

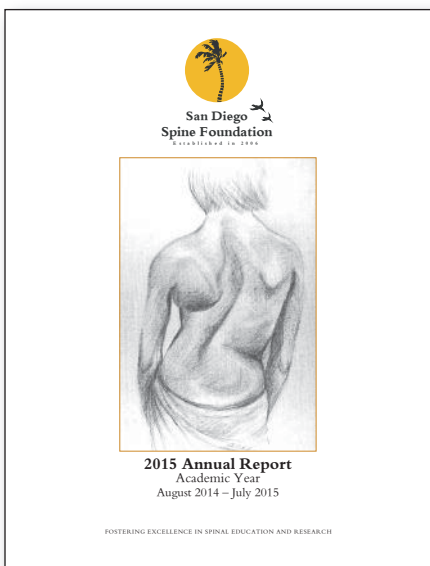
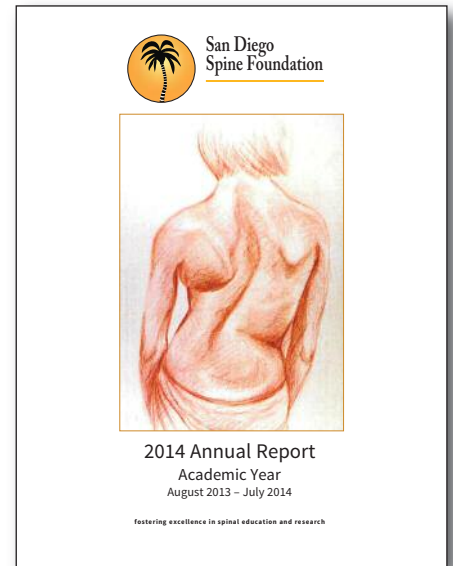
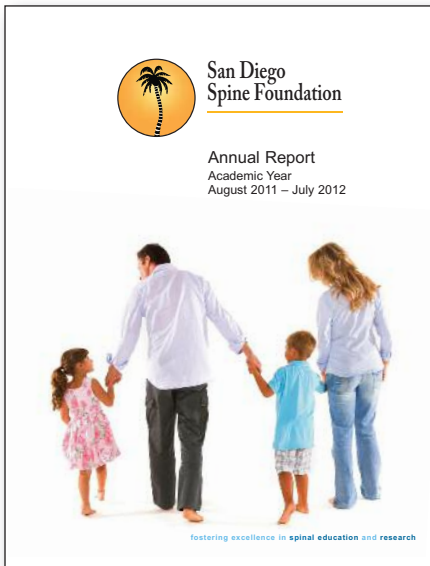
# 2018 Annual Report

## Academic Year

### August 2017 – July 2018



**San Diego**  
**Spine Foundation**  
Established in 2006



FOSTERING EXCELLENCE IN SPINAL EDUCATION, RESEARCH AND OUTREACH

## Note From The President and Founder



Before writing this year's note, I decided to look back at our previous Annual Reports to get some perspective. Every organization has its ups and downs, but looking back, I have only seen an upward trajectory for the San Diego Spine Foundation (SDSF). This past academic cycle has been yet another memorable and noteworthy year toward fulfilling our mission, namely research, education and outreach.

I am so pleased to share with everyone a major initiative this year. Thanks to our Board of Directors and Dr. Steven Garfin, Dean of UC San Diego School of Medicine, we made a decision to initiate a project in collaboration with the Department of Orthopaedic Surgery at the University of California, San Diego, and help to establish the first ever UCSD Endowed Chair in spine surgery.

The genesis for this decision came from a growing collaboration of mutual educational interest through SDSF's Annual Visiting Professorship; the ongoing UCSD spine educational programs; and a newly established multi-institutional research project spearheaded by both UCSD and our foundation. This initiative will permit area spine surgeons to participate in data collection that will help identify values and variations in spine care and eventually improve the outcomes for our San Diego area patients and, in the future, for everyone.

As a result of this growing symbiosis between UCSD and SDSF, we hope to achieve our goal of raising the final funds to support this important new endowed chair position, for which the recipient will get support to oversee this research and other innovative spine-based projects. If you are interested in supporting this Endowed Chair in Spinal Surgery, over 75% of goal has been achieved, but we need your help to get us to the finish line. For more information, please contact Pat Kostial, our Executive Director. Achieving this goal will create a long-term relationship between our organizations as well as within and beyond our community for many years to come.

I hope you will take some time now to read through our Annual Report in the pages that follow. It is a celebration of so many great events and milestones, as well as a testament to our patients' strength and determination as they journey through life. We also feature the accomplishments of two of our past Research Fellows who have climbed mountains to achieve success. And, we highlight some of our past Research Volunteers, all of whom have gone on to reach their goals and more. I am so moved by each of the wonderful elements and personal stories within these pages; I hope you will be as well.

As always, I would like to recognize our San Diego Fellowship Program, our fellowship Co-Directors Greg Mundis and Bob Eastlack, our esteemed faculty including our 2 newest members Ali Bagheri and Hani Malone, and our clinical fellows for their commitment and hard work to make our fellowship one of the country's most sought-after spine fellowship programs. This year, we have a record number of applicants, which I am sure will make it even more difficult to make selections among such outstanding candidates. Our international visiting fellows and our research fellowship programs continue to enjoy popularity as well. The Annual Visiting Professorship event, another great success, continues to bring great Visiting Professors, and we especially would like to thank our sponsors, without whose support this meeting could not happen.

Finally, I am grateful to our Board of Directors for their time and support and to all of you who have supported our organization over the years. We cannot accomplish our goals without you.

May you have a blessed holiday season and a wonderful new year.

Warmest regards,

Behrooz

*Behrooz A. Alhasania*

## San Diego Spine Foundation Board of Directors



**Behrooz A. Akbarnia, MD**  
*President, Board of Directors  
Director Emeritus and  
Faculty Member,  
Spine Fellowship Program*



**Patricia N. Kostial, RN, BSN**  
*Treasurer; Board of Directors  
Executive Director  
Administrator,  
Spine Fellowship Program*



**Sarah E. Aghassi, Esq.**  
*Member, Board of Directors*



**Gregory M. Mundis, Jr., MD**  
*Member, Board of Directors  
Co-Director and  
Faculty Member,  
Spine Fellowship Program*



**Robert K. Eastlack, MD**  
*Member, Board of Directors  
Co-Director and  
Faculty Member,  
Spine Fellowship Program*



**Jeff Pawelek, BS**  
*Member, Board of Directors*

## Additional Members of the Fellowship Faculty



**Donald Blaskiewicz, MD**  
*Rotation Chief  
Neurosurgical Medical Clinic,  
San Diego, CA.*



**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**  
*Girard Orthopedics  
San Diego, CA*



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

## San Diego Combined Spine Fellowship Program Fellowship Co-Directors Message 2017-2018

Our 2017-18 Fellowship year was another success, with 3 physicians completing their spine training, Eric Varley, Nick Ghazarian and Randy Hlubek. Since graduation, Eric Varley has begun work with the Idaho Spine Institute, Nick Ghazarian has opened his own practice in the greater Los Angeles area, and Randy Hlubek is finishing his final year at Barrow Neurologic Institute, and has accepted a position at Mayfield Clinic in Cincinnati. We'd like to congratulate each of them for their hard work and wish them great success in their future careers.

On August 1, 2018, our new clinical fellows hit the ground running: Daniel Thibaudeau and Nicole Record, both having completed their residencies at Seton Hall University Orthopedic Surgery Residency Program, Patterson, New Jersey. Their hard work and dedication are already apparent to faculty, staff and patients alike, so we know this year will be a special one for all involved.

Looking to the future, we will be welcoming Ryan Hoel from the University of Minnesota Orthopedic Residency Program and Ruwan Ratanayake from the University of California, Davis Orthopedic Surgery Residency Program. They will be accompanied by two more Barrow Neurologic Institute fellows, Jakub Godzik and Corey Walker, who will matriculate with the SDSF spine fellowship over the course of the 2019-2020 academic year.

Of course, that's not the end of the story, as we have just reviewed a record number of applicants for the 2020-2021 academic cycle with plans to conduct interviews in late February 2019. Armed with constructive input from our 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 so tremendous!

*Robert K. Eastlack, M.D.*

*Gregory M. Mundis, Jr., MD*

# Building Future Leaders



*SDSF Research Volunteer Areian Eghbali wins attendance at NCRC in 2018*



*2017-18 Clinical, Research and International Fellows meet with Dr. Akbarnia to discuss current issues in spine care*



*SDSF weekly research meeting*

In the 2017-2018 Academic Year, SDSF held 47 Fellows Spine Conferences and 6 Journal Club Meetings



*Inaugural meeting of the San Diego Spine Initiative (SDSI) in January 2018. Spine surgeons and researchers from the greater San Diego area attended to kick off this project.*

## VISITING PROFESSORSHIP...

Our 2018 Annual Visiting Professorship Meeting was a tremendous success. Many thanks go out to our esteemed Visiting Professors James Harrop and Paul Sponseller, along with this year's talented faculty, all of whom shared their expertise and unique perspectives to create a one of a kind program.

Each year, top physician leaders and researchers share their experiences at the SDSF Visiting Professor event.



*Visiting Professor: James S Harrop, MD, FACS*



*Visiting Professor: Paul D. Sponseller, MD, MBA, FAOA*



*2018 Faculty. From left: Samuel Bederman, Bob Cho, Afshin Aminian, Peter O. Newton, Vid Upasani, Bob Eastlack, R. Todd Allen, Behrooz Akbarnia, VP Paul Sponseller, VP James Harrop, Jay Turner, Neel Anand, Eddie Nomoto, Greg Mundis, Jr., Choll Kim, Robert Watkins, IV and Patrick Morrissey*

## SDSF Research Volunteers – Where Are They Now?

Since its inception, SDSF has offered research opportunities to volunteers to achieve their career path goals.

We've always considered those who have worked in the ranks at San Diego Spine Foundation as family.

Research volunteers are a very unique breed of individuals. Highly goal oriented, independent and driven, their time spent doing research is specific to their goal of achieving higher education, usually in the field of medicine, or related fields. We'd like to thank our past volunteers, who have all reached for the stars and attained success. Below features just some of the volunteers who have touched our lives.



**Sormeh Mahjouri MPH, PMP** – 2007 SDSF Research Volunteer: Sormeh's SDSF-based research involved an early study on the safety and efficacy of lateral interbody MIS approach in adult spinal deformity, which was presented at IMAST. She received a BA in Biology with honors from Carleton College and went on to obtain a Masters Degree in Public Health with honors from University of Southern California in 2011. She received a PMP certification through the Project Management Institute in 2017. Since receiving her MPH, Ms. Mahjouri has worked as a Clinical Research Specialist at Medtronic in Minneapolis, MN, and as an Independent Consultant for several healthcare related businesses. As of October 2018, Sormeh has returned to San Diego to begin a position as a Clinical and Regulatory Program Manager for Arena Pharmaceuticals in Sorrento Valley.



**Pooya Javidan, MD** – 2008-2010 SDSF Research Volunteer: One SDSF-based publication in which Pooya was co-author involved delayed neurological complication in a patient with congenital kyphoscoliosis. In preparation for his entrance into medicine, Dr. Javidan also completed research work at Wayne State University, St. Louis University and Shiley Center for Orthopaedic Research and Education (SCORE). He obtained his medical degree from the University of California-Irvine School of Medicine in 2010 and completed his surgery and orthopedic surgery residency training at Wayne State U and SLU. Following residency, Pooya completed a Fellowship in Adult Lower Extremity Reconstruction and Joint Replacement at Scripps Clinic Torrey Pines, La Jolla, CA. He is now a staff physician at Kaiser Permanente Medical Group, Department of Orthopaedic Surgery in San Diego.

