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Overview

How time flies! It seems like only yesterday, but it has been nearly five years since the creation of the Department of Orthopaedic Surgery and Rehabilitation Medicine at the University of Chicago Medicine. The credit for our growth and success belongs to our department and the orthopaedic service line, a group of individuals who have exceeded my expectations and for whom I am so very grateful. It is an honor to work with each of these individuals.

This year, we prepare for the opening of our adult level-I trauma center, and we work to consolidate the orthopaedic service line across the Ingalls healthcare system, with whom we merged last fall. I am delighted we have recruited two outstanding clinician-educators specializing in orthopaedic trauma to join our excellent faculty. Jason Strelzow, MD, joined us in August, having completed fellowships in upper extremity surgery in Hamilton, Ontario and in trauma surgery in Edinburgh, Scotland prior to joining us. Dr. Strelzow is already contributing immeasurably in trauma planning and trauma education and will contribute even more when the trauma center opens in May 2018. Miguel Daccarett, MD, trained in Columbia and is joining us after a decade of orthopaedic trauma practice at the University of Nebraska. Dr. Daccarett, who joins us in March 2018, also has training and experience in open hip preservation techniques and in multiligament knee reconstruction. He will not only be a valuable orthopaedic traumatologist, but will also expand our capabilities in the areas of surgical dislocation of the hip and pelvic osteotomy. All will come to fruition in May 2018, when we become the busiest trauma center in the Chicago area.

The merger of the University of Chicago Medicine with the Ingalls healthcare system marks the advent of the University of Chicago Healthcare System, a system that now serves the entire Southland region. The department has responded to this development with a vision for an orthopaedic service line that spans the entirety of the system, coordinating access, care and quality for orthopaedic patients wherever they choose to see us. Just as the UChicago Medicine brand will be featured at each facility in the southland, so will our promise for access, service, and quality for orthopaedic patients. Our faculty are seeing outpatients in Orland, Park, Tinley Park, Calumet City, and Crown Point, and are performing outpatient procedures at the Tinley Park outpatient surgery center. We are working to expand and fully integrate the orthopaedic surgeons in the clinically integrated network by linking on access, quality and service. We feel the future is exciting and bright for UChicago Medicine Orthopaedic Surgery in the southland.

The theme chosen for this annual report is “Art and Science” — a choice that delights me. This theme embodies the ethos, the philosophy, the daily activities, the accomplishments and the aspirations of our department. All that we do every day of the year evidences the intertwining of the art and science of our profession. Whether we are providing patient care, educating our learners or advancing our scholarly pursuits, we are — every day and in every way — interweaving in each activity the art and the science of our profession. We teach our learners the science of orthopaedic medicine, yet we model for them the art of listening to patients and building rapport and trust. We care for patients according to and utilizing state-of-the-art science, yet we must always understand their individual needs and tailor care to meet those needs. We perform incisive research projects around cost effectiveness, yet we must present the results of that work in ways that persuade others to change clinical behaviors. We apply scientific principles and methods to help fine tune and improve communications with patients in the critical and anxious time period immediately prior to surgery. We use motion sensing and augmented reality technology to devise a training tool for learners to perform the closed reduction of a fracture, with the goal of improving quality and care. We use current scientific knowledge to create and communicate pain management strategies that limit opioid use while providing satisfactory relief to patients. I mention these few examples because you will find them in this annual report, but you will also find in this report a myriad of additional examples of projects and programs that apply cutting-edge science in an artful manner for the betterment of patient care, for enhanced education, and to improve the performance of our profession. I encourage you, when you read this report, to specifically seek examples of this attention to both the science and the art of our field and our endeavors.

I am delighted to be associated with this department and its programs and I am proud of the outstanding progress we have made. I am particularly excited, however, about what we will achieve in the next five years and I look forward to our future endeavors to advance the art and science of Orthopaedics at the University of Chicago Medicine and on a national level. Please stay tuned — there is no doubt in my mind that our next five years will be even brighter than the last!

Douglas R. Dirschl, MD
Lowell T. Coggshall Professor of Orthopaedic Surgery
Chairman, Department of Orthopaedic Surgery and Rehabilitation Medicine
History of the Department of Orthopaedic Surgery

Dr. Dallas Burton Phemister

Renowned surgeon, professor and first-ever chairman of the Department of Surgery at the University of Chicago Hospitals, Dallas Burton Phemister was born on July 15, 1882. After graduation from Rush Medical College in 1904, he studied in Paris, Berlin and Vienna.

From the beginning, he evinced an intense interest in clinical investigation and a profound dedication for research in the biological sciences. He became an expert pathologist and was one of the first to make fundamental correlations between roentgenological patterns and histopathological interpretation of bone disease. His studies on the fate of bone grafts remain classic.

Phemister was intensely interested in tumors in general and bone tumors in particular — a field in which he made valuable contributions. He devoted much time and effort to the Registry of Bone Sarcoma of the American College of Surgeons. At the University of Chicago, he established a formal residency program in surgery and expended much effort in the development of his house staff.

High honors came in the form of the Presidency of the American Surgical Association and of the American College of Surgeons. His reputation was recognized abroad by a bestowal of the Honorary Fellow of the Royal College of Surgeons of England, a visiting professorship in the Sorbonne and the granting of Order of Cavalier of the Legion of Honor. Phemister was one of the last of the great general surgeons, a representative of a vanishing art.

Accomplishments

In 1930, The University of Chicago Hospitals established the nation’s first full-time Orthopaedic Surgery Faculty. Howard Hatcher, MD, a pioneer in the field of orthopaedic surgery and medicine, joined the department shortly after its inception, and his contributions to the educational programs at UCM were foundational and groundbreaking. Dr. Hatcher was the first orthopaedic resident to work with Dr. Phemister. In 1938, Dr. Hatcher founded and became the first chief of the Section of Orthopaedic Surgery within the University of Chicago Department of Surgery.

Of the 22 Residents, Dr. Hatcher trained between 1938–1960, 18 became full-time academic faculty. Fifteen of the 18 became Inaugural Chairman of Orthopaedic Surgery Department around the nation.
Faculty

UNIVERSITY OF CHICAGO FACULTY

Professors of Orthopaedic Surgery
Holly Benjamin, MD*
Douglas R. Dirschl, MD
Henry Finn, MD
Rex Haydon, MD, PhD
Sherwin Ho, MD
John Martell, MD
Daniel P. Mass, MD
Anthony Montag, MD*
Michael Simon, MD
Brian Toolan, MD
Jennifer Wolf, MD

Clinical Associate Professor of Orthopaedic Surgery
Michelle Gittler, MD

Clinical Associate Professors of Surgery
Mary Lawler, MD
Lisa Thornton, MD

Clinical Associates
Cheryl Benjamin, DO
Benjamin Domb, MD
Raymond Lee, MD

Visiting Assistant Professors
Jiaming Fan, MD
Chen Zhao, MD, MSC
Yulong Zou, MD

Visiting Scholars
Liping An, PhD
Liqun Chen, MD
Jun Fei, MD, PhD
Chen Gong, MD
Dan Guo, MD, PhD
Jiayi Huang, MD, PhD
Shifeng Huang, MD, PhD
Xue Hu, MD, MSC
Xiaojuan Ji, MD, PhD
Chen Gong, MD

PhD Student
Mary Rose Rogers

NORTHSHORE FACULTY

Clinical Professors
Leon Benson, MD
Jason Koh, MD, MBA

Clinical Associate Professors
James Kudrna, MD, PhD
Howard Sweeney, MD

Clinical Assistant Professors
Joseph Alleva, MD
Ravi Bashyal, MD
David Beigler, MD
Bradley Dunlap, MD
Miledones Eliades, MD
Thomas Hudgins, MD
Eldin Karaikovic, MD
Rachel Kermen, MD
Steven Levin, MD
Seth Levitz, MD
Robert McMillan, MD
Craig S. Phillips, MD
Gary Shapiro, MD
Anand Srinivasan, MD

Pritzker School of Medicine
Clinician Educators
Patrick Birmingham, MD
Lan Chen, MD
Catherine Choi, MD
Mark Mikhail, MD
Mark Neault, MD
Danielle Schiff, MD
Naila Shaikh, MD

Senior Clinician Educators
Eric Chehab, MD
Joseph Feldman, MD
James Fox, MD
Michael O’Rourke, MD
Gregory Palutsis, MD
Gregory Portland, MD
Amy Ptaszek, MD
Laith Puri, MD
William Robb, MD
Van Stamos, MD

*Secondary appointment
2017
Honors and Awards

Aravind Athiviraham, MD
Selected for the American Academy of Orthopedic Surgeons Sports Medicine Evaluation Committee
Selected for the Education Committee, American Orthopedic Society for Sports Medicine

Tessa Balach, MD
Medical Education Research, Innovation, Teaching and Scholarship Fellowship

Holly Benjamin, MD
Elected Vice President of American College of Sports Medicine (ACSM) 2016–18
Named NCAA Athletics Health Care Administrator for University of Chicago
ACSM Representative: NCAA Task Force on Sleep and Wellness, Indianapolis, IN
Winner, the Sigma Xi award for greatest impact on society at Pritzker Summer Research Symposium
Winner, Best Research Project by a Student in the Translational Science Category, University of Chicago Pediatric Research Forum

Megan Conti Mica, MD
Journal of Hand Surgery’s Editor Choice Article
Bucksbaum Associate Junior Faculty Scholar
ASSH Young Leader
Hand-E Editor of the Month

Doug Dirschl, MD
“Best Doctors in America” for the 10th consecutive year

Sherwin S. W. Ho, MD
Gold Medal, 2016 Olympic Games, Rio de Janeiro, Brazil, China Women’s National Team, Head Team Physician

Leonardo Protasio Jorge De Oliveira, MD, FACP
NCQA Patient Centered Medical Home Level III Certification

Jennifer Moriatis Wolf, MD
Office of Faculty Initiatives Grant Award
Simon and Kalt Award

It is with great pleasure that I announce that Dr. Rex Haydon has been named the Simon and Kalt Families Professor in the Department of Orthopaedic Surgery and Rehabilitation Medicine at The University of Chicago Medicine. This achievement recognizes his superb contributions to the clinical care of patients with sarcomas and the education of the next generation of physicians and surgeons. Dr. Haydon’s outstanding institutional citizenship in the areas of faculty mentorship and academic affairs go beyond measure.

Dr. Haydon has spent his entire professional career at the University of Chicago, going on to complete BA, MA, MD and PhD degree programs — all of them at the University of Chicago. Additionally, Dr. Haydon completed his orthopaedic residency and two orthopaedic fellowships, also at the University of Chicago. Dr. Haydon joined the faculty in 2003 as an assistant professor. He now serves as a professor of orthopaedic surgery and associate director of molecular oncology.

The Simon and Kalt Families Professorship is available to those who have achieved the rank of full professor and have made outstanding contributions to the clinical care of patients with sarcomas and the education of physicians in the field of orthopaedic oncology. Dr. Haydon is a true leader in this arena and a valued contributor to the department and the University.

Congratulations Dr. Oliveira

Congratulations Dr. Leonardo Oliveira on being selected for The 2018 AMSSM Traveling Fellowship to Scandinavia. From the AMSSM Weekly Digest: AMSSM has selected Leonardo Oliveira, MD, and Jason Zaremski, MD, to serve as Junior Traveling Fellows for AMSSM’s 2018 International Traveling Fellowship program tour to Scandinavia. Drs. Oliveira and Zaremski will join AMSSM Founder and Past President John Lombardo, MD, who will serve as Senior Traveling Fellow for the May 16–31, 2018 tour. The Traveling Fellowship program offers an opportunity for academic exchange & clinical immersion for sports medicine physicians to teach & learn sports medicine on a global level.

Dr. Oliveira is a sports medicine physician at the University of Chicago Medicine. He provides skilled non-surgical care for athletic and musculoskeletal injuries in teens and adults, and his specialties include concussion care and ultrasound-guided diagnostic and interventional procedures. Dr. Oliveira treats sports medicine and musculoskeletal injuries in athletes at Concordia University Chicago. He also has experience providing care for runners, including the Chicago and Cleveland marathons in recent years. He is board-certified in internal medicine and sports medicine.

“As an AMSSM traveling fellow, I seek to provide the Scandinavian sports medicine physicians and scientists an ethnic diverse background and a multitude of clinical, administrative and research experiences with the goal to enhance collaboration and partnership within our countries and sports medicine societies,” said Dr. Oliveira, who completed medical school in Brazil and his residency and fellowship at the Cleveland Clinic. “Having been in similar situations at earlier stages of my career, I am certain that now as a faculty and practicing physician I will return from Sweden, Norway and Denmark with a different level of sports medicine knowledge, research acumen and cultural experience which will be invaluable for my career and my roles with the AMSSM.”
Bone Health and Fragility

Osteoporosis, the weakening of the bones due to loss of bone mass, puts older patients at risk for breaking a bone. Fragility fractures — broken bones related to osteoporosis — affect more than 2 million individuals over age 50 in the United States each year. Despite these figures, less than 20 percent of these patients receive appropriate evaluation and treatment for their underlying disease. The orthopaedic department at the University of Chicago Medicine is working to raise awareness about the increasing prevalence of osteoporosis and the consequences of bone loss.

"Fragility fractures are three times more common than heart attacks," explained orthopaedic surgeon and bone health expert, Douglas R. Dirschl, MD. “This is a huge and under-recognized public health issue.” As president of the American Orthopaedic Association, Dirschl was instrumental in developing the organization’s “Own the Bone™ campaign, a national program designed to bring attention to the increasing prevalence of osteoporosis and the consequences of bone loss.

Bone Health and Fragility Team
Douglas R. Dirschl, MD
Rex C. Haydon, MD, PhD

Douglas R. Dirschl, MD
Douglas R. Dirschl, MD, is a highly accomplished surgeon and an expert in fracture care. He specializes in caring for patients with musculoskeletal trauma and fractures, as well as other injuries and diseases of the bones, joints and muscles. Dr. Dirschl has published widely on the assessment of factors that influence reliability in classifying fractures. He currently publishes work delineating the cost-effectiveness and value of musculoskeletal care using population-level data, including the areas of arthritis, fragility fracture and nonsurgical treatment.

