



MASSACHUSETTS GENERAL HOSPITAL

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The Orthopaedic Journal at the Harvard Medical School provides a wonderful forum to celebrate on an annual basis our Department's many achievements and successes, and to highlight new additions to our program. Most importantly the Journal provides us with an opportunity to give you our reader a sense of the Department's commitment to education, research and clinical care. My fifth annual Chief's Report will highlight many of the successes and contributions of the orthopaedic staff at the Massachusetts General Hospital.

I would like to start my report by briefly reflecting on the history of the Orthopaedic Department at the MGH. Dr. Joel Goldthwait founded the Orthopaedic Service at the Massachusetts General Hospital (MGH) in 1899 and served as the first Chief of Orthopaedic Surgery until 1909. Other luminaries in orthopaedic surgery have headed the Department over the years, including Drs. Elliot Bracket (1911-1918), Robert Bailey Osgood (1919-1922), Marius Smith-Petersen (1929-1946), Melvin Glimcher (1965-1970), and Henry Mankin (1972-1996). Each of these individuals added significantly to the treatment of orthopaedic disorders, to the education of orthopaedic residents, to national associations of orthopaedic surgery, and to the basic science of many orthopaedic diseases. Many great orthopaedic surgeons have graced the halls of the MGH and their legacy is reflected in the work we continue today. As a Department, we continue to take tremendous pride in providing our patients with the highest quality of orthopaedic care and in training orthopaedic surgeons who contribute to both basic and translational research.

NEW CLINICAL FACULTY

It is a great pleasure to welcome Maurice Albright, MD, to the Pediatric Orthopaedic Service. Dr. Albright will complement the fine work that Brian Grottkau, MD, Chief of the Pediatric Orthopaedic Service, is doing to develop a patient and family friendly focused Pediatric Orthopaedic Service at



Maurice Albright, MD

the MGH. Dr. Albright is a graduate of Harvard College and the University of Michigan Medical School. He completed his orthopaedic residency at the University of Pittsburgh Medical Center (another Pittsburgh guy) and was a pediatric orthopaedic surgery fellow at the Texas Scottish Rite Hospital and at the Children's Hospital, Boston. Dr. Albright says, "I thank God, my

parents, sisters, teachers, and mentors for helping me dream an impossible dream--a pediatric patient goes on to become a doctor and returns to his hospital as an attending surgeon. There is nowhere I'd rather be than at the Department of Orthopaedic Surgery and Mass General Hospital for Children." I look forward to many contributions from Dr. Albright.



Thomas Holovac, MD

I am also happy to announce that Thomas Holovac, MD, has joined the Department in the Sports/Shoulder Services. Dr. Holovac received his undergraduate degree from the University of Pennsylvania. While at Penn, he was a 4-year letterman and captain of the men's varsity swim team. He earned his medical degree from the College of Physicians & Surgeons of Columbia University. Dr. Holovac completed his orthopaedic surgery residency at Duke University Medical Center. While at Duke he was an Assistant Resident Team Physician for all the athletic teams, including the 2001 NCAA National Men's Basketball Championship Team. After residency, Dr. Holovac developed additional expertise in shoulder/sports medicine surgery as an Intercontinental Shoulder Fellow. During this time, he spent 6 months on the Harvard Shoulder Service with Dr. Jon J.P. Warner and 6 months at the University of Zurich. We welcome Dr. Holovac and his family to the MGH community, wife, Karrie; daughter, Terra (age 13 years); puppy, Mocha, (8 months); cat, Maddie (14 years) and Digger, the turtle (4 years).

I'm also pleased to announce that Kevin Raskin, MD, currently a fellow at the MGH in the Orthopaedic Oncology Service will be joining the MGOA practice in September. Kevin is originally from California and attended UC Santa Barbara. Following college, he spent two years working on BMP research with Marshall R. Urist at the UCLA Bone Research Laboratory. Kevin trained at the Tel Aviv University, Sackler Faculty of Medicine and returned to complete his Internship and Residency at the Albert Einstein College of Medicine/Montefiore Medical Center. Kevin is an outstanding surgeon and will be a fine addition to



Kevin Raskin, MD

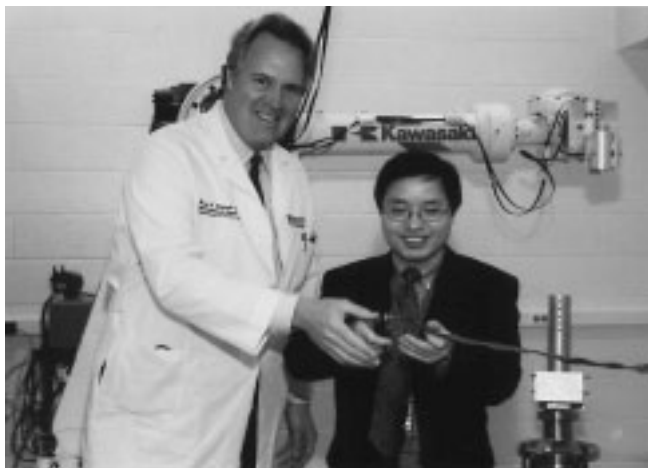
the Orthopaedic Oncology Service. Dr. Francis Hornicek, Chief of the Orthopaedic Oncology Service reports, “we are pleased Kevin Raskin will be joining our Service in the fall after the completion of his fellowship. Kevin brings to the team demonstrated skills and will be an integral member of our practice.” Please join me in welcoming Kevin to the Department.

ANNOUNCEMENTS

In December 2003, Dr. James Herndon, my friend, colleague, mentor, and Chairman of the Partners HealthCare Department of Orthopaedics will step down from his surgical and administration duties at Partners. Jim has had a distinguished career as a surgeon, educator and leader in the field of orthopaedics. He was recently elected President of the American Academy of Orthopaedic Surgeons (AAOS) and is the first incumbent of the William H. and Johanna A. Harris Chair in Orthopaedic Surgery at the MGH.

Over the last five years Dr. Herndon has helped guide the Department into one of the finest clinical, academic and research programs in the country. While, Dr. Herndon is relinquishing some of his administrative duties on the institutional level, he will continue his active involvement in medical education and training as the Program Director of the Harvard Combined Orthopaedic Residency. I look forward to his many additional contributions to the residency program.

It is a great pleasure to announce the opening of the new Bioengineering (Robotics) Laboratory under the direction of Dr. Guoan Li in the greatly expanded orthopedic space on Jackson 12. The Lab has three major research groups: The Arthroplasty Research Group, works closely with members of the Adult Reconstruction (Arthroplasty) Service, including myself, Andrew Freiberg, MD, Orhun Muratoglu, PhD, and William H. Harris, MD. The Human Forearm Biomechanics Research Group collaborates with David Ring, MD, and James Herndon, MD, MBA, and The Sports Medicine Research Group works closely with Thomas Gill, MD.



Dr. Harry Rubash and Dr. Guoan Li

In other important news, Andrew Hecht, MD, Director MGH Spine Surgery Fellowship left the Department in late spring. Dr. Hecht moved to Mt. Sinai Hospital (New York) as Chief of the Orthopaedic Spine Service. Dr. Hecht was an

integral part of the MGH Orthopaedic Spine Center and was co-director along with Joanne Borg-Stein, MD of the comprehensive center for spine care there. We all wish him the best in his new role of Spine Service Chief at Mt. Sinai Hospital.

The institution will be undergoing some major organizational changes this year. Recently, Dr. Samuel Thier, retired as Partners CEO and Dr. James Mongan, has assumed this position. Dr. Peter Slavin has moved from his position in the Physicians Organization to the CEO of the MGH and Dr. David Torchiana, Chief of Cardiac Surgery, will become the President of the Mass General Physicians Organization (MGPO).

