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ABOUT HOSPITAL FOR SPECIAL SURGERY

Founded in 1863, Hospital for Special Surgery (HSS) is a world leader in orthopaedics, rheumatology and rehabilitation. HSS is nationally ranked No. 1 in orthopaedics, No. 4 in rheumatology, and No. 5 in geriatrics by U.S. News & World Report (2013-14), and is the first hospital in New York State to receive Magnet Recognition for Excellence in Nursing Service from the American Nurses Credentialing Center three consecutive times. Located in New York City, HSS also serves patients in the regional area with physician offices in Greenwich, Long Island, and Queens, and serves Florida patients with an outpatient rehabilitation office in South Florida. Patients choose to come to Hospital for Special Surgery from across the United States and from around the world. HSS has one of the lowest infection rates in the country. From 2008 to 2013, HSS has been a recipient of the HealthGrades Joint Replacement Excellence Award. HSS is a member of the NewYork-Presbyterian Healthcare System and an affiliate of Weill Cornell Medical College and as such all Hospital for Special Surgery medical staff are faculty of Weill Cornell. The Hospital's Research Division is internationally recognized as a leader in the investigation of musculoskeletal and autoimmune diseases. Hospital for Special Surgery is located in New York City and online at www.hss.edu.

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“The essential work of Hospital for Special Surgery – patient care, research, and education – thrives on the communication, collaboration, and collegiality that are found within the Department of Orthopaedic Surgery and across disciplines and other specialties,” says Thomas P. Sculco, MD, Surgeon-in-Chief. “With a common goal of improving the lives of patients restricted or immobilized by musculoskeletal injuries or disorders, the Hospital continues to extend the boundaries of what is possible in musculoskeletal care.”
A MESSAGE FROM THE SURGEON-IN-CHIEF
THOMAS P. SCULCO, MD

As we celebrate the 150th Anniversary of the founding of Hospital for Special Surgery, I write this message with a touch of nostalgia and great affection for the institution where for more than 40 years I have had the privilege to develop my career and work side by side with some of the greatest minds in musculoskeletal medicine.

From its start in a small brownstone on Second Avenue in New York City to its current campus of clinical, research, and education facilities overlooking the East River, the Hospital has followed a trajectory of growth and innovation that continues to transform the fields of orthopaedic surgery and rheumatology to this day.

During the past year, HSS saw a number of significant endeavors come to fruition. We embarked on several new initiatives that will play a role now and in the future, securing improvements in the clinical arena, driving new avenues of research, and ensuring that the orthopaedic surgeons of tomorrow are equipped with the knowledge and training to provide the highest quality of care to their own patients.

The Clinical Imperative

Demand for the Hospital’s services has nearly doubled in the past six years. In 2012 alone, more than 256,000 patient visits were made to HSS orthopaedic surgeons, and over 27,000 surgeries were performed. Of these procedures, some 4,300 were total hip replacements – nearly four times that of any other institution in New York State and the highest number in the country. For the fourth consecutive year, HSS demonstrated an infection rate significantly lower than the New York State average for hip replacement or revision surgeries. According to the most recent report on hospital infection rates released by the New York State Department of Health, the Hospital had a statistically lower surgical site infection rate of 0.4 percent compared with the state average of 1.12 percent.

Numerous best practices – many pioneered here – help to keep our infection rates low. Several of these focus on minimizing surgical time for joint replacement, which, in general, lowers the risk for infection. They include the use of regional anesthesia, in turn reducing bleeding and the length of the surgery.

In 2012, The Joint Commission acknowledged the Hospital as one of its Top Performers on Key Quality Measures.” HSS was the only Manhattan-based hospital among the 620 hospitals singled out for achieving an exemplary level of accountability measure performance. The Joint Commission’s annual report presents scientific evidence of how hospital performance relates to common medical conditions and procedures. The Hospital also was recognized as a Top Performer for surgical care.

Expanding Our Facilities

To accommodate a patient population that continues to grow and to ensure that our facilities for diagnosis and treatment remain state of the art, HSS has an ongoing capital plan to modernize and expand facilities at its main campus and beyond. In 2012, the completion of two new operating rooms brought our OR complement to 35. We also celebrated the opening of several highly anticipated facilities:

Alfred and Norma Lerner Children’s Pavilion and Ellen Wright Children’s Care Center – a comprehensive state-of-the-art “hospital within a hospital” for pediatric patients and their families

Steve Tisch Adult Reconstruction and Joint Replacement Center and the Joan H. Tisch Adult Reconstruction and Joint Replacement Reception Area – new accommodations for the Adult Reconstruction and Joint Replacement Division equipped with contemporary exam rooms and physician offices, and a welcoming and comfortable space to greet patients and families when they arrive for appointments.
Expediting Research Translations

The ultimate goal of the scientists in the Hospital’s Division of Research is to improve the lives of patients with musculoskeletal disorders. In the past several years, under the leadership of Steven R. Goldring, MD, Chief Scientific Officer, our research programs have evolved to incorporate new ways of thinking about bench-to-bedside science and advances in technology that are accelerating the pace of discoveries in the laboratory to therapeutic applications.

Musculoskeletal research efforts also are being strengthened through the creation of a formal Clinician Scientist Program, funded by a generous gift from the Kellen Foundation, which provides mentoring and support to young faculty who are committed to careers as clinician-scientists.

Among the Division’s priorities has been the establishment of multidisciplinary teams comprising basic scientists, biomedical engineers, and clinical investigators who collaborate to define mechanisms involved in osteoarthritis, cartilage repair, and bone injury and regeneration, for example.

Five years ago, HSS launched its Osteoarthritis (OA) Initiative with major funding from the Li Ka Shing Foundation. Since that time, the OA Initiative has made great strides, developing multidisciplinary research activities and clinical trials that help address the broad-ranging challenges of OA. The establishment of a peer-review grants program and a faculty member support program has made possible, to date, pilot projects and ongoing research in areas that include mechanisms of post-traumatic arthritis, cellular mechanisms that result in the destruction and abnormal repair of cartilage, gene involvement in ACL repair, and early detection of osteolysis and identification of therapeutic targets.

Recently, Hollis G. Potter, MD, the Coleman Chair in MRI Research and Chief of the Division of Magnetic Resonance Imaging, and Matthew F. Koff, PhD, received NIH funding for a multidisciplinary approach to identify total hip arthroplasty patients at risk for early revision surgery due to adverse effects of wear debris released from prosthetic implants.

Teams of scientists, physicians, and engineers – led by Scott A. Rodeo, MD, Co-Chief of the Sports Medicine and Shoulder Service, and Mary B. Goldring, PhD – are working together in the Tissue Engineering, Regeneration and Repair Program to develop new strategies to prevent, repair, regenerate, or replace injured tissues.

In addition, HSS is an associate founding member of the New York Genome Center, a collaboration of New York academic medical centers, private companies, foundations, and New York City, and one of the largest sequencing and bioinformatics centers in the country. Through the New York Genome Center, our scientists and clinical investigators have access to the newest genomics technologies furthering their ability to research the causes and regulation of musculoskeletal conditions and expedite the development of new therapies.
Honoring the Past, Envisioning the Future
Celebrating 150 Years

The 150th Anniversary of the founding of Hospital for Special Surgery on May 1, 1863, was commemorated with gala celebrations; scholarly and scientific symposia; a 530-page historical volume and documentary film; and numerous exhibits and publications.

1 In Anatomy of a Hospital: Hospital for Special Surgery 1863-2013, David B. Levine, MD, emeritus attending orthopaedic surgeon at HSS, eloquently details the history of the Hospital.

2 The Metropolitan Museum of Art served as host to the Hospital’s 150th Anniversary reception, illuminating the grand stairway with candles displaying the HSS logo.

3 Joining in the festivities at the 150th Anniversary reception are (from left) Russell F. Warren, MD, 10th Surgeon-in-Chief; Philip D. Wilson, Jr., MD, eighth Surgeon-in-Chief; Sam Delgado, CST, Senior Technical Manager, OR; and Thomas P. Sculco, MD, current HSS Surgeon-in-Chief.

4 Leading historians, scholars, scientists, physicians, and health policy experts from around the country gathered at HSS for a two-day symposium entitled “Honoring the Past, Envisioning the Future.”

5 The Hospital’s 30th Annual Tribute Dinner celebrated the 150th Anniversary, honoring the City of New York with special guest Mayor Michael Bloomberg, who accepted the award on the City’s behalf. The event also paid tribute to renowned spine surgeon Oheneba Boachie-Adjei, MD, Chief of the Scoliosis Service, who was honored with the HSS Lifetime Achievement Award.
The HSS Healthcare Research Institute (HRI), directed by Stephen Lyman, PhD, is stepping up the Hospital’s patient-oriented research. The HRI consolidates clinical research programs under a single administrative structure with the goal of enhancing the productivity and impact of clinical research. An established health services researcher, Dr. Lyman has focused his studies on the patterns of orthopaedic healthcare delivery and their impact on patient outcomes.

Our high patient volumes provide us with exceptional opportunities to compile and analyze data on patient outcomes through more than 45 registries with nearly 84,000 enrollees.

Residency Training

In 1888, Virgil P. Gibney, MD, the Hospital’s second Surgeon-in-Chief, established the nation’s first orthopaedic residency program. Dr. Gibney set the gold standard for training in orthopaedic surgery and its subspecialties that has endured for more than 125 years. The program has grown from one year to five, including a first year spent in general surgery at NewYork-Presbyterian Hospital, and from two residents to 45 as of 2013. Also, greater than 70 fellows train here in all musculoskeletal areas with 39 in orthopaedic surgery.

The Orthopaedic Residency Program of today is not so very different in its mission to provide residents the opportunity to gain a well-rounded surgical education and master the fundamentals of orthopaedic surgery.

In 2012, more than 600 medical school graduates applied to our orthopaedic residency program; 55 candidates were interviewed for the 10 PGY-1 positions available. We were extremely successful in the orthopaedic match for our residency class. Competing with every other program in the country, HSS rose to number 11 on the match list for our top 10 – surpassing all previous years. Our new residents received their MD degrees from University of Maryland School of Medicine, Geisel School of Medicine at Dartmouth, Harvard Medical School, Howard University College of Medicine, Rush Medical College of Rush University Medical Center, The Raymond and Ruth Perelman School of Medicine at the University of Pennsylvania, Universidad Autonoma de Guadalajara, University of California San Francisco School of Medicine, and Weill Cornell Medical College.

I am also pleased to report that two of our residents have been honored with major awards: Michael B. Cross, MD, received an ORS/OREF Travel Award in Orthopaedic Research Translation, and Peter D. Fabricant, MD, MPH, received the 2013 American Orthopaedic Society for Sports Medicine Excellence in Research Award for best clinical research paper.

With Pride in Our Faculty

The 2013 Annual Meeting of the American Academy of Orthopaedic Surgeons held in Chicago was a great success for HSS, with over 160 presentations, courses, exhibits, and posters by our faculty.

The year also brought important honors and recognition for many faculty members.

Jo A. Hannafin, MD, PhD, has been named the first female president of the American Orthopaedic Society for Sports Medicine and was elected Secretary of The Herodicus Society, where she will serve as President in 2015. Dr. Hannafin also was named one of three physicians honored by Castle Connolly as Physician of the Year for Clinical Excellence. She is the first orthopaedic surgeon to receive this award in its eight-year history.
As we reflect on the extraordinary achievements of HSS throughout its history, we appreciate that when James A. Knight, MD, established the Hospital in 1863, he wanted for his young patients that which we desire for our patients and for those who will come to us in the future: to help children and adults of all ages who suffer from musculoskeletal disorders to live their lives to the fullest. In the feature article that follows we discuss the fundamental factors that make it possible for HSS to excel in its orthopaedic specialties today and provide a look at some of the pioneering research of our faculty that is expected to redefine the field.

On a personal note, the opportunity to practice medicine at HSS, serve as an educator to physicians on the threshold of their careers as orthopaedic surgeons, and conduct research that can influence the outcome of patient care fills me with immense satisfaction. For the past decade, I have had the added pleasure of serving as Surgeon-in-Chief at this remarkable Hospital and to lead an extraordinary staff. Many of you may know that in the year to come I will be passing the baton to the Hospital’s 12th Surgeon-in-Chief.

I want to thank all of you for your support over the years, and I look forward to continuing my tenure with HSS surrounded by colleagues who are committed to helping our patients achieve mobility and the highest quality of life possible.

Thomas P. Sculco, MD
Surgeon-in-Chief and Medical Director

Mary B. Goldring, PhD, was named First Vice President of the Orthopaedic Research Society (ORS) at its 2013 annual meeting and will assume the presidency in 2014. Mathias P. Bostrom, MD, was named Second Vice President of the Society.

Timothy M. Wright, PhD, Director of Biomechanics and the F.M. Kirby Chair in Orthopaedic Biomechanics, received the ORS 2013 Alfred R. Shands, Jr. Award in recognition of his “contributions to orthopaedics and the devotion of a significant portion of his professional lifetime to furthering knowledge in the field of musculoskeletal disease.”

Oheneba Boachie-Adjei, MD, Chief of the Scoliosis Service and founder of the FOCOS project in Ghana, received Hospital for Special Surgery’s Lifetime Achievement Award, and Edward V. Craig, MD, MPH, a pioneer in shoulder replacement, received the Lifetime Achievement Award from the New York Chapter of the Arthritis Foundation.

I received the Austrian Cross of Honour for Science and Art First Class for my work in teaching in Austria and was elected President of The Knee Society for the year 2016. For the past 15 years, Helene H. Pavlov, MD, FACR, has led the Hospital’s Department of Radiology and Imaging, developing an outstanding program and greatly expanding orthopaedic imaging and MRI capabilities. Dr. Pavlov has announced that she will be stepping down as Radiologist-in-Chief, but we are pleased that she will remain active on staff both clinically and as a mentor and educator.