Rex C. Haydon, MD, PhD
Rex C. Haydon, MD, PhD, is author of more than 25 articles and book chapters, and he has accepted career development awards from both the Orthopaedic Research and Education Foundation and the National Institutes of Health. Additionally, Dr. Haydon's research has also been supported by the Musculoskeletal Tumor Foundation.
Foot and Ankle

At the University of Chicago Medicine, our two highly skilled foot and ankle orthopaedic surgeons take an individualized approach to diagnosing and managing their patients’ problems. Whether their patients are adolescents or adults, or their conditions are straightforward or complex, our specialists listen to be sure they understand the impact of the condition before they explain the options for reducing pain and improving function. They emphasize education, provide information and encourage their patients to participate fully in every decision regarding their conditions. Their goal is to restore the health and well-being of everyone they encounter through safe, effective and patient-centered care. To learn more about the qualifications of foot and ankle orthopaedic surgeons and how our two specialists are well-prepared to offer you the best care possible for your foot and ankle health, visit myfootcaremd.com.

Foot and Ankle Care Team

Kelly Hynes, MD
Brian C. Toolan, MD

Kelly Hynes, MD
Dr. Hynes joined the University of Chicago Medicine after completing her orthopaedic and foot and ankle education at premier academic institutions in Canada. She completed her orthopaedic surgery residency at the University of Ottawa. During her residency, she pursued an interest in trauma with additional training at the Royal Edinburgh Infirmary in Scotland and Aarhus University Hospital in Denmark. Through her fellowship in adult foot and ankle surgery at the University of British Columbia, she has developed an expertise in total ankle arthroplasty, arthroscopy and the minimally invasive management of sports-related and traumatic injuries. She provides skilled and compassionate care for a broad range of common and complex foot and ankle disorders.

Brian C. Toolan, MD
Dr. Brian C. Toolan is a nationally and internationally recognized orthopaedic surgeon and educator. He has spent his entire career at the University of Chicago. He published over 30 scientific articles, more than 20 book chapters and became a professor of orthopaedic surgery before shifting his focus to lead the department’s educational program as residency director. He contributed to the development of national standards in musculoskeletal education during residency and fellowship in orthopaedic foot and ankle surgery. He served as faculty on numerous courses sponsored by the Academy of Orthopaedic Surgeons and the American Orthopaedic Foot and Ankle Society. Along with his academic accomplishments, he has built an active clinical practice as an expert in all aspects of foot and ankle health for adults and adolescents. Although he specializes in complex and revision reconstructive surgery for post-traumatic, degenerative and acquired conditions, Dr. Toolan also treats common fractures, tendon, ligament and sports-related injuries.
From sporting activities to intricate work, healthy hands and wrists are critical to daily life. At the University of Chicago Medicine, we have orthopaedic experts who are recognized leaders in the treatment of hand and wrist injuries and conditions. Our goal is to relieve pain and discomfort and to restore strength, motion, dexterity, form and function. We have the skill and expertise to treat the full range of conditions affecting the bones, joints and nerves of the hands and wrists.

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<td>Jovito Angeles, MD</td>
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<td>Roderick Birnie, MD</td>
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<td>Megan Conti Mica, MD</td>
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<tr>
<td>Daniel P. Mass, MD</td>
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<td>Jennifer Moriatis Wolf, MD</td>
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**Jovito Angeles, MD**
Jovito Angeles, MD, is an expert in the surgical treatment of adults and children with orthopaedic conditions, particularly those with musculoskeletal problems of the upper extremities. He is also interested in the treatment of patients with traumatic and birth-related brachial plexus palsies, traumatic nerve injuries and compressive neuropathies.

**Roderick Birnie, MD**
Roderick Birnie, MD, specializes in non-operative general orthopaedics. He sees patients with a variety of orthopaedic issues, including both upper and lower extremity conditions. A respected educator, Dr. Birnie teaches medical students and residents in orthopaedic surgery at the University of Chicago.

**Megan Conti Mica, MD**
Megan Conti Mica, MD, specializes in the treatment of adults and children, including athletes at all levels, with injuries or disorders of the hand, wrist, elbow and shoulder. Dr. Conti Mica has expertise in the management of traumatic and post-traumatic reconstructions, as well as treatment of congenital, paralytic, arthritic, infectious, tumorous and acquired conditions affecting the upper extremity and brachial plexus. Additionally, she has advanced training in minimally invasive (arthroscopic) and microvascular (microscopic) techniques.

**Daniel P. Mass, MD**
Dr. Daniel Mass is a highly regarded expert in orthopaedic surgery of the hand and upper extremities. He has a special interest in the research and treatment of flexor tendon injuries (injuries to the muscles that allow the fingers to bend and flex), and he also studies the mechanics of the hand, wrist and elbow. A popular speaker, Dr. Mass has given numerous presentations on hand surgery to medical audiences around the world. In addition, he has written book chapters on flexor tendon injuries and hand and wrist surgery.

**Jennifer Moriatis Wolf, MD**
Jennifer Moriatis Wolf, MD, is a renowned hand surgeon with expertise in the surgical and non-surgical treatment of bone, nerve, tendon and ligament injuries caused by trauma or overuse. She provides comprehensive care to treat pain and restore form and function in the hand, wrist and elbow. She has special expertise in the treatment of atypical nerve compression, lateral epicondylitis, and basilar thumb joint osteoarthritis.
The orthopaedic specialists at UChicago Medicine offer comprehensive care for patients with hip pain, instability or disability. In recent years, significant advances in hip arthroscopy for soft tissue tears, dysplasia and abnormalities have increased treatment options for patients with non-arthritis hip pain to preserve the natural joints in order to delay or avoid total hip replacement.

Comprehensive treatment options for knee injuries and knee pain include arthroscopic care, ligament reconstruction, cartilage restoration, less invasive joint replacement and a rapid recovery program that quickly returns patients to an active lifestyle.

### Hip and Knee Care & Preservation Team

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<th>Name</th>
<th>Title</th>
<th>Specialty</th>
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<tr>
<td>Aravind Athiviraham, MD</td>
<td>Tessa Balach, MD</td>
<td>A specialist in sports medicine, Aravind Athiviraham, MD, is skilled in minimally invasive and arthroscopic procedures of the shoulder, elbow, knee and ankle. In addition, he has received advanced training in reconstructive procedures of the knee and shoulder.</td>
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<tr>
<td>Sherwin S. W. Ho, MD</td>
<td>Richard W. Kang, MD, MS</td>
<td>Dr. Sherwin Ho is an expert in sports medicine, specializing in minimally invasive arthroscopic procedures of the shoulder, elbow, hip, knee and ankle. He has served as faculty at numerous advanced arthroscopic shoulder and knee courses for the American Academy of Orthopaedic Surgeons.</td>
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<td>Hue H. Luu, MD</td>
<td>Derrick Brown, PA-C</td>
<td>Hue Luu, MD, specializes in joint replacement surgery, including both direct-anterior and posterior-lateral approaches for hip replacements. His research interests include: the fundamental mechanisms regulating bone biology and bone regeneration, osteolysis in total joint replacement, and advances in gene therapy to study applications of bone biology in fracture care.</td>
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<tr>
<td>Derrick Brown, PA-C</td>
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<td>Derrick Brown, PA-C, is a physician assistant. He received his bachelor’s and master’s degrees both in kinesiology from Indiana University. He earned his master of physician assistant studies degree from Rosalind Franklin University. He is board-certified by the National Commission on Certification of Physician Assistants.</td>
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**Aravind Athiviraham, MD**

A specialist in sports medicine, Aravind Athiviraham, MD, is skilled in minimally invasive and arthroscopic procedures of the shoulder, elbow, knee and ankle. In addition, he has received advanced training in reconstructive procedures of the knee and shoulder.

**Tessa Balach, MD**

As an orthopaedic oncologist, Tessa Balach, MD, provides comprehensive surgical care for bone and soft tissue tumors. She treats a broad range of benign and malignant tumors in adults and children. As a member of the multidisciplinary physician team, Dr. Balach works closely with other experts to provide highly specialized, individualized care for patients with common and rare bone and soft tissue tumors.

**Sherwin S. W. Ho, MD**

Dr. Sherwin Ho is an expert in sports medicine, specializing in minimally invasive arthroscopic procedures of the shoulder, elbow, hip, knee and ankle. He has served as faculty at numerous advanced arthroscopic shoulder and knee courses for the American Academy of Orthopaedic Surgeons.

**Richard W. Kang, MD, MS**

Richard W. Kang, MD, MS, is an orthopaedic sports medicine surgeon. He specializes in adolescent and adult hip conditions, including labral tears and femoroacetabular impingement. He also has expertise in the treatment of cartilage lesions of the hip, knee and shoulder. Dr. Kang’s objective is to delay or prevent the onset of arthritis and the need for a joint replacement.
Bone and Soft Tissue Cancer

Bone and soft tissue cancer can be frightening for the children and adults that it strikes. However, the latest treatments available at the University of Chicago Medicine — from innovative chemotherapy to limb-sparing surgery — can reduce pain, fight the disease and preserve the ability to walk, work and play. Our orthopaedic oncology program includes respected experts in orthopaedic surgery, adult and pediatric oncology, diagnostic and therapeutic radiology, radiation oncology and pathology. Together, this multidisciplinary team designs the best treatment for patients with bone cancers and soft tissue sarcomas (e.g. synovial sarcomas, liposarcomas, fibrosarcomas). Weekly multidisciplinary meetings are held every Tuesday at 4:30 p.m. in the Orthopaedic Conference Room.

**Orthopaedic Oncology Team**

Tessa Balach, MD  
Rex C. Haydon, MD, PhD  
Hue H. Luu, MD

**Tessa Balach, MD**  
Tessa Balach, MD, is an orthopaedic oncologist who provides comprehensive surgical care for bone and soft tissue tumors, whether malignant or benign. Dr. Balach also provides surgical care for metastatic bone disease, stabilizing bones to prevent fractures. Additionally, Dr. Balach specializes in joint replacement surgery, with particular interest in hip and knee replacement. She also currently leads and contributes to clinical studies designed to advance the comprehensive treatment and management of bone diseases and injuries. Dr. Balach serves as a mentor and instructor to medical students, residents and fellows, and has authored several articles in peer-reviewed journals and medical publications.

**Rex C. Haydon, MD, PhD**  
Rex Haydon, MD, PhD, focuses on the comprehensive treatment of malignant and benign tumors in bone or soft tissue. He specializes in the surgical care of bone and soft tissue tumors, including limb-salvage and reconstructive surgery of the upper and lower extremities. Also a skilled physician scientist, his research focuses on advancing the treatment of musculoskeletal tumors. Additionally, Dr. Haydon’s research has been supported by the Musculoskeletal Tumor Foundation.

**Hue H. Luu, MD**  
Hue Luu, MD, is skilled in the surgical care of bone and soft tissue tumors. He also specializes in joint replacement surgery, including both direct anterior and posterior-lateral hip approaches for hip replacements. His research interests include: the fundamental mechanisms regulating bone biology and bone regeneration, osteolysis in total joint replacement patients, and advances in gene therapy to study applications of bone biology and cancer metastasis.
Shoulder and Elbow

The shoulder and elbow specialists at University of Chicago Medicine offer the complete range of non-surgical, minimally invasive (arthroscopic) and open surgery for teens, young adults and older adults. We design individual treatment plans tailored to each patient’s needs and goals, and we maximize use of non-surgical options prior to considering surgery. When surgery is necessary, our orthopaedic surgeons offer innovative and advanced operative therapies for repair of shoulder and elbow conditions, both minimally invasive and open. We strive to help patients regain full function and to return to their daily activities as soon as possible.

Shoulder and Elbow Care Team

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<tr>
<th>Jovito Angeles, MD</th>
<th>Megan Conti Mica, MD</th>
<th>Lewis Shi, MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aravind Athiviraham, MD</td>
<td>Sherwin S. W. Ho, MD</td>
<td>Daniel P. Mass, MD</td>
</tr>
</tbody>
</table>

**Jovito Angeles, MD**

Jovito Angeles, MD, is an expert in the surgical treatment of adults and children with orthopaedic conditions, particularly those with musculoskeletal problems of the upper extremities. He is also interested in the treatment of patients with traumatic and birth-related brachial plexus palsies, traumatic nerve injuries and compressive neuropathies.

**Aravind Athiviraham, MD**

A specialist in sports medicine, Aravind Athiviraham, MD, cares for patients with athletic and overuse injuries, as well as other injuries and diseases of the bones, joints and muscles. He is skilled in minimally invasive and arthroscopic procedures of the shoulder, elbow, knee and ankle. In addition, he has received advanced training in reconstructive procedures of the knee and shoulder.

**Roderick Birnie, MD**

Roderick Birnie, MD, specializes in non-operative general orthopaedics. He sees patients with a variety of orthopaedic issues, including both upper and lower extremity conditions.

**Megan Conti Mica, MD**

Megan Conti Mica, MD, specializes in the treatment of adults and children, including athletes at all levels, with injuries or disorders of the hand, wrist, elbow and shoulder. Dr. Conti Mica has expertise in the management of traumatic and post-traumatic reconstructions, as well as treatment of congenital, paralytic, arthritic, infectious, tumorous and acquired conditions affecting the upper extremity and brachial plexus. Additionally, she has advanced training in minimally invasive (arthroscopic) and microvascular (microscopic) techniques.

**Sherwin S. W. Ho, MD**

Dr. Sherwin Ho is an expert in sports medicine, specializing in minimally invasive arthroscopic procedures of the shoulder, elbow, hip, knee, and ankle. He has served as faculty at numerous advanced arthroscopic shoulder and knee courses for the American Academy of Orthopaedic Surgeons. Dr. Ho has worked with numerous professional teams, and currently he is the team physician for the Chinese national women’s volleyball team.
Daniel P. Mass, MD
Dr. Daniel Mass is a highly regarded expert in orthopaedic surgery of the hand and upper extremities. He has a special interest in the research and treatment of flexor tendon injuries (injuries to the muscles that allow the fingers to bend and flex), and he also studies the mechanics of the hand, wrist and elbow.

Lewis Shi, MD
Lewis Shi, MD, is an orthopaedic surgeon who specializes in shoulder injuries in patients of all ages. His busy practice includes many primary as well as revision (re-do) procedures referred by other surgeons. Dr. Shi is also highly involved in research on the latest technology in treating shoulder/elbow pathology, and teaches other surgeons through conferences and courses. He has published more than 50 journal articles.
The University of Chicago Medicine orthopaedic spine team offers a wide range of non-surgical, minimally invasive and traditional proven surgical techniques for the treatment of back and neck problems. We maximize the use of non-surgical interventions for reducing pain and restoring function. When surgery is recommended, in many instances it can be performed using minimally invasive techniques that involve smaller incisions, less pain and greater safety. In other complex situations, traditional approaches may be recommended to optimally address the spinal disease. In all cases, patients can expect the most effective solution: a treatment that has the highest probability of providing the most improvement and durability for the longest period of time.

