then-President] Frank Rhodes was looking to kick off the funding campaign," said Levitt. "He went to Herb Gussman, for whom the lobby is named, and Herb made the initial large contribution on the condition that when the dedication was made,

he would play the piano and Frank would sing the alumni song."

When Levitt ran into Gussman on campus before the dedication, "he asked if we'd gotten the piano yet? When I said we didn't, he was gracious enough to arrange for us to get a Steinway, which we still have. And he did play and Frank sang at the opening"

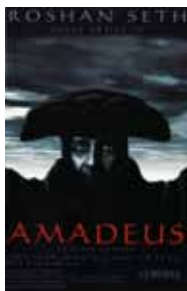
After Gussman's gift, other donors stepped up, and continue to do so. Levitt believes the project "has been a catalyst for all sorts of activity on campus."

"It was the first, the largest, the most expensive building ever built at the time [at Cornell] with no state funds and funded by private donors," he said. "Many of the donors to the performing arts center were first-time donors to

Cornell, as it was important to them to build what would be a beacon for the arts on campus. They wanted to expand Cornell's liberal arts profile and broaden the image of Cornell as being more than a science school. Since then, many of them have supported many other projects, including the sciences."

Designed by architects James Stirling and Michael Wilford, the center features some curious modern architectural details, from the circular staircase behind the building to its jutting crow's-nest bay window and enclosed concrete plaza in front. There's also the unattached Eisner Pavilion, aka "The Cupcake," which houses a seminar room and an office for the actors serving as resident professional teaching associates.

Facing page: The Schwartz Center's promenade, or loggia, overlooks Cascadilla Gorge. The building was designed by architects James Stirling and Michael Wilford. This page, clockwise from top: A photo from the opening of the then-Center for Theatre Arts in 1988; students at work in the costume and scenery shops, shot last year; Residential professional teaching associate Tom Demenkoff and Ellen Hada '07 in "Metamorphoses" (spring 2006); Colista Turner '05 and Yolanda King in "A Raisin in the Sun" (fall 2004); students perform in "Dance Concert 1999"; and Peter Michael Goetz and Phil Mills '07 in "All My Sons" (fall 2006).



New institute will apply computer power to sustainability issues



Could graph theory help a grizzly bear find a mate? Could a computer model help stabilize the tuna population? Can we compute how to transition to ethanol fuel without messing up food production?

On the other hand, could grizzly bears and tuna teach computer scientists something new?

Those are some of the questions to be taken up by the new Institute for Computational Sustainability, launched with a \$10 million grant from the National Science Foundation (NSF). Based at Cornell with Carla Gomes, Cornell associate professor of computing and information science, as director (pictured above with associate director David Shmoys), the institute will involve 14 Cornell faculty members along with scientists at Oregon State University, Howard University, Bowdoin College, the Department of Energy's Pacific Northwest National Laboratory and the Conservation Fund. The research brings together computer scientists, applied mathematicians, economists,

them), dynamical systems (systems where some variables keep changing) and machine learning.

The institute launches with several interdisciplinary research projects under way, including:

- **Wildlife Corridors for Grizzly Bears** – Grizzlies now live mainly in three areas: the Yellowstone, Salmon-Selway and Northern Continental Divide ecosystems, spanning 64 counties in Idaho, Wyoming and Montana. To ensure the viability of the species, conservationists want to acquire land to create corridors connecting these three areas. Optimizing the design of the corridors has already found solutions with dramatically reduced cost compared to previous estimates.
- **Biofuels** – This project will include developing models for the transition to an ethanol economy, taking into account the needs of households, landowners, ethanol producers, regular gasoline refiners, food producers, the fraction of land allocated for each of the possible uses, crops rotations and tillage options.
- **Bird Conservation** – To preserve bird habitats and design bird corridors, a good understanding of hemispheric-scale bird migrations is required, a daunting task involving literally billions of birds. Studies will use detailed data on bird populations collected through the Citizen Science program of Cornell's Laboratory of Ornithology.
- **Rotational Management of Fishing Grounds** – To conserve and buffer valuable fish stocks and marine biodiversity, this project involves developing a computer model to decide the optimal number of "no-fish zones," their location, size and the number of years they should be open or closed to fishing.
- **Pastoral Systems in East Africa** – How does the interaction between precipitation and forage resources, the location of water wells, the dynamics of the groundwater stock and the possibility of fencing and rotating livestock to different pastures influence poverty, food security and environmental stress in Africa?