HARVARD DEPARTMENT REVIEW

In February, Harvard Medical School under the direction of Joseph B. Martin, MD, PhD, Dean of the Harvard University Faculty of Medicine, conducted a comprehensive review of the research, education and clinical care provided by our Department. The review process, which is done every five-years by the Medical School was conducted by an external review committee comprised of leaders in the field of orthopaedic surgery including, Richard Gelberman, MD, Fred C. Reynolds Professor and Chairman, Department of Orthopaedic Surgery, Washington University School of Medicine; Gary Friedlaender, MD, Professor and Chair, Department of Orthopaedics and Rehabilitation, Yale University School of Medicine; Frank Frassica, MD, Professor and Chair, Department of Orthopaedic Surgery, Johns’s Hopkins University; and Ex-Officio Member of the Review Committee, Raphael Dolin, MD, Maxwell Finland Professor and Dean, Clinical Programs, Harvard Medical School.

In preparation for this important review the Department was asked to provide a comprehensive and in-depth detailed written account of the activities throughout the Department over the last five-years. An 800 plus page document resulted. The materials generated provide a valuable look at the growth, development and progresses of the Department over the last



The Review Committee

five-years. I would like to thank the Service Chiefs, Fellowship and Laboratory Directors for their assistance with providing written materials for this important project.

The external review committee’s charge was to produce a

written report by the conclusion of the review proceedings to identify the strengths and weaknesses of the Department and to provide specific recommendations for improvements. I will report on these findings next year in my Chief's Report.

YAWKEY AMBULATORY CENTER



An artist's rendering of the Yawkey Ambulatory Care Center as seen from Cambridge Street

Construction continues at the site of the new state-of-the-art Yawkey Ambulatory Care Center on the front of the main campus. The Center will consist of approximately 420,000 square feet and will house a new Cancer Center, the Women's Center and the Cardiac Center for the MGH. A new Musculoskeletal Institute will occupy 44,000 square feet in the building and will include: a centralized Radiology Service, expanded waiting areas, procedure rooms, team rooms and offices for our practitioners. Our clinical space will increase from 16,000 square feet at five different locations to approximately 32,000 in the new building. The new ambulatory building will provide an exciting opportunity to consolidate the MGH Department of Orthopaedic Surgery in one contiguous geographic location, and will enable us to provide high quality orthopaedic services more efficiently and effectively. The Musculoskeletal Institute will launch a new era in advancing Orthopaedic Surgery at the MGH, with expected occupancy in the fall of 2004.

ADMINISTRATION

Mr. David Gaynor joined our practice in 1999 as the Administrative Director of the Orthopaedic Service and he continues to be an absolutely invaluable asset to the Department. Mr. Gaynor works closely with the Department, to grow our practices, and plan strategic development. He has worked diligently to help us plan and develop the new areas in the Yawkey Ambulatory Center. Mr. Gaynor has assembled a highly skilled administrative team to meet the needs of our growing practices. We all value his many contributions.

Lauren Ellis, our new Department Administrative Manager, continues to develop and enhance the financial management of the Department and has operating responsibilities for Orthopaedic Oncology, Arthroplasty, the MGH Orthopaedic Spine Center and Pediatric Orthopaedics. She has done an outstanding job in improving service, efficiency and satisfaction in her Divisions. We are pleased to have Lauren as a member of our Department and look forward to her continued contributions.

We are sad to announce the resignation of Tom Amerault Director of the Orthopaedic Billing Office. Tom decided to take a job at Brockton Hospital which is in close proximity to his home. Tom did a wonderful job over the past two and a half years. We are pleased however, to have recently hired a new Director for the Orthopaedic Billing Office, Louise Borda. Louise comes to us from the Joslin Diabetes Center. She has over 16 years of billing experience including Mount Auburn HealthCare, and the Brigham/Beth Israel Medical Group.

ORTHOPAEDIC PRACTICE AT THE MGH

In 2002, the Mass General Orthopaedic Associates saw 47,000 outpatients, admitted 3,500 patients and performed 8,700 surgeries. There has been consistent growth in all of the practices. The Department has seen an increase in volume of over 22% since 1998. The Orthopaedic Service now includes 80 clinical faculty members, with 36 members of the MGOA (the full-time academic group), 15 members of the geographic full-time group (private practice) plus eight podiatrists and two physiatrists. We are currently recruiting for an additional member of the faculty to join the Foot and Ankle Service and are searching for a new Service Chief for the Orthopaedic Spine Service.

NEWS FROM THE OPERATING ROOM

Improvements to Operating Room efficiency have taken place over the last year. Jim O'Connell, Orthopaedic Systems Manager, has adapted the specific equipment lists for each of the orthopaedic subspecialties to electronic documents. The idea behind this is to create a system of On-line Equipment Lists whereby the electronic form maybe completed and sent via email directly to the Orthopaedic Equipment Managers. This allows for direct contact between physicians' offices and the OR personnel who are responsible for assembling the case specific surgical supplies and equipment. All of our services went online in the spring.



Jim O'Connell, Orthopaedic Systems Manager

LONGITUDINAL MEDICAL RECORD

The Orthopaedic Associates was the first specialty practice at the MGH to utilize the Hospital's new on-line Longitudinal Medical Record (LMR). The LMR is an on-line computer based-system that organizes the patient record so that it is easier to locate patient information in the record. The LMR is available to all physicians involved in the care and treatment of the patient. Lauren Ellis has been instrumental in coordinating this new initiative and has worked closely with Jim O'Connell on the implementation of this new program. We are pleased to report that a high percentage of attendings have been utilizing the LMR and it has become an important tool in the management of patients' orthopaedic care. Congratulations to Lauren, Jim and the Hospital's LMR Team in getting this new and very functional program into the practices.

ACCESS PROGRAM

We have been working to further improve the referral process for referring providers and their patients seeking appointments with orthopaedic. The Partners Department Access



John James, RN, Access Facilitator

Program, established in 1999, has undergone further improvements over the last year to assist primary care physicians in the identification of the most appropriate specialists, to facilitate scheduling appointments and to ensure prompt and thorough communication. The key to this program was in the hiring of Access Facilitator, John James, RN, an advanced practice nurse. John is immediately available for clinical

consultation, assistance with referral, or transfer. The cellular phone number of the Orthopaedic Access Phone or "Bone Phone" (617) 584-BONE (2663) is known throughout the institution. In 2002, over 1,000 referrals were placed to the physicians in the Orthopaedic Department. The Access Program has been highly successful and has grown immensely. Thank you John!

WEBSITE

The Department's interactive webpages: <http://www.massgeneral.org/ortho/> have been greatly expanded over the last year. Each of the eleven clinical divisions within the Department and the MGH Bone Bank now all have their own distinctive interactive websites. Many of the clinical divisions now include online Appointment Request and Patient Referral forms. The Bone Bank has an online Allograft Request form available as well as a listing of tissues available. The Trauma Service has even added an electronic version of their new publication, "A Patient Guide to Orthopaedic Trauma Care at the MGH, Expert Care for Trauma Patients." The Sports Medicine Service site has a section dedicated to information about common sports injuries, including information on frequently asked questions, causation, and treatments. Websites have now also been created for the eight Orthopaedic Research Laboratories within the Department. Many improvements are planned for the webpages, which are continuously updated to reflect changes in the Department. Please take a moment to visit the website.

SERVICE UPDATES

ADULT RECONSTRUCTIVE (ARTHROPLASTY) SERVICE

The Adult Reconstructive (Arthroplasty) Service had another outstanding year. Andrew Freiberg, MD, is doing a wonderful job as the leader of the Service. He continues to pursue his interest in unicompartimental knee arthroplasty and in the near future, we will be beginning a program on the Service to explore minimally invasive hip arthroplasty as well as additional navigational controls. These new techniques involve modifications of current surgical approaches for hip arthroplasty, total knee arthroplasty, unicompartimental replacements

and endoprosthesis for femoral neck fractures. Dr. Freiberg and I are also planning a major initiative in developing the "Orthopaedic Operating Room of the Future."