Spine Team
Michael Lee, MD
James Mok, MD

Michael Lee, MD
An expert spine surgeon, Michael Lee, MD, treats spinal injuries, degenerative conditions and spinal deformity as well as complex tumors of the spinal cord. He is dedicated to improving safety and quality measures for spine surgery.

Dr. Lee is the co-director of the Operative Performance Research Institute at the University of Chicago Medicine and is actively engaged in a wide range of research in safety and quality. He has worked to identify risk factors for post-operative lumbar spondylolisthesis and to enhance lumbar spine surgical techniques. He recently has focused efforts on creating models to predict the likelihood of complication after spine surgery. In addition to his research, Dr. Lee teaches medical students, residents and fellows about spine surgery. Past courses have focused on the surgical treatment of complex spinal tumors and minimally invasive surgery.

James Mok, MD
James Mok, MD, is a board-certified orthopaedic surgeon who specializes in the diagnosis and treatment of spine conditions, including herniated discs, spinal stenosis, spondylolisthesis and degenerative disc disease. He also cares for patients with cervical stenosis or myelopathy — conditions in which the spinal cord and nerves become compressed in the neck. In addition, Dr. Mok has a special interest in utilizing minimally invasive surgery to speed up recovery times after spine surgery.
The orthopaedic surgeons at the University of Chicago Medicine offer state-of-the-art sports medicine for all ages and skill levels — from young competitors to weekend athletes to professional players. We offer non-surgical, surgical and rehabilitative options designed to return patients to their full ability and level of play. In addition to arthroscopy and a full range of cutting-edge surgical procedures, the sports medicine team offers additional expertise through specialty services for runners, female athletes, pediatric and adolescent athletes, performing artists and gymnasts, as well as football, soccer and volleyball players. Additional consultation services and treatment options include comprehensive care for sport-related concussions and nutritional issues in athletes such as calcium/vitamin D deficiencies, low iron and low bone densities. Our offices are equipped with x-ray, musculoskeletal ultrasound, MRI (Orland Park and Hyde Park only), injections, TENEX, PRP and IMPACT neuropsychological concussion testing (baselines and post-injury), as well as laboratory services on site.

The most common problems treated by our sports medicine team are:

- Knee problems, including anterior cruciate ligament (ACL) tears, meniscus and cartilage injuries, and problems affecting the kneecap (patella)
- Shoulder injuries, including dislocation, rotator cuff tears, swimmer’s/volleyball player’s shoulder, throwing injuries
- Hip injuries, including labral tears and femoroacetabular impingement (hip impingement) related to all sports (including gymnastics and dancing)
- Hamstring injuries and Achilles tendon/plantar fascia
- Elbow injuries, such as golfer’s elbow and tennis elbow, ulnar collateral ligament injuries (Tommy John surgery)
- Hand and wrist injuries
- Sprains and strains
- Stress fractures, growth plate injuries and cartilage injuries in joints
- Arthritis, bursitis and tendonitis

Aravind Athiviraham, MD
Holly J. Benjamin, MD
Sherwin S. W. Ho, MD
Lewis Shi, MD
Leonardo Oliveira, MD

Aravind Athiviraham, MD
Dr. Aravind Athiviraham is a board-certified specialist in orthopaedic sports medicine, and cares for patients with athletic and overuse injuries of the knee, shoulder and elbow. He is skilled in minimally invasive and arthroscopic procedures, to optimize patient recovery from surgery and allow early return to sports activity. In addition, he has received advanced training in reconstructive procedures of the knee and shoulder. He currently serves on the education committee of the American Orthopedic Society for Sports Medicine and has served as an associate instructor at numerous courses at the Orthopedic Learning Center. He is currently the
head team physician for the DuSable High School Panthers and is an associate team physician for Concordia University. Dr. Athiviraham’s current research interests include improving the biology of graft incorporation following ACL reconstruction, optimizing rehabilitation protocols following meniscal repair surgery, and evaluating clinical results following procedures for knee cartilage restoration, shoulder labral tears and elbow ulnar collateral ligament reconstruction (Tommy John) surgery.

Holly J. Benjamin, MD
(non-surgical in children and adolescents, female athletes and adult endurance athletes)

A specialist in sports medicine and nonsurgical musculoskeletal injuries, Holly J. Benjamin, MD, has been nationally recognized for expertise in treating all types of athletic injuries, with a special interest and training in young patients. She routinely does office consultations for adolescent and pre-adolescent athletes ranging from elite, college-bound and pre-professional athletes to interscholastic, varsity and club level athletes participating in all types of sports and physical activity. She is the head team physician for the University of Chicago Lab School, a team physician for the UChicago NCAA athletic program and is a consultant to many gymnastics, dance, soccer, track and swim clubs. In 2008, Dr. Benjamin was selected as a volunteer team physician at the United States Olympic Training Center in Colorado Springs and has served as a medical staff officer for The Bank of America Chicago Marathon, US Soccer and the AVP. Her practice is built on a comprehensive approach for evaluation and treatment with an emphasis on early, safe return to play following treatment of sports related injuries and illnesses.

Dr. Benjamin is an expert in sports medicine education and teaches nationally and internationally. She has served on the Boards of Directors and Trustees for major national sports organizations and is the founder and chair of the committee on sports medicine and fitness for the Illinois Chapter of the American Academy of Pediatrics (AAP). Research interests include overuse injuries, early sports specialization in youth athletes (particularly gymnastics/performing arts), and concussions, serving as the on-site principal investigator for the NCAA-DoD $30 million dollar CARE Consortium Concussion Study.

Sherwin S. W. Ho, MD
(shoulder and elbow)

Dr. Sherwin Ho is an expert in sports medicine, specializing in minimally invasive arthroscopic procedures of the shoulder, elbow, hip, knee and ankle. He has been recognized for his expertise in treating all types of athletic injuries, with a special interest and training in young patients. He routinely does office consultations for adolescent and pre-adolescent athletes ranging from elite, college-bound and pre-professional athletes to interscholastic, varsity and club level athletes participating in all types of sports and physical activity. He is the head team physician for the University of Chicago Lab School, a team physician for the UChicago NCAA athletic program and is a consultant to many gymnastics, dance, soccer, track and swim clubs. In 2008, Dr. Benjamin was selected as a volunteer team physician at the United States Olympic Training Center in Colorado Springs and has served as a medical staff officer for The Bank of America Chicago Marathon, US Soccer and the AVP. Her practice is built on a comprehensive approach for evaluation and treatment with an emphasis on early, safe return to play following treatment of sports related injuries and illnesses.

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Leonardo Oliveira, MD
(non-surgical adolescents and adults)

Leonardo Oliveira, MD, specializes in non-operative sports medicine and musculoskeletal medicine. His goal is to accurately assess musculoskeletal complaints and sports injuries in order to assist the patient to return to their modality of physical activity. With a particular interest in running, Dr. Oliveira strives to get his runners and triathletes to achieve their goal when faced with injuries. Dr. Oliveira also sees patients for sports concussions, and, in addition, performs procedures under ultrasound guidance to treat tendon tears, tendinopathies and osteoarthritis.
The pediatric orthopaedic surgeons at the University of Chicago Medicine Comer Children’s Hospital offer comprehensive and compassionate care for children with illness or injuries of the bones, joints and muscles. A level-I trauma center, we specialize in treatment for multiple fractures, including complex fractures that affect growth plates in children and teens.

Our orthopaedic program provides surgical and non-surgical treatment for the full range of pediatric orthopaedic conditions, including disorders of the spine (scoliosis, kyphosis, spondylolysis and other sources of back pain), hip diseases (developmental dislocation of the hip, dysplasia, avascular necrosis and slipped capital femoral epiphysis), club feet, flat feet, congenital anomalies, birth defects of the extremities, gait issues, leg length disparities, bow legs, Blount’s disease, crooked legs and neuromuscular conditions, such as cerebral palsy.

In addition, University of Chicago Medicine Department of Orthopaedic Surgery and Rehabilitation Medicine pediatric specialists also treat more traumatic developments in children and young adults, including fractures (multiple, complex fractures and broken growth plates), growth disturbances secondary to fractures, bone infections (and growth disturbances secondary to bone infections), benign bone tumors, brachial plexus injuries and congenital hand and arm abnormalities. Besides congenital and traumatic bone issues in children, our pediatric physicians also treat patients who are fighting cancerous growth in bone tissue, including patients diagnosed with Ewing sarcoma and osteosarcoma.

**Advanced Care for Children with Scoliosis**

Scoliosis is a sideways curvature of the spine that affects many children and teens. Most cases are mild, but scoliosis can progress and lead to disabling spine deformities or problems with lung and heart function. Our specialists have the experience and research background to make that determination early on. We use bracing as an effective treatment for many children, reserving surgery for the more severe and progressive cases.

At Comer Children’s, we use the latest techniques and medical procedures for pediatric spinal disorders. For example, when children require bone fusion, our physicians use bone graft substitutes that are less painful and heal faster.

**Collaborative Approach**

Our team approach to care brings together specialists from many disciplines to identify the most effective treatment options for each child. Surgeons in our orthopaedic and neurosurgery departments frequently combine their talents to address complex spinal problems. This collaboration ensures the most effective, comprehensive and safest treatments for our patients.
Robert J. Bielski, MD

Robert J. Bielski, MD, provides the full range of surgical and nonsurgical care for musculoskeletal problems in children, such as club feet, fractures, hip disorders and issues associated with cerebral palsy and spina bifida. Dr. Bielski has given more than 60 lectures, authored several journal articles and book chapters, and is a reviewer for *JBJS*, *JAMA* and the *Journal of Pediatric Orthopaedics*.

Christopher Sullivan, MD, MPH

Dr. Christopher Sullivan is a highly regarded expert in muscle and skeletal disorders in children and adolescents. He has presented lectures at national medical meetings on topics such as femur fractures and hip diseases in children. Scoliosis and other spinal deformities are among his many clinical interests. In addition, Dr. Sullivan reviews clinical articles for *Clinical Orthopaedics and Related Research*.

**Pediatric Orthopaedics Team**

Robert J. Bielski, MD

Christopher Sullivan, MD, MPH
Total Knee Replacement
with Robotic-Arm Assisted Technology

Our orthopaedic specialists are at the forefront of the latest advancements in total knee replacement surgery — including robotic-arm assisted technology.

This innovative approach, called Mako total knee replacement, provides patients with a personalized surgical solution based on their diagnosis and anatomy. Advantages over traditional total knee replacement surgery include: a less invasive procedure, more precise alignment of the implant, reduction in the amount of bone removed, more natural circular motion and less disruption to soft tissue around the knee.

How Does It Work?
A CT scan of the knee joint generates a 3-D model of the patient’s unique anatomy. The orthopaedic surgeon uses this model along with sophisticated software to create each patient’s pre-operative plan. In the operating room, the surgeon guides the robotic-arm to remove diseased bone and cartilage, and insert a total knee implant. The Mako system allows the surgeon to make adjustments, if necessary, during the procedure.

Dr. Ho referred the couple to Hue Luu, MD, an expert in knee and hip replacement. Luu recommended robotic-arm assisted total knee replacement surgery, a less invasive option than the traditional joint replacement procedure.

"Working with the robotic arm technology has many advantages for patients," Dr. Luu said. "For example, the surgical team can do a more precise alignment of the implant leading to more natural motion of the joint after recovery."

Karen volunteered to go first. Luu performed a robotic arm-assisted replacement of her left knee in November 2016. Within a few months, she was out walking her three dogs, Zoe, Maddie and Macy on a trail near her home.

"The range of motion is normal," she said. "I can’t tell it’s not my real knee. It was a fantastic procedure for me."

Seeing his wife’s success, Michael scheduled robotic surgery to replace his right knee in January 2017. "He’s also doing great," Karen said. The couple had planned to sell their split-level house, but have decided to stay in their home longer now that they can more easily climb the stairs.

Karen is considering getting the same procedure done on her right knee. "My results were so good, that I want Dr. Luu to do exactly what he did with the left knee," she said.
Minimally Invasive Spinal Surgery

Neuro-decompression and stabilization of lumbar stenosis and spondylolisthesis has been shown to be a successful treatment. While multiple strategies exist to achieve these goals of surgery, an oft-utilized method at the University of Chicago is the minimally invasive trans-foraminal lumbar interbody fusion (MIS-TLIF).

Minimally invasive approaches can be advantageous in that they are associated with significantly less blood loss translating into potentially greater patient safety. In addition, because less tissue is traumatized, patients often report less short-term pain, and MIS approaches have subsequently been associated with shorter lengths of stay in the hospital. While study is needed to determine if MIS techniques differ from traditional open techniques in long-term results, the MIS techniques do appear advantageous in the short-term, particularly for pain and blood loss.

In the case example, the patient has a grade I L45 spondylolisthesis with stenosis and fluid within the facets further suggestive of instability (Figure 1). In the setting of failed non-operative treatment, or urgent symptoms, surgery is a viable option. In this case, the patient underwent a lumbar facetectomy on the left (Figure 2), with a lumbar decompression on the right (Figure 3). These decompressions are done through tubular retractors measuring roughly two and a half centimeters in diameter. Once the neural tissue has been adequately decompressed, the disc is removed and bone graft is placed in the disc space and around the spinal column. Pedicle screws are placed percutaneously at L4 and L5 and the hardware is secured. Figure 4 demonstrates the increase in disc height as well as the reduction of the spondylolisthesis at L45. All of this work is done percutaneously through bilateral incisions measuring less than three centimeters in length.

Left: This patient experienced severe back pain due to progressive scoliosis (curvature of the spine). We were able to correct the scoliosis with multiple level XLIF and screw fixation placed percutaneously through small (1.5 cm) incisions.
Lateral Approaches to Groundbreaking Spinal Surgeries

The lateral retroperitoneal transpsoas approach to the lumbar spine, also known as “Extreme Lateral Interbody Fusion” (XLIF), is a powerful minimally invasive technique for fusion. The University of Chicago Medicine has special expertise in this new field of spinal surgery. The approach allows the surgeon to remove a large portion of the diseased disc that connects the bones of the spine and implant a spacer through which the bones heal together, a process called fusion.

