



San Diego 
Spine Foundation
Established in 2006

Bridge The Gap

2022 Annual Report
Academic Year
August 2021 – July 2022

San Diego Combined Spine Fellowship Program Fellowship Director's Message 2021-2022



Our 2021-22 Fellowship year was another success with 4 physicians completing their clinical spine training: Kody Barrett, Micah Blais, Benjamin Kafka, and Shalin Shah. Since graduation, Kody has accepted a position with Proliance Surgeons in Seattle, Washington, Micah has accepted a position with the VA San Diego in San Diego, California, Benjamin has accepted a position with Capital Neurosurgery Specialists, Salem, Oregon, and Shalin has accepted a position with Virginia Commonwealth University, Richmond, Virginia. We'd like to congratulate all of them for their hard work and wish them great success in their future careers.

On August 1, 2022, our new clinical fellows hit the ground running: Cameron Shirazi from University of Oklahoma Health Sciences Center, Amber Price from University of New Mexico Health Sciences Center, and Jay Kumar, who is doing a 6-month in-folded fellowship as a PGY-5 neurosurgical resident from University of Florida.

Looking to the future, we will be welcoming Michael Pompliano from Seton Hall University/St. Joseph's University Medical Center, New Jersey and David Sing from Boston University. We are pleased to have matched both Drs. Pompliano and Sing who were among our top ranked candidates. In addition, we are pleased to provide spine training in advanced MIS and deformity to Ryan Khanna who completed his residency training at Rush University and a year of neurosurgical oncology spine training at Memorial Sloan Kettering Cancer Center, New York.

We are delighted to announce the expansion of our fellowship program to include 2 more faculty members and 1 more clinical fellow position starting academic year 2024-25, thus allowing us to provide training to 3 matched clinical fellows total. We are thrilled to receive 107 applications for the 3 positions! We plan to hold in-person fellow interviews in early March. Already armed with constructive input from our past and current fellows, we hope to continue to build a program that is the best in the country.

Thank you to all who have contributed to making our fellowship training program the very best!

A handwritten signature in black ink, appearing to read "G. Mundis, Jr." The signature is stylized and cursive.

Gregory M. Mundis, Jr., MD

Research Progress and Grant Funding Program Bahar Shahidi, PT, PhD (Funding Committee Chair)

Research Progress

2022 has been a prolific year in terms of research productivity, including 55 peer reviewed publications, 63 podium presentations, 28 poster presentations, 7 book chapters, and 42 invited talks from our SDSF faculty, fellows, collaborators, and volunteers. Here are some highlights of research topics that our SDSF partners are helping progress:

Pediatric and Growing Spine:

Under the mentorship and expertise of Dr. Behrooz Akbarnia, SDSF partners have published and presented novel work on best approaches for treatment of Early-Onset Scoliosis, including use of traditional growing rods, growth preserving instrumentation, and magnetically controlled growing rods.

Adult Spinal Deformity:

Drs. Greg Mundis and Robert Eastlack have made substantial contributions to the literature in the area of Adult Spinal Deformity, including improving our understanding of predictors for optimal surgical outcomes, the impact of different surgical techniques and correction magnitudes on clinical results, and the characterization and treatment of cervical spine deformity.

Surgical techniques in management of spine pathology:

Drs Robert Eastlack, Hani Malone, and Greg Mundis continue to provide new evidence on clinical outcomes for state-of-the art surgical approaches and techniques being introduced to the market. These approaches include implementing novel interbody cage designs, the use of bioactive implants, and robotic-assisted surgery.

We look forward to continued productivity and progress in the coming year!

SDSF Research Grant Funding Program

We would like to thank everyone who has supported the SDSF Endowment Fund over the years, and are happy to announce that with this support, we have successfully funded our first year of our new Research Grants Program. After our first call for applications in January of 2022, we received numerous quality applications under our topic options of Scientific Research, Education/Training, and Outreach. Ultimately, in August of 2022, we awarded a total of \$45,000 in grant funds to 3 investigators proposing research spanning basic, translational, and clinical science for our overarching mission to improve education, foundational knowledge, and quality of clinical care for individuals with spine conditions.

Michael P. Kelly, MD, MSc was awarded under the Scientific Research option for his proposal entitled “Immunophenotyping in Neuromuscular Pediatric Scoliosis Surgery”. This project aims to evaluate risk for poor surgical outcomes in individuals with neuromuscular scoliosis using innovative basic science techniques to evaluate functional immunosuppression. Kenneth Illingworth, MD was awarded under the Education/Training option for his proposal entitled “Simulation Training in Pediatric Spinal Deformity.” This project aims to provide spine surgical simulation training to improve orthopaedic resident’s proficiency in surgical techniques using 3D printed spine models of pediatric spines. Hai Le, MD, MPH, was awarded under the Scientific Research option for his proposal entitled “Physical Activity Monitoring after Adult Spinal Deformity Surgery.” This project aims to use wearable technology to measure functional outcomes after spinal fusion surgery in individuals with adult spinal deformity.

We congratulate our first grant awardees for their outstanding proposals and look forward to seeing the results of these works. We are also excited to see what the 2023 year holds as we continue to develop and expand our Funding Program.



A handwritten signature in black ink, appearing to read 'Bahar Shahidi'.

Bahar Shahidi, PT, PhD

Bridging the Gap 2022

It started as a suggestion from Greg Mundis. “What if we took the SDSF Visiting Professor Meeting, made it a two-day event, added some fun events for networking, and held the GSO (Global Spine Outreach)-SDSF Fundraising Gala at the end of the conference?”

The idea took hold, and things began to move. Dates and a hotel – July 29-30 and the Omni La Costa Resort in Carlsbad – were selected and Dr. Mundis began inviting faculty. The name, Bridging the Gap, was selected to reflect efforts to reduce or eliminate gaps in many areas of spine care. “Learn. Play. Give” was added as a tagline acknowledging the desire to combine education, fun with colleagues and philanthropy in one event.

It was a bit of a gamble but paid off handsomely. The course itself covered 11 hours over Friday and Saturday, with a golf tournament on Friday afternoon and cycling early on Saturday morning. The weekend finished with a flourish at The Secret Garden fund raising gala. Course attendance, including faculty and industry, was over 120 with many participating in the additional activities.

Course Chairs Greg Mundis, Robert Eastlack and Behrooz Akbarnia (Emeritus Chair) were assisted by Directors Michael Kelly, Eric Klineberg and Burt Yaszay in preparing a program that addressed a number of gaps, both surgical and practice related. Each thirty-minute presentation was followed by thirty minutes of lively panel and audience discussion.

Faculty and panelists for the course included Keynote Speaker Christopher Shaffrey along with Ricardo Acacio, R. Todd Allen, Christopher Ames, Neel Anand, Lindsay Andras, John Asghar, Donald Blaskiewicz, Roberto Chapa, Robert Cho, Lawrence Lenke, Elizabeth

Lord, Hani Malone, Peter Newton, Joseph Osorio, Anthony Rinella, Shalin Shah, Bahar Shahidi, David Skaggs, Jay Turner, Salil Upasani and Juan Uribe.

We are grateful to all of them for their participation and for the insights and expertise they brought to the course!

With the outstanding faculty and topics as diverse as “What every adult surgeon should know about my pediatric patients,” “What is the financial impact of innovation and is it sustainable” and “How to navigate the critical relationship between the spine surgeon and administration,” it wasn’t surprising that the room was always full and participants engaged. Feedback was extremely positive.

We also appreciate the companies who exhibited and supported the course. Those included NuVasive, SeaSpine and Si-Bone at Gold Level Support, Carlsmed and Cerapedics at Silver Level, and exhibitors ATEC Spine, CarboFix, Centinel Spine, DePuy Synthes, Globus Medical, Medtronic, NeoSpine USA, Orthofix, Spinal Elements, Stryker, Surgalign and Zimvie Spine.

Thanks also to Manscaped and Mainstay Medical for their support of the Cycling event. All proceeds from Golf and Cycling went to support the work of Global Spine Outreach and SDSF.

Planning has already begun for the 2023 event to be held on July 21-22 in Carlsbad. Mark your calendar!



SECRET GARDEN



Da Vinci and Me: Straight and Curved Spines

Karen J. Sangren, Ph.D.

I largely look upon 2020 as a lost year, a time for lamenting over our lives changed forever because of the global pandemic. It is ironic then, that I was able to produce a body of two-dimensional artwork during isolation that I rarely had time to do when I was working full-time as a university art education professor and department chair.



As I was reorganizing my garage one day, I came across a 1957 coffee table book on Leonardo Da Vinci's drawings. The amazing sketches of Da Vinci (1452-1519) and some of his contemporaries seemed lost between the book's hardcovers. In fact, I later disassembled the book into 50 different mixed-media collages, 39 of which were displayed at an art exhibition during the 2022 Lenten Season. As I began using some of Da Vinci's anatomical drawings in several of my collages, my eyes landed on his depictions of human skeletons, first drawn around 1510. The ribcages were portrayed from front and side. My spine had not been that straight since I was 11 years old.

I had lived with scoliosis since junior high and rarely thought about my spine across the years. I

learned from my orthopedist early on that the top and bottom of my spine aligned, but an S-curve in between would define its shape for all the years that followed. Muscle structures developed around it and life went forward. As long as I did not do anything "stupid", like engaging in tasks that required a lot of bending or carrying something too heavy, I was just fine. I had always been grateful that my parents had chosen the body cast treatment when I was 12, rather than surgery -- even though the stretching machine had hurt a lot.