Forest corridors like this could connect separated habitats of endangered species to enhance their survival. Balancing the cost of the land against the best routes is a problem in computer optimization.

Grizzly bears live in three widely separated areas in Idaho, Wyoming and Montana. Computer optimization can balance distance and suitability against the cost of the land to design a connecting corridor, as in the example at right.



biologists and environmental scientists.

"Given the well-recognized need for better management and utilization of Earth's rapidly depleting resources, it is imperative and urgent that computer scientists turn their attention to computational problems that arise in this context," Gomes wrote in her proposal to NSF. "Our vision is that computing and information science can – and should – play a key role in increasing the efficiency and effectiveness of the way we manage and allocate our natural resources."

Many of today's problems in ecology and conservation involve juggling large numbers of variables, often to find the optimal balance between cost and environmental impact. Some are so complex, the researchers say, that they will require new advances in computer science. Gomes and her team hope to create a new field of computational sustainability, analogous to computational biology, that will stimulate new developments in the computer science areas of constraint optimization (finding the best balance of many variables where there are constraints on some of

The institute will collaborate extensively with the Center for a Sustainable Future at Cornell and a number of other sustainability programs on campus.

Researchers affiliated with the institute hope to extend beyond their initial members to other researchers concerned with sustainability issues, in part by making funding available for graduate and undergraduate students.

The project is one of four "Expeditions in Computing" funded by the NSF Directorate for Computer and Information Science and Engineering to pursue "far-reaching research agendas that promise significant advances in the computing frontier and great benefit to society."

Through a cell phone interface, game aims to influence teens to make healthier food choices



In *Mindless Eating Challenge* a virtual pet, in this case a tree, withers or flourishes based on the food choices of its teenage owner.

Could computer games actually help kids get healthy? Researchers in Cornell’s Food and Brand Lab and Department of Communication think so.

They have designed a game called *Mindless Eating Challenge* that teens can play on their mobile phones. It links the health and happiness of a virtual pet – a worm, a dinosaur or a tree, for example – with real-life choices about eating.

“It’s taking the flipside of the technology,” says Geri Gay, the Kenneth J. Bissett ’89 Senior Professor of Communication and principal investigator. “The Nintendo Wii has shown us that computers can help people exercise. This game focuses on being conscious about eating.”

Here’s how it works: *Mindless Eating Challenge* will send customized tips developed by the Food and Brand Lab to teens’ phones several times a day. The choices



From left, Professor Geri Gay, doctoral candidate J.P. Pollak, and students Sara Lin and Ben Davis look at the game *Mindless Eating Challenge* on two iPhone screens.

players then make in their own eating, such as to snack on fruit instead of chips, will affect the health of a virtual pet living on their phone’s home screen.

If the teen makes a healthy choice (and proves it by sending a photo to researchers or a peer group), their virtual pet will grow bigger, stronger and happier. Consistent healthy choices will unlock special accessories for their pet, games and fun features. Poor choices will make the pet lethargic, sickly and sad. In some versions, players will be able to see the health of their friends’ virtual pets too.

“People have an underlying motivation to become healthy, but on its own it’s not enough,” says J.P. Pollak, a Ph.D. candidate in information science and a researcher on the project. “The game gives an extra kick.”

“It’s about negative and positive feedback and how it motivates choices,” Gay says.

The work is supported by a grant from the Robert Wood Johnson Foundation, which has committed more than \$8 million to its national program for Health Games Research.

Gay says she and her group are taking on “an amazing epidemic.”

More than 17 percent of adolescents in America are overweight, up from 5 percent in the late 1970s, according to the National Health and Nutrition Examination Survey. Health risks to overweight children include type 2 diabetes and such precursors of cardiovascular disease as high cholesterol and high blood pressure. Other risks include social stigma and low self-esteem.

What’s more, four out of five children who are overweight in their early teens will be clinically obese by age 25, according to estimates by the National Centers for Disease Control and Prevention.

Electronic games for mobile devices are a new frontier in health research, but Gay and her team are building on extensive knowledge they have collected by experimenting with mobile devices in other contexts, including museums. They believe cell phones make it possible to deliver a persuasive message at the most opportune time – and get better results.

