12th Annual Meeting

The International Society For
The Advancement Of Spine Surgery

2012

March 20 - 23, 2012

Barcelona, Spain
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*NOTE: Full abstracts and authors list are in the SAS11 Abstract Book*
2010 - 2011 Board of Directors

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President 2010 - 2011
NYU Hospital for Joint Diseases,
Division of Spine Surgery,
New York, NY USA

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Bordeaux, France

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Immediate Past President
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The Catholic Univ. of Korea,
Neurosurgery,
Seoul, Republic of Korea
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President 2004 - 2005
Founding Member

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President 2001 - 2004
Founding Member

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Founding Member

Michael Mayer, MD
Founding Member

Hallett Mathews, MD

SAS BOARD OF DIRECTORS

The Board of Directors provides leadership for SAS by upholding SAS’s vision, purpose and values; setting the broad policies, direction and priorities of the organization; ensuring that SAS has highly effective leadership; providing fiduciary oversight; and maintaining the integrity of SAS services and products developed for the benefit of SAS members.

MISSION STATEMENT

SAS=ISASS: ISASS is an international, scientific and educational society organized to discuss and assess existing strategies and innovative ideas in the clinical and basic sciences related to spine surgery to enhance patient care.

ADVOCACY

SAS represents our members and their patients by advocating for public policies that provide spine patients with appropriate access to surgical spine experts and the latest, most innovative technologies and surgical procedures. We fight to ensure that the spine surgeon's voice is heard in both the legislative and regulatory arenas, and that policies are truly evidence-based and focused on improved patient outcomes. Additionally, SAS is actively involved in private sector advocacy to ensure that commercial payers promulgate appropriate coverage and reimbursement policies specific to surgical spine care, and that protect patient’s access to needed spine surgeries.

Where the World Comes to Advance Spine Surgery
Taking Spine Surgery Into The Future

The International Society for the Advancement of Spine Surgery (also known as SAS) is a global, scientific and educational society organized to provide an independent venue to discuss and address the issues involved with all aspects of basic and clinical science of spine surgery, motion preservation, stabilization, innovative technologies, MIS procedures, biologics and other fundamental topics to restore and improve motion and function of the spine and the patient. A place for surgeons, scientists, inventors and others dedicated to progress in spine surgery.

The World’s Best Thinking About Spines

The field of spine surgery is evolving globally. With innovations originating in every continent, it’s imperative that those committed to advancing spine surgery have a platform for discussion and education that encompasses the international community. With members from around the globe and chapters in China, India, Korea, Latin America, the Middle East, Taiwan and Turkey, SAS is the society for forward-thinking spine surgeons in tune with ideas, treatments, technologies, and scientific innovations from every corner of the world. You are invited to join SAS to surround yourself with the world’s best thinking about spine surgery.

How Does Membership Help You Become a Better Spine Surgeon?

Becoming a member of SAS gives you:

- Access to research, articles, and information from the global leaders in spine surgery.
- CMEs offered through the annual conference and complimentary access to the online Interactive Education Program through MagnifiGroup.
- Online access to up-to-the-minute news on spine surgery advancements, techniques and related products.
- An email subscription to the SAS Spinal News International newsletter.
- A subscription to the SAS Journal.
- Access to online presentations and discussion groups.
- Access to SAS papers, presentations, research and membership directory.

- Listing in the “Find a Member” search on the SAS website so that patients can find and contact you.
- Discounted registration fees for all SAS-sponsored programs including the annual congress, and the Asia Pacific (APSAS) and Latin America (LASAS) conferences.
- CDs with information from previous meetings.
- Affiliation with AOSpine, The Society for Minimally Invasive Spine Surgery, Spine-Health.com, and Members Only access to Pearl Diver’s largest (HIPAA-compliant) patient records database in the US.

Make Your Voice Heard

We exist not only to learn from each other, but also as the collective voice of the world’s spine surgeons. By advocating for spine surgeons and spine patients, we can help protect the rights of those in the field and promote sound public policy. Becoming a part of SAS gives you a stronger voice in the matters most important to your practice.

SAS Membership Information

Advancements in spine surgery are happening everywhere. You’re invited to join us.