Clinically, it was a productive year for the Service, with over 3300 patient visits, over 1000 admissions and more than 1300 procedures performed. Our new multi-disciplinary conference run in conjunction with the Orthopaedic Oncology Service, "CAOS" (Combined Arthroplasty Oncology Service Rounds) has added greatly to our capabilities in treating some of our patients with difficult implant and allograft requirements.

The Arthroplasty Service is utilizing a new Intranet computer collection system for hip and knee arthroplasty patients called Patient View (PV). A computer workstation of five interactive screens is housed on Jackson 11. Operative records, discharge summaries, clinical notes, and digital radiographs are updated at each patient encounter with minimal effort by the attending surgeon. The IRB approved database may be queried by approved staff, for both clinical and research purposes. PV has revolutionized the collection, organization, and maintenance of data; facilitated the production of clinical studies; and may serve as a model for the national total joint registry. This outstanding registry will be the foundation for our clinical studies for years to come. We all thank Dr. William Harris and the team: Dennis Gillis; Sara Jane Wessinger, RN; Janet Dorrwachter; David Merrill and Rob Condon for creating this treasure.

The Arthroplasty Service is a proud host to many international visitors. Clinical and research fellows come to the MGH to observe patient care in the clinics, operating room and to participate in the Orthopaedic Research Laboratories. During the past year Sang Eun Park, MD, a post-doctorate research fellow from Korea, has been focusing his efforts on the understanding of PCL reconstruction and knee arthroplasty. Other recent visitors include Koichiro Hayata, MD, Kui-Chou Huang, MD, Nam Wook Kang, MD, Carmine DelGaizo, MD, and Jae-Doo Yoo, MD.

This past year's 32nd annual Harvard Arthroplasty Course was one of our very best. The meeting again took place at



Arthroplasty Fellow, Peter Chiang, MD, and William Harris, MD, at the Patient View workstation on Jackson 11

the Hyatt Regency, Cambridge and was entitled, "Advances in Hip & Knee Arthroplasty - A New Era of Minimally Invasive Techniques?" Over four hundred participated in the four-day event. The print syllabus was accompanied this year by an interactive CD ROM that contained all course materials. The new format was well received and greatly appreciated by all. This year's Partners course undertaking will include expanded local and national faculty as well as international leaders in the field from Japan, Korea, Canada and South America. The course will also again include the very popular live surgeries, mini-debates and a new meet the professors sections. For more information and registration for the 2003 course, "Advances in Arthroplasty: New Technologies, New Techniques," September 17-20, 2003 please visit the Harvard Medical School Department of Continuing Medical Education at <http://cme.med.harvard.edu/>.

On the research front this has also been an extremely productive year for the Service. Members of the Adult Reconstructive Service spoke once again at this year's AAOS and ORS meetings with a record number of presentations.

I am delighted to report that our research group was awarded The John Charnley Award for our work on the "Efficacy of BMP-2 to Induce Bone Ingrowth in Gap and Nongap Regions of a THR Model." The authors on the paper were Charles R. Bragdon, BS, Arin M. Doherty, BS, Harry E. Rubash, MD, Murali Jasty, MD, X. Jian Li, MD, Howard Seeherman, PhD, VMD and William H. Harris, MD. Charlie Bragdon commented, "It was a great honor and pleasure to have our work recognized by the Hip Society and to represent our research group at the Annual Meeting". Dr. Freiberg stated, "This landmark study demonstrated that BMP- 2 can be used to fill critical sized gaps in an acetabular revision model. This research program is an example of translational research in that basic science/molecular biology will have clinical application in the management of patients who require complex total hip arthroplasty." This is Dr. Harris' 9th Specialty Society Award and Dr. Rubash's 5th Award.

I am also delighted to announce the recent publication of my new text, "The Adult Knee," which was edited with Drs. John J. Callaghan, Aaron G. Rosenberg, Peter T. Simonian, and Thomas L. Wickiewicz. This two-volume set published by Lippincott Williams & Wilkins, joins our 1997 "The Adult Hip." The 117-chapter text, written by the foremost experts in



Shown from left to right: Harry Rubash, MD, Charles Bragdon, Arin Doherty and William Harris, MD

the field, is a comprehensive reference for the evaluation and surgical management of problems plaguing the adult knee. Dr. Freiberg recently commented that, "our residents, fellows and colleagues will benefit from this outstanding reference."

FOOT AND ANKLE SERVICE

The Foot and Ankle Service continues to grow and provide comprehensive care to patients from the MGH community and the greater Boston area. Dr. George Theodore, Chief of the Service reports, "There is particular emphasis on the correction of acquired deformities, post-traumatic reconstructions, treatment of sports injuries of the foot and ankle, and complex tendon transfers and osteotomies. The Service is a national leader in the treatment of heel pain or plantar fasciitis." The physicians in the Service employ both conservative and operative forms of treatment. Non-operative care may include custom orthotics, physical therapy, casting, and therapeutic injections. We are actively recruiting an additional foot and ankle surgeon to supplement and extend the existing capabilities of this Service. Resident training remains an important function of the Foot and Ankle Service, and we are looking into the addition of a fellow to the Service to assist in the initiation of prospective studies to examine the treatment of injuries of the foot and ankle.

PODIATRIC UNIT

The Podiatric Unit at the MGH is nationally recognized for clinical care and post-graduate education. The Director of Podiatric education and the Chief of the Service, Dr. Robert Scardina is actively involved in the national arena in podiatric surgery residency training and has had 4 new Orthopaedic subspecialty rotations added to the PGY 1 year of podiatry residency, including Oncology, Sports Medicine, Pediatrics and Foot and Ankle. Dr. Scardina reports, "as we initiate implementation of the new national models for Podiatric Post-Graduate education in July 2003, our Residency Program will undergo a restructuring, with enhancements in scope, levels, and eventual duration of clinical and academic training and experiences."

The Service is comprised of 8 active members, 1 clinical consultant, 3 non-clinical consultants, 1 Orthotic Technician and 2 residents. Podiatric clinical subspecialties include, "high risk" (diabetic/ neuropathic/ dysvascular) foot management, reconstructive foot surgery, as well as general foot care. The Service has also implemented a weekly "emergency" session on the main campus over the last year. This session has proven to be very successful, addressing more urgent referrals from: MGH PCP's, the Orthopaedic Access Office, Development Office, International Office and the Executive Registry. Dr. Scardina commented, "As a group, we remain committed to excellence in patient care within the MGH medical community and look forward to opportunities to expand our practice and services in the new Yawkey Center."

Dr. Scardina is active on the local and national podiatry front. He was recently elected to the Board of Trustees of the Massachusetts Podiatric Medical Society and maintains Field Faculty teaching appointments at six of the seven Colleges of Podiatric Medicine in the United States.



Dr. Robert Scardina

HAND AND UPPER EXTREMITY SERVICE

The Hand and Upper Extremity Service led by Service Chief, Jesse B. Jupiter, MD, is one of the busiest services in the Department. The Service saw meteoric rise in 2002 with 13,300 outpatient visits and 1,700 operative procedures. Fortunately, there is a close collaboration between the

Hand and Upper Extremity Service, Trauma Service, and the Pediatric Orthopaedic Service in the evaluation and treatment of patients with injuries and disorders of the hand and upper extremity. The Service enjoys a steady stream of national and international visitors, which helps to maintain its active academic interchange. Academically the Service hosted over 20 visiting scholars from countries including Spain, Columbia, Argentina, Korea, Turkey, Israel, Germany, Thailand, Taiwan, Japan, Brazil, Belgium and China.

Over the last year the faculty of the Hand Service had 9 peer review publications, 7 analytic reviews, 9 book chapters, 2 textbooks, 53 national and international presentations and 25 posters. The tremendous success of this Service can be attributed in part to the many fellows, residents, medical students, pre-medical students, as well as summer preceptors who have been involved in the important research endeavors of this Service. We are actively recruiting a new faculty member to join this vibrant group of individuals.