*“Being able to actively contribute to research projects under the mentorship of Dr. Akbarnia at SDSF was an amazing opportunity that taught me the fundamentals of clinical research in orthopaedics.”*



**Yashar Javidan, MD** – 2008 SDSF Research Volunteer: Part of Yashar’s research experience at SDSF included animal lab exposure during the early period of research for MCGR rods, which later became cleared by the FDA in 2014. Dr. Javidan obtained his medical degree from Chicago Medical School in 2009 and then completed his residency training in Orthopedic Surgery at University of Southern California, Keck School of Medicine in 2014. Yashar also completed a fellowship in Spine Surgery at the University of California, Davis Medical Center, where he was then asked to stay on as faculty. He is now Assistant Professor at both the University of California, Davis Department of Orthopedic Surgery and at Shriners’s Hospital for Children in Sacramento, CA.



**Areian Eghbali, BS** – 2016-2018 SDSF Research Volunteer: Areian is a co-author of a study of systematic review of the literature on magnetically controlled growing rods, which was accepted for presentation and was nominated for the 2018 Scoliosis Research Society Hibbs Clinical Presentation Award. Areian is currently working at the National Health Institute (NIH) having won a Postbaccalaureate Intramural Training Award. He is studying Gaucher Disease and its connection to Parkinson’s Disease during his time at NIH. He is applying to attend Medical School beginning in 2019 and is already receiving acceptance letters. Well done Areian!

*“My experience at SDSF has truly been an extraordinary one. In addition to learning the basics of clinical research, I have been blessed with continuous mentorship from incredible people such as Dr. Akbarnia, Dr. Mundis, and Dr. Eastlack. These amazing mentors have not only been instrumental in guiding my pursuit of a career in medicine, but also critical in shaping the type of caring and compassionate physician I aspire to become.”*



**Justin Zhang, BS** – 2017-2018 SDSF Research Volunteer: In addition to his SDSF research experience which lead to a poster presentation at the 2018 Scoliosis Research Society Annual Meeting, Justin has completed research-based work at UCSD, UC-Irvine, Sharp Memorial Hospital, San Diego, and Washington University School of Medicine. Having graduated from University of California-San Diego with a Bachelors in Human Biology, Justin was accepted into the St. Louis University School of Medicine with an anticipated graduation date of 2022. In addition to Justin’s scholarly work, he has received numerous athletic awards from UC San Diego NCAA Men’s Tennis Team including, but not limited to the Academic All-American and ITA Scholar-Athlete Awards, each award 3 years in a row.

*“The SDSF team I have had the privilege of interacting with were extremely receptive. At the time, being an undergraduate student, this was rare to come by..... All of their help has really allowed me to gain a competitive advantage in medical school, as I have a foundation in clinical research that has already allowed me to pursue further research in spine surgery.”*

# This is my long run

I'm Jennifer... My life has been a collection of short races, all of which have prepared me in some way. Some have prepared me physically, others mentally and others in ways that feed the soul as well as the body. I've run these races well. Now, it's time for my long run....



I was diagnosed with scoliosis as a teenager. As you would expect, I was less than thrilled when I was told I would have to wear a Boston-style body brace for 23 hours a day. Bottomline, I hated it. But, I wore it, and I got through it. When my treatment was finished, I was told my curve was big enough that I was borderline for needing surgery, which I did not pursue at that time. Then life happened, and over time I forgot I even had scoliosis. Pittsburgh was my home and I pursued

my education and obtained my degree in Nursing. I worked in Pittsburgh for some time until close friends in the field announced they were taking jobs in San Diego. It sounded so appealing. Before I knew it, I too had a job lined up and a month later I was moving to San Diego. I developed a passion for humanitarian work as well, and have volunteered my nursing skills in several countries around the world.

I continued to work as a nurse, but in my spare time, running is my other passion. Over time, I found myself drawn to ultra-marathons, which are races longer than the standard 26.2 miles of a full marathon. I ran frequently when not working, often on trails, which are kinder to the body than asphalt and concrete. I even ran a 50-mile race once and frequently run with a pack on my back. I have no back pain when I run. I rarely have pain at all, but if I do, it's often when I didn't use good body mechanics performing the physical parts of my job.

Then, one day I came across a deal for a chiropractor. I thought it would be a good idea to get my back checked since it had been about 15 years since my last x-ray.

The chiropractor gave me shocking news regarding my long-forgotten scoliosis. It had progressed... a lot. I was told of a litany of potential problems I was facing, including a shorter life span. Well, if you get shocking news, get a second opinion!!

I then decided to see Dr. Greg Mundis, Jr. for a spinal deformity evaluation. I remember Dr. Mundis carefully reviewing my history and x-rays with me. Instead of hearing that I needed to stop everything and have major surgery, he totally understood who I am and said that as long as we monitor the curves, and I'm not having pain, there is no rush to do anything! I could continue to work, and run, and live my life. Now, I realistically know that someday I may start to have symptoms that prevent me from doing the things I love, but for now I am very thankful and relieved by Dr. Mundis' opinion.

When you get medical news that is unexpected, get a second opinion, even a third if necessary. Don't accept things as is and do whatever you can to educate yourself. Ask questions and do research. If you don't understand, don't be afraid to ask more questions including "Why"? Focus on what you can do, and not on what you can't.

At the time of this writing, I've just left my job for a short-term assignment of humanitarian work in Bangladesh. I'll be helping to educate their nurses who are caring for refugees that are pouring in from neighboring countries. Then, I'll return to San Diego and apply for another job as a nurse. This time, I won't forget that I have scoliosis. It's part of who I am and I plan to own it. I'll train smarter, keeping core strength and cross training in mind, and be more vigilant in using good body mechanics at work, all to sustain me in the through the longest run - LIFE!



*San Diego Spine Foundation would like to thank Jennifer for sharing her inspirational story. This story can also be seen at [www.sandiegospinefoundation.org](http://www.sandiegospinefoundation.org)*





## Mexico Mission

**Number of GSO Outreach Trip Procedures Performed with Fellows Assisting - 19**

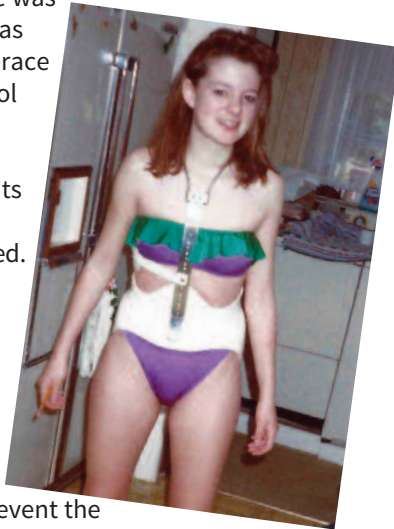
Part of our mission is Outreach. SDSF fulfills this partially through sending every Clinical Fellow to experience this life changing event first hand, along with faculty, staff and past fellows.

In addition to clinics and surgery, an educational symposium is provided by **Global Spine Outreach (GSO)** for the area surgeons and staff. We thank GSO for this opportunity.



# My name is Keely. I have scoliosis that required corrective surgery. My story is one of struggles and triumphs; challenges, but never limitations!

When I was 15 years old, I found out that my spine has 2 curves and is shaped like the letter “s.” My spinal specialist, Dr. James Merenda, recommended wearing a Milwaukee brace in an attempt to stop the curves from getting worse. The upper (thoracic) curve was 36° and the lower curve was 26°. Wearing this type of brace for two years in high school was not fun!



Thankfully, the brace did its job. The curvatures were halted and slightly corrected. When the brace was discontinued I thought I was done with scoliosis complicating my life. Unfortunately, the upper curve progressed to 54° within just 3 months. Surgery was needed to prevent the curves from becoming life threatening.

Dr. Merenda and his nurse, Pat Kostial, explained that special rods and hooks would be anchored to my thoracic spine (T4-T12) thus providing immobility to allow those vertebrae to fuse together. A spinal fusion would ensure the curves didn't progress. The procedure was performed the week after my 17<sup>th</sup> birthday. Both the surgery and recovery were routine and uneventful. My fusion was solid within 6 months and I went on to live my life and pursue my dreams.



Postop image showing correction of curves

While working as a nanny for a fun group of kids during my last semester of high school, I was introduced to their uncle on a blind date to an amusement park. After earning a double major in college, I married that handsome guy from the blind date! I went on to graduate school and started my first job teaching at a Montessori school. Later, I worked as an international business-woman and travelled the world. I also enjoyed an active lifestyle with mountain biking, photography, skiing and back packing.

## Challenges, Not Limitations

I would have an occasional muscle spasm, or minimal back pain, but nothing that kept me down for long.

At the age of 26, things took a dramatic turn for the worse. I contracted a painful intestinal infection called Clostridium-Difficile (C-Diff) while caring for my ailing grandmother. I was hospitalized 4 times, put on rigorous antibiotics, and developed painful neuropathy as a side effect from the medications. Unfortunately, the nerve damage and pain in my back and legs was so debilitating that I wasn't able to work anymore. Over the next ten years I dealt with a domino effect of health hurdles including polycystic ovarian syndrome, interstitial cystitis, fibromyalgia and Hashimoto's Thyroiditis, to name a few.

Another challenge came the day I awoke with unbearable pain in the middle of my back. We discovered that one of the spinal anchors that hook under the vertebra was protruding into my spinal canal. My spinal cord was snagged on that hook. To me the pain felt like a piranha gnawing on my spine. I spent 9 months in a wheelchair while we sought the best solution. Ultimately my spinal implants were successfully removed. But, I woke up from surgery with a rare condition called Reflex Sympathetic Dystrophy (RSD). My nervous system was just too overloaded with inflammation, chronic pain and nerve damage.

My recovery took 2 years. During that time, I convinced my wonderful husband we should move to Arizona where I found the climate more suitable for chronic pain.

My new pain management specialist, Dr. Michael Carlton, favored blending holistic and traditional methods to help manage pain, allowing his patients to lead richer lifestyles. At one of my appointments, I completed a survey that asked, “If you weren't in so much pain, what would you be doing instead?” My answer was, “Flying airplanes.” Years before, I had begun studying aviation but my spine challenges caused me to take a detour. The questionnaire in the doctor's office reignited the dream of flying and gave me something to aim for.

Since my husband and I had been dealing with infertility for 13 years, we decided to become foster parents. We welcomed a tender-hearted 7-year-old boy into our lives. Then, to our complete surprise, I got pregnant! My pregnancy was wonderful and my spine held up well. Our son was born happy and healthy. The following year we were able to adopt our foster son. My new role as mom brought much joy and gave me something else to focus on besides my pain.

At the age of 40, I passed an FAA medical exam and within 18 months I had earned my pilot's certificate. I joined Angel Flight West and started flying volunteer missions to transport patients to and from medical appointments. What satisfaction! Not only have I fulfilled my desire to fly, but I have combined my experience as a patient to serve others who need medical care. Often, when I share my story about scoliosis and chronic pain, and that I am now a pilot, others are encouraged that there is hope for them. This has helped me cope and given my pain purpose.

Today, I am not pain free, but I've discovered I can live with it. There is a delicate balance between ignoring my pain to press on and listening to my pain to know when to stop and recharge. By doing the things I love, I can better tolerate my pain because I am enjoying life.

I hope by writing this chronicle of my challenges I can help others. We all get knocked down at some point. It's what we do with the challenge that matters. The important thing is to keep putting one foot in front of the other. Technology and treatments are constantly evolving. What wasn't possible before, becomes possible later. Be your own advocate. A doctor or treatment is a tool and a resource, but you are the captain of your own ship. At the end of the day you have to live in your body. It's up to you to determine what is best.

The main reason for my hope is my friendship with Jesus. Without him I'm not sure I would see pain as a gift. I have an amazing life because of pain and in spite of pain. The lessons I've learned are because of my pain. My outlook in life is because of my pain. Adversity is an opportunity for growth and change if we choose to see it as such. Despite all I went through, my faith has kept me and my family strong. I am blessed to live this life. I am grateful for the struggles and challenges because they have made me who I am. I am thankful that I can use my life, my story and my crooked body to bring life and healing to so many others.

