

Discovery to Recovery

FALL 2005

REPORT ON
RESEARCH
AT HSS



HSS Completes Campaign for Research

Exceeding Goal, Unprecedented Drive Raises Over \$114 Million

Discovery to Recovery, the Campaign for Research, has made fund-raising history at Hospital for Special Surgery. As of September 1, the Campaign raised \$114,013,324 in philanthropic support to reconstruct laboratories, recruit and retain renowned scientists, advance novel investigations, and strengthen the research endowment. The Campaign helped transform HSS research – from the physical plant to the depth and focus of scientific expertise.

Campaign milestones are many. The Starr Foundation gave the largest aggregate gift the Hospital has ever received in its 142-year history: \$19 million. The Campaign attracted more than 2,200 new donors. Twenty-one named chairs and fellowships were established, more than half in response to a challenge grant from an anonymous benefactor. Research endowments totaling \$10.4 million were boosted by an unprecedented \$9 million bequest.

The impact of the Campaign is equally extraordinary. HSS has conducted the largest recruitment drive in its history. Expanded, state-of-the-art laboratories have increased the quantity and quality of investigations. The Hospital vaulted to the fourth rank among the top ten

independent hospitals in New York State receiving federal awards from the National Institutes of Health.

Of course, the most important measure of success is HSS's capacity to improve quality of life through treatments derived from a greater understanding of disease. This has been fortified by the scientific talent and new resources made possible by the Campaign and by a culture of physician-scientist collaboration that is stronger than ever before.

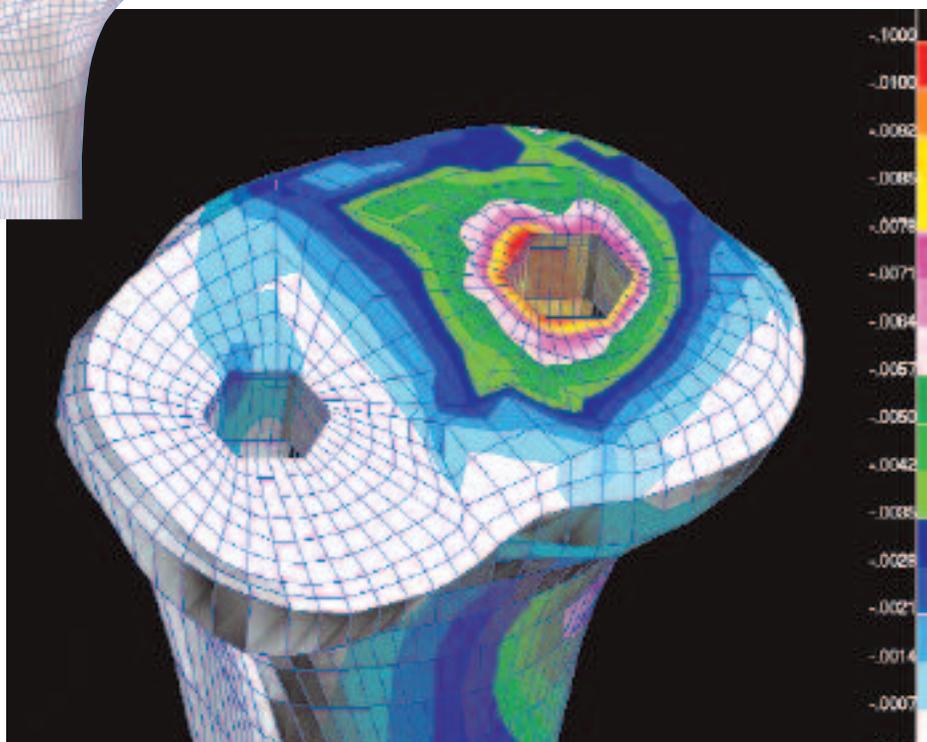
Expanding Investigations

In order to maximize the benefits of teamwork, HSS combined a series of distinct laboratories into four powerful disease-oriented programs: Musculoskeletal Integrity, Autoimmunity and Inflammation, Arthritis and Tissue Degeneration, and Tissue Engineering and Repair. This reorganization has been critical to fostering collaboration across disciplines by focusing on those clinically relevant questions where the intellectual efforts of scientific

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The Campaign for Research has provided key resources to acquire state-of-the-art tools for exploring new technologies. For example, HSS scientists can now create detailed, three-dimensional computer models of bone to predict how joint implants will perform in the human body. Below, a spectrum of colors forecasts the amount and degree of bone damage that might result from a new joint design, currently being studied in collaboration with a corporate partner.



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Hospital for Special Surgery is an affiliate of New York-Presbyterian Healthcare System and Weill Medical College of Cornell University.

Our Mission

Achieving Our Goal

As of September 1, we have raised \$114,013,324 million to support the scientific mission of this Hospital, and now is a great time to thank the efforts of our Board of Trustees and members of the medical and scientific staff for their roles in helping raise this exceptional sum.

This outpouring of philanthropic support for the Campaign for Research has been extraordinary, and I am delighted to thank the many close friends and supporters of HSS whose generosity has made this unprecedented initiative such a tremendous success.