This may be especially true for teens, whose always-connected relationship with mobile phones is well documented, adds Pollak.

The research group is collecting preliminary data now with plans for a full study in the spring and summer that will involve up to 150 children ages 10–14 in upstate New York. If the results are encouraging, Pollak says, the mobile gaming concept could be adapted to health issues for adults, including smoking cessation and alcoholism.

He acknowledges that mindless eating – like scarfing down buttery popcorn throughout a long movie – is only one factor contributing to childhood obesity, but he says calling attention to it can cut down on calories kids weren’t really hungry for in the first place.

“It won’t feel like dieting,” he says. “There are literally hundreds of calories a week you just didn’t need to eat.”

BY DANIEL ALOI

Writing seminar explores early American literature through the original word – and typeface



Zoe Warhaft, center, and other students in the “Power of the Page” writing seminar, watch part of a demonstration in the Risley Hall print shop earlier this fall.

A group of Cornell students had a hands-on lesson in printing technology this fall as part of the first-year writing seminar American Literature and Culture: The Power of the Page, taught by doctoral English student Jonathon Senchyne. What they gained was a deeper understanding of the printed medium in early America.

The course explored the cultural impact of early American printing, spanning 200 years of books, pamphlets and broadsides (such as Thomas Paine’s “Common Sense”) and culminating in writings by Emily Dickinson and Walt Whitman.

In September, Senchyne took his class of 12 to the print shop in Risley Hall, where they composed metal type into a familiar phrase about a fox and a dog, and ran impressions of it off a press.

“This print shop resembles more or less what you would have seen in the 19th or late 18th century,” he said. “The technology has remained static for centuries.”

The Caslon type in the Risley shop was once used by the New York Times, he said. Several cases of type vie for space in the shop with an automated proof press and hand-operated platen presses.

Composing type and composing an essay are not that different, Senchyne said: “The idea of ‘composition’ is a very interesting lens to think about our own writing and how to produce it. Even though we don’t have to lay out each letter piece by piece, the work involved in making a high-quality, readable essay requires just as much forethought.”

The class was assigned books on writing style and American cultural studies, and texts such as Mary Rowlandson’s story of her captivity by American Indians in 1675, and “The Autobiography of Benjamin Franklin”

– who was “very famously a printer,” Senchyne said. “We look at how print allows one to represent a version of oneself.”

Gender and social issues, like slavery and depictions of Native Americans, figured heavily in the course. In Puritan society, women like Rowlandson were not viewed as public figures. “The narrative bears the traces of her delicate negotiation of gendered expectations,” Senchyne said. “In a way, she explores the boundaries of possibility for a woman’s voice in public.”

His students used Cornell Library’s online archives, particularly the Evans collection in Early American Imprints.

Their readings included 17th-century poet Anne Bradstreet, the first woman writer published in colonial America.

“I told them to go to the online archive and find the poems in their original form,” he said.

Bradstreet was not named on the cover or title page of her first book of poems. Instead, she was described as “A Gentlewoman in those parts” and “The Tenth Muse.” In one poem, Bradstreet “claims to be incapable of discussing topics believed to be under the purview of men: namely, issues of state,” Senchyne said – although the title page belies that statement.

“A lot of that is lost in reading a reprinted version in a Norton anthology,” Senchyne said. “Those are all important things you get from looking at forgotten elements of print such as a title page – which scholars have been doing for years, but I’m trying to reintroduce it to the undergraduate classroom by using this approach.”



Senchyne added an engraving of a sailing ship to this poem.

From Ecuador to Mozambique, vet students roam world to improve animal health



LESLIE DIAZ/PROVIDED

Veterinary students from UAGRM (Universidad Autónoma René Gabriel Moreno). Cornell student Leslie Diaz had the opportunity to work at the veterinary hospital in Santa Cruz, Bolivia, shadowing the veterinarians and assisting with routine cases.

In Ecuador last summer, Cornell veterinary student John Cooley hitched rides on milk trucks to dairy farms, where he gave workshops on calf health and conducted research. Student Jennifer Harrison spent nine weeks in Mozambique lecturing on chicken disease.

Cooley and Harrison are among the 10 students who participated in the College of Veterinary Medicine's 2008 Expanding Horizons program, which provides travel grants to vet students, mostly to developing countries, on animal and public health projects.

