

Massachusetts General Hospital

---

# Hand and Upper Extremity Fellowship





---

# Introduction

---

## Welcome

The Massachusetts General Hospital Hand and Upper Extremity Fellowship is a foundational, immersive, and transformative training program to produce the next generation of leaders in Hand Surgery



# Welcome

Thank you for your interest in the MGH Hand and Upper Extremity fellowship. We are excited to share with you our dynamic program and its many different facets.

We are looking for enthusiastic fellows with a passion for learning and a similar dedication to caring for patients.

I think fondly on my time as an MGH Hand Fellow. It was the most important and impactful year of my training. It laid the foundation for my surgical philosophy, but also gave me the practical education that guides me day to day.

We hope this overview will be helpful as you explore the many wonderful fellowships in Hand Surgery, and we hope to meet you during the interview season.

Sincerely,

Neal Chen, Fellowship Program Director



---

# History

The MGH Hand Fellowship arose from the merger of the Orthopedic and Plastic Hand Fellowships of Drs. Richard Smith and James May Jr.

**Dr. Richard Smith** was one of the great educators in the early days of hand surgery. He was renowned for his teaching, especially his masterful descriptions of the intrinsic muscles of the hand and tendon transfers.

**Dr. James May Jr.** was one of the pioneers in toe to thumb transplantation. He also performed the world's first hand transfer, penile replantation, and free muscle transfer for leg reconstruction.

The two fellowships have always had a tremendous history of collaboration, and this partnership was formalized when the two fellowships merged in 2007. From this combination of two hand surgery traditions arose a richness of philosophy and experience that we seek to pass on to our graduates.



---

# History

Hand Surgery evolved substantially with innovations driven by Drs. Jesse Jupiter, David Ring, WP Andrew Lee, and Richard Gelberman.

In the 1980s, the Orthopedic Hand Service was led by **Dr. Richard Gelberman**. His scientific work has greatly improved our understanding of tendon rehabilitation and healing. After he left to lead the Orthopedic Department at Washington University, **Dr. Jesse Jupiter** assumed leadership of the Orthopaedic Hand Service for two decades.

Initially considered iconoclastic, **Dr. Jupiter** has advanced our understanding of concepts throughout orthopedic surgery, including elbow trauma, the treatment of non-unions and malunions, and complex wrist trauma.. He also was a key contributor to the development of many orthopedic implant designs of today.

His protege **David Ring, MD PhD** also recognized crucial concepts in upper extremity trauma. But also just as important, he influenced orthopedic surgery in understanding how psychosocial factors influence our interpretation of outcomes and the practice of medicine. **Dr. Ring** is currently Associate Dean at the Dell Medical Center at the University of Texas, Austin.

During this time, **Dr. WP Andrew Lee** assumed the role of Chief of the Plastic Hand Service and the Director of the Plastic Surgery Research Laboratory where he laid the groundwork for the current work in composite tissue allotransplantation. **Dr. Lee** is currently Dean of the University of Texas, Southwestern Medical School.





# Today at MGH



Massachusetts General Hospital is a 1000 bed Level 1 Trauma Center and two ambulatory centers

We serve all of the communities of Boston and the greater metropolitan area, as well as much of New England. We also treat the highest level trauma, referred from a seven state catchment of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and Upstate New York. In addition, we receive referrals and treat patients from around the world.

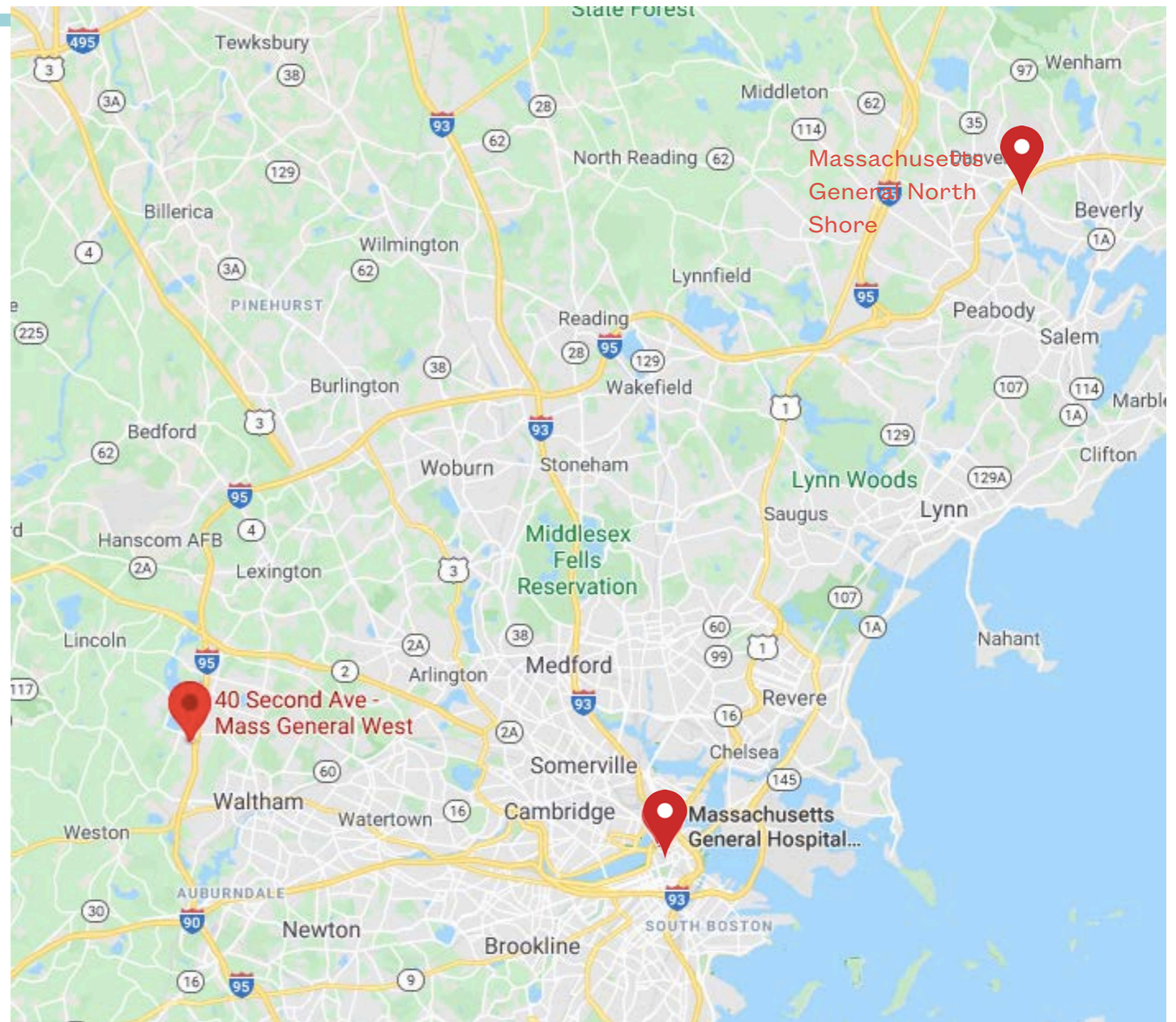
# Locations

The Hand Service sees patients and performs surgery at three locations: Massachusetts General Hospital, Mass General West, and Mass General North Shore Center for Outpatient Care.

Massachusetts General Hospital has the capability to do the most complex of surgeries. We perform co-surgeries with orthopedic trauma, general surgery trauma, orthopedic oncology, shoulder, and sports medicine.

The ambulatory centers at MG West and MG North Shore are efficient, specialized centers that are very facile at regional anaesthesia, have nurses and surgical technicians who are highly competent at hand surgery, and have rapid case turnover.

A car is highly recommended during the fellowship year.



---

# Our Faculty



Our faculty at a dinner (from left to right): Curtis Cetrulo, Chaitanya Mudgal, Jesse Jupiter, Neal Chen, Kyle Eberlin, and Jonathan Winograd.

The MGH Hand Service is highly collaborative between the Plastic and Orthopaedic Services

The partnership between Orthopaedic and Plastic Surgery leads to a vibrant intellectual environment for faculty, fellows, residents, researchers, students, and international visitors. We have eight full-time faculty who have expertise spanning the entire gamut of Hand and Upper Extremity Surgery. Orthopaedic Fellows receive excellent background in soft tissue surgery and microsurgery, and similarly Plastics Fellows gain an outstanding foundation in orthopedic principles.