Be encouraged! Your challenges don't have to be your limitations.

San Diego Spine Foundation would like to thank Keely for sharing her inspirational story. To read Keely's full-length story, please visit our website at [www.sandiegospinefoundation.org](http://www.sandiegospinefoundation.org).



## Graduating Clinical Fellows 2017-2018



**Nick Ghazarian, DO**  
*Solo Practitioner  
Glendale, California*



**Eric Varley, DO**  
*Idaho Spine Institute  
Meridian, Idaho*



**Randall Hlubek, MD**  
*PGY-7 Neurosurgery Resident  
Barrows Neurological Institute  
Accepted position at Mayfield  
Clinic, Cincinnati, Ohio*

“SDSF has trained a total of 32 Clinical and 4 Research Fellows, as well as 5 Navy Ortho Residents since inception, contributing to the advancement of spinal care.”

## Current Clinical Fellows 2018-2019



**Daniel Thibaudeau, MD**  
*Seton Hall University  
Patterson, New Jersey*



**Nicole Record, DO**  
*Seton Hall University  
Patterson, New Jersey*

## Future Clinical Fellows 2019-2020



**Jakub Godzik, MD**  
*Barrow Neurological Institute  
Phoenix, AZ*



**Ryan Hoel, MD**  
*University of Minnesota  
Minneapolis, MN*



**Ruwan Ratnayake, MD**  
*University of California: Davis  
Sacramento, CA*



**Corey Walker, MD**  
*Barrow Neurological Institute  
Phoenix, AZ*

## A TALE OF 2 POORIAS.....

Often referred lovingly as Pooria1 and Pooria2 (among other terms of endearment), each is unique in his own way. But their commonality is their drive and persistence to not accept things when goals aren't achieved as they'd like. They, like many other Research Fellows, had to fight an uphill battle to obtain a training spot in the U.S. and it just so happens that both are now at St. Louis University (SLU).

**Pooria Salari** departed SDSF in 2010 to obtain his Orthopedic Residency training at SLU and then completed a Spinal Surgery Fellowship at Washington University. He has just begun an academic position at St. Louis University's Department of Orthopedic Surgery as Assistant Professor/Staff Spine Surgeon. Among his accomplishments, he has received a research grant from the Scoliosis Research Society for continuing laboratory research he started at SDSF on spinal growth.

**Pooria Hosseini**, who has been nothing short of a research powerhouse during his time with SDSF by either winning or being nominated for awards for his out-of-the-box research concepts, began his surgical residency training at St. Louis University in July 2018. It is both his and our hope that he will be accepted into an Orthopedic Surgery Residency program this coming year.

Both Pooria's recently presented their research at the 2018 Scoliosis Research Society (SRS) Annual Meeting in Bologna, Italy in October. *Of note, only about one in 10 abstracts are selected for podium presentation at this meeting.*

Pooria Hosseini's paper was nominated for the SRS Hibbs Clinical Research Award.

*"This particular SRS Annual Meeting was very special for me", Dr. Akbarnia commented. "As a mentor, seeing both Poorias present at the podium and watching the results of their hard work was a fulfilling experience".*

## Karma.

First to have two Pooria's as outstanding Research Fellows, then, to have them both at St. Louis University at the same time, followed by both presenting at the same SRS Annual Meeting, and exceling all the while. We wish them both continued success as they journey through their academic careers!



Pooria Salari, MD

Pooria Hosseini, MD, M.Sc.



## Publications and Presentations 2017-18

### Peer-Reviewed Publications: Adult

Protopsaltis TS, Lafage R, Vira S, Sciubba D, Soroceanu A, Hamilton K, Smith J, Passias PG, **Mundis G**, Hart R, Schwab F, Klineberg E, Shaffrey C, Lafage V, Ames C, ISSG, Novel Angular Measures of Cervical Deformity Account for Upper Cervical Compensation and Sagittal Alignment. *Clin Spine Surg*, 30(7): E959-E967, August 2017

Smith JS, Shaffrey CI, Lafage R, Lafage V, Schwab FJ, Kim HJ, Scheer JK, Protopsaltis T, Passias P, **Mundis G**, Hart R, Neuman B, Klineberg E, Hostin R, Bess S, Deviren V, Ames CP, ISSG, Three-Column Osteotomy for Correction of Cervical and Cervicothoracic Deformities: Alignment Changes and Early Complications In A Multicenter Prospective Series of 23 Patients. *Eur Spine J*, 26(8):2128-2137, August 2017

Hart RA, Hiratzka J, Kane MS, Lafage V, Klineberg E, Ames CP, Line BG, Schwab F, Scheer JK, Bess S, Hamilton DK, Shaffrey CI, **Mundis G**, Smith JS, Burton DC, Sciubba DM, Deviren V, Boachie-Adjei O, ISSG, Stiffness After Pan-Lumbar Arthrodesis for Adult Spinal Deformity Does Not Significantly Impact Patient Functional Status or Satisfaction Irrespective of Proximal Endpoint, *Spine (Phila Pa 1976)*. 42(15):1151-1157, August 2017

**Mundis GM, Turner JD, Kabirian N, Pawelek J, Eastlack RK**, Uribe J, Klineberg E, Bess S, Ames C, Deviren V, **Nguyen S**, Lafage V, **Akbarnia BA**: Anterior Column Realignment has Similar Results to Pedicle Subtraction Osteotomy in Treating Adults with Sagittal Plane Deformity. *World Neurosurg*. 2017 Sep; 105: 249-256

**60 Publications**  
**55 Podium Presentations**  
**31 Poster Exhibits**

Smith JS, Shaffrey CI, Klineberg E, Lafage V, Schwab F, Lafage R, Kim HJ, Hostin R, **Mundis GM Jr**, Gupta M, Liabaud B, Scheer JK, Diebo BG, Protopsaltis TS, Kelly MP, Deviren V, Hart R, Burton D, Bess S, Ames CP, ISSG, Complication Rates Associated With 3-Column Osteotomy In 82 Adult Spinal Deformity Patients: Retrospective Review of A Prospectively Collected Multicenter Consecutive Series With 2-Year Follow-Up. *J Neurosurg Spine*, 27(4):444-457, October 2017

**Eastlack RK, Mundis GM Jr**, Wang M, Mummaneni PV, Uribe J, Okonkwo D, **Akbarnia BA**, Anand N, Kanter A, Park P, Lafage V, Shaffrey C Fessler R, Deviren V, ISSG: Is There a Patient Profile That

Characterizes a Patient with Adult Spinal Deformity (ASD) as a Candidate for Minimally Invasive Surgery (MIS)? *Globe Spine J*. 2017 Oct; 7(7): 703-708

Lafage R, Line BG, Gupta S, Liabaud B, Schwab F, Smith JS, Gum JL, Ames CP, Hostin R, **Mundis GM Jr**, Kim HJ, Bess S, Klineberg E, Lafage V, ISSG, . *Spine (Phila Pa 1976)*, 5;42(20):1570-1577, October 2017

Passias PG, Horn SR, Jalai CM, Ramchandran S, Poorman GW, Kim HJ, Smith JS, Sciubba D, Soroceanu A, Ames CP, Hamilton DK, **Eastlack R**, Burton D, Gupta M, Bess S, Lafage V, Schwab F: Cervical Alignment Changes in Patients Developing Proximal Junctional Kyphosis Following Surgical Correction of Adult Spinal Deformity. *Neurosurgery*, [Epub ahead of print], October 2017.

Passias PG, Horn SR, Jalai CM, Poorman G, Bono OJ, Ramchandran S, Smith JS, Scheer JK, Sciubba DM, Hamilton DK, **Mundis G**, Oh C, Klineberg EO, Lafage V, Shaffrey CI, Ames CP, ISSG, Comparative Analysis of Perioperative Complications Between A Multicenter Prospective Cervical Deformity Database and The Nationwide Inpatient Sample Database, *Spine J*, 17(11):1633-1640, November 2017

Ferrero E, Liabaud B, Henry JK, Ames CP, Kebaish K, **Mundis GM**, Hostin R, Gupta MC, Boachie-Adjei O, Smith JS, Hart RA, Obeid I, Diebo BG, Schwab FJ, Lafage V, Sagittal Alignment and Complications Following Lumbar 3-Column Osteotomy: Does the Level of Resection Matter? *J Neurosurg Spine*, 27(5):560-569, November 2017

**Hlubek RJ, Mundis GM Jr.**, Treatment for Recurrent Lumbar Disc Herniation. *Curr Rev Musculoskelet Med*, 10(4):517-520, December 2017

Nunley PD, **Mundis GM Jr**, Fessler RG, Park P, Zavatsky JM, Uribe JS, **Eastlack RK**, Chou D, Wang MY, Anand N, Frank KA, Stone MB, Kanter AS, Shaffrey CI, Mummaneni PV, ISSG, Impact of Case Type, Length of Stay, Institution Type, And Comorbidities on Medicare Diagnosis-Related Group Reimbursement for Adult Spinal Deformity Surgery. *Neurosurg Focus*, 43(6): E11, December 2017

Poorman GW, Passias PG, Horn SR, Frangella NJ, Daniels AH, Hamilton DK, Kim H, Sciubba D, Diebo BG, Bortz CA, Segreto FA, Kelly MP, Smith JS, Neuman BJ, Shaffrey CI, LaFage V, LaFage R, Ames CP, Hart R, **Mundis GM Jr, Eastlack R**, ISSG, Despite Worse Baseline Status Depressed Patients Achieved Outcomes Similar to Those in Non-depressed Patients After Surgery for Cervical Deformity. *Neurosurg Focus*, 43(6): E10, December 2017

**Hosseini P, Mundis GM, Eastlack RK, Bagheri R, Vargas E, Tran S, Akbarnia BA**: Preliminary Results of Anterior Lumbar Interbody Fusion, Anterior Column Realignment for The Treatment of Sagittal Malalignment. *Neurosurgical Focus* 43 (6) E6, Dec 2017

Than KD, Mummaneni PV, Bridges KJ, **Tran S**, Park P, Chou D, La Marca F, Uribe JS, Vogel, TD, Nunley PD, **Eastlack RK**, Anand N, Okonkwo DO, Kanter AS, **Mundis GM Jr.**: Complication Rates of Open Vs. Percutaneous Pedicle Screw Instrumentation Among

Patients Undergoing Minimally Invasive Interbody Fusion for Adult Spinal Deformity. *Neurosurg Focus*. 2017 Dec;43(6): E7.