This technique has several major advantages over traditional fusion techniques. Instead of the back or front, the surgery is performed from the side. The incision is approximately 4 cm long and, more importantly, muscles are not stripped off the spine like traditional open surgery, but instead are gently spread apart. A “safe corridor” is established to the diseased disc without the need to move major blood vessels, unlike traditional anterior surgery. The lateral approach allows for anterior lumbar interbody fusion, which has high success rates of fusion. The fusion is accomplished with minimal blood loss and, at the University of Chicago Medicine, averages less than 20 minutes per level.

The lateral approach utilizes an area that is unfamiliar to many surgeons and not part of many traditional teaching pathways. Many spine surgeons are not comfortable with the learning curve. Specialized instruments are necessary to perform the surgery safely. There are unique risks to the surgery, such as the lumbar nerve plexus, that demand mastery of anatomy and speed of technique.

At the University of Chicago Medicine, the lateral approach has been applied to other situations in ways that put us at the forefront of minimally invasive spinal surgery. It is used for revision (“re-do”) surgeries after previous fusions, multi-level scoliosis, deformity correction, and corpectomy, which are large surgeries associated with considerable morbidity if traditional approaches are used. These represent advanced techniques of the lateral approach that achieve equivalent outcomes while maintaining the important advantages of minimally invasive surgery.
Serving the Department of Orthopaedic Surgery and Rehabilitation Medicine mission to communicate knowledge, our faculty participate in numerous educational programs to teach medical students and orthopaedic surgery residents.

For the Pritzker M3 students, we have developed a three-hour introductory course on the musculoskeletal system, which combines a series of fundamental lectures on clinical topics with a hands-on training session in casting and splinting techniques. We also offer a subspecialty rotation which the M3 students may opt for during their surgery clerkship. During this 2.5 week rotation, the students work with the attending and resident physicians in the ambulatory orthopaedic clinics. Through this offering, they are introduced to the evaluation and management of musculoskeletal conditions and receive a first-hand experience in the rewarding yet challenging care we provide to our patients.

For the Pritzker M4 students, we offer a four-week elective sub-internship on inpatient musculoskeletal care. This sub-internship is designed for senior students who seek advanced instruction and training in musculoskeletal care in order to prepare for a residency in orthopaedic surgery. The senior medical students rotate on two of the eight orthopaedic subspecialty services. They interact with attending and resident physicians on consults, inpatient rounds, inpatient and outpatient surgeries and ambulatory clinics. The students also attend the morning didactic sessions, consult and admissions intake conference and their assigned, service-specific teaching conferences. In addition to Pritzker students, senior students from other medical schools apply for this popular, but very competitive educational experience. For Pritzker M4 students entering primary care or other non-procedural fields who desire additional knowledge beyond our introductory M3 course, we offer an outpatient senior elective rotation on musculoskeletal medicine. These two rotations provide a comprehensive and foundational education in musculoskeletal care which prepares senior medical students for their post-graduate training in their chosen fields.

Our residency program continues to prepare our graduating residents for rewarding and successful careers in orthopaedic surgery. Their training is centered around their activity on the medical center inpatient units, ambulatory clinics and operating rooms. The residents also attend suburban ambulatory clinics and operate at an off-site surgicenter. The educational program is organized into eight subspecialty services that include general orthopaedics and orthopaedic trauma, hip and knee arthroplasty, spine, musculoskeletal oncology, pediatric orthopaedics, foot and ankle, upper extremity and sports medicine. Each resident rotates through the eight subspecialty services and clinical teams twice during their residency to provide an introductory and advanced clinical experience. This allows each resident to expand their knowledge and skills and progress in autonomy under the supervision of the department’s faculty.

The residents participate in a five-day-a-week, morning educational program that includes basic science and clinical lectures, group discussions, anatomical prosections and indications conferences that comprise the majority of the educational program. The didactic sessions include group review of in-training examination questions, topic-specific presentations and case-based conferences. In addition to these sessions, interactive conferences on musculoskeletal pathology, quality assurance, interpersonal communication and practice management take place throughout the academic year. Last year’s addition of weekly subspecialty conferences continues to allow for protected service-based clinical interaction. The educational hallmark of the residency, consult and admission intake conference takes place every weekday morning from 7:00 to 7:30 am, immediately after these didactic sessions. At this conference, the
junior and senior on-call resident presents the consults and admissions from the previous day to the faculty for review and discussion. This conference serves as quality control for patient care and an interactive educational experience for all residents. After these presentations, the faculty present their surgical cases for that day and discuss their operative indications. Then, the residents present the post-operative x-rays, images and videos from the previous day’s cases to follow up on the attendings’ pre-operative presentations. This process of showing and discussing the cases before and after surgery enhances learning and develops critical analysis and reflective skills.

Our orthopaedic grand rounds program has been expanded to include invited lectures from national leaders in addition to our regional and institutional speakers. Journal Club and morbidity and mortality conferences have been updated to enhance the current knowledge and patient care skills of our residents and faculty. We continue to refine our basic motor skills curriculum to improve the educational experience for our PGY1 residents in their first year of training and offer a variety of opportunities for the PGY2 through PGY5 residents to deepen their knowledge and hone their surgical skills.

In addition to our didactic and clinical curriculum at the UChicago Medicine Hyde Park campus, our long-standing academic affiliation with the NorthShore University HealthSystem (NSUHS) provides a complementary educational experience for our residents. At NSUHS, our residents rotate at Evanston Hospital, a designated level-I trauma center; Glenbrook Hospital, a community hospital in Glenview, IL; and affiliated outpatient ambulatory clinics and surgicenters. At any given time, five residents rotate at NSUHS on hip and knee arthroplasty, foot and ankle, trauma, hand and spine rotations with members of the NSUHS teaching faculty who are fellowship-trained orthopaedic surgeons in well-established community practices. Collectively, the individual practices of the faculty provide an extensive, subspecialty-driven ambulatory experience in the evaluation and management of orthopaedic conditions.

Our four fellowship programs, combined hand surgery, under the direction of Dr. Jennifer Moriatis Wolf; orthopaedic sports medicine, under the direction of Dr. Sherwin Ho; musculoskeletal oncology, under the direction of Dr. Rex Haydon; and adult reconstructive orthopaedics, based at Weiss Memorial Hospital, under the direction of Dr. Henry Finn; continue to train some of the nation’s brightest emerging orthopaedic subspecialists.

The University of Chicago Department of Orthopaedic Surgery and Rehabilitation Medicine strives to remain at the forefront of education at every level to prepare our students, residents and fellows for their future.
Rehabilitation and NorthShore

NorthShore Orthopaedic Program
The orthopaedic program at NorthShore University HealthSystem is a valuable and robust component of the orthopaedic surgery graduate medical education program at the University of Chicago Medicine. Five residents rotate continually through the NorthShore Orthopaedic Department with subspecialty rotations in total joint, foot and ankle, hand, trauma and spine, with fellowships offered in sports medicine and hand and upper extremity. Daily conferences on the NorthShore campus complement the UChicago Medicine programs with hand, trauma, surgical outcomes, arthroscopic correlation, journal club and spine conferences. Residents gain experience and exposure through the NorthShore orthopaedic outpatient clinic, operating rooms, Evanston Hospital (level-I trauma) ER, Ravine Way surgicenter and clinical offices of the faculty. They also participate in sub-specialty specific motor skills education programs in the NorthShore Orthopaedic Psychomotor Skills & Virtual Reality Laboratory. Another integral component of the residency and fellowship programs is the real-world experience gained through managing the NorthShore Community Health Center (CHC) clinics. The CHC Clinic provides experience with varying orthopaedic conditions from a wide patient population in preparation for their future practices.

Annual Trauma Skills Course
Dr. David Beigler, the Division Head for Trauma in Orthopaedic Surgery at NorthShore, led another successful trauma course for the UChicago Medicine orthopaedic residents on February 10 & 11, 2017. This marks the fifth year for this annual course. The course receives complete funding through a partnership with DePuy Synthes. Dr. Beigler served as faculty and organizer for the course. The program includes step-by-step surgical dissection for accessing orthopaedic traumas as well as identification and use of implants. The two-day course continues to be well received as a valuable part of the residency program.

Wavering Lecture 2017
This year marks the 20th year for the annual NorthShore Orthopaedic Surgery Wavering Lectureship. Each year a different orthopaedic surgery sub-specialty is chosen as the focus. The 2017 didactics and motor skills education was presented by Dr. Keith Wapner, Chief of the Division of Foot & Ankle Surgery at Pennsylvania Hospital, on October 28, 2017. Dr. Wapner is also the former Director of the Foot & Ankle Fellowship at and former President of the American Foot & Ankle Society Board of Directors. In 2016, Dr. Peter Stern, past President of the American Society for Surgery of the Hand was the guest speaker.

Keith Wapner, MD, is a renowned orthopaedic surgeon specializing in foot and ankle surgery. He is a Clinical Professor of Orthopedic Surgery at Penn Medicine, where he is the Chief of Foot and Ankle Surgery. He has been recognized annually in Philadelphia Magazine’s Top Docs issue since 2004, and as one of America’s Top Doctors and Best Doctors in America repeatedly since 2003.
## 2018 Weekly Conference Schedule

### University of Chicago Orthopaedic Residency Program

<table>
<thead>
<tr>
<th>Day</th>
<th>Place</th>
<th>Description</th>
<th>Time</th>
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<tbody>
<tr>
<td><strong>Monday</strong></td>
<td>CCD 7750</td>
<td>OITE Review/Anatomy</td>
<td>6:30–7:00 AM</td>
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<tr>
<td></td>
<td>CCD 7750</td>
<td>AM Intake Conference</td>
<td>7:00–7:15 AM</td>
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<tr>
<td><strong>Tuesday</strong></td>
<td>CCD 7750</td>
<td>Clinical Conference</td>
<td>6:15–7:00 AM</td>
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<tr>
<td></td>
<td>CCD 7750</td>
<td>AM Intake Conference</td>
<td>7:00–7:15 AM</td>
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<tr>
<td><strong>Wednesday</strong></td>
<td>J 103/E 302</td>
<td>Basic Science</td>
<td>6:15–7:00 AM</td>
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<tr>
<td></td>
<td>J 103/E 302</td>
<td>Chairman/PD/Resident Meeting</td>
<td>7:00–7:20 AM</td>
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<tr>
<td></td>
<td>J 103/E 302</td>
<td>Grand Rounds</td>
<td>7:30–8:15 AM</td>
</tr>
<tr>
<td></td>
<td>J 103/E 302</td>
<td>AM Intake Conference</td>
<td>8:15–8:30 AM</td>
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<tr>
<td><strong>Thursday</strong></td>
<td>CCD 7750</td>
<td>Indications</td>
<td>6:15–7:00 AM</td>
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<tr>
<td></td>
<td>CCD 7750</td>
<td>AM Intake Conference</td>
<td>7:00–7:15 AM</td>
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<tr>
<td><strong>Friday</strong></td>
<td>CCD 7750</td>
<td>Clinical Conference</td>
<td>6:15–7:00 AM</td>
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<tr>
<td></td>
<td>CCD 7750</td>
<td>AM Intake Conference</td>
<td>7:00–7:15 AM</td>
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### Conference Details

#### AM Intake Conference
- Pre-op & Post-op Discussion
- X-ray Review from Previous Day
- ER X-ray Review

#### Monthly Conference
- Journal Club
- Last Wednesday of Each Month 7:00 AM – E 302
- Morbidity and Mortality (M&M) Second Wednesday of Each Month 7:00 AM – J 103/E 302

#### Ethics
- One Wednesday quarterly 7:00 AM
- **Vignettes in Ethics and Professionalism Compliance Education Annually**
- **Liability Education Annually**
- **Prosthetic Education Annually**
- **Cultural Competence Vignettes**

#### Wednesday
- Basic Science Conference
- July–Sept
- Sept–Dec
- Jan–June
- Anatomy
- Pathology
- Basic Science Curriculum

#### Thursday
- Indications Conference
- Topics are covered on a rotating basis
- Trauma, Adult Reconstruction, Pediatrics, Hand, Sports, Foot and Ankle, Spine

#### Tuesday & Friday
- Clinical Conference
- Topics are covered on a rotating basis
- Trauma, Adult Reconstruction, Pediatrics, Hand, Sports, Foot and Ankle, Spine
## Orthopaedic Surgery Residents

**PGY-1**

<table>
<thead>
<tr>
<th>Name</th>
<th>Undergraduate/Graduate</th>
<th>Institution 1</th>
<th>Institution 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jason Dickherber, MD</td>
<td>Undergraduate/Graduate</td>
<td>Saint Louis University</td>
<td>Marshall University Joan C. Edwards School of Medicine</td>
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<tr>
<td>Manoj Reddy, MD</td>
<td>Undergraduate/Graduate</td>
<td>Emory University/Texas A&amp;M Health Science Center College of Medicine</td>
<td></td>
</tr>
<tr>
<td>Bradley Saitta, MD</td>
<td>Undergraduate/Graduate</td>
<td>Wake Forest University/Temple University School of Medicine</td>
<td></td>
</tr>
<tr>
<td>Bryan Scott, MD</td>
<td>Undergraduate/Graduate</td>
<td>University of California at Los Angeles/The University of Chicago Pritzker School of Medicine</td>
<td></td>
</tr>
<tr>
<td>James Benjamin St. Clair, MD</td>
<td>Undergraduate/Graduate</td>
<td>Harvard University/University of Colorado School of Medicine</td>
<td></td>
</tr>
</tbody>
</table>

**PGY-2**

<table>
<thead>
<tr>
<th>Name</th>
<th>Undergraduate/Graduate</th>
<th>Institution 1</th>
<th>Institution 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Avino, MD</td>
<td>Undergraduate/Graduate</td>
<td>Saint Louis University</td>
<td>Saint Louis University School of Medicine</td>
</tr>
<tr>
<td>Daniel Curtis, MD</td>
<td>Undergraduate/Graduate</td>
<td>Northwestern University</td>
<td>Northwestern University The Feinberg School of Medicine</td>
</tr>
<tr>
<td>Jonathan Edgington, MD</td>
<td>Undergraduate/Graduate</td>
<td>Miami University/University of Cincinnati College of Medicine</td>
<td></td>
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<tr>
<td>Connor King, MD</td>
<td>Undergraduate/Graduate</td>
<td>University of Southern California Georgetown University School of Medicine</td>
<td></td>
</tr>
<tr>
<td>William Mosenthal, MD</td>
<td>Undergraduate/Graduate</td>
<td>St. Lawrence University/Geisel School of Medicine at Dartmouth</td>
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**PGY-3**