The students spent between six and 10 weeks completing such self-designed projects as promoting conservation of a mountain gorilla habitat in Uganda and evaluating recent foot-and-mouth disease outbreaks in cattle in Bolivia.

"The Expanding Horizons program is an opportunity for Cornell students to impact the world and be impacted themselves," said Michael Kotlikoff, the Austin O. Hooley Dean of the Veterinary College. "The research these students conduct on site – in the field or the jungle or a village where chickens roam free – has the potential to improve the lives of animals and people who are struggling to survive."

In Mozambique, Harrison conducted surveys and gave lectures about the importance of vaccinating chickens against Newcastle disease, a highly contagious infection in domestic and wild avian species. Based on the surveys, she prepared a manual about chicken husbandry and ran her own education programs.

Latoya Schultz spent time in Indonesia researching parasites that affect the endangered Sumatran rhino and other species as part of a health surveillance program.

Annie Li volunteered at the U.N. Food and Agriculture Organization (FAO) headquarters in Rome, Italy. She created disease information for African horse sickness and porcine reproductive and respiratory syndrome, which will be posted on the agency's Web site. She also wrote a user manual for an animal health information system that tracks certain animal diseases, maps outbreaks and more. Additionally, she designed animal health country profiles for FAO members needing agro-ecological maps, livestock statistics and contact information for potential FAO collaborators. After graduation, Li will pursue a career in public health with hopes to work on an avian influenza surveillance project in Taiwan.

"The FAO was especially a great place to meet leaders in public health who come from many different parts of the world," said Li. "The plethora of languages and accents could always be heard in meetings or even a stroll through the hallways. I found this to be the most stimulating environment and learned to work with people from many different backgrounds and ethnicities."



LESLIE DIAZ/PROVIDED



MISSY TURNER/PROVIDED

Left: The Cathedral of Santa Cruz de la Sierra, Bolivia. Right: Missy Turner worked with Conservation Through Public Health in Uganda, which aims to promote conservation and public health by improving primary health care to people and animals in and around protected areas of Africa. Turner brought new laboratory equipment with her and advised and retrained the team on current laboratory techniques.

\$50 million endowment from Tata trust bolsters Cornell ties to India, and to eminent alumnus

With one historic gift, Cornell finds itself with a vast new mandate to fight poverty and malnutrition in India while bringing more of India's best and brightest to study in Ithaca.

The Tata Education and Development Trust, a philanthropic arm of India's Tata Group, has given a combined \$50 million to endow the new Tata-Cornell Initiative in Agriculture and Nutrition and the Tata Scholarship Fund for Students from India.

President David J. Skorton announced the gift during his State of the University address Oct. 17, calling it "one of the most generous endowments ever received from an international benefactor by an American university."

Ratan Tata '59, B.Arch. '62, is a Cornell trustee and chairman of Tata Sons, the holding company of the Tata Group, one of India's oldest, largest and most respected business conglomerates. Tata was named one of the 30 most respected CEOs in the world by Barron's magazine last year, and the Tata Group was awarded the Carnegie Medal of Philanthropy in 2007.

The \$25 million Tata-Cornell Initiative in Agriculture will engage Cornell scientists more deeply with their counterparts in India in efforts to improve the productivity, sustainability and profitability of India's food system, said Alice Pell, Cornell vice provost for international relations.

Changes in the food system – including record high commodity prices, dietary changes, climate change and soaring energy costs – can disproportionately affect the poor. The Tata gift will extend numerous successful pub-



Alumnus Ratan Tata and President David Skorton after signing their historic agreement that will provide an endowment of \$50 million to Cornell for agriculture and nutrition programs in India and for the education of Indian students at Cornell.

lic-private partnerships Cornell has already established to fight poverty and promote food security in India, and it will permit the development of new ventures, Pell said.

"Although the Tata funds will be used to address problems in rural India, the gift will also help us learn how universities can better contribute to development and poverty reduction in other parts of the world," she added.

Meanwhile, the \$25 million Tata Scholarship Fund introduces a new era of accessibility for students from India, Skorton said.