Annually the Hand Service hosts the Richard J. Smith Lectureship. This academic program is dedicated to the late Dr. Richard J. Smith who founded the Hand Service in 1972 and MGH's Hand Surgery Fellowship Program two years later. Dr. Thomas Trumble will be the 13th annual Richard J. Smith lecturer this year.



Jesse B. Jupiter, MD

In the spring of 2003, the Department and the Hand and Upper Extremity Service celebrated the formation of the Hansjörg Wyss AO Professorship in Orthopaedic Trauma Surgery with ceremonies at Harvard Medical School and the MGH. I will report on this important event in my chief's corner next year. The first recipient of this Harvard Chair is Dr. Jesse B. Jupiter. Dr. Jupiter is highly

deserving of this outstanding honor. Dr. Jupiter has built a renowned center for the reconstruction of post-traumatic problems of the wrist and elbow, as well as microsurgical reconstructions of the extremities. Congratulations to Dr. Jupiter!

HARVARD SHOULDER SERVICE

The Harvard Shoulder Service directed by Service Chief, Jon J.P. Warner, MD, is a prolific clinical service as well as an internationally renowned education center. The Shoulder Service has seen a significant increase in its clinical volume and has nearly doubled in size over the past five-years.

As announced in the new clinical faculty section, Thomas Holovac, MD, a recent graduate of the Harvard International Shoulder Fellowship, was hired this past year as a member of the MGOA Group and works with both the Harvard Shoulder and Sports Medicine Services. His clinical interests run the entire spectrum of shoulder and sports medicine ailments, with particular expertise in complicated and revision shoulder surgery. Dr. Warner recently commented, "The Harvard Shoulder Service has grown into a major section of the Orthopaedic Department. Dr. Thomas Holovac joined us this year and also is part of the Sports Medicine Service at MGH. Together, myself, Drs. Gill, Millett, and Holovac have performed over 1000 shoulder surgeries this year."

Dr. Warner's highly sought after Transcontinental Shoulder Fellowship began in 1999. Since that time he has several outstanding scholars participate in this program. This program partners the MGH with the Balgrist Hospital and the University of Zurich in Switzerland.

Later this year we plan to open a new Shoulder Laboratory on Jackson 12. We are in the process of recruiting a PhD bioengineer to direct this important new facility. Dr. Warner, reports that "ongoing research projects include three-dimensional anatomy of the shoulder for reconstruction of arthritis and fractures, cost analysis of instability surgery, and prospective study of shoulder reconstructive techniques." Dr. Warner's sincere interest in translational as well as basic research around the shoulder combined with the numerous clinical opportunities afforded by this Service will make the new Shoulder Laboratory one of the hallmarks of the Department.

ORTHOPAEDIC ONCOLOGY SERVICE

The Orthopaedic Oncology Service at the MGH continues to grow and prosper under its new Service Chief, Francis Hornicek, MD, PhD. This Service continues to be one of the busiest in patient units at the institution and deals with the most difficult problems surrounding bone and soft tissues tumors in patients. The Orthopaedic Oncology Service has seen an increase in visits of approximately 25% over the past 5 years and admissions and surgeries continue to grow in a similar fashion. Mark Gebhardt, MD, continues to split his time between the MGH Unit and Children's. Dr. Mankin is directing his time toward research activities in his new location on Jackson 11. Dr. Hornicek, reports, "The Orthopaedic Oncology Service serves an important role not only in the Northeast but in the United States as a premier orthopaedic oncology service. The program is now the largest sarcoma treatment group in New England and is one of the largest in the world."

The Connective Tissue Oncology Clinic (CTOC) is a collaborative effort between the Service and the MGH Cancer Center. The CTOC includes Medical and Radiation Oncologists, Radiologists, Bone Pathologists and other integral medical personnel to provide the optimum continuum of care for our patients. In 2001 over 1200 new patients with both benign and malignant bone tumors were seen by the CTOC. Dr. Hornicek reports, "Our mission includes: providing optimum clinical care, educating residents, fellows, and other health care profes-

sionals, and performing basic and translation tumor research.”

As announced in the New Clinical Faculty section of this report, Fellow, Kevin Raskin, MD, was recently hired to join the Orthopaedic Oncology Service in the fall. Kevin commented recently, “my interest in orthopaedic oncology grew out of a love for caring for people whose diseases place their lives precariously on an edge. Meeting them at that edge and gradually escorting them back to their future, so to speak, is the challenge and call to treating patients with cancer.” We are pleased to have Kevin as part of this important Service.



Drs. Hornicek and Raskin

In addition, the Orthopaedic Oncology Group actively participates in the maintenance of the MGH Bone Bank; headed by Dr. William Tomford. Dr. Hornicek, reports, “our unit has performed the world’s largest series of 1100 such allograft transplants. The fellows spend time acquiring bone allografts, selecting appropriate connective tissue grafts, and transplanting them into patients.”

The recently opened Sarcoma Molecular Biology Laboratory on Jackson 11 provides ample opportunity for Dr. Hornicek to continue to develop his basic science expertise. Along with Lawrence Weissbach, PhD, Dr. Hornicek continues to explore the biological mechanisms of tumors arising in bone and soft tissues, and to perform translational research into new treatment options for patients afflicted with musculoskeletal tumors. Drs. Hornicek and Weissbach are active speakers at national and regional symposiums and conferences. Results of their work has been published in major peer-reviewed journals such as *Clinical Orthopaedics and Related Research* and in specialty journals including the *Journal of Oral Maxillofacial Surgery*. The Orthopaedic Oncology Service is truly a first-rate academic practice.

PEDIATRIC ORTHOPAEDIC SERVICE

The Pediatric Orthopaedic Service is working in close collaboration with the MassGeneral Hospital for Children to develop and expand the specialized orthopaedic care and

treatment for MGH’s youngest patients. The short-term goal of the Service is to provide comprehensive continuous care to the ever-growing number of pediatric patients referred to our Department from within the Partners HealthCare System, from the Boston Shriners’ Hospital for Children and other area institutions. This includes providing coverage to MassGeneral Hospital for Children’s Emergency Rooms at Newton Wellesley Hospital, the North Shore Children’s Hospital and establishing satellite offices to better provide pediatric orthopaedic care in the communities surrounding Boston. A new satellite office will be opening in the near future at the Newton Wellesley Hospital to begin the realization of these goals. The numbers of visits, admissions, and surgeries on this Service have nearly doubled over the past two years and we anticipate continued growth. The Pediatric Orthopaedic Service works in close collaboration with Pediatric Surgery, Pediatric Medicine Service and the MGH Health Centers to provide coordinated high quality care for our patients.

As reported in the New Clinical Faculty section, Dr. Maurice Albright recently joined the Service. In addition, , Erin Hart, RN, MS, CPNP, was hired as a Pediatric Nurse Practitioner. Dr. Brian Grottkau, Chief of Pediatric Orthopaedics, reports, “we were lucky to attract Erin Hart, who received a nursing and advanced practitioner degree from Boston College. Her graduate thesis was on the role of a nurse practitioner in a pediatric Orthopaedic sports medicine clinic. Erin worked as a floor nurse at the MassGeneral Hospital for children and as a clinical pediatric nurse practitioner with the Pediatric Health Associates at Children’s Hospital, Boston prior to joining us.” Erin commented recently, “I am very excited about my new role as a nurse practitioner in the Pediatric Orthopaedic Service. Our Service has undergone tremendous growth in the past year, and we continue our commitment to patient and family-centered care. In addition to clinical practice, my goals include emphasizing patient and family education, and assisting in various exciting research opportunities.” Erin brings a great deal of general pediatric knowledge, compassion and organizational skills to our Department.



The Pediatric Orthopaedic Team

SPORTS MEDICINE SERVICE

The Sports Medicine Service under the direction of Service Chief, Bertram Zarins, MD, and Assistant Chief, Thomas Gill, MD, provides unique and optimal care for all levels of athletes from recreational to elite. The Service's long-term association with the New England Patriots, the Boston Bruins, the New England Revolution, and the Boston Breakers as well as many collegiate and high school teams in the area makes them uniquely qualified as providers of care for all levels of athletes. The Sports Medicine Service has had a tremendous increase in clinical activities over the past five years, nearly doubling the number of visits and surgical procedures in that time.