Support from individuals, foundations, corporations, and government has enabled a revitalization of our research enterprise, and we are particularly thankful for the exceptional philanthropy of The Starr Foundation, Franchellie Cadwell, Katherine and Arnold Snider, William R. Salomon, and Charles H. Thieriot.



Richard L. Menschel

Over the past decade, a new wave of scientific breakthroughs has opened entirely new avenues of scientific investigation – from the decoding of the human genome to advances in biotechnology, discoveries that have the potential to fundamentally transform the way we care for musculoskeletal conditions.

In consultation with the Hospital's medical staff, scientific faculty, and senior management, the Board of Trustees agreed that taking the next step forward in musculoskeletal research required a major investment in this institution. A strategic planning process culminated in the Board's unanimous endorsement of a major program to significantly expand the Hospital's research enterprise and raise the philanthropic support needed to accomplish our objectives.

To implement this Strategic Plan, we took a number of key steps. First, we added several new members to our Board of Trustees who have tremendous expertise in the fields of medicine and science. Throughout the Campaign, the ideas and input of trustees Richard Brand, MD, Melvin J. Glimcher, MD, Carl F. Nathan, MD, and Torsten N. Wiesel, MD, have been essential to the expansion and enhancement of research at HSS. Second, we established an External Scientific Advisory Board, comprised of leaders in musculoskeletal research, to provide objective advice, insight, and counsel on the direction, competitiveness, and efficiency of HSS research. Third, we recruited a world renowned scientist, Francesco Ramirez, PhD, to serve as the Hospital's first Chief Scientific Officer and lead the Research Division into this new era of scientific discovery.

Meeting the Challenge

Contributions toward musculoskeletal research at HSS have surged since the inception of the Campaign in 1998 and dramatically increased each following year. Generous gifts from individuals, foundations, and corporations, along with crucial public support at the federal, state, and local levels, have enabled us to raise the critical funding needed to sustain the Hospital's pioneering research.

On the following pages, you will read about the incredible impact that has been made in science at HSS through philanthropic support for the Campaign: Modern research laboratories



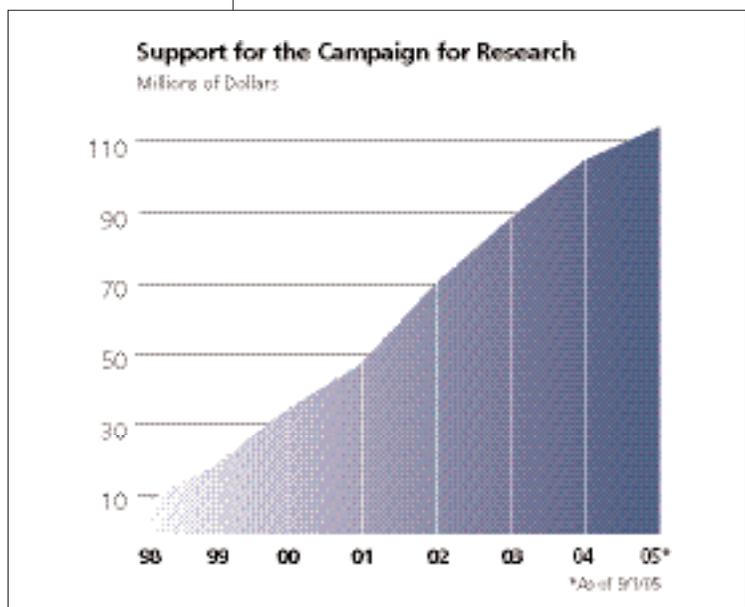
Philanthropic support contributed through the Campaign for Research has made it possible for HSS to modernize and expand its research laboratories.

equipped with state-of-the-art scientific tools, a critical mass of multidisciplinary researchers with a common focus on musculoskeletal conditions, pace-setting research programs aimed at finding the causes of and treatments for musculoskeletal disease, and a stronger research endowment that will provide perpetual support for the breakthroughs of the future.

The success of the Campaign has taken our research enterprise to a new level. Thanks to the crucial guidance of Dr. Ramirez and, now, the current leadership team of Lionel B. Ivashkiv, MD, Director of Basic Research, and Robert N. Hotchkiss, MD, Director of Clinical Research, we have the tools, talent, and resources to accelerate scientific findings into novel methods of treatment and prevention.

With all good wishes,

Richard L. Menschel
Campaign Chair



PRIVATE AND PUBLIC SUPPORT FOR HSS'S PIONEERING RESEARCH HAS BEEN PHENOMENAL.

Seizing an Opportunity

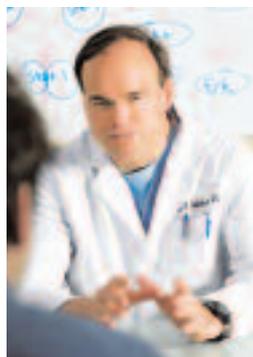
Throughout HSS history, discoveries by our scientists have contributed greatly to advances in the field of musculoskeletal health care – from pioneering the first total knee replacement prosthesis in the United States to landmark investigations into the immunological causes of conditions such as lupus and rheumatoid arthritis.