The increased accuracy of Da Vinci's drawings and his growing knowledge in the arts, humanities, and sciences, was greatly driven by his insatiable curiosity and genius. By the time of his death in 1519, Da Vinci had dissected 30 human cadavers for use in 240 anatomical drawings. His art skills brought an increased finesse to earlier attempts to draw skeletons by lesser known Italian artists, such as Jacopo Berengario and Antonio Pollaiuolo in the late 1400s.

Da Vinci's skeletal drawings were first assembled in 1511, in a volume entitled Anatomical Manuscripts A. It became a benchmark document in science and art history into the 19th Century. Realistic depictions of the human form by artists in the Renaissance (1300s-1600s), were increasingly "built" from the inside out. Da Vinci needed to know anatomical structures before he could more accurately sketch his human forms, portraying highly contoured three-dimensional figures on a flat surface.

So how do we get from Da Vinci's 500 year-old idealized drawings of straight spines that I used in my collages back to my own scoliosis? Life did not require me to have a straight spine to accomplish my avocations and professional interests in the visual arts. While I often had to have spine to stand up for what was right as a woman in leadership, physically I was rarely hampered by my spine's curvature. I had been fortunate enough not to require surgery as a young adolescent and my spine had functioned almost normally despite its S shape. Those times when I knew I had exerted it too much, I paid the price with a couple days of Aspirin and back exercises. Only now as I age, when I see I have begun to shrink a little in height,

am I reminded of my back and its contour. Some backaches here and there? A few, but I remain grateful for a lifetime of staying physically fit and doing the activities I loved best, with amazingly little intervention by my scoliosis. It is okay that Da Vinci mostly drew straight spines.



Graduating Clinical Fellows 2021-2022



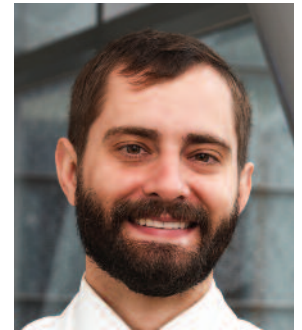
Kody K. Barrett, MD
*Harbor UCLA Medical Center
Torrance, CA*



Micah B. Blais, MD
*Harvard Combined Orthopedics
Residency Program
Boston, MA*



Shalin Shah, DO
*University of Rochester
Rochester, NY*



Benjamin Kafka, MD
*University of Texas
Southwestern Medical Center
Dallas, TX*

Current Clinical Fellows 2022-2023



Amber Price, MD
*University of New Mexico HSC
Albuquerque, NM*



Jay Kumar, MD
*University of South Florida
Tampa, FL*



Cameron Shirazi, MD
*University of Oklahoma HSC
Oklahoma City, OK*

Research Fellow



Fernando Rios, MD
*Hospital Christus Muguerza
Chihuahua, Mexico*

Visiting Fellows



Antonio Barrera, MD
*Christus Muguerza Hospital Alta Especialidad
Monterrey, Mexico*

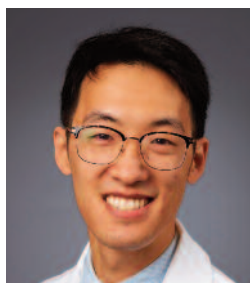


Adetunji Toluse, MD
*National Orthopaedic Hospital
Lagos, Nigeria*

Future Clinical Fellows 2023-2024



Michael J. Pompliano, MD
*Seton Hall University/St. Joseph's
University Medical Center
Paterson, NJ*



David Sing, MD
*Boston University
Boston, MA*



Ryan Khanna, MD
*Rush University
Chicago, IL*

Fellowship Activities

SDSF has trained a total of 45 Clinical Fellows, 5 Research Fellows, numerous International Fellows, and 28 Navy Ortho Residents since inception, contributing to the advancement of spinal care.



Behrooz Akbarnia and SDSF Fellow, Jay Kumar, with visiting surgeons Antonio Barrera and Adetunji Toluse.



Graduating fellow, Micah Blais, with Faculty at Stone Brewery



Fellows attending a quarterly meeting with Dr. Akbarnia. The goal is to promote lifelong professional and personal excellence.

SDSF is proud of our continued collaboration with the Orthopedic Residency Training Program at NMCS. Beginning in July 2017, we have welcomed PGY-4 residents from the Naval Medical Center. Residents complete 10 week rotations with our full-time clinical faculty. Their training curriculum includes clinic and surgeries, weekly spine and research conferences, journal club meetings, and presenting one assigned lecture.



Mathew Bowers, MD



Matthew Henriques, MD



Richard Lang, MD



Christopher Martin, MD



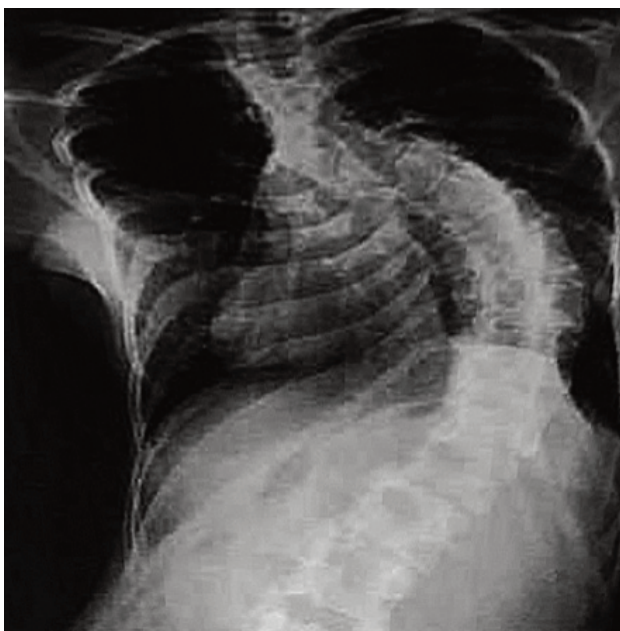
Christopher Sullivan, MD

“Every Scar Tells a Story”: Stephanie’s Story

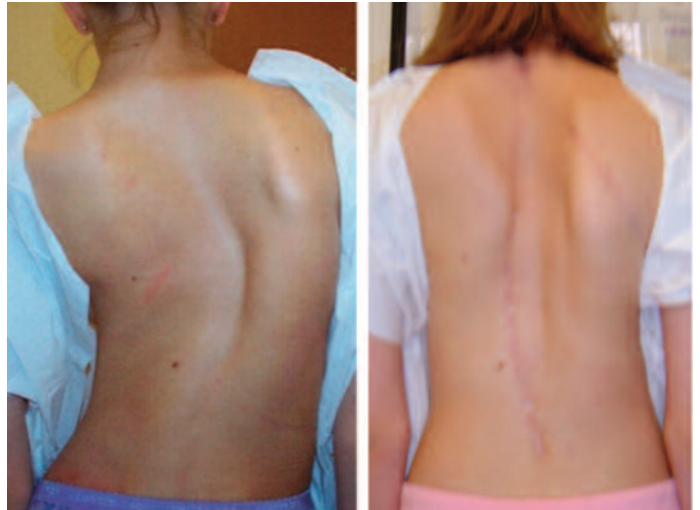


My name is Stephanie and it has been 20 years since my scoliosis surgery was done by Dr. Akbarnia and his team.

When I was 7 years old, I was diagnosed with scoliosis. By the time I turned 12, my scoliosis hit 60 degrees and doctors suggested a back brace. Since I was premature and 4 years behind in growth, I wore many different back braces from 6th - 11th grade in hopes that a growth spurt would correct my curve. During those years, I was very insecure and did everything I could to hide my brace. Endless doctor appointments and therapy were my “sports” growing up as I tried to help my scoliosis and some other issues. I know none of it was easy on my parents either. After doing all we could to prevent my curve from increasing, it drastically took off and became 110 degrees!



Never ones to give up, my wonderful parents began researching spine surgeons and found Dr. Akbarnia. I was nervous going to the appointment because I knew what the news was most likely going to be. Dr. Akbarnia carefully reviewed my medical history and x-rays with me. I was informed that my curve was one of the worst they had seen at the time and was told of the potential problems I could face in the future, including a shorter life span, if it was not corrected.



At 17 years old, I had my back surgery and was under for 12 hours. They put two rods in my back and removed a rib and discs that would fuse my spine. It was an extensive surgery and I didn't regain full consciousness for over 2 days. After all of that, the gifted hands of Dr. Akbarnia and his team were able to get my curve down from 110 degrees to 41 degrees. It was truly a miracle and a blessing to my life!

After my successful back surgery, for the first time I truly felt beautiful and I was able to live a life I had only dreamed of while growing up. I was able to pursue acting and print modeling, which led to my career as a makeup artist and business owner, specializing in bridal beauty, that I have continued for over 15 years. I find great delight in sharing those feelings of transformation with other women and being able to make them look and feel beautiful from the inside out, because that is how mine took place.

What I had to go through with my scoliosis and the challenges along the way have made me who I am today. I wouldn't change it for the world because it has made me a stronger person in the end.

