

Cornell University

THE REPORT

Excelling.

FY 2010

Research at Cornell Office of the Vice Provost for Research



The Report—formerly the Annual Report—is a collection of statistics, quick facts, and highlights from the Office of the Vice Provost for Research. It incorporates FY 2010 research expenditures and other research statistics.



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Securing a Future of Excellence

FROM THE SENIOR VICE PROVOST FOR RESEARCH

Cornell—known for its world-class research and facilities and for leadership in interdisciplinary research, physical sciences, literary theory, genomics, nanotechnology, and many other areas—is positioning its research strategies for continued and expanded excellence.



We intend to remain among the very best in collaborative multidisciplinary research and

other areas where we currently excel; we also seek to advance in selected areas, particularly newly emerging ones, where we see distinct opportunities. This means planning for a highly competitive future.

DOLLARS MATTER

Cornell had a robust year in 2010 in competing for sponsored research funding. Due to the one-time 30 percent increase in NIH and NSF funding provided by the 2009 American Recovery and Reinvestment Act, more federal funds were available for research than ever before, and Cornell got a great share. In total, we received \$160 million in Recovery Act awards.

Did we get more than our share? We are still in the process of analyzing that question, but we know that in order to pursue world-class research in all the areas in which we seek to lead, we need appropriate funding. Dollars matter. Although Cornell's Recovery Act funding will have a residual effect for the next several years, this funding windfall was a one-time event. For the near term, we expect to be in a very tight research funding environment, with the most likely prospect of a flat federal budget for university research. So we must ask ourselves, is Cornell becoming more, or less,

competitive than our peers in increasing our share of federal and other external funding that will be available? Cornell's research strategy must consider the highly competitive nature of the future. We must be looking at how to improve our take of the available external research funding as we focus on research strategies and metrics for achieving greater excellence.

INVESTING IN EXCELLENCE— NEW FACULTY

When we invest in new faculty, we seek the very best. We aim for faculty who will have exceptionally productive careers at Cornell, with research that will better society and the human condition. We look for new faculty with the clear potential to be "stars" throughout their careers-faculty who can lead in building outstanding collaborative and multidisciplinary research programs, who will take a tradition of excellence to new heights, and who by exemplary leadership will create new areas where Cornell research will shine in coming years.

This means that we recruit new faculty with great care and rigor. As we renew our faculty, we must hire individuals who will publish groundbreaking papers and books; whose innovative research, scholarship, and creativity will launch new areas and gain numerous citations; who show great promise for obtaining top research funding, who will excel at training the next generation of researchers and scholars; and who will win awards and recognition all through their careers. The faculty we have hired and will need to hire over the next five years will define Cornell's future for the next quarter of a century.

NEW AND NOTEWORTHY

The past year saw many areas of distinction at Cornell and prominent events that will contribute to a distinguished future for Cornell research. I will highlight only a few.

▶ Astronomy The \$11million gift from Fred Young (Cornell Engineering '64, MBA '66) for a 25-meter submillimeter wave telescope-the Cerro Chajnantar Atacama Telescope (CCAT) in Chile-is a splendid investment in Cornell-led astronomy. The telescope will be the largest and highest of its type in the world, providing unprecedented capability for a broad range of research objectives, including observing galaxy formation and evolution. The project is scheduled to be completed in 2017.

> Early Career Faculty Our newest faculty performed extremely well again this past year. A strong number of them won NSF Faculty Early Career Development awards. A large fraction of our eligible faculty who work in the areas covered by this distinction have now received the award. Three faculty received particularly notable awards this past year: Rachel Bean, Astronomy; Michal Lipson, Electrical and Computer Engineering; and Ruth Ley,



Microbiology. Bean received a Presidential Early Career Award for Scientists and Engineers (PECASE), one of 100 in the nation. Lipson garnered the MacArthur "Genius" award—one of only 23. Over the past year and a half, Ley won four major national awards to study the microbiome of the human gut, including a Beckman prize, NIH investigator award, and Packard award, amounting to \$4 million.

The recognition that our early career faculty are receiving indicates that we do indeed have great strength in our new faculty and that we are renewing our faculty ranks well.