From Bench to Bedside: Collaborative Research at HSS

Translating basic findings into new ways of treating and preventing musculoskeletal conditions goes to the heart of Special Surgery's research mission. With more than 16,000 surgeries and over 200,000 patient visits annually, HSS is uniquely positioned to advance discoveries aimed at improving patient care. We recently sat down with Robert N. Hotchkiss, MD, Director of Clinical Research, and Lionel B. Ivashkiv, MD, Director of Basic Research, to discuss the partnership between basic science and clinical research at HSS.

How do basic science and clinical research interrelate at HSS?

Hotchkiss: The best research begins with a good question. For example, a clinician might ask, "What causes osteolysis, or loosening, in total joint replacements?" Or, in basic science, the researcher would say, "I wonder if this new cytokine is prevalent or plays a role in osteolysis?" These kinds of questions form the basis of collaborative research between the clinical and basic sciences at HSS.



Robert N. Hotchkiss, MD

In the absence of a clinical problem, basic research can pose questions related to basic biology but there may not be a more immediate impact on patients' lives. Similarly, clinicians today who aren't up to speed on the latest innovations in basic science need help to more fully answer their own clinical questions.



Lionel B. Ivashkiv, MD, Director of Basic Research (left) and Robert N. Hotchkiss, MD, Director of Clinical Research (right), are working together to expand and enhance clinical research at HSS.

Ivashkiv: In most institutions, the relationship between basic and clinical research hasn't been an equal partnership. One side hasn't fully understood the other. The clinician would hire scientists to solve a question, and while the scientists wouldn't actually understand the disease, they would work to solve it themselves without a clinician's knowledge of the disease or the healing process. A true partnership includes ideas from both sides, using the strengths of both sides.

Hotchkiss: In order to make optimal use of our capacity to discover and innovate, we are working to bring the two sides together. For example, our physicians have been seeing many cases of arthritis at the base of the thumb, and Assistant Scientist Francisco Valero-Cuevas, PhD, has been interested in thumb coordination in the human hand. So he and Cornell student Madhusudhan Venkadesan devised an instrument that measures the strength and dexterity of the thumb by measuring compressive force. Dr. Lisa Mandl then worked with me to apply this test in a clinical setting. By taking what is ostensibly a basic science/engineering instrument and applying this to arthritic thumbs, we can potentially determine new ways to treat with or without surgery.

What is being done to enhance the capabilities of our clinical research program?

Hotchkiss: We are revamping and reviewing our clinical research activities with an emphasis on patient safety. Our goal is to create a sustainable, durable infrastructure for clinical research.

Ivashkiv: Now that the basic science side of the equation has an infrastructure in place, we're looking to take it to the next level. And since the clinical side has



Lionel B. Ivashkiv, MD

traditionally been inhabited by practice-focused physicians doing research on the side, we're working together to enable more effective and programmatic means of establishing clinical projects by focusing on our strengths and aligning them in the most efficient way. In the next few months, the clinical side of HSS research will be able to access this infrastructure and benefit greatly from it.

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Discovery Funds for

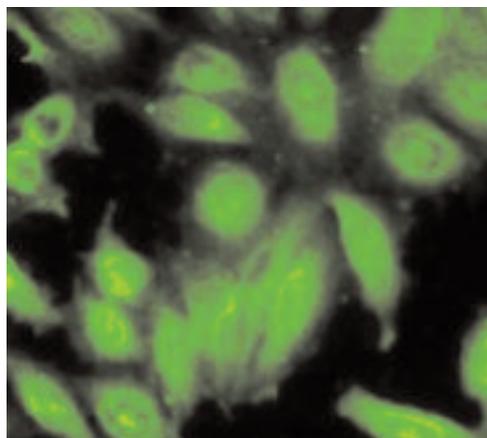
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faculty and medical staff converge. Moreover, it has helped guide the recruitment of scientists, as well as improve opportunities for NIH support and increased participation in multi-institutional research initiatives.

Dedicated individual and foundation Campaign supporters have committed crucial funds for discovery. HSS trustees Charles H. Theriot, William R. Salomon, and James R. Houghton provided essential support early on in the Campaign. Donors have contributed nearly \$50 million to advance novel investigations.

The F.M. Kirby Foundation and The Clark Foundation have provided critical seed funding for research in musculoskeletal integrity through investigations in biomedical mechanics and novel biomaterials that can be used in the replacement of joints, cartilage, and meniscal tissues. An anonymous benefactor was instrumental in the establishment of a Children and Adolescent Hand and Arm (CHArm) Center, dedicated to research, education and the treatment of children with hand and upper extremity conditions, including cerebral palsy. Research into musculoskeletal conditions that are prevalent in childhood has been generously supported by donors, including the Norman and Rosita Winston Foundation, the William T. Morris Foundation, and HSS trustee Mary Kay Farley, who focused her generosity on research into Marfan syndrome.

Rheuminations, Inc. boosted autoimmunity and inflammation research



Cells, above, glow green due to a staining process that reveals the presence of autoreactive antibodies capable of destroying the body's tissues. Under normal conditions, antibodies are produced by B cells to protect the body against infection and disease. HSS scientists are studying why autoreactive antibodies are inappropriately produced by activated B cells in patients with autoimmune conditions.