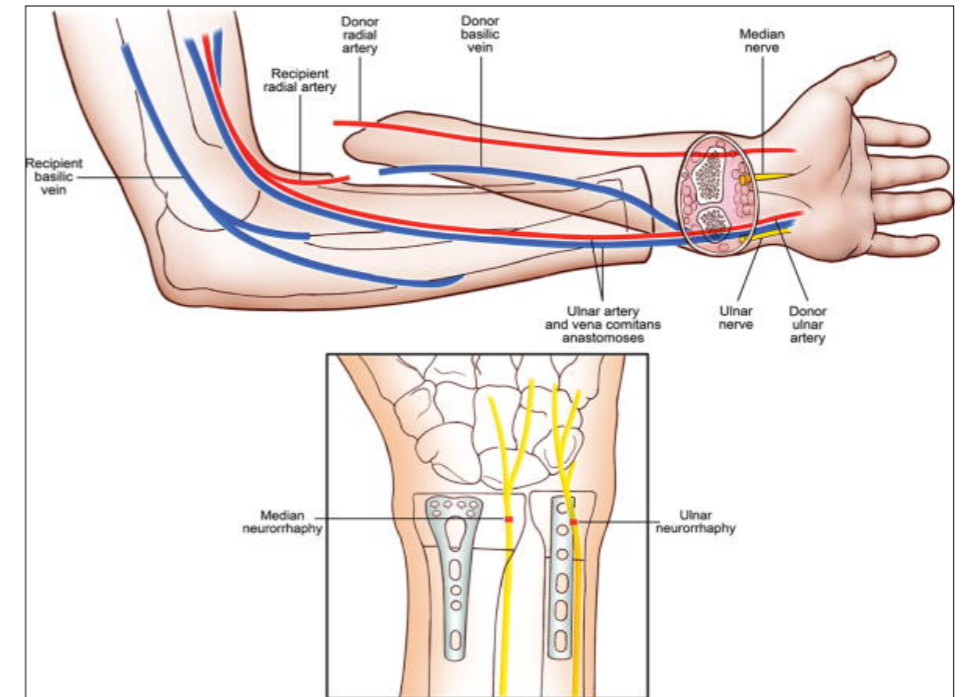
# Curtis Cetrulo MD



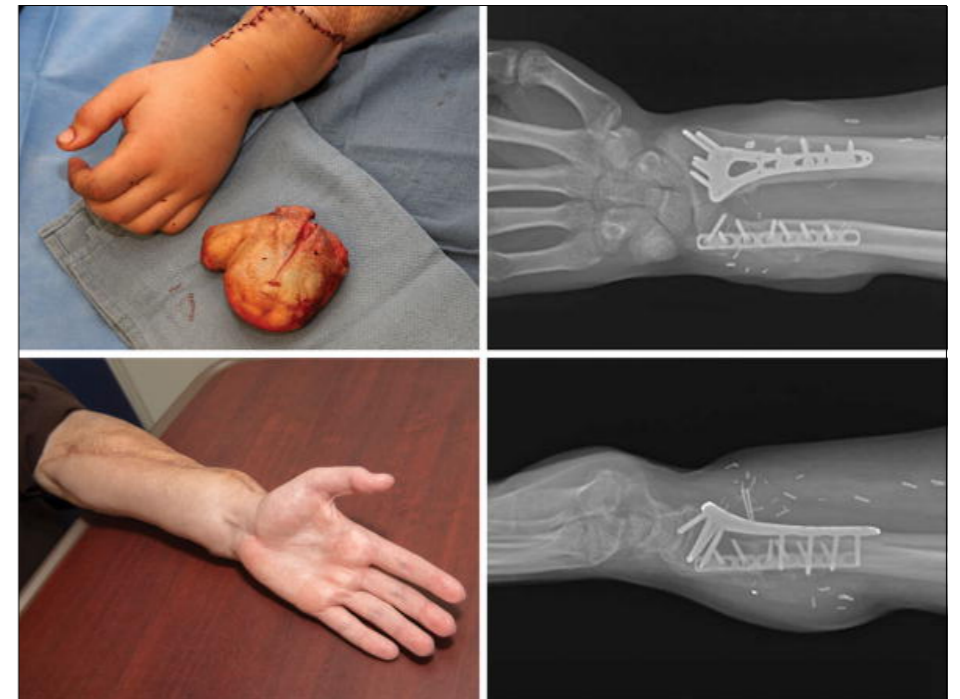
**Curtis Cetrulo, MD** graduated from Stanford University and Tufts Medical School. After general and plastic surgery residency training, he was an attending surgeon at the University of Southern California Medical Center where he established a translational research laboratory dedicated to composite tissue allograft research.

He joined the Division of Plastic and Reconstructive Surgery at MGH and the Shriners Hospital for Children—Boston in 2009, and is the Director of the Vascularized Composite Tissue Allotransplantation Lab. He is also an Assistant Professor at Harvard Medical School.

His most prominent clinical work includes Hand Transplantation and the first penile transplant in North America. He has received more than \$4 million of extramural funding for his work on tolerance induction strategies for vascularized composite tissue allografts.



A schematic and clinical pictures of the most recent Hand Transplant at MGH



# Neal Chen MD



**Neal Chen MD** was born and raised in Albuquerque, New Mexico. He attended Stanford University and Yale University School of Medicine. He graduated from the Harvard Combined Orthopaedic Residency in 2006. Following this, he completed the MGH Hand and Upper Extremity Fellowship and the Shoulder and Sports Medicine Fellow at Hospital for Special Surgery.

He began his career as a Sports Medicine Surgeon at Medsport at the University of Michigan. He was a consultant for the University of Michigan and USA Hockey, and he was the Head Team Physician for Eastern Michigan University. He then practiced Hand and Shoulder surgery at the Philadelphia Hand to Shoulder Center and Thomas Jefferson University Hospital for four years.

In 2014, he returned to Boston and MGH. He is Associate Professor of Orthopaedic Surgery at Harvard Medical School. He currently serves as the Fellowship Program Director of the Hand and Upper Extremity Fellowship and the Chief of the MGH Hand and Arm Service.

He has clinical interests in arthroscopy of small joints, wrist, elbow, and shoulder, especially in arthroscopic assisted fracture fixation. His research interests focus on the application of Bayesian statistical principles to interpreting clinical outcomes.



# Kyle Eberlin MD



**Kyle Eberlin MD** grew up in Buffalo, NY and completed his undergraduate and medical school education in the Seven-Year Accelerated Medical Program at Boston University, where he graduated Summa Cum Laude and 1st in his medical school class. Dr. Eberlin completed residency training in the Harvard Integrated Plastic Surgery Program, prior to completing Hand Surgery Fellowship at MGH.

He is an Assistant Professor at Harvard Medical School, and the Program Director of the Harvard Plastic Surgery Residency Program. He also serves as the Associate Director of the MGH Hand Surgery Fellowship.

In 2017, Dr. Eberlin was awarded the Julian Pribaz Teaching award given to one surgeon within the Harvard Plastic Surgery Training Program. He was selected as the American Society for Surgery of the Hand's 2018-2019 Plastic Surgery Visiting Professor, and was chosen as the American Society for Peripheral Nerve Traveling Fellow for 2020 given his

contributions to peripheral nerve surgery and the surgical management of symptomatic neuromas. He serves on the Board of Directors of the American Society of Plastic Surgeons and the American Association for Hand Surgery.

Dr. Eberlin has a focused interest in management of complex extremity conditions, including peripheral nerve and microvascular surgery with a special focus on Targeted Muscle Reinnervation (TMR) and surgery for symptomatic neuromas. He is the Editor of the upcoming textbook *Contemporary Neuroma Management*

# Rohit Garg MBBS



**Rohit Garg MBBS** started his medical career by obtaining the third-highest medical entrance score in India (top 0.005%). He received his medical degree from the All India Institute of Medical Science, declared as an 'Institute of National Importance' by the government of India. He completed orthopedic surgery residency training at University of Illinois, Chicago and Hand & Upper Extremity fellowship at Massachusetts General Hospital.

Dr. Garg obtained additional experience in Canada, India and Thailand. In Canada, he worked with Dr. Graham King to enhance his experience in total elbow replacement, elbow contracture release and elbow trauma. Dr Garg obtained further valuable training in microsurgery, adult and pediatric brachial plexus surgeries, complex reconstruction of the upper extremity, nerve injuries and reconstruction, pediatric hand, and free tissue transfer in Ganga hospital, Coimbatore, India. Following that, Dr. Garg worked with Dr. Somsak Leechavengvongs in Thailand where he gained further expertise in

adult and pediatric brachial plexus injuries, with a special focus on shoulder reconstruction and intercostal nerve transfers. Dr Garg's clinical interests include hand, elbow and upper extremity fractures, ligament and tendon injuries, nerve injuries and reconstruction, brachial plexus injuries, complex reconstructive surgery of the upper extremity, and pediatric hand. He has research interest in brachial plexus injuries, upper extremity trauma and nerve injuries.



# Jesse Jupiter MD



**Jesse Jupiter MD** is Chief Emeritus of the MGH Hand and Arm Service. He completed his undergraduate studies at Brown University where he was on both the varsity soccer and baseball teams. He then studied at Yale University School of Medicine and was a resident at the Harvard Combined Orthopaedic Residency Program. Following this, he was a hand and microvascular fellow in Louisville, KY and was also an AO fellow in Basel, Switzerland.