All of our orthopaedic surgeons are credentialed faculty members of Weill Cornell Medical College. Our relationship with the Medical College dates back to 1951 thanks to the foresight of Philip D. Wilson, Sr., MD, HSS’s fifth Surgeon-in-Chief. Dr. Wilson believed that the Hospital should have a close affiliation with a medical school to enable it to be a leading orthopaedic institution. The past 60 years have borne this out, producing important and influential collaborations with Weill Cornell in clinical care, education, and research.

At the 2013 AAOS Annual Meeting, HSS orthopaedic surgeons had over 160 presentations, courses, exhibits, and posters.

A Future Informed by Our Past

In July, we learned that U.S. News & World Report again named Hospital for Special Surgery the top hospital in the country for orthopaedics in its 2013 “Best Hospitals” survey. For six of the past seven years, the Department of Orthopaedic Surgery has been ranked number 1. This is a tremendous honor for all who work at HSS and who constantly endeavor to advance the research and education that translate into unsurpassed patient care.

As we reflect on the extraordinary achievements of HSS throughout its history, we appreciate that when James A. Knight, MD, established the Hospital in 1863, he wanted for his young patients that which we desire for our patients and for those who will come to us in the future: to help children and adults of all ages who suffer from musculoskeletal disorders to live their lives to the fullest. In the feature article that follows we discuss the fundamental factors that make it possible for HSS to excel in its orthopaedic specialties today and provide a look at some of the pioneering research of our faculty that is expected to redefine the field.

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A Return to Form and Function: The Essential Work of Hospital for Special Surgery

When orthopaedic surgeon Mathias P. Bostrom, MD, looks out his office window, he can see his basic science lab some 25 yards across the street. “That doesn’t happen in many places,” says Dr. Bostrom, referring to the environment at Hospital for Special Surgery that is ideally structured to integrate clinical practice with scientific research and provide orthopaedic residents and fellows training in the best of both worlds.

“At HSS, we have an interplay among engineers, biologists, and clinicians. This may happen in limited ways in some institutions, but not with the breadth offered here,” says Dr. Bostrom. “Individually, there are great clinical places. There are also great research laboratories and educational venues around the country. But to have them all in the same place is very unusual. Additionally, our clinicians and researchers represent all the orthopaedic subspecialties. We have cartilage people, tendon people, and bone people just in the basic science arena. We have an exceptional clinical research infrastructure with Steve Lyman, and we also have the engineering expertise of Tim Wright and his group. Most importantly, we all talk to each other. When I’m down in conference, there will be a handful of engineers and biologists, and two dozen clinicians and trainees all in the same room. And that’s just the arthroplasty group. All of the orthopaedic services have this kind of interaction.”

“The essential work of our hospital – patient care, research, and education – thrives on the communication, collaboration, and collegiality that are found within the Department of Orthopaedic Surgery and across disciplines and other specialties,” says Thomas P. Sculco, MD, Surgeon-in-Chief. “With a common goal of improving the lives of patients restricted or immobilized by musculoskeletal injuries or disorders, the Hospital continues to extend the boundaries of what is possible in musculoskeletal care.” Following is a look at some of the promising work taking place at the bench, within the ORs, and in the clinical arena of HSS.

HSS Patient Registries: Taking Data Driven Research to a New Level

Hospital for Special Surgery now has more than 45 institutional registries, with data on over 84,000 patients. These registries are a must in the world of evidence-based care, providing information that can form the basis for evaluating patient outcomes, refining current treatments, and developing new techniques and therapies. “Our registries have some unique capabilities, including a very large patient population, and are a little different than most others in that we concentrate heavily on getting information directly from the patients on their outcomes,” says Timothy M. Wright, PhD, Director, Department of Biomechanics, and the F.M. Kirby Chair in Orthopaedic Biomechanics. According to Dr. Wright, the information collected in some of the registries is beginning to bear fruit.

“The amount of data that is being generated is
care,” notes Dr. Lyman. “We currently have a number of pilot studies on the table to determine whether a new registry platform can be implemented on a broader scale with much more flexible data collection. This would be quite an innovative approach.”

Dr. Lyman’s hope is that through the registries, HSS will become an arbiter of best practices. “If we could establish algorithms or predictive models that provide warnings to the surgeons, nursing staff, anesthesiologists, pharmacists, and other caregivers when certain combinations of issues are appearing in a patient’s record, it would be a truly efficient way to improve outcomes after surgery.”

Total Joint Replacement: Coming Together to Meet the Challenges
So many questions still to answer. That is the consensus of arthroplasty surgeons the world over. From the microscopic level to the animal model to human trials, HSS clinicians, engineers, and scientists are assessing, monitoring, and addressing problems with implants and techniques from every perspective. The influence of their body of work to date is impressive – spanning more than four decades since the development of the earliest implant designs and joint replacement procedures. So when problems with metal-on-metal hip replacements were revealed, the team didn’t waste a minute trying to find out the reasons behind the implants’ early and high failure rates.

“We are collecting data on patients at HSS who might be affected,” says Dr. Wright. “What’s unique about our approach is how many integrated disciplines we can involve to study this problem. We’ve got Dr. Ed Purdue and Dr. Goldring in the Osteolysis Lab looking at biomarkers in the blood and serum that might provide a screening tool to indicate if there’s a problem, as well as differentiate the signature of the biological response that a particular patient has had to that implant. Hollis Potter, Chief of our MRI Division, and her group are evaluating the MRIs of these patients. They found imaging markers that suggest if a patient may be on the road to a failure. So, now the patient and surgeon can do some planning and watchful waiting. Our department collects the retrieved implants from those patients who, unfortunately, went on to fail. By

“Data generated from the registries and ongoing studies are enabling our clinicians and investigators to compete for grants, publish high impact manuscripts in peer-reviewed journals, and, most importantly, generate knowledge that can be applied to improving patient care,” says Steven R. Goldring, MD, Richard L. Menschel Research Chair and Chief Scientific Officer.

Stephen Lyman, PhD, Program Director of the recently created Healthcare Research Institute, is charged with consolidating the Hospital’s clinical research programs, with the goal of enhancing productivity and impact. “To create efficiencies with the registry program, we are exploring the use of a common electronic platform. We can then link any patient in any registry. If a patient in those registries had hip preservation surgery or ACL surgery, and then 10 or 15 years from now has a total hip or total knee replacement, we’ll know.’

Dr. Lyman and his colleagues have also proposed the development of a data warehouse for HSS to link electronic records with external data sources. “In this way when our patients leave HSS, we can follow their

“Amazing,” says Dr. Wright. “We’re deriving incredible benefits now that we have begun to analyze the data, including answering some questions in arthroplasty that literally no one has been able to answer. This is largely because we have so many patients in our Total Joint Replacement Registry – over 20,000. We know so much about them.”

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examining these implants, we learn what it is about the implant – its shape, its composition – that controls the amount of wear and corrosion we are seeing.

“In those patients undergoing revision surgery, the surgeons are making real-time observations of the failed implants in the OR. That’s what I mean by integration. You begin to understand the problems much faster than if you were at an institution that only looked at retrieved implants or only did osteolysis research. By having all of these disciplines focused on a singular problem, you have multiple opportunities to facilitate a positive outcome.”

Research in the laboratory of Dr. Mathias Bostrom has made some important inroads in understanding how the body reacts to implants – whether metal or plastic – at the molecular biologic level. “We have very interesting animal models where we focus in on mechanisms of action,” says Dr. Bostrom. “At the same time, we are doing a clinical study using agents to see if we can improve bone quality around a patient’s hip before their hip replacement in order to help sustain the implant over time.”

Notes Dr. Bostrom, “Our researchers are close, but not quite there in terms of how to regenerate a biologic joint. In the future bioengineered products are going to have some sort of reaction that we’ll need to understand better. If you understand how metal implants integrate into bone, we’ll then know how new, tissue-engineered implants will integrate into bone. Instead of using metal and plastic implants 20 years from now, we’ll be performing tissue-engineered joint replacements. HSS is the place that can really help to develop that. We have all the pieces.”

Ed Purdue, PhD, Director of the Hospital’s Osteolysis Research Laboratory, is also focused on what happens to patients with a total joint replacement and why some of the joint implants fail. “We’re interested in what mechanisms are involved in these failures and why the vast majority of patients do very well while others do not,” says Dr. Purdue. “Total joint replacement is phenomenally successful, with a very high success rate in restoration of function and removal of pain. But it’s not perfect. A small proportion of patients do not do well and will need revision surgeries. It’s a hugely complex issue requiring a multifaceted approach. We keep the clinical perspective in view at all times.”

According to Dr. Purdue, understanding the biological mechanisms by which these joints are failing can help with diagnosis or early detection of disease. “This is something that’s critically missing at this point,” he says. “We don’t see what we’re doing as academic; we think it is part of the whole approach to coming up with strategies to improve the lives of the patients.”

Dr. Purdue's lab begins its work when the failed devices are retrieved from patients, collecting tissue from around the joint, as well as synovial fluid, serum, and blood. "We're looking at how the tissue looks with histopathological approaches, devising ways to grade their pathology," says Dr. Purdue. “This allows patients to be subdivided into different types of local tissue reaction. Our next step is to ask what products are being made in these tissues that might be contributing to tissue destruction and inflammation.”

The other observation made by Dr. Purdue and his colleagues is that in many of the tissues that are reacting very poorly, such as with the metal-on-metal implants, there appears to be a problem with corrosion of some of the metals. “In all of these failures there's a view that some sort of wear is occurring in the implant, which is initiating the inflammatory reaction,” says Dr. Purdue. “By digging through the molecules that are being produced in the different groups of patients through gene expression analysis of...
the tissues, we’ve identified specific products that are associated with each type of pathological reaction.”

Dr. Purdue notes that in his research on osteolysis, traditionally the leading cause of failure with the polyethylene cup, there is often a lot of polyethylene debris present. “There were certain markers of the tissues being expressed at very high levels. However, these aren’t present in the tissues of patients who have the types of devices where the corrosion appears. There is a different set of inflammatory markers being produced. If we can identify a biomarker, it can act as an early indication of a tissue reaction without having to actually use invasive techniques.

“It’s a rapidly changing field,” adds Dr. Purdue. “The range of different types of blood markers available is growing by the day for various disorders. It is an important goal of ours to develop these markers for early detection, diagnosis, and monitoring of the patient.”

In the Hospital’s Tissue Engineering, Repair, and Regeneration Program, Suzanne A. Maher, PhD, Associate Director of the Department of Biomechanics, along with Peter A. Torzilli, PhD, and Russell F. Warren, MD, have reached a crucial turning point in their research on hydrogel materials to treat defects in cartilage with a goal toward preserving joints.

“Focal cartilage defects reduce the ability of articular cartilage to resist mechanical loading and provide lubrication during joint motion,” says Dr. Maher, who has been researching hydrogel materials for several years. “The limitations in current surgical treatments have motivated the use of biocompatible materials to fill the defect site as a future treatment option.”

Dr. Maher and her colleagues have now described a new generation synthetic material that provides a unique and promising approach for the functional replacement of cartilage defects and are testing the newer hydrogel implant in the large animal model, bringing them closer to testing the product in humans.

“In the 50 years that orthopaedic surgeons have been performing hip and knee replacements, the surgeries have been done with mechanical guides,” says David J. Mayman, MD, Clinical Co-Director, Computer Assisted Surgery Center. “We know that with those mechanical guides, knee implants are placed in the optimal position about 70 percent of the time and hips about 50 percent of the time. This doesn’t mean that 30 percent of knees fail or that 50 percent of hips fail. It means that they’re not in that optimal zone.”

For the past several years, Dr. Mayman has been involved in research and development of smarter tools for joint replacement, refining computerized guides to be easily usable in the OR. “It’s not changing the operation or changing the implants that we use for the operation, it’s making the tools better. The computerized guides give us more consistent alignment, with no bigger incision.”

Using the device, over 95 percent of knee implants are within that target zone. With hip implants, tested on cadavers and on saw bones, more than 90 percent are within the target zone when guided by the computerized tool. The hip tool is now under review by the FDA.

**Patient-Specific Surgery or No Surgery at All**

No two people are alike. Their ligaments are not quite the same. They don’t join the bones at exactly the same place. And the bones are slightly different shapes.

“So it shouldn’t be surprising that when our surgeons
“Limitations in surgical treatments have motivated the study of synthetic materials to address cartilage defects.”

– Suzanne A. Maher, PhD

reconstruct an ACL placing the standard graft in roughly the same spot, the outcome can vary from patient to patient,” says Dr. Timothy Wright. “We are integrating our studies of knee mechanics, pre and post surgery, with computational knee models to determine how those structures that are damaged in athletes – ACLs, menisci, and medial collateral ligaments – contribute to stabilizing the knee. What is emerging are tools that will allow surgeons to use objective stability measurements to customize the graft position that best restores the joint to its pre-injury status.”

A recent study led by Dr. Suzanne Maher provided the first evidence that the shape of a person’s knee could be a factor in the decision of whether a patient should undergo ACL reconstruction after a tear. “After your ACL is ruptured, the changes in the mechanics of the knee can be affected by the shape of the knee,” says Dr. Maher. “Previously, researchers had only conducted studies looking at whether a particular knee shape makes a person more likely to have an ACL injury, specifically in the athletic population.”

Dr. Maher and colleagues conducted experiments using nine cadaveric knees to examine how knee shape impacts knee mechanics during walking after a person has torn their ACL. Outfitting the knees with a sensor that measured the contact stresses of the tibial plateau, the researchers then mounted the knees on a machine that flexed and extended the specimens while applying forces in many directions to mimic the act of walking – with and without an ACL rupture.

“We found that the changes in contact stresses were highly variable, and the knees that showed changes in the front of the knee had specific shape features, including a less concave tibial plateau,” explains Dr. Maher. “If the tibial plateau has a very deep valley and then you have a femur sitting in a deep well that is going to give you a very stable knee. So, when you tear your ACL, it is not going to have a huge effect.” The study suggests that clinicians may be able to identify individuals who will have a more diffuse change in contact mechanics after their ACL is torn and be able to determine which patients are more likely to benefit from reconstruction surgery.