In the Laboratory for Soft Tissue Research, Chih-Tung Chen, PhD, and Chisa Hidaka, MD, are uncovering important information about the properties of cartilage, the reasons for its vulnerability following injury, and potential breakthrough discoveries for its repair and recovery.

through the creation of The Mary Kirkland Center for Lupus Research, dedicated to better understanding the causes of lupus, a “model” autoimmune disease, and developing new therapies. The Leonard Wagner Charitable Trust is enabling HSS to explore the molecular and cellular basis of autoimmune and inflammatory diseases.

HSS trustee David H. Koch, Linda Gosden Robinson, and the Estate of Franchellie M. Cadwell significantly strengthened the Hospital’s commitment to understanding and preventing arthritis and tissue degeneration. Support for the Hospital’s fledgling Arthritis and Tissue Degeneration Program is underwriting the basic science needed to develop novel approaches to prevent tissue destruction in patients with arthritis and related diseases. HSS developed the Gosden Robinson Early Arthritis Center to improve prompt detection and treatment of rheumatoid arthritis.

Mr. and Mrs. Russell L. Carson are helping to advance research into tissue regeneration and repair through the Orthopedic Clinical Research Incubator, where scientists are working to improve

tendon to bone healing following surgery and investigate age-related differences in bone fracture healing.

A Design for the Future

The Hospital’s capacity to undertake groundbreaking research flourished with the renovation and expansion of the Caspary Research Building. Built in 1958, it had undergone only one major renovation since construction. Since that time, advances in medicine and technology skyrocketed, and the way that research is conducted moved from an emphasis on the work of individual scientists to collaborative programs. Moreover, over the past four decades, the HSS Research Division grew from a handful of

scientists to more than 80 of the best and brightest minds in orthopedics, rheumatology, and their related sciences.

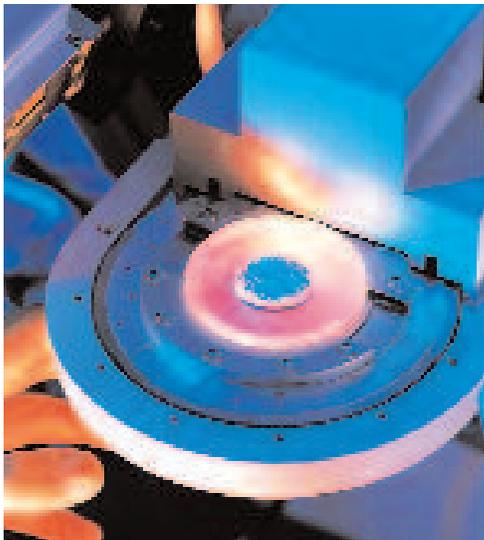
Thanks to crucial support from The Starr Foundation, the William Randolph Hearst Foundation, the Edwin S. Webster Foundation, and philanthropist Franchellie M. Cadwell, as well as an infusion of government funding at the federal, state, and local levels, the Hospital has rebuilt its laboratories to accommodate past and future growth and promote today’s integrative approach to musculoskeletal research. The Caspary Building now houses nine floors and boasts 72,000 square feet dedicated to research, more than double the original amount of laboratory space. Small, isolated laboratories have been replaced by an open design, allowing for an increased number of investigations and facilitating the free exchange of ideas that is so important to catalyzing scientific discoveries.

By strengthening the Hospital’s ability to recruit and retain scientific talent and initiate novel investigations, the new research laboratories have enhanced the Research Division’s ability to garner federal funding, an important measure of its vitality. For FY

2004, new federal funding to HSS increased to \$12 million from \$9 million, an increase of 33% over FY 2003. In fact, since the Caspary renovation began in 1999, the Hospital's funding from the National Institutes of Health increased by a staggering 300%.

Building a Critical Mass

Thanks to the generosity of an invaluable group of dedicated philanthropists, HSS now has nine endowed research



X-ray diffraction is used by Adele Boskey, PhD, Starr Chair in Mineralized Tissue Research, to understand the crystalline structure of bone mineral – information that can be key to helping predict the risk of developing bone disorders such as osteoporosis.

chairs, including the Starr Chairs in Mineralized Tissue Research and Tissue Engineering, the David H. Koch Chair for Arthritis and Tissue Degeneration Research, the Franchellie M. Cadwell Chair, the Collette Kean Research Chair, the Virginia F. and William R. Salomon Chair in Musculoskeletal Research, the Benjamin M. Rosen Chair in Immunology and Inflammation Research, the St. Giles Chair in Pediatric Genetic Research, and the Russell F. Warren Research Chair.

In addition, HSS has created 12 research fellowships, including the Helen Frankenthaler Fellowship in Restorative Mobility, the William T. Morris Fellowship in Pediatric Rheumatology, the Finn and Barbara Caspersen Fellowship for Spine Research, the Mary Rodgers and Henry Guettel Fellowship in Biomedical Mechanics, the Nancy Dickerson Whitehead Research Fellowship, the Ira W.

DeCamp Fellowship in Musculoskeletal Genetics, the Charles Christian Research Fellowship, the Leo Farbman Fellowship in Pediatric Musculoskeletal Research, the Ludwig Fellowship in Women's Sports Medicine Research, the Biomedical Ethics Research fellowship, the Cellular Research in Arthroplasty Fellowship, and the Immunology and Inflammation Fellowship.