> Physical Sciences Building The new physical sciences building, completed at the end of 2010, will have a big impact on campus, particularly on the departments within this broad field, ranging from chemistry to physics to astronomy. It's a fantastic building. The atrium attracts students and faculty, studying and interacting. The culture that is developing there will be transformative for the physical sciences, just as the recently completed Duffield and Weill Halls have been for engineering and the life sciences.

▶ A Few More Areas Biomedical Engineering, which was started as a new College of Engineering department only a few years ago, is on a strong trajectory in research funding and graduate student enrollment. The Faculty of Computing and Information Science is making great strides in the field of information science and moving forward in revitalizing statistics research and education on campus. Several faculty in the social sciences have received prominent recognition and notable research support. In the Department of Government, for example, one faculty member was inducted into the American Academy of Arts and Sciences (in 2009 two faculty were inducted into the American Philosophical Society), and several



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early career faculty received awards supporting their research. In the Department of Sociology, another early career faculty member received a significant grant from the Defense Threat Reduction Agency to develop ways of identifying terrorist social networks.

Creating a First-Rate Research

Administration and Infrastructure As we begin to implement the research component of Cornell's strategic plan, we have been reenvisioning our research infrastructure, starting with a lot of behind-the-scenes work across the campus to address research administration services. This year's reorganization of the Office of Sponsored Programs into centers of expertise designed to best serve internal researcher and external sponsor needs is beginning to speed completion of industrysponsored agreements, a longtime challenge. In the Office of Research Integrity and Assurance, we are beginning to see a significant reduction in the time required for protocol review and amendment approval, while strengthening regulatory compliance. By the end of 2011, we plan to realize the first step in our long-term effort to put into place an integrated research administration system that will make it easier for faculty and support staff to prepare proposals and budgets efficiently, and thus allow our faculty to focus as much of their time and energy as possible on the actual research and less on completing paperwork. When fully implemented, the new system will enable Cornell to be much more efficient, reducing the currently high administrative burden on our researchers.

AS EXCELLENT AS CORNELL IS...

The research goals and strategies that we set into place and implement today will allow us to build unrivaled programs and ensure continued and expanded preeminence.

Robert A. But

Robert A. Buhrman Senior Vice Provost for Research

Our Research Strategy Will Include

Renewing our faculty—

recruiting aggressively and carefully, with a focus on maintaining and expanding Cornell's strategic areas of research leadership

Recruiting top graduate students

and postdocs and educating them to be outstanding leaders of the next generations

Leveraging resources

and strengthening Cornell's advantages in state-of-the-art shared facilities and research infrastructure

Supporting excellence

in research administration staff and systems to reduce burdens on Cornell researchers and enable their success

Establishing appropriate metrics

for measuring Cornell's strengths, so that we can strategically deploy our resources to optimize our research assets

Cornell's Total Research Expenditures **2010**



Source: Cornell University, Sponsored Financial Services

Ranking Cornell Nationally

		in thousands
BY RESEARCH EXPENDITURES FY 2009		FY 2009
1	Johns Hopkins University*	\$1,856,270
2	University of Michigan	1,007,198
3	University of Wisconsin, Madison	952,119
4	University of California, San Francisco	947,697
5	University of California, Los Angeles	889,995
6	University of California, San Diego	879,357
7	Duke University	805,021
8	University of Washington	778,046
9	Pennsylvania State University	753,358
10	University of Minnesota	740,980
11	Massachusetts Institute of Technology	736,102
12	University of Pennsylvania	726,768
13	Ohio State University	716,461
14	Stanford University	704,183
15	University of California, Davis	681,618
16	Cornell University	671,406



Ranking Cornell in New York

		in thousands
BY RE	SEARCH EXPENDITURES	FY 2009
1	Cornell University	\$671,406
2	Columbia University	589,575
3	University of Rochester	395,358
4	SUNY, Albany	340,259
5	SUNY, Buffalo	338,283
6	Mount Sinai School of Medicine	318,407
7	New York University	308,834
8	SUNY, Stony Brook	258,098
9	Rockefeller University	252,478
10	Yeshiva University	193,010

* Johns Hopkins University includes the Applied Physics Laboratory, with \$977,951 in total R&D expenditures.