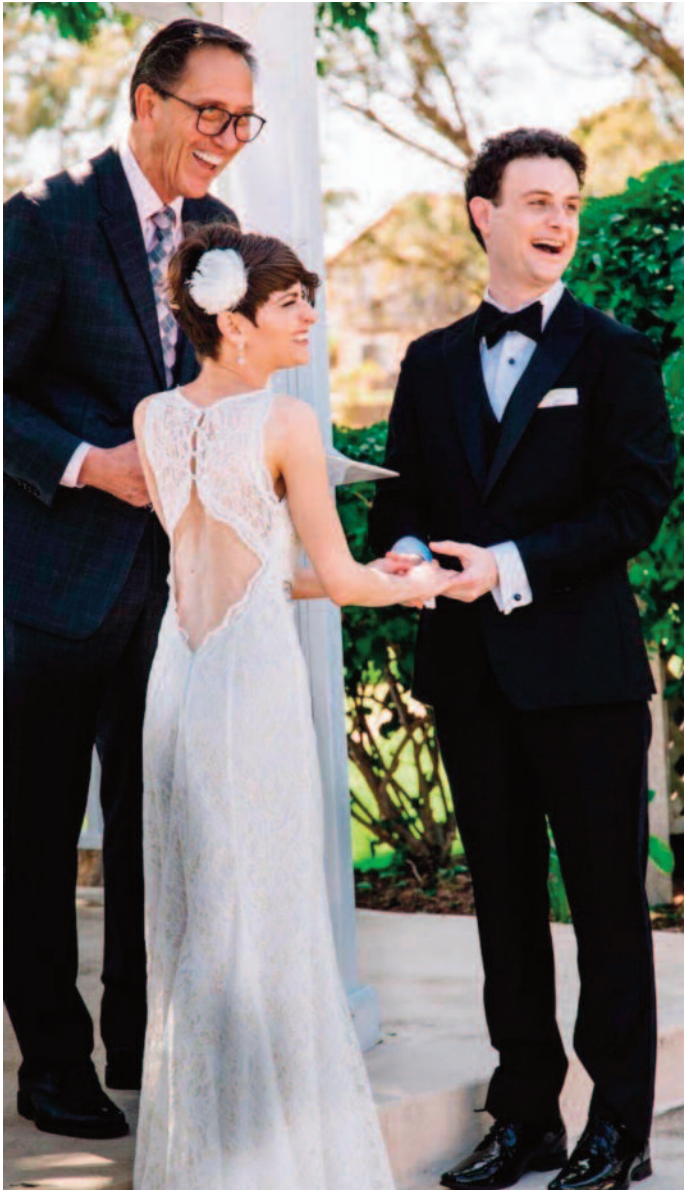




I am blessed to get to live the life that I have today! Now at 37, I have an incredible husband and 2 beautiful daughters (2.5 years and 8 months.)

I am able to live a full life, with minimal pain, which may not have happened without the expertise of my surgical team and on-going advancements in the care of patients with scoliosis.

Instead of hiding in hooded sweatshirts with a back brace as an insecure teenager, I now love my back scars and choose to embrace them. It is my story and a true testimony to what God has done in my life through the talent of amazing doctors. From every wound there is a scar and every scar tells a story. A story that says “I survived”.



Because of my scoliosis transformation and my admiration for Dr. Akbarnia and Dr. Mundis, my husband and I also annually support SDSF & GSO. It is my desire for children who have severe spinal deformities around the world, who may not have the means due to underlying circumstances, to be able to get the same level of care and experience the same life transformation that I did. When your spine is improved and your value of life extended, it not only changes you physically, but emotionally, mentally, and spiritually.

I also want to acknowledge and honor Dr. Akbarnia because he is the most humble man you will ever meet. He has great sensitivity and wisdom and has helped so many people. He exhibits a generous life of giving and serving others, never showing a bit of arrogance.



Through his years of experience, he has also raised up many leaders and accomplished doctors.

It is a joy to see the legacy he continues to build and the lives he has touched.



I am forever grateful to Dr. Akbarnia, as well as Dr. Mundis and their team, for all their support and care over the years. They changed my life for the better and continue to do the same for others.

A Fellow's Story

With Edward K. Nomoto, M.D

It's been a long time coming, I just wanted to thank Dr Akbarnia, Greg, Bob, Ramin, Jamie, Muneesh, Don, Burt and Pat and my co-fellow, Paul Stanton for their comradery and commitment to my education and development 10 years ago! Time has passed so quickly since my glorious one year of fellowship from 2011-2012. I remember it like it was yesterday...maybe last week at this point. I live in Santa Monica with my wife, Jenica Ryu, and my two daughters Azumi (11 years old, born October of fellowship year), and Sora (five years old).

Currently, I remain in private practice in an orthopedic group, DOCS Health. We are a group of 6 spine surgeons (3 ortho, 3 neuro), 3 orthopedic surgeons and a vascular access surgeon. Our DOCS medical building is next to Cedars Sinai, which houses our surgery center. We have a small physician owned hospital in the area as well with 2 operating rooms and 7 patient rooms where we do moderately sized orthopedic and spine cases. I operate at Cedars-Sinai Medical Center and St. John's Hospital in Santa Monica as well. Approximately 1/3 of my cases are deformity/ revision related. The other 2/3 are degenerative while taking call one week every three months at Cedars Sinai (level one).

We have a spine fellowship at DOCS with Dr. Neel Anand which we describe as a finishing school as we typically take a fellow who has already completed fellowship and wants to see more MIS deformity surgery, outpatient surgery and motion preservation. I am faculty for the Orthopaedic residency program and the Cedars-Sinai fellowship.

I feel so fortunate, having been a part of the SDSF program. I truly believe the training I received was special as I have been able to take the knowledge and fundamentals of spine and apply them to my current techniques. I was very green on July 1, 2011 and felt like a deer in the headlights. I appreciate the help I received to develop the critical analysis of patients foremost and imaging that are necessary to evaluate a patient. These are the fundamentals I try to pass along to my fellows and residents. Those Monday morning conferences have proven to be so valuable in developing surgical plans and the thought process especially early in practice. I believe this was key to help me survive in the competitive Los Angeles market.



SDSF Mexico Outreach Team at 2022 Bridging The Gap

The surgical skills and fundamentals of techniques have allowed me to continue performing lateral surgery, degenerative surgery and deformity surgery but have also allowed me to further develop my technique. I have adopted the anterior to psoas technique for lateral surgery especially at L4-5 and single position anterior interbodies in deformity surgery which has helped with efficiency in the operating room. I have integrated the use of navigation and robotics to degenerative and deformity surgeries and have been happy with the results and patient outcomes thus far. I have also taken a special interest in motion preservation both in the cervical and lumbar spine and have been doing both types of cases with great results.

I appreciate that the fellowship family life has continued. It is great to see each other at conferences in San Diego and abroad and to have the opportunity to work together. I have also had the opportunity to participate in Global Spine Outreach with Greg and Burt and take care of kids in need in Mexico which has been amazing and rewarding. I never thought those clinics at Rady's would be put to use and wish I had paid more attention!

Thanks again to all involved in my training. I know that I would not be in the position I am today without the family.

Cheers and thank you to the best fellowship in the country,

Eddie





Publications and Presentations 2021-2022

Legend:
Pediatric



PEER-REVIEWED PUBLICATIONS

Passias PG, Horn SR, Oh C, Poorman GW, Bortz C, Segreto F, Lafage R, Diebo BG, Scheer JK, Smith JS, Shaffrey CI, **Eastlack RK**, Sciubba DM, Protopsaltis T, Kim HJ, Hart RA, Lafage V, Ames CP; ISSG. *Predictive Model for Achieving Good Clinical and Radiographic Outcomes at One-Year Following Surgical Correction of Adult Cervical Deformity*. J Craniovertebr Junction Spine. 2021 Jul-Sep;12(3):228-235.

Passias PG, Passfall L, Horn SR, Pierce KE, Lafage V, Lafage R, Smith JS, Line B, **Mundis GM**, **Eastlack RK**, Diebo BG, Protopsaltis TS, Kim HJ, Scheer J, Burton DC, Hart RA, Schwab FJ, Bess S, Ames CP, Shaffrey CI; ISSG. *Risk-Benefit Assessment of Major Versus Minor Osteotomies for Flexible and Rigid Cervical Deformity Correction*. J Craniovertebr Junction Spine. July/September 2021; 12(3):263-268.

Alas H, Passias PG, Diebo BG, Brown AE, Pierce KE, Bortz C, Lafage R, Ames CP, Line B, Klineberg EO, Burton DC, Uribe JS, Kim HJ, Daniels AH, Bess S, Protopsaltis T, **Mundis GM**, Shaffrey CI, Schwab FJ, Smith JS, Lafage V. *Cervical Deformity Patients with Baseline Hyperlordosis or Hyperkyphosis Differ in Surgical Treatment and Radiographic Outcomes*. J Craniovertebr Junction Spine. July/September 2021; 12(3):279-286.

Woodward J, **Malone H**, Witiw CD, Kolcun JPG, Koro L, Keegan KC, Ahmad S, Kerolus MG, David BT, Fessler RD, Fessler RG. *Transforaminal Lumbar Interbody Fusion Using a Novel Minimally Invasive Expandable Interbody Cage: Patient-Reported Outcomes and Radiographic Parameters*. J Neurosurg Spine. 2021 Aug; 35(2):170-176.

Khanna R, **Malone H**, Keppetipola KM, Deutsch H, Fessler RG, Fontes RB, O'Toole JE. *Multilevel Minimally Invasive Lumbar Decompression: Clinical Efficacy and Durability To 2 Years*. Int J Spine Surg. 2021 Aug; 15(4):795-802.

Passias PG, Brown AE, Bortz C, Pierce K, Alas H, Ahmad W, Passfall L, Kummer N, Krol O, Lafage R, Lafage V, Burton D, Hart R, Anand N, **Mundis GM**, Neuman B, Line B, Shaffrey C, Klineberg E, Smith J, Ames C, Schwab FJ, Bess S; ISSG. *A Risk-Benefit Analysis of Increasing Surgical Invasiveness Relative to Frailty Status in Adult Spinal Deformity Surgery*. Spine (Phila Pa 1976), August 2021; 15;46(16):1087-1096.