In the past two years, HSS considerably strengthened its cohort of young scientists thanks to Campaign support and the efforts of HSS Chair Emeritus Richard L. Menschel. The Hospital added three exceptional basic scientists to the Arthritis and Tissue Degeneration Program: Carl P. Blobel, MD, PhD, Inez Rogatsky, PhD, and Paul Edward Purdue, PhD. Research into autoimmune and inflammatory disease has been deepened with the addition of basic scientist Eric Meffre, PhD, and pediatric rheumatologist Theresa Lu, MD, PhD. Research and development of new implant technologies and biologic solutions to cartilage injury has been broadened with the appointment of Suzanne Maher, PhD, an interdisciplinary mechanical engineer. Most recently, HSS welcomed Marjana Tomic-Canic, PhD, who will focus on wound healing as part of new research efforts in tissue engineering and repair.

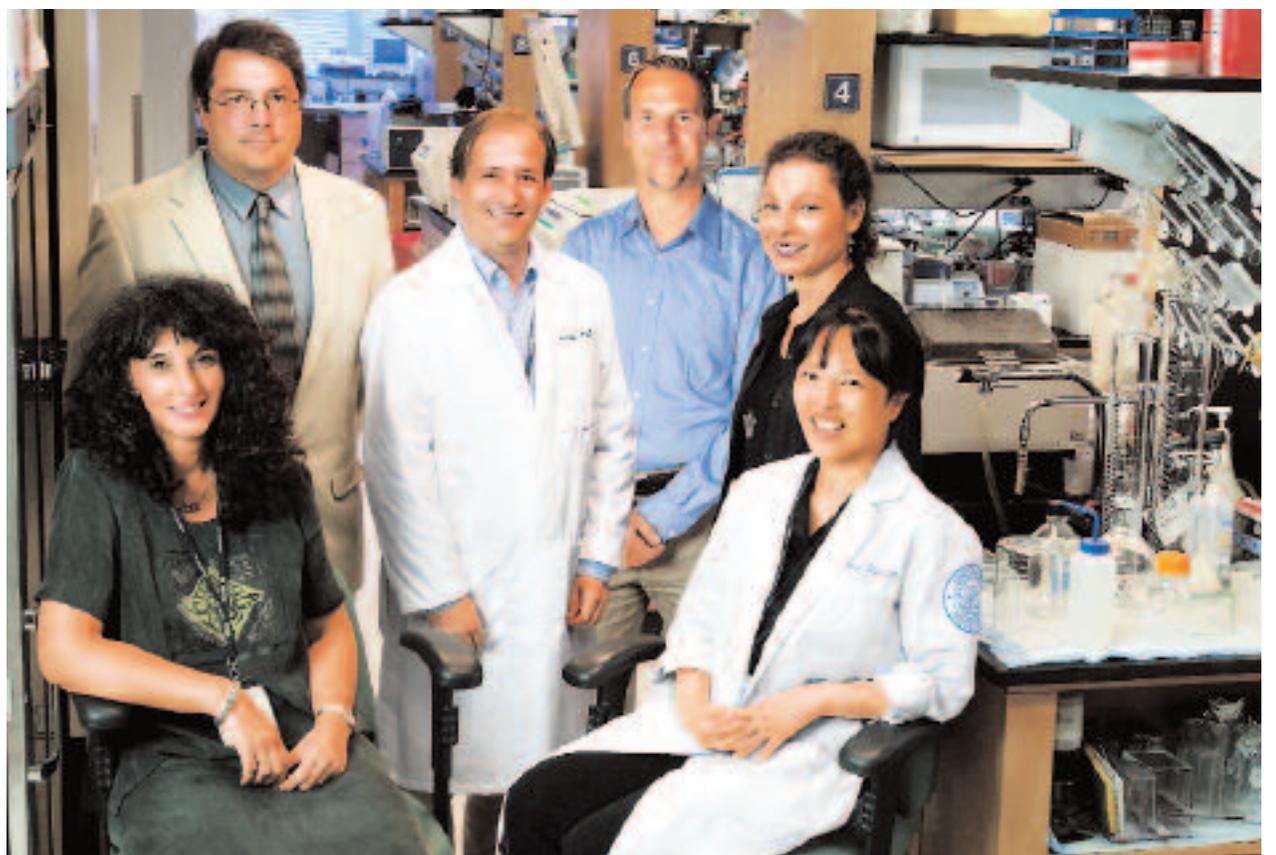
Sustaining the Scientific Endeavor

Endowment funds raised through the Campaign provide a permanent source of support for scientific investigations.

The Campaign has helped to build existing endowments, such as the Philip D. Wilson, Jr., Orthopedic and Education Research Endowment, as well as create new endowments, including the Margaret R. Cadwell Endowment for Musculoskeletal Research and the John H. Foster Center for Clinical Outcome Research. Significant gifts from the late Charles H. Thieriot, who served on the HSS Board, as well as extraordinary planned gifts accelerated the growth of endowed funds. These included a generous bequest from the Estate of George D. Cornell and the far-reaching \$9 million bequest from the Estate of Franchellie M. Cadwell. As the Campaign entered its final phase, the Hospital received an exceptional gift from The Starr Foundation to further enhance the research endowment, bringing the Foundation's total support of the Campaign to an unprecedented \$19 million.