Clinician scientist Matthew E. Cunningham, MD, PhD, has been investigating alternate methods to achieve spine fusion without surgery. “We are studying ways to deliver an injection of a specific gene to the disc that causes the disc tissue to turn into bone in the same space that would otherwise be the target for the surgery,” says Dr. Cunningham. “In other words, you still achieve the spine fusion, but you don’t have to subject the patient to surgery and its risks.”

Dr. Cunningham’s work has been taking place in animal models using the ex vivo gene delivery technique. “We take cells from the bone marrow of one donor animal and expand them into a tissue culture in petri dishes. We then inject them with an adenovirus that contains our gene of interest,” explains Dr. Cunningham. “You then take those cells and put them into the animal spine and see if new bone was made, if the bones fused, and if the results are valid or applicable to the clinical endpoint.”

Dr. Cunningham and his colleagues have conducted two large scale studies to further develop this line of research, looking at a bone morphogenic protein created with half of a BMP2 and half of a BMP7. According to Dr. Cunningham, the resulting heterodimer is very different biologically than the homodimers and about 30 times more powerful as a bone-producing signal. “When we delivered these heterodimers into the disc space of our animal models, they were a lot more effective. Not only did it make significantly more bone than the BMPs in the homodimer form, they were also capable of driving fusion events.”
Developing Clinician Scientists: Sustaining the Link between Research and Results

“Essential to ensuring the effective transfer of new scientific knowledge is a cohort of investigators knowledgeable in the basic science of medicine and actively involved in care of patients,” says Dr. Steven Goldring. “Throughout the years, HSS has made it possible for several of its orthopaedic surgeons to have active clinical practices, while still pursuing research. In 2012, we created a formal Clinician Scientist Program to mentor and support early career clinical faculty who are committed to careers that combine ‘both sides of the coin.’”

“Dr. Cunningham notes that a drawback of the current approach is that bone forms on the outside of the disc space, so he is now focusing his efforts on forcing bone to form within the disc space. “One thing that’s going to be required for this to work is to make the disc space vascular,” says Dr. Cunningham. “In our next series of experiments, we discovered that the enzyme chondroitin-sulfate-ABC exolyase dissolves the tissue. But when the disc is treated with this enzyme it makes the disc permissive to vascular in-growth. This is a step forward in trying to make bone grow in that space because not only does bone want to be held still while it is growing, it also wants to have an excellent blood supply.”

“The ramifications of Dr. Cunningham’s research are astounding. “If you’re able to take patients who need a single-level anterior fusion, for example, for degenerative disc disease, you could potentially bring them in for an injection, send them home the same day, and enable them to go back to work the following day versus the three to four months of recovery needed with surgery.”

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“By studying the molecular aspects of bone formation, I hope to develop better methods for spinal fusion.”
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“The fact that we continue to support clinician scientists within our young faculty is really important,” says Dr. Mathias Bostrom, a longtime clinician scientist. “They can provide the link from what we are doing in the culture dish, in vivo, and in the clinic. Being able to integrate patient care, research, and education in the way that we do at HSS is very unique. Some may argue that the education and research parts are not critical to patients. I would argue the contrary. I think they’re incredibly important because it makes us question what we do and enables us to push the field forward in terms of innovation. This is an environment where we are always striving to make it better, and patients will continue to reap the benefits.”

“We are looking at smarter tools, such as computerized guides, to enhance the accuracy of implant placement.”
– David J. Mayman, MD
During the past year, the Department of Orthopaedic Surgery’s 12 surgical services, in concert with the Department of Biomechanics, continued to advance patient care, research, and education programs in their respective specialties – developing alternative surgical techniques, pursuing research breakthroughs based in cross-discipline collaborations, and applying novel approaches to guide new physicians in their orthopaedic training.

DEPARTMENT OF ORTHOPAEDIC SURGERY
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The Adult Reconstruction and Joint Replacement Division is composed of the Hip Service, the Knee Service, and the Surgical Arthritis Service. Led by 21 full-time surgeons, the Division performed approximately 8,700 surgeries in 2012.

The Division continues to intensify its efforts in quality and patient safety. We are pleased to report that for the fourth year HSS — with nearly 4,200 procedures in 2011 — had the highest volume and lowest infection rate for total hip replacement in New York State according to the most recent report released by the New York State Department of Health. Among the 167 hospitals included in the report, Hospital for Special Surgery had a statistically lower surgical site infection rate of 0.4 percent compared with the state average of 1.12 percent for total hip replacement or revision hip procedures.

Under the direction of Steven B. Haas, MD, the Hospital’s operating rooms are being equipped with a new software system to help ensure — given the multiple and various implant systems and parts that are now available — that joint replacement patients receive the correct implants. The product, OrthoSecure, developed by Dr. Haas and HSS colleagues, replaces manual reading of the implant packaging with computer scanning of a barcode on the implant that is validated before the prosthesis is used in the patient. Additionally, the label of the implant is projected on a large LCD screen for the entire OR team to view and confirm that it is the correct implant or system for that patient. A pilot study of the new system demonstrated that the computer system not only prevents errors in the OR, it results in a significant cost savings.

In 2012, the Division launched the Post-Discharge Nurse Call Pilot Program in which a nurse practitioner contacts all patients discharged by our orthopaedic surgeons one to two weeks post-discharge. The nurse addresses any routine questions as well as a set of clinical issues based on specific criteria defined by the surgeon’s office. Any non-routine issues are forwarded to the surgeon’s office to be managed. According to the physicians involved, in its first few months the pilot program has had a great impact on patient care and satisfaction, including, for example, the early identification of potential patient readmissions.

In collaboration with the Visiting Nurse Service of New York, we have also developed the Intensive Home Rehab Program, which enables patients to receive front-loaded home therapy visits following their discharge home. This initiative is one of several aimed at discharging

Research at HSS has revealed that the cause of unexplained pain among metal-on-metal hip implant patients is more likely to be due to tissue damage than wear of the implant.
total joint replacement patients to their home instead of to inpatient rehabilitation, wherever appropriate.

The ARJR Fellowship Program – with six accredited and two non-credited fellowship positions – continues to be strengthened under the leadership of Mathias P. Bostrom, MD. The program received 137 applicants for the 2014-2015 academic year.

We continue to make great progress in several key areas of research. Since its launch in 2012, the prospective Total Joint Replacement Registry has enrolled over 20,000 hip and knee replacement patients and has participation by 20 HSS surgeons. This registry forms the foundation for many studies now complete or underway to evaluate patient outcomes, as well as the implants and the techniques that are used.

With data compiled for the Registry, we have been able to report on outcomes of various subgroups of patients who have had joint replacements, including two studies in 2012 on patients with rheumatoid arthritis (RA). In the two new studies, investigators led by HSS rheumatologist Susan M. Goodman, MD, set out to examine whether outcomes remained worse for RA patients in a cohort with a high prevalence of potent disease-modifying drugs and biologic agents. One study overturned the common belief that RA patients have worse outcomes after a total knee replacement than patients who undergo the operation for osteoarthritis (OA). The second study demonstrated that RA patients who undergo a total hip replacement were as likely to have significant improvements in function and pain as patients with OA, even though they did not do as well.

Our research priorities continue to focus on gaining a better understanding of the biologic consequences of joint replacement, implant design and materials, and joint mechanics. These efforts draw on crucial collaborations with the Hospital’s Pathology Department, the Magnetic Resonance Imaging (MRI) Division, and the Department of Biomechanics.

Research led by Douglas E. Padgett, MD, and Hollis G. Potter, MD, Chief of MRI, has revealed that the cause of unexplained pain among metal-on-metal hip implant patients is more likely to be due to tissue damage than wear of the implant. Comparing 50 patients who came to HSS for revision surgery because of unexplained pain to a control group of 48 patients who came because of loosening, malalignment, infection or fracture, the investigators found that some patients had a significant amount of tissue damage but not a lot of wear. The findings were based on clinical examinations, novel MRI protocols developed by Dr. Potter, wear analysis studies on the removed implants, and pathology studies of tissues removed at surgery. Information from the study is being used to develop guidelines for patients and surgeons.

An international, multicenter study led by Mark P. Figgie, MD, found that total knee replacements in younger patients with juvenile idiopathic arthritis (JIA) last at least 10 years in 92 percent of cases; more than 75 percent of the implants lasted 20 years or more. Because of the low volume of procedures in this patient population, the research was worldwide in order to best determine the survivorship and functional outcome of total knee replacement in this group of patients. The next step for researchers will be to look at the different types of knee implants to determine which fare the best for younger patients. Researchers will look at standard implants versus custom implants specifically designed to meet the anatomical needs of JIA patients. Dr. Figgie launched the study to make sure surgeons have continued access to custom implants if they are needed for a younger patient.

We are also exploring the role of smart and enabling technologies in joint replacement as it pertains to both hip and knee. On the knee side, we are applying robotics and smart tools to perform both partial and total knee replacements and have demonstrated that these devices are practical and easy-to-use tools to improve alignment in total knee replacement. In hip replacement, enabling technology combines navigation and robotic systems, which are now being validated by both scientists and clinicians.
We are constructing a robotic gait simulator for the testing of new procedures in foot and ankle that is expected to be the most advanced technology of its kind in the world.

We continue to provide our three fellows and two rotating residents with training in all aspects of foot and ankle care. Through our large and diverse faculty, fellows and residents are exposed to reconstructive techniques for congenital and acquired deformities, trauma, and sports injuries. Fellows participate in procedures such as total ankle replacement, flatfoot correction, forefoot reconstruction, fracture repair, and novel cartilage and tendon reparative techniques.

Our Service-wide registry, supported by the Susan and Elihu Rose Foundation, is a key focal point of our research. As of the end of 2012, the web-based, customized database enrolled 40,968 patients and is one of the largest registries at HSS. This data has helped to generate numerous peer-reviewed publications with nine presentations at the recent AOFAS meeting.

Service members are expanding the use of total ankle replacements with increasing success, with the latest implant requiring less bone to be removed on the front and back of the ankle. It also uses curved cuts on the bone so that the load on the bone is along a curved surface, much like that of an ankle joint in its natural state.

Clinical studies are evaluating the treatment of osteochondral lesions using cartilage stem cells, bone marrow aspirates, and platelet-rich plasma injections. We are actively researching how best to use the biological adjuncts. In addition, the implantation of juvenile cartilage cells and transplanting cartilage from one joint to repair the defect in the ankle joint are both demonstrating improved results.

The foundation for progress in laboratory research has been established with the support of Herbert Black. Dr. Josh Baxter, the first PhD in biomechanics devoted to foot and ankle, has been added to HSS's research team. Dr. Baxter's research focuses on how surgical adjustments of foot and ankle structure affect function, with the long-term goal of translating experimental findings to clinically relevant tools. Currently, we are working with the Department of Biomechanics to develop a robotic gait simulator that will help answer questions about which surgical procedures are most effective at correcting deformities. Once completed, it will be a versatile research tool.
The Hand and Upper Extremity Service is a nationally and internationally respected authority in the treatment of common and complex conditions of the hand, wrist, forearm, and elbow. Our surgeons, each skilled in a particular specialty, are committed to enhancing the quality of life of patients, while advancing the science of orthopaedic surgery and the training of residents and fellows. Members of the Service performed over 2,400 cases in 2012, with more than 21,000 new and follow-up patient visits.

In December 2013, former HSS orthopaedic resident, Duretti T. Fufa, MD, will join the Service after completing a fellowship in hand and upper extremity at Washington University in St. Louis and a second fellowship in microsurgery at Chang Gung Memorial Hospital in Taiwan. Dr. Fufa, who specializes in traumatic injuries to the hand and upper extremity, will guide the microsurgical training of our fellows.

Our faculty also direct surgical hand programs at NewYork-Presbyterian Hospital/Weill Cornell Medical Center, Memorial Sloan-Kettering Cancer Center, and the Bronx VA Hospital.

The Service has coordinator-supported registries in seven key areas: the basal joint, distal radius, carpal tunnel, neoplasia, pediatrics, brachial plexus, and the elbow.

In 2012, the Service achieved national attention with a study led by Michelle G. Carlson, MD, on the treatment of hand and wrist injuries in the high level athlete. The risks and rewards of each potential treatment protocol can make a significant difference in the career path of professional, collegiate, and high school athletes, as well as affect the timing of when to clear an athlete to return to play. Noting the lack of literature on return to play after treatment, Dr. Carlson founded a study group of consultant hand surgeons to professional teams to collaborate on outcomes of treatment in this population. As Co-Chair of this group, she served as guest editor for an issue of Hand Clinics focusing on hand and wrist injuries in the elite athlete.

In a major study in 2012, led by Scott W. Wolfe, MD, Director of the Center for Brachial Plexus and Traumatic Nerve Injury, researchers challenged a widely held belief that long nerve grafts do poorly in adults with an axillary nerve injury. Investigators found that the outcomes of long nerve grafts were comparable to those of modern nerve transfers in restoring function, concluding that this type of graft should not be overlooked as an effective treatment for an axillary nerve injury. Results were measured by the patients’ recovery and by electromyography.

In May 2012, the Service hosted the Lee Ramsay Straub, MD, Honorary Lecture in Hand Surgery with Scott Kozin, MD, Associate Professor, Department of Orthopaedics at Temple University School of Medicine, Shriners Hospital for Children in Philadelphia, presenting on the pediatric hand.
The Limb Lengthening and Complex Reconstruction Service is one of the first in the country to use the fully implantable limb lengthening motorized nail, recently approved by the FDA, for lengthening procedures of the tibia and femur.

American Academy of Orthopaedic Surgeons (AAOS). In addition, Dr. Rozbruch has been invited to author a chapter on rehabilitation following limb lengthening surgery for an AAOS publication, *Rehabilitation after Orthopaedic Surgery*. Drs. Rozbruch and Fragomen will be editing an upcoming Springer major reference work, *Limb Lengthening and Reconstruction Surgery – A Case Atlas*.