Membership is open to all spinal specialists, groups or organizations, including government and industry, whose common cause is the advancement of spine surgery. Membership categories are as follows:

REGULAR MEMBERSHIP
- Surgeons
- Scientists

AFFILIATE MEMBERSHIP
- Industry

OTHER MEMBERSHIP
- Resident
- Fellow
- Nurse
- Physical Therapist
- Physician’s Assistant
- Retired

The Society has been duly constituted under law with officers, directors and committees as defined in its bylaws.

For more information about becoming a SAS member or to request a membership application, please visit the membership booth in Town Square / Exhibit Hall area or see page 7 in this program book for the membership application.
# APPLICATION FOR MEMBERSHIP

**MEMBER INFORMATION** Please print clearly in BLOCK characters

<table>
<thead>
<tr>
<th>Salutation:</th>
<th>First Name:</th>
<th>Last Name:</th>
<th>Degree (MD, PhD):</th>
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<thead>
<tr>
<th>Birth Year:</th>
<th>Years in Practice:</th>
<th>Hospital/Clinic:</th>
<th>Title:</th>
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<tr>
<th>Address:</th>
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<tr>
<th>City:</th>
<th>State or Region:</th>
<th>Postal Code:</th>
<th>Country:</th>
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<th>Telephone:</th>
<th>Fax:</th>
<th>Mobile:</th>
<th>Email Address:</th>
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<tr>
<th>Medical School:</th>
<th>Graduation Year:</th>
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<table>
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<th>Specialty:</th>
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Do you have an administrative contact that will handle your membership? If yes, please enter the contact information:

<table>
<thead>
<tr>
<th>Admin Name:</th>
<th>Admin Telephone:</th>
<th>Admin Email:</th>
<th>Admin Fax:</th>
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Public information, will appear in the public member search on the www.isass.org website. Note that only basic contact information is provided to the public to promote your organization. To see the information provided to the public, please visit www.isass.org home page and do a search.

Please provide us with a 6 digit character password that you will use to access the SAS members area. This password will also provide you with access to the SAS Online Journal: ____________________________

## MEMBERSHIP CATEGORIES (select one from the following)

### REGULAR MEMBERSHIP
- Surgeon: Those actively practicing spine surgery
- Scientist: Researchers in spine surgery

### AFFILIATE MEMBERSHIP
- Industry: Those actively involved in the spine surgery industry

### OTHER MEMBERSHIP CATEGORIES (select one from the following)
- Resident: Those in residency to become spine surgeons
- Fellow: Graduates of orthopedic surgery residency training programs under the direction of a spinal surgeon
- Physician’s Assistant: Healthcare professionals licensed to practice medicine with supervision of a licensed physician
- Physical Therapist: Those working in rehabilitation techniques after spine surgery.
- Nurse: Nurses practicing in spine surgery
- Retired: Physicians no longer practicing medicine

In submitting this application for membership, I agree to the bylaws and the rules and regulations of the SAS - The International Society for the Advancement of Spine Surgery.

Membership dues for all categories, including board, advisory panels, committees, corporations, affiliated societies and government entities are USD $390 (three hundred ninety US dollars) for Regular memberships or $250 (two hundred fifty US dollars) for Other memberships payable on an individual annual basis. Dues may be paid in local currency contingent upon the payment option selected.

## PAYMENT OPTIONS

**CHECK, MONEY ORDER, BANK DRAFT** - Local currency equivalent equal to above total. Make payable to: The SAS. Mail with completed order form to: The SAS - The International Society for the Advancement of Spine Surgery, 2323 Cheshire Drive, Aurora, IL 60504 USA  Fax to: SAS Registrar - (717) 828-1012

**CREDIT CARD, DEBIT CARD** - Your signature below authorizes a charge for the total amount.

- Cards Accepted: □ Visa □ MasterCard □ American Express
- Signature: ____________________________
- Exp Date: __________
- Security Code: _______

**WIRE TRANSFER** - To pay the total amount by wire transfer, provide the following information to your sending financial institution: Chase JPMorgan Chase Bank, NA, Chicago, IL USA 60670 Routing/Transit No. 071000013; For credit to SAS, Inc. Account No. 001026071000012 803648708 Chase JPMorgan Chase Bank’s website 1-800-741-1700 Fax to: SAS Registrar - (717) 828-1012 Mail to: The SAS - The International Society for the Advancement of Spine Surgery, 2323 Cheshire Drive, Aurora, IL 60504 USA

**QUESTIONS?** - Contact: Michele Boylstein, Member Services Manager for SAS; call (630) 995-9994, x801; fax: 717 828-1012; email: michele@isass.org or visit the website at www.isass.org  The SAS - The International Society for the Advancement of Spine Surgery, 2323 Cheshire Drive, Aurora, IL 60504 USA
The SAS began adding chapters in 2004 with the KOSAS-Korean SAS Chapter. In 2007 we added the Chinese Chapter and in 2008 added the Middle East and India Chapters. The SAS added the Taiwan Chapter in 2009 and the Latin America Chapter in June 2010 when the LASAS hosted their first Meeting in Los Cabos, Mexico. The Turkey Chapter was added in January 2011.