HSS research began in 1954 with a generous endowment provided by a grateful patient, Helen Bicknell. Benefactors who have provided endowed gifts and generous support through the Campaign have built upon this tradition, creating a foundation for future scientific discoveries. ●

HSS has recruited a cohort of new scientists who add tremendous value to its world-renowned research faculty. From left to right, they include Marjana Tomic-Canic, PhD, Carl Blobel, MD, PhD, Paul Edward Purdue, PhD, Eric Meffre, PhD, Inez Rogatsky, PhD, and Theresa Lu, MD, PhD.



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Hotchkiss: The thumb study is an example of taking an emerging problem, recognizing it, and applying the spirit of inquiry with the patient as a collaborator. We need to inform the patient that by donating some of their time, letting us collect information about their condition, we can learn about the care of their problem and potentially improve care for others in the future.

Going forward, HSS will be using a team-based approach to research. What are the benefits and challenges of using this approach?

Ivashkiv: On the basic side of science, we've formed some interdisciplinary teams in three areas. The first team will be researching arthritis as well



Lionel B. Ivashkiv, MD

as osteolysis (bone loss), which accounts for prosthetic loosening in total joint replacements. The second will focus on bone healing, which is relevant for fractures, postoperative spine fusion, and metabolic bone disease. The third team will look at soft tissue remodeling and tissue engineering.

Each of these teams have clinicians who set the agenda and ask questions, senior academic scientists who advise the lab technicians working on the scientific side, and people within the lab who actually run the lab administratively. If you're a clinician, you don't have time to run a lab, so it makes sense that it's broken down in this particular way.

Hotchkiss: It requires a combination of curiosity, humility, and energy. The ultimate goal is to solve these problems for the benefit of a large number of patients. While it is tempting for a researcher to want quick results in a study serving the needs of a small section of the patient population, the other choice is to answer fundamental questions that may require a longer period of time and more patients.



The Strength-Dexterity Test, created by Assistant Scientist Francisco Valero-Cuevas, PhD, (see article, page 7) and Cornell University PhD candidate Madhusudhan Venkadesan, helps HSS physicians determine the compressive force of their patients' thumbs as part of a clinical study of arthritis involving orthopedic surgeons, rheumatologists, and engineers.

What's unique about this research collaboration at HSS?

Ivashkiv: While it could be said that much of the basic research at HSS is integrated with cutting edge science going on around the world, our distinction lies in our ability to link it to clinical research. HSS is one of the few places where we have this type of access to patients in the clinical population and the ability to ask questions that will have an impact on patients.

We'd like to do something that hasn't been done before anywhere in the world, which is to take these basic scientific resources and apply them in a meaningful way to asking clinical questions within the confines of musculoskeletal medicine. I think this is the next step that really hasn't happened anywhere yet.

We've also had a lot of success in attracting world-class clinicians while recruiting world-class scientists. I feel that going forward there's great potential for collaboration, and that's very exciting.

Where do you see clinical research at HSS in the next five to ten years?

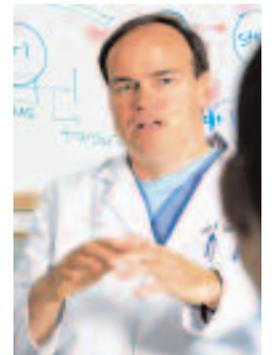
Ivashkiv: We need to bring clinical research up to the state of the art. If we do, I think we'd be among the first mus-

culoskeletal centers to do that. Instead of practitioners doing small projects, we would have a programmatic, team approach of professionals with a rigorous core of methodology that would include clinicians, surgeons, and statisticians – that's step one.

Step two would be to merge clinical research with this revolution that's occurring in modern biology and genetics. Today, patients are well-defined and we know what the individual diseases are. However, modern cellular and molecular biology hasn't been applied in a clinical sense to musculoskeletal medicine. We have to take advantage of the explosion of information we've gotten from the genome in order to study systems, apply them to humans, and really understand genetics and the regulation of genes in a really sophisticated way, on a global level.

Hotchkiss: These days, clinicians spend so much time with patients that we need a dedicated, complementary cohort of clinical investigators, and one of our focus areas should be to attract these people to HSS.

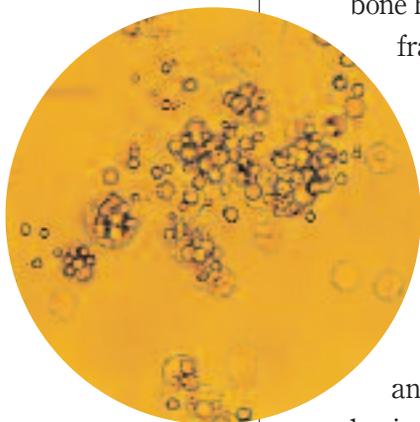
As clinical research grows at HSS, we will have the capability of managing the mechanics of enrolling patients, ensuring privacy of patient data, and remaining compliant with the latest rules and regulations regarding patient safety, especially as we become more expansive with our studies.



Robert N. Hotchkiss, MD

Ivashkiv: The real goal – what nobody has been able to do thus far – is to take full advantage of the current scientific revolution and apply it to the patient to understand what goes on with these diseases.