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<thead>
<tr>
<th>Name</th>
<th>Undergraduate/Graduate</th>
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</thead>
<tbody>
<tr>
<td>Blake Burkert, MD</td>
<td>Undergraduate/Graduate</td>
<td>Hendrix College/Emory University School of Medicine</td>
<td></td>
</tr>
<tr>
<td>Ravand Khazai, MD</td>
<td>Undergraduate/Graduate</td>
<td>Northwestern University/University of Missouri – Columbia School of Medicine</td>
<td></td>
</tr>
<tr>
<td>David Landy, MD, PhD</td>
<td>Undergraduate/Graduate</td>
<td>Vanderbilt University/Dartmouth Medical School &amp; University of Miami Leonard M. Miller School of Medicine</td>
<td></td>
</tr>
<tr>
<td>Michael Perrone, MD</td>
<td>Undergraduate/Graduate</td>
<td>University of Florida/University of Florida &amp; USF Health Morsani College of Medicine</td>
<td></td>
</tr>
<tr>
<td>Paul Shultz, MD</td>
<td>Undergraduate/Graduate</td>
<td>University of Colorado at Boulder The Warren Alpert Medical School of Brown University</td>
<td></td>
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</tbody>
</table>

**PGY-4**

<table>
<thead>
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<th>Name</th>
<th>Undergraduate/Graduate</th>
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<tbody>
<tr>
<td>Kenneth Chakour, MD</td>
<td>Undergraduate/Graduate</td>
<td>University of Illinois at Urbana Champaign/University of Illinois College of Medicine</td>
<td></td>
</tr>
<tr>
<td>Srikanth Divi, MD</td>
<td>Undergraduate/Graduate</td>
<td>Johns Hopkins University/University of Pittsburgh School of Medicine</td>
<td></td>
</tr>
<tr>
<td>Patrick Leung, MD</td>
<td>Undergraduate/Graduate</td>
<td>Rutgers University/UMDNJ – Robert Wood Johnson Medical School</td>
<td></td>
</tr>
<tr>
<td>Jonathan Twu, MD</td>
<td>Undergraduate/Graduate</td>
<td>University of Illinois at Urbana Champaign/University of Illinois College of Medicine</td>
<td></td>
</tr>
<tr>
<td>Noelle White, MD</td>
<td>Undergraduate/Graduate</td>
<td>The University of Western Ontario Pennsylvania State University College of Medicine</td>
<td></td>
</tr>
</tbody>
</table>
Orthopaedic Surgery Fellows - 2017 Graduates

Kyle Sweeney, MD
(Musculoskeletal Oncology)
University of Kansas
Kansas City, KS

Michael Chiu, MD
(Sports Medicine)
Illinois Bone and Joint Institute
Arlington Heights, IL

Jason Somogyi, MD
(Hand and Upper Extremity)
Carl R. Darnall Army Medical Center
Fort Hood, TX

John Miller, MD
(Sports Medicine)
Loyola University/Mercy Medical and Medical Center
Chicago, IL

Christian Zaino, MD
(Hand and Upper Extremity)
Orthopaedic Institute of New Jersey
Hackettstown, NJ

James Carson, MD
(Adult Joint Reconstruction)
Cypress Fairbanks Medical Center
Houston, TX

Nicholas Dirig, DO
(Adult Joint Reconstruction)
Tahoe Fracture and Orthopaedic Medical Clinic, Inc.
Carson City, NV

PGY-5

Harpreet Bawa, MD
Undergraduate/Graduate
University of California, Los Angeles
Case Western Reserve University
School of Medicine

Kyle Borque, MD
Undergraduate/Graduate
Texas A&M University/Baylor College of Medicine

Pranay Patel, MD
Undergraduate/Graduate
Washington University in St. Louis
Southern Illinois University School of Medicine

Anna Rosenblum, MD
Undergraduate/Graduate
Harvard College/Albany Medical College

Robert Stewart, MD
Undergraduate/Graduate
University of Washington/Jefferson Medical College of Thomas Jefferson University
Welcome New Faculty

Jason Strelzow, MD  Assistant Professor of Orthopaedic Surgery

Jason Strelzow, MD, comes to the UChicago Medicine Department of Orthopaedic Surgery and Rehabilitation Medicine as an assistant professor of orthopaedic surgery. An expert in orthopaedic trauma, Dr. Strelzow provides comprehensive care for patients with complex fractures and injuries throughout the body, with an additional emphasis on trauma and post-traumatic deformity of the upper extremity, including the hand.

Along with being dedicated to his clinical work, Dr. Strelzow is currently exploring research on patient-reported outcomes related to elbow trauma, shoulder trauma and total elbow replacements. He takes an active interest in evaluating the functional outcomes around urban trauma with the goal of improving patient care and returning patients to normal activity as soon as possible.

Clinical Interests

<table>
<thead>
<tr>
<th>Orthopaedic trauma/injuries</th>
<th>Hand and upper extremity injuries</th>
<th>Arthroscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident education</td>
<td>Optimizing patient outcomes</td>
<td></td>
</tr>
</tbody>
</table>
Teacher of Teachers and Leaders

Thank you, Dr. Simon, as you transition from associate dean of graduate medical education into full-time faculty member of the Department of Orthopaedic Surgery and Rehabilitation Medicine.

Michael A. Simon, MD

Dr. Michael Simon received his medical degree at the University of Michigan in 1967 followed by an internship and general surgery residency, also at Michigan. From 1969 to 1971, he served in the U.S. Air Force, first at Nellis Air Force Base, then in Vietnam. In 1971, he returned to Michigan to begin an orthopaedic surgery residency. Next, he completed a fellowship in musculoskeletal pathology/oncology at the University of Florida and achieved board certification. He was appointed to the faculty of the Section of Orthopaedic Surgery and Rehabilitation Medicine at the University of Chicago as an assistant professor in July of 1975. He quickly rose through the ranks to associate professor in 1979 and professor in 1983. He was acting chief of the section 1983 to 1984 and was named chief of the Section of Orthopaedic Surgery and Rehabilitation Medicine in 1987, a position he held until 2006. During that time, he was also program director for the orthopaedic surgery residency program from 1976 through 2001. He discontinued his leadership position as the chief of orthopaedic surgery and rehabilitation medicine as of July 1, 2006.

Dr. Simon has published over 200 scientific articles, book chapters, abstracts, and has been a frequent Visiting Professor. Dr. Simon, his wife Barbara, daughter Susan Kalt along with his son-in-law David Kalt, established the Simon and Kalt Families Professor in Orthopaedic Surgery at the University of Chicago.

Dr. Simon is currently the associate dean for graduate medical education, professor of orthopaedic surgery. He has been Chair or President of numerous national, regional and international professional organizations, including serving as President of the Illinois Orthopaedic Association, the Musculoskeletal Tumor Society, the Academic Orthopaedic Society, the American Orthopaedic Association, and the Chairman of the American Board of Orthopaedic Surgery, the Board of Trustees of the Journal of Bone and Joint Surgery and the Residency Review Committee for Orthopaedic Surgery. He has been honored as an American British Canadian Exchange Fellow by the AOA in 1983 and received the AOA Smith and Nephew Distinguished Clinician Educator Award in 2005.

1980–2016 Orthopaedic Residents

- 109 Residents
- 32 Full-Time Academic Medical Center Faculty
- 5 Residency Program Directors
- 1 Journal Editor
- 3 Chairmen of the Department of Orthopaedic Surgery: Herb Schwartz, David King, and William Phillips

1980–2016 Oncology Fellows

- 35 Fellows
- 25 Full-Time Academic Medical Center Faculty
- 2 Residency Program Directors
- 1 Associate Dean
- 2 Cancer Center Directors
- 1 Chief Medical Officer
- 4 Chairmen
Gerald S. Laros
Memorial Visiting Professor

Javad Parvizi, MS, MD, FRCS

Javad Parvizi, MS, MD, FRCS, is James Edward Professor of Orthopedic Surgery at the Rothman Institute and Thomas Jefferson University in Philadelphia. He is director and vice chairman of research. His clinical practice involves reconstruction of complex pelvis, hip and knee conditions with special emphasis on joint preservation and periprosthetic joint infection. He has performed over 1,000 joint preservation and 5,000 joint anthroplasty procedures. He performs around 600 surgical procedures per year. He is a member of numerous national and international societies and has served in leadership roles in a large number of national committees. He chaired the workgroup of the MSIS workshop that proposed the MSIS definition of PJI in 2010 that has been adapted by the Center for Disease Control as the definition of PJI. He was the president of Musculoskeletal Infection Society in 2013 and as part of his presidential initiative held the International Consensus Group on periprosthetic joint infection that brought together over 300 world experts on PJI from 52 countries and 130 different societies. He is the associate editor for the Journal of Arthroplasty, and a member of various editorial boards for orthopaedic journals. He has received wide recognition for his clinical and basic science research including numerous awards from The Hip Society, The Knee Society, The American Association of Hip and Knee Surgeons, The MSIS and numerous other organizations. He was given the best researcher of the year award in 2011 by the Arthritis Foundation. He has authored over 550 peer-reviewed manuscripts, 120 book chapters, and is the editor of 16 text books in orthopaedics.
### Leadership and Teaching Awards

#### Resident Leadership Award

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
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<tbody>
<tr>
<td>2015–2016</td>
<td>Jason R. Somogyi, MD</td>
</tr>
<tr>
<td>2014–2015</td>
<td>Zachary W. Sisko, MD</td>
</tr>
<tr>
<td>2013–2014</td>
<td>Kevin D. Hardt, MD</td>
</tr>
<tr>
<td>2012–2013</td>
<td>James Cameron, MD</td>
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<tr>
<td>2011–2012</td>
<td>Kyle Hazelwood, MD</td>
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<tr>
<td>2010–2011</td>
<td>Robert Steffner, MD</td>
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<tr>
<td>2009–2010</td>
<td>Dharmesh Vyas, MD</td>
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<tr>
<td>2008–2009</td>
<td>Matthew Beal, MD</td>
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<tr>
<td>2007–2008</td>
<td>Andrew Trueblood, MD</td>
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<tr>
<td>2006–2007</td>
<td>Samer Attar, MD</td>
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<tr>
<td>2005–2006</td>
<td>Patrick Bolt, MD</td>
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<td>2004–2005</td>
<td>Torrey Botti, MD</td>
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<td>2003–2004</td>
<td>Timothy Havenhill, MD</td>
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<tr>
<td>2002–2003</td>
<td>Erling Ho, MD</td>
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#### Gerald S. Laros, MD Faculty Teaching Award

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<thead>
<tr>
<th>Year</th>
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<tbody>
<tr>
<td>2015–2016</td>
<td>Michael J. Lee, MD</td>
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<tr>
<td>2014–2015</td>
<td>Lewis Shi, MD</td>
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<tr>
<td>2013–2014</td>
<td>Daniel P. Mass, MD</td>
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<tr>
<td>2012–2013</td>
<td>Robert Bielski, MD</td>
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<tr>
<td>2011–2012</td>
<td>Roderick Birnie, MD</td>
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<td>2010–2011</td>
<td>Rex C. Haydon, MD, PhD</td>
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<tr>
<td>2009–2010</td>
<td>Hue H. Luu, MD</td>
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<tr>
<td>2008–2009</td>
<td>Robert Bielski, MD</td>
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<tr>
<td>2007–2008</td>
<td>David Manning, MD</td>
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<tr>
<td>2006–2007</td>
<td>Rex C. Haydon, MD, PhD</td>
</tr>
<tr>
<td>2005–2006</td>
<td>Daniel P. Mass, MD</td>
</tr>
<tr>
<td>2004–2005</td>
<td>Brian C. Toolan, MD</td>
</tr>
<tr>
<td>2003–2004</td>
<td>David Manning, MD</td>
</tr>
<tr>
<td>2002–2003</td>
<td>Christopher Sullivan, MD</td>
</tr>
<tr>
<td>2001–2002</td>
<td>Craig Phillips, MD</td>
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<tr>
<td>2000–2001</td>
<td>Brian C. Toolan, MD</td>
</tr>
<tr>
<td>1999–2000</td>
<td>Terrance Peabody, MD</td>
</tr>
<tr>
<td>1998–1999</td>
<td>Roderick Birnie, MD</td>
</tr>
<tr>
<td>1997–1998</td>
<td>John Martell, MD</td>
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<td></td>
<td>Frank Phillips, MD</td>
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### Graduating Residents

The University of Chicago Department of Orthopaedic Surgery and Rehabilitation Medicine would like to extend congratulations to our graduating residents.

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Fellowship Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harpreet Bawa, MD</td>
<td>UCLA/ Case Western Reserve University School of Medicine</td>
<td>Harpreet will be going to the Hospital for Special Surgery in New York, NY, for an Adult Reconstructive Surgery Fellowship under Mathias P. Bostrom, MD, Program Director.</td>
</tr>
<tr>
<td>Kyle Borque, MD</td>
<td>Texas A&amp;M University/Baylor College of Medicine</td>
<td>Kyle will be going to Massachusetts General Hospital in Boston, MA, for a Sports Medicine Fellowship under Luke S. Oh, MD, Program Director.</td>
</tr>
<tr>
<td>Anna Cohen-Rosenblum, MD</td>
<td>Harvard College/Albany Medical College</td>
<td>Anna will be going to University of Virginia in Charlottesville, VA, for an Adult Reconstruction Fellowship under Thomas E. Brown, MD, Program Director.</td>
</tr>
<tr>
<td>Pranay Patel, MD</td>
<td>Washington University in St. Louis/Southern Illinois University School of Medicine</td>
<td>Pranay will be going to University of Southern California in Los Angeles, CA, for a Spine Surgery Fellowship under Jeffrey C. Wang, MD, and John C. Liu, MD, Co-Program Directors.</td>
</tr>
<tr>
<td>Robert Stewart, MD</td>
<td>University of Washington/ Sidney Kimmel Medical College at Thomas Jefferson University</td>
<td>Rob will be going first to Kaiser Permanente in San Diego, CA, for a Sports Medicine Fellowship under Najeeb Khan, MD, Program Director. From there, Rob will go to Swedish Medical Center in Englewood, CO, for a Trauma Fellowship under Wade Smith, MD, Program Director.</td>
</tr>
</tbody>
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This year's AAOS Annual Meeting will be held in New Orleans, LA, March 6–10, 2018.
2017–2018
Orthopaedic Residency Program

Kenneth Chakour, MD
Srikanth Divi, MD
Patrick Leung, MD
Jonathan Twu, MD
Noelle Whyte, MD
Blake Burkert, MD
Ravand Khazai, MD
David Landy, MD, PhD
Michael Perrone, MD
Paul Shultz, MD
Robert Avino, MD
Daniel Curtis, MD
Jonathan Edgington, MD
Connor King, MD
William Mosenthal, MD
Jason Dickherber, MD
Manoj Reddy, MD
Bradley Saitta, MD
Bryan Scott, MD
J. Ben St. Clair, MD, PhD
Alexander Bradley, MD
Kiera Kingston, MD
Charles Qin, MD
Cameron Roth, MD
Thomas Utset-Ward, MD
Orthopaedic Research Endeavors

Our mission is to inspire colleagues to create new knowledge, to communicate knowledge through medical education and to provide superior and compassionate healthcare in a collegial atmosphere. Basic, clinical and translational research in orthopaedic science is an integrated part of our graduate medical education. Thus, in addition to the clinical and educational commitments, our faculty is actively involved in a broad range of research on bone and musculoskeletal diseases, which has been highlighted in the following areas.