Bumpass DB, Lenke LG, Gum JL, Shaffrey CI, Smith JS, Ames CP, Bess S, Neuman BJ, Klineberg E, **Mundis GM Jr**, Schwab F, Lafage V, Kim HJ, Burton DC, Kebaish KM, Hostin R, Lafage R, Kelly MP, ISSG: Male Sex May Not Be Associated with Worse Outcomes in Primary All-Posterior Adult Spinal Deformity Surgery: A Multicenter Analysis. *Neurosurg Focus*, 43(6): E9, December 2017

Challier V, Henry JK, Liu S, Ames C, Kebaish K, Obeid I, Hostin R, Gupta M, Boachie-Adjei O, Smith JS, **Mundis G**, Bess S, Schwab F, Lafage V, ISSG, Complication Rates and Maintenance of Correction After 3-Column Osteotomy in the Elderly: Report of 55 Patients With 2-Year Follow-up. *Neurosurgery*, [Epub ahead of print], December 2017

Ailon T, Smith JS, Shaffrey CI, Kim HJ, **Mundis G**, Gupta M, Klineberg E, Schwab F, Lafage V, Lafage R, Passias P, Protosaltis T, Neuman B, Daniels A, Scheer JK, Soroceanu A, Hart R, Hostin R, Burton D, Deviren V, Albert T, Riew KD, Bess S, Ames CP, ISSG: Outcomes of Operative Treatment for Adult Cervical Deformity: A Prospective Multicenter Assessment With 1-Year Follow-up. *Neurosurgery*, [Epub ahead of print], December 2017

Miller EK, Ailon T, Neuman BJ, Klineberg EO, **Mundis GM Jr**, Sciubba DM, Kebaish KM, Lafage V, Scheer JK, Smith JS, Hamilton DK, Bess S, Shaffrey CI, Ames CP, ISSG, Assessment of A Novel Adult Cervical Deformity Frailty Index as A Component of Preoperative Risk Stratification. *World Neurosurg*, 109: E800-E806., January 2018

Smith JS, Shaffrey CI, Kim HJ, Passias P, Protosaltis T, Lafage R, **Mundis GM Jr**, Klineberg E, Lafage V, Schwab FJ, Scheer JK, Miller E, Kelly M, Hamilton DK, Gupta M, Deviren V, Hostin R, Albert T, Riew KD, Hart R, Burton D, Bess S, Ames CP: Prospective Multicenter Assessment of All-Cause Mortality Following Surgery for Adult Cervical Deformity. *Neurosurgery*, [Epub ahead of print]. January 2018



Pooria Hosseini presents his research at the 2017 Scoliosis Research Society Annual Meeting

Kanter AS, Tempel ZJ, Agarwal N, Hamilton DK, Zavatsky JM, **Mundis GM**, Tran S, Chou D, Park P, Uribe JS, Wang MY, Anand N, **Eastlack R**, Mummaneni PV, Okonkwo DO: Curve Laterality for Lateral Lumbar Interbody Fusion in Adult Scoliosis Surgery: The Concave Versus Convex Controversy. *Neurosurgery*. [Epub ahead of print]. 2018 Jan 18.

Iyer S, Klineberg EO, Zebala LP, Kelly MP, Hart RA, Gupta MC, Hamilton DK, **Mundis GM**, Sciubba D, Ames CP, Smith JS, Lafage V, Burton D, Kim HJ, ISSG: Dural Tears in Adult Deformity Surgery: Incidence, Risk Factors, and Outcomes. *Global Spine J*, 8(1):25-31, February 2018

Robles LA, **Mundis GM**, Cuevas-Solórzano A: Atlanto-Occipital Rotatory Dislocation: A Case Report and Systematic Review, *World Neurosurg*, 110:106-114, February 2018.

Ramchandran S, Protosaltis TS, Sciubba D, Scheer JK, Jalai CM, Daniels A, Passias PG, Lafage V, Kim HJ, **Mundis G**, Klineberg E, Hart RA, Smith JS, Shaffrey C, Ames CP, ISSG: Prospective Multi-Centric Evaluation of Upper Cervical and Infra-Cervical Sagittal Compensatory Alignment in Patients with Adult Cervical Deformity. *Eur Spine J*, 27(2):416-425, February 2018

**Blaskiewicz DJ**, Harris JE, Han PP, Turner AW, **Mundis GM**, an In Vitro Evaluation of Sagittal Alignment in The Cervical Spine After Insertion of Supraphysiologic Lordotic Implants. *Eur Spine J*, 27(2):433-441, February 2018

Witiw CD, Fessler RG, **Nguyen S**, Mummaneni P, Anand N, **Blaskiewicz D**, Uribe J, Wang MY, Kanter AS, Okonkwo D, Park P, Deviren V, **Akbarnia BA**, **Eastlack RK**, Shaffrey C, **Mundis GM Jr**: Re-operation After Long-segment Fusions for Adult Spinal Deformity: The Impact of Extending the Construct Below the Lumbar Spine. *Neurosurgery*. 2018 Feb 1; 82(2): 211-219

Scheer JK, Lafage R, Schwab FJ, Liabaud B, Smith JS, **Mundis GM**, Hostin R, Shaffrey CI, Burton DC, Hart RA, Kim HJ, Bess S, Gupta M, Lafage V, Ames CP: ISSG, Under-Correction of Sagittal Deformities Based on Age-Adjusted Alignment Thresholds Leads to Worse HRQOL While Over-Correction Provides No Additional Benefit. *Spine (Phila Pa 1976)*, 43(6):388-393, March 2018

Raad M, Jain A, Neuman BJ, Hassanzadeh H, Gupta MC, Burton DC, **Mundis GM, Jr.**, Lafage V, Klineberg EO, Hostin RA, Ames CP, Bess S, Sciubba DM, Kebaish KM, ISSG: Association of Patient-Reported Narcotic Use with Short and Long-Term Outcomes After Adult Spinal Deformity Surgery: Multicenter Study of 425 Patients With 2-Year Follow-Up. *Spine (Phila Pa 1976)*, [Epub ahead of print], March 2018

Langella F, Villafaña JH, Lafage V, Smith JS, Shaffrey C, Kim HJ, Burton D, Hostin R, Bess S, Ames C, **Mundis G**, Klineberg E, Schwab F, Lafage R, Berjano P, Xipho-Pubic Angle (XPA) Correlates with Patient's Reported Outcomes in A Population of Adult Spinal Deformity: Results from A Multi-Center Cohort Study. *Eur Spine J*, 27(3):670-677, March 2018

Passias PG, Bortz C, Horn S, Segreto F, Poorman G, Jalai C, Daniels A, Hamilton DK, Kim HJ, Sciubba D, Smith JS, Neuman B, Shaffrey C, Lafage V, Protosaltis T, Ames C, Hart R, **Mundis G**, **Eastlack R**: Drivers of Cervical Deformity Have a Strong Influence on Achieving Optimal Radiographic and Clinical Outcomes at 1 year Following Cervical Deformity Surgery. *World Neurosurg*, 112: E61-E68, April 2018

Hart RA, Rastegar F, Contag A, Kane M, Daniels A, Klineberg E, **Eastlack R**, Smith JS, Hostin R, Hamilton DK, Gum JL, Burton DC, Scheer JK, Ames C, Schwab F, Lafage V, Bess S, Shaffrey C, Kebaish K, ISSG: Inter- and Intra-rater Reliability of the Hart-ISSG Proximal Junctional Failure Severity Scale. *Spine (Phila Pa 1976)*, 2018 Apr 15;43(8):E461-E467

Protosaltis TS, Lafage R, Smith JS, Passias PG, Shaffrey CI, Kim HJ, **Mundis GM**, Ames CP, Burton DC, Bess S, Klineberg E, Hart RA, Schwab FJ, Lafage V, ISSG.: The Lumbar Pelvic Angle, The Lumbar Component of the T1 Pelvic Angle, Correlates With HRQOL, PI-LL Mismatch, and It Predicts Global Alignment. *Spine (Phila Pa 1976)*, 43(10):681-687, May 2018

Kim HJ, Iyer S, Diebo BG, Kelly MP, Sciubba D, Schwab F, Lafage V, **Mundis GM**, Shaffrey CI, Smith JS, Hart R, Burton D, Bess S, Klineberg EO, ISSG: Clinically Significant Thromboembolic Disease in Adult Spinal Deformity Surgery: Incidence and Risk Factors in 737 Patients. *Global Spine J*, 8(3):224-230, May 2018

**Eastlack RK, Srinivas R, Mundis GM Jr, Nguyen S,** Mummaneni PV, Okonkwo DO, Kanter AS, Anand N, Park P, Nunley P, Uribe JS, **Akbarnia BA,** Chou D, Deviren, ISSG: Early and Late Reoperation Rates with Various MIS Techniques for Adult Spinal Deformity Correction. *Global Spine J.* (Epub ahead of print] 2018, May 10.

Chou D, Mummaneni P, Anand N, Nunley P, La Marca F, Fu KM, Fessler R, Park P, Wang M, Than K, **Nguyen S,** Uribe JS, Zavatsky J, Deviren V, Kanter AS, Okonkwo D, **Eastlack RK, Mundis GM,** ISSG: Treatment of the Fractional Curve of Adult Scoliosis With Circumferential Minimally Invasive Surgery Versus Traditional, Open Surgery: An Analysis of Surgical Outcomes. *Global Spine J.* (Epub ahead of print] 2018, May 10.

**Khalsa AS, Mundis GM Jr,** Yagi M, Fessler RG, Bess S, Hosogane N, Park P, Than KD, Daniels A, Iorio J, **Ledesma JB, Tran S, Eastlack RK,** ISSG: Variability in Assessing Spinopelvic Parameters (SPP) with Lumbosacral Transitional Vertebrae (LTV): Inter- and Intra-observer Reliability Among Spine Surgeons. *Spine,* 01 Jun 2018, 43(12): 813-816.

Yang J, Lafage V, Lafage R, Smith J, Klineberg EO, Shaffrey CI, **Mundis G Jr,** Hostin R, Burton D, Ames CP, Bess S, Kim HJ, Schwab F, ISSG: Determinants of Patient Satisfaction Two Year after Spinal Deformity Surgery: A Latent Class Analysis. *Spine (Phila Pa 1976),* [Epub ahead of print], June 2018

**Eastlack RK, Ledesma JB, Tran S, Khalsa A,** Park P, Mummaneni PV, Chou D, Kanter AS, Anand N, Nunley P, La Marca F, Fessler RG, Uribe JS, **Mundis GM Jr,** ISSG: Home Versus Rehabilitation: Factors that Influence Disposition After Minimally Invasive Surgery in Adult Spinal Deformity Surgery. *World Neurosurg.* [Epub ahead of print] 2018 Jul 10.

**Khalsa AS, Mundis GM, Ledesma JB, Hosseini P, Bruffey JD, Nguyen S, Akbarnia BA, Eastlack, RK:** Radiographic and Surgical Outcomes After Stand-Alone Lateral Lumbar Interbody Fusion. *Shafa Orthopedic J.* [Epub ahead of print] 2018 Jul 18.

**Hlubek RJ, Eastlack RK, Mundis GM Jr:** Transpoas Approach Nuances. *Neurosurg Clin N Am,* 29(3):407-417, July 2018

Raad M, Neuman BJ, Jain A, Hassanzadeh H, Passias PG, Klineberg E, **Mundis GM Jr,** Protosaltis TS, Miller EK, Smith JS, Lafage V, Hamilton DK, Bess S, Kebaish KM, Sciubba DM, ISSG: The Use of Patient-Reported Preoperative Activity Levels as A Stratification Tool for Short-Term and Long-Term Outcomes in Patients with Adult Spinal Deformity. *J Neurosurg Spine,* 29(1):68-74, July 2018

Daniels AH, Bess S, Line B, Eltorai AEM, Reid DBC, Lafage V, **Akbarnia BA,** Ames CP, Boachie-Adjei O, Burton DC, Deviren V, Kim HJ, Hart RA, Kebaish KM, Klineberg EO, Gupta M, **Mundis GM Jr,** Hostin RA Jr, O'Brien M, Schwab FJ, Shaffrey CI, Smith JS, ISSG: Peaking Timing for Complications Following Adult Spinal Deformity Surgery. *World Neurosurg,* 115: E509-E515, July 2018

**Khalsa AS, Eghbali A, Eastlack RK, Tran S, Akbarnia BA, Ledesma JB, Mundis GM Jr:** Rest Pain Level as a Preoperative Predictor of Success with Indirect Decompression for Lumbar Spinal Stenosis: A Pilot Study. *Global Spine J.* (Epub ahead of print] 2018 Jul 26.