Source: National Science Foundation

Note: Research expenditures of \$14,738 for Cornell's National Astronomy and lonosphere Center (NAIC) are reported separately and are not included in the above NSF amounts. The above amounts also do not include Cornell research expenditures of \$1,286 outside of science and engineering.

Ranking Cornell in National Science Foundation Funding



3RD 2010 NSF FUNDING

Funding Cornell's Research

	in thousands
BY DOLLARS EXPENDED	FY 2010
Total Federal Funds	\$461,169
Sponsored Research	453,773
Appropriated Research*	7,395

Total Nonfederal Funds	\$303,076
Sponsored Research	108,337
State & Local Governments	15,995
Corporations & Trade Associations	21,749
Foundations	54,767
Nonprofit Organizations	15,490
All Others	337
Appropriated Research	194,739
Cornell Support**	144,211
New York State	50.528





Federal Agencies

DHHS	Department of Health & Human Services	\$223,411
NSF	National Science Foundation	141,941
DOD	Department of Defense	24,576
USDA	Department of Agriculture	22,226
DOE	Department of Energy	14,233
NASA	National Aeronautics & Space Administration***	13,175
AID	Agency for International Development	2,521
	All Others	11,690

* Includes federal appropriated funds, such as Hatch and other federal budgeted dollars for colleges and universities.

 Consistent with NSF reporting guidelines, university support includes institutional cost sharing, GRA tuition fellowships, university seed research grants, unrecovered facilities and administration costs, and organized research allocation of NYS-funded employee benefits.
*** NASA includes JPL funds under subcontract.

Source: Cornell University, Sponsored Financial Services

External Funding Sources



Source: Cornell University, Sponsored Financial Services

Expending Research Dollars

	in thousands
BY DISCIPLINES	FY 2010
Medical Sciences	\$296,687
Biology	116,136
Multidisciplinary	64,929
Agriculture	61,559
Physics	49,688
Astronomy	28,294
Chemistry	20,036
Computer Sciences	16,818
Electrical Engineering	14,588
Economics	12,834
Institutional & College Research Support*	10,744
Metallurgical & Materials Engineering	10,733
Sociology	10,368
Mechanical Engineering	8,494
Psychology	7,115
Earth Sciences	6,928
Bioengineering & Biomedical Engineering	6,237
Chemical Engineering	5,464
Mathematical Sciences	5,463
Civil Engineering	5,389
Other Social Sciences	2,971
Communication, Journalism, & Library Sciences	1,508
Humanities	655
Business & Management	263
Political Sciences	181
Law	120
Oceanography	44

* Expenses incurred at the administrative unit level in support of research. Disciplines are defined by the National Science Foundation. Source: Cornell University, Sponsored Financial Services



Transferring Technology





in thousands
FY 2010
\$31,866
9,042
2,712
20,112

* Includes provisional and nonprovisional applications.

** Includes nonrecurring income, such as sale of equity. Source: Cornell Center for Technology, Enterprise, and Commercialization (CCTEC)

12 / Excelling.



TWO PREMIUM APPLE VARIETIES LICENSED

Cornell licensed two new, patented premium apple varieties to the New York State Apple Growers LLC. The New York exclusive agreement, called a managed release, is a new distribution model for Cornell's apple breeding program. This model coordinates supply and marketing, cuts commercialization and branding time in half, and serves both the New York apple industry and Cornell's apple breeding program. In the making for 14 years, these juicy, crisp, and grower-friendly varieties were developed by Susan K. Brown, Horticulture.



WIDETRONIX, A CORNELL STARTUP, RECEIVED \$2.2 MILLION

Widetronix Inc. was awarded \$1.2 million by The Solar Energy Consortium (TSEC) and \$1 million by the U. S. Department of Defense. Widetronix makes betavoltaic batteries, which are low power and long lasting. Betavoltaic batteries are used in applications such as smoke detectors and pacemakers. Widetronix uses silicon carbide as a semiconductor material to increase the batteries' efficiency and reduce costs. The funds will help the Ithaca-based company to open a prototyping facility. The technology was developed in the lab of Michael G. Spencer, Electrical and Computer Engineering.

A Few Research Notables



A false-color microscopy image overlay depicting the shapes and lattice orientations of several grains in graphene.