The Orthopaedic Biomedical Imaging Institute

As the director of The Orthopaedic Biomedical Imaging Institute at Weiss Memorial Hospital in affiliation with the University of Chicago, Dr. John Martell continues to develop collaborations with implant manufacturers and individual investigators. Dr. Martell’s research has been funded by grants from The Harris Foundation, NIH/NIAMS, Smith & Nephew, Stryker, Biomet and Zimmer. The Orthopaedic Biomedical Imaging Institute is known nationally and internationally as a resource for the design and implementation of polyethylene wear studies and has been involved in the analysis of cross-linked polyethylene.

Dr. Martell accommodates requests from academic joint replacement programs to observe the techniques that are used in processing and analyzing films. The Orthopaedic Biomedical Imaging Institute has become a world-class resource for the analysis of polyethylene wear in total hip arthroplasty. The Institute has furthered its commitment to orthopaedic research by sponsoring the Geraldine Mary Maley Research Award, an annual research award for projects developed by faculty/residents in the Section of Orthopaedic Surgery and Rehabilitation Medicine at the University of Chicago or Weiss Memorial Hospital.

Dr. Martell has recently developed several important and innovative biomedical imaging tools. First, mechanical analysis software allows investigators to estimate the joint reaction force and stress in normal and prosthetic hips. Using the joint stress as a predictor variable in combination with patient activity indicators (speed of walking, UCLA score, or pedometer data), he has developed a multiple-logistic regression model that can identify patients with total hips that are at risk for high wear and osteolysis in the long term. This model is now 87% accurate and has no false negatives in a series of 300 hips with minimum eight-year follow-up.

Dr. Martell has partnered with Dr. Christian Heisel at Heidelberg University in Germany to investigate the biomechanics of ceramic total hip arthroplasty to identify factors leading to squeaking in ceramic total hip arthroplasty. As an extension of the mechanical analysis software, Dr. Martell developed pre-operative templating software which allows the surgeon to template pre-operatively using knowledge of the impact choices for keyboard, stress and wear performance of the implanted prosthetic hip joint. This work identifies reconstructive options that put the patient at risk for high wear, and assists the surgeon in choosing prosthetic position and designs to minimize this significant complication. Another modification of the mechanical analysis software allows the estimation of shear forces in the capitol femoral epiphysis that predispose to slipped capitol femoral epiphysis in children. These shear forces, in conjunction with the skeletal age of the pelvis, have a predictive value of 90% for the risk of slipped capitol femoral epiphysis.

Dr. Martell has partnered with the Argonne National Laboratories, and has received $20,000
through the BIASE initiative, to fund a pilot project to develop a visual-tactile feedback system for use in minimally invasive robotic surgery. Preliminary testing of this video processing image analysis system has shown the capability to detect real-time suture strain rates that are 100 times lower than the strain to failure. Work now continues on perfecting the video processing, including measuring strains in sutures from archived clinical videos.

**Tendon and Ligament Injury Repair**

Drs. Daniel Mass, Sherwin Ho, Lewis L. Shi, and Jovito Angeles, in collaboration with Dr. Tong-Chuan He, are investigating possible gene therapy approaches to enhancing tendon and ligament healing using recombinant adenoviral vectors expressing BMPs and/or other biological factors. They have demonstrated that BMP-13 can significantly improve the biomechanical properties of lacerated flexor tendons in a rabbit model while BMP-14 is also shown to significantly improve the biomechanical properties of lacerated flexor tendons in a rabbit model. Based on time-course studies of gene expression after tendon injury, they identified several factors that may work alongside BMP-13 and BMP-14 at different stages of tendon healing. Dr. Lewis L. Shi is also investigating biological factors that may improve the healing of rotator cuff injuries.

**Shoulder Research**

Dr. Lewis L. Shi is leading an active shoulder research program, with multiple clinical and translational projects. In collaboration with Dr. He, he is investigating biological factors that may improve the healing of rotator cuff injuries. He has an on-going IRB approved study examining patients undergoing shoulder arthroscopy, correlating the growth factors of the subacromial milieu to the condition and chronicity of cuff tears. The ultimate goal is to identify potential pharmacologic treatment to augment rotator cuff repairs in human patients.

Dr. Shi is leading several multi-centered shoulder clinical outcome studies. These are prospective randomized control trials studying the optimal methods of treatment for rotator cuff tears, biceps tendonitis, and labrum tears. He is also conducting several studies using the Marketscan, a national insurance claims database, to examine the patterns, complications, and the cost of shoulder surgery in the last decade.

Dr. Shi continues his collaborations with several prestigious orthopaedic hospitals in China. In this past year, he has co-authored several papers in *PLoS One* and *Genetic Testing and Molecular Biomarkers* on ankylosing spondylitis with investigators in 301 Military Hospital in Beijing. Additionally his work on vascularized fibula grafts with the Shanghai Sixth People’s Hospital has generated multiple podium presentations at international conferences and will be published soon.

**Foot and Ankle Research**

Dr. Brian Toolan has focused on several clinical projects related to foot and ankle disorders. In the past, he studied the effects of acquired flatfoot deformity on tibiotalar contact pressures in a cadaveric model, and performed a follow-up study on the effects of UCBL orthotics and surgical techniques on joint contact characteristics in the same model. Both of these studies were published in *Foot & Ankle International*. He recently published a retrospective study in *Foot & Ankle International* comparing lateral column lengthening to a medial calcaneal osteotomy in the treatment of adult acquired flatfoot. He is currently conducting a similar comparison in a prospective clinical study. Lastly, he is retrospectively evaluating the results of a new procedure for salvaging malunited ankle fractures with chronic syndesmotic disruption using a distal fibular arthrodesis and soft tissue reconstructions.

In addition to his interests on flatfoot deformity, Dr. Toolan is interested in developing a better understanding of the ruptured Achilles tendon healing process and potentially developing new means in treating patients with this injury. Achilles tendon ruptures are common injuries
and both surgical and non-surgical treatments have frequent complications, such as wound dehiscence and re-rupture. Therefore, Dr. Toolan, in collaboration with Dr. He, has used a rat model to investigate the effects of BMP-14 and other factors on Achilles tendon healing, finding a 70% increase in tensile strength at two weeks.

Articular Cartilage Regeneration and Anterior Cruciate Ligament Repair

The Sports Medicine Service, consisting of Drs. Sherwin Ho, Aravind Athiviraham and Leonardo Oliveira, has been intensively investigating the biological processes in articular cartilage regeneration, anterior cruciate ligament repair, and rotator cuff tear repair. Articular cartilage has little intrinsic capacity to repair itself after injury, prompting many researchers to explore new methods to facilitate and augment cartilage regeneration. Currently, a variety of approaches have been developed, including chondroplasty, osteochondral transfer procedures (autologous and allograft procedure), microfracture and autologous cultured chondrocyte implant (ACCI). Each of these techniques is useful when utilized in appropriate conditions, however, a significant cohort of patients still fail to achieve good to excellent results even when surgical, pharmacologic and physical therapy treatments are optimal by current standards. These clinical failures suggest that new biologic strategies, including gene therapy, may be a useful adjunct to current treatments to further improve clinical outcomes.

Drs. Sherwin Ho and Aravind Athiviraham are investigating the possible use of Sox9 and/or other biofactors to facilitate articular cartilage regeneration. Previously, Drs. He and Haydon successfully transduced intervertebral disc cells with Sox9, a transcription factor necessary for chondrogenesis and Type II collagen synthesis. They observed that human degenerative intervertebral disc cells transduced with Sox9 genes led to chondrocyte proliferation with increased production of Type II collagen (Spine 28: 755-763). Currently, Drs. Ho and Athiviraham are investigating whether exogenous expression of Sox9 in articular cartilage cells or in mesenchymal stem cells will augment articular cartilage repair in a rabbit model. This research has included experiments comparing different man-made scaffolds that can be used to implant these genetically altered cartilage cells back into the host knee defects (J Biomed Mater Res A. 2013, 101(12):3542-50). In addition, Drs. Ho and Athiviraham are investigating whether exogenous expression of Sox9 in articular cartilage cells or in mesenchymal stem cells will augment articular cartilage repair in a rabbit model. This research has included experiments comparing different man-made scaffolds that can be used to implant these genetically altered cartilage cells back into the host knee defects (J Biomed Mater Res A. 2013, 101(12):3542-50). In addition, Drs. Ho and Athiviraham are investigating whether exogenous expression of Sox9 in articular cartilage cells or in mesenchymal stem cells will augment articular cartilage repair in a rabbit model.

The Sports Medicine Service has developed a surgical skills laboratory for medical students, residents and fellows to develop their arthroscopic and minimally-invasive surgical skills using a state-of-the-art virtual reality arthroscopy simulator developed by the Spanish aerospace company, GMV based in Madrid, as well as with cadavers. Such virtual and simulated surgery represents important new educational tools for training medical students, residents and fellows. A study to quantitate the learning of these skills was presented at the Arthroscopy Association of North America’s annual meeting in San Francisco this year, as well as at the Mid-America Orthopaedic Society’s annual meeting in Marco Island, Florida and has been submitted for publication.

Dr. Reider is also engaged in an ongoing clinical prospective cohort study of possible links between knee proprioception in collegiate soccer and basketball players. Dr. Reider’s previous research has shown that athletes with ACL tears have abnormal proprioception of the knee that returns
Knowledge of the molecular aspects of bone and soft tissue tumors through collaborations with Drs. Michael A. Simon and Anthony Montag. They previously found that β-catenin signaling is activated in approximately 70% of human osteosarcoma samples, suggesting that deregulation of β-catenin may play a role in the development of human osteosarcoma. They examined the expression of the S100A6 in human osteosarcoma, and found that approximately 84% of the analyzed osteosarcoma specimens stained positive for S100A6. Thus, their findings suggest that S100A6 may be associated with the pathogenesis of osteosarcoma (International Journal of Cancer 102:338-342; Clin Orthop Relat Res 466: 2060-2070, and Cancer Letters 229: 135-148). More recently, Drs. Haydon, Luu and He found that, while in mesenchymal stem cells BMP-2 and BMP-9 induce osteogenic differentiation, osteosarcoma cells are refractory to BMP-induced bone formation with increased cell proliferation, suggesting that blocks to normal BMP-induced differentiation must exist. Downstream targets of the osteogenic BMPs include several key inhibitors of differentiation that are commonly expressed in human tumors. They hypothesize that osteosarcoma may represent a “disease of differentiation”, possibly caused by the defects in the terminal differentiation pathway of pre-osteoblast and/or osteoblasts (Laboratory Investigation 88:1264-1277; Clinical Orthopaedics and Related Research 466: 2114–2130; Clinical Orthopaedics and Related Research 454: 237-246; Clinical Cancer Research 16: 2235–2245, Clinical Cancer Research 8: 1288-1294). They are attempting to reconstruct osteosarcoma-like cells from mesenchymal stem cells by disrupting the differentiation pathway and enhancing proliferation activity of the progenitors. Consistent with “disease of differentiation” model, generic differentiation agents, such as PPARγ agonists and retinoic acids were shown to promote osteogenic differentiation and inhibit osteosarcoma tumor growth (Clinical Cancer Research 16: 2235–2245; PPAR Research 2010: 956427; PLoS ONE 5: e11917).

Drs. He, Haydon and Luu developed a novel orthotopic tumor model for osteosarcoma progression and pulmonary metastasis (Clin Exp Metastasis 22: 319-329). This model highlights different stages of primary bone tumor progression and the eventual development of pulmonary metastasis. They are currently using this model to investigate several genes for their role in controlling bone tumorogenesis and metastasis. Meanwhile, they have conducted gene profiling analysis of gene expression patterns between non-metastatic and highly metastatic osteosarcoma cells, and have identified several promising candidate genes associated with pulmonary metastasis of osteosarcoma. Further functional characterization of these target genes is currently ongoing (Clinical & Experimental Metastasis 26:599–610). They have recently reported that IGFBP5 suppresses tumor growth and metastasis of human osteosarcoma (Oncogene 30:3907-17).

Effects of natural products and herbal extracts on cancer cells and stem cell differentiation: As natural products and herbs represent a great deal of resources for drug discovery, we have collaborated with Dr. Chun-Su Yuan of the Tang Center for Herbal Medicine Research and investigated the effect of several herbal products, such as Berberine and ginseng extracts, on cancer growth and proliferation, as well as on stem cell differentiation. Dr. He was one of the PIs on a P01 grant from the NIH to study the role of herbal products in cancer (International Journal of Oncology 32: 975-983; Oncol Rep 22: 943-952; Biol Pharm Bull 32: 1552-1558; Cancer Lett 289: 62-70; Mol Pharmacol 79(2):211-9).