He returned as faculty at MGH where he was a surgical pioneer, treating complex elbow and wrist fractures and non-unions of long bones. He helped develop several important orthopedic implants including the blade plate used in the shoulder, original locking plates of the distal radius, and headless screws.

He has written many influential papers on the distal radius, elbow, humerus, and clavicle. He is also an original editor of Skeletal Trauma, among several other texts.

Dr. Jupiter is the Hansjorg Wyss AO Professor of Orthopaedic Surgery at Harvard Medical School. He served as the President of both the American Association for Surgery of the Hand and the American Shoulder and Elbow Surgeons and continues to lecture widely around the world.



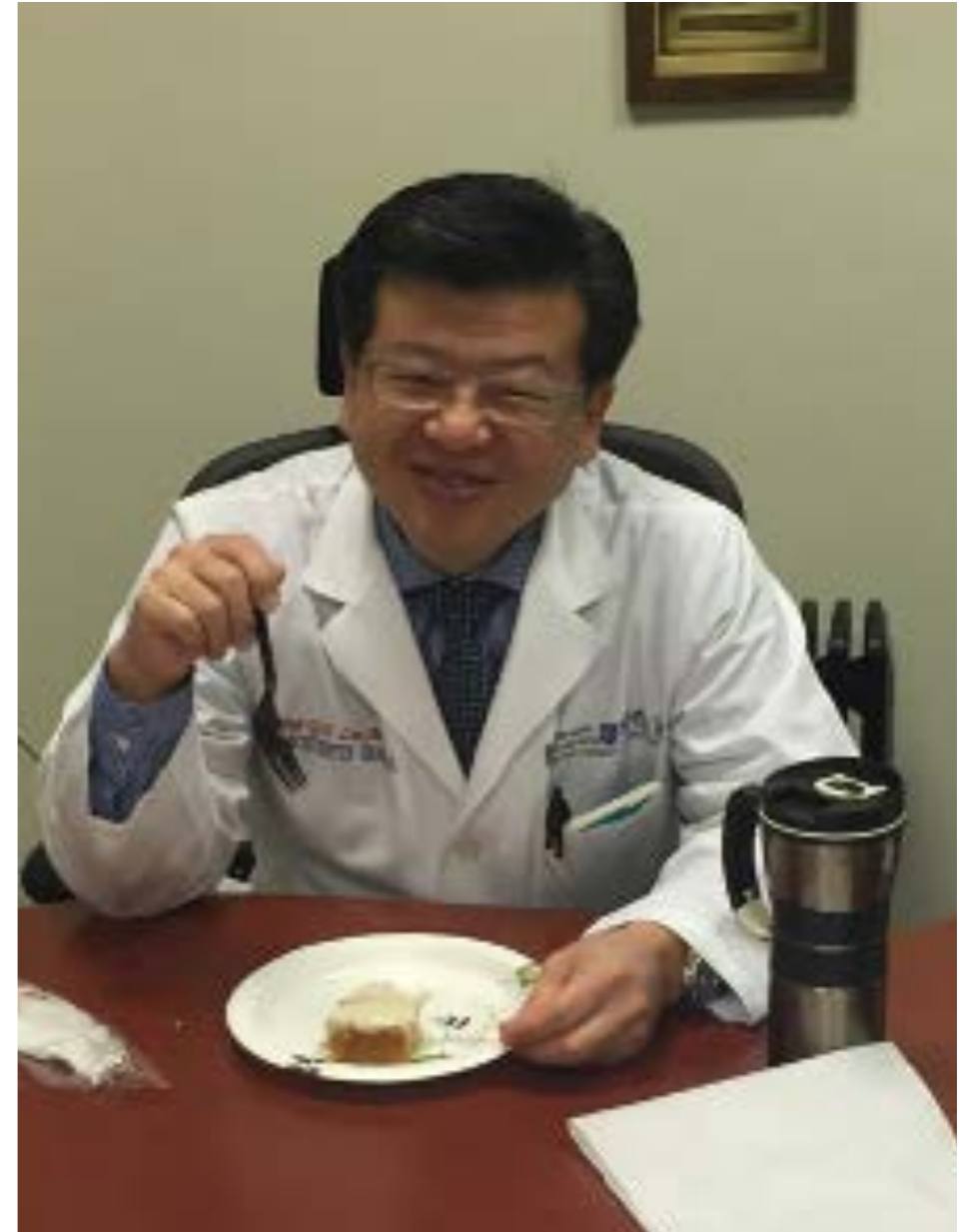
Dr. Jupiter with his dear friend A. Lee Osterman

# Sang-Gil Lee MD



**Sang-Gil Lee, MD** grew up in Oklahoma where he developed a love of Sooners football . He earned his BA from the University of Pennsylvania. He trained at the University of Chicago Medical Center Orthopaedic Residency Program. He then completed a hand fellowship at the Raymond M. Curtis National Hand Center in Baltimore, Maryland. Dr. Lee is solo private practice with an academic affiliation with Massachusetts General Hospital and is a vibrant contributor to the MGH Hand and Arm Service and the Hand and Upper Extremity Fellowship.

His clinical interests include vascularized fibular reconstruction for large bone defects. He has a large clinical experience in fibular reconstruction of spine defects after chordoma resection and free functional gracilis transfer for brachial plexus injury. He also is an expert in the arthroscopic management of thumb carpometacarpal arthritis.



# Chaitanya Mudgal MD



**Chaitanya S. Mudgal, MD** received his MBBS degree from Bombay University, India in 1983. He completed an Orthopaedic Residency in Bombay (1988) as well as one in Liverpool, UK, (1992) leading to his MS (Orth.) and MCh(Orth.) degrees. Dr. Mudgal went on to complete an additional Orthopaedic Residency in the Harvard Combined Orthopaedic Residency Program in Boston, and a Fellowship in Hand and Upper Extremity Surgery at Cleveland Clinic and Case Western Reserve University. He joined the faculty at Massachusetts General Hospital in 2004 and is currently an Associate Professor of Orthopaedic Surgery at Harvard Medical School. Prior to joining the Massachusetts General Hospital, he was responsible for the creation of and was the Director of the Hand Surgery Service at the Cambridge Health Alliance in Cambridge MA.

He is an expert in upper extremity trauma, and has published extensively on fractures, tendon injuries affecting the hand, wrist forearm and elbow. In addition, he is one of the leading minds on the East Coast in surgery for stroke, tetraplegia, and traumatic brain injury. He has been AO faculty both nationally as well as in Latin America, Asia and Europe. In this role he has lectured extensively on

various aspects of upper limb trauma in various parts of the world. He teaches Masters level courses at the annual AO courses in Davos, Switzerland. The C.S. Mudgal Hand Surgery Forum is held in his honor annually at the Guigang City People's Hospital in Guigang, Guangxi Autonomous province, China. He lectures widely across India and is the founding Director of the Annual Indo-US Hand Surgery Conference, held at various sites in India which is now in its fourth year. As a result of his associations in India, over the last 10 years, he has been able to facilitate short duration resident and fellow visits to various centers in India. He has also set up a partially funded Visitor program, funded by the Tara Mudgal Trust, which allows one young hand surgeon from India the opportunity to visit the MGH for a period of 3 months.

He is the Chairman of the AO North America Hand Education Committee. In this role, along with the members of the Committee, he has been responsible for the creation and dissemination of web based educational content (Must know series) (Sage on Stage series) offered by AONA. He has either moderated or participated in multiple webinars, in North America as well as in India.

---

# Jonathan Winograd MD



**Jonathan Winograd MD** graduated from Harvard Medical School, earning his medical degree in 1992. He then entered a combined general surgery/plastic surgery residency at Johns Hopkins Hospital and the University of Maryland/Shock Trauma Center in Baltimore, Maryland. During that time, he was a research fellow under the mentorship of Dr. Gregg Semenza, a molecular biologist and recipient of the Nobel Prize in Physiology or Medicine in 2019. Dr. Winograd then completed a fellowship in Hand and Microsurgery at Washington University in Saint Louis led by Dr. Susan Mackinnon, an internationally recognized expert in Peripheral Nerve Surgery

Dr. Winograd joined the staff of the MGH and Shriners Hospital for Children in 2001. He is an Associate Professor of Plastic Surgery at Harvard Medical School. He focuses on reconstructive problems of the peripheral nervous system, such as brachial plexus injuries, thoracic outlet syndrome, and nerve compressions including carpal tunnel and cubital

tunnel syndromes. These also include microsurgical nerve reconstruction after nerve injuries of the extremities and other regions of the body as well as the surgical treatment of chronically painful conditions such as neuropathy or nerve injuries known as neuromas. He is the Director of an active basic science translational research program as well as a clinical research program aimed at improving outcomes after peripheral nerve injuries, and he is the recipient of multiple grant awards from the Consortium for Improving Medicine with Innovation and Technology (a consortium comprised of leading academic scientists and clinicians from MIT, MGH and other Boston area institutions), the DOD, and the NIH. He is the current President of the Massachusetts Society of Plastic Surgeons and is the Secretary and an Executive Board member of the American Society of Peripheral Nerve.