Sheikh Alshabab B, Gupta MC, Lafage R, Bess S, Shaffrey C, Kim HJ, Ames CP, Burton DC, Smith JS, **Eastlack RK**, Klineberg EO, **Mundis GM**, Schwab FJ, Lafage V; ISSG (ISSG). *Does Achieving Global Spinal Alignment Lead to Higher Patient Satisfaction and Lower Disability in Adult Spinal Deformity?* Spine (Phila Pa 1976), August 2021; 15;46(16):1105-111

Buell TJ, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protopsaltis TS, Passias PG, **Mundis GM**, **Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Kojo Hamilton D, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Ames CP, Smith JS; ISSG. *Global Coronal Decomensation and Adult Spinal Deformity Surgery: Comparison of Upper-Thoracic versus Lower-Thoracic Proximal Fixation for Long Fusions*. J Neurosurg Spine, 2021 August 27; 35(6):761-773.

Buell TJ, Shaffrey CI, Bess S, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protopsaltis TS, Passias PG, **Mundis GM**, **Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Kojo Hamilton D, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Ames CP, Smith JS; ISSG. *Multicenter Assessment of Outcomes and Complications Associated with Transforaminal Versus Anterior Lumbar Interbody Fusion for Fractional Curve Correction*. J Neurosurg Spine. 2021 Aug 20; 35(6):729-742.

Durand WM, Lafage R, Kojo Hamilton D, Passias PG, Kim HJ, Protopsaltis T, Lafage V, Smith JS, Shaffrey C, Gupta M, Kelly MP,

55 Publications
63 Podium Presentations
28 Poster Exhibits

Klineberg EO, Schwab F, Gum JL, **Mundis GM**, **Eastlack RK**, Kebaish K, Soroceanu A, Hostin RA, Burton D, Bess S, Ames C, Hart RA, Daniels AH; ISSG (ISSG). *Artificial Intelligence Clustering of Adult Spinal Deformity Sagittal Plane Morphology Predicts Surgical Characteristics, Alignment, and Outcomes*. Eur Spine J. 2021 Aug; 30(8):2157-2166.

Buell TJ, Smith JS, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protopsaltis TS, Passias PG, **Mundis GM**, **Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Kojo Hamilton D, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Bess S, Ames CP. *Operative Treatment of Severe Scoliosis in Symptomatic Adults: Multicenter Assessment of Outcomes and Complications with Minimum 2-Year Follow-Up*. Neurosurgery, September 2021; 89(6):1012-1026.

Clement RC, Yaszay B, **McClung A**, Bartley CE, Nabizadeh N, Skaggs DL, Thompson GH, Boachie-Adjei O, Sponseller PD, Shah SA, Sanders JO, **Pawelek J**, **Mundis GM**, **Akbarnia BA**; Pediatric Spine Study Group (Formerly, Growing Spine Study Group). *Growth-Preserving Instrumentation in Early-Onset Scoliosis Patients with Multi-Level Congenital Anomalies*. Spine Deform. 2021 Sep; 9(5):1491.

Varley ES, **Pawelek JB, Mundis GM**, Oetgen ME, Sturm PF, **Akbarnia BA**; Pediatric Spine Study Group, Yaszay B. *The Role of Traditional Growing Rods in The Era of Magnetically Controlled Growing Rods for the Treatment of Early-Onset Scoliosis*. Spine Deform. 2021 Sep; 9(5):1465-1472.



Le HV, Wick JB, Lafage R, **Mundis GM, Eastlack RK**, Bess S, Burton DC, Ames CP, Smith JS, Passias PG, Gupta MC, Lafage V, Klineberg EO; ISSG. *Association of Findings on Preoperative Extension Lateral Cervical Radiography with Osteotomy Type, Approach, and Postoperative Cervical Alignment After Cervical Deformity Surgery*. J Neurosurg Spine. 2021 September 3; 36(1):93-98.



Passias PG, Pierce KE, Naessig S, Ahmad W, Passfall L, Lafage R, Lafage V, Kim HJ, Daniels A, **Eastlack RK**, Klineberg E, Line B, Mummaneni P, Hart R, Burton D, Bess S, Schwab F, Shaffrey C, Smith JS, Ames CP; ISSG. *At What Point Should the Thoracolumbar Region Be Addressed in Patients Undergoing Corrective Cervical Deformity Surgery?* Spine (Phila Pa 1976). 2021 Oct 15; 46(20): E1113-E1118.

Kim HJ, Virk S, Elysee J, Ames C, Passias P, Shaffrey C, **Mundis GM**, Protopsaltis T, Gupta M, Klineberg E, Hart R, Smith JS, Bess S, Schwab F, Lafage R, Lafage V, On Behalf of the ISSG. *Surgical Strategy for the Management of Cervical Deformity Is Based on Type of Cervical Deformity*. J Clin Med. 2021 October 21; 10(21), 4826.

Passias PG, Brown AE, Alas H, Pierce KE, Bortz CA, Diebo BG, Lafage R, Lafage V, Burton DC, Hart R, Kim HJ, Bess S, Moattari K, Joujon-Roche R, Krol O, Williamson T, Tretiakov P, Imbo B, Protopsaltis TS, Shaffrey C, Schwab F, **Eastlack RK**, Line B, Klineberg E, Smith J, Ames C; ISSG. *The Impact of Postoperative Neurologic Complications on Recovery Kinetics in Cervical Deformity Surgery*. J Craniovertebr Junction Spine. October-December 2021; 12(4):393-400.

Passias PG, Bortz C, Pierce KE, Kummer NA, Lafage R, Diebo BG, Line B, Lafage V, Burton DC, Klineberg EO, Kim HJ, Daniels AH, **Mundis GM**, Protopsaltis TS, **Eastlack RK**, Sciubba DM, Bess S, Schwab FJ, Shaffrey CI, Smith JS, Ames CP; ISSG (ISSG). *Appropriate Risk Stratification and Accounting for Age-Adjusted Reciprocal Changes in The Thoracolumbar Spine Reduces the Incidence and Magnitude of Distal Junctional Kyphosis in Cervical Deformity Surgery*. Spine (Phila Pa 1976). 2021 November 1; 46(21):1437-1447.

Chan AK, **Eastlack RK**, Fessler RG, Than KD, Chou D, Fu KM, Park P, Wang MY, Kanter AS, Okonkwo DO, Nunley PD, Anand N, Uribe JS, **Mundis GM**, Bess S, Shaffrey CI, Le VP, Mummaneni PV; ISSG. *Two- and Three-Year Outcomes of Minimally Invasive and Hybrid Correction of Adult Spinal Deformity*. J Neurosurg Spine. 2021 November 5; 36(4):595-608.

Buell TJ, Smith JS, Shaffrey CI, Kim HJ, Klineberg EO, Lafage V, Lafage R, Protopsaltis TS, Passias PG, **Mundis GM, Eastlack RK**, Deviren V, Kelly MP, Daniels AH, Gum JL, Soroceanu A, Kojo Hamilton D, Gupta MC, Burton DC, Hostin RA, Kebaish KM, Hart RA, Schwab FJ, Bess S, Ames CP. *Operative Treatment of Severe Scoliosis in Symptomatic Adults: Multicenter Assessment of Outcomes and Complications with Minimum 2-Year Follow-Up*. Neurosurgery. 2021 Nov 18; 89(6):1012-1026.

Lafage R, Smith JS, Sheikh Alshabab B, Ames C, Passias PG, Shaffrey CI, **Mundis GM**, Protopsaltis T, Gupta M, Klineberg E, Kim HJ, Bess S, Schwab F, Lafage V; ISSG (ISSG). *When Can We Expect Global Sagittal Alignment to Reach a Stable Value Following Cervical Deformity Surgery?* J Neurosurg Spine, 2021 November 5; 36(4):616-623.

Line B, Bess S, Gum JL, Hostin RA, Kebaish K, Ames C, Burton D, **Mundis GM, Eastlack RK**, Gupta M, Klineberg E, Lafage V, Lafage R, Schwab F, Shaffrey C, Smith JS; ISSG. *Opioid Use Prior to Surgery Is Associated with Worse Preoperative and Postoperative Patient Reported Quality of Life and Decreased Surgical Cost Effectiveness for Symptomatic Adult Spine Deformity; A Matched Cohort Analysis*. N Am Spine Soc J. 2021 Dec 12;9:100096.

Lafage R, Fong AM, Klineberg E, Smith JS, Bess S, Shaffrey CI, Burton D, Kim HJ, Elysee J, **Mundis GM**, Passias P, Gupta M, Hostin RA, Schwab F, Lafage V. *Complication Rate Evolution Across a 10-Year Enrollment Period of a Prospective Multicenter Database*. J Neurosurg Spine. 2021 December 24; 1-11

Cobanoglu M, Yorgova P, Neiss G, **Pawelek JB**, Thompson GH, Skaggs DL, Jain VV, **Akbarnia BA**; Pediatric Spine Study Group, Shah SA. *Prevalence of Junctional Kyphosis in Early-Onset Scoliosis: Can It Be Corrected at Final Fusion?* Eur Spine J. 2021 Dec; 30(12):3563-3569. 1.



Patricia A. Kostial, Hazem Elsebaie, Mark Ochoa, Behrooz A. Akbarnia, *The History and Evolution of Spine Deformity Management*, Seminars in Spine Surgery, Volume 33, Issue 4, 2021, 100910, ISSN 1040-7383, December 2021.

Passias PG, Ahmad W, Kummer N, Lafage R, Lafage V, Kebaish K, Daniels A, Klineberg E, Soroceanu A, Gum J, Line B, Hart R, Burton D, **Eastlack RK**, Jain A, Smith JS, Ames CP, Shaffrey C, Schwab F, Hostin RA, Bess S; ISSG. *Examination of the Economic Burden of Frailty in Patients with Adult Spinal Deformity Undergoing Surgical Intervention*. Neurosurgery, 2022 Jan 1; 90(1):148-153.