In addition to addressing deformities related to knock-knee and bowleg, foot and ankle, as well as nonunion and malunion fractures, upper extremity deformities, and limb lengthening for children, the Service continually tackles more infrequent situations, including limb lengthening in patients with Russell-Silver syndrome and treating infected ankles in patients with neuropathy.

In the last year, we introduced an exciting new clinical practice – the intramedullary remote-controlled limb lengthening system, PRECICE. Our Service is one of the first in the country to use the fully implantable limb lengthening motorized nail, recently approved by the FDA, for lengthening procedures of the tibia.

We continue to evaluate the results of this new device as compared to traditional methods and are finding the new device may be even more precise and accurate than the external fixator. We are currently engaged in the development of a similar non-invasive lengthening device.

We continue to work closely with other services – foot and ankle, arthroplasty, metabolic bone, radiology, and rehabilitation, to name a few – throughout HSS, developing techniques to address challenging situations. In collaboration with the Department of Radiology and Imaging, we will be evaluating different techniques for using fluoroscopy in the OR to minimize radiation exposure to the surgeons.

With physical therapists, we are developing a postoperative rehabilitation protocol for limb lengthening. The educational information provided, available in print, video, and online, helps to facilitate a patient’s recovery process. We are also working with the physical therapists to develop the first postoperative rehabilitation course in limb lengthening and reconstruction surgery geared to therapists and physician assistants.

Our Third Annual Dr. Bonnie Reichman Distinguished Lectureship featured Sanjeev Saharwal, MD, Chief of Pediatric Orthopaedics at University Hospital, University of Medicine and Dentistry of New Jersey, who presented on lessons learned in the management of lower limb deformity in children.
The Metabolic Bone Disease/Musculoskeletal Oncology Service is a consortium of basic scientists, clinical diagnosticians, and medical disciplines focused on the prevention and treatment of osteoporosis, Paget’s disease, and related bone disorders. The Service brings together practitioners across clinical fields, including orthopaedics, rheumatology, physiatry, endocrinology, nephrology, and pediatrics, and involves interactions between basic, clinical, and translational research efforts. The Service has close relationships with endocrinologists at NewYork-Presbyterian/Weill Cornell and Memorial Sloan-Kettering Cancer Center.

In 2012, the American Academy of Orthopaedic Surgeons selected Joseph M. Lane, MD, along with Adele L. Boskey, PhD, and Eve Donnelly, PhD, from the Hospital’s Musculoskeletal Integrity Program, to develop a national fact-finding conference to determine the elements of bone quality and how to establish it in patients beyond the use of DEXA. Supported by the National Institutes of Health, the conference established a general consensus for identifying key elements for invasive and non-invasive methods of determining bone strength and fragility and ways to restore bone quality.

We are also providing leadership in the creation of a fracture liaison service at HSS, with a particular focus on hip fracture, utilizing nurse practitioners to establish algorithms for orthopaedic and fracture care in the setting of osteoporosis. The program has drawn clinicians from around the country who come to HSS for individual preceptorships to learn how to create a similar program at their own institution.

We have also become more proactive treating osteoporosis where bone healing is required, including spine surgery patients in whom osteoporotic agents can enhance fusion and pediatric patients who present with low levels of vitamin D.

In a recent clinical trial, researchers found that postmenopausal women experienced significant amounts of bone growth by taking teriparatide with denosumab, a targeted therapy drug used to stop bone loss. The 12-month study, published online May 15 in The Lancet, involved 94 postmenopausal women being treated for osteoporosis. Those treated with both drugs enjoyed significantly better results than those receiving just one. Though an important step, we will continue to evaluate whether the combination therapy will sustain bone density at two years, and whether the quality of that bone has improved.

Some of the current research being performed by the Metabolic Bone Disease Service includes the characterization of the favorable responders to teriparatide (PTH 1-34); determining the effect of frailty and support systems in influencing outcome from hip fractures; testing if high vitamin D levels improve patient balance and prevent falls; and studying how delayed fragility fracture care beyond 48 hours affects short-term and long-term recovery.

The Seymour Cohn Metabolic Bone Registry, which analyzes patient data to identify methods to prevent and repair fragility fractures, has recruited 540 participants since its launch in July 2007.
The Orthopaedic Trauma Service (OTS) has grown dramatically over the last 15 years and is renowned nationally and internationally for the capability to care for all types of orthopaedic trauma, from isolated injuries to the most complex. Cases include upper and lower extremity fractures; pelvic, acetabulum, and articular fractures; polytrauma and complicated cases involving nonunions and malunions with or without presence of deformity; and limb length discrepancies.

The Medical-Orthopaedic Trauma Service (MOTS) continues as a model program, ensuring geriatric patients, particularly those with hip fractures, receive quality care through collaboration of the General Medicine Service at NewYork-Presbyterian/Weill Cornell and the OTS.

The specialty of orthopaedic trauma continues evolving – not just in techniques – but also in scientific aspects. Our research, directed by Dean G. Lorich, MD, includes a large database of cases that forms the basis of important basic science and clinical research initiatives. We have developed groundbreaking methods for studying arterial contributions associated with bone perfusion. This research represents significant collaboration of orthopaedic and radiology specialties and modalities, including orthopaedic trauma, hip preservation, arthroplasty, sports medicine, hand and upper extremity, and magnetic resonance imaging (MRI) and computed tomography.

Our vascularity research aims to precisely assess bone perfusion using contrast-enhanced MRI with custom analytical software. In the past year, this research has focused on (i) femoral head vascular disruption associated with surgical approaches to the hip joint, including the standard posterior approach, modified posterior approach, and anterolateral trochanteric flip approach; (ii) a novel vessel-sparing posterolateral surgical approach for surgical hip dislocation; (iii) soft tissue damage and femoral head dysvascularity in antegrade femoral nailing; comparison of the piriformis and greater trochanteric starting points; and (iv) assessment of the contributions from the volar and dorsal radial artery branches to scaphoid vascularity.

In 2012, OTS members gave 29 research presentations at national and international conferences, including six at the American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting and 11 at the Orthopaedic Trauma Association Annual Meeting. One 2012 AAOS presentation focused on arterial supply to the patella. Findings demonstrated that the dominant arterial contribution entered inferomedially in 75 percent of study specimens. A dorsal arterial anastomotic network contributed secondarily. This has significant surgical implications. In 2012, OTS members published 28 articles, including 20 peer-reviewed publications.

A key component of the OTS is education, providing HSS residents with remarkable experience in management of acute trauma, fractures in the elderly, tumors, and pediatric orthopaedic trauma. Currently, four residents during their training have chosen to specialize in orthopaedic trauma. The Orthopaedic Trauma Fellowship accepts three fellows annually and is enhanced through the significant referral nature of the program. Through HSS’s affiliation with NewYork-Presbyterian, a Level 1 Trauma Center, and Westchester Medical Center, the busiest New York State Level 1 Trauma Center, fellows gain extensive experience in the management of a variety of complicated polytrauma.
In 2012, the Pediatric Orthopaedic Service marked the opening of the Alfred and Norma Lerner Children’s Pavilion dedicated to the care of children with musculoskeletal conditions. The new 31,000-square-foot pavilion includes a 10-bed pediatric inpatient unit, an expanded outpatient facility with 17 exam rooms, and a family-friendly waiting room. The pavilion also houses a radiology suite that includes two conventional digital radiology rooms and an EOS® low-dose imaging radiology suite. This complements the Hospital’s CA Technologies Rehabilitation Center for children, which opened last fall.

In the OR, we have begun utilizing intraoperative CT scanning, which allows for three-dimensional real-time imaging. This advanced technology assists in both the assessment of placement of implants in spinal deformity surgery, as well as for the imaging of growth plates – more specifically, determining completeness of resection of premature closure of the growth plate.

The Pediatric Orthopaedic Service has expanded its expertise in pediatric hip reconstruction, with a focus on reconstructive pelvic osteotomies for patients with hip dysplasia by preserving their native hip joint. Prior to the advent of this procedure patients had to consider total hip replacement.

The Service is actively using magnetically controlled lengthening rods in the setting of limb length discrepancy, and we are hopeful that similar technology will be approved for use in the growing spine. This technology can conceivably take what is a surgical operative intervention every six months to lengthen growing rods in the spine and make it an outpatient procedure monthly or even weekly.

With the recruitment of clinician scientist Emily R. Dodwell, MD, MPH, in 2012, the Service is pursuing prospective multicenter studies on surgical outcomes and disparities in healthcare for pediatric orthopaedic patients. Along with Service colleagues, Dr. Dodwell is developing a Pediatric Spinal Deformity Surgical Site Infection Prospective Database to investigate these infections following spinal surgery. We are also moving forward in the growth and development of registries in osteochondritis dissecans, pediatric fractures, and patella subluxation.

Under the direction of our research chief, Daniel W. Green, MD, our faculty are currently working on more than 35 active IRB-approved studies. Dr. Green is also spearheading the Pediatric Sports Medicine Program, including a research component, working closely in conjunction with the Hospital’s adult sports medicine colleagues.

The Leon Root, MD Motion Analysis Laboratory, under the co-direction of David M. Scher, MD, has flourished with an increase of referrals of young patients for gait analysis. Dr. Scher, along with a clinical physical therapist and a dedicated researcher, is expanding the Service’s research efforts in cerebral palsy.

The Pediatric Orthopaedic Service was honored to be selected as one of four U.S. host facilities for the 2013 POSNA-EPOS Traveling Fellows.
The Scoliosis Service has earned a worldwide reputation for managing the care of both children and adults with spine deformity using advanced techniques of spinal instrumentation to achieve safe, maximum, and optimum surgical results. The surgical staff is complemented by a team of pediatricians, geneticists, pulmonologists, and neurologists who contribute to the overall academic and clinical activities of the surgeons, fellows, and residents.

In 2013, we welcomed Han Jo Kim, MD, a former HSS resident, who recently completed a spine fellowship in adult and pediatric spinal deformity and scoliosis surgery, followed by a subspecialty fellowship in cervical spine surgery at Washington University in St. Louis, Barnes-Jewish Hospital. Dr. Kim has a particular interest in motion-preserving surgeries of the cervical spine.

The Service’s eight orthopaedic surgeons are also members of the Hospital’s Spine Care Institute, a comprehensive program that brings together all of the dimensions and facets of operative and nonoperative treatment resources for the care of scoliosis and spine patients.

Our faculty further developed the use of minimally invasive surgery for adult spinal deformities. While our surgeons use both maximally invasive and minimally invasive surgical procedures, they have achieved similar, if not improved, outcomes with the posterior approach, which is better tolerated by patients. Combined anterior and posterior spinal fusion requires a thoracotomy and a thoracoscopy, performed two weeks apart, placing greater demand on a patient’s pulmonary function. Particularly with complex reconstructive techniques, such as an osteotomy, our surgeons can perform the resection and reconstruct the spine from the back – essentially performing one operation instead of two. Patients recover in 24 hours rather than 48 hours and ambulate within two days. Offered at few medical centers due to its complexity, the posterior approach helps to avoid pulmonary embolisms, blood clots, breathing difficulties, and abdominal wall asymmetry. Surgeons can also perform the minimally invasive anterior approach through a small incision on the side. The surgeon is able to access the front of the spine for a segmental correction to aid in the improvement of the curve, thus stabilizing it from the back.

Surgeons are applying the use of preoperative halo traction with a tension-based halo designed at HSS that provides gradual traction and lengthening of the spine prior to surgery. Our surgeons, along with residents and fellows, continue to treat underserved adults and children with spinal deformity at the FOCOS (Foundation of Orthopedics and Complex Spine) Orthopaedic Hospital in Accra, Ghana.

Members of the Service are also part of the International Spine Study Group and the Complex Spine Study Group and are principal or co-investigators in a number of multicenter clinical registries and research protocols.
The Spine Service continues to develop the multidisciplinary Spine Care Institute and Integrated Spine Research Program. The Spine Care Institute is a collaboration of some 50 physicians, surgeons, and health professionals across multiple specialties with expertise in diagnosing and treating all levels of spine disease, making comprehensive and coordinated care more accessible to patients.

The Integrated Spine Research Program continues to pursue basic and clinical research that will lead to evidence-based care and promote their improvement over time in comparison to those who had nonoperative care. The results of the study were published in the *Journal of the American Medical Association* and *The New England Journal of Medicine*.

The Spine Service continues to be at the forefront of refining minimally invasive fusion through a transpsoas approach and publishing outcome data. The approach reduces blood loss during surgery and enables the surgery to be accomplished avoiding the major muscles of the back or abdomen.

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To ensure an outstanding level of care for our patients, quality management and process improvement remain a top priority. With a patient’s bone health critical to the success of a spine fusion, the Spine Care Institute has initiated a clinical protocol for patients to evaluate their bone health prior to surgery using bone density and laboratory tests. Based on the results, a treatment plan is developed with the goal of maximizing bone quality to ensure the best surgical outcomes. Our review of surgical site infections recently published in *The Journal of Bone & Joint Surgery* details our experiences with postoperative wound infections. We are also working on a Process Modeling of Infections in Spinal Surgery (ProMISS) study that will examine a number of variables to determine the impact each has on patient outcomes, helping to identify high-risk factors.

The Spine Service has continued with basic science research in orthobiologics, specifically, bone healing in animal fusion models. In recent years the Service has studied the efficacy in established animal spine models of demineralized bone matrices and beta-tricalcium phosphate (beta-TCP) ceramics.

Utilizing our animal models, we are seeking to characterize the mechanisms associated with the fusion profile using platelet-rich fibrin matrix. Clinically, we are currently reviewing our first 50 patients with greater than two-year follow-up.

The Spine Service and the Biomechanics Department continue to coordinate a global registry of retrieved total disc replacements to understand wear and performance mechanisms of all the early designs of total disc replacement. During the past year, the cervical series was published in *The Spine Journal* and the lumbar series in *Spine*.