Arthur Boland, MD

Recently, Arthur Boland, MD, who has been the team physician for Harvard University for over thirty-years, decided to discontinue the surgical component of his orthopaedic practice. He will however, continue to work at Harvard University Health Services and with the Harvard Department of Athletics. He will also continue to see patients in consultation at the MGH, and will continue to participate in the resident and fellowship educational programs.

Dr. Zarins recently elaborated on Dr. Boland's new role: "Dr. Boland has increased his commitment to education. He has assumed the responsibility of Director of Education in the MGH Sports Medicine Service. Dr. Boland will undertake formalizing a curriculum for medical students, residents and fellows as well as instituting a formal examination for these various categories of students and physicians." Dr. Boland is also pursuing scholarly activities in the national organizations for sports medicine including the American Orthopaedic Society for Sports Medicine (AOSSM) and the Herodicus Society. He has served as President for both organizations. He will also continue to be active with Sports Medicine Committee for the American Academy of Orthopaedic Surgeons

The Sports Medicine Service continues its collaboration with Guoan Li, PhD, Director of the Bioengineering Laboratory, on the subject of biomechanics and the posterior cruciate ligament. In addition, Mr. Mark Randolph joined the Department to work with Dr. Thomas Gill on cartilage repair and regeneration for the knee in the newly established Laboratory for Musculoskeletal Tissue Engineering on Jackson 11. Building on more than ten years of tissue engineering cartilage in the MGH Plastic Surgery Research Laboratory, they are exploring tissue engineering approaches for meniscal and articular surface repair. With the collaboration of Dr. Giuseppe Peretti from Milan, a swine model for meniscal tears was developed and treated with an engineered implant. This work should be published later this year. New studies are underway exploring alternative cell sources and new scaffold materials. The other primary focus is engineering cartilage to repair articular surface defects. Working with chemical engineering teams from MIT and University of Colorado, new polymer carriers are being developed and tested. Results of this research have been

recently presented at the Orthopaedic Research Society in New Orleans.

Last year Dr. Zarins performed the first remote surgical procedure using videoconferencing via satellite communication. Dr. Zarins directed a primary care physician in the South Pole in repairing a ruptured patellar tendon. Congratulations to Dr. Zarins for this pioneering remote surgery.

Congratulation to the Sports Medicine Service for their recent research awards from The National Football League's



Mark Randolph

Charities, The Center for Minimally Invasive Technology (CIMIT Award), The Orthopaedic Research and Education Foundation (OREF), and grants from Wyeth-Ayerst, Mitek and the AO. In addition, Dr. Gill recently received the Arthroscopic Association of North America's Research Award for his work on the posterior cruciate ligament.

ORTHOPAEDIC SPINE CENTER / ORTHOPAEDIC SPINE SERVICE

The Orthopaedic Spine Center at the MGH is now in its fourth year. The Center is responsible for all clinical, teaching and research activities related to cervical, thoracic and lumbar spine. The members of this multi-disciplinary center work closely with Physiatrists, the MGH Pain Center, Physician Assistants, Nurse Practitioners, John James, RN, in the Access Program to handle approximately 8,000 outpatient visits annually. The timely and comprehensive evaluations of this Center offer a full-range of conversation and operative options for our patients. Dr. Fred Mansfield reports, "the Orthopaedic Spine Service has continued to manage a large number of patients with a broad diversity of spine problems. A great many patients are managed with conservative care, from medications and physical therapy to cortisone injections and radiofrequency median branch blocks. Surgical procedures have ranged from straightforward disc excisions and laminectomies to extensive reconstructions for trauma, spine tumors and infections. "The Center is recognized as a regional and international referral center for complex problems of the spine including primary and metastatic bone tumors.

Drs. James Sarni and David Karli are Physiatrists who play an important role in the Spine Service, the Department, and the institution. The addition of physiatry services allows us to better address the issue of patient access to the MGH Spine Care Programs. The physiatrists work in collaboration with the Department of Physical Medicine and Rehabilitation of the Spaulding Rehabilitation Hospital. Their expertise and compassion in dealing with patients with spinal issues has improved the quantity of care given as well as its quality.

As noted in the Announcements Section of this report, Andrew Hecht, MD, will become the Director of the Spine Service at Mt. Sinai Hospital in New York. Dr. Hecht will begin his new position this summer and we are currently actively recruiting a new academic spine surgeon to compliment the many important activities of this Service.

TRAUMA SERVICE

The Partners Orthopaedic Trauma Service, under the dedicated leadership of Mark Vrahas, MD, has experienced another phenomenal year of growth and success at the MGH. Malcolm Smith, MD, FRCS, Chief of MGH Orthopaedic Trauma Services, has quickly assimilated into the Harvard system and his outstanding teaching and clinical abilities have brought tremendous additional benefit to our patients and residents. Since the Trauma Service's official inception in 1999, surgeries in the area have increased approximately 30%, admissions by 35% and outpatient visits have nearly doubled. Dr. Vrahas said of the recent growth, "our Service continues to grow and gain notoriety throughout New England and the rest of the county, as indicated by our improved referral volume and ever-increasing academic requests. We are very pleased that several of our residents will pursue careers in trauma upon graduating from the Residency Program."

The Trauma Service is actively involved in teaching. 5 fellows from 4 countries (Brazil, United Kingdom, Argentina, China) have visited the Service this year, complimenting the one full-time Orthopaedic Trauma Fellow. In August, the Trauma Service will be increasing to two Trauma Fellows at the MGH to continue to train individuals in this uniquely valuable environment.

In January, Drs. Vrahas and Smith hosted the Second Annual New England Trauma Summit at Sunday River, Maine. This conference is highly successful and has become a much-anticipated event. Dr. Vrahas recently commented on the Summit, "we were fortunate to have a talented faculty from New England and New York who facilitated stimulating conversation and debate. The format of relatively few lectures and extensive case discussion has been so successful that AO North America has decided to add similar courses to its future offerings."

The Trauma continues to engage in additional translational and basic research activities. New studies are underway including a collaboration with MGH Oral Surgery, a pilon fracture study, a LISS (Less Invasive Stabilization System) study and a femur fractures and vascular injuries study.

The research database developed by the Service, affection-

ately named, ORTHO DUDE, (Data Utility for Documentation and Education) tracks injuries, treatments, and outcomes of all patients seen by the Service. The Ortho DUDE's were honored with a "Making a Difference Grant Award." Dr. Smith explains, "our Ortho DUDE database has collected over 3,000 injuries in its first year. What began as a relatively simple research resource has grown to an application that has vastly improved our billing efforts, the way our clinical runs, and - most importantly - our communication with patients. We have begun to use its data for several of our current research projects, and look forward to further opportunities to mine its data."

During the last year, the Trauma Service completed a major publication, "A Patient Guide to Orthopaedic Trauma Care at the MGH, Expert Care for Trauma Patients." This manual has been well received by our patients and their families. It provides information about injuries, treatments, the Trauma Team, and the MGH faculty. An electronic version has also been added to the Trauma Service's webpages. Suzanne Morrison, MPH, Administrative Trauma Coordinator, was instrumental in bringing this project to fruition. Suzanne reported on the Guide, "One year ago, we began distributing our *Patient Guide to Orthopaedic Trauma Care at the MGH* booklets to our patients and their families. This book helps us accomplish two things: Setting expectations for our patients and their families about their injuries, treatments and recovery; and showing them how our team and the Hospital works while they are under our care."



ORTHO DUDE's from left to right are: Dr. Mark Vrahas, Suzanne Morrison, Dr. Malcolm Smith and Dr. Harry Rubash

In March a new on call Trauma Room on White 6 was dedicated. The Trauma Room provides facilities for the on call trauma physicians. Computer access and other amenities are available in this exclusive area.