The purpose of the SAS chapters is to provide a local forum for personal and professional development, provide an opportunity to network with others in the local spine community, gather information on how others are handling spine issues, provide insights into various spine procedures and policies and build relationships and contacts with other spine professionals from your area.

Membership in an SAS chapter means access to a local network of spine professionals in your community that can broaden your skills and make you more valuable to your organization. There are resources and services available through SAS that local chapters can’t possibly duplicate, and there are resources and services available through your local chapter that SAS can’t provide.

If you are a member of one of the SAS Chinese, India, Korean, Middle East, Taiwan, Latin America and Turkey chapters, we encourage you to become a member of the SAS! Please contact your local chapter to get a special membership application for a reduced fee for the SAS membership.

Membership in an SAS chapter is separate and apart from membership in the SAS.

Maximize your opportunities by becoming a member of SAS and your local chapter. It’s a winning combination!

Our SAS Chapter Presidents are:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>President</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS China Chapter</td>
<td>Dewei Zou, MD</td>
</tr>
<tr>
<td>SAS India Chapter</td>
<td>Sajan K. Hegde, MD</td>
</tr>
<tr>
<td>SAS Korea Chapter</td>
<td>Chong-Suh Lee, MD</td>
</tr>
<tr>
<td>SAS Latin America Chapter</td>
<td>Eduardo Barreto, MD</td>
</tr>
<tr>
<td>SAS Middle East Chapter</td>
<td>Mohamed Maziad, MD</td>
</tr>
<tr>
<td>SAS Taiwan Chapter</td>
<td>Cheng-Hsing Kao, MD</td>
</tr>
<tr>
<td>SAS Turkey Chapter</td>
<td>Fahir Ozer, MD</td>
</tr>
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CME Committee
This committee shall be chaired by a selected member of the SAS, appointed by the Board with assistance from selected consultants that specialize in the process of ensuring that all aspects of the SAS CME program are developed appropriately. Conclusions and recommendations will be presented to the Board for review and actions to be taken. The Committee will discuss and provides interpretation of the ACCME guidelines regarding accreditation policies and decisions. It will concentrate on evaluating the effectiveness of the Society’s system of accreditation, including the accreditation requirements and its processes for funding and support. This committee also forwards actions regarding accreditation decisions to the full Board of Directors for ratification. The CME Committee will work in the development and adherence of all CME rules and regulations. They will review all SAS sponsored programs to make sure that the SAS provides continuing education programs on substantive, practice-related subjects. The CME Committee Chair and SAS Administrative staff representative will work with the Program and Education Committee to ensure ACCME rules are followed and appropriate documentation is maintained.

Chairman:
Rolando Garcia, MD - USA
Fred Geisler, MD, PhD - USA
Robert Havey, BS - USA
Scott Leary, MD - USA
George Miz, MD - USA
Leonard Voronov, MD, PhD - USA
Debra Bachman-Zabloudil - SAS
Jennifer Joseph - SAS

CME Provider:
Medical Education Resources

Education Committee
The committee will have a chair and a vice chair appointed by the Board as well as selected member to staff the committee. An SAS Administrative team member will also sit on the education committee, this staff person will liaison with the CME committee as well to ensure all programs follow the ACCME rules. The main goal of the Education Committee is to educate and promote medical excellence in the care of spine. The committee is charged with devising goals and guidelines for the coordinating efforts of the Society to satisfy the changing needs of its membership in the field of continuing education.