"For years, applications for admission from Indian students have continued to rise, but enrollments have remained only steady due, in large part, to the lack of financial aid for needy students," he said. "The Tata Scholarship Fund will support as many as 25 scholars at any given time and will ensure that the very best Indian students have access to Cornell, regardless of their financial means."

Until now, the university's entire endowment for international financial aid generated about \$1.5 million per year. That's enough to fund about a dozen new students a year from outside North America, said Doris Davis, Cornell's associate provost for admissions and enrollment.

Davis recalls visiting India a year ago and meeting with prospective students. At the time, she felt the pinch of having little to offer them.

"I met so many bright, talented students who would make such a contribution to Cornell," she said. "Now I can go back and tell the Cornell story with this added information – not only is Cornell committed to admitting students from India, but now we have the resources to help with their financial needs."



Illika Sahu '12, Manan Suri '09 and Praveen Narayanan '12 sit on the steps of Goldwin Smith Hall. They are three of approximately 400 students from India at Cornell.

Andrew and Ann Tisch commit funding for ‘amazing professors’

FROM ELEMENTARY SCHOOL THROUGH COLLEGE, THERE WERE TEACHERS WHO INSPIRED ANDREW '71 AND ANN TISCH. NOW, THEY HAVE ESTABLISHED A \$35 MILLION ENDOWMENT TO HELP CORNELL HIRE ITS NEXT GENERATION OF INSPIRING PROFESSORS.



Ann and Andrew Tisch speak about the importance of education at a luncheon at the Herbert F. Johnson Museum of Art.

Anounced in September, the Tisch University Professorships are meant to help Cornell recruit and retain prolific scholars at the height of their careers. The professorships will not be tied to a specific college or discipline and will be awarded at the provost's discretion.

"I have great faith in the leadership of the university," said Andrew Tisch, a Hotel School alumnus. "We didn't want to put so many restrictions on it that the university couldn't operate with free hands."

Competition for top faculty is "ferocious" across higher education, said Interim Provost David Harris. Cornell faces the dual challenges of increasing its capabilities in such highly competitive fields as the life sciences while absorbing the loss of baby boomers, who are beginning to retire in waves.

Faculty recruitment and retention are major priorities of Far Above ... The Campaign for Cornell. Of the \$4 billion goal, the target for faculty support is \$1.885 billion.

"Right now, we're hiring our reputation for the next two to three decades," said G. Peter Lepage, the Harold Tanner Dean of the College of Arts and Sciences, who has seen a quarter of his faculty change in the past five years. "We need all the flexibility we can have."

Meanwhile, schools that face the same challenges as Cornell are aggressively trying to lure away star professors.

"I don't begrudge a great professor for looking at how he or she can conduct research in the best way possible," Tisch said. "What we want to do is make sure that in the end, they conclude that Cornell is the best place to be."

Geoffrey W. Coates, a professor of chemistry and chemical biology whose research has led to advances in biodegradable and sustainable polymers, is nominated to be the first Tisch University Professor.

"It provides the sort of long-term, no-strings funding that will allow me to tackle big problems that I can't ordinarily do with short-term, more restricted funding," Coates said. "It's an opportunity to do the sort of science that I've always dreamed of."

Tisch is co-chairman of the board and chairman of the executive committee of Loews Corp., a company with interests in oil and gas, financial services, watches, real estate and hotels. (The family sold the Loews movie chain in 1985.) He also serves on the Cornell Board of Trustees and its executive committee, as well as on the Harvard Business School Dean's Board of Advisers, and as co-chair of the Dean's Council at the New York University/Tisch School of the Arts.

Ann Tisch, a graduate of Washington University in St. Louis, is president and founder of The Young Women's Leadership Foundation and The Young Women's Leadership School, a groundbreaking inner-city public school for girls that opened in 1996. A number of other schools – operating under the same model – have been created since in New York City, Philadelphia, Chicago, Dallas and Austin, Texas. She is also the founder of CollegeBound, a privately funded school-based college counseling service. For 19 years, she worked in broadcast journalism, including as a national correspondent for NBC.

The Tisch family has a long history of support for Cornell, funding scholarships and contributing consistently to the university's Annual Fund. In 2002, Andrew Tisch and brother James S. Tisch '75 established the Andrew H. and James S. Tisch Distinguished University Professorship, the university's highest honor, which is awarded to a faculty member nearing retirement.