---

# Fellowship Overview

---

## Aims

The MGH Hand Fellowship is foundational, immersive, and transformative

# Clinical Experience

Our foundation is clinical breadth, complexity, volume and individual responsibility

There are multiple modes of training during our fellowship which consists of direct mentorship and graduated responsibility.

There are usually two orthopedic and one plastic surgery trained fellows each year.

There are four rotations during the academic year: 1) Jupiter/ Chen/ Garg, 2) Mudgal/ Lee, and 3) Eberlin/ Winograd/ Cetrulo. The orthopedic hand fellows participate in an exchange with Brigham and Women's/ Children's Hospital, and the plastic hand fellow spends additional time on the Mudgal/ Lee rotation.

On average, fellows perform around 600 to 700 surgical cases per year. Surgeries include common hand surgery in high volumes but also unusual and complex hand surgeries, namely composite tissue transplantation, revision shoulder and elbow arthroplasty, and targeted muscle reinnervation.



The world's first replant was performed at MGH in 1962. At age 12, Everett "Redd" Knowles had a shoulder level amputation which was replanted by a 12 doctor team led by Dr. Ronald Malt.

# Clinical Experience

## Graduated responsibility is a key element of training

Beyond direct mentorship, fellows have an independent clinic for care of their own patients on Friday afternoons. Fellows are responsible for decision-making and the execution of treatment. Fellows have attending privileges and admit patients to their service. After an initial training period, fellows perform operative cases independently with attending back-up whenever needed. There is tremendous development and maturation that comes with progressive autonomy.

Fellows take home call 1:3. The role of the fellow during call is to direct patient care in coordination with an in house resident. Fellows also communicate with attending surgeons to ensure proper delivery of care, especially for complex injuries.

By the end of the year, fellows are able to perform some replantation and revascularization independently and develop a high level of

proficiency in the surgical treatment complex hand trauma.

A special part of the fellowship is working with other fellows. Fellows clinic is on Friday afternoons where a great sense of camaraderie is developed while thinking about clinical problems together. These unique settings have created lifetime bonds among our alumni.



---

# Education

We aim to teach the philosophy and principles of hand surgery and ultimately develop the basis for lifelong learning

There are structured didactics every morning that are each led by an attending. On Tuesday is the Weekly Conference where the hand service as a whole meets and discusses complex cases, debates controversial topics, or reviews interesting surgeries from the past week.

Lectures are intended to give a comprehensive view of hand surgery fundamentals, advanced topics, soft tissue reconstruction, and practice management.



Three generations of MGH Hand Surgeons working together (from left to right) : Chris Langhammer (2018), Arnold Alqueza (2011) , and Lydia Helliwell (2017)

# Clinical Experience

In addition to traditional hand surgery, our fellows are exposed to other related areas

**Shoulder-** Shoulder Arthroplasty, Revision TSA, Proximal humerus fracture, Arthroscopic Rotator Cuff Repair, Arthroscopic and Open Treatment of Shoulder Instability

**Elbow-** Complex fracture dislocations, Elbow arthroscopy, Elbow arthroplasty, revision TEA

**Soft Tissue Reconstruction-** Neurotized free tissue transfer, vascularized fibula reconstruction, toe to thumb transfer

## **Targeted Muscle Reinnervation**

**Brachial Plexus Reconstruction-** Nerve transfer, Doi Procedure, Late Reconstruction and Tendon Transfers

**Oncologic Upper Extremity Reconstruction:**  
Arthroplasty, Vascularized fibula, and free flap coverage



# Education

## **Foundations of Hand Surgery**

Hand Examination  
Carpal Tunnel Syndrome  
Cubital Tunnel Syndrome  
Guyon's Canal  
Trigger Finger/ DeQuervain's  
Mallet Finger, Nail disorders, Mucous Cyst  
Phalangeal Fractures  
PIP joint injuries  
Metacarpal Fractures/ CMC Dislocations  
Scaphoid Fractures  
Other Carpal Fractures  
Perilunate Dislocations  
Kienbock's  
Distal Radius Fracture  
Distal Radioulnar Joint  
Forearm Fractures  
Compartment Syndrome  
Radial Head Fractures  
Proximal Ulna Fractures  
Elbow Fracture Dislocations  
Monteggia/ Essex Lopresti  
Distal Humerus Fracture  
Humeral Shaft Fracture  
Clavicle Fracture  
Dupuytren's Contracture  
Hand Infections  
Intrinsic Mechanism  
Extensor Tendon Laceration  
Flexor Tendon Repair  
Flexor Tendon Rehabilitation  
Flexor Tendon Reconstruction  
Thumb CMC Arthritis

Thumb Ulnar Collateral Ligament Injury  
Scapholunate Dissociation  
SLAC/ SNAC Wrist  
Wrist Fusion/ Arthroplasty  
Wrist Arthroscopy  
TFCC Tears  
Epicondylitis  
Distal Bicep Rupture  
Osteochondral Defect  
Elbow arthritis  
Shoulder arthritis

## **Advanced Topics**

Uncommon Neuropathies  
Replantation  
Scaphoid Non-union  
Distal Radius Osteotomy  
Heterotopic Ossification/ Stiff Elbow  
Humerus Non-union  
Clavicle Non-union  
Vascularized Bone Grafting  
Tendon Transfers  
The Stiff Finger/ Tenolysis  
Rheumatoid Arthritis  
Stroke and Tetraplegia  
Thumb Reconstruction  
Benign Tumors  
Malignant Tumors  
CRPS  
PIP Joint Fracture Dislocations  
Chronic Elbow Fracture Dislocations  
Elbow Arthroscopy  
Osteochondral Defect

Ulnar Collateral Ligament Injury Elbow  
Shoulder Instability  
Rotator Cuff Tears  
Proximal Humerus Fracture  
Total Elbow Arthroplasty  
Total Shoulder Arthroplasty  
Reverse Shoulder Arthroplasty  
Traumatic Brachial Plexus Injury  
Factitious Disorders

## **Special Lectures**

Billing and Coding  
Private Practice Structure  
Disability Insurance/ Contracts  
Workman's Compensation  
Academic versus Private Practice  
How to Read a Paper  
Basics of Clinical Research/ How to Write a Paper  
Clinical Decision Making/ Bayes Theorem  
How to read a NCV/ EMG  
How to read an MRI  
Tips on Starting Practice  
How we built it: Research  
My experience with the Hand Study Group  
How I designed distal radius plates and Norian  
My advice for the future  
My toughest cases

# Education

## Soft Tissue and Nerve Curriculum

Microvascular techniques and instruments  
Vascular anatomy of the upper extremity  
Digit and extremity replantation 1  
Digit and extremity replantation 2  
Management of the mangled extremity  
Principles of pedicled and free flaps  
Volar fingertip defects  
Dorsal fingertip injuries and nailbed reconstruction  
Pediatric fingertip defects  
Soft tissue defects of the fingers  
Dorsal hand defects  
Thumb reconstruction  
Toe to thumb transfer  
Pedicled flaps from the upper extremity  
Introduction and classification of nerve injuries  
Management of nerve gaps  
Neuroma management  
Autologous nerve harvest, types, and techniques  
TMR/RPNI and contemporary amputee management  
Brachial Plexus Anatomy and Introduction  
Brachial Plexus treatment strategies and nerve transfers  
MFC flaps  
Management of Hypothenar Hammer Syndrome  
Soft tissue coverage of the elbow  
Sympathectomy and Botox for ischemic digits  
Lower extremity nerve compression syndromes



Dr Eberlin and his team in the OR

# Education

Internet Education with Dr. Mudgal

## Webinars in North America

Scaphoid fractures: <https://p.widencdn.net/rtdtap/Scaphoid-Fracture-Edit>

Metacarpal fractures: <https://p.widencdn.net/asoq7e/Metacarpal-Fractures>

Distal radius malunion: <http://aofoundation-na.adobeconnect.com/pu12v7mzfxbg/>

Extensor tendon injury: <http://aofoundation-na.adobeconnect.com/p42t5zelk94/>

Complex distal radius fractures: <http://aofoundation-na.adobeconnect.com/p3tl9a7syd23/>

Distal tendon injuries: <https://youtu.be/lZtc7WuhGqA>

Fractures of P1 and P2: <https://youtu.be/rDfOlbjqY4Y>

Metacarpal plating: <https://youtu.be/blUMopvIZuo>

Sage on Stage: Jesse Jupiter MD: <https://youtu.be/J38-3n828QE>

Bennett and Rolando fractures: <https://youtu.be/xFdLstHP9Tw>

Scaphoid fracture fixation- Volar: <https://youtu.be/IMJv-kPpGBA>

Scaphoid fracture fixation – Dorsal: [https://youtu.be/16GvN\\_ZcETc](https://youtu.be/16GvN_ZcETc)