Molecular Basis of Bone Formation

Identification of BMP-9 as the most osteogenic BMP. Although several BMPs (mostly BMP-2 and BMP-7) have been shown to induce bone formation, it is unclear whether the ones currently used represent the most osteogenic BMPs. Through a comprehensive analysis of the 14 types of human BMPs, the He, Haydon, and Luu lab previously demonstrated that BMP-2, BMP-6, and BMP-9 are the most potent osteogenic BMPs in osteoblastic progenitor cells in vitro, which was published in the Journal of Bone and Joint Surgery with over 900 citations so far. They have concluded several rounds of in vivo studies and found that BMP-2, BMP-6 and BMP-9 are the most potent osteogenic BMPs at inducing orthotopic bone formation in athymic mice (Gene Therapy 11: 1312-1320; J Orthop Res 25: 665-677; and Front Biosci 13: 2001-2021). Interestingly, they have also found that...
osteoogenic BMPs can induce adipogenic differentiation of mesenchymal stem cells (Stem Cells and Development 18: 545-559). They have demonstrated that TGFbeta/BMP type I receptors ALK1 and ALK2 are essential for BMP-9-induced osteogenic signaling in mesenchymal stem cells (J Biol Chem 285(38): 29588-98).

To identify potentially important mediators of BMP-induced osteogenic signaling, Drs. He, Haydon and Luu determined the transcriptional differences between three osteogenic BMPs (i.e., BMP2, 6, and 9) and two inhibitory/non-osteogenic BMPs (i.e., BMP3 and 12). Through the microarray analysis in pre-osteoblast progenitor cells, they found that expression level of 203 genes (105 up-regulated and 98 down-regulated) was altered >2-fold upon osteogenic BMP stimulation (Journal of Cellular Biochemistry 90: 1149-1165). Several such downstream targets are the inhibitors of DNA binding/differentiation helix-loop-helix (a.k.a., Id proteins), connective tissue growth factor (a.k.a., CTGF), Hey1, and growth hormone that play an important role in BMP-9 induced osteogenic signaling (Journal of Biological Chemistry 279: 32941-32949; Journal of Biological Chemistry 279: 55958-55968; Journal of Biological Chemistry 284: 649-659; and J Bone Miner Res. 2012, 27(7):1566-75).

Role of Wnt/β-catenin signaling in osteogenic differentiation of mesenchymal stem cells: The He, Haydon and Luu group previously demonstrated that Wnt/beta-catenin signaling is de-regulated in over 70% of human osteosarcomas. They demonstrated that normal Wnt/β-catenin signaling is required for BMP9 signaling in MSCs (Journal of Cellular and Molecular Medicine 13:2448-2464).

They have completed a microarray analysis on the genes regulated by Wnt3A in mesenchymal stem cells, and found that CTGF is also highly regulated by Wnt. They have recently finished a study, in which they demonstrate that CTGF is a mutual target of Wnt and BMP-9 and plays an important role in regulating osteogenic differentiation (Journal of Biological Chemistry 279: 55958-55968; Molecular and Cellular Biology 26: 2955–2964). Furthermore, Drs. He, Haydon and Luu have recently investigated the potential synergistic effect of other factors on BMP9-mediated osteogenic differentiation and bone formation. Such factors include retinoid receptors and IGFs (PLoS ONE 5: e11917 and Journal of Bone and Mineral Research 25:2447-59).
Orthopaedic advanced practice nurses at the University of Chicago Medicine Bone Health Clinic work to enhance patient care following osteoporosis-related fragility fractures. The goal of the program is to identify, evaluate and treat individuals from our current orthopaedic patients as well as other UCM medical services who suffer from osteoporosis or low-bone-density-related fractures. The advance practice nurses in the clinic provide fracture risk assessments, order and interpret diagnostic and laboratory testing, and provide innovative treatment options with the goal of promoting bone health and preventing future re-fractures.

**Advanced Practice Nurses**

Orthopaedic advanced practice nurses at the University of Chicago Medicine Bone Health Clinic work to enhance patient care following osteoporosis-related fragility fractures. The goal of the program is to identify, evaluate and treat individuals from our current orthopaedic patients as well as other UCM medical services who suffer from osteoporosis or low-bone-density-related fractures. The advance practice nurses in the clinic provide fracture risk assessments, order and interpret diagnostic and laboratory testing, and provide innovative treatment options with the goal of promoting bone health and preventing future re-fractures.

**Emilee Haupricht, ANP**
Advanced Nurse Practitioner
Specialty: General orthopaedic care (non-surgical)

Emilee Haupricht is an advanced nurse practitioner in the Department of Orthopaedic Surgery and Rehabilitation Medicine. She received her bachelor’s degree in communication at Miami University in Oxford, Ohio. She received both her masters in nursing and her family nurse practitioner degree from The University of Toledo in Toledo, Ohio. She is board-certified by the American Academy of Nurse Practitioners.

**Lauren Creighton, ANP**
Advanced Nurse Practitioner
Specialty: General orthopaedic care (non-surgical)

Lauren Creighton is an advanced nurse practitioner in the Department of Orthopaedic Surgery and Rehabilitation Medicine. She received her bachelor’s degree in microbiology from Miami University in Oxford, Ohio, and her master’s degree in nursing from Case Western Reserve University in Cleveland. She is board-certified by the American Academy of Nurse Practitioners.

**Kimberly Martin, ANP**
Advanced Nurse Practitioner
Specialty: General orthopaedic care (non-surgical)

Kimberly Martin is an advanced nurse practitioner in the Department of Orthopaedic Surgery and Rehabilitation Medicine. She has worked for UCM for eight years. She received her bachelor’s degree in nursing from Bradley University in Peoria, IL, master’s degree in nursing from North Park University in Chicago, IL and doctorate in nursing from the University of St. Francis in Joliet, IL. She is board-certified by the American Academy of Nurse Practitioners.

**Svetlana Bielecki, ANP**
Advanced Nurse Practitioner
Specialty: General orthopaedic care (non-surgical)

Svetlana “Lana” Bielecki is an advanced nurse practitioner in the Department of Orthopaedic Surgery and Rehabilitation Medicine. She received her master’s degree in biology and chemistry in Ukraine, and her bachelor’s degree and master’s degree in nursing from North Park University in Chicago. She is board-certified by the American Academy of Nurse Practitioners.
Clinical care providers at the University of Chicago Medicine Bone Health Clinic work to identify, evaluate and treat patients with osteoporosis or low-bone-density-related fractures. They provide education and innovative treatment options to reduce the risk of additional fractures. Bone Health Clinic services include:

- Fracture risk assessments
- Bone density scans, called dual-energy x-ray absorptiometry (DEXA)
- Patient-specific treatment plans to promote bone health and reduce fracture risks
- Blood work testing

The goal of the Bone Health Clinic is to identify, evaluate and treat high risk individuals from our current orthopaedic patients as well as from other UCM medical services in an effort to prevent these patients from sustaining a second fracture.

- Two million people over the age of 50 suffer osteoporosis-related fractures each year—three times the combined cases of heart attacks, strokes and breast cancer
- Less than 20% of these people receive proper evaluation and treatment for their low bone density
- Fragility fractures due to osteoporosis cost about $19 billion a year in direct care alone
- About 50% of women over 50 will experience a fragility fracture
- Once a woman has a first break/fracture, she is 200% more likely to suffer a second one

Within the past year as a group:

- APNs have expanded their APN-run clinics to the South Loop and Orland Park locations to see general orthopaedic patients, joint injections and bone health evaluations
- Emilee Haupricht, APN, is performing ultrasound-guided hip injections

Lauren Creighton, APN, has been collaborating with Dr. Hynes and a multidisciplinary team to design and implement a new pathway and set of protocols for our hip fracture patients that will be rolled out hospital-wide by the end of the year. She assisted in developing the order sets, general work flow pathway, and developed the patient education booklet that will be offered to these patients.

Emilee Haupricht, APN, has been doing ultrasound-guided hip and knee injections for the past 18 months as a treatment of labral tears and osteoarthritis of the hip and knee. This practice is a specialty clinic.
Bone Infection Program

The Bone Infection Program at the University of Chicago Medicine is setting a new standard of care for patients with osteomyelitis, which is an inflammation or swelling of bone tissue. Osteomyelitis is most often caused by an infection, can occur in both children and adults, and usually affects the femur, radius or spine. Our team, consisting of Douglas Dirschl, MD; Rex Haydon, MD; Emily Landon, MD; and Stephen Weber, MD; is made up of skilled, experienced, orthopaedic specialists who are trained in the special challenges bone infections can present.

Symptoms of osteomyelitis can include a new or worsening limp, a stiff back (if the spine is affected), a fever, previously diagnosed blood infection, redness, pain, warmth, swelling and trouble bearing weight. Diagnosis and treatment of osteomyelitis can be complex and often requires the expertise of both orthopaedic and infectious disease specialists. Our Bone Infection Program brings together experts in these two specialties to provide comprehensive care in a single setting.

At the University of Chicago Medicine, a multidisciplinary team of physicians, scientists and care providers use the latest advances in osteomyelitis care for evaluation, assessment and treatment of multiple bone infection types, including infected fractures, infections around or involving orthopaedic implants, infections of original (native) and prosthetic joints and chronic infections of bones.

We offer both non-operative and operative solutions for bone infections, including medication (including infusion therapy), draining the infected area, debridement (removing the diseased bone and tissue), restoration of blood flow to the bone, removal of foreign objects (plates or screws from previous surgeries), limb salvage, limb reconstruction, bone grafting, limb lengthening, bone transplant and even amputation when necessary.
Angeles, Jovito G.


Athiviraham, Aravind


Balach, Tessa


Benjamin, Holly J.


In submission, acknowledged for research contribution: "Impact of contemporary approaches to concussion management on return to play and risk of repetitive concussion in collegiate football players: Comparative analysis from the NCAA Concussion Study (1999-2001) and CARE Consortium (2014-2016)."

Bielski, Robert J.


Conti Mica, Megan Anne


Wagner E, Conti Mica MA, Shin A. Smartphone photography utilized to measure wrist range of motion. JSH(E) 2017 Aug; 0(0):1-6.


Dirschl, Doug


Finn, Henry


He, Tong-Chuan


Jing Wang, Junyi Liao, Fugui Zhang, Dongzhe Song, Minpeng Lu, Jianxiang Liu, Qiang Wei, Shengli Tang, Hao Liu, Jiaming Fan, Yulong Zou, Dan Guo, Jiayi Huang, Feng Liu, Chao Ma, Xue Hu, Li Li, Xiangyang Qu, Liqun Chen, Yaguang Weng, Michael J. Lee, Russell R. Reid, Tong-Chuan He* and Jiye Zhang* (2017) NEL-Like Molecule-1 (Nell1) Is Regulated by Bone Morphogenetic Protein 9 (BMP9) and Potentiates BMP9-Induced Osteogenic Differentiation at the Expense of Adipogenesis in Mesenchymal Stem Cells. Cellular Physiology and Biochemistry 41(2):484-500. PMID: 28214873. DOI: 10.1159/000456885. (* Corresponding authors).


Jiaming Fan*, Qiang Wei*, Junyi Liao, Yulong Zou, Dongzhe Song, Dongmei Xiong, Chao Ma, Xue Hu, Xiangyang Qu, Liqun Chen, Li Li, Yichun Yu, Xin Yi, Zhicaiz Zhang, Chen Zhao, Zongyue Zeng, Ruyi Zhang, Shujuan Yan, Tingting Wu, Xingye Wu, Yi Shu, Jiayan Lei, Yasha Li, Wenwen Zhang, Rex C. Hayden, Hue H. Luu, Ailong Huang, Tong-Chuan He, and Hua Tang# (2017) Noncanonical Wnt signaling plays an important role in modulating canonical Wnt-regulated stemness, proliferation and terminal differentiation of hepatic progenitors. Oncotarget 8(16):27105-27119. doi: 10.18632/oncotarget.15637. PMID: 28404920. (* these authors contributed equally to the reported work).


Hynes, Kelly K.

Lee, Michael J.


Luu, Hue H.


Mass, Daniel P.

Mok, James M.


Oliveira, Leonardo Protasio Jorge De


Townsend JR, Stout JR, Jajtner AR, Church DD, Beyer KS, Oliveira LP, La Monica MB, Riffe JJ, Muddle TW, Baker KM, Fukuda DH, Roberts MD, Hoffman JR. Resistance Exercise Increases Intramuscular NF-kb Signaling In


**Lewis L. Shi, M.D.**


**Toolan, Brian C.**


**Wolf, Jennifer Moriatis**


2017 Presentations

Angeles, Jovito G.
Normal Wound Healing, Lecture, Doctors Demystify, University of Chicago Medical Center
Common Upper Extremity Fractures, Lecture, 22nd Annual Primary Care Orthopaedics Course, Chicago, IL
Upper Extremity Fractures in Adults, Lecture, 38th Annual Clinical Conference, Philippine Minnesotan Medical Association, Wisconsin Dells, WI
Intraoperative stimulation with handheld device to improve nerve recovery. Lecture, Nerve Repair Workshop sponsored by Checkpoint Surgical, Waikoloa, HI
Angeles JG, Jiang JJ, Twu J, Improving nerve recovery after repair or decompression through brief intraoperative nerve stimulation. ePoster, Annual Meeting of the American Society for Peripheral Nerve, Jan 2017, Hawaii, USA

Athiviraham, Aravind
Early Rates of Revision of Knee Cartilage Restoration Surgery and Conversion to Arthroplasty within Five Years.