Akbarnia BA, Pawelek JB, Hosseini P, Salari P, Kabirian N, Marks D, Shah SA, Skaggs DL, Emans JB, **Elsebaie H**, Thompson GH, Sponseller PD; Pediatric Spine Study Group. *Treatment of Early-Onset Scoliosis: Similar Outcomes Despite Different Etiologic Subtypes in Traditional Growing Rod Graduates*. J Pediatr Orthop. 2022 Jan 1; 42(1):10-16.



Lafage R, Smith JS, Elysee J, Passias P, Bess S, Klineberg E, Kim HJ, Shaffrey C, Burton D, Hostin RA, **Mundis GM**, Ames C, Schwab F, Lafage V; ISSG (ISSG). *Sagittal Age-Adjusted Score (SAAS) for Adult Spinal Deformity (ASD) More Effectively Predicts Surgical Outcomes and Proximal Junctional Kyphosis Than Previous Classifications*. Spine Deform, 2022 January; 10(1):121-131

Chou D, Lafage V, Chan AY, Passias P, **Mundis GM, Eastlack RK**, Fu KM, Fessler RG, Gupta MC, Than KD, Anand N, Uribe JS, Kanter AS, Okonkwo DO, Bess S, Shaffrey CI, Kim HJ, Smith JS, Sciubba DM, Park P, Mummaneni PV; ISSG (ISSG). *Patient Outcomes After Circumferential Minimally Invasive Surgery Compared with Those of Open Correction for Adult Spinal Deformity: Initial Analysis of Prospectively Collected Data*. J Neurosurg Spine. 2022 Feb; 36(2):203-214

Daniels AH, Durand WM, Steinbaum AJ, Lafage R, Kojo Hamilton D, Passias PG, Kim HJ, Protopsaltis T, Lafage V, Smith JS, Shaffrey C, Gupta M, Klineberg EO, Schwab F, Gum JL, **Mundis GM, Eastlack RK**, Kebaish K, Soroceanu A, Hostin RA, Burton D, Bess S, Ames C, Hart RA; ISSG. *Examination of Adult Spinal Deformity Patients Undergoing Surgery with Implanted Spinal Cord Stimulators and Intrathecal Pumps*. Spine (Phila Pa 1976). 2022 Feb 1; 47(3):227-233

Durand WM, Babu JM, Kojo Hamilton D, Passias PG, Kim HJ, Protopsaltis T, Lafage V, Lafage R, Smith JS, Shaffrey C, Gupta M, Kelly MP, Klineberg EO, Schwab F, Gum JL, **Mundis GM, Eastlack RK**, Kebaish K, Soroceanu A, Hostin RA, Burton D, Bess S, Ames C, Hart RA, Daniels AH; ISSG (ISSG). *Adult Spinal Deformity Surgery Is Associated with Increased Productivity and Decreased Absenteeism from Work and School*. Spine (Phila Pa 1976). 2022 Feb 15; 47(4):287-294

Than KD, Mehta VA, Le V, Moss JR, Park P, Uribe JS, **Eastlack RK**, Chou D, Fu KM, Wang MY, Anand N, Passias PG, Shaffrey CI, Okonkwo DO, Kanter AS, Nunley P, **Mundis GM**, Fessler RG, Mummaneni PV. *Role Of Obesity in Less Radiographic Correction and Worse Health-Related Quality-Of-Life Outcomes Following Minimally Invasive Deformity Surgery*. J Neurosurg Spine. 2022 Aug; 37(2):274-282. Epub 2022 Feb 18

Durand WM, Disilvestro KJ, Kim HJ, Kojo Hamilton D, Lafage R, Passias PG, Protopsaltis TS, Lafage V, Smith JS, Shaffrey CI, Gupta MC, Klineberg EO, Schwab FJ, Gum JL, **Mundis GM, Eastlack RK**, Kebaish KM, Soroceanu A, Hostin RA Jr, Burton DC, Bess S, Ames CP, Hart RA, Daniels AH; ISSG. *Low-Density Pedicle Screw Constructs Are Associated with Lower Incidence of Proximal Junctional Failure in Adult Spinal Deformity Surgery*, Spine (Phila Pa 1976). 2022 Mar 15; 47(6):463-469.

Wick JB, Le HV, Lafage R, Gupta MC, Hart RA, **Mundis GM**, Bess S, Burton DC, Ames CP, Smith JS, Shaffrey CI, Schwab FJ, Passias PG, Protopsaltis TS, Lafage V, Klineberg EO; ISSG. *Assessment of Adult Spinal Deformity Complication Timing and Impact On 2-Year Outcomes Using a Comprehensive Adult Spinal Deformity Classification System*. Spine (Phila PA 1976). 2022 Mar 15; 47(6):445-454.

Chan JL, Bae HW, Harrison Farber S. Uribe JS, **Eastlack RK, Walker CT**. *Evolution of Bioactive Implants in Lateral Interbody Fusion*. Int J Spine Surg. 2022 Mar;16.

Malone H. *Commentary: Robotic-Assisted Vs Nonrobotic-Assisted Minimally Invasive Transforaminal Lumbar Interbody Fusion: A Cost-Utility Analysis*. Neurosurgery. 2022 Apr 1;90(4): E92.

Moss IL, **Eastlack RK**. *Editors' Introduction: Advances in the Evolution of the Lateral Approach to the Thoracolumbar Spine*. Int J Spine Surg. 2022 Apr;16(S1): S7-S8.

Passias PG, Poorman GW, Vasquez-Montes D, Kummer N, **Mundis GM**, Anand N, Horn SR, Segreto FA, Passfall L, Krol O, Diebo BG, Burton D, Buckland A, Gerling M, Soroceanu A, **Eastlack RK**, Kojo Hamilton D, Hart R, Schwab F, Lafage V, Shaffrey C, Sciubba D, Bess S, Ames C, Klineberg E, ISSG (ISSG). *Predictive Analytics for*

Determining Extended Operative Time in Corrective Adult Spinal Deformity Surgery. International Journal of Spine Surgery, Int J Spine Surg. 2022 Apr; 16(2):291-299.

Elias E, Bess S, Line B, Lafage V, Lafage R, Klineberg E, Kim HJ, Passias PG, Nasser Z, Gum JL, Kebaish K, **Eastlack RK**, Daniels AH, **Mundis GM**, Hostin RA, Protopsaltis TS, Soroceanu A, Kojo Hamilton D, Kelly MP, Gupta M, Hart R, Schwab FJ, Burton D, Ames CP, Shaffrey CI, Smith JS; ISSG. *Outcomes Of Operative Treatment for Adult Spinal Deformity: A Prospective Multicenter Assessment with Mean 4-Year Follow-Up*. J Neurosurg Spine. 2022 October; 37(4):607-616. Epub 2022 Apr 29.

Mundis GM, Walker CT, Smith JS, Buell TJ, Lafage R, Shaffrey CI, **Eastlack RK**, Okonkwo DO, Bess S, Lafage V, Uribe JS, Lenke LG, Ames CP; ISSG (ISSG). *Kickstand Rods and Correction of Coronal Malalignment in Patients with Adult Spinal Deformity*. Eur Spine J. 2022 May; 31(5):1197-1205.

Lafage R, Smith JS, Fong AM, Sheikh Alshabab B, Protopsaltis T, Klineberg EO, **Mundis GM**, Passias PG, Gupta M, Shaffrey CI, Kim HJ, Bess S, Schwab F, Ames CP, Lafage V; ISSG. *Proximal And Distal Reciprocal Changes Following Cervical Deformity Malalignment Correction*. J Neurosurg Spine. 2022 October; 37(4):599-606. Epub 2022 May 6.

Uribe JS, Koffie RM, Wang MY, **Mundis GM**, Kanter AS, **Eastlack RK**, Anand N, Park P, Smith JS, Burton DC, Chou D, Kelly MP, Kim HJ, Bess S, Shaffrey CI, Schwab FJ, Lenke LG, Mummaneni PV. *Are Minimally Invasive Spine Surgeons or Classical Open Spine Surgeons More Consistent with Their Treatment of Adult Spinal Deformity?* World Neurosurg. 2022 Sep; 165:e51-e58. Epub 2022 May 26.

Passias PG, Naessig S, Kummer N, Passfall L, Lafage R, Lafage V, Line B, Diebo BG, Protopsaltis T, Kim HJ, **Eastlack RK**, Soroceanu A, Klineberg EO, Hart RA, Burton D, Bess S, Schwab F, Shaffrey CI, Smith JS, Ames CP. *Predicting Development of Severe Clinically Relevant Distal Junctional Kyphosis Following Adult Cervical Deformity Surgery, With Further Distinction from Mild Asymptomatic Episodes*. J Neurosurg Spine. 2022 June; 36(6):928-936.

Lafage R, Virk S, Elysee J, Passias P, Ames C, Hart R, Shaffrey C, **Mundis GM**, Protopsaltis T, Gupta M, Klineberg E, Burton D, Schwab F, Lafage V; ISSG. *Radiographic Characteristics of Cervical Deformity (CD) Using a Discriminant Analysis: The Value of Extension Radiographs*. Clin Spine Surg. 2022 Jun 1; 35(5):E504-E509.

Virk S, Lafage R, Bess S, Shaffrey C, Kim HJ, Ames C, Burton D, Gupta M, Smith JS, **Eastlack RK**, Klineberg E, **Mundis GM**, Schwab F, Lafage V; ISSG. *Are the Arbeitsgemeinschaft Für Osteosynthesefragen (AO) Principles for Long Bone Fractures Applicable to 3-Column Osteotomy to Reduce Rod Fracture Rates?* Clin Spine Surg. 2022 Jun 1; 35(5):E429-E437.