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The Sports Medicine and Shoulder Service is one of the largest in the country with more than 105,000 patient visits and nearly 9,300 surgical procedures performed in 2012. Our physicians and physical therapists have the distinction of being the team physicians and athletic trainers for numerous professional and college teams, including the New York Knicks, New York Mets, New York Giants, New York Liberty, New York Red Bulls, USRowing, USA Swimming, St. John’s University Athletics, CUNY Athletic Conference, St. Peter’s College, and the Association of Tennis Professionals.

Most recently, HSS has been designated the first National Medical Center of the United States Olympic Committee’s National Medical Network. In this capacity, the Hospital is an official hospital for elite U.S. athletes who will be sent to HSS for all aspects of their care – evaluation, operative, nonoperative, and rehabilitative management. We are thrilled that Hospital for Special Surgery will now have an even closer relationship with elite athletes and the opportunity to put its full expertise behind all of Team USA.

In September 2012, the Hospital opened the James M. Benson Sports Rehabilitation Center and Tisch Sports Performance Center, providing athletes with multidisciplinary and comprehensive activities for those who want to improve performance, whether they are recovering from an orthopaedic or sports related injury or seeking to take their fitness to the next level. The new Centers feature custom designed massage rooms, an aquatics program, an antigravity treadmill, and state-of-the-art video analysis and core performance training systems.

The Service’s education program has seven accredited Sports Medicine Fellowship positions and an additional non-accredited international fellow. A two-year fellowship position permits a dedicated research year. In 2012, we welcomed our first primary care fellow.

We continue to develop a research infrastructure to enable our faculty to expand and sustain clinical and basic science research programs that parallel the clinical problems we see. This structure includes four well-developed clinical registries containing intraoperative data and follow-up data on outcomes for anterior cruciate ligament (ACL) surgery, cartilage repair procedures, shoulder replacement, and hip surgery.

With one of the largest caseloads in the country for ACL repair and a long history of investigating ACL injuries and instability, the Service has established a major research program over the years specifically focused on ACL injuries. This research program encompasses basic and clinical researchers working in a multidisciplinary environment side-by-side clinician scientists, bioengineers, physical therapists, and imaging specialists, among others.

Together, they are addressing questions related to the biology of soft tissue, knee biomechanics and the role that ligaments play, how instability from an ACL injury affects the knee, and gait analysis in patients who have undergone ACL surgery. Faculty have just
reported on the first in-depth study of a knee cartilage repair technique, showing improvement in patient outcomes and regeneration of knee cartilage. The study demonstrated that a natural tissue graft can spur regeneration of cartilage and improve symptoms in patients who have cartilage damage in their knee.

The Department of Biomechanics, the Leon Root, MD Motion Analysis Laboratory, and the Department of Radiology and Imaging continue to be our partners in ongoing long-term studies of knee mechanics. These initiatives include studies evaluating the relationships between knee stability and knee kinematics in cadaveric models utilizing robotics and a gait simulator.

We also have significant ongoing investigations on athletic conditions affecting the shoulder and elbow, shoulder stability, shoulder arthroplasty, rotator cuff tendon healing, and articular cartilage repair.

With the incidence of ulnar collateral ligament (UCL) tears dramatically increasing over the past decade in the adolescent population due to widespread participation in overhead sports, our faculty led a study on the docking technique to repair a torn elbow ligament in teenage athletes. The outcomes were better than those in previously published reports on reconstruction of the ulnar collateral ligament in this age group and may be attributed to technique-specific factors. The researchers noted that athletes with coexisting elbow conditions or injuries should be counseled that they might experience inferior clinical outcomes from UCL surgery. Additionally, gymnasts and javelin throwers may be at increased risk for postoperative complications due to their sport’s increased stress on the elbow.

Basic science research remains an integral part of our program, complementing our clinical research initiatives. In the past several years, research has been ongoing looking at augmenting the biology of healing for ligaments, tendons, and menisci using stem cells and growth factors. This work is starting to be applied clinically, with a study now underway using stem cells in rotator cuff repair in patients.

In conjunction with colleagues at Weill Cornell Medical College, we are exploring a novel imaging technique – multiphoton microscopy – to longitudinally quantify tendon healing and reorganization in live animals. In collaboration with colleagues at Columbia University, we are investigating the use of engineered nanofiber-spun scaffolds to augment soft tissue graft tendon-bone healing within ACL tunnels, as well as investigating the use of synthetic-braided ACL graft seeded with bone marrow stem cells as a candidate for ACL graft substitute.
Researchers at HSS have developed a model of OA in which *in vivo* mechanical loading of intact knees in mice recapitulates key features of the human disease.

During the past year, engineers in the Department of Biomechanics collaborated on research projects with nearly every orthopaedic service at HSS. Two projects highlight HSS as a unique environment for integrative approaches to research that can rapidly be applied to patient care.

The first effort, led by Carl W. Imhauser, PhD, focuses on the anterior cruciate ligament (ACL), a complex structure deep within the knee joint that unfortunately is injured in more than 200,000 Americans each year. Using a sophisticated robotic system, Dr. Imhauser and colleagues from the sports and arthroplasty services have been unraveling how the ACL helps control knee motion and how that motion is altered when the ACL is injured. Interestingly, the experimental results varied greatly with small anatomical variations among the knees that were tested in the robot. This has led Dr. Imhauser to develop a computer model to predict how these subtle differences can explain the alterations in knee stability seen in the experiments.

The power of this approach is the ability to compare the computer predictions with the actual functional results measured in the robot. These predictive capabilities are the first step in improving the outcomes of ACL surgery by customizing surgery for each individual patient.

The second effort is a joint initiative among researchers from HSS and Cornell University’s main campus in Ithaca. Marjolein van der Meulen, PhD, a professor in Ithaca and a senior scientist at HSS, has been exploring the pivotal role that mechanical loading plays in osteoarthritis (OA). The excessive repetitive loads that joints like the knee sustain during daily activities can damage the articular cartilage that lines the surfaces of joints. Dr. van der Meulen and her colleagues, Steven R. Goldring, MD, Mary B. Goldring, PhD, and Timothy M. Wright, PhD, have developed a model of OA in which *in vivo* mechanical loading of intact knees in mice recapitulates key features of the human disease.

During the past year they sought to understand whether the changes created by the model were due to direct physical damage to the tissues or were caused by a cell-mediated biological response. Differentiating between these two scenarios is important, because if the former were true (the loading was directly damaging the tissues), the model would have little application beyond studying the type of traumatic OA that occurs with an acute injury. They conducted an experiment in which a single bout of loading was applied to the knees of adult mice. The single dose of applied load was identical to the daily loading of the initial experiments that had used repetitively applied loads, yet was sufficient to induce the same changes, proving that the response was indeed through cell-mediated mechanisms.

During the coming year, Dr. van der Meulen and her colleagues will apply the model to examine the effects of loading in the context of a joint that has been genetically manipulated to have abnormal cartilage matrix or bone properties. Ultimately, this model provides a unique opportunity to investigate the pathogenesis of OA with the long-term goal of developing both mechanical and pharmacologic treatments.
Excellence in the Hospital’s Department of Orthopaedic Surgery is measured in many ways. These include the increasing number of patients who seek our care; patient outcomes; caliber of our physicians, residents, fellows, and researchers; awards and honors by peers and others; leadership of professional societies; and publications in scientific journals.
2012 PATIENT CARE VOLUME

Hospital for Special Surgery
2012 Patient Care Volume *

- 13,830 Total Inpatient Surgeries
- 13,727 Total Ambulatory Surgeries
Total Surgical Volume: 27,557
Total Patient Visits: 316,826

* Volume and visit figures are inclusive of all Hospital departments.

Department of Orthopaedic Surgery 2012 Patient Care Volume

Adult Reconstruction and Joint Replacement Division

- 7,976 Inpatient Surgeries
- 651 Ambulatory Surgeries
Total Surgical Volume: 8,627
Total Patient Visits: 43,856

Total Hip Replacements (1)

- 3,547 Primary Total Hip Replacements, bilateral and unilateral
- 494 Revision Total Hip Replacements
- 342 Hip Resurfacing Procedures

Total Knee Replacements (2)

- 4,334 Primary Total Knee Replacements, bilateral and unilateral
- 360 Revision Total Knee Replacements

Foot and Ankle Service

- 397 Inpatient Surgeries
- 1,681 Ambulatory Surgeries
Total Surgical Volume: 2,078
Total Patient Visits: 22,664

Hand and Upper Extremity Service

- 131 Inpatient Surgeries
- 2,334 Ambulatory Surgeries
Total Surgical Volume: 2,465
Total Patient Visits: 21,529

Limb Lengthening and Complex Reconstruction Service

- 373 Inpatient Surgeries
- 333 Ambulatory Surgeries
Total Surgical Volume: 706
Total Patient Visits: 3,613
Metabolic Bone Disease/Musculoskeletal Oncology Service

- 47 Inpatient Surgeries - HSS
- 168 Inpatient Surgeries - NewYork-Presbyterian/Weill Cornell
- 14 Ambulatory Surgeries - HSS
- 17 Ambulatory Surgeries - NewYork-Presbyterian/Weill Cornell

Total Surgical Volume: 246
Total Patient Visits: 9,870
DEXA Scans: 2,352

Surgical Trauma Service

- 407 Inpatient Surgeries - HSS
- 1,269 Inpatient Surgeries - NewYork-Presbyterian/Weill Cornell
- 215 Ambulatory Surgeries - HSS
- 316 Ambulatory Surgeries - NewYork-Presbyterian/Weill Cornell

Total Surgical Volume: 2,207 (3)
Total Patient Visits: 5,691

Pediatric Orthopaedic Service

- 634 Inpatient Surgeries - HSS
- 147 Inpatient Surgeries - NewYork-Presbyterian/Weill Cornell and New York Hospital Queens
- 2,534 Ambulatory Surgeries - HSS

Total Surgical Volume: 3,168 (4)
Total Patient Visits: 19,791

Orthopaedic Trauma Service

- 283 Inpatient Surgeries

Total Surgical Volume: 283
Total Patient Visits: 10,643

Scoliosis Service (5)

- 283 Inpatient Surgeries

Total Surgical Volume: 283
Total Patient Visits: 10,643

Sports Medicine and Shoulder Service

- 1,614 Inpatient Surgeries
- 7,683 Ambulatory Surgeries

Total Surgical Volume: 9,297
Total Patient Visits: 105,639

(1) Bilateral procedures are counted as two surgeries.

(2) Includes knee replacement surgeries performed by the Sports Medicine and Shoulder Service. Bilateral procedures are counted as two surgeries.

(3) Trauma surgeries are performed by Hospital for Special Surgery’s orthopaedic surgeons at both HSS and NewYork-Presbyterian/Weill Cornell. Volume does not include surgeries performed by the Metabolic Bone Disease Service or surgeries performed at Westchester Medical Center.

(4) Total includes 240 inpatient surgeries and 2,121 ambulatory surgeries across all other HSS orthopaedic services.

(5) Includes patient visits and scoliosis surgeries performed by surgeons who are joint members of the Pediatric and Scoliosis Services. One case is an ambulatory surgery.
QUALITY CARE INDICATORS

In today’s demanding healthcare environment, it is incumbent upon healthcare institutions to continually evaluate and improve the quality of care delivered to patients while at the same time operate efficiently and cost effectively. At HSS, this value is supported by tangible results such as increasing patient volume, low complication rates, and improved quality of life. In fact, patient satisfaction with Hospital for Special Surgery is consistently ranked in the 99th percentile by Press Ganey.

**SURGICAL VOLUME**

**Lower Extremity**

<table>
<thead>
<tr>
<th>Major Joint Replacement and Reattachment</th>
<th>U.S. Medicare 2011*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital for Special Surgery</td>
<td>3,383</td>
</tr>
<tr>
<td>Next Highest Hospital</td>
<td>1,444</td>
</tr>
<tr>
<td>Average for Remaining 2,734 Hospitals in the United States</td>
<td>154</td>
</tr>
</tbody>
</table>

**Non-Cervical Spine Fusion**

<table>
<thead>
<tr>
<th>New York State Medicare 2011*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital for Special Surgery</td>
</tr>
<tr>
<td>Next Highest Hospital</td>
</tr>
<tr>
<td>Average for Remaining 49 Hospitals in the United States</td>
</tr>
</tbody>
</table>

*Source: Hospital Compare, Centers for Medicare and Medicaid Services. These figures reflect the Medicare segment of the population only. Total joint replacement volume at Hospital for Special Surgery is more than twice the number shown here.

**PREVENTING INFECTIONS**

**Infections After Hip Surgery**

<table>
<thead>
<tr>
<th>Hospital for Special Surgery</th>
<th>New York State Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4%</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

Source: 2011 New York State Acquired Infections Report

**Preventing Urinary Catheter Infections**

<table>
<thead>
<tr>
<th>*2012</th>
<th>93%</th>
<th>95%</th>
<th>99%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>93%</td>
<td>94%</td>
<td>99%</td>
</tr>
<tr>
<td>2010</td>
<td>94%</td>
<td>95%</td>
<td>99%</td>
</tr>
</tbody>
</table>

*Source for National and State Average data collected in Hospital Compare. Source for HSS 2012 data is HSS internal monitoring.
QUALITY OF LIFE

PATIENT SATISFACTION

Source: Press Ganey Survey for Magnet-designated hospitals
Magnet Hospitals refer to all Magnet-designated hospitals in the Press Ganey database.