## Peer-Reviewed Publications: Pediatric

Hill G, Nagaraja S, **Akbarnia BA, Pawelek J,** Sponseller P, Sturm P, Emans J, Bonangelino P, Cockrum J, Kane W, Dreher M, GSSG: Retrieval and Clinical Analysis of Distraction-based Dual Growing Rod Constructs for Early Onset Scoliosis. *Spine J.* 2017 Oct 17(10): 1506-1518

Glottzbecker M, St Hilaire T, **Pawelek J,** Thompson G, Vitale M, Children's Spine Study Group, Growing Spine Study Group. Best



Greg Mundis, Jr. at the podium during the Scoliosis Research Society 2017 Annual Meeting

Practice Guidelines for the Surgical Site Infection Prevention with Surgical Treatment of Early Onset Scoliosis. *J Pediatr Orthop* [Epub ahead of print] 2017, Oct 23

Kwan KYH, Alanay A, Yazici M, Demirkian G, Helenius I, Nnadi C, Ferguson J, **Akbarnia BA,** Cheung JPY, Cheung KMC: Unplanned Reoperations in Magnetically Controlled Growing Rod Surgery for Early Onset Scoliosis with A Minimum of Two-Year Follow-Up. *Spine.* 42(24): E1410-E1414, Dec 15, 2017

**Goldstein MJ, Kabirian N, Pawelek JB, Arandi NR, Mundis GM Jr,** Yaszay B, Newton PO, **Akbarnia BA:** Quantifying Anesthesia Exposure in Growing Rod Treatment for Early Onset Scoliosis. *J Pediatr Orthop.* 2017 Dec; 37(8): E563-E566

**Choi E,** Yaszay B, **Mundis G, Hosseini P, Pawelek J,** Alanay A, Berk H, Cheung K, Demirkiran G, Ferguson J, Gregg T, Helenius I, La Rosa G, Senkooylu A, **Akbarnia BA:** Implant Complications After Magnetically Controlled Growing Rods for Early Onset Scoliosis: A Multicenter Retrospective Review. *J Pediatr Orthop.* 2017 Dec; 37(8): E588-E592

**Hosseini P, Mundis G,** Yoo K, Successful Spine-Shortening Osteotomy for Recurrent Tethered Cord Syndrome in a Patient with Ehlers-Danlos Type III and Mosaic Trisomy 20: A Case Report. *Shafa Ortho J,* 5(1): E64977, January 2018

Blakemore L, Schwend R, **Akbarnia BA,** Dumas M, Schmidt J: Growth Patterns of The Neurocentral Synchondrosis (NCS) in Immature Cadaveric Vertebra. *J Pediatr Orthop.* 2018 Mar; 38(3): 181-184

Matsumoto H, Williams B, Park HY, Yoshimachi JY, Roye BD, Roye DP Jr, **Akbarnia BA,** Emans J, Skaggs D, Smith JT, Vitale MG: The Final 24-Item Early Onset Scoliosis Questionnaires (EOSQ-24): Validity, Reliability and Responsiveness. *J Pediatr Orthop,* 2018 Mar; 38(3): 144-151

**Hosseini P, Akbarnia BA, Nguyen S, Pawelek J,** Emans J, Sturm PF, Sponseller PD, GSSG: Construct Levels to Anchored Levels Ratio and Rod Diameter Are Associated with Implant-Related Complications in Traditional Growing Rods. *Spine Deformity Journal Volume 6, Issue 3 (May-June 2018) Pp 320-326*

Feinberg N, Matsumoto H, Hung CW, St. Hilaire T, **Pawelek J,** Sawyer Jr, **Akbarnia BA,** Skaggs DL, Roye BD, Roye DP, Vitale MG: Expert Consensus and Equipose: Planning a Randomized Controlled Trial of Magnetically Controlled Growing Rods. *Spine Deformity Journal Volume 6, Issue 3 (May-June 2018) Pp 303-307*

Oetgen ME, Matthews A, Wang Y, Blakemore L **Pawelek J, McClung A,** Sponseller P, Perez-Gruoso FS, **Akbarnia BA,** GSSG: Radiographic Outcome Differences in Distraction-Based Growing Rod Constructs



Using Tandem Versus Wedding Band Connectors. *Spine Deformity Journal* Volume 6, Issue 3 (May-June 2018) Pp 314-319

Helenius IJ, Oksanen HM, **McClung A, Pawelek JB**, Yazici M, Sponseller PD, Emans JB, Perez-Grueso FS, Thompson GH, Johnston C, Shah SA, **Akbarnia BA**: Outcomes of Growing Rod Surgery for Severe Compared with Moderate Early-Onset Scoliosis – A Matched Comparative Study. *The Bone and Joint Journal*. June 2018; 100-B No 6: 772-779

Bachabi M, **McClung A, Pawelek JB**, El Hawary R, Thompson GH, Smith JT, Vitale MG, **Akbarnia BA**, Sponseller PD, CSSG, GSSG: Idiopathic Early-Onset Scoliosis: Growing Rods Versus Vertically Expandable Prosthetic Titanium Ribs at 5-Year Follow-Up. *J Pediatr Orthop*. [Epub ahead of print] 2018, June 8.

Woon R, Andras L, Noordeen H, Morris S, Hutchinson J, Shah S, **Pawelek J**, Johnston C, Skaggs D, CSSG, GSSG: Surgeon Survey Shows No Adverse Events with MRI in Patients with Magnetically Controlled Growing Rods. *Spine Deform*. 2018 May - Jun;6(3):299-302

**Hosseini P, Akbarnia BA**: Commentary: Mean 6-Year Follow-Up of Magnetically Controlled Growing Rod Patients with Early Onset Scoliosis: A Glimpse of What Happens to Graduates. *Neurosurgery*, [Epub ahead of print] July 13, 2018

Hardesty C, Huang R, El-Hawary R, Samdani A, Bas Hermida P, Bas T, Balioglu M, Gurd D, **Pawelek J**, McCarthy R, Zhu F, Luhmann S, the Growing Spine Committee of the Scoliosis Research Society. Early-Onset Scoliosis: Updated Treatment Techniques and Results. *Spine Deform*. 2018 July-Aug 6(4):467-472.

## Book Chapters

Fitzgerald RE, Rickert KD, **Akbarnia BA**, Yazsay B: *Early Onset Scoliosis Treated with Magnetically Controlled Growing Rods.....* Early Onset Scoliosis: A Clinical Casebook. Springer, April 2018

**Hosseini P, Akbarnia BA**. *Early Onset Scoliosis*. Sohail T, Lenke LG, Abumi K, Samdani A, Editors. *The Spine Principles and Practice Vol 1*. 1 ed. Pakistan: Update Book Company; 2018:253-265

**Mundis GM, Hosseini P**: *Thoracolumbar Deformity: MIS ACR Complications*. Praveen V. Mummaneni PP, Charles H. Crawford III, Adam S. Kanter, Steven D. Glassman, Editors. *Spinal Deformity: A Case-Based Approach to Managing and Avoiding Complications*: Springer; 2018. p. 245-57



Past Research Volunteer, Yashar Javidan, MD at 2017 Scoliosis Research Society Annual Meeting, Philadelphia, PA

## Podium Presentations – Adult

**Mundis GM**, Lafage R, **Eastlack RK**, Soroceanu A, LaFage V, Sciubba DM, Klineberg EO, Kim HJ, Smith JS, Shaffrey CI, Ames CP, Hart RA, Schwab FJ, ISSG: Is the “2/3 Lumbar Lordosis Comes from L4-S1” Rule Predictive of Outcome Among Patients with Sagittal Plane Spinal Deformities? 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017

Kim HJ, Bao H, Shaffrey CI, Smith JS, Kelly MP, Gupta MC, Albert TJ, Protopsaltis TS, **Mundis GM**, Passias PG, Klineberg EO, LaFage V, Ames CP, ISSG: Neurological Complications and Recovery Rates in Adult Cervical Deformity Surgery. 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017 and 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Smith JS, Shaffrey CI, Kim HJ, Passias PG, Protopsaltis TS, LaFage R, **Mundis GM**, Klineberg EO, LaFage V, Schwab FJ, Scheer JK, Kelly MP, Hamilton DK, Gupta MC, Deviren V, Hostin R, Albert TJ, Riew D, Hart RA, Burton DC, Bess S, Ames CP, ISSG: Prospective Multicenter Assessment of All-Cause Mortality Following Surgery for Adult Cervical Deformity (ACD): 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017 and 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Soroceanu A, Gum JL, Kelly MP, Passias PG, Smith JS, Protopsaltis TS, LaFage V, Kim HJ, Scheer JK, Gupta MC, **Mundis GM**, Klineberg EO, Burton DC, Bess S, Ames CP, ISSG: Establishing the Minimum Clinically Important Difference in NDI and mJOA for Adult Cervical Deformity. 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017 and 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Kim HJ, Wang SJ, Aguwa OK, LaFage R, Shaffrey CI, **Mundis GM**, Hostin R, Douglas DC, Ames CP, Klineberg EO, Gupta MC, Smith JS, Schwab FJ, LaFage V, ISSG: Recurrent Proximal Junctional Kyphosis: Incidence, Risk Factors, Revision Rates and Outcomes at 2-Year Minimum Follow-up. 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017 and 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017 and American Academy of Orthopaedic Surgeons (AAOS) 2018 Annual Meeting, New Orleans, LA, March 6-10, 2018

Bess S, Line BG, Ames CP, Burton DC, LaFage V, LaFage R, Hart RA, Kelly MP, Kim HJ, Klineberg EO, Hostin R, **Mundis GM**, Gupta MC, Kebaish K, Schwab FJ, Shaffrey CI, Smith JS, ISSG: How Much Will I Improve After My Surgery and Will I be Normal? The Critical Importance of Collecting and Discussing Patient Reported Outcomes Measures (PROMS) With Adult Spinal Deformity (ASD) Patients. 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017

Plais N, Bao H, Kim HJ, Gupta MC, Shaffrey CI, Elysee JC, **Mundis GM**, Hostin R, Burton DC, Ames CP, Klineberg EO, Bess S, Schwab FJ, LaFage V, ISSG: Fractional Curves in Adult Spinal Deformity: Is it a Driver of or a Compensation for Coronal Malalignment? 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017

Bao H, Varghese JJ, Kim HJ, Gupta MC, Shaffrey CI, Smith JS, **Mundis GM**, Hostin R, Burton DC, Ames CP, Klineberg EO, Bess S, Schwab FJ, LaFage V, ISSG: Does the Use of an Interbody Fusion at the Osteotomy Site Limit the Loss of Correction After 3 Column Osteotomy in Adult Spinal Deformity? 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017

Park P, **Mundis GM**, Than KD, Fu FMG, **Nguyen S**, Uribe JS, Kanter AS, Nunley PD, **Eastlack RK**, Fessler RG, Anand N, LaMarca F, Mummaneni PV, ISSG: Analysis of Complications with Staged Surgery for Less Invasive Treatment of Adult Spinal Deformity. (*E-Presentation*) 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society, Philadelphia, Pennsylvania. September 5, 2017 and Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 – 17, 2018

Klineberg EO, Soroceanu A, **Mundis GM**, Kim HJ, Kelly MP, Smith JS, Shaffrey CI, Hart RA, Burton DC, LaFage V, Schwab FJ, Ames CP, Berven SH, Lenke LG, Bess S, ISSG: Comprehensive Complication for Adult Spinal Deformity: Impact on Patient Outcomes. (*E-Presentation*) 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society, Philadelphia, Pennsylvania. September 5, 2017 and 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Gupta MC, LaFage R, Kelly MP, Shaffrey CI, **Mundis GM**, Hostin R, Burton DC, Ames CP, Schwab FJ, Kim HJ, Klineberg EO, Bess S, Smith JS, LaFage V, ISSG: Evolution of Sagittal Correction Durability and Associations with Patient Reported Outcome Measures (PROMS) for Long Fusions Terminating at the Upper Thoracic (UT) vs. Thoracolumbar (TL) with Minimum 3-Year Follow-up. (*E-Presentation*) 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society, Philadelphia, Pennsylvania. September 5, 2017

**Khalsa A, Eastlack R, Eghbali A, Tran S, Mundis G:** Rest Pain Level as a Preoperative Predictor of Success with Indirect Decompression for Lumbar Spinal Stenosis: A Pilot Study, Society for Minimally Invasive Spine Surgery, Las Vegas, NV, September 14–16, 2017