Perilunate fracture- dislocation: <https://youtu.be/5P7naS1zpjg>

Sage on Stage: Luis Scheker MD: <https://youtu.be/Pcld4Y5faSA>

## Tweetorial:

Case of the month: Volar Barton Fractures – Part 1: <https://youtu.be/Kur944xxXM8>

## Webinars in India:

PIP injuries: <https://sites.google.com/view/webinar-go/webinar14>

Scaphoid fractures: <https://sites.google.com/view/webinar-go/webinar26>

Complex injuries in the hand and wrist: <https://tinyurl.com/yc8o4bw2>

## Grand Rounds:

Tendon transfers: <https://achesandjoints.wordpress.com/2013/03/18/chaitanya-mudgal/>



Afternoon didactics with Dr. Mudgal



# Education

## **Microsurgery Curriculum**

A dedicated microsurgery curriculum begins during orientation with a hands-on course in the rat laboratory. This is a great opportunity to advance one's skills prior to the beginning of fellowship. Fellows have access to the rat laboratory for individual training throughout the year. Technical training in microsurgery is supplemented by a reading list and weekly case-based lecture series on soft tissue and nerve reconstruction led by Dr. Eberlin throughout the academic year.

## **Cadaver Dissection**

Fellows engage in cadaver dissections and implant/ technique demonstrations throughout the year with faculty guidance.

## **Journal Club**

Dr. Garg is co-director of a city-wide journal club among all of the hand surgery programs across Boston.

## **Conferences**

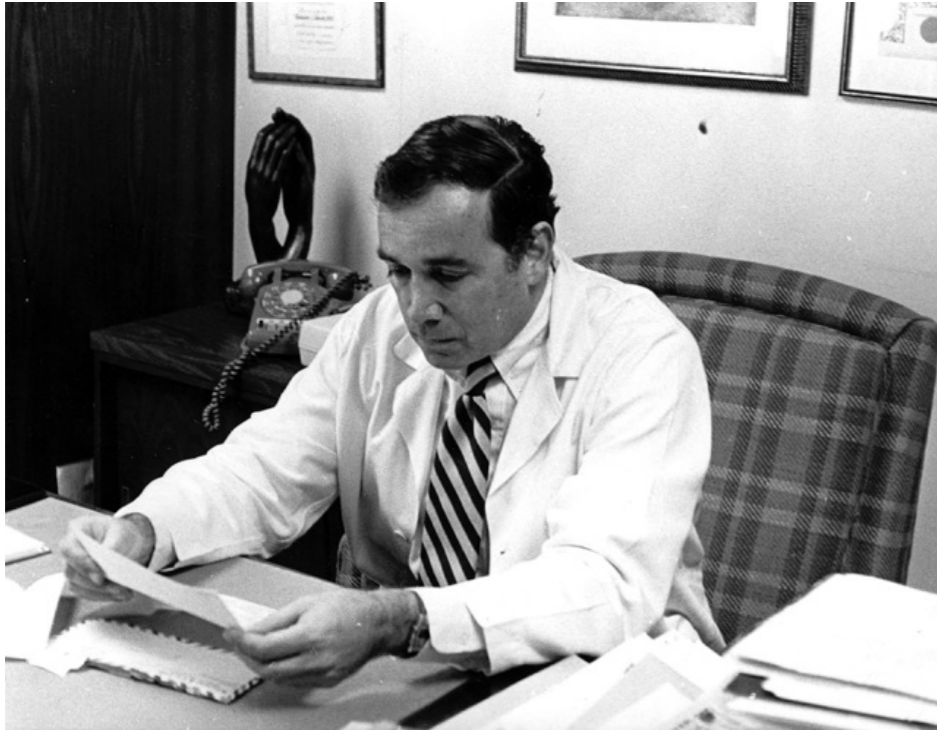
Each fellow is given the opportunity to attend a conference or educational course during their fellowship. A stipend is provided to help support travel and housing.



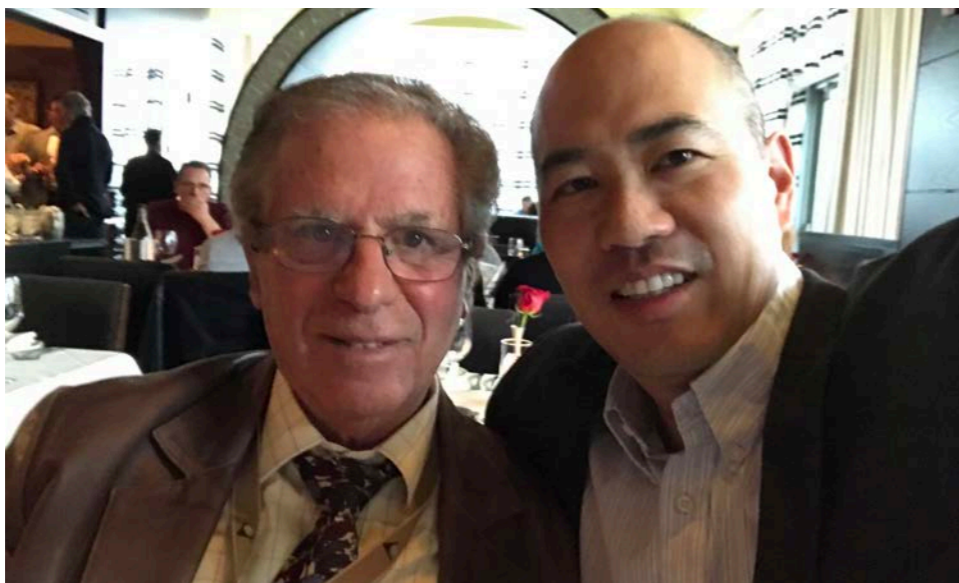
Lydia Helliwell in the Rat Microsurgery lab

---

# Research



Dr Richard Smith in his office



## **Infrastructure**

Our research infrastructure helps facilitate our efficiency. We have a set of global IRBs intended for low-risk studies that evaluate straightforward outcomes.

We have a great research team consisting of our research coordinator, PhD students, visiting physicians, and medical students who come from around the world.

## **International Collaboration**

We have several ongoing collaborations including Osaka University, University of Texas at Austin, the University of Michigan, and several centers in Europe and South America.

## **Fellow Expectations**

Fellows will engage in a project during their academic year to learn research methods as well as gain insight into critically reading the literature. Their work is presented in May at the Richard J Smith Memorial Lectureship.



Sezai Ozkan MD with Frank Bloemers MD PhD with a copy of his PhD Thesis on Distal Radius Fractures

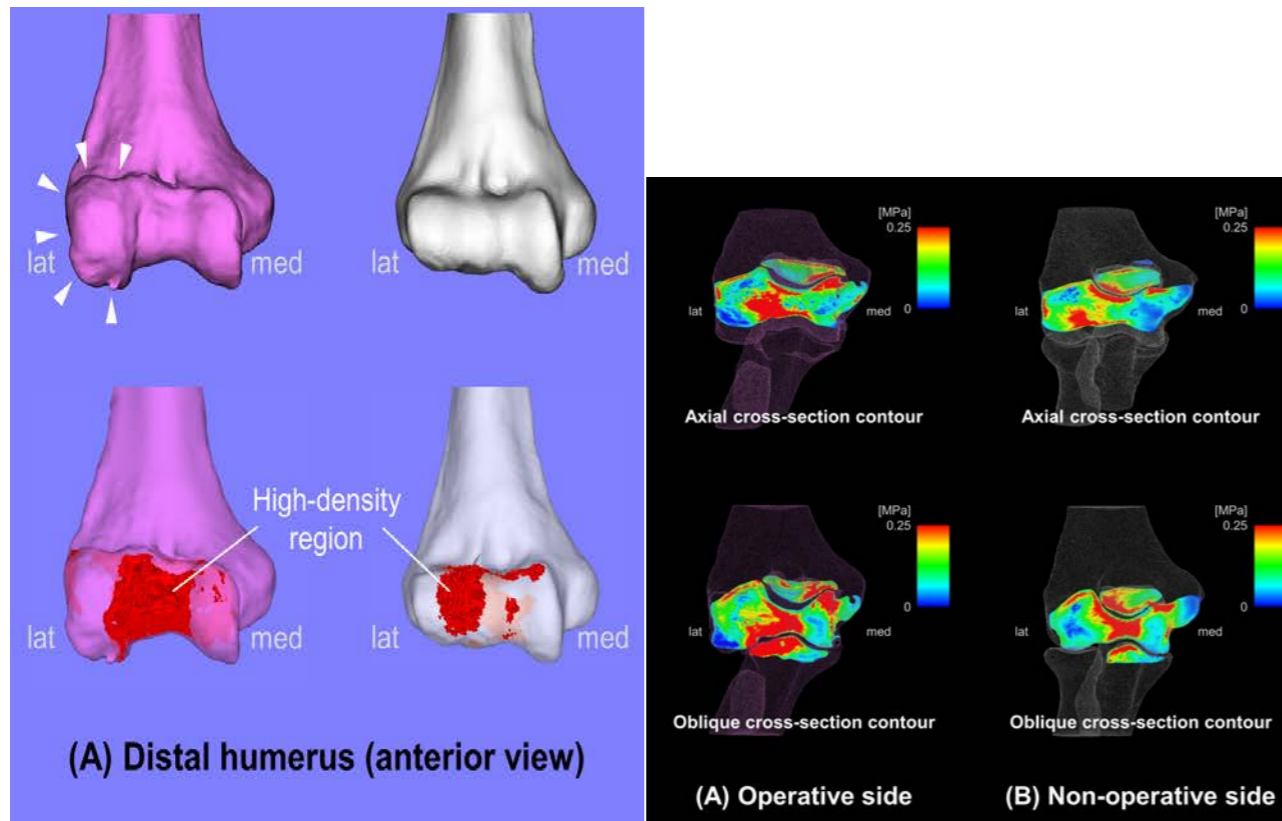
# Research

We have a dynamic research environment. Fellows can engage in various opportunities throughout their year