Chairman:
Scott Blumenthal, MD - USA
Todd Albert, MD - USA
Neel Anand, MD - USA
Paul Anderson, MD - USA
Manoj Krishna, MD - UK
Hee-Kit Wong, MD - Singapore
Ken Yonemura, MD - USA
Debra Bachman-Zabloudil - SAS
Jennifer Joseph - SAS

Finance and Audit Committee
This Committee of the Board shall consist of the Treasurer as Chair, Second Vice President and the Executive Director in coordination with the Public Accountants serving the Society. This Committee shall formulate all investment policies of the Society, subject to the approval of the Board. The Committee will assess the financial condition of the society on a quarterly basis. The role of this Committee is to review proposed budgets and present recommendations and findings to the full Board of Directors for approval. They will track the income and expenses and make recommendations as necessary. The group will advise the Board of Directors and provide guidance and direction to the Executive Director on all matters relating to financial management. This committee serves as the watchdog for the financial stability of the organization, reviewing banking and investment options and establishing procedures for investigating and making recommendations for large expenditures.

This Committee shall oversee the financial affairs, their management, supervision, and controls by the Society acting as a not-for-profit Corporation. This Committee shall meet at least annually as well as at the request of the Board to review the financial affairs of the Society and the Executive Director and Treasurer shall submit a report to the Board.

Treasurer:
Steven Garfin, MD - USA
Fepe Paramarti - SAS
Kristy Radcliffe - SAS
Industry Relations Committee
This Committee shall consist of a chair (surgeon) and four to six additional members (industry), appointed by the President and approved by the Board for a two-year term. The Industry Relations Committee elects its own committee Vice Chair and its activities. All members may be reappointed. The SAS Industry Relations Committee will offer Industry partners a forum to discuss issues that arise between industry and the SAS. The Committee will look to solve those issues without having them escalate into conflicts. They will work with industry to form policies and offer a platform for creating a close collaboration between industry and the surgeons. They will pay close attention to industry involvement in SAS activities, but will ensure that they will not dominate the educational programming or society agenda. They will try to create the best possible relationship to benefit both sides to create a harmonious cooperation. They will make sure that the co-existence between industry and the surgeon community is respectful, cooperative and beneficial for progress. The SAS Industry Relations Committee shall make efforts to coordinate the involvement of members of spine-related Industries with the interests of the Society in improving spine care for patients. This may include special focus meetings, approved by the Board. The Industry Relations Committee shall also:

1. Help solicit exhibitors for Annual Conference, Society publications and other media.
2. Recommend policies governing and concerning exhibitors.

Chairman:
Frank Phillips, MD - USA

Dom Coric, MD - USA
Pascale Davis - Spineart - USA
Charles Gilbride - Alphatec - USA
Brent Melancon - Medtronic - USA
Pat Miles - NuVasive - USA
Kim Norton - Synthes - USA
Hassan Serhan, PhD - DePuy - USA
Jim Youssef, MD - USA

David Porter – SAS

Exhibitor Advisory Work Group
The Exhibitor Advisory Work Group will consist of a cross section of exhibitors totaling 10 representatives and at least one SAS representative. They will handling exhibit booth arrangements and suggest ways that SAS is aimed at enhancing the exhibitor experience to determine best practices for each SAS Annual Conference.

Erin Bicho - DePuy
Katie Daniel - Medtronic
Tanja Dold - Aesculap
Jill Helgerson - iMDs
Brad Larson - Zimmer Spine
James May - Centinel Spine
Kim Murray - Thompson Surgical
Patsy Peterson - LDR
Dora Sambdman - NuVasive
Annie Schussler - Buxton Biomedical
Theresa Simpson - K2M

IT Committee
This Committee shall have a Chair and Co-Chair plus a member of the SAS Administrative team. The Committee shall operate the Society Website on the Internet and manage its layout and content. The members of this committee will work to enhance the SAS website to ensure that current and relevant matters are addressed. The IT committee in conjunction with the designated member of the SAS Administrative team will guide and direct the appointed webmaster to make necessary changes and upgrades to ensure member needs are met.

Chairman:
William Sears, MD - Australia
Manabu Ito, MD, PhD - Japan
Dilip Sengupta, MD, PhD - USA
Hyun Chul Shin, MD, PhD - South Korea
Heather Howard - SAS
Michele Boylstein - SAS