Ann Prestipino, RN, Senior Vice President, Surgical and Anesthesia Services and The MGH Cardiac Program and Dr. Mark Vrahas at the opening of the new Trauma Room

The Trauma Service was recognized over the last year with a number of awards. Dr. Vrahas was presented with the 2002 New England Orthopaedic Society Kilfoyle Award for Resident/Fellow Research. He was also given the Teacher of the Year (Golden Apple Award) by the Harvard Combined Orthopaedic Residency Program. Two Partners in Excellence Awards were delivered over this past year. Dr. Vrahas was recognized for his work on the MGH Anticoagulation Team; and Suzanne Morrison, MPH, Administrative Trauma Coordinator, was recognized for outstanding individual performance. Congratulations to the outstanding Trauma Service Team on all there accomplishments!

MGH BONE BANK

The MGH Bone Bank is directed by William Tomford, MD on White 6 and has additional facilities at Five Emerson Place. Dr. Tomford has been in this role since 1979 and works closely with the Department Tissue Specialist, Connie Dellaruso, CTSB. The Bone Bank was originally founded over thirty years ago under the direction of Henry J. Mankin, MD, as an effort by the Department to obtain bones for transplantation in limb sparing procedures in bone cancer patients. For nearly fifteen years now the MGH Bone Bank has had a bone recovery and procurement agreement with the New England Organ Bank (NEOB). The MGH Bone Bank operates solely as an effort of the MGH and the Department of Orthopaedic Surgery and provides outstanding services to the MGH network and other area hospitals. The Bone Bank has recently expanded in range and has gone online with an Allograft Request form and a listing of products available through their website: <http://www.massgeneral.org/ortho/BoneBank.htm>. The Bone Bank is a tremendous asset to our Department and New England.



Dr. William Tomford, Connie Dellaruso and Dr. William Harris

RESEARCH UPDATES

Over the past several years, we have made sweeping changes in the MGH Orthopaedic Research Laboratories. Overall laboratory space has grown from 8,149 to 14,000 square feet and we have expanded to occupy the entire research area on Jackson 12. The faculty and staff of our research laboratories have been instrumental in assisting with the reorganization of the laboratories' mission, focus and locations. In addition, I have instituted a new MGH Orthopaedic Laboratories Executive Committee that includes, Orhun Muratoglu, PhD, Chair of the Committee, and committee members, Francis Hornicek, MD, PhD, and Teresa Morales, PhD. This Committee has been instrumental in the development of the MGH Orthopaedic Research Laboratories' Five-Year Plans and the overall allocation of our new research space on Jackson 11 and 12.

The scientists and surgeons of our Department once again had a strong showing at the Orthopaedic Research Society (ORS) and the American Academy of Orthopaedic Surgeons (AAOS) Meetings. This year the group had over 25 podium presentations, 40 posters, 16 Instructional Course Lectures and a variety of symposiums and specialty day presentations. The extreme motivation, talent, innovation and successes of these extremely successful individuals continually amaze me.

ORTHOPAEDIC BIOMECHANICS AND BIOMATERIALS LABORATORY (OBBL)

The Orthopaedic Biomechanics and Biomaterials Laboratory (OBBL) led by William H. Harris, MD, and Associate Director, Orhun Muratoglu, PhD, continues to contribute many significant and innovative contributions to the field of total joint arthroplasty. The OBBL is responsible for pioneering work in improving cement techniques, hip implant design, revision total hip arthroplasty techniques, the understanding of the biology of bone ingrowth as well important contributions in



Drs. Ebru Oral and Orhun Muratoglu

the understanding of implant failure. In addition, to improving arthroplasty articulations with the development of extensively crosslinked polyethylene, this Laboratory continues a major focus in biological control for the prevention of osteolysis.

The OBBL has increased research efforts over the past year by expanding into new research space on Jackson 12. The OBBL focuses on research in biomechanical and biomaterial aspects of total joint replacement. On Jackson 12 the Lab has recently initiated a program to study the wear of polyethylene components using radiostereometric analysis (RSA). Currently two clinical studies are underway using the RSA technique to determine the wear behavior of highly crosslinked polyethylenes when used in conjunction with large femoral components. Within the same program the Lab has also initiated efforts to use the RSA technique to investigate total knee kinematics in vivo. A recent addition to the OBBL is Dr. Ebru Oral, who completed her PhD in chemical engineering at Purdue University and joined the Department to work in different aspects of biopolymer research at the OBBL. On annual basis this Laboratory brings in over \$3 million worth in funding from a variety of foundations, industry, and government sources. The Lab is over-flowing with new activity and energy.

BIOMATERIALS LABORATORY

The Biomaterials Laboratory is under the direction of Arun Shanbhag, PhD, MBA. Capitalizing in advances in genomics, the Laboratory has entered into a collaboration with Partners HealthCare System Genomics Center as well as private industry (DeCode Genetics) to identify markers for osteoarthritis and osteolysis. Our arthroplasty surgeons including Dennis Burke, MD, Andrew Freiberg, MD, Harry E. Rubash, MD, and William Tomford, MD, have been recruiting patients for this study over the past year.

In other studies the Laboratory is utilizing complimentary DNA micro-rays to investigate the gene profile expression of macrophages in their interaction with biomaterials. In addition, the Laboratory is evaluating pharmaceutical approaches to bone ingrowth.

BIOENGINEERING (ROBOTICS) LABORATORY

Guoan Li, PhD and members of the Bioengineering

Laboratory have been pursuing the accurate understanding of in vivo knee joint function and methodologies to increase knee flexion after knee ligament reconstruction or total knee arthroplasty. In vivo MRI studies and robotic testing have been utilized to provide baselines for the development of new concepts in total knee arthroplasty, unicompartmental knee arthroplasty, anterior and posterior cruciate ligament research, and studies of the interosseous ligament of the upper extremity. There are several Robotic Teams: Sports Medicine, Hand and Upper Extremity, Joint Kinematics, and Total Joint (including unicompartmental) Arthroplasty teams. These teams continue to utilize the robotic testing system to develop new concepts and understanding of orthopaedic, ligamentous and osseous interactions.

We are most fortunate to have Dr. Li's new Laboratory open on Jackson 12 and have recently conducted a ribbon-cutting ceremony and a celebration for the opening of this new Laboratory. Dr. Li reports, "the mission of the Bioengineering Laboratory is to conduct cutting edge orthopaedic research and thus to help restore normal life functions to patients with musculoskeletal diseases. The Laboratory provides first class training to orthopaedic residents, undergraduate, and graduate students in biomedical engineering."

Dr. Li and his colleagues Jeremy Suggs, Ephrat Most and Louis DeFrate actively collaborate with investigators from the Department. Ephrat Most is an MIT graduate student and has been an integral member of the Laboratory since 1998. She concentrates on the experimental and theoretical modeling of TKA in high flexion. Louis DeFrate, also a MIT graduate student, has been with the Lab since 1999. Lou's work focuses on the optimal reconstruction of the PCL using theoretical analysis and experimental validation. Jeremy Suggs, another MIT graduate student, joined the Lab in 2000 to study the mechanisms of treating the osseous knee using unicompartmental knee arthroplasty. Jeremy Axe, a student at the University of Delaware, and son of Dr. Michael Axe, an orthopaedic surgeon in Delaware, has recently joined the team. Jeremy has been investigating human knee flexion in high flexion angles using computer modeling. This laboratory has annual grants totaling over \$1 million



Robotic Group

CARTILAGE BIOLOGY AND ORTHOPAEDIC ONCOLOGY LABORATORIES

The Cartilage Biology and Orthopaedic Oncology Laboratories are under the direction of Drs. Christine Towle and Henry Mankin. The Laboratories continue to focus on molecular and biochemical markers that may serve as predictors of metastases and malignant bone and soft tissue tumors. The Cartilage Biology and Orthopaedic Oncology Laboratories collaborate extensively with the Sarcoma Molecular Biology Laboratory on both tumor-related and cartilage-related projects. Dr. Mankin maintains a computerized patient database, which includes relevant information on over 15,000 patients treated by the MGH Orthopaedic Service since 1972. The FOXPRO system records demographic data, diagnosis, stage, anatomical site, operative procedures, use of adjuvant therapy and in many cases, outcomes in terms of local recurrence, metastasis and death. The data from these studies have been used in numerous clinical studies.