Ann Tisch said this new investment will build the foundation for Cornell's future success.

"Every great educational institution is great because of its faculty," she said. "You can't compete at the college and university levels unless you have amazing professors who are going to commit, remain loyal and stay."

BY JEREMY HARTIGAN

Remembering legendary Big Red coach Ned Harkness



Ned Harkness waves to the crowd following the dedication of the Ned Harkness Alumni Room at Lynah Rink on Oct. 13, 2007, with former players Murray Deathe '67, left, and Ken Dryden '69.

In an old horse barn, a chilly hockey rink and a hard grass field, Nevin D. “Ned” Harkness taught life lessons to hundreds of young men in Ithaca. He was their mentor, who took all the knowledge on a subject and gave it practical applications. Harkness could relate to and motivate them all.

He was the face of the madness that still to this day prompts students to wait in line all night for the right to purchase ice hockey tickets, to stand and yell at Harvard. He turned around the fortunes of a lacrosse program that hadn’t posted a winning record in five seasons, helping the team to its first two Ivy League crowns and a 35-1 record in his three years directing the program.

Harkness was the Renaissance man who led the Big Red through a golden era of athletics. An innovator in lacrosse and ice hockey who brought out the best in so many young men, Harkness became a legend at three different colleges.

When he took over the Cornell hockey team in 1963, the Big Red had just two winning seasons in the previous 24 years. His first team went 12-10-1, finishing one game

off a school record. The next year, that record jumped to 19-7, then to 22-5 in 1965.

“We wanted to make Lynah Rink the place ‘where angels fear to tread,’” Harkness said.

First, student crowds came to witness the winning team. The community soon followed. In his final four years on the Cornell bench, Harkness’ teams enjoyed a 110-5-1 record, placing in the top three in the NCAA tournament each time. The Big Red celebrated national championships in both 1967 and 1970. By then, the rink was at capacity every night, watching the Big Red win 47-1 in home games, outscoring opponents 338-71. The last 42 times Cornell dressed at home under Harkness, it skated off the ice in victory. That streak would climb to 63 consecutive home wins under his successor, Dick Bertrand.

When Harkness died Sept. 19 at age 89, so did the father of the Lynah Faithful and the mastermind behind Cornell’s running streak in lacrosse.

“Don’t stand around, you’re killing the grass,” Harkness would yell to players not in a lacrosse drill at that moment. Run anywhere. Move. Do anything. Anything but stand still and watch.

“WE WANTED TO MAKE LYNAH RINK THE PLACE ‘WHERE ANGELS FEAR TO TREAD.’”

—NED HARKNESS



Harkness after the 1967 NCAA championship game, held in Syracuse.

He believed that the less talented team could always win if it was in the best shape, and that his squad would be the last one standing, but only by not standing around.

While Harkness was head coach of the hockey team, tragedy befell the lacrosse program. Two assistant coaches were among four people killed in a plane crash during a 1965 recruiting trip.

“[Lacrosse coach] Bob Cullen had asked the day before if I would help with the lacrosse team,” Harkness said. “I went out and said to them, ‘I don’t know you, and you don’t know me, but you’re going to run more today than you ever have in your lifetime.’”

A year later, those same players requested that Harkness be elevated to head coach after Cullen stepped down. Two Ivy League titles and a runner-up finish later, and Harkness had written his name in the lore of a second sport at Cornell.

The hallmark of a Harkness team was that it was almost without fail the last one standing. Few coaches in any sport have led teams to victories as often. His Cornell teams were triumphant 87 percent of the time. His 1969–70 hockey team remains the only unbeaten and untied group in NCAA history, posting a perfect 29-0-0 mark en route to a national title. He was also at the helm of a pair of undefeated lacrosse teams, and his 35-1 record in three campaigns as head coach is good for an unfathomable 97 percent winning percentage.

That only tells part of the story. Before Cornell, at Rensselaer Polytechnic Institute (RPI), Harkness turned the school lacrosse and hockey crazy. He guided the hockey team to a 176-96-7 mark with a national title in 1954 and a third-place finish the season before. His lacrosse teams were equally good, compiling a 112-26-2 mark and a USILA national championship in 1952. His 1956 club finished No. 2 in the nation. Added together, along with a short three-year stint at Union College as head hockey coach, Harkness guided teams to a 532-158-14 record as a head coach.