Department of Orthopaedic Surgery 31
PROFESSIONAL STAFF

Surgeon-in-Chief and Medical Director
Thomas P. Sculco, MD

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Charles N. Cornell, MD

Academic Director
Mathias P. Bostrom, MD

Orthopaedic Research Director
Jo A. Hannafin, MD, PhD

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Scott W. Wolfe, MD

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Chief, Hip Service

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Chief, Knee Service

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Foot and Ankle Service

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Nina Suh, MD

Limb Lengthening and Complex Reconstruction Service

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Orthopaedic Trauma Service

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Ali Maziad, MD  
(*John R. Cobb Spine/Scoliosis Fellow*)
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Haruki Ueda, MD

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Patrick F. O’Leary, MD  
Andrew A. Sama, MD  
Harvinder S. Sandhu, MD

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Marios-Nikolaos Lykissas, MD  
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Haruki Ueda, MD

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Bryan T. Kelly, MD  
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Riley J. Williams, III, MD

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Osric S. King, MD  
Jordan D. Metzl, MD

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*(Primary Care)*
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Demetris Delos, MD  
Kristopher Jones, MD  
Richard Kang, MD  
Richard Ma, MD  
*(Research Fellow)*
Andrew Merritt, MD  
Cathal Moran, MD  
*(International fellow)*
Danyal Nawabi, MD

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*Medical Director*

**Department of Biomechanics**
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*Director*
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Christopher J. Hernandez, PhD  
Carl W. Imhauser, PhD  
Joseph D. Lipman, MS  
Suzanne A. Maher, PhD  
Marjolein van der Meulen, PhD

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Lionel B. Ivashkiv, MD  
*Associate Chief Scientific Officer and Director of Basic Research*
Robert N. Hotchkiss, MD  
*Director of Clinical Research*

**AFFILIATIONS**
The affiliations of Hospital for Special Surgery enable orthopaedic surgery residents and fellows to benefit from a broad range of research and training opportunities.

**Memorial Sloan-Kettering Cancer Center**
Orthopaedic Service  
John H. Healey, MD  
*Chief*

**New York Hospital Queens**
Department of Orthopaedics and Rehabilitation  
Jeffrey E. Rosen, MD  
*Chair*

**NewYork-Presbyterian Hospital/Weill Cornell Medical Center**
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*Director*
Dean G. Lorich, MD  
*Director, Orthopaedic Trauma Service, NewYork-Presbyterian Hospital/Weill Cornell Medical Center*

**St. Luke’s-Roosevelt Hospital Center**
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*Senior Attending Orthopaedic Surgeon*

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Orthopaedic Surgery  
Allan E. Inglis, Jr., MD  
*Chief*

**Westchester Medical Center**
Orthopaedic Surgery  
David E. Asprinio, MD  
*Chair and Program Director*
Endowed chairs, professorships, and fellowships recognize the generosity of our donors and sustain excellence in musculoskeletal care, research, and medical education.

**Named Chairs and Professorships**

**Franchellie M. Cadwell Chair**
Sergio Schwartzman, MD

**Coleman Chair in Magnetic Resonance Imaging Research**
Hollis G. Potter, MD

**Joel and Anne Bick Ehrenkranz Research Chair**
Allan E. Inglin, MD, Chair in Surgical Arthritis
supporting research under the direction of the Chief, Surgical Arthritis Service – a position currently held by Mark P. Figgie, MD

**John N. Insall Chair in Knee Surgery**
Steven B. Haas, MD

**Collette Kean Research Chair**
Jane E. Salmon, MD

**F.M. Kirby Chair in Orthopaedic Biomechanics**
Timothy M. Wright, PhD

**David H. Koch Chair for Arthritis and Tissue Degeneration Research**
Lionel B. Ivashkiv, MD

**Koren-Wilson Professorship in Orthopaedic Surgery**
Thomas P. Sculco, MD

**Richard S. Laskin, MD, Chair in Musculoskeletal Education**
Charles N. Cornell, MD

**David B. Levine, MD, Chair in Scoliosis**
Oheneba Boachie-Adjei, MD

**C. Ronald MacKenzie, MD, Chair in Ethics and Medicine**
C. Ronald MacKenzie, MD

**Richard L. Menschel Research Chair**
Steven R. Goldring, MD

**Stephen A. Paget, MD, Chair in Rheumatology**
Stephen A. Paget, MD

**Chitrnanjan S. Ranawat, MD, Chair in Adult Reconstruction and Joint Replacement**
Douglas E. Padget, MD

**Leon Root, MD, Chair in Pediatric Orthopaedics**
Leon Root, MD

**Benjamin M. Rosen Chair in Immunology and Inflammation Research**
Mary K. Crow, MD

**Joseph P. Roth Professor of Rheumatic Diseases in Medicine**
Mary K. Crow, MD

**Virginia F. and William R. Salomon Chair in Musculoskeletal Research**
Carl Blobel, MD, PhD

**Eduardo A. Salvati, MD, Chair in Hip Arthroplasty**

**The Peter Jay Sharp Chair in Lupus Research**
Alessandra B. Pernis, MD

**St. Giles Research Chair supporting**
Theresa T. Lu, MD, PhD

**Starr Chair in Mineralized Tissue Research**
Adele L. Boskey, PhD

**Starr Chair in Tissue Engineering Research supporting**
Chitra Dahia, PhD

**Russell F. Warren, MD, Research Chair supporting**
Suzanne A. Maher, PhD

**Nancy Dickerson Whitehead Research Fellowship supporting, in part,**
Adele L. Boskey, PhD, and collaborators in the Musculoskeletal Integrity Program

**Leo Farbman Fellowship for Pediatric Musculoskeletal Research**
Lorene C. Janowski, OTR/L, MS

**Helen Frankenthaler Fellowship in Restorative Mobility**
Andrew D. Pearle, MD

**Mary Rodgers and Henry Guettel Fellowship in Biomedical Mechanics**

**Ken and Jill Iscol Fellowship in Orthopaedic Research**
Andrew D. Pearle, MD

**Irving Lipstock and Sally Lipstock Fellowship in Orthopaedic Surgery**
Lazaros Poultsides, MD, PhD

**Ludwig Fellowship for Women’s Sports Medicine Research**

**Stavros Niarchos Foundation–Thomas P. Sculco, MD, International Orthopaedic Fellowship**
Vasileios Sakellariou, MD, PhD

**Robert and Gillian Steel Fellowship in Musculoskeletal Research**
Inez Rogatsky, PhD

**Nancy Dickerson Whitehead Research Fellowship supporting**
Adele L. Boskey, PhD, and collaborators in the Musculoskeletal Integrity Program

**Fellowship in Arthroplasty**
Edward Purdue, PhD

**Immunology and Inflammation Fellowship**
Sergei Rudchenko, PhD
The orthopaedic surgeons at Hospital for Special Surgery are regularly cited for their professional achievements and outstanding contributions to musculoskeletal medicine, research, and education. They manage the care of numerous major professional sports teams and organizations, hold leadership positions and serve on committees for national and international organizations and professional societies, serve on editorial boards and as reviewers for numerous peer-reviewed journals, and as authors and co-authors of book chapters and textbooks.

Awards and Special Recognition

**Answorth A. Allen, MD**  
Head Team Orthopaedist, New York Knicks  
Head Team Physician, St. John's University  
Orthopaedic Consultant, West Indies Cricket Board of Control Consultant, Major League Baseball

**David W. Altchek, MD**  
Medical Director, New York Mets  
Medical Director, New Jersey Nets

**William J. Briner, Jr., MD**  
Head Team Physician, USA Volleyball  
Medical Delegate for Beach Volleyball at the Horse Guards Parade, London 2012 Olympic Games, Federation Internationale de Volleyball

**Frank P. Cammisa, Jr., MD**  
Spinal Consultant, New York Giants  
Spinal Consultant, National Hockey League Players' Association  
Founders Award for Best Paper, Eastern Orthopaedic Association  
Best Podium Presentation, Cervical Spine Research Society

**Struan H. Coleman, MD, PhD**  
Head Team Physician, New York Mets

**Frank A. Cordasco, MD, MS**  
Scientific Exhibit 2012 Top 20 Award, American Association of Orthopaedic Surgeons

**Edward V. Craig, MD, MPH**  
Lifetime Achievement Award, New York Chapter, Arthritis Foundation

**David M. Dines, MD**  
Medical Director, Association of Tennis Professionals – ATP World Tour  
Team Physician, U.S. Davis Cup Tennis Team  
Team Physician and Medical Director, Long Island Ducks  
Minor League Baseball  
Head Orthopaedic Consultant, U.S. Open Tennis  
2012 Best Scientific Exhibit, American Association of Orthopaedic Surgeons

**Joshua S. Dines, MD**  
Team Physician, U.S. Davis Cup Tennis Team  
Team Physician, Long Island Ducks, Minor League Baseball Team  
Orthopaedic Consultant, Los Angeles Dodgers  
2012 Award of Excellence for Scientific Exhibit, American Association of Orthopaedic Surgeons

**Stephen Fealy, MD**  
Team Physician, Chaminade High School  
Orthopaedic Consultant, Major League Baseball Players Association

**Joseph H. Feinberg, MD**  
Team Physician, St. Peter's College

**Austin T. Fragomen, MD**  
Alpha Omega Alpha Society Alumni Membership Award, Downstate Medical College  
Patients' Choice Award

**Marci Anne Goolsby, MD**  
Team Physician, New York Liberty

**Daniel W. Green, MD**  
2013 Excellence in Research Award, American Orthopaedic Society for Sports Medicine

**Brian C. Halpern, MD**  
Consultant, New York Mets

**Jo A. Hannafin, MD, PhD**  
Team Physician, USRowing  
Head Team Physician, New York Liberty

**Anne M. Kelly, MD**  
Team Physician, St. John's University

**Bryan T. Kelly, MD**  
Associate Team Physician, New York Giants  
Assistant Team Physician, New York Red Bulls  
Consulting Team Physician, New Jersey Nets

**Osric S. King, MD**  
Sports Medicine Coordinator, City University of New York Athletic Conference  
Associate Medical Director, St. John's University  
Medical Director, Metro Chapter, USA Boxing

**James J. Kinderknecht, MD**  
Assistant Team Physician, St. John's University  
Assistant Team Physician, New York Mets  
Consulting Team Physician, New York Giants

**Darren R. Lebl, MD**  
2013 Best Podium Presentation, Cervical Spine Research Society  
Patients Choice Award

**Robert G. Marx, MD, MSc, FRCSC**  
2013 Excellence in Research Award, American Orthopaedic Society for Sports Medicine

**Michael J. Maynard, MD**  
Medical Director, Department of Athletics, Marist College
2012-2013 NOTABLE ACHIEVEMENTS

Stephen J. O'Brien, MD
Chief Orthopaedic Consultant, Athletic Department,
St. John's University

Martin J. O'Malley, MD
Medical Staff, New Jersey Nets
Foot and Ankle Consultant, New York Knicks
Foot and Ankle Consultant, New York City Ballet
Foot and Ankle Consultant, Iona College Athletics

Douglas E. Padgett, MD
Commencement Speaker and Guest of Honor,
Naval Medical Center, San Diego

Andrew D. Pearle, MD
Associate Team Physician, New York Mets

Anil S. Ranawat, MD
Assistant Team Physician, New York Mets
Richard S. Laskin, MD, Resident Teaching Award,
Hospital for Special Surgery

Bernard A. Rawlins, MD
Spine Consultant, New York Knicks
Spine Consultant, New York Mets

Scott A. Rodeo, MD
Associate Team Physician, New York Giants
Cabaud Memorial Award, American Orthopaedic Society
for Sports Medicine

S. Robert Rozbruch, MD
Mimics Innovation Award, Development and Verification of a
Computational Model of the Knee Joint for the Evaluation of
Surgical Treatment of Osteoarthritis, Materialise

Andrew A. Sama, MD
Orthopaedic Research and Education Fellowship Grant
in Spine Care

Thomas P. Sculco, MD
Austrian Cross of Honour for Science and Art First Class
Nancy Kane Bischoff Mentor Award

Beth E. Shubin Stein, MD
Team Physician, U.S. Federation Cup Tennis Team

Ernest L. Sink, MD
2012 Achievement Award, American Academy of
Orthopaedic Surgeons

Sabrina L. Strickland, MD
Leadership Fellows Program, American Association of
Orthopaedic Surgeons

Russell F. Warren, MD
Team Physician, New York Giants

Thomas L. Wickiewicz, MD
Team Physician, Department of Athletics, St. Peter’s College

Roger F. Widmann, MD
2013 Excellence in Research Award, American Orthopaedic
Society for Sports Medicine

Riley J. Williams, III, MD
Head Team Physician, New Jersey Nets
Medical Director, New York Red Bulls
Head Team Physician, Department of Athletics, Iona College
New York Orthopaedic Consultant, National Football League

Timothy M. Wright, PhD
Alfred R. Shands, Jr, MD Award, Orthopaedic Research Society

Leadership Positions and Appointments

Michael M. Alexiades, MD
President, Weill Cornell Medical College Alumni Association
Board of Overseers, Weill Cornell Medical College
Oral Examiner, American Board of Orthopaedic Surgery

Edward A. Athanasiou, MD
Long Island Committee, Harvard Medical School

Oheneba Boachie-Adjei, MD
Fellowship Criteria Task Force; 50th Anniversary Task Force;
Globalization Committee, Scoliosis Research Society

Richard S. Bockman, MD, PhD
Chair, Calcium Subcommitte of the Professional Practice
Committee, American Society for Bone and Mineral Research
Steering Committee, 64th Clinical Endocrinology
Update Meeting, The Endocrine Society

Mathias P. Bostrom, MD
Board of Trustees, Hospital for Special Surgery
Board Member, International Society for Fracture Repair
Board of Directors and Fellowship Committee, The Hip Society
Board of Directors; Presidential Line (2015); Member-at-Large,
Orthopaedic Research Society
Study Section, Musculoskeletal Tissue Engineering,
National Institutes of Health
Course Director, American Austrian Foundation

William J. Briner, Jr., MD
Chair, USA Volleyball Sports Medicine and
Performance Commission

Robert L. Buly, MD
Board Member, Maurice E. Muller Foundation of North America
Secretary, International Society for Hip Arthroplasty

Lisa R. Callahan, MD
Chief Medical Officer and Vice President of Player Care,
New York Knicks and New York Liberty
Medical Advisory Board, American Ballet Theatre
Advisory Board, Center for Women's Healthcare,
Weill Cornell Medical College