Dr. Towle is exploring the mechanisms leading to cartilage damage in osteoarthritis. In particular, the group is interested in factors that promote cartilage repair and the regulation of the degenerative cascade that leads to cartilage destruction of poorly functioning joints. Dr. Towle explains, “The missions of the laboratories are to promote through clinical and basic science research a better understanding of the biology of skeletal tissues in health and disease and to educate students, residents, fellows, and clinicians from this country and around the world in orthopaedic research.” There are annual grants totaling \$1 million, including two active NIH grants. NIH funding in this lab has been continuous since 1962.

These Laboratories have an active medical student research program: the “Pinkney Scholars,” funded by a Department endowment. The Pinkney Scholars Program is designed to encourage medical students to spend time doing basic or clinical science research. The program is funded by a gift from Mrs. Mankin in honor of her father, Harold Pinkney. Pinkney scholars partake in seminars, rounds, clinical conferences, and library studies, and they have generally found that the experience helps to clarify their interest in orthopaedics.

SARCOMA MOLECULAR BIOLOGY LABORATORY

The Sarcoma Molecular Biology Laboratory under the direction of and Lawrence Weissbach, PhD, and Francis Hornicek, MD, PhD, is investigating tumor physiology and novel chemotherapeutic agents to further advance the treatment of malignant tumors. Also working in the Lab is Jeremy Kasanov, PhD, a Postdoctoral Fellow and Takeshi Morii, MD, a Visiting Research Fellow. The Laboratory is investigating ways that chondrosarcoma cells may develop resistance to chemotherapeutic agents. Dr. Weissbach explains, “The overall objectives of this laboratory are to explore biological mechanisms of tumors arising in bone and soft tissues, and perform translational research into new treatment options for patients afflicted with musculoskeleton tumors. For certain tumors such as chondrosarcoma, treatment options are limited once the tumor has metastasized, and this laboratory is interested

in improving existing therapies as well as devising novel treatments for these tumors.”

The Lab is working on a number of novel research programs and members of the Lab have collaborated with researchers at Children’s Hospital in Boston, Carnegie Mellon University, the University of Bern in Switzerland, and Bio-Technology General Corporation in Israel. This Laboratory has also produced over 25 peer-reviewed manuscripts and has presented at regional and national symposia and conferences. The Sarcoma Molecular Biology Laboratory currently has 4 grants pending/submitted to the NIH and additional industry-sponsored research grants pending.

LABORATORY OF ORTHOPAEDIC BIOCHEMISTRY AND OSTEOARTHRITIS THERAPY

Teresa Morales, PhD directs the Laboratory of Orthopaedic Biochemistry and Osteoarthritis Therapy. This Laboratory focuses on understanding the key binding proteins of matrix factors that regulate the activities of important growth factors and their effect on normal and pathologic articular cartilage. Additional focuses include understanding chondrocyte formulation, modeling, and new avenues of cartilage repair. Dr. Morales explains the mission of the Laboratory is “to understand the role of key signaling and matrix factors in the regulation of chondrocyte biology and to apply this knowledge towards investigations of cartilage repair.”

Recent members of this Laboratory include Judy Miao, a Laboratory Technician with a MS in Bioengineering, Roberto Morento, also a Laboratory Technician with a BS in Biology and Celeste Chang, a graduate student from MIT’s Bioengineering Program. Currently, Xia Liu is working as a part-time Technician in the Lab. Xia has a BS in Medical Science. Key collaborators with Dr. Morales include: Dr. Ernst Hunziker, Director Muller Institute of Biomechanics. Dr. Douglas Lauffenburger, Co-Director, Division of Biological Engineering, MIT and Drs. Joseph Buckwalter and James Martin, University of Iowa. The Laboratory has a R03 grant, a R21 grant, a recent R01 award, as well as funding from industry and foundation sources. Congratulations to Dr. Morales for her outstanding accomplishments.

BIOMOTION LABORATORY

The Biomotion Laboratory is directed by David Krebs, DPT, PhD, and is located in Ruth Sleeper Hall. Dr. Krebs is a Professor of Physical Therapy and Clinical Investigation. As a Professor of Clinical Investigation he teaches Advanced Statistics for graduate students. He holds academic appointments in the Department of Orthopaedic Surgery and in Mechanical Engineering (MIT). The Biomotion Laboratory investigates mechanical and neuro-constraints of human locomotion. The Lab focuses on two distinct research areas: balance (inner ear and cerebella problems) and arthritis (degenerative). In the former the Biomotion Laboratory works closely with the Neurology Service. This Laboratory has significant funding from the NIH as well as substantial foundation and industry support.

Dr. Krebs recently elaborated on the Laboratory’s focus:



Dr. David Krebs lecturing in the Biomotion Laboratory

“The mission of the MGH Biomotion Laboratory is to better understand the biomechanical and neural constraints of human movement. The major goals are to investigate the means by which force, momentum, power and energy flows interact with neuropathic and arthropathic conditions. Our objectives include determining the means by which humans compensate for and adapt to, specific orthopaedic and neurophysiological motor deficits. We employ state-of-the art modeling, theory and data acquisition to generate appropriately detailed analyses of impairments, organ level function or dysfunction, functional limitations, whole person function or dysfunction, and disability whole person function or dysfunction in society performing the expected role.”

The Biomotion Laboratory has continuously provided novel and outstanding contributions to orthopaedic, rehabilitation, and movement science for nearly two decades. Novel research programs have included a MGH-MIT instrumented hip project, as well as the current impetus to fit such prostheses to <.5 mm of the anatomical (fractured) femoral head. In addition, along with MIT collaborators, the Lab provided the world’s first clinically interpretable, routinely obtained, whole body kinematic model that is independent of anatomical joint markers, thus allowing anatomically accurate modeling even of individuals with severe transverse or frontal orthopaedic deformities.

Key laboratory personnel include, Chris A. McGibbon, PhD, who is the Technical Assistant Director of the Laboratory, Donna M. Scarborough, MSPT, the Lab’s Clinical Assistant Director, Dov Goldvasser, MSC, ME, Lab Research Technologist, and Niyom Lue, MScBE, PT, who is also a Lab Research Technologist. In addition, other personnel include, Lara Asmundson, MSPT, Clinical Research Assistant and Lorrie Walker, MA, the Lab’s Staff Assistant. The Biomotion Laboratory also provides volunteer and educational opportunities for students from around the world. Visit the Biomotion Laboratory online: <http://www.massgeneral.org/depts/biomotion/index.htm>.



These doctors were very good this year. Shown with Santa from the left: Mark Vrahas, Harry Rubash and Malcolm Smith

ANNUAL CHILDREN’S HOLIDAY PARTY

Our 3rd Annual Children’s Holiday Party enchanted parents and children alike this past December at the Children’s Museum. Over 100 family members were present this year to join us for the fun-filled party at the Children’s Museum of Boston on Congress Street. Of course, Santa and his elves were there to entertain with songs and stories. Santa’s sack was filled with gifts for all the children and the celebration included a wonderful lunch in the Museum’s private party-room as well as a special holiday cake and ice-cream dessert. Each of the family’s went home with a personalized professional photograph of their children taken with Santa and the elves. Peter Chiang, MD, Arthroplasty Fellow, attended with his wife, Tracey, and sons Alex (2 years) and William (1 month). Dr. Chiang, reported, “The children’s holiday party was a fantastic event for all who attended. It was a joy to watch the children of the staff, residents, and fellows play and sing. The highlight of the party was the entrance of Santa Claus.” After the great party, the afternoon was spent exploring and playing in the wonderful exhibits at the Museum. Thank you to Brent Ponce, MD, PGY5, whose hard work and dedication to this year’s event made it an outstanding success.