If we have the two sides of research at HSS addressing the aforementioned three focus areas, we'd be the best in the world in these major musculoskeletal areas. I think that's how we'd take it to the next level – not only in quality and impact on patient care, but also in how we're recognized around the world. ●



The above image depicts the interaction of cells with implant debris particles that collect around prostheses, leading to osteolysis (bone destruction) and implant loosening. Basic and clinical researchers at HSS have teamed up to investigate the causes of osteolysis with the aim of preventing implant loosening.

Adele Boskey, PhD, was invited to speak at the Bone Quality Meeting, hosted by the American Society for Bone and Mineral Research and the National Institutes of Health, in May. **Dan Faibish, DDS, Eve Donnelly, BS**, and **Guiyang Li, PhD**, each received a Young Investigator Travel Award to present their work at this meeting. In June, **Dr. Boskey** spoke at the International Osteogenesis Imperfecta meeting co-chaired by **Cathleen Raggio, MD**, and participated in the Merck-sponsored National Therapeutic Experts Forum in Philadelphia.

The International Skeletal Society has awarded **Peter Bullough, MD**, The Founder's Medal, a prestigious award that is presented to one distinguished Society member each year who has demonstrated outstanding dedication to the Society and excellence in their field of science or medicine.

The New York Chapter of the Arthritis Foundation has awarded **R. Krishna Chaganti, MD**, a one-year, \$40,000 Arthritis Foundation Rheumatology Fellow Award.

Jo A. Hannafin, MD, PhD, has received a three-year, \$1,122,000 grant from the NIH to investigate the effect of mechanical stimuli on the structure and function of the anterior cruciate ligament.

The NIH has presented a five-year, \$1,649,000 award to **Lionel Ivashkiv, MD**, to study the inhibition of Stat3 and inflammatory cytokine production.

Weill Medical College of Cornell University presented an Excellence in Teaching Award

to **Joseph Lane, MD**, at the annual Celebration of Teaching dinner held in June.

In June, **Peggy Crow, MD, Michael Lockshin, MD, Stephen Paget, MD, and Jane Salmon, MD**, were invited to speak at the annual meeting of the European Congress of Rheumatology, a forum in which professionals in rheumatology can exchange research and educational information with European scientists and scientific societies.

The Arthritis Foundation, (National and New York State Chapters), has awarded **Lisa A. Mandl MD, MPH**, an Arthritis Investigator Award/Clinical Research Award. This two-year, \$75,000 grant, renewable for two years at \$90,000, supports a randomized controlled trial of the medical treatment of carpometacarpal osteoarthritis.

In May, **Elizabeth Myers, PhD**, was elected to chair the Special Emphasis Panel of the NIH Study Section.

Luminita Pricop, MD, served on the review panel on Systemic Lupus Erythematosus (SLE) and SLE Biomarkers organized by the Department of Defense Peer-Reviewed Medical Research Program and held in April.

Scott Rodeo, MD, and Stephen Doty, PhD, are co-investigators on a newly awarded grant to **Helen Lu, PhD**, of Columbia University, to study tissue engineering approaches to tendon insertion site development. The two-year, \$235,000 grant was provided by the Walter Coulter Foundation.

Jane Salmon, MD, was appointed Vice Chair of Study Sections for the Alliance for Lupus Research.

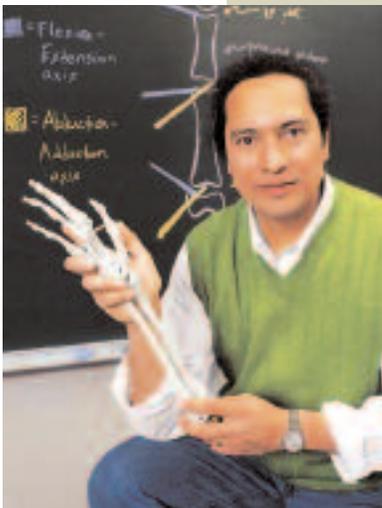
Daniel Solomon, MD, has received a one-year, \$18,800 grant from the Arthroscopy Association of North America, to study motion and joint force after knee ligament injuries.

Andrew Swanson, MD, received first prize at the NYSSH residents and fellows conference for his work comparing the recovery of chronically denervated muscle using neurotization (the implantation of nerve directly into muscle) or traditional nerve repair. HSS staff who co-authored the study included **Scott W. Wolfe, MD, Stephen Doty, PhD, and Joseph Feinberg, MD**.

The Musculoskeletal Trauma Foundation has awarded **Andrew Pearle, MD, Scott Rodeo, MD and Russell Warren, MD**, a one-year, \$101,400 grant to evaluate cascade platelet-rich fibrin matrix, a source of growth factors that assist in bone and soft tissue healing, on rotator cuff injuries.

In April, the Society for Biomaterials invited **Timothy Wright, PhD**, to speak about integrated approaches to knee wear. In addition, Dr. Wright participated for the second year in the NIH Loan Repayment Program Study Section for the National Institutes of Arthritis and Musculoskeletal and Skin Diseases. He was a guest lecturer at the 49th Meeting of the Korean Hip Society and the Trauma and Total Joints Meeting of the Northern California Chapter of the Western Orthopaedic Association. Dr. Wright also lectured at the Maine Orthopaedic Review Course in June.