Frank P. Cammisa, Jr., MD
Medical Advisory Board, The Alan T. Brown Foundation to
Cure Paralysis
Michelle G. Carlson, MD  
Council and Annual Program Committee, American Society for Surgery of the Hand  
Founder and Co-Chair, Elite Athlete Hand and Wrist Study Group, and Founder and Co-Chair, Women in Hand Surgery Group, American Society for Surgery of the Hand  
Leadership Development Committee, American Academy of Orthopaedic Surgeons  
nominating Committee, Ruth Jackson Orthopaedic Society Study Group, Shriners’ Pediatric Hand Surgery  

Struan H. Coleman, MD, PhD  
Board of Trustees, Cunningham Dance Foundation  
Treasurer, MLB Team Physicians Association  
Chairman, Fundraising Committee; Education Committee, American Orthopaedic Society for Sports Medicine  
Board of Directors and Member-at-Large; Co-Chairman, Closed Meeting Program Committee; Chairman, Membership Committee; Evidence Analysis Task Force, American Shoulder and Elbow Surgeons  
Research Committee, Arthroscopy Association of North America  
Research Committee, American Orthopaedic Society for Sports Medicine  
American Shoulder and Elbow Surgeons Representative on the Health Policy Committee, American Academy of Orthopaedic Surgeons  

Frank A. Cordasco, MD, MS  
Board of Directors, Baryshnikov Arts Center  
Executive Committee, American Shoulder and Elbow Surgeons  
Medical Advisory Board, Children of China Pediatric Foundation  

Charles N. Cornell, MD  
Board of Trustees, Hospital Board of for Special Surgery  

Edward V. Craig, MD, MPH  
Medical Advisory Board, AmeriCares  
Board of Directors and Chair, ABC Travelling Fellowship Committee; Judiciary Committee, American Academy of Orthopaedic Surgeons  
Chair, ABC Traveling Fellowship, The American Orthopaedic Association  
Planning and Development Committee, American Shoulder and Elbow Surgeons  

Jonathan T. Deland, MD  
Board of Directors, American Orthopaedic Foot and Ankle Society  

David M. Dines, MD  
Industry Relations Committee and 2016 ICSES Committee, American Shoulder and Elbow Surgeons  
Education Committee, American Orthopaedic Association Shoulder and Elbow ICL Committee, American Academy of Orthopaedic Surgeons  

Joshua S. Dines, MD  
Chair, Technology Committee, American Shoulder and Elbow Society  

Emily R. Dodwell, MD, MPH  
Clinical Trials Committee, Pediatric Orthopaedic Society of North America  

Mark C. Drakos, MD  
Young Physicians Committee, American Orthopaedic Foot and Ankle Society  

Andrew J. Elliott, MD  
Honors and Awards Committee and Psycho Lab Advisory Committee, American Society for Surgery of the Hand  

Scott J. Ellis, MD  
Chair, Young Physicians Committee; Awards Committee; Program Committee; Safety Summit, Hand, Foot, and Ankle Workgroup, American Orthopaedic Foot and Ankle Society  

Stephen Fealy, MD  
Technology Committee, Arthroscopy Association of North America  
American Orthopaedic Association Reviewer, American Academy of Orthopaedic Surgeons  
Research Committee, Major League Baseball Association  

Joseph H. Feinberg, MD  
Clinical Practice Guideline Committee, American Academy of Physical Medicine and Rehabilitation  

Austin T. Fragomen, MD  
Treasurer, Limb Lengthening and Reconstruction Society  

Federico P. Girardi, MD  
International Medical Graduate Committee, Medical Society of the State of New York  
Publications Committee, Spine Arthroplasty Society  
Patient-Based Outcomes Committee and Global Outreach Committee, Scoliosis Research Society  

Steven R. Goldring, MD  
Board of Trustees, Hospital for Special Surgery  
Co-Chair, Annual Meeting Basic Research Conference, American College of Rheumatology  
Advisory and Organizing Committee and Session Chair, Sun Valley Workshop on Musculoskeletal Biology, International Bone & Mineral Society  
Review Panel, Research Education Fund Investigator-Initiated Grants, American College of Rheumatology  

Marci Anne Goolsby, MD  
Annual Meeting Program Planning Committee; Practice and Policy Committee; Research Committee, American Medical Society for Sports Medicine  
Representative, Female Athlete Triad Coalition, American Medical Society for Sports Medicine
### 2012-2013 NOTABLE ACHIEVEMENTS

**Daniel W. Green, MD**  
Board Member, New York State Society of Orthopaedic Surgeons  
Board Member and Treasurer, New York County Medical Society  
New York Board of Councilors Representative and Communication Cabinet Member, American Academy of Orthopaedic Surgeons  
Representative to the American College of Surgeons for the Pediatric Orthopaedic Society of North America  
Education Committee, Pediatric Orthopaedic Society of North America  
Program Committee and Patient Education Committee, Scoliosis Research Society  
Clinic Chief, Association of Children's Prosthetic-Orthotic Clinics

**Joseph M. Lane, MD**  
Chair, MOAC Recertification Program, American Academy of Orthopaedic Surgeons  
Chair, Study Section, Special Grants Review Committee, National Institutes of Health and National Institute of Arthritis and Musculoskeletal Skin Disorders

**Darren R. Lebl, MD**  
Morbidity and Mortality Committee and Global Outreach Committee, Scoliosis Research Society

**Steve K. Lee, MD**  
Leadership Circle, American Foundation for Surgery of the Hand  
Chairman, Public Education Committee; Courses/Meetings Advisory Committee; Engagement Task Force; Leader, Subgroup on Transparency and Equitability Member  
Engagement Task Force; SHUEHORN Task Force, American Society for Surgery of the Hand

**David S. Levine, MD**  
Membership Committee, American Orthopaedic Foot and Ankle Society  
Foot and Ankle Instructional Course Committee, American Association of Hip and Knee Surgeons  
Dean's Advisory Council, College of Agriculture and Life Sciences, Cornell University

**Dean G. Lorich, MD**  
Technical Commission and Osteoporosis Task Force, AO Foundation

**Douglas E. Padgett, MD**  
Board of Trustees, Hospital for Special Surgery  
Board Member-at-Large and Committee on Education, American Association of Hip and Knee Surgeons  
Secretary, The Hip Society  
Program Committee, 2010-2012 Annual Meeting, American Academy of Orthopaedic Surgeons

**Michael L. Parks, MD**  
President, New York State Society of Orthopaedic Surgeons  
Member-at-Large, Board of Directors; Health Policy Committee; Communications Cabinet, American Association of Hip and Knee Surgeons

**Andrew D. Pearle, MD**  
Arthroscopy Committee, International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine  
Technology Committee, American Orthopedic Society for Sports Medicine  
ACL Study Group

**Rock G. Positano, DPM, MSc, MPH**  
Deputy Chairman, Board of Trustees, Medicine Board, New York College of Podiatric Medicine  
Board of Trustees, Children's Health Fund

**Hollis G. Potter, MD**  
Research Committee, American Orthopaedic Society for Sports Medicine  
Program Committee, International Society for Magnetic Resonance in Medicine

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**Steven B. Haas, MD**  
Program Chair and New York Coordinator, John N. Insall Travelling Fellowship, The Knee Society

**Jo A. Hannafin, MD, PhD**  
President, American Orthopaedic Society for Sports Medicine  
Vice President, Board of Trustees, National Rowing Foundation  
Secretary, The Herodicus Society  
Medical Commission, FISA (International Rowing Federation)

**David L. Helfet, MD**  
Board of Trustees, Hospital for Special Surgery  
Trustee, AO Foundation  
Chair Emeritus, Clinical Investigation and Documentation, AO Foundation Technical Commission, AO North America

**Robert N. Hotchkiss, MD**  
Board of Trustees, Hospital for Special Surgery

**Lana Kang, MD**  
Diversity Committee; Government Affairs Committee; Nominating Committee, American Society for Surgery of the Hand  
Young Members Committee and Subspecialty Committee, Medical Society of the State of New York  
Leadership Fellows Program and Research Committee, American Academy of Orthopaedic Surgeons

**Andrew D. Pearle, MD**  
Arthroscopy Committee, International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine  
Technology Committee, American Orthopedic Society for Sports Medicine  
ACL Study Group

**Osric S. King, MD**  
Board of Directors, Foundation of the American Medical Society for Sports Medicine
Cathleen L. Raggio, MD
Chair, Data and Safety Monitoring Board, National Institute of Arthritis and Musculoskeletal Skin Diseases
Medical Advisory Council, Osteogenesis Imperfecta Foundation
Research Committee; Advocacy Committee; Annual Meeting Abstract Reviewer, Pediatric Orthopaedic Society of North America
Advocacy Committee, Orthopaedic Research Society

Amar S. Ranawat, MD
Chairman, Technical Exhibits Committee, Eastern Orthopaedic Association

Anil S. Ranawat, MD
Master Instructor, Hip and Knee Course, Arthroscopy Association of North America

Chitranjan S. Ranawat, MD
President, Eastern Orthopaedic Association
President, Eastern Orthopaedic Education Foundation
Chairman, Ranawat Orthopaedic Research Foundation
Chairman, Annual "ROC Advances and Techniques in Joint Replacement Surgery"

Bernard A. Rawlins, MD
Examiner, American Board of Orthopaedic Surgery
Program Committee, Cervical Spine Research Society

Matthew M. Roberts, MD
Postgraduate Education and Training Committee and Resident Candidate, American Orthopaedic Foot & Ankle Society
Board Member, New York State Society of Orthopaedic Surgeons

Scott A. Rodeo, MD
Chairman, Sports Medicine/Science Committee, USA Swimming
Study Section on Skeletal Biology Structure and Regeneration, National Institutes of Health

Leon Root, MD
Chairman, Orthopaedic Section, New York Academy of Medicine

S. Robert Rozbruch, MD
President, Limb Lengthening and Reconstruction Society

Thomas P. Sculco, MD
Governing Board, Salzburg Medical Seminar International
Executive Director and Founder, International Society of Orthopaedic Centers
Board of Trustees, Vice Chairman, New York Chapter, Arthritis Foundation
Board of Directors, President-Elect, The Knee Society
Advisory Council on Biology and Medicine, Brown University
Board of Trustees, Hospital for Special Surgery
Board of Trustees, Carnegie Hall
Board of Visitors, Columbia University Medical Center
Steering Committee, World Orthopaedic Alliance

Beth E. Shubin Stein, MD
Program Committee and 2014 Program Chair, American Orthopaedic Society for Sports Medicine

Ernest L. Sink, MD
2012 Annual Meeting Local Host; Program Committee; Chair, Specialty Day, Pediatric Orthopaedic Society of North America

Jennifer L. Solomon, MD
Women's Sports Medicine Committee, Association of American College of Sports Medicine

Harvey Strauss, DPM, FACFAS
Board of Directors, New York Division, New York State Podiatric Medical Association

Edwin P. Su, MD
Hip Program Subcommittee, American Academy of Orthopedic Surgeons

Russell F. Warren, MD
Board of Trustees, Hospital for Special Surgery

Andrew J. Weiland, MD
Chairman, American Foundation for Surgery of the Hand
Nominating Committee, American Society for Surgery of the Hand

Geoffrey H. Westrich, MD
Board Member; Treasurer; Chairman, Program Committee; Finance Committee, Eastern Orthopaedic Association

Riley J. Williams, III, MD
Research and Education Committees, American Orthopaedic Society for Sports Medicine
Technology Committee, American Shoulder and Elbow Society
ACL Study Group

Russell E. Windsor, MD
Examiner, American Board of Orthopaedic Surgery

Scott W. Wolfe, MD
Vice President, New York Society for Surgery of the Hand
Electronic Information Committee, American Society for Surgery of the Hand

Timothy M. Wright, PhD
National Institutes of Health Special Review Panel for Grant Applications, National Institute of Arthritis and Musculoskeletal and Skin Diseases for Centers of Research Translation
Editorial Appointments

David W. Altchek, MD
Co-Editor, Sports Medicine of Baseball
Co-Editor, Foot and Ankle Sports Medicine

Edward A. Athanasian, MD

John S. Blanco, MD
Reviewer, Journal of Pediatric Orthopaedics

Oheneba Boachie-Adjei, MD
Board of Associate Editors, Spine Journal

Mathias P. Bostrom, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Lisa R. Callahan, MD
Editorial Advisor: Journal of Women’s Health; Women’s Health Advisor; Food and Fitness Advisor

Michelle G. Carlson, MD
Reviewer: Journal of Hand Surgery; Journal of Hand and Microsurgery; Sports Health

Struan H. Coleman, MD, PhD
Reviewer: Journal of Orthopaedic Research; Clinical Orthopaedics and Related Research; The American Journal of Sports Medicine; Journal of Shoulder and Elbow Surgery; Arthroscopy; The Journal of Arthroscopic and Related Surgery

Charles N. Cornell, MD
Editor-in-Chief, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery
Senior Associate Editor, Clinical Orthopaedics and Related Research

Edward V. Craig, MD, MPH
Editor-in-Chief, Techniques in Shoulder & Elbow Surgery

Matthew E. Cunningham, MD, PhD
Reviewer, Clinical Orthopaedics and Related Research

Jonathan T. Deland, MD
Editor-in-Chief, Foot and Ankle Section, Orthopaedia
Associate Editor, Foot & Ankle International

David M. Dines, MD
Board of Trustees and Treasurer, Journal of Shoulder and Elbow Surgery

Joshua S. Dines, MD
Chief Social Media Editor, Journal of Shoulder and Elbow Surgery
Co-Editor, Sports Medicine of Baseball
Co-Editor, Foot and Ankle Sports Medicine
Editorial Board, The American Journal of Orthopedics

Emily R. Dodwell, MD, MPH
Consultant Reviewer: Journal of Pediatric Orthopaedics; The Journal of Bone & Joint Surgery

Mark C. Drakos, MD
Reviewer: Clinical Orthopaedics and Related Research; The American Journal of Sports Medicine; The Physician and Sports Medicine

Scott J. Ellis, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Stephen Fealy, MD

Joseph H. Feinberg, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Steven R. Goldring, MD
Associate Editor, Arthritis Research & Therapy