Our research group has several arms: 1) Clinical outcomes in hand surgery, 2) nerve injuries and targeted muscle reinnervation, 3) advanced imaging, 4) kinematics and 5) composite tissue transplantation.

Since 2010, we have published over 500 peer-reviewed articles. Notable developments are:

1. Using bone density on CT to predict scaphoid non-union
2. A double-blind randomized controlled trial evaluating the effect of Vitamin C on CRPS after distal radius fracture
3. A randomized control trial evaluating if a brief mindfulness exercise improve outcomes in upper extremity patients (Julian M. Bruner Award ASSH, 2017)



Miyamura et al. Asymmetric ulnohumeral bone density after radial head resection on 3D CT modeling

## Publications from MGH Hand 2019-2020

Nawijn F, Westenberg RF, Langhammer CG, Chen NC, Eberlin KR. Factors Associated with Primary and Secondary Amputation following Limb-Threatening Upper Extremity Trauma. *Plast Reconstr Surg*. 2020 Apr;145(4):987-999.

Lans J, Eberlin KR. Reply: Surgery for Symptomatic Neuroma: Anatomic Distribution and Predictors of Secondary Surgery. *Plast Reconstr Surg*. 2020 Mar;145(3):663e-665e.

Lans J, Baker DJ, Castelein RM, Sood RF, Chen NC, Eberlin KR. Patient-Reported Outcomes following Surgical Treatment of Symptomatic Digital Neuromas. *Plast Reconstr Surg*. 2020 Mar;145(3):563e-573e.

Verhies SHWL, Özkan S, Chen NC, Jupiter JB. Long-Term Outcomes After Extensor Carpi Ulnaris Subsheath Reconstruction With Extensor Retinaculum. *Tech Hand Up Extrem Surg*. 2020 Mar;24(1):2-6.

Nawijn F, Verhies SHWL, Lunn KN, Eberlin KR, Hietbrink F, Chen NC. Factors Associated with Mortality and Amputation Caused by Necrotizing Soft Tissue Infections of the Upper Extremity: A Retrospective Cohort Study. *World J Surg*. 2020 Mar;44(3):730-740.

van Hernen JJ, Lans J, Garg R, Eberlin KR, Chen NC. Factors Associated With Reoperation and Conversion to Wrist Fusion After Proximal Row Carpectomy or 4-Corner Arthrodesis. *J Hand Surg Am*. 2020 Feb;45(2):85-94.

Schurko BM, Lechtig A, Chen NC, Earp BE, Kanj WW, Harper CM, Rozental TD. Outcomes and Complications Following Volar and Dorsal Osteotomy for Symptomatic Distal Radius Malunions: A Comparative Study. *J Hand Surg Am*. 2020 Feb;45(2):158.e1-158.e8.

Oflazoglu K, de Planque CA, Guitton TG, Rakhorst H, Chen NC. Dorsal Subluxation of the Proximal Interphalangeal Joint After Volar Base Fracture of the Middle Phalanx. *Hand (N Y)*. 2020 Jan 23:1558944719895621.

Buijze GA, Bachoura A, Mahmood B, Wolfe SW, Osterman AL, Jupiter JB. Reevaluation of the Scaphoid Fracture: What Is the Current Best Evidence? *Instr Course Lect*. 2020;69:317-330.

Tosti R, Treiser MD, Eberlin KR. Contralateral Heterotopic Thumb-to-Thumb Replantation With Free Ulnar Forearm Fasciocutaneous Flap and Targeted Muscle Reinnervation. *J Hand Surg Am*. 2020 Jan;45(1):71.e1-71.e5

Rinkinen JR, Diamond S, Lans J, Cetrulo CL Jr, Eberlin KR. Neurotized Free Tissue Transfer for Foot Reconstruction: A Systematic Review. *J Reconstr Microsurg*. 2020 Jan;36(1):32-40.

Blackburn J, van der Oest MJW, Selles RW, Chen NC, Feitz R, Vranceanu AM, Porsius JT. Which Psychological Variables Are Associated With Pain and Function Before Surgery for de Quervain's Tenosynovitis? A Cross-sectional Study. *Clin Orthop Relat Res*. 2019 Dec;477(12):2750-2758.

Blackburn J, Fischerauer SF, Talaei-Khoei M, Chen NC, Oh LS, Vranceanu AM. What are the Implications of Excessive Internet Searches for Medical Information by Orthopaedic Patients? *Clin Orthop Relat Res*. 2019 Dec;477(12):2665-2673.

Bhashyam AR, Fernandez DL, Fernandez dell'Oca A, Jupiter JB. Dorsal Barton fracture is a variation of dorsal radiocarpal dislocation: a clinical study. *J Hand Surg Eur Vol*. 2019 Dec;44(10):1065-1071.

Blackburn J, van der Oest MJW, Poelstra R, Selles RW, Chen NC, Feitz R; Hand-Wrist Study Group. Three-ligament tenodesis for chronic scapholunate injuries: short-term outcomes in 203 patients. *J Hand Surg Eur Vol.* 2019 Nov 11:1753193419885063.

Ortiz R, Sood RF, Wilkens S, Gottlieb R, Chen NC, Eberlin KR. Longitudinal Microsurgery Laboratory Training during Hand Surgery Fellowship. *J Reconstr Microsurg.* 2019 Nov;35(9):640-645.

Özkan S, Teunis T, Ring DC, Chen NC. What Is the Effect of Vitamin C on Finger Stiffness After Distal Radius Fracture? A Double-blind, Placebo-controlled Randomized Trial. *Clin Orthop Relat Res.* 2019 Oct;477(10):2278-2286.

Chen NC. CORR Insights: Patient Characteristics, Treatment, and Presenting PROMIS Scores Associated with Number of Office Visits for Traumatic Hand and Wrist Conditions. *Clin Orthop Relat Res.* 2019 Oct;477(10):2356-2357.

Freniere BB, Wenzinger E, Lans J, Eberlin KR. Relocation Nerve Grafting: A Technique for Management of Symptomatic Digital Neuromas. *J Hand Microsurg.* 2019 Oct;11(Suppl 1):S50-S52

Özkan S, Mudgal CS, Evans BT, Watkins CJ, Heng MM, Bloemers FW. Surgical Decision-Making in Median Neuropathy Associated with Distal Radius Fractures. *J Wrist Surg.* 2019 Oct;8(5):366-373.

Nawijn F, Verhiel SHWL, Jupiter JB, Chen NC. Hemiresection Interposition Arthroplasty of the Distal Radioulnar Joint: A Long-term Outcome Study. *Hand (NY).* 2019 Sep 13:1558944719873430.

Antoinette Bargon C, Mohamadi A, Talaei-Khoei M, Ring DC, Mudgal CS. Factors Associated with Requesting Magnetic Resonance Imaging during the Management of Glomus Tumors. *Arch Bone Jt Surg.* 2019 Sep;7(5):422-428.



The MGH Hand Research Group at the New England Hand Society in Sturbridge, MA. (From Left to right): Yannick Hofteizer, Satoshi Miyamura, Sina Monfared, Jonathan Lans, Kiera Lunn, Mara Meulendijks, Merel Hazewinkel, and Meryam Zamri.

Wilkins SC, Tarabochia MA, Ring D, Chen NC. Factors Associated With Radiographic Trapeziometacarpal Arthrosis in Patients Not Seeking Care for This Condition. *Hand (N Y)*. 2019 May;14(3):364-370.

Pickrell BB, Eberlin KR. Secondary Surgery Following Replantation and Revascularization. *Hand Clin*. 2019 May;35(2):231-240.