Malone H, Mundis GM, Collier M, Kidwell R L, Rios F, Jelousi M, Galli S, Shahidi B, Akbarnia BA, Eastlack RK. (2022). *Can A Bioactive Interbody Device Reduce The Cost Burden Of Achieving Lateral Lumbar Fusion?* Journal Of Neurosurgery: Spine. November 2022; 37(5):646-653. Epub 2022 Jun 3

Eastlack RK, Soroceanu A, **Mundis GM**, Daniels AH, Smith JS, Line B, Passias P, Nunley PD, Okonkwo DO, Than KD, Uribe J, Mummaneni PV, Chou D, Shaffrey CI, Bess S, ISSG. *Rates Of Loosening, Failure, and Revision of Iliac Fixation in Adult Deformity Surgery*. 2022 July 15; Spine, 47(14), 986-994,

Kim HJ, Yao YC, Shaffrey CI, Smith JS, Kelly MP, Gupta M, Albert TJ, Protopsaltis TS, **Mundis GM**, Passias P, Klineberg E, Bess S, Lafage V, Ames CP; ISSG. *Neurological Complications and Recovery Rates of Patients with Adult Cervical Deformity Surgeries*. Global Spine J. 2022 Jul; 12(6):1091-1097.



Drs. Flippen, Akbarnia, Hunt, Vikas at SRS

Katsuura Y, Lafage R, Kim HJ, Smith JS, Line B, Shaffrey C, Burton DC, Ames CP, **Mundis GM**, Hostin RA, Bess S, Klineberg EO, Passias PG, Lafage V; ISSG. *Alignment Targets, Curve Proportion and Mechanical Loading: Preliminary Analysis of an Ideal Shape Toward Reducing Proximal Junctional Kyphosis*. *Global Spine J*. 2022 Jul; 12(6):1165-1174.

Passias PG, Segreto FA, Moattari KA, Lafage R, Smith JS, Line B, **Eastlack RK**, Burton DC, Hart RA, Bess S, Shaffrey CI, Ames CP, Lafage V; ISSG. *Is Frailty Responsive to Surgical Correction of Adult Spinal Deformity? An Investigation of Sagittal Re-Alignment and Frailty Component Drivers of Postoperative Frailty Status*. *Spine Deform*. 2022 Jul; 10(4):901-911

Passias PG, Kummer N, Williamson TK, Ahmad W, Lebovic J, Lafage V, Lafage R, Kim HJ, Daniels AH, Gum JL, Diebo BG, Gupta MC, Soroceanu A, Scheer JK, Kojo Hamilton D, Klineberg EO, Line B, Schoenfeld AJ, Hart RA, Burton DC, **Eastlack RK**, **Mundis GM**, Mummaneni P, Chou D, Park P, Schwab FJ, Shaffrey CI, Bess S, Ames CP, Smith JS; ISSG. *The Additional Economic Burden of Frailty in Adult Cervical Deformity Patients Undergoing Surgical Intervention*. *Spine (Phila Pa 1976)*. 2022 October 15; 47(20):1418-1425. Epub 2022 Jul 1

Passias PG, Krol O, Moattari K, Williamson TK, Lafage V, Lafage R, Kim HJ, Daniels A, Diebo BG, Protopsaltis T, **Mundis GM**, Kebaish K, Soroceanu A, Scheer J, Kojo Hamilton D, Klineberg E, Schoenfeld AJ, Vira S, Line B, Hart R, Burton DC, Schwab FA, Shaffrey C, Bess S, Smith JS, Ames CP; ISSG. *Evolution Of Adult Cervical Deformity Surgery Clinical and Radiographic Outcomes Based on A Multicenter Prospective Study: Are Behaviors and Outcomes Changing with Experience?* *Spine (Phila Pa 1976)*. 2022 November 15; 47(22):1574-1582. Epub 2022 Jul 1

BOOKS EDITED

Akbarnia BA, Thompson G, Yazici M, and El-Hawary R, Editors: *The Growing Spine: Management of Spinal Disorders in Young Children*, Third Edition: Springer: 2022



The Growing Spine: Management of Spinal Disorders in Young Children, 3rd Edition Editors, Ron El-Hawary, Behrooz A. Akbarnia, George Thompson and Muharrem Yazici at SRS 2022

BOOK CHAPTERS

Schwend RM, **Akbarnia BA**, Schmidt JA, Blakemore LC: *Normal Growth of the Thorax*. *The Growing Spine: Management of Spinal Disorders in Young Children*, Third Edition. **Akbarnia**, Thompson, Yazici and El-Hawary Editors. Springer: 2022



Blakemore LC, Wallace A, **Mundis GM**, **Akbarnia BA**: *Idiopathic Early-Onset Scoliosis*. *The Growing Spine: Management of Spinal Disorders in Young Children*, Third Edition. **Akbarnia**, Thompson, Yazici and El-Hawary Editors. Springer: 2022.



Nnadi C, **Akbarnia BA**: *Magnetically Controlled Growing Rods (MCGRs)*. *The Growing Spine: Management of Spinal Disorders in Young Children*, Third Edition. **Akbarnia**, Thompson, Yazici and El-Hawary Editors. Springer: 2022



Rios F, Boachie-Adjei O, Yankey KP, **Akbarnia BA**, **Mundis GM**: *Early-Onset Scoliosis Treatment in an Outreach Setting*. *The Growing Spine: Management of Spinal Disorders in Young Children*, Third Edition. **Akbarnia**, Thompson, Yazici and El-Hawary Editors. Springer: 2022



Yazici M, **Akbarnia**, Thompson GH, El-Hawary R, Emans JB: *A Journey from the Past to the Future*. *The Growing Spine: Management of Spinal Disorders in Young Children*, Third Edition. **Akbarnia BA**, Thompson, Yazici and El-Hawary Editors. Springer: 2022



Li Y, El-Hawary, **Akbarnia BA**, St. Hilaire T: *Terminology*. *The Growing Spine: Management of Spinal Disorders in Young Children*, Third Edition. **Akbarnia**, Thompson, Yazici and El-Hawary Editors. Springer: 2022



Akbarnia BA: *Magnetically Controlled Growing Rods (MCGR) in Early Onset Scoliosis: Early Onset Spinal Deformity (Chinese Version)*, Editor: Zhang T. 2022



Fernando Rios at SRS

SUMMARY OF PODIUM PRESENTATIONS – 63

- 56th Annual Meeting of Scoliosis Research Society (SRS), **St. Louis, MO**, September 22-25, 2021. **(12)**
- 36th Annual Meeting of North American Spine Society (NASS), **Boston, MA**, September 29-October 2, 2021 **(24)**
- Annual Meeting SMISS Asia/Pacific, **South Korea (Virtual)**, September 29 – October 2, 2021 **(1)**
- 2021 Annual Meeting Congress of Neurological Surgeons (CNS), **Austin, TX**, October 16-20, 2021. **(1)**
- Perry V Halushka 2021 MUSC Research Day, **South Carolina (Virtual)**, November 5, 2021. **(1)**
- 15th International Congress on Early Onset Scoliosis and Growing Spine Annual Meeting, **Salt Lake City, Utah**, November 10-12, 2021 **(2)**
- 49th Annual Meeting of Cervical Spine Research Society (CSRS), **Atlanta, GA**, December 1-4, 2021. **(2)**
- The Annual Meeting of the AANS/CNS Section On Disorders of the Spine and Peripheral Nerves, **Las Vegas, NV**, February 23–26, 2022 **(10)**
- 29th International Meeting on Advanced Spine Techniques (IMAST), **Miami, FL**, April 6-9th, 2022 **(8)**
- 48th Annual Meeting of International Society for the Study of the Lumbar Spine (ISSLS), **Boston, MA**, May 9-13, 2022. **(1)**
- 8th Annual Fellows Research Forum, 2022 16th Annual Ruben F. Gittes, M.D. Award, **La Jolla, CA**, July 27, 2022 **(1)**

SUMMARY OF POSTER PRESENTATIONS – 28

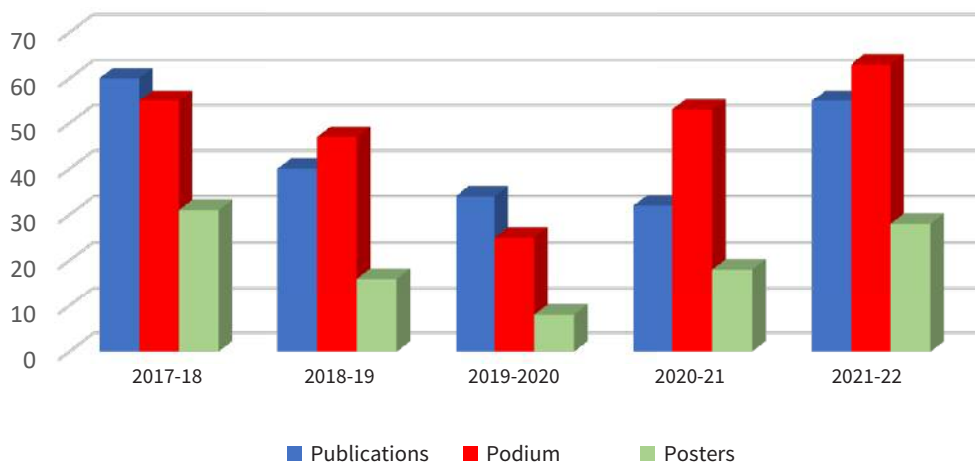
- 36th Annual Meeting of North American Spine Society (NASS), **Boston, MA**, September 29-October 2, 2021 **(7)**
- 49th Annual Meeting of Cervical Spine Research Society (CSRS), **Atlanta, GA**, December 1-4, 2021. **(3)**
- Annual Meeting of American Academy of Orthopaedic Surgeons (AAOS 2022), **Chicago, IL**, March 22-26, 2022. **(6)**
- 29th International Meeting on Advanced Spine Techniques (IMAST), **Miami, FL**, April 6-9th, 2022 **(6)**
- 22nd Annual Conference of International Society for the Advancement of Spine Surgery (ISASS), **The Bahamas**, June 1-4, 2022. **(6)**