Balach, Tessa
Northwestern University – Department of Orthopaedic Surgery Grand Rounds Management of Metastatic Bone Disease: An Update on Current Techniques. April 2017

Benjamin, Cheryl

Benjamin, Holly
University of Chicago Pediatrics Research Day, June 8th, 2017, Collaborator on poster presentations:

“Improving Concussion Identification in the Pediatric Emergency Department.” Presented by Natalie Yapo, MD. Authors: Yapo N. Benjamin H.J. Hageman J. McKee M
Primary Care Orthopaedics Course, Chicago, IL, “Pedicatric Sports Injuries,” June 8th, 2017
Primary Care Orthopaedics Course, Chicago, IL, “Knee Exam” (Workshop Leader), June 8th, 2017
NATA Youth Sports Safety Summit. November, 2017
Preventing Pediatric Overuse Injuries. Indianapolis, IN
Athletico University “Overhead Sports Injuries,” Feb. 6”, 2017 Hyde Park and also in Naperville on September, 2016
“The Female Athlete Triad,” April 2017, Orthopedic Sports Medicine Conference, University of Chicago
Moderator, Eye Opening Clinical Cases – AMSSM Annual Meeting, San Diego, CA, May 12, 2017
“PAS: Getting the Most Out of the PPE” With Lainie Ross
and Christina Master, Pediatric Academic Society Annual Meeting, May 2017, San Francisco, CA

The AMSSM Showcase talk “Got your ZZZ’s? The Role of Sleep in Performance, Injuries and Mental Health in Pediatric Athletes. Showcase talk in Denver, 2017, AMSSM Annual Meeting

Conti Mica, Megan Anne


Meislin M, Moran S. Long-Term Outcome after Treatment of Pediatric Lipofibromatous Hamartoma of the Median Nerve at the Wrist. ASPN Annual Meeting; 2016. Scottsdale, Arizona (Podium)

Conti Mica MA, Bindra R, Moran S. Anatomic Considerations when Performing the Modified Henry Approach for Exposure of Distal Radius Fractures AOA Annual Meeting, 2017 (E-Poster)

Conti Mica MA. Acute Boutonniere Deformity: Pre-Course Symposium, ASSH Annual Meeting 2017. San Francisco, California (Podium)


Twu J, Patel N, Conti Mica MA. Effects of Multiple Corticosteroid Injections on Blood Glucose in Diabetic Patient. ASSH Annual Meeting; 2017. San Francisco, California (E-Poster)


San Francisco, California, (E-Poster)


Dirschl, Doug

June 2017, Invited speaker at the Osteosynthesis and Trauma Care Annual Meeting in Verona, Italy

January 2017, FOT Annual Meeting in Las Vegas

June 2016, American Orthopedic Association "Own the Bone" Annual Symposium Seattle, WA


May 2017, National Association of Orthopaedic Nurses Annual Meeting in San Juan, PR

June 2017, American Orthopedic Association "Own the Bone" Annual Symposium in Charlotte, NC

He, Tong-Chuan

“How to make tumors of bone: when stem cell differentiation goes awry”, The University of Chicago Comprehensive Cancer Center Translational Research Seminars, Chicago, IL, USA, April 8, 2016

“Current understanding of osteosarcoma”, Shandong Provincial Hospital Affiliated with Shandong University School of Medicine, Jinan, China, May 13, 2016

“Toolkits for stem cell biologists”, the Cardiovascular Sciences Training Program, Department of Medicine Section of Cardiology, The University of Chicago Medical Center, Chicago, IL, USA, May 27, 2016

“From Bone Biology to Bone Tumorigenesis”, OREF Board of Trustee Annual Meeting, Orthopaedic Research and Education Foundation, Rosemont, IL, USA, June 3, 2016

“Noncoding RNAs, Stem Cell Differentiation, and Bone Tumorigenesis”, 2016 International Symposium on Health and Development, hosted by the Children’s Hospital of Chongqing Medical University, Chongqing, China, July 2, 2016

“Missing links between stem cell differentiation and tumorigenesis” Department of Biomedical Sciences, the City University of Hong Kong, Hong Kong, China, September 29, 2016

“Ginseng metabolites and gut microbiome”, the Fifth International Conference on Modernization of Traditional Chinese Medicine, Chengdu, China, October 24, 2016

“Organoids: What can we do with them?”, The University of Chicago GI Research Conference, Chicago, IL, USA, January 12, 2017

"Wnt Signaling in Mensenchymal Stem Cells", the 2017 American Society for Investigative Pathology Annual Meeting at Experimental Biology, Chicago, IL, USA, Tuesday, April 25, 2017

“Missing links between stem cells and cancers”, the 2017 Annual Meeting for Society of Black Academic Surgeons, Chicago, IL, USA, Friday, April 28, 2017

“BMP9 Signaling in Mesenchymal Stem Cells: at the Crossroad of Cancer Biology and Regenerative Medicine”, the School of Life Science, Southwest University, Chongqing, Chian, May 15, 2017

“Missing links between stem cells and cancers”, the 2017 Annual Meeting for Society of Black Academic Surgeons, Chicago, IL, USA, Friday, April 28, 2017

“CRISPR/Cas9 and Genome Editing: Opportunities and Challenges”, the 2017 Annual Meeting for the Chinese Society of Translational Research in Cardiovascular Diseases, Chongqing, China, June 23-24, 2017

“Missing Incs between Stem Cell Differentiation and Tumorigenesis”, Department of Toxicology & Cancer Biology, The Markey Cancer Center, University of Kentucky College of Medicine, Lexington, KY, October 30, 2017
“Lncs between stem cell differentiation and pediatric tumorigenesis”, The 13th Annual National Pediatric Tumor Conference, November 2-5, 2017, Chongqing, China

Ho, Sherwin S. W.
22nd Annual Primary Care Orthopaedics, Course Director. “Common Adult Sports Shoulder Injuries,” June 7-9, 2016

Hynes, Kelly K.
Medical Student Summer Lecture Series - June 2017, The University of Chicago Medicine, Chicago, IL. Presented ‘Management of Ankle Fractures’ to 3rd year medical students
Athletico University Running Symposium - March 2017, Orland Park, IL. Presented ‘Running Biomechanics’ to area Physical Therapists
Medical Student Winter Lecture Series - February 2017, The University of Chicago Medicine, Chicago, IL. Presented ‘Orthopaedic Emergencies’ to 3rd year medical students
University of Chicago Orthopaedic Surgery Grand Rounds - November 2016, The University of Chicago Medicine, Chicago, IL. Presented ‘The Canadian Health Care System’
West Suburban Medical Center Grand Rounds - October 2016, Oak Park, IL. Presented ‘Management of Ankle Arthritis’ to general internists and family physicians
University of British Columbia Orthopaedic Surgery Grand Rounds- April 2016, Vancouver, BC, Canada. Presented ‘Dealing with the Consequences of Failed Hallux Valgus Surgery’ to Orthopaedic Surgeons throughout the Province of British Columbia

Lawler, Mary H.
Rehabilitation after Lower Limb Amputation, Vascular Interdisciplinary Conference, July 6, 2017

Luu, Hue H.
ATI Physical Therapy Continuing Education Conference: Robotic arm assisted THA, PKA, and TKA, Bolingbrook, IL, 10/2017
Chicago Trauma Symposium: The art of balancing a TKA, Chicago, IL, 7/2017
Primary Care Orthopaedics Course: Management of degenerative arthritis of the hip, Chicago, IL, 6/2017

Mok, James M.
Adult Lumbar Spine Lecture, 22nd Annual Primary Care Orthopaedics, Chicago, Illinois, June 7-9, 2016

Moriatis Wolf, Jennifer
Ulnar Collateral and Radial Collateral Ligament Repair and Reconstruction. AAOS Complex Wrist and Hand Trauma Course, April 15, 2016, Rosemont, Illinois
Radial Tunnel Syndrome. AAOS Complex Wrist and Hand Trauma Course, April 15, 2016, Rosemont, Illinois
Research in Thumb CMC Osteoarthritis. Brown University Grand Rounds, March 20, 2016, Providence, Rhode Island
Thumb CMC Osteoarthritis: Epidemiology, Hormones, and Laxity. Boston University Grand Rounds, November 23, 2016, Boston, Massachusetts
Orthopaedic Residency in the United States. Kristianstad Department of Orthopaedics Lecture, December 12, 2016, Kristianstad, Sweden
Upper Extremity Injuries in Gymnastics. All Alaska Orthopaedic Conference, April 8, 2017, Anchorage, Alaska
Tennis Elbow: Perspectives in the 21st Century on Etiology
and Treatment. All Alaska Orthopaedic Conference, April 8, 2017, Anchorage, Alaska
Basilar Thumb Joint Arthritis: Conservative and Operative Treatment Options. All Alaska Orthopaedic Conference, April 8, 2017, Anchorage, Alaska
Rohde RS, Wolf JM, Adams JE. Where are the Women in Orthopaedic Surgery? American Academy of Orthopaedic Surgeons Annual Meeting, March 2-4, 2016 (poster)
Oliveira, Leonardo Protasio Jorge De
American Medical Society for Sports Medicine 2017, Annual Meeting, Showcase Talk Myth or Fact: Fish Oil Facilitates Concussion Recovery, 5/2017
American College of Sports Medicine 2017 Annual Meeting, (Denver, CO) Comparison Of High And Low 25(OH)-Vitamin D Concentrations On Recovery From Resistance Exercise In Men
Lecture: Traumatic Brain Injuries / Concussions – June 7th, 2017
Lecture: Tendon Injuries and Musculoskeletal Ultrasound – June 7th, 2017
University of Chicago Cubicle to 5K Program Common Running Injuries, 5/2017
Athletico University Common Running Injuries, 3/2017
University of Chicago Medicine - Total Health Challenge Staying Physically Active In The Midst of Life Demands, 2/2017
12th Annual Cutting-Edge Concepts in Orthopaedics and Sports Medicine Common Running Injuries, 2/1016
American College of Sports Medicine 2017 Annual Meeting Discussant – Foot Injuries in Sports Medicine, 6/2017
American Medical Society 2017 Annual Meeting Panelist– Podium Research Presentations, 5/2017
Reider, Bruce
A Look into the Future of Our Profession; Asia-Pacific Knee, Arthroscopy, and Sports Medicine Society (APKASS) and 13th International Forum of Orthopaedic Sports Medicine and Arthroscopic Surgery (IFOSMA); Hong Kong; June 10, 2016
How to Publish in a High Impact Journal; Spanish Society for Traumatology and Orthopaedic Surgery (SECOT); La Coruna Spain; September 30, 2016
ACL Reconstruction à la Carte; Spanish Society for Traumatology and Orthopaedic Surgery (SECOT); La Coruna Spain; September 30, 2016
Traduction de la littérature scientifique en pratique quotidienne; Societe Francophone d’Arthroscopie (SFA); Paris, France; December 1, 2016
Open Access Publishing in Sports Medicine; Danish SportsKongres; Copenhagen, Denmark, February 3, 2017
Reading the Literature to Change Your Clinical Practice; The VK Pillay Lecture; National University of Singapore; Singapore; April 11, 2017
Getting Your Research Published, National University of Singapore; Singapore; April 11, 2017
Rotator Cuff Tears: Controversies and Conundrums; National University of Singapore; Singapore; April 12, 2017
ACL a la Carte; National University of Singapore; Singapore; April 13, 2017
Reading the Literature to Change Your Clinical Practice; Hughston Society; Hughston Foundation; Columbus Georgia, April 21, 2017
How to Embed Scientific Research in Your Daily Practice (Symposium); The Future of Football Medicine; Barcelona, Spain; May 13, 2017
Shi, Lewis L.
Stewart RJ, Borque KA, Ek ET, Koh JL, Shi LL. Muscle Changes Following Rotator Pathology – Implications for Treatment. Scientific Exhibit. AAOS Annual meeting. Orlando, FL. March 2016
Khazai R, Boyajian H, Shi LL, Athiviraham A. Early Rates of Revision of Knee Cartilage Restoration Surgery and Conversion to Arthroplasty within Five Years. AOSSM 2017 annual meeting
“History of Shoulder Arthroplasty”, Taipei Medical University Hospital, Taipei, Taiwan 1/27/16
“Reverse Shoulder Arthroplasty: Expanding Indications and Complications”, Taipei Medical University Hospital,
Taipei, Taiwan 1/27/16
University of Chicago Primary Care Orthopaedic Course. Lecture. “Adult shoulder injuries.” 6/9/16
University of Chicago Primary Care Orthopaedic Course. Lecture. “Adult shoulder injuries.” 6/8/17

Toolan, Brian C.
Plenary Lecture, The Evaluation and Management of Injuries to the Syndesmosis. 2016, 41st Annual Meeting of the Japanese Society for Surgery of the Foot, Nara, Japan
Plenary Lecture, The Relationship between Hypermobility of the First Ray and Hallux Valgus, 2016, The 6th Scientific Meeting of Asian Federation of Foot and Ankle Surgeons, Nara, Japan
Invited Speaker, “Midfoot Tendon Transfer,” AAOS/AOFAS Prevalent Procedures in Foot and Ankle Trauma and Reconstruction Course, AAOS Orthopaedic Education & Conference Center, 2017, Rosemont, IL
Invited Speaker, “Morton’s Neuroma,” AAOS/AOFAS Prevalent Procedures in Foot and Ankle Trauma and Reconstruction Course, AAOS Orthopaedic Education & Conference Center, 2017, Rosemont, IL
Invited Speaker, Concurrent Session: “Ask the Expert,” AOFAS Annual Meeting 2017, Seattle, WA
Primary care, urgent care and emergency room physicians, as well as other healthcare providers, are often on the front line in the initial care and management of orthopaedic problems. This course is intended to enhance the attendees’ knowledge base regarding common orthopaedic problems and increase their confidence in managing these issues. This 23rd annual course provided a complete review of basic principles of orthopaedic care. Particular attention was paid to the diagnosis and initial management of the orthopaedic problems most commonly seen by the primary caregiver. Formal question and answer periods followed each session, paneled by the faculty. We featured daily “Spotlight Lectures” on hot topics related to orthopaedic issues and updates.

This conference provides physical therapists, occupational therapists and athletic trainers with evidence-based rationale for assessment and treatment techniques for various musculoskeletal conditions. Through didactic presentations, videos, case study discussions, and hands-on demonstrations, attendees expand their skills, and learn to incorporate new treatment skills into existing expertise. In addition, The University of Chicago is recognized by the Board of Certification, Inc. to offer continuing education for Certified Athletic Trainers.

Optional afternoon workshops cover those parts of the orthopaedic physical examination relevant to the morning lectures. As in previous years, hands-on workshops cover joint and bursa injections. We also conduct a workshop devoted to reading x-rays and MRIs.

**General sessions cover many different orthopaedic topics, including learning how to:**

- Describe and diagnose common patient problems in the following orthopaedic areas: trauma, spine, foot and ankle, pediatrics, sports medicine, upper extremity and adult hip and knee
- Identify which patient issues need to be referred to an orthopaedist and which are best treated by a primary caregiver
- Explain how to safely manage those orthopaedic problems that are appropriately treated by a primary caregiver
- Name key elements of the orthopaedic physical examination
- State the most appropriate imaging modalities of common orthopaedic problems
- Analyze how a team approach to interdisciplinary care of orthopaedic problems can improve patient care
- Develop strategies to efficiently maximize the value of orthopaedic services through an interdisciplinary, team-based approach to patient care

In several elective workshops, participants learn to:

- Demonstrate how to conduct a physical exam of the hand, wrist, shoulder, spine, hip, knee, ankle and foot
- Interpret orthopaedic x-rays and MRIs to diagnosis orthopaedic problems in patients
- Identify techniques to properly administer common, as well as less common, musculoskeletal injections