While the numbers are mind-boggling, Harkness as a mentor can’t be measured tangibly. His former players – later engineers, doctors, lawyers and politicians – were loyal to his last days. They traveled to Ithaca and Rensselaer in his final years to see him at ceremonies, called him when he lived in Florida and spoke of him with reverence at every opportunity.

“To this day, I’ve not met anyone like him as a man, a father figure, as a model and as a coach. ... There is no greater motivator out there,” said Bertrand, who was a captain of the 1970 hockey team. “He made such an impact on so many people, and he affected so many lives. No matter how many years after you left Cornell, he would still be there for you. ...”

“Even after a loss,” Bertrand added, “he’d give us a tongue lashing, but he’d never let us leave that locker room without feeling good about ourselves. That’s a God-given talent, and he was able to do it.”

And he was an innovator – many of his ideas and tactics have been studied and copied ever since.

“There was the ‘Maryland Ride’ that everyone was bragging about, and how no one could break it,” said Tom Harkness, who played lacrosse for his father. “[The strategy was that] he gave Bobby Smith the ball with the idea that you couldn’t take something from someone you couldn’t catch. He had him run it right through the team.”

Harkness would coach goalkeepers without sticks. With All-American Butch Hilliard, no one else was



David Ferguson '67 (holding trophy), Ned Harkness and Murray Deathe accept the national championship trophy after defeating Boston University, 4-1, on March 18, 1967, in Syracuse.

allowed to shoot on him during warm-ups. The head coach would make Hilliard use only a broom handle to teach him to move to the corner and quicken his feet.

In hockey, his use of walkie-talkies with an assistant in the press box was unique, as was his decision to recruit Canadians. Players also recount times in lacrosse when he would run a midfield or attack line of deep reserves with the full understanding that they may not score a goal, but would fight like heck to keep the opponent off the scoreboard and give an extra minute or two of rest for the starters.

Harkness was a man in constant motion, and he expected those around him to have the same energy, the same passion.

“He would adapt the strategy to his team,” Tom Harkness said. “People would say you could see his mind work, figuring out things as the game would go on.”

Of course you could.

Harkness never stopped. Because of that, the Cornell ice hockey and lacrosse programs have a legacy of success that span well beyond the victories and national titles.

Investing in Cornell's students guarantees us all a stronger future

If you want to sense great energy and feel hope for the future, all you have to do is walk down Tower Road when classes change. Investing in our sharp, enthusiastic and creative Cornell students guarantees a stronger future for our country and the world.

Along with many Cornellians, we believe that creating knowledge and educating young people are the two most important ways we can revitalize our economy and improve the quality of life everywhere. That's why we applaud President David Skorton for his commitment to building an even more robust financial aid policy at Cornell. It is a policy that will strengthen the diversity of the student body and ease the financial burden of college costs on families.

In his October State of the University address, the president asked Cornellians to commit an additional \$125 million to undergraduate financial aid to keep admissions need-blind and financial aid need-based. Stepping up our support for scholarships, he said, is critically needed to keep Cornell's legacy of access and inclusion alive. He pledged to make this effort a hallmark of his presidency.

The financial climate remains uncertain. But we have a great – and inspiring – wealth of ideas and energy on campus in our students and faculty. Even more individuals are knocking on our doors to be a part of this great institution.

Together, we have already raised more than \$2.321 billion toward our goal. You can learn more about Far Above...The Campaign for Cornell at campaign.cornell.edu or make a secure gift online at giving.cornell.edu.

Stephen Ashley '62, MBA '64, *Campaign Co-Chair*

Jan Rock Zubrow '77, *Campaign Co-Chair*

Robert J. Appel '53, *Chairman, the Campaign for Weill Cornell Medical College*



Stephen Ashley



Jan Rock Zubrow



Robert J. Appel

SKORTON REAFFIRMS AID COMMITMENT

"As we enter a new era of prudence, we cannot and will not retreat from our long-standing commitment to need-based student financial aid. Because of the urgent need to keep the doors of Cornell wide open to students from all parts of the socio-economic spectrum and all parts of the world, I commit today to raise an additional \$125 million for undergraduate financial aid, and I ask for your support. We have a wonderful Cornell legacy of access, and we need to join forces, with gifts large and small, to keep that legacy alive for our students far into the future."