National Institutes of Health Selects HSS Scientist to Join Biomechanics Study Section



Francisco Valero-Cuevas, PhD

Recognizing his superior competence and productivity in biomechanics research, Francisco Valero-Cuevas, PhD, Assistant Scientist in the Musculoskeletal Integrity Program at Hospital for Special Surgery, and Assistant Professor at the Sibley School of Mechanical and Aerospace Engineering at Cornell University, has been named a member of the Motor Function, Speech, and Rehabilitation Study Section of the National Institutes of Health starting in July 2005.

From Biomechanics Research to Clinical Care

In collaboration with the biomechanics team at HSS and engineers at Cornell, Dr. Valero-Cuevas is investigating the progression and treatment of osteoarthritis and nerve entrapment syndromes in the human hand. To improve clinical outcomes for hand function in orthopedic and neurological disease and aging, these scientists emphasize an integrative approach that considers the complex structure of the hand, its neurological control, and the integrity of hard and soft tissues.

In 1999, Dr. Valero-Cuevas broke ground with the development of the Strength-Dexterity Test (S-D Test), a clinical measure of finger and thumb dynamic grasping ability involving the compression of a number of springs, each with different combinations of stiffness and propensity to buckle. Advances have since refined the S-D Test to include only one spring – a considerable decrease from its original 87 springs. By applying the S-D Test to

osteoarthritis and nerve entrapment patients, clinicians can analyze hand function, treatment efficacy, and recovery related to musculoskeletal diseases.

Strength-Dexterity Test Aids in Clinical Rehabilitation

“The reviews we’ve received from both patients and clinicians using the shortened S-D Test have been outstanding,” Dr. Valero-Cuevas remarked. “It has proven to be a reliable method of determining ways in which we can optimize the clinical rehabilitation following disease.”

Dr. Valero-Cuevas is recipient of a National Science Foundation Career Award, The American Society of Biomechanics Young Scientist Award, and is currently a Humboldt Fellow at the Max Planck Institute for Human Brain and Cognitive Sciences in Munich.

In 2005, Dr. Valero-Cuevas and his co-investigators at Special Surgery, including Robert Hotchkiss, MD, Sherry Backus, DPT, and Lisa Mandl, MD, received a NIH grant to enhance the effectiveness of randomized clinical trials by employing the S-D Test.

“Dr. Valero-Cuevas is bridging the gap between biomechanics research and clinical care to expand the scope of our understanding of the progression of osteoarthritis,” says Senior Scientist Timothy Wright, PhD. “As a young scientist, it is remarkable that he has been invited to join a study section at the NIH.” ●



Discovery to Recovery

News & Notes Research

HSS Journal Highlights Comprehensive Approach to Musculoskeletal Medicine

World-renowned for its clinical practices and at the forefront of musculoskeletal research, Hospital for Special Surgery has launched publication of the *HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery*. The Hospital's first peer-reviewed, multidisciplinary journal will be published twice per year. Issues feature articles on progressive research, innovative surgical procedures, and case reports, as well as topical articles on musculoskeletal medicine and science by internal faculty and HSS alumni.

Editor-in-Chief of the new journal is Richard Laskin, MD, an Attending Orthopedic Surgeon at HSS. Appointed by Surgeon-in-Chief Thomas P. Sculco, MD, Dr. Laskin specializes in hip and knee surgery and has a reputation for excellence in orthopedics. "HSS is the leader worldwide in musculoskeletal care and part of our mission is to help educate physicians and



scientists," Dr. Laskin remarked. "This will be a prime educational venue for us. My goal as Editor-in-Chief is to have a first rate peer-reviewed journal that will serve as one of the cornerstone musculoskeletal references in both the U.S. and abroad."

The journal's editorial board is comprised of physicians, scientists, and allied health professionals, as well as two international alumni, whose expertise covers the fields of orthopedic surgery, rheumatology, radiology and imaging, physiatry, basic science, anesthesia, neurology, pathology, physical therapy, and nursing, among others.

"It is our goal with the *HSS Journal* to not only represent the work that is being done by our current faculty, but also that of our alumni, many of whom are former trainees," observed Laura Robbins, DSW, Vice President, Education and Academic Affairs, and the journal's Executive Editor.

Published by SpringerLink, one of the largest medical publishing companies in

the world, the first issue of the *HSS Journal* contains approximately 20 articles, cases, and reports by HSS faculty and alumni on topics ranging from updates on hip arthroscopy to issues of medical ethics in treating musculoskeletal disease. The first edition of the subscription-based journal has been distributed to over 25,000 physicians, primarily orthopedic surgeons, and can be accessed online at www.springerlink.com. The *HSS Journal* will be featured at the American College of Rheumatology's annual meeting in November, as well as at the American Academy of Orthopaedic Surgeons' annual meeting in the spring of 2006.

"Recognizing the value of collaboration and the benefits of sharing knowledge and discoveries across disciplines is a hallmark of HSS," says Dr. Sculco. "Now, through the *HSS Journal*, we will have an opportunity to share with other leading medical experts just how multi-disciplinary our approach is to understanding and treating musculoskeletal disease."

To subscribe to the *HSS Journal*, please visit www.springerlink.com, or for more information about contributing to the journal, please visit us online at www.hss.edu. ●