**Khalsa A, Ledesma J, Mundis G, Tran S, and Eastlack R:** Radiographic and Surgical Outcomes after Stand-Alone Lateral Lumbar Interbody Fusion, Society for Minimally Invasive Spine Surgery, Las Vegas, NV, September 14–16, 2017

Fu KM, Nunley P, **Tran S, Mundis G**, Park P, La Marca F, Uribe J, **Eastlack R**, Than K, Okonkwo D, Kanter A, Anand N, Fessler R, Mummaneni P, ISSG: Patients Over Age 65 with Postoperative Malalignment Are Not as Disabled as Younger Patients, Society for Minimally Invasive Spine Surgery. Las Vegas, NV, September 14–16, 2017

Raad M, Gupta MC, Hassanzadeh H, Jain A, Neuman BJ, Burton DC, **Mundis GM**, LaFage V, Klineberg EO, Daniels AH, Hostin R, Ames CP, Bess S, Sciubba DM, Kebaish KM, ISSG: The S2AI Technique Has a Lower Complication Rate Compared to Iliac Screws: A Multicenter Study of 418 Adult Spinal Deformity Patients. (*E-Presentation*) 52<sup>nd</sup>

Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017 and 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Soroceanu A, Park P, Bess S, Burton DC, Cunningham ME, **Eastlack RK**, Errico TJ, Gupta MC, Kim HJ, Lebl DR, **Mundis GM Jr**, Protosaltis TS, Schwab FJ, LaFage V, ISSG: Radiographic Assessment of Spinopelvic Pelvic Parameters in Surgically Treated Patients with Symptomatic Low-Grade Spondylolisthesis. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Staub BN, LaFage R, Kim HJ, Shaffrey CI, **Mundis GM Jr**, Hostin RA, Burton DC, Lenke LG, Gupta MC, Ames CP, Klineberg EO, Bess S, Schwab FJ, LaFage V, ISSG: Cervical Mismatch: The Normative Value of T1S-CL and Its Ability to Predict Ideal CL. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Protosaltis TS, Ramchandran S, Tishelman JC, Smith JS, Neuman BJ, **Mundis GM Jr**, LaFage R, Klineberg EO, Hamilton DK, LaFage V, Gupta MC, Hart RA, Schwab FJ, Burton DC, Bess S, Shaffrey CI, Ames CP, ISSG: The Importance of C2-Slope, a Singular Marker of Cervical Deformity, Correlates with Patient-Reported Outcomes. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017 and [American Academy of Orthopaedic Surgeons \(AAOS\) 2018 Annual Meeting, New Orleans, LA, March 6-10, 2018](#)

Protosaltis TS, Soroceanu A, Smith JS, Gupta MC, LaFage R, Kim HJ, Passias PG, Hamilton DK, **Mundis GM Jr**, Klineberg EO, LaFage V, Schwab FJ, Deviren V, Albert TJ, Riew D, Hart RA, Burton DC, Bess S, Shaffrey CI, Ames CP, ISSG: Analysis of Prospective Collection of 374 Osteotomies in 99 Patients with Adult Cervical Deformity. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Protosaltis TS, Ramchandran S, Tishelman JC, Smith JS, Sciubba DM, Passias PG, **Mundis GM Jr**, LaFage R, Klineberg EO, Gupta MC, LaFage V, Shaffrey CI, Schwab FJ, Ames CP, ISSG: Prospective Multicenter Analysis of Outcomes Following Surgical Correction of Patients with Severe Cervical Deformity and Horizontal Gaze Disruption. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Passias PG, Poorman GW, Horn SR, Klineberg EO, Shaffrey CI, LaFage V, Protosaltis TS, Ames CP, Smith JS, **Mundis GM Jr**, Neuman BJ, Hart RA, Burton DC, ISSG: Identifying Sources of Improvement of Axial Pain in Corrective Cervical Deformity Surgery. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017 and Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 – 17, 2018

Raad M, Jain A, Neuman BJ, Hassanzadeh H, Gupta MC, Burton DC, **Mundis GM Jr**, LaFage V, Klineberg EO, Daniels AH, Hostin RA Jr, Ames CP, Bess S, Sciubba DM, Kebaish KM, ISSG: Preoperative Opioid Use is an Independent Predictor of a Prolonged Length of Hospital Stay (LOS) Following Adult Spine Deformity Surgery: A Multicenter Study of 819 Patients. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Passias PG, Poorman GW, Vasquez-Montes D, **Mundis GM Jr**, Horn SR, Diebo BG, Burton DC, Gum JL, Buckland AJ, Gerling MC, Hart RA, Schwab FJ, LaFage V, Shaffrey CI, Bess S, Ames CP, Klineberg EO, ISSG: Predictive Analytics for Determining Extended Operative Time in Corrective ASD Surgery. 32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017 and Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 – 17, 2018



Greg Mundis, Jr. with Kuniyoshi Abumi, MD at 2017 Himalayan Spine Symposium in Nepal

Neuman BJ, Raad M, Klineberg EO, Sciubba DM, **Mundis GM Jr**, Passias PG, Scheer JK, Gum JL, Kebaish KM, Hamilton DK, Protopsaltis TS, Line B, Smith JS, Ames P, ISSG: ASD-SR Invasiveness Index Predicts the Magnitude of Deformity Surgery Essential to Stage to Reduce the Risk of Complications. 32nd Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Plais N, Bao H, Kim HJ, Gupta MC, Pesenti S, Smith JS, **Mundis GM Jr**, Hostin RA Jr, Burton DC, Ames CP, Klineberg EO, Bess S, Schwab FJ, LaFage V, ISSG: Concave Malalignment is Associated with Worse Health-Related Quality of Life: An Analysis of Painful Scoliosis in Adult Patients with No History of Spine Surgery. 32nd Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

LaFage R, Schwab FJ, Klineberg EO, Burton DC, Bess S, Kim HJ, Smith JS, Ames CP, Hostin RA, Shaffrey CI, **Mundis GM Jr**, LaFage V, ISSG: Risk Factor Analysis for PJK after Adult Spinal Deformity Surgery: A new Simple Scoring System Based on 417 Patients with Two-Year Follow-up. 32nd Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Bess S, Line B, LaFage V, LaFage R, Ames CP, Burton DC, Hart RA, Hostin RA Jr, O'Brien MF, **Mundis GM Jr**, Gupta MC, Kim HJ, Klineberg EO, Kebaish KM, Protopsaltis TS, Passias PG, Schwab FJ, Shaffrey CI, Smith JS, ISSG: Use of Prophylactic Techniques to Prevent Proximal Junctional Failure (PJF) Following Adult Spinal Deformity (ASD) Surgery Does Not Prevent PJF, However Prophylaxis Might Reduce Need for Revision Surgery. 32nd Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017

Protopsaltis, Soroceanu, Tishelman, Buckland, **Mundis**, Smith, Daniels, Lenke, Klineberg, Ames, Hart, Bess, Shaffrey, Schwab, LaFage, ISSG: Should Targets for ASD Correction Depend on Pelvic Incidence? American Academy of Orthopaedic Surgeons (AAOS) 2018 Annual Meeting, New Orleans, LA, March 6-10, 2018

Gerling M, **Mundis GM**, Uribe JS, Park P, Mummaneni PV, Fu KG, Tran S, Than KD, Nunley PD, Okonkwo DO, Fessler RG, Anand N, Eastlack R, ISSG: The Impact of Revision Surgery on Patients Undergoing MIS Correction of Adult Spinal Deformity: A Multicenter Study, *Podium 239*, Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 - 17, 2018

**Ledesma J, Eastlack R, Tran S**, Park P, Than KD, Mummaneni PV, Chou D, Kanter AS, Anand N, Nunley PD, La Marca F, Fessler RG, Uribe JS, **Mundis GM**, ISSG: Home Versus Rehab: Factors That Influence Disposition After MIS Adult Spinal Deformity Surgery? *Podium 400*, Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 - 17, 2018

Godzik J, **Hlubek R**, Xu DS, Walker CT, **Turner JD, Mundis GM**, Uribe JS, Combined Lateral Transposas Anterior Column Realignment with Pedicle Subtraction Osteotomy: Cadaveric Feasibility and Early Clinical Experience. Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 - 17, 2018

Godzik J, Alan N, **Hlubek R**, Konrad Bach, **Mundis GM**, Kanter AS, Okonkwo DO, **Turner JD**, Uribe JS, Retrospective Multicenter Assessment of Risk Factors for Rod Fracture Following Minimally Invasive Surgery for Adult Spinal Deformity Correction. Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 - 17, 2018 and Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018



Jay Turner and Matthew Goldstein chat at SDFS Fellow's Reunion during the 2017 Scoliosis Research Society

**Mundis GM, Varley E**, Uribe JS, Park P, **Tran S**, Nunley P, Kanter AS, Anand N, Mummaneni PV, Than KD, Okonkwo DO, Fessler RB, Fu KM, Wang MY, Chou D, **Eastlack RK**, ISSG: Transforaminal Versus Anterior Lumbar Interbody Fusion at L5-S1 in MIS Treatment of ASD: Effect on Spinopelvic Parameters and Outcomes in Degenerative Scoliosis. Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018

Park P, **Eastlack RK**, Fu KM, **Tran S, Mundis GM**, Uribe JS, Wang MY, Than KD, Okonkwo DO, Kanter AS, Nunley P, Anand N, Fessler RG, Chou D, Mummaneni PV, ISSG: Is Achieving Optimal Spinopelvic Parameters Necessary to Obtain Substantial Clinical Benefit: Analysis of Patients who Underwent Circumferential MIS or Hybrid Surgery with Open Posterior Instrumentation. Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018

**Eastlack RK**, Nunley P, Uribe JS, Park P, **Tran S**, Wang MY, Than KD, Okonkwo DO, Kanter AS, Anand N, Fessler RG, Fu KM, Chou D, Mummaneni PV, **Mundis GM**, ISSG: Impact of Lower Thoracic Vs. Upper Lumbar UIV in MIS Correction of Adult Spinal Deformity. Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018 and 25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018

Balzer JR, Bilys J, Brown CR, **Bruffey J**, Cha T, **Eastlack RK**, Goodrich J, Hamilton DK, Harper GE, Isaacs RE, Jenis L, Kanter AS, Karikari I, Khajavi K, Lee JY, Malcolm JR, Meyer C, Okonkwo DO, Orndorff D, Smith WD, Tohmeh AG, Uribe JS, Volcan IJ, Youssef JA: The Feasibility of Transcutaneous Transabdominal Stimulation of the Lumbosacral Nerve Roots in Lumbar Spine Surgery. Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018

Godzik J, Alan N, **Hlubek R**, Xu D, **Mundis GM, Turner JD**, Kanter AS, Okonkwo DO, Uribe JS: Retrospective Multicenter Assessment of Rod Fracture Following Anterior Column Realignment in Adult Spinal Deformity Correction. Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018

Godzik J, De Andrada B, Lehrman J, Newcomb A, **Mundis GM**, Uribe JS, Kelly BP, **Turner JD**: Optimizing Biomechanics of Anterior Column Realignment (ACR) Constructs: A Cadaveric Study of Rod Strain and Construct Stability. Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018

Godzik J, De Andrada B, Newcomb A, Lehrman J, **Mundis GM**, Uribe JS, Kelly BP, **Turner JD**: Maximal Segmental Lordosis Can Be Achieved When Fixating into One or Both Vertebral Bodies During Anterior Column Realignment: A Cadaveric Study. Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018

**Hida T, Eastlack RK**, Kanemura T, **Mundis GM**, Imagama S, **Akbarnia BA**: Effect of Race, Age and Gender on Lumbar Muscle Volume and Fat Infiltration in The Degenerative Spine. 25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018