NEW INSIGHTS INTO GRAPHENE



Graphene, a single atomic layer form of carbon, has the potential to improve anything from solar cells to cell phone screens. Cornell researchers David A. Muller, Applied and Engineering Physics; Paul L. McEuen, Physics; and Jiwoong Park, Chemistry and Chemical Biology, revealed atomic-resolution

details of graphene "quilts"sheets of carbon one atom thick, stitched together at tilted interfaces-and how they look at the boundaries between patches. The researchers found that growing bigger patches did not improve the electrical conductivity of the graphene, as materials scientists previously believed, but that impurities get into the sheets, making the electrical properties fluctuate. These key insights into graphene's mechanical and electrical properties will lead scientists closer to the best ways to grow and use graphene.

DEVELOPING METHODS TO IDENTIFY TERRORIST SOCIAL NETWORKS



Matthew E. Brashears, Sociology, received a three-year grant of \$797,000 from the **Defense Threat Reduction** Agency to develop methods of identifying covert social networks that could be used by terrorists, human traffickers, or drug smugglers. His research will investigate why transnational terrorism emerges and how the supply of terrorists can be cut off, instead of just finding individual terrorists once they act. He will also develop a method to identify the first person in a network. His goal is to replace profiling techniques currently in use with more reliable methods for detecting terrorist cells that are preparing to attack.

HOMELESS DOGS AND MELANCHOLY APES



With the discovery of the great apes and the rise of bourgeois pet keeping, human-animal relations underwent a change in 18thcentury England. In her new book, Homeless Dogs and Melancholy Apes: Humans and Other Animals in the Modern Literary Imagination (Cornell University Press, 2010), Laura S. Brown, English, shows how these historical changes created a new cultural and intellectual context for understanding and representing animalkind, which has played a significant role in imaginative literature ever since. Brown illustrates how writers first used their nonhuman characters—from the lapdogs of Alexander Pope to the illmannered monkey of Frances Burney's *Evelina* and ape-like Yahoos of Jonathan Swift—to explore human identity and self-definition, human love and the experience of intimacy, and human diversity and the boundaries of convention.

STARVING CANCER CELLS



Richard A. Cerione, Molecular Medicine/Chemistry and Chemical Biology, and his research team discovered a molecule that can block cancer cells from using glutamine, an amino acid needed for cancer cell growth and vitality. The finding could lead to a new class of cancer-fighting drugs. Researchers have long believed that starving cancer cells of glutamine would help to fight some cancers, but have struggled with how to accomplish it. These Cornell researchers discovered a molecule they dubbed 968, which binds to the enzyme glutaminase and inhibits cancer growth by blocking the cancer cells' ability to use glutamine.



SECONDHAND CIGARETTE SMOKE UNSAFE



Ronald G. Crystal, Medicine, and physician-scientists at Weill Cornell Medical College found that infrequent smokers and people exposed to secondhand smoke are at risk for future lung diseases, such as lung cancer and chronic obstructive pulmonary disease (COPD). The researchers discovered that even at the lowest detectable levels of exposure to cigarette smoke, there are direct effects on the functioning of genes within the cells lining the airways. No level of smoking or exposure to secondhand smoke is safe. This is the first study to provide conclusive biological tests demonstrating what secondhand smoke and lowlevel smoking do to the body at the level of gene function.

A SUSTAINABLE FUTURE



The Cornell Center for a Sustainable Future got a new name, the David R. Atkinson Center for a Sustainable Future, in October 2010. The center received the largest single gift from an individual to Cornell's Ithaca campus: \$80 million from David R. Atkinson '60 and Patricia Atkinson. Providing "a permanent base for stimulating and coordinating Cornell's unfolding capabilities in sustainability," the historic gift helps position

Cornell to become a global leader in sustainability research,

education. and outreach. Frank

DiSalvo, Chemistry and Chemi-

cal Biology, directs the center.