SUMMARY OF INVITED SPEAKERS – 42

- Seattle Science Foundation, STED Talk, **Seattle, WA (Webinar)**, September 15, 2021 **(1)**
- 56th Annual Meeting of Scoliosis Research Society (SRS), **St. Louis, MO**, September 22-25, 2021. **(4)**
- University Of California, San Diego, Neurosurgery Grand Rounds, **La Jolla, CA**, October 15, 2021 **(1)**
- Spine: Base to Summit 2022, **Vail, CO**, January 14-17, 2022 **(7)**
- 38th Annual Malcolm B. Coutts Visiting Professorship, San Diego Orthopaedic Society, **San Diego, CA**, January 28, 2022 **(2)**
- Barrow Spine Surgery Symposium, Barrow Neurological Institute, **Phoenix, Arizona**, February 11, 2022 **(3)**
- Spine Summit 2022, The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, **Las Vegas, NV**, February 23–26, 2022 **(2)**
- 20th Annual AO SNA Fellows Forum, AO Spine North America, **Banff Springs, Alberta, Canada**, March 24-26, 2022. **(3)**
- 29th International Meeting on Advanced Spine Techniques (IMAST). **Miami, FL**, April 6-9th, 2022 **(5)**
- University of Oklahoma College of Medicine, Department of Orthopedic Surgery and Rehabilitation 47th Annual Visiting Professorship, **Oklahoma City, Oklahoma**, April 28-29, 2022 **(3)**
- Chop Orthopaedics 7th Annual Surgeon Innovator, **Philadelphia, Pennsylvania**, May 5, 2022 **(1)**
- State of Spine Surgery Think Tank, **San Jose Del Cabo, Mexico**, June 22-25, 2022 **(5)**
- San Diego Spine Foundation, Bridging the Gap 2022, **Carlsbad, CA**, July 28-30, 2022 **(5)**

OVER THE YEARS

Academic Year	Publications	Podium Presentations	Poster Exhibits
AY 2017-2018	60	55	31
AY 2018-2019	40	47	16
AY 2019-2020	34	25	8
AY 2020-2021	32	53	18
AY 2021-2022	55	63	28



In September 2022, we had the privilege of being involved in the inaugural Traveling Fellowship for the Society of Minimally Invasive Spine Surgery (SMISS). Not only did we host their Traveling Fellows, but Dr. Greg Mundis Jr. chaired the committee for this. The committee was responsible for developing the fellowship parameters (length, sites, expectations, etc.). They also drafted the application, reviewed the submissions, and selected the traveling fellows. The fellowship provides sponsorship for an immersive 2-week experience at three US medical institutions focused on minimally invasive spine surgery, plus attendance at the SMISS Annual Meeting.

The focus of this year's program was on lateral access surgery and the Traveling Fellows visited Rush University Medical Center, Chicago, IL, Barrow Neurological Institute, Phoenix, AZ and Scripps, San Diego, CA. The three selected fellows were Drs. Elizabeth Lord (UCLA Medical Center), Daniel Hafez (University of Pittsburgh Medical Center), and Hardeep Singh (University of Connecticut School of Medicine).

Their visit in San Diego took place on September 25-27, 2022, which was their last stop before the SMISS Annual Meeting in Las Vegas. Upon arrival to San Diego, they received a warm reception at the home of Dr. Mundis. On their first day, they observed MIS cases with SDSF Faculty members Drs. Bob Eastlack, Hani Malone, and Jamie Bruffey. Later that night, they enjoyed a scrumptious sushi dinner hosted by SI-Bone at Ken's Sushi.

Their second day was spent in the OR with Dr. Mundis. Lunch that afternoon was held at the San Diego Spine Foundation office with Dr. Akbarnia and he discussed the history and evolution of spine deformity care with the fellows. Afterwards, the Traveling Fellows hiked at the Torrey Pines State Beach. They concluded their visit with dinner with SDSF faculty and fellows at a nearby brewery. We thoroughly enjoyed being a part of this educational and meaningful experience, and are honored to be one of the participating sites for the SMISS's inaugural Traveling Fellowship!



Dr. Mundis presenting awards to the SMISS Fellows at the 2022 SMISS Annual Meeting



SMISS Traveling Fellows At SDSF Office (L-R) Daniel Hafez, Greg Mundis, Behrooz Akbarnia, Elizabeth Lord, Hardeep Singh



SMISS Traveling Fellows with SMISS president and hosting Institutions at the 2022 SMISS Annual Meeting

We had the honor of hosting the Scoliosis Research Society (SRS) Traveling Fellows from August 21-24, 2022, along with Rady Children’s Hospital – San Diego. SRS is one of the many spine societies that SDSF faculty are members of and is recognized as the world’s premier spine society focused on spinal deformity research and education. Each year SRS provides sponsorship for three junior and one senior Traveling Fellows to visit spinal deformity centers in different regions. You may recall, Dr. Behrooz Akbarnia was the senior mentor in 2015 when he guided the three junior Traveling Fellows to visit 4 countries (Japan, China, Korea and Hong Kong) in 24 days and Dr. Greg Mundis, Jr. was also selected as a Traveling Fellow in 2019 and visited West Africa, Israel, Turkey, and India in 3 weeks. This is a phenomenal opportunity for members to learn from one another, exchange ideas and perspectives, ultimately contributing to optimal patient care, as well as to experience a new culture and develop new friendships.

This year two junior Traveling Fellows, Drs. Dong-Guene Chang (Sanggye Paik Hospital, Inje University, South Korea) and Javier Pizones (European University of Madrid, Hospital Universitario La Paz, Spain) traveled with senior fellow Dr. Rene Marten Castelein (Dutch Scoliosis Center, Cresco Spine, University of Medical Center Utrecht, Netherlands). The trio spent three weeks in the United States visiting spine centers in San Diego, CA; Dallas, TX; Chapel Hill, NC; Philadelphia, PA; Wilmington, DE; and New York, NY. San Diego was the first stop of stops and ending with travel to the SRS Annual Meeting in Stockholm, Sweden as their final destination.

The Traveling Fellows spent part of the first day observing pediatric deformity surgery at Rady Children’s Hospital with Dr. Peter Newton. They then met with Dr. Akbarnia at San Diego Spine Foundation for lunch and heard his presentation on the early years of SRS and its impact on spine deformity care. The fellows spent the next day observing complex deformity surgeries at Scripps Green Hospital with Dr. Greg Mundis, Jr. Their last day concluded with lectures given by the Traveling Fellows, Rady and SDSF faculty members in a session which was also open to the San Diego spine community for attendance.



SRS Traveling Fellows spending time at the SDSF Office with Drs. Kelly, Akbarnia, and Kumar

In addition to hospital visits, the Traveling Fellows attended social events with both the Rady and SDSF teams. One night they attended a Padres game and cheered on the Padres while enjoying beers and hot dogs. One afternoon was spent fishing 12 miles out from the coastline on a private boat. Even though the trip did not yield any fish, the excursion itself was still very successful in fostering comradery and an exchange of ideas.

We are honored to be a part of this prestigious trip and contribute to its impact on the care of all patients with spinal deformities.



SRS Traveling Fellows with Drs. Mundis and Barrera in the OR



SRS Traveling Fellows with Drs. Mundis and Barrera enjoying a beautiful day in San Diego

Thank You!



NUVASIVE

For your DIAMOND LEVEL* support to San Diego Spine Foundation throughout the last year.

NuVasive has helped us reach our goals by providing support for Fellowships, the annual Visiting Professorship Conference, and Journal Club.

*Support Levels: Diamond \$100,000 or more; Platinum \$50,000-99,000; Gold \$25,000-49,999; Silver \$10,000-24,999; Bronze up to \$10,000.

Executive Director Report



This has been such an exciting year for SDSF!

It's hard to know where to start with all that has happened.

SDSF continues to grow and accept new challenges in support of the Mission "to serve the spine community through achievement of professional excellence and optimization of clinical care." Thanks to generous support from SDSF faculty, industry and other supporters, our Endowment Fund reached a sufficient level to allow us to begin awarding grants with the income from that fund. Bahar Shahidi, as Chair of the Research Grant Committee, provides more information on those first grants on page 3.

Research grants

We were also excited to present our first Bridging the Gap event, an evolution and expansion of the popular one-day Visiting Professor Conference held each July.

There is a more detailed report later in this publication, but I would like to commend the Chairs Greg Mundis, Robert Eastlack and Behrooz Akbarnia, Directors Mike Kelly, Eric Klineberg and Burt Yaszay, and all of the faculty for putting together an excellent course. Thanks also to the wonderful exhibitors and sponsors who helped make this happen. If you are involved in spine care, you won't want to miss the 2023 version on July 21-22 as it promises to be even better.

Bridging the Gap ended with the bi-annual GSO-SDSF fundraising gala, themed this year as The Secret Garden. This was also a highly successful event, raising over \$400,000 which was split between GSO and SDSF to help each group achieve their mission. Photos and a full report are on pages 4-5.