— Excerpt from President Skorton's Oct. 17 State of the University address

CORNELL: UNIQUE AMONG THE IVIES

- Cornell ranks as the fourth most economically diverse university in the nation and 14th overall.
Source: U.S. News and World Report.
- The number of undergraduate Cornell students who qualify for financial aid is greater than the size of the student body at Harvard.
- The number of Cornell students who qualify for Pell grants exceeds the combined number of Pell grant students at Harvard, Princeton and Yale.
- The number of lower-income Pell grant students at Cornell has declined slightly over the past four years – an indication that more students perceive the costs of a Cornell education as prohibitive.
- In 2007, Cornell's endowment ranked 17th in the nation in size, but fell to 73rd on a per-student basis.



Support for undergraduate scholarship goal increased from \$225 million to \$350 million

How a design progressed from concern to challenge and collaboration



Early study models of what would become the design for Weill Hall, created during the concept design phase of the project in 2002–03.



Most of our work comes to us from new clients who have a special project and who have already seen and admired the character of our buildings in the United States and Europe. A visionary Cornell administration approached us with a new building for the life sciences because of its substance and meaning to Cornell's future, and because

of Richard Meier's stature as perhaps Cornell's most prominent architectural alumnus today.

The commission must have been a leap of faith for the university because we had never designed a laboratory building. Laboratories are notoriously complex, and the challenge was increased substantially with the need for a flexible facility that could adapt and change to the needs of science well into the future.

Our approach to Weill Hall was different than it would have been for a museum or a church, which are more intuitive and conceptual processes with simpler programs. Indeed, Weill Hall has more in common with the two federal courthouses we have designed – buildings with many highly organized components.

As a design challenge, however, a science building is not so different; we may not initially be familiar with the pieces, but learning about them is an objective process made easier with the help of expert advice from our design team along the way. We listen, we learn, we interpret.

Over much of the eight years it took to bring Weill Hall to fruition, the listening and learning was done by the design team that Cornell and Richard Meier & Partners assembled, consisting of architects, engineers and various specialty consultants that numbered almost 30 professional groups.

Ultimately, Weill Hall was based on the notion that large, programmatically complex buildings are best

designed around simple organizational ideas. The most flexible space was assembled in a continuous lab zone occupying several floors in one wing of the building, while other unusual labs, non-labs or “dry” space (computer-related research, the business incubator and more typical office space) are in the opposite wing across the atrium. Not immediately apparent is that much of the building's program spaces that require controlled light and vibrations are concealed underground in an enormous area twice the size of the building's footprint above.

The atrium space between the two wings is the heart of the building, and is the key component encouraging fluid interaction among building researchers and students. The large central communal space is like a piazza at the terminus of the corridor streets of each wing to encourage social and academic interaction, as well as to anchor a center, heart and living room to the communities being created at each level. We have long understood the importance of an identifiable center as an orientation point in large buildings, such as the Getty Museum, and have more recently come to understand their social significance.

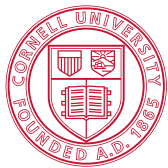
During construction, Scott Emr, director of the Weill Institute in the south wing, pushed that concept of interaction one step further in asking for adjustments to the office zones at each floor to accommodate a little “neighborhood café” where each department would have a central break/lunch area and common journals library. It isn't uncommon to make adjustments to a design during construction. It is unusual and even ironic for a user to so freely embrace the social goals of the design that he's willing to give up precious programmed office space to create additional interactive areas.

In the laboratories, Emr and associate director Tony Bretscher so appreciate the quality of light, openness and flexibility in the south wing lab spaces that they have generally resisted the temptation to partition them.

It has been exceptionally gratifying for all of us to see researchers' initial skepticism and concern for maximizing research space in the building eventually give way to an appreciation for how architecture and design can enrich the quality of their lives and research. Admittedly, there were some shaky periods when we weren't always confident that researchers' expectations would be married to the university's goal of making a great campus building.

Weill Hall is the product of one of the most genuinely collaborative team efforts we've ever been part of, and it has been a rare opportunity for us as architects. Perhaps for the first time we are even more proud of our modest contribution toward embellishing the process of important research for decades to come than we are of the building we leave behind.

Renny Logan is an architect and associate partner with Richard Meier & Partners.



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