NETWORKS, CROWDS,

David A. Easley, Economics, and

Jon M. Kleinberg, Computer

Science, study how the social,

economic, and technological

worlds are connected. In their

new book, Networks, Crowds,

World (Cambridge University

Press, 2010), they look at net-

aggregate behavior of groups

of people: for example, the

rapid growth of the internet

and the web, the ease of global

communication, and the ability

epidemics, and financial crises

to spread swiftly around the

world. The authors apply dif-

ferent scientific perspectives-

computing and information

science, and applied mathe-

matics—to broad questions

about networks and behavior.

economics, sociology,

of news and information,

works, incentives, and the

and Markets: Reasoning

about a Highly Connected

AND MARKETS

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The Cornell Center for a Sustainable Future got a new name, the David R. Atkinson Center for a Sustainable Future, in October 2010. The center received the largest single gift from an individual to Cornell's Ithaca campus: \$80 million from David R. Atkinson '60 and Patricia Atkinson.

David and Patricia Atkins

This sketch by Efraim Racker, the late Albert Einstein Professor of Biochemistry at Cornell, depicts a qlutamine addict (symbolizing a cancer cell).

IMPROVING DISABILITY EMPLOYMENT PRACTICES



The Employment and Disability Institute in Cornell's School of Industrial and Labor Relations won a grant of \$4 million to study differences in employer practices in hiring, advancing, and retaining people with disabilities. The study seeks to answer some key questions: What kind of manager is most effective at implementing disability policy? Can organizations help people with disabilities feel more engaged and fully utilized at work? How can employers be better equipped to recruit and retain people with disabilities, including returning veterans? Several centers and external partners, including ILR's Center for Advanced Human Resource Studies and Institute for Compensation Studies, are contributing to the project. The study will inform targeted interventions to improve employer practices. Susanne Bruyére directs the institute, and Lisa Nishi leads research in the institute. Kevin Hallock directs the Institute for Compensation Studies.

GOVERNMENT ACTION



Sherry L. Martin, Government, was awarded a Fellowship for Advanced Social Science Research on Japan from the U. S. National Endowment for the Humanities to pursue her comparative project, "Mobile



Knowledge: Adult Learning and Politics in Japan, Sweden, and the United States." Jessica L. Weeks, Government, was awarded a Junior Faculty Research Grant from the Smith Richardson Foundation for her book project, *Dictators at War*, which examines how domestic politics affects decisions of authoritarian leaders concerning war, peace, and international cooperation.

SOUNDS OF ANIMATED THINGS BREAKING



Doug L. James, Computer Science, and his graduate student have learned to synthesize the sounds of smashing brittle materials to match computer-animated images. To create a perfectly matched sound, they consider the computer graphic model underlying the animation and calculate how a corresponding real object would vibrate when fractured and how that vibration would create sound. The researchers integrate their computation of appearance, motion, and sound, instead of adding the sound afterward. For years, filmmakers have dubbed in recorded sound, but it is difficult to get the sound effects to match the action. In a game or virtual

reality, programmers cannot know in advance just how hard or far an object will fall. This is the first time computer-synthesized models of these events have been built with sound.

STUDYING MICROBES IN THE GUT



Ruth E. Ley, Microbiology, asks basic questions about the world of microbes in the gut. With a 2010 Packard Fellowship in Science and Engineering of \$875,000, she will study the genes of twins to understand how gut microbes coevolved with humans and their diets. With a 2010 National Institutes of Health New Innovator grant of \$1.5 million, she will investigate the relationship between chronic disease and microbes in the gut. In 2009, Ley received a Beckman Foundation Young Investigator award for her work on how defensins, antimicrobial peptides produced in the intestine, influence the diversity of bacteria in the gut. Ley thinks that people's mix of microbeswhich outnumber human cells ten to one in the bodycould be just as important to their health as their genes.

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The study seeks to answer some key questions: What kind of manager is most effective at implementing disability policy? Can organizations help people with disabilities feel more engaged and fully utilized at work?

A ROBOT'S HAND



Hod Lipson, Mechanical and Aerospace Engineering/ Computing and Information Science, and research collaborators created a versatile robotic gripper using ground coffee and a latex party balloon, instead of traditional designs based on the human hand. The researchers call their creation a universal gripper because it conforms to the object it is holding. rather than fitting just one object. The gripper has limitless future applications, including robotic arms in factories, robot feet that could walk on walls, and prosthetic limbs. The military could use the gripper to dismantle explosive devices or move dangerous objects.