Finally, SDSF continues to be a leading player in spine surgery education. We were pleased to host both the Scoliosis Research Society and Society of Minimally Invasive Spine Surgery Traveling Fellows this year. Once again we also had a record setting number of applications for the SDSF Fellowship with 107 received. Tough competition for three spots!

This will be my last ED report, as we've made the decision that SDSF will be better served by a full-time, resident Executive and I would prefer to continue my retirement. The search for that person is now underway.

I am happy to have had the opportunity to work with such a great organization and wish them continued success with new projects and activities!



Tressa Goulding
Executive Director

Thank You!



For your PLATINUM LEVEL* support to San Diego Spine Foundation throughout the last year.

SeaSpine has helped us reach our goals by providing support for Fellowships, the Bridging the Gap conference and the GSO-SDSF Fundraising Gala.

Benefactors

Words can't begin to express our gratitude to the wonderful people who have provided such amazing support to SDSF this year. We are particularly grateful to SDSF Faculty (shown in Bold) and Former Fellows (shown in Italic) who continue to show their faith in the mission of SDSF with combined contributions of more than \$100,000 in the last year.

Visionary (\$30,000-\$49,999)

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Lauren Roper
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Thank You!



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For your GOLD LEVEL* support to San Diego Spine Foundation throughout the last year.

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Thank you to all the BRONZE LEVEL companies who have provided funding to San Diego Spine Foundation throughout the last year in support of Education, Outreach and Research.

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Thank you to AOSNA for their ongoing support of our Fellowship and Education programs.



Brian Greer

The SDSF would like to again thank Brian Greer, President of Golmage Media Services for his ongoing contributions including the development of our Annual Reports since 2013 and for our website development and management: www.sandiegospinefoundation.org.



Drs Akbarnia and Mundis at the SDSF-GSO Gala in 2020



2021-22 Fellows with Fellowship Faculty at annual AOSNA Fellows Forum in Banff, Canada (2022)



Dr. Pooria Hosseini, Jeff Palawek, and Dr. Akbarnia at the National Constitution Center, Philadelphia (2017)



Celebrating Drs. Ali Bagheri and Drew Brown at their Fellows Graduation (2014)



SRS Traveling Fellows with their hosts at the Padres baseball game (2022)

San Diego Spine Foundation Board of Directors and Faculty



1



2



3



4

1. Behrooz A. Akbarnia, MD, *President and Founder, Board of Directors, Director Emeritus San Diego Spine Fellowship Program*

2. Sarah E. Aghassi, Esq. *Secretary, Board of Directors*

3. Robert K. Eastlack, MD, *CFO, Board of Directors Faculty Member, Spine Fellowship Program*

4. Patricia N. Kostial, RN, BSN, *Board of Directors*

5. Gregory M. Mundis, Jr., MD, *Vice President, Board of Directors Director and Faculty Member, Spine Fellowship Program*

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6



7



8

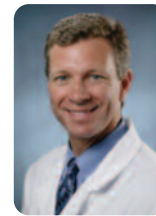
Additional Members of the Fellowship Faculty



Ramin Bagheri, MD
*Scripps Clinic,
La Jolla, CA*



Maneesh Bawa, MD
*San Diego Orthopaedic Associates
Medical Group,
San Diego, CA.*



James D. Bruffey, MD
*Scripps Clinic,
La Jolla, CA.*



Ali Bagheri, MD
*Scripps Clinic
La Jolla, CA*



Hani Malone, MD
*Scripps Clinic,
La Jolla, CA.*



Bahar Shahidi, PT, Ph.D.
*UCSD,
La Jolla, CA.*

How can you support the San Diego Spine Foundation?

SDSF has established an Endowment Fund for those who wish to contribute to support the foundation's research, education and outreach efforts for years to come. SDSF also accepts donations for current use to cover operating expenses.

For credit/Debit card donations: www.sandiegospinefoundation.org/donate/

Checks can be mailed and payable to:

San Diego Spine Foundation
6190 Cornerstone Ct. E; Ste. 212
San Diego, CA 92121

For Credit Card or Check: Please indicate either ENDOWMENT or ANNUAL OPERATIONS in the memo.

CODA



In the Beginning, Dr Akbarnia and Pat Kostial on research trip to visit James Weinstein and fellow Joe Mumford at University of Iowa to review their nonoperative treatment experience of severe Burst fractures (1990)



Dr. Akbarnia with Dr. Serena Hu, SRS President at the SRS Annual Meeting (2022)



Dr. Akbarnia at Japanese Scoliosis Society (2012)



Planning the first Endowed Chair in Spine Surgery at UCSD with Dr. Steven Garfin (2019)



SRS Past Presidents, Dr. George Thompson and Dr. Akbarnia recording a documentary for SRS (2017)



Dr. Oheneba Boachie-Adjei and Dr. Akbarnia in Switzerland (2019)



The torch is passed Dr. Akbarnia to Dr. Mundis

President's Note 2022 – The Best is Yet to Come!



To my SDSF friends, family, and supporters, it is with bittersweet emotions that I announce my intention to step down as President of our Foundation. I have enjoyed watching this organization grow from a vehicle for funding fellowship training to becoming the multidimensional institution it is today.

I am grateful for and proud of those who helped me build this organization together over the years. From our founding Board members, the late Vert Mooney, and Pat Kostial to current members of our Board, all have contributed to achieving our mission through their deep commitment and hard work. Pat was initially part of our clinical team and volunteered as SDSF Executive Director before formally accepting the position. Bob Eastlack, who joined our Board in its early stages, has been instrumental in decision making at critical times and is currently doing a great job as CFO of the organization.

Other members of the Board, including Sarah Aghassi, Jeff Pawelek, Sam Ward, and Peter Newton, have each carried a wealth of knowledge in organizational leadership, research, and clinical fields, and dedicated their time and effort to make our Board remarkably effective and successful. I sincerely thank all of them for their commitment, insight, and leadership. Last, but certainly not least, I must mention Greg Mundis, Jr. Greg was an SDSF clinical fellow and joined our fellowship faculty immediately thereafter. His growing passion and natural talent for mentorship has helped SDSF redefine our mission and vision to include mentorship as a strong part of our organization's identity. Greg, thank you for your dedication and tireless efforts. Finally, I couldn't have done my job without the support of my own family (Nasrin, my children, and their families), to whom I am immensely indebted for their support throughout these years, and especially for tolerating me during the "re-retirement" years.

Since our inception in 2004 and the attainment of non-profit status in 2006, SDSF steadily achieved its goals for education and research. Outreach was added to our mission at our 15-year anniversary, and now, in partnering with GSO (thanks to Tony Rinella, Greg Mundis, and Melissa Hicks), SDSF strives to be a leader in global education, research, and mentorship. I am so incredibly honored not only to be working with this great organization but also to be able to help build bridges within our academic community. Collaborating with UCSD and other institutions both locally and regionally has been a rewarding experience. I am particularly grateful to my dear friend Steve Garfin, the former Chair of the Department of Orthopaedic Surgery and current Dean of UCSD's Medical school for initiating and helping to establish the first Endowed Spine Chair at UCSD. I hope this signals the beginning of many future collaborations in our community.

I mentioned earlier that SDSF's Fellowship Training program has enjoyed an upward trajectory since its inception in 1999–2000. The program's training slots are now viewed as highly desirable and competitive. Our goal is always to learn from our fellows, never accepting that we are as good as we can be, and always embracing opportunities to learn, improve, and grow. We are greatly indebted to and proud of our esteemed fellowship faculty and associates (Greg Mundis, Bob Eastlack, Jamie Bruffey, Ramin Bagheri, Hani Malone, Ali Bagheri, Maneesh Bawa, Don Blaskiewicz and Bahar Shahidi) for a great fellowship program. Well done, team!

I would be remiss if I didn't thank Tressa Goulding, who kindly accepted a part-time role as Executive director to guide us through this transition period as we enter a new phase of expansion. Tressa, you have gone above and beyond and your help and expertise has been invaluable and I can never thank you enough. Throughout this expansion, SDSF has gained two incredible staff members, Mai Chung, and Kiersten Farmer. Their academic and human resource expertise has helped us achieve success like never before and I'm grateful for your contributions as well.

Lastly, SDSF would not be the organization it is today without the support from our private and industry patrons. You have our deepest gratitude for believing in our mission, which ultimately benefits all patients.

With much gratitude for the opportunity to serve, and all confidence that **THE BEST IS YET TO COME!**

Sincerely,

A handwritten signature in black ink that reads "Behrooz A. Akbarnia". The signature is written in a cursive, flowing style.

Behrooz A. Akbarnia, MD



San Diego
Spine Foundation
Established in 2006

2nd Annual SDSF Bridging the Gap

July 21-22, 2023
Westin Carlsbad Resort,
Carlsbad, CA

Following rave reviews from the 2022 course, the educational component will tackle important non-clinical aspects of a successful spine practice, with topics such as challenges for women in spine surgery, sustainability of spine surgery and finding fulfillment in our careers. A 5K run and a golf tournament will provide opportunities for physical activity and casual networking while raising funds to support outreach efforts.

Keynote Speaker:

Serena S. Hu, MD, President, Scoliosis Research Society

Course Chairs:

Gregory M. Mundis, Jr., MD

Michael Kelly, MD

Join us for a can't miss, updated version of the San Diego Spine Visiting Professorship. This event incorporates the Visiting Professorship course, GSO/SDSF bi-annual gala, and sporting events for learning, fun, and networking.

San Diego Spine Foundation
6190 Cornerstone Ct. E ; Ste. 212
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