Safa B, Greyson MA, Eberlin KR. Efficiency in Replantation/ Revascularization Surgery. *Hand Clin*. 2019 May;35(2):131-141.

Arnold DMJ, Wilkins SC, Coert JH, Chen NC, Ducic I, Eberlin KR. Diagnostic Criteria for Symptomatic Neuroma. *Ann Plast Surg*. 2019 Apr;82(4):420-427.

Lans J, Alvarez J, Kachooei AR, Ozkan S, Jupiter JB. Dorsal Lunate Facet Fracture Reduction Using a Bone Reduction Forceps. *J Wrist Surg*. 2019 Apr;8(2):118-123.

Zhang D, Gancarczyk SM, Mudgal CS. Open Volar Dislocation of the Thumb Metacarpophalangeal Joint. *J Hand Microsurg*. 2019 Apr;11(1):59-60.

Ortiz R, Ozkan S, Chen NC, Eberlin KR. Firework Injuries of the Hand: An Analysis of Treatment and Health Care Utilization. *Hand (N Y)*. 2019 Mar 17:1558944719829905.

Warrender WJ, Ruchelsman DE, Livesey MG, Mudgal CS, Rivlin M. Low Rate of Complications Following Intramedullary Headless Compression Screw Fixation of Metacarpal Fractures. *Hand (N Y)*. 2019 Mar 20:1558944719836214.

Notermans BJW, Lans J, Arnold D, Jupiter JB, Chen NC. Factors Associated With Reoperation After Silicone Metacarpophalangeal Joint Arthroplasty in Patients With Inflammatory Arthritis. *Hand (N Y)*. 2019 Mar 12:1558944719831236



Part of the MGH Research Team: PhD Candidate Jonathan Lans, Neal Chen, PhD Candidate Ritsaart Westenberg, and Visiting Professor Yueju Liu

Eberlin KR. Discussion: Prophylactic Regenerative Peripheral Nerve Interfaces to Prevent Postamputation Pain. *Plast Reconstr Surg*. 2019 Sep;144(3):431e-432e.

Lans J, Notermans BJW, Germawi L, Lee H, Jupiter JB, Chen NC. Factors Associated With Reoperation After Silicone Proximal Interphalangeal Joint Arthroplasty. *Hand (N Y)*. 2019 Aug 6:1558944719864453.

Verhiel SHWL, Greenberg J, Zale EL, Chen NC, Ring DC, Vranceanu AM. What Role Does Positive Psychology Play in Understanding Pain Intensity and Disability Among Patients with Hand and Upper Extremity Conditions? *Clin Orthop Relat Res*. 2019 Aug;477(8):1769-1776.

Menendez ME, Parrish RC 2nd, Ring D, Chen NC. Variation in Physician Charges and Medicare Payments for Hand Surgery. *J Hand Microsurg*. 2019 Aug;11(2):61-70.

Özkan S, Kheterpal A, Palmer WE, Chen NC. Dorsal Extrinsic Ligament Injury and Static Scapholunate Diastasis on Magnetic Resonance Imaging Scans. *J Hand Surg Am*. 2019 Aug;44(8):641-648.

Daly MC, Horst TA, Mudgal CS. Dorsal Cortical Breaks in Volar Barton Distal Radius Fractures. *Hand (N Y)*. 2019 Jul 18:1558944719862644.

Oflazoglu K, Wilkens SC, Rakhorst H, Ring D, Chen NC. Reoperation After Operative Fixation of Proximal Interphalangeal Joint Fractures. *Hand (N Y)*. 2019 Jul 9:1558944719858429

Eberlin KR. Extracorporeal Perfusion for Extended Ischemia Time After Major Limb Amputation. *Ann Surg*. 2019 Jul;270(1):e7



**Combined Plastics and Orthopaedic Grand Rounds:** The research group and fellows spend an afternoon learning about the studies of a visiting surgeon and ask questions about study design and the story of particular studies during the course of development, publications and influence. In addition, fellows present complicated clinical cases to review how to approach challenging cases. Prior guests include Kevin Chung, University of Michigan and Ryan Calfee, Washington University (pictured above).

Verhies SHWL, Ozkan S, Eberlin KR, Chen NC. Nonunion and Reoperation After Ulna Shortening Osteotomy. *Hand (N Y)*. 2019 Mar 8;1558944719828004.

Wilkins SC, Ring D, Teunis T, Lee SP, Chen NC. Decision Aid for Trapeziometacarpal Arthritis: A Randomized Controlled Trial. *J Hand Surg Am*. 2019 Mar;44(3):247.e1-247.e9.

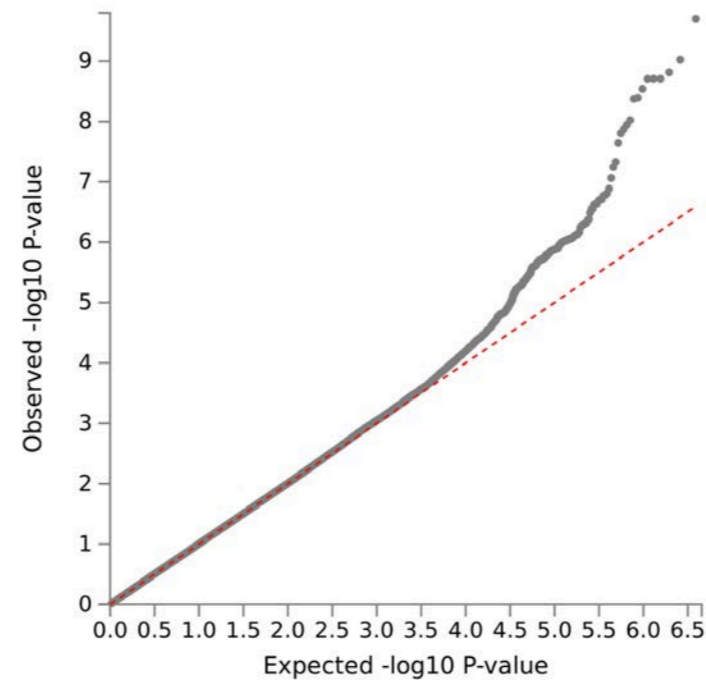
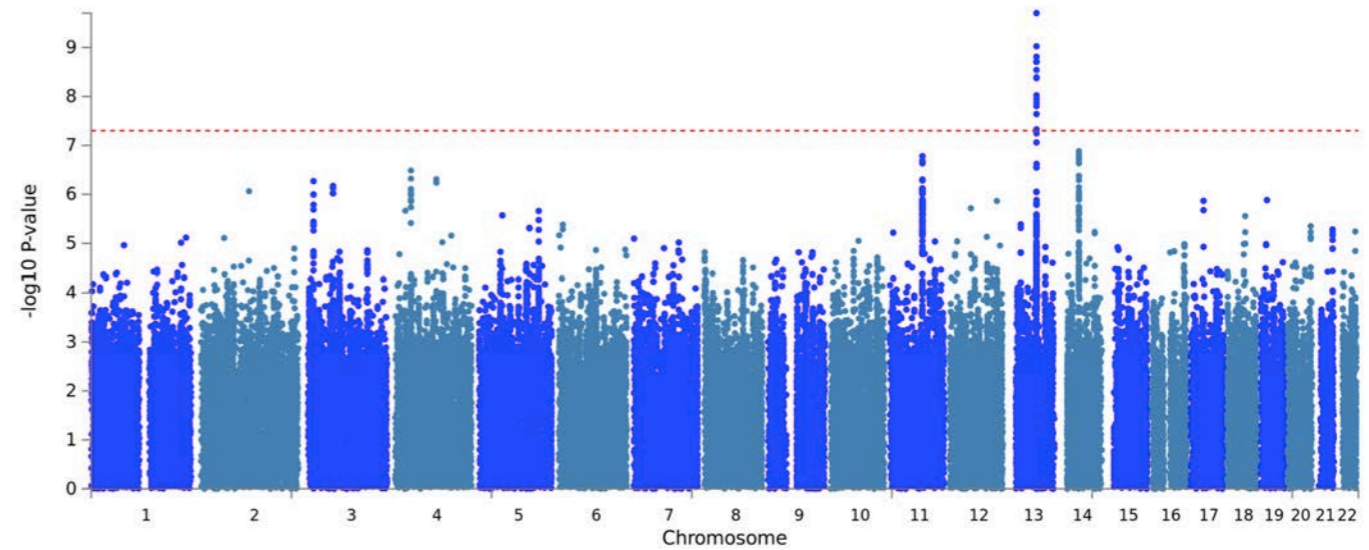
Serebrakian AT, Knaus WJ, Nazarian RM, Jupiter JB. Initial Misidentification of Thumb Poroma by Shave Biopsy. *J Hand Surg Am*. 2019 Mar;44(3):252.e1-252.e4

Lans J, Chen SH, Jupiter JB, Scheker LR. Distal Radioulnar Joint Replacement in the Scarred Wrist. *J Wrist Surg*. 2019 Feb;8(1):55-60.