PERSONAL NOTE

Kimberly, and I have thoroughly enjoyed the last year in Weston and it has been a delight to watch our family grow. Our children Bradley (age 16 years), Steven (age 14 years), and Kristen (age 12 years) continue to develop and flourish in this new environment. We have reached out and developed wonderful friendships and relationships in the community and department. There has been a period, of calming, as some stability has fortunately been achieved. I hope...

My wife and I were most fortunate to have recently gone to Naples, Florida with the MGH Development Office, Drs. Peter Slavin and Gerald Austin in an attempt to further endow important areas in the Department. We had a wonderful time and had the opportunity to present lectures to the MGH community in South Florida as well as spend time on the golf course and enjoy the wonderful weather. This was a much-needed reprieve after all the snow and freezing temperatures this winter.



Orthopaedic Residents and Staff 2003

The past five years have been some of the most rewarding and difficult of my entire professional career. I am pleased to have seen the Department develop into a more cohesive, focused and defined academic group. We have gathered a faculty that provides state-of-the art care to our patients with dignity, respect and compassion. We have developed world-class clinical divisions and research laboratories, which continue to expand and have provided some major contributions to the field of orthopaedic surgery. I will continue to support the growth of the biological and genomics sections of our laboratories and will continue to foster an environment, which will allow our investigators to collaborate and succeed. We are one of the largest academic departments in the country with one of the strongest clinical and research programs. I look forward to many more years in Boston.

Department of Orthopaedic Surgery, Massachusetts General Hospital

Clinical Faculty

General Orthopaedics

Joseph S. Barr, MD; Assistant Clinical Professor of Orthopaedic Surgery, Harvard Medical School

Fulton C. Kornack, MD; Clinical Instructor of Orthopaedic Surgery, Harvard Medical School

William Tomford, MD; Professor of Orthopaedic Surgery, Harvard Medical School

Foot and Ankle Surgery

George H. Theodore, MD; Chief, Foot and Ankle Unit; Instructor in Orthopaedic Surgery, Harvard Medical School

James Heckman, MD; Instructor in Orthopaedic Surgery, Harvard Medical School, Editor-In-Chief Journal of Bone and Joint Surgery

Hand/Upper Extremity

Jesse B. Jupiter, MD; Chief, Hand Service; Professor of Orthopaedic Surgery, Harvard Medical School

James H. Herndon, MD, MBA; Chairman, Partners Department of Orthopaedic Surgery Partners Healthcare; Professor of Orthopaedic Surgery, Harvard Medical School

Sang-Gil P. Lee, MD; Instructor in Orthopaedic Surgery, Harvard Medical School

David C. Ring, MD; Instructor in Orthopaedic Surgery, Harvard Medical School

Arthroplasty

Andrew Freiberg, MD; Chief, Adult Reconstruction Surgery Service, Assistant Clinical Professor of Orthopaedic Surgery

William H. Harris, MD; Allen Gerry Clinical Professor of Orthopaedic Surgery, Harvard Medical School

Dennis W. Burke, MD; Clinical Instructor in Orthopaedic Surgery, Harvard Medical School

Murali J. Jasty, MD; Associate Clinical Professor of Orthopaedic Surgery, Harvard Medical School

David W. Lhowe, MD; Instructor in Orthopaedic Surgery, Harvard Medical School

Harry E. Rubash, MD; Chief, MGH Department of Orthopaedic Surgery; Edith M. Ashley Professor of Orthopaedic Surgery, Harvard Medical School

John M. Siliski, MD; Clinical Instructor in Orthopaedic Surgery, Harvard Medical School

William Tomford, MD; Professor of Orthopaedic Surgery, Harvard Medical School

Shoulder

Jon J. P. Warner, MD; Chief, Partners Shoulder Service; Associate Professor of Orthopaedic Surgery, Harvard Medical School

Thomas F. Holovacs, MD
Instructor of Orthopaedic Surgery, Harvard Medical School

Peter Millett, MD; Instructor in Orthopaedic Surgery, Harvard Medical School

Gary S. Perlmutter, MD; Clinical Instructor in Orthopaedic Surgery, Harvard Medical School

Spine

Francis X. Pedlow, MD; Chief, Spine Service, Instructor in Orthopaedic Surgery, Harvard Medical School

Frederick L. Mansfield, MD; Instructor in Orthopaedic Surgery, Harvard Medical School

James Sarni, MD; Instructor in Physical Medicine and Rehabilitation, Harvard Medical School

David Karli, MD; Instructor in Physical Medicine and Rehabilitation, Harvard Medical School

Podiatry

Robert J. Scardina, DPM; Chief, Podiatric Service, Clinical Instructor in Orthopaedic Surgery (Podiatry), Harvard Medical School

Sports Medicine

Bertram Zarins, MD; Chief, Sports Medicine Service; Associate Clinical Professor of Orthopaedic Surgery; Harvard Medical School

Arthur Boland, MD; Assistant Clinical Professor of Orthopaedic Surgery, Harvard Medical School

Thomas J. Gill, MD; Instructor in Orthopaedic Surgery, Harvard Medical School

Dinesh Patel, MD; Assistant Clinical Professor of Orthopaedic Surgery, Harvard Medical School

Trauma

Mark Vrahas, MD; Chief, Partners Orthopaedic Trauma Services; Assistant Professor of Orthopaedic Surgery, Harvard Medical School

Malcolm Smith, MD; Assistant Professor of Orthopaedic Surgery, Harvard Medical School
Associate Chief of Orthopedic Trauma Services

Oncology

Francis J. Hornicek, MD; Chief, Orthopaedic Oncology Service; Assistant Professor of Orthopaedic Surgery, Harvard Medical School

Henry J. Mankin, MD; Distinguished, Edith M. Ashley Professor of Orthopaedic Surgery, Harvard Medical School

Mark C. Gebhardt, MD; Frederick and Jane Ilfeld Associate Professor of Orthopaedic Surgery, Harvard Medical School

Pediatric Orthopaedics

Brian Grottkau, MD; Assistant Professor of Orthopaedic Surgery, Harvard Medical School, Chief of Pediatric Orthopaedics

Maurice Albright, MD
Clinical Fellow in Orthopaedic Surgery, Harvard Medical School

Saechin Kim, MD
Clinical Instructor of Orthopaedic Surgery, Harvard Medical School

Fellows Trauma

David Joseph, MD

Sports

Joseph Chase, MD
Stephen Nuccion, MD
Bruce Stamos, MD

Hand

Phani Dantuluri, MD
Steven Kronlage, MD
Roger Cornwall, MD
Daniel Polatsch, MD

Oncology Clinical

Yasser Farid, MD
Kevin Raskin, MD

Arthroplasty

Sanjeev Agarwal, MD
Peter Chiang, MD
David Manning, MD
Peter Sultan, MD

Shoulder

Michael Gilbert, MD
David Kim, M.D.
Edward Yian, MD

Basic Science Faculty

David E. Krebs, PhD; Lecturer on Orthopaedic Surgery, Harvard Medical School

Guoan Li, PhD; Assistant Professor of Orthopaedic Surgery, Harvard Medical School

Chris McGibbon, PhD; Lecturer on Orthopaedic Surgery, Harvard Medical School

Teresa Morales, PhD; Lecturer on Orthopaedic Surgery, Harvard Medical School

Orhun Muratoglu, PhD; Assistant Professor of Orthopaedic Surgery, Harvard Medical School

Mark Randolph, PhD; Assistant Professor of Orthopaedic Surgery, Harvard Medical School

Arun Shanbhag, PhD; Assistant Professor of Orthopaedic Surgery, Harvard Medical School

Patricia Sullivan, PhD; Lecturer on Orthopaedic Surgery, Harvard Medical School

Lawrence Weissbach, PhD; Assistant Professor of Orthopaedic Surgery, Harvard Medical School