Daniel W. Green, MD
Editor, Orthopaedics Section, Current Opinion in Orthopaedics
Consultant Reviewer: Journal of Pediatric Orthopaedics; Clinical Orthopaedics and Related Research
Reviewer, Spine

Lawrence V. Gulotta, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Jo A. Hannafin, MD, PhD

Lana Kang, MD
Reviewer: Clinical Orthopaedics and Related Research; Journal of Hand Surgery

Anne M. Kelly, MD
Reviewer, The American Journal of Sports Medicine

Han Jo Kim, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Joseph M. Lane, MD
Editorial Board: Bone; Journal of Arthroplasty; Journal of Orthopaedic Research; Spine

Alejandro Leali, MD
Senior Associate Editor, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Darren R. Lebl, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery
Steve K. Lee, MD
Associate Editor, Journal of Hand Surgery
Associate Editor, Yearbook of Hand and Upper Limb Surgery
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Robert G. Marx, MD, MSc, FRCS
Deputy Editor, Evidence-Based Orthopaedics, The Journal of Bone & Joint Surgery
Senior Associate Editor, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Michael J. Maynard, MD
Section Editor for Sports Medicine, American Academy of Orthopaedic Surgeons OKOF – Orthopedic Knowledge Online Journal

Martin J. O’Malley, MD
Editorial Advisory Committee, PhysicianLink

Douglas E. Padgett, MD
Editorial Board, The Journal of Arthroplasty
Consultant Reviewer: Journal of Orthopaedic Research; The Journal of Bone & Joint Surgery; Clinical Orthopaedics and Related Research

Andrew D. Pearle, MD
Editor-in-Chief, Techniques in Knee Surgery
Associate Editor, Sports Medicine Newsletter, The Journal of Bone & Joint Surgery

Rock G. Positano, DPM, MSc, MPH
Co-Editor, Foot and Ankle Sports Medicine

Hollis G. Potter, MD
Associate Editor: Imaging; Sports Health

Amar S. Ranawat, MD
Editorial Board, Journal of Arthroplasty
Reviewer: Clinical Orthopaedics and Related Research; Current Orthopaedic Practice

Chitranjan S. Ranawat, MD
Founder and Editor, Orthopedics E-Journal

Bernard A. Rawlins, MD
Reviewer: Journal of Spine; Journal of Orthopaedic Research; Journal of Clinical Orthopaedics

Scott A. Rodeo, MD
Invited Editor, Special Issue on Rotator Cuff Biology and Healing, Volume 21, February 2012, Journal of Shoulder and Elbow Surgery

Havinder R. Sandhu, MD
Co-Editor, Symposium Section, SAS Journal

David M. Scher, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery
Consultant Reviewer: Journal of Pediatric Orthopaedics; Clinical Orthopaedics and Related Research

Thomas P. Sculco, MD
Deputy Editor, American Journal of Orthopedics
Advisory Board and Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery
Editorial Board, Istituto Ortopedico, Rizzoli
Reviewer, The Lancet

Edwin P. Su, MD
Editorial Board, The American Journal of Orthopedics

Russell F. Warren, MD
Editor-in-Chief, Techniques in Shoulder & Elbow Surgery

Andrew J. Weiland, MD
Board of Trustees, The Journal of Bone & Joint Surgery
Reviewer: The Journal of Bone & Joint Surgery; Clinical Orthopaedics and Related Research; Journal of American Society of Surgical Hand; Journal of Orthopaedic Trauma

David S. Wellman, MD
Editorial Board, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery

Thomas L. Wickiewicz, MD
Treasurer, The American Journal of Sports Medicine
Board of Trustees, Medical Publishing Group, American Orthopaedic Society for Sports Medicine

Roger F. Widmann, MD
Editorial Board, Journal of Children’s Orthopaedics
Consultant Reviewer: Journal of Pediatric Orthopaedics; Clinical Orthopaedics and Related Research; Journal of Children’s Orthopaedics

Scott W. Wolfe, MD
Editor-in-Chief, Green’s Operative Hand Surgery

Timothy M. Wright, PhD
Deputy Editor, HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery
Co-Editor, Journal of Orthopaedic Research
2012-2013 SELECTED PUBLICATIONS

Adult Reconstruction and Joint Replacement Division


Klingenstein GG, Yeager AM, Lipman JD, Westrich GH. Computerized range of motion analysis following dual mobility total hip arthroplasty, traditional total hip arthroplasty and hip resurfacing. The Journal of Arthroplasty. 2013 Mar 8. [Epub ahead of print]


2012-2013 SELECTED PUBLICATIONS


Stoner K, Jerabek SA, Tow S, Wright TM, Padgett DE. Rotating platform has surface damage advantage over fixed-bearing TKA. *Clinical Orthopaedics and Related Research.* 2013 Jan;471(1):76-85.


Vulcano E, Memtsoudis S, González Della Valle A. Bilateral total knee arthroplasty guidelines: are we there yet? *Journal of Knee Surgery.* 2013 [Epub ahead of print]


Yang X, Willie BM, Beach JM, Wright TM, van der Meulen MC, Bostrom MP. Trabecular bone adaptation to loading in a rabbit model is not magnitude-dependent. *Journal of Orthopaedic Research.* 2013 Jun;31(6):930-34.

**Foot and Ankle Service**


Ellis SJ, Young E, Endo Y, Do H, Deland JT. Correction of multiplanar deformity of the second toe with metatarsophalangeal release and extensor brevis reconstruction. *Foot & Ankle International.* 2013 Feb 7. [Epub ahead of print]

2012-2013 SELECTED PUBLICATIONS


**Hand and Upper Extremity Service**


**Limb Lengthening and Complex Reconstruction Service**


Metabolic Bone Disease/
Musculoskeletal Oncology Service


2012-2013 SELECTED PUBLICATIONS


**Orthopaedic Trauma Service**


2012-2013 SELECTED PUBLICATIONS


**2012-2013 SELECTED PUBLICATIONS**


### Scoliosis Service


**Spine Service**


**Sports Medicine and Shoulder Service**


### Department of Biomechanics


HOSPITAL FOR SPECIAL SURGERY
2012-2013 ORTHOPAEDIC SURGERY GRADUATING RESIDENTS

Front row, from left: Dr. Edward V. Craig, Dr. Thomas P. Sculco, Dr. Mathias P. Bostrom; second row, from left: Dr. Benjamin A. McArthur, Dr. Moira M. McCarthy, Dr. Alison F. Kitay, Dr. Samuel A. Taylor; third row, from left: Dr. Marschall B. Berkes, Dr. Milton T.M. Little

Academic Leadership
Thomas P. Sculco, MD
Surgeon-in-Chief
Mathias P. Bostrom, MD
Program Director,
Orthopaedic Surgery Residency Program
Edward V. Craig, MD, MPH
Associate Program Director,
Orthopaedic Surgery Residency Program
Alejandro Leali, MD
PGY-1 Faculty Mentor

2012-2013 Orthopaedic Surgery
Graduating Residents
Marschall B. Berkes, MD
United States Air Force – Germany (Pending)
Alison F. Kitay, MD
Hand Fellowship
Brigham and Women’s Hospital
Milton T.M. Little, MD
Trauma Fellowship
University of Washington, Harborview Medical Center
Benjamin A. McArthur, MD
Arthroplasty Fellowship
Mayo Clinic
Moira M. McCarthy, MD
Sports Medicine Fellowship
Hospital for Special Surgery
Samuel A. Taylor, MD,
Sports Medicine Fellowship
Hospital for Special Surgery

Academic Awards
Nancy Kane Bischoff Mentor Award
Thomas P. Sculco, MD
Samuel Delgado, CST, Award for Outstanding Educator and Mentor to Residents in the OR
Lincoln Tugwell, CST
Richard S. Laskin, MD, Young Attending Award
Joshua S. Dines, MD
Jean C. McDaniel Award for Professionalism, Ethics and Peer Leadership
Samuel A. Taylor, MD
Lewis Clark Wagner, MD, Award for Excellence in Orthopaedic Clinical/Translational Research
Benjamin A. McArthur, MD
Intra-articular Continuously-Infused Ropivacaine vs. Epidural Plus Femoral Nerve Block for Pain Control Following Total Knee Arthroplasty: A Prospective, Randomized, Double-Blinded Trial
Russell F. Warren, MD, Award for Excellence in Orthopaedic Basic/Translational Research
Alison F. Kitay, MD
Parathyroid Hormone and Alendronate Reduce Fractures and Alter Bone Quality in an oim/oim Mouse Model of Osteogenesis Imperfecta
Philip D. Wilson, Jr., MD, Teaching Award
John H. Healey, MD
Front row: Dr. Thomas P. Sculco, Surgeon-in-Chief, and Dr. John S. Blanco, Chair, Fellowship Programs

HOSPITAL FOR SPECIAL SURGERY
2012-2013 ORTHOPAEDIC SURGERY GRADUATING FELLOWS

Adult Reconstruction and Joint Replacement Division
Matthew P. Abdel, MD
Michael P. Ast, MD
Trevor R. Banka, MD
Thomas John, MD
Denis Nam, MD
Joseph Ogyaadu, MB, BCh
Lucas Pugh, MD, MBA, MPH
Jeffrey D. Stimac, MD
Jonathan M. Vidgorchik, MD

Center for Hip Preservation
Olusanjoo Adebayo, MD, MBA

Foot and Ankle Service
MaCalus V. Hogan, MD
Eric Lloyd, MD
Christine M. Seaworth, MD

Hand and Upper Extremity Service
Eugene Ek, MBBS, PhD
Thomas Owen, MD
Nina Suih, MD

Limb Lengthening and Complex Reconstruction Service
Yatin Kirane, MBBS, D.Ortho, MS, PhD
Saravanaraja Mathusamy, MBBS, MS

Metabolic Bone Disease/Musculoskeletal Oncology Service
Pinal Desai, MD
Parth Vyas, MD

Stavros Niarchos Foundation International Fellowship
Vasileios Sakellariou, MD, PhD

Orthopaedic Trauma Service
Jason Halvorson, MD
Jeremy LaMothe, MD
Ryan Martin, MD

Pediatric Orthopaedic Service
O. Folorunsho Edobor-Osula, MD, MPH

Scoliosis/Spine Service
Motasef Al Maaieh, MD
Woojin Cho, MD, PhD
Mazda Farshad Tabrizi, MD
Marios-Nikolaos Lykissas, MD
Ali Maziad, MD
(John R. Cobb Spine/Scoliosis Fellow)
Joshua Schroeder, MD
Haruki Ueda, MD

Sports Medicine and Shoulder Service
Tiffany M. Bohan, MD
(Primary Care)
K. Lauchlan Chambers, MD, MPH
Demetris Delos, MD
Kristofer Jones, MD
Richard Kang, MD
Richard Ma, MD
(Research Fellow)
Andrew Merritt, MD
Cathal Moran, MD
(International Fellow)
Danyal H. Nawabi, MD

Philip D. Wilson, MD, Award for Excellence in Orthopaedic Surgery Research
Denis Nam, MD

Extramedullary Guides versus Portable Navigation for Tibial Alignment in Total Knee Arthroplasty: A Randomized, Controlled Trial
Adult Reconstruction and Joint Replacement Division
Douglas E. Padgett, MD, Chief, Hip Service
212.606.1642
Steven B. Haas, MD, Chief, Knee Service
212.606.1852
Mark P. Figgie, MD, Chief, Surgical Arthritis Service
212.606.1932

Foot and Ankle Service
Jonathan T. Deland, MD, Co-Chief
212.606.1665
Matthew M. Roberts, MD, Co-Chief
212.606.1181

Hand and Upper Extremity Service
Edward A. Athanasian, MD, Chief
212.606.1662

Limb Lengthening and Complex Reconstruction Service
S. Robert Rozbruch, MD, Chief
212.606.1415

Metabolic Bone Disease/
Musculoskeletal Oncology Service
Joseph M. Lane, MD, Chief
212.606.1172

Orthopaedic Trauma Service
David L. Helfet, MD, Chief
212.606.1888

Pediatric Orthopaedic Service
Roger F. Widmann, MD, Chief
212.606.1325

Scoliosis Service
Oheneba Boachi-Adjei, MD, Chief
212.606.1948

Spine Service
Frank P. Cammisa, Jr., MD, Chief
212.606.1946

Sports Medicine and Shoulder Service
David W. Altchek, MD, Co-Chief
212.606.1909
Scott A. Rodeo, MD, Co-Chief
212.606.1513

Adult Ambulatory Care Center
Alejandro Leali, MD, Medical Director
212.606.1433

Department of Biomechanics
Timothy M. Wright, PhD, Director
212.606.1093

Research Division
Steven R. Goldring, MD, Chief Scientific Officer
212.606.2394
DEPARTMENT OF ORTHOPAEDIC SURGERY

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ABOUT HOSPITAL FOR SPECIAL SURGERY

Founded in 1863, Hospital for Special Surgery (HSS) is a world leader in orthopaedics, rheumatology and rehabilitation. HSS is nationally ranked No. 1 in orthopaedics, No. 4 in rheumatology, and No. 5 in geriatrics by U.S. News & World Report (2013-14), and is the first hospital in New York State to receive Magnet Recognition for Excellence in Nursing Service from the American Nurses Credentialing Center three consecutive times. Located in New York City, HSS also serves patients in the regional area with physician offices in Greenwich, Long Island, and Queens, and serves Florida patients with an outpatient rehabilitation office in South Florida. Patients choose to come to Hospital for Special Surgery from across the United States and from around the world. HSS has one of the lowest infection rates in the country. From 2008 to 2013, HSS has been a recipient of the Healthgrades Joint Replacement Excellence Award. HSS is a member of the NewYork-Presbyterian Healthcare System and an affiliate of Weill Cornell Medical College and as such all Hospital for Special Surgery medical staff are faculty of Weill Cornell. The Hospital’s Research Division is internationally recognized as a leader in the investigation of musculoskeletal and autoimmune diseases. Hospital for Special Surgery is located in New York City and online at www.hss.edu.

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