Protosaltis TS, Stekas N, LaFage R, Smith JS, Soroceanu A, Sciubba DM, Hamilton DK, **Eastlack RK, Mundis GM**, Kebaish KM, Klineberg EO, Gupta MC, LaFage V, Hart RA, Schwab F, Burton DC, Bess S, Shaffrey CI, Ames CP, ISSG: Can We Define Clinically Relevant DJK in Cervical Deformity Surgery? 25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018

Segreto FA, Passias PG, LaFage R, LaFage V, Smith JS, Line BG, **Mundis GM**, Nunley PD, Daniels AH, Gupta MC, Gum JL, Hamilton DK, Klineberg EO, Burton DC, Hart RA, Schwab FJ, Bess S, Shaffrey CI, Ames CP, ISSG: Incidence of Acute, Progressive and Delayed Proximal Junctional Kyphosis Over an 8-Year Period in Adult Spinal Deformity Patients. 25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018

Neuman BJ, Raad M, Sciubba DM, Passias PG, Klineberg EO, Hassanzadeh H, Protosaltis TS, Gupta MC, **Mundis GM**, Ames CP, Shaffrey CI, Gum JL, Smith JS, LaFage V, Bess S, Kebaish KM, ISSG: A Comparative Analysis of Young vs Older Adult Spinal Deformity Patients Fused to the Pelvis: Who Benefits More? 25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018

Passias PG, Segreto FA, LaFage R, LaFage V, Smith JS, Line BG, Scheer JK, **Mundis GM**, Hamilton DK, Kim HJ, Diebo BG, Gupta MC, Klineberg EO, Burton DC, Hart RA, Schwab FJ, Shaffrey CI, Ames P, Bess S, ISSG: Recovery Kinetics Following Spinal Deformity Correction: A Comparison of Isolated Cervical, Thoracolumbar and Combined Deformity Morphometries. 25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018

## Podium Presentations - Pediatric

**Hosseini P, Akbarnia BA, Nguyen S, Pawelek J**, Emans JB, Sturm PF, Sponseller PD, GSSG: Construct Levels to Anchored Levels Ratio and Rod Diameter Are Associated with Implant-Related Complications in Traditional Growing Rods. 52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 6-9, 2017 and 32<sup>nd</sup> Annual Meeting of The North American Spine Society, Orlando, Florida, October 25-28-2017

Yaszay B, Nabizadeh N, Jeffords M, Farnsworth C, Reighard F, Doan J, **Pawelek J, Mundis GM, Akbarnia BA**: 3D Assessment of Spine Growth in Early Onset Scoliosis During Growing Rod Lengthening. 11<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS): San Diego, California, November 16-17, 2017

**McClung A, Mundis GM, Pawelek J**, Garg S, Yaszay B, Boachie-Adjei O, Sanders JO, Sponseller PD, Perez-Grueso FJS, Lavelle W, Emans J, Johnston C, **Akbarnia BA**; CSSG, GSSG: Utilization and Reliability of Intraoperative Neuromonitoring In Vertebral Column Resections for Severe Early-Onset Scoliosis. 11<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS): San Diego, California, November 16-17, 2017

**McClung A, Mundis GM, Pawelek J, Kabirian N**, Garg S, Yaszay B, Boachie-Adjei O, Sanders JO, Sponseller PD, Perez-Grueso FJS, Lavelle W, Emans J, Johnston C, **Akbarnia BA**: Vertebral Column Resection for Early Onset Scoliosis: Indications, Utilization and Outcomes. 11<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS): San Diego, California, November 16-17, 2017

Helenius I, Oksanen H, **McClung A, Pawelek J**, Yazici M, Sponseller PD, Emans J, Perez-Grueso FJS, Thompson GH, Johnston C, Shah SA, **Akbarnia BA**, GSSG: Treatment of Severe Early Onset Scoliosis Using Distraction-Based Spinal Instrumentation. 11<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS): San Diego, California, November 16-17, 2017

Nabizadeh N, Yaszay B, **McClung A**, Skaggs D, Thompson G, Boachie-Adjei O, Sponseller PD, Shah SA, Sanders JO, **Pawelek J, Mundis GM, Akbarnia BA**, GSSG: Multi-Level Congenital Deformities in Early Onset Scoliosis: Radiographic and Clinical Outcomes in Growth Friendly Graduates. 11<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS): San Diego, California, November 16-17, 2017

**Hosseini P, Eghbali A, Pawelek J, Heskett, Mundis GM, Akbarnia BA**: A High Degree of Variability Exists in How "Safety and Efficacy" Is Defined and Reported in Growing Rod Surgery for Early-Onset Scoliosis: A Systematic Review. 11<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS): San Diego, California, November 16-17, 2017

Skaggs D, **Akbarnia BA, Pawelek J**, Matsumoto H, St. Hilaire T, Sturm PF, Perez-Grueso FJS, Luhmann S, Sponseller PD, Smith J, White K, Vitale M, CSSG, GSSG: Two-Year HRQOL Measures Are Similar Between Magnetically-Controlled Growing Rods Patients and Traditional Growing Rod Patients. 11<sup>th</sup> International Congress on Early Onset Scoliosis and Growing Spine (ICEOS): San Diego, California, November 16-17, 2017

**McClung A**, Williams BA, Shah SA, Blakemore LC, **Pawelek J**, Sponseller PD, Parent S, Emans JB, Sturm PF, Yaszay B, **Akbarnia BA**, GSSG: Intraspinal MRI Abnormalities in Early-Onset Scoliosis: Rates Across A Global Cohort. 25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018

## Summary of Poster Exhibits – Adult

52<sup>nd</sup> Annual Meeting of Scoliosis Research Society, Philadelphia, PA. September 5, 2017 - 3

Society for Minimally Invasive Spine Surgery, Las Vegas, NV, September 14–16, 2017 - 4

32<sup>nd</sup> Annual Meeting of North American Spine Society, Orlando FL, October 25-28, 2017 – 19

11<sup>th</sup> International Congress on Early Onset Scoliosis (ICEOS), San Diego, CA, November 16–17, 2017 - 1

Harvard College Undergraduate Research Association (HCURA) Boston, Massachusetts, January 18th-20, 2018 - 1

American Academy of Orthopaedic Surgeons, New Orleans, Louisiana, March 6-13, 2018 - 2

## Summary of Poster Exhibits – Pediatric

Pediatric Orthopaedic Society of North America 2018 Annual Meeting, Austin Texas, May 9-12, 2018 - 1

## Invited Speakers:

Simposio Correntoso, Controversias en Cirdugia Raquidea, Neuquén Argentina, 24-25 De Agosto 2017 – **Gregory M. Mundis, Jr., MD**

52<sup>nd</sup> Annual Meeting of The Scoliosis Research Society. Philadelphia, Pennsylvania. September 5, 2017 – **Behrooz A. Akbarnia, MD, Robert K. Eastlack, MD, Gregory M. Mundis, Jr., MD**

Society for Minimally Invasive Spine Surgery, Las Vegas, NV, September 14-16, 2017 – **Robert K. Eastlack, MD**

2017 Asia-Pacific SOLAS Meeting, Sydney, Australia. September 2017 – **Donald Blaskiewicz, MD**

11<sup>th</sup> International Congress on Early Onset Scoliosis (ICEOS), San Diego, California, November 16-17, 2017 – **Behrooz A. Akbarnia, MD**

Hospital for Special Surgery, New York, NY, December 7, 2017 – **Gregory M. Mundis, Jr., MD**

University of California, San Diego, Neurosurgery Grand Rounds, La Jolla, CA December 15, 2017 – **Gregory M. Mundis, Jr., MD**

American Academy of Orthopaedic Surgeons 2018 Annual Meeting. New Orleans, Louisiana, March 6-13, 2018 – **Behrooz A. Akbarnia, MD, Gregory M. Mundis, Jr., MD**

Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Orlando, FL, March 14 – 17, 2018 - **Gregory M. Mundis, Jr., MD**

Society of Lateral Access Surgery 2018 Annual Meeting, San Diego, California, May 17-19, 2018 – **Robert K. Eastlack, MD, Gregory M. Mundis, Jr., MD**

Setting Scoliosis Straight: Power Over Scoliosis, Annual Patient Education Course, San Diego, CA, June 2, 2018 – **Behrooz A. Akbarnia, MD, Gregory M. Mundis, Jr., MD**

Shafa Hospital, Tehran, Iran - June 21, 2018 – **Behrooz A. Akbarnia, MD**

The 15th Annual State of Spine Surgery Think Tank, Aruba, June 21-23, 2018 - **Gregory M. Mundis, Jr., MD**

Tashkent Pediatric Medical Institute, Tashkent, Uzbekistan, June 29, 2018 – **Behrooz A. Akbarnia, MD**

25<sup>th</sup> International Meeting on Advanced Spine Techniques, Los Angeles, California. July 11-14, 2018 – **Gregory M. Mundis, Jr., MD**

2018 San Diego Spine Annual Visiting Professorship Meeting. La Jolla, California. July 27, 2018 – **Behrooz A. Akbarnia, MD, Donald Blaskiewicz, MD, Robert K. Eastlack, MD, Gregory M. Mundis, Jr., MD**

## Scientific and Invited Talks 2017-2018





## Knowledge is Power

Life can be full of unexpected detours, some great and some causing stress and frustration. No one expects to be knocked down by illness, me included. I'm Nancy and my story began like most, a healthy happy life as a child, teen and adult.

I originally experienced radiating leg pain in my mid 50's. At first, I just tried to ignore it, thinking it was temporary and would go away. But it didn't. I was having pain with prolonged standing or walking. Traveling wasn't fun anymore, it hurt too much and required pain medication. I finally sought the advice of Steven Copp, MD at Scripps Clinic who diagnosed this initial problem as arthritis in my hips. A diagnostic MRI did also show early spinal stenosis. I had been terrified my spine was the problem, so I was thankful I didn't need to have spine surgery! I had a right followed by a left total hip replacement and later, a right hip revision. I was better for a time but when I tried to increase my activity, the leg pain returned and now I was having significant lower back pain as well. I had epidural steroid injections which didn't help. Dr. Copp told me I was at a crossroads: live with my increasing pain and disability, or pursue spine treatment. He took the time to show me new x-rays which demonstrated a rapidly worsening back condition. I was too young to live with this, and, not care for or play with my grandchildren!! My fear of spine surgery returned all over again.

I was referred for a spine evaluation with Robert Eastlack, MD, who completely put me at ease. He patiently explained the reasons for my symptoms: Degenerative Scoliosis. My spine was developing arthritis that lead to my nerves being pinched while causing my spine to twist and fall off balance to the side. My only chance to improve was to have spine surgery, and not just the smaller procedure I had anticipated, but a two-stage surgery over three days and spanning at least 6 vertebrae! I still remember the emotional shock I felt as he delivered this recommendation.

My reality was such that I was taking ½ to 1 tablet of Percocet at least once daily and I still couldn't stand to cook, lift or care for my granddaughter without considerable pain. Again, Dr. Eastlack helped reassure me that I would get through it, but said that it was very common for someone my age to have bumps in the road to recovery. He cautioned that recovery wouldn't be as easy or quick as the hip surgery. I met with him once again, this time with my daughter, who is an orthopedic nurse. She was such a help in asking all the right questions and, with the help of my family and friends, I decided to proceed.

I was never told I had scoliosis when I was young, rather, I was told it was "adult onset scoliosis," caused by arthritic degeneration of my spine.

My life has been a busy one, starting with a career for 5 years before getting married and starting a family. We enjoyed staying active with family and traveling as most do. I retired from my job at UCSD in 2003 upon the birth of my first grandchild. My new "job" would be as "nanny" to my new granddaughter!

My first surgery was considered “minimally invasive”.

Through 2 small side incisions, I had 4 discs removed from my lumbar spine, which were replaced with special spacers that restored the collapsed disc spaces that helped to cause my scoliosis and imbalance. The first surgery was fairly easy to recover from and 2 short days later, I had the larger posterior procedure from T12 to S1 with rods and screws to both correct my curve as well as immobilize it to allow the fusion to heal.