Wilkins SC, Meghpara MM, Ring D, Coert JH, Jupiter JB, Chen NC. Trapeziometacarpal Arthrosis. *JBJS Rev*. 2019 Jan;7(1):e8. doi: 10.2106/JBJS.RVW.18.00020. Review.

Lans J, Chebib IA, Castelein RM, Chen NC, Lozano-Calderon S. Reconstruction of the Proximal Aspect of the Radius After Desmoplastic Fibroma Resection: A Case Report. *JBJS Case Connect*. 2019 Jan-Mar;9(1):e12.

Lans J, van Hernen JJ, Eusamio B, Langhammer C, Eberlin KR, Chen NC. The Flexor Pollicis Longus Tendon Does Not Lie Parallel to the Thumb Metacarpal. *Hand(N Y)*. 2019 Jan;14(1):86-90.



From Sood RF et al. KLHL1 and POLE2 are associated with risk of trigger finger: a genome-wide analysis

Manhattan plot of genome-wide SNP-based association demonstrates a significant locus at chromosome 13





---

# Richard J. Smith Memorial Lecture and Jesse B. Jupiter International Forum

In May, the MGH celebrates the legacies of two hand surgery luminaries

The Smith Memorial Lecture is a celebration of research and a gathering of our alumni from around the country. At the end of the day our guest lecturer delivers an oration about hand surgery to honor Dr. Smith and the tradition he has built at MGH. We also honor a young surgeon orator.

The following Saturday, the day is filled with discussion and debate about unsolved problems in hand surgery. Several guest faculty are invited to give their insights and engage in thoughtful discourse about how to reach solutions regarding these challenging problems.





---

## Social Events

Dr. Jupiter enjoys having the fellows over for soccer in both the Spring and the Fall. He also initiates the fellows with a bike ride at the beginning of the year. Fellows are often going to Green Papaya, Dr. Lee's favorite Thai restaurant after a Thursday OR in Waltham, or running across the street to a popular pub, the Hill when clinic ends early

---

# Alumni

Neil Ford Jones- University of California Los Angeles, Past President, American Society for Surgery of the Hand

Rod Rohrich- Baylor College of Medicine, Past President, American Society of Plastic Surgeons

Roy Meals- University of California, Los Angeles, Past President, American Society for Surgery of the Hand

Leonard Gordon- Chief Emeritus of Hand Surgery University of California San Francisco

Gary Pess- Central Jersey Hand Surgery

Ronald Neimkin- Carolina Hand and Sports Medicine

Robert Lins- Center for Bone and Joint Surgery

Bronier "Stormy" Costas- Atlanta Scottish Rite Hospital, The Hand and Upper Extremity Center of Georgia

Stuart Kushner- Cedar Sinai Medical Center

Thomas Trumble- Chief Emeritus of Hand Surgery University of Washington

Murray Goodman- Salem Orthopedic Surgeons Inc.

Mathias Masem- University of California San Francisco

Mark Konuich- Orthopedic Hand Surgeons, Troy MI

Robert Atkinson- University of Hawaii, Chief of Orthopaedic Residency Training Program

George Edwards Jr.- University of North Carolina, Raleigh Hand to Shoulder Center

Graham Gumley- Macquarie University, Australia

Joseph Sheppard- University of Arizona

Thomas Breen- University of Massachusetts, Chief of Hand and Upper Extremity Surgery

John Seiler III- Georgia Hand Shoulder and Elbow, Emory University

Martin Boublik- Steadman Hawkins Clinic, Colorado University, Head Team Physician Denver Broncos

Philip Heyman- Hand Surgery Associates, Denver, CO

Richard Brown- Scripps Health, Torrey Pines Orthopedics and Sports Medicine

Jon Ark- Princeton Orthopaedic Associates

David Steinberg- University of Pennsylvania, Director, Hand and Upper Extremity Fellowship

Douglas Rothkopf- University of Massachusetts, Chief of Plastic Surgery

Glenn Buterbaugh- University of Pittsburgh Medical Center

Michael McKee- Chair of Orthopaedic Surgery, University of Arizona

Ian Edmunds- University of Sydney, Australia

Robert Kang- Allegheny Health Network Edward Wang- Stonybrook University, Renaissance School of Medicine

David Ring- Associate Dean, Dell Medical Center at University of Texas Austin

---

# Alumni

Bertrand Perey- University of British Columbia

Ramin Modabber- Cedars-Sinai Kerlan-Jobe Institute

Jinsong Wang- New Hampshire Orthopedic Center

Marshall Brustein- Decatur Memorial Hospital

David Alessandro- Excel Orthopaedic Surgeons

Korsh Jafarnia- Houston Methodist, University of Texas Houston

Michael Brunelli- New England Hand Associates

Lauren Adey- Orthopaedic Institute of Central Maine

Matthew Leibman- Newton Wellesley Hospital, Hand Surgery PC

Steven Kronlage- Andrews Institute

Phani Dantuluri- Resurgens Orthopaedics

John Jiuliano- University of Hawaii John A Burns School of Medicine

Samir Sodha- Rothman Institute Neal Chen- Chief of Hand Surgery Massachusetts General Hospital

Jose Nolla- Kelsey Seybold Clinic, Houston TX

Robert Shin- Kaiser Permanente, Honolulu HI

Asif Ilyas- Rothman Institute, Thomas Jefferson University Hospital, Program Director Hand and Upper Extremity Fellowship

Michael Obeng- MiKO Plastic Surgery, Cedars Sinai Medical Center

Andrew Jawa- New England Baptist Hospital

Michael Baskies-Atlantic Medical Group, Morristown NJ

Rafael Montecino- Gifford Medical Center Randolph, VT

Sonu Jain- Ohio State University

Vipul Patel-NYU Langone/ Hospital for Joint Diseases

Anthony Marcotte- Orthopaedic Specialties, Clearwater FL

Grace Wong- Kaiser Permanente Honolulu, HI

James Monica- Robert Wood Johnson

James Chambers- Walter Reed Medical Center

David Ruchelsman- Newton Wellesley Hospital, Chief of Hand Surgery

Andrea Bauer- Boston Childrens Hospital

Arnold Alqueza- Brigham and Women's Hospital

Anthony Perrone- Maine General Medical Center

---

# Alumni

Matthew Thomas- University of Maryland

John Kadzielski- South Shore Hospital

Dimitrious Christofourou- Orthopaedic Associates of Long Island, NY

Paul Lagler

Melissa Klausmeyer- Kaiser Permanente, Los Angeles, CA

Anna Babushkina- Mendelson-Kornblum Orthopedics, Spine and Pain Specialists, Detroit, MI

Nikola Zivaljevic- Greater Dallas Orthopedics, Plano TX

Kyle Eberlin- Massachusetts General Hospital, Program Director Plastic Surgery Residency, Associate Program

Director Hand and Upper Extremity Fellowship

Michael Rivlin- Rothman Institute, Thomas Jefferson University

Arthur Turko-Maine Medical Center

Taylor Horst- Lahey Health, Excel Orthopaedic Specialists

Gregory Kolovich- Optim Health, Savannah GA

Richard Tosti- Philadelphia Hand to Shoulder Center, Thomas Jefferson University

Donato Perreta- Caremount Medical, Westchester, NY

Jacques Machol- Kaiser Permanente, Los Angeles CA

Lydia Helliwell- Brigham and Women's Hospital

Jyoti Sharma-Geisinger, Camp Hill, PA

Christopher McCarthy-The Hand Center, Hartford CT

Christopher Langhammer- University of Maryland, Shock Trauma

William Knaus II- Emory University

Rohit Garg- Massachusetts General Hospital

Michael Daly- South Shore Hospital

Frederick Wang, University of Chicago

Ryan Ponton- United States Naval Medical Center

Brady Evans- Stanford University



---

# Life Outside Fellowship

Boston is a great place to enjoy city life and explore the beautiful scenery of New England for both adults and children

Many fellows enjoy living in the West End or Beacon Hill area, situated near eclectic shops and restaurants along historic Charles Street, close to running and biking paths on the Charles River Esplanade, and just blocks away from TD Garden, which hosts Celtics games and major touring concerts.





---

## Life Outside Fellowship

Fellows have two out of three weekends free of clinical responsibilities, providing ample opportunities for exploring Boston and the greater New England area. Favorite weekend trips include whale-watching and enjoying a lobster roll in Cape Cod, hiking and foliage tours in Vermont, and skiing in New Hampshire. Those with children enjoy trips to the nearby Museum of Science, Children's Museum, and New England Aquarium. Other fellowship year bucket list activities include sailing and kayaking on the Charles River, going to a Red Sox game in Fenway Park, eating a cannoli in the North End, having dim sum in Chinatown, visiting the Sam Adams brewery, shopping on Newbury Street, and taking a Duck Tour of Boston.