DIGGING INTO DATA



Mats Rooth, Linguistics, is one of eight winners of an international competition, Digging into Data. Participants were challenged to devise innovative humanities and social sciences research projects that employ large-scale data analysis. Rooth's project, "Harvesting Speech Databases for Linguistic Research," scans the internet to study how we really say things. Rooth uses software to distinguish prosody (rhythm, stress, and intonation) in language by hunting online for word patterns, harvesting hundreds of thousands of examples of spontaneousrather than lab-created—word patterns. His work will enable researchers to evaluate theories about the form and meaning of prosody on an unprecedented scale, transforming the understanding of an important branch of linguistics.

BACH IN ITS ELEMENT



Annette Richards, Music, led an international, multidisciplinary project to build an organ at Cornell in the "style and scope appropriate to the music of noted German organist composers of the 17th and 18th centuries, particularly Johann Sebastian Bach." This world-class instrument was unveiled in November 2010 in Anabel Taylor Chapel. The organ was constructed using authentic 18th-century techniques, and it has many voices—"powerful, sweet, lovely, tender, proud." The dedication of this historic organ took place March 2011 with a concert festival and a major conference, Keyboard

Culture in 18th-Century Berlin and the German Sense of History. Cornell's new Baroque organ was a decade in the making, promoted by an international team of more than 100 researchers and artisans.

FABRIC FOR ONLINE SECURITY



Fred B. Schneider and Andrew C. Myers, Computer Science, are developing a way to build security into computer systems from the start-by incorporating security into the language used to write the programs, rather than trying to patch a hacked system. Their new development, dubbed Fabric, is a platform and programming language designed to create secure systems for distributed computing, where many interconnected nodes (locations on a computer network) are involved, such as in systems that move money or maintain medical records. For example, when you connect to Amazon, it



talks to your credit card company and the vendor of the product, passes your demographics to some advertisers and more. Nodes in Fabric pass around objects that contain data and program code, but the objects have built-in rules about how each node can interact with them. The Fabric language requires programmers to include these rules and saves them the work of writing code to enforce them.



Cornell's Total Research Expenditures

\$764 million

Top Sources of Funding for Cornell Research

\$223 million DEPARTMENT OF HEALTH AND HUMAN SERVICES

\$142 million NATIONAL SCIENCE FOUNDATION

American Recovery and Reinvestment Act (ARRA)



Cornell Colleges & Divisions

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF HUMAN ECOLOGY COLLEGE OF VETERINARY MEDICINE DIVISION OF NUTRITIONAL SCIENCES FACULTY OF COMPUTING AND INFORMATION SCIENCE





Distinguished Cornellians

Cornell Interdisciplinary Research Centers, Institutes, and Laboratories

Cornell NanoScale Science and Technology Facility

National Astronomy and Ionosphere Center

> Cornell High Energy Synchrotron Source

> > NATIONAL RESEARCH CENTERS



CENTERS, **INSTITUTES, AND** LABORATORIES

Center on the Microenvironment and Metastasis

Energy Materials Center

David R. Atkinson Center for a Sustainable Future

NEW CORNELL INTERDISCIPLINARY CENTERS

Photos: Robert Barker/CU; Cornell Daily Sun; Lindsay France/CU; Jason Koski/CU

Note: All statistics are FY 2010.

GRADUATE SCHOOL JOHNSON GRADUATE SCHOOL OF MANAGEMENT

LAW SCHOOL SCHOOL OF CONTINUING EDUCATION AND SUMMER SESSIONS SCHOOL OF HOTEL ADMINISTRATION SCHOOL OF INDUSTRIAL AND LABOR RELATIONS WEILL CORNELL GRADUATE SCHOOL OF MEDICAL SCIENCES (NEW YORK CITY) WEILL CORNELL MEDICAL COLLEGE (NEW YORK CITY)

Research Division/Office of the Vice Provost for Research



Approximately **1,000** academic and nonacademic staff

Senior Vice Provost For Research CHIEF ADMINISTRATOR

New and Recent State-of-the-Art Research and Teaching Facilities

Center

SCIENCES BUILDING Applied and Engineering Physics, Chemistry and

DUFFIELD HALL Interdisciplinary Nanotechnology Research and Education



MILSTEIN HALL (IN PROGRESS FOR COMPLETION) Cornell's College of Architecture, Art, and Planning

Biomedical Engineering, McGovern Innovation

WEILL HALL Weill Institute for Cell and Molecular Biology,



SIX CORNELL RESEARCH DISTINCTIONS

ENERGY RECOVERÝ LINAC (ERL)

A linear accelerator-driven, ultrabright x-ray source—essential for studying all types of materials, physical phenomena, biological molecules, and chemical processes—the ERL, is in progress as Cornell scientists build and test a prototype, continuing Cornell's legacy in high energy physics.