Of course, my doctor was right, there were bumps in the road. During the first night after the second stage, I had an episode of A-Fib (atrial fibrillation), which caused my heart to beat rapidly and irregularly. That was the scariest part of my recovery. I remember being in the ICU asking “what did I do?!” But everyone caring for me was so competent and reassuring. Ultimately, the A-Fib responded to medication which restored my heart back to its normal rate and rhythm. I also had some intermittent leg pain immediately after surgery, which I was told was completely normal and expected. Short walks helped to relieve this discomfort. I was also having problems emptying my bladder, which resolved shortly after my discharge. After 10 days in the hospital, I was discharged home.



I was able to transfer directly to my home where family and friends attended to me for the first week. Once I was home, I had home PT twice, largely to ensure my home was set up to optimize my mobility. Outpatient P.T. commenced weeks later and continued for several months.

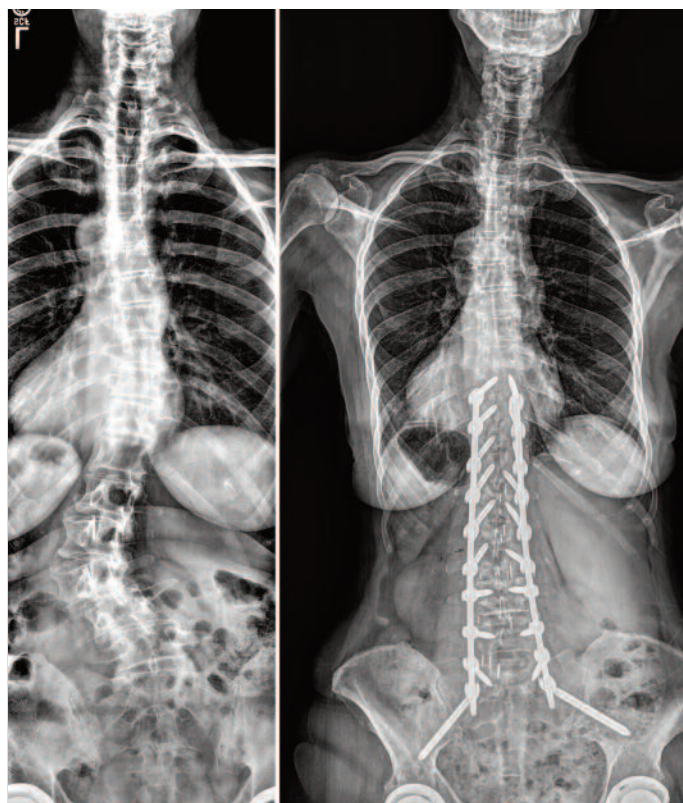
Over time, my leg pain subsided and my surgical pain was surprisingly minimal. Now, I no longer need narcotic pain control! I do take anti-inflammatory medication, but not for my spine, it helps my arthritic hands.

I was very surprised to see my standing height increase to my original height; I had gained almost 2 inches after my surgery! Also, I didn't realize just how painful it can be when your body is out of balance! Those poor muscles are constantly working to correct the spine's imbalance, and as a result, they become tired and in constant spasm. Bottom line, my quality of life is so much better!

I've been asked what pearls of wisdom I can pass along to others considering surgery for a spine problem. That's a very good question! Ask your surgeon to introduce you to other patients who have had similar procedures. Talking to someone who has lived the ups and downs, can really help you mentally plan and prepare your family and friends for what's ahead. Now, I am happy to speak to others considering back surgery. No offense to the doctors or nurses, who do a great job, but there's nothing quite like talking to someone who's lived the experience. The more there are patient support groups, the better. So, don't live in fear of spine surgery, educate yourself, research your doctors and talk to patients. The worst thing is the fear of things you don't know.

Knowledge is power! I also emphasize the importance of seeing a qualified spine surgeon, fellowship trained in the most advanced methods of spine surgery.

For so many decades, back surgery has held fear in the hearts of many, me included, and rightfully so. But doing nothing in the case of a spinal deformity can often lead to increased symptoms and/or disfigurement. The new minimally invasive techniques and advanced instrumentation have led to amazing treatment opportunities and results for so many. I feel very thankful to have benefitted from this new evolution of spine surgery.



*Left image shows significant collapse and shift from center caused by degenerative scoliosis. Right image: postoperative correction of alignment and balance*

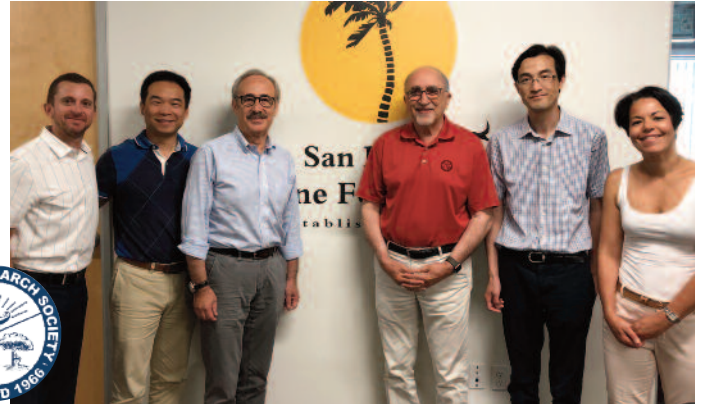
*San Diego Spine Foundation would like to thank Nancy for sharing her inspirational story. For the full story version, please visit our website at [www.sandiegospinefoundation.org](http://www.sandiegospinefoundation.org)*

# SRS Traveling Fellows Visit the San Diego Spine Foundation



2018 SRS Traveling Fellows visit SDSF Faculty.

From Left: Kai Cao (China), Senior Fellow Francisco Perez-Grueso (Spain), Greg Mundis, Jr., Bob Eastlack (SDSF Faculty), Kariman Abelin-Genevous (France) and Zezhang Zhu (China)



2018 SRS Traveling Fellows with Jeff Pawelek and Dr. Akbarnia

## Building Bridges in the Spine Community

Whether visiting or being visited, SDSF's vision of "building bridges in the spine community" is far more than a tag line, it's who we are.



Greg Mundis, Jr. with past International Fellow Rabi Dhakal in Nepal



Bob Eastlack at lab with Argentinian surgeon Leopoldo Luque



Past Fellow Randy Hlubek on Monterrey Mexico Mission Trip



## An Eventful Year

You know it's been a busy year when it seems like we just finished compiling last year's Annual Report and here we are again! This past academic cycle was full of poignant moments. Robert Campbell, who was honored at last year's GSF fundraiser sadly passed a few short weeks ago, leaving a massive whole where he recently stood. He remains a giant in our field, having dedicated his life to children with spinal deformities. Another giant, Oheneba Boachie-Adjei spent his life planning and building an Orthopedic Hospital in his home country, Ghana, as a way to give back. SDSF is so proud to provide his organization with badly needed growing spine implants to help improve the lives of children in need of spine care.



*Behrooz Akbarnia presents Lifetime Achievement award to Robert Campbell at the 2017 ICEOS Gala in San Diego*



*Visiting colleague, Oheneba Boachie-Adjei, MD. His nonprofit foundation FOCOS is one recipient of SDSF donated implants in 2017 and 2018*



*Pooria Hosseini, MD, M.Sc. receives his Certificate as graduating Research Fellow from SDSF*



*Past fellow Amrit Khalsa and his wife Emily Margaret Levy enjoy their new arrival!*



*San Diego colleagues, staff and guests at the Growing Spine Foundation Gala in 2017*



*Gathering of staff, past and current fellows and faculty attend Pooria Hosseini's graduation party in 2018*



# Generosity

## 2017 SDSF Private Donors

Todd J. Albert, MD, FACS  
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 Dr. and Mrs. Nosrat Javidan  
 Dr. Carl Maguire / Ms. Margaret Sheehan  
 Dr. and Mrs. Michael Rohmiller  
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Behrooz Akbarnia  
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## Cumulative

Champion  
 Champion  
 Champion  
 Visionary  
 Visionary  
 Patron  
 Benefactor  
 Contributor  
 Contributor

## Key

Supporter \$1-499  
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 Patron \$15,000-29,999  
 Visionary \$30,000-49,999  
 Champion \$50,000-99,999  
 Elite \$100,000 - \$199,999  
 Legend \$200,000+



## 2018 SDSF Visiting Professorship Exhibitors

This meeting could not have happened without industry support. Many thanks to the record 18 Exhibitors listed below, who supported this meeting with tremendous enthusiasm. THANK YOU ALL!

- |                  |                |
|------------------|----------------|
| Alphatec         | Globus Medical |
| Bioventus        | K2M            |
| Centinel Spine   | Medtronic      |
| DePuy Spine*     | Nuvasive*      |
| Donjoy           | Orthofix       |
| Paradigm Spine   | Spine Wave     |
| SeaSpine         | Stryker Spine  |
| Si-Bone          | Titan Spine    |
| Spine Innovation | Zimmer-Biomet  |

\*Depuy Spine and Nuvasive also provided Educational Grants for this event.

## 2018 SDSF Fellowship Grant Supporters



SDSF has hosted 44  
 Past Visiting Professors  
 since 1997

# SUPPORTING THE FOUNDATION



As you have read throughout our Annual Report, our faculty, fellows and staff are laser focused on our mission. I'm so truly blessed to work with such dedicated people every day. Also, our supporters and donors are the best folks on the planet. They understand our mission and our culture. I can't thank them enough!

We can't fulfill our mission without your support! Won't you give to San Diego Spine Foundation this holiday season?

*Patricia Kostial*



2018 SDSF leadership. From left: Stacie Nguyen (Research Manager), Pat Kostial (Executive Director) pictured with Board Members Bob Eastlack, Behrooz Akbarnia, Jeff Pawelek and Greg Mundis, Jr. Not present: Sarah Aghassi (Board member)



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](http://www.sandiegospinefoundation.org). Brian, you are one in a million!



Jennifer Rushall

Thanks to Jennifer Rushall for volunteering her time to photograph our 2018 Annual Visiting Professorship. Jennifer, thank you for always being there!

## About the Cover

Our cover illustrates past Annual Report covers from the years 2012-2017.

A number of covers featured the work of Anne Cotrel . Those illustrations were provided as a courtesy of Anne Cotrel and the Cotrel Foundation. Ecole Superieure Des Arts Decoratifs – Paris. B.A. in Visual Art, Concordia University, Montreal, Quebec.

Anne has lived and worked in Canada, Italy and German speaking Switzerland. Her last personal exhibit took place at the Centre Culturel Zoroastre in Paris, April, 2014. The proceeds from Anne's art sales help to support the Cotrel Foundation.





## SAVE THE DATE!

**2019 SAN DIEGO VISITING PROFESSORSHIP**  
FRIDAY, JULY 26, 2019

Hilton La Jolla Torrey Pines Hotel

Co-Chairs:  
Gregory M. Mundis, Jr. MD (Scripps Clinic)  
Eddie Nomoto, MD (Cedars Sinai)

**Michael P. Kelly, MD, MSCI**  
Associate Professor  
Department of Orthopaedic Surgery  
Adult/Pediatric Scoliosis and  
Reconstructive Spinal Surgery  
Associate Professor  
of Neurological Surgery  
Washington University Medical Center at  
Washington University School of Medicine  
St. Louis, MO



**Alex Vaccaro, MD, PhD, MBA, FACS**  
Chairman of Orthopaedics  
Sidney Kimmel Medical College  
at Thomas Jefferson University  
Endowed Chair: Richard H. Rothman  
Professor and Chairman,  
Department of Orthopaedic Surgery  
Elected President of the Rothman Institute  
Philadelphia, Pennsylvania

## 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: <http://www.sandiegospinefoundation.org/donate/>

Checks can be mailed and payable to:

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

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