NANOTECHNOLOGY/ NANOSCIENCE

Cornell is a longtime global force, particularly in advanced electron beam and optical lithography and complex process integration.

BIOPHYSICS

Leading in research and education, Cornell biophysicists invented multiphoton microscopy, a widely used technology that allows researchers to see what happens inside living cells.

GENETICS/GENOMICS

With a long tradition of leadership, Cornell scientists have earned national recognition for implementing and utilizing the latest sequencing technologies as shared resources.

Faculty Distinctions

AMERICAN PHILOSOPHICAL SOCIETY

Mary Beth Norton, History/American Studies

AMERICAN ACADEMY OF ARTS AND SCIENCES

Valerie Jean Bunce, Government Theodore Eisenberg, Law Ronald Raymond Hoy, Neurobiology and Behavior Roberto Sierra, Music

NATIONAL ACADEMY OF SCIENCES

J. C. Séamus Davis, Physics

NATIONAL ACADEMY OF ENGINEERING

Thomas W. Parks, Electrical and Computer Engineering Stephen B. Pope, Mechanical and Aerospace Engineering

INSTITUTE OF MEDICINE

Joseph J. Fins, Medical Ethics/Medicine/Public Health/Psychiatry David J. Skorton, Medicine/Pediatrics/Biomedical Engineering/ Cornell President

JOHN D. AND CATHERINE T. MACARTHUR FELLOWSHIP (GENIUS AWARD)

Michal Lipson, Electrical and Computer Engineering

PRESIDENTIAL EARLY CAREER AWARD FOR SCIENTISTS AND ENGINEERS

Rachel E. Bean, Astronomy

NATIONAL SCIENCE FOUNDATION EARLY CAREER DEVELOPMENT AWARD

Ehsan Afshari, Electrical and Computer Engineering Salman Avestimehr, Electrical and Computer Engineering Jonathan T. Butcher, Biomedical Engineering Itai Cohen, Physics William R. Dichtel, Chemistry and Chemical Biology Tobias Hanrath, Chemical and Biomolecular Engineering Eun-Ah Kim, Physics Hadas Kress-Gazit, Mechanical and Aerospace Engineering Matthew Pritchard, Earth and Atmospheric Sciences Cynthia Reinhart-King, Biomedical Engineering

NATIONAL INSTITUTES OF HEALTH DIRECTOR'S NEW INNOVATOR AWARD

Maria Julia Felippe, Veterinary Medicine Ruth E. Ley, Microbiology John C. March, Biological and Environmental Engineering

GUGGENHEIM MEMORIAL FOUNDATION FELLOWSHIP Simone Pinet. Romance Studies

ALFRED P. SLOAN FOUNDATION FELLOWSHIP

David S. Bindel, Computer Science Jiwoong Park, Chemistry and Chemical Biology

FULBRIGHT SCHOLAR PROGRAM

David P. Hajjar, Pathology and Laboratory Medicine/ Biochemistry/ Weill Cornell Graduate School Dean

ALEXANDER VON HUMBOLDT FOUNDATION AWARD Johannes E. Gehrke, Computer Science

ASTRONOMY AND SPACE SCIENCES

Cornell managed the world's greatest radio telescope for 50 years, created the famous Mars exploration rovers, Opportunity and Spirit, and now leads the world's largest and highest 25-meter submillimeter wave telescope project in the Atacama Desert.

LITERARY THEORY

Cornell theorists are among the most highly regarded in the field.



FIND OUT MORE View this report and other publications from the Office of the Vice Provost for Research at Cornell online.

www.research.cornell.edu/VPR



Cornell-known for its world-class research and facilities and for leadership in interdisciplinary research, physical sciences, literary theory, genomics, nanotechnology, and many other areas-is positioning its research strategies for continued and expanded excellence.

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