Membership Committee
The Membership Committee shall consist of a Chair and two other members of the Society appointed by the President. The chair and the two members of the Committee may succeed themselves in office for a further term of three years if elected by a simple majority of the Board. An SAS Administrative staff member will also sit on this committee. The Membership Committee is responsible for increasing the number of members worldwide and to ensure members’ needs are met. This includes recommending ways for increasing the SAS membership base, formulating coordinating and implementing plans for membership recruitment, ways to acknowledge and welcome new members and encourage their participation in SAS Committees and SAS sponsored activities. They will work with the designated member of the Executive Team of the SAS in the development of a membership renewal program. This Committee will be charged with developing and maintaining a membership directory available online for the membership to access via the website. This Committee will also work to identify members and non-members’ needs and perceptions, analyzing them and making recommendations to the Board of Directors. The SAS Administrative staff member of the Membership Committee shall receive and review all applications for membership and forward applications to the Chair. The SAS Administrative staff member shall advise the committee to consider and investigate any charge made against any member of the Society, acting under the provisions of these bylaws. The Membership Committee shall make recommendations to the Board, but is not empowered to take any action unless otherwise specifically authorized by the Board or as otherwise provided in these bylaws.

Chairman:
Jeff Goldstein, MD - USA
Michael Ahrens, MD - Germany
Ali Araghi, MD - USA
Svante Berg, MD - Sweden
Ashish Diwan, Prof. - Australia
Rick Geyer, MD - USA
Chun Kun Park, MD, PhD - South Korea
Choon Keun Park, MD, PhD - South Korea
Luiz Pimenta, MD, PhD - Brazil
Rick Sasso, MD - USA
Paul Slosar, MD - USA
Hee Kit Wong, Prof. - Singapore
Michele Boylstein - SAS
Past President’s Committee
This committee of the Board shall consist of the President, the two Vice Presidents, the Past Presidents and the Executive Director. It shall meet during the Annual Conference and at other times as needed, on a request by the President and the board. The Executive Director will report its conclusions and recommendations to the Board. This Committee reviews the current state of the SAS, determines whether the Society has met its goals and decides what changes to make within the society in light of the needs of its members and changes in the medical profession. In order to service its purpose, the committee develops a strategic plan to be reviewed annual which lays out the SAS objective in areas such as governance and administration, membership, member services, public service and it determines what steps to take to fulfill those objectives.

Chairman:
Chun-Kun Park, MD, PhD - South Korea

Thomas Errico, MD - USA
Jean-Charles LeHuec, MD, PhD - France
Steve Garfin, MD - USA
Karín Böttner-Janz, MD, PhD - Germany
Hansen Yuan, MD - USA
Thierry Marnay, MD - France
Stephen Hochschuler, MD - USA
Rudolph Bertagnoli, MD - Germany

Nominating Committee
Chairman:
Chun-Kun Park, MD, PhD - South Korea

Thomas Errico, MD - USA
Jean-Charles LeHuec, MD, PhD - France
Steve Garfin, MD - USA

Publications Committee
The Publications Committee shall consist of a Chair and Co-Chair appointed by the President on recommendations by the Journal Editor and Executive Director. The design, text, layout and editing of the newsletter, hard copy and online books and instructional course material test books all fall under the realm of this committee. They will develop standards and guidelines to ensure all items published by the SAS or with SAS endorsement meet the requirements set up by the Committee. The committee will monitor and approve all such materials with that goal in mind. They will assist in the appointment of editors, associate editors and editorial boards as well as offer advice and content ideas.

Chairman:
James Yue, MD - USA

Neel Anand, MD - USA
Federico Girardi, MD - USA
Ulrich Hahnle, PhD - South Africa
Larry Khoo, MD - USA
Choll Kim, MD, PhD - South Korea
Martin Knight, MD, FRCS, MBBS - UK
Jean-Charles LeHuec, MD, PhD - France
Dilip Sengupta, MD - USA

Jonny Dover - SAS

SAS Journal Committee
This Subcommittee shall be chaired by the SAS Journal Editor with support staff plus the Executive Director and staff. The Editor-In-Chief shall report pertinent status data to the Board at the Annual Conference and prepare a statement for the Member’s Business Meeting. The structural and functional details of this Committee shall be decided by the Editor with assistance from the Executive Director.

Editorial Board
Editor-in-Chief:
Hansen Yuan, MD, PhD
SUNY Upstate/Syracuse

Associate Editors:
Paul Anderson, MD, University of Wisconsin
Jack Zigler, MD, Texas Back Institute

Special Deputy to the Editor-in-Chief:
Donna D. Ohnmeiss, DrMed, Texas Back Institute

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Ali Araghi, DO, Texas Back Institute
Hyun Bae, MD, Institute at St. John's Health Center
Frank Cammisa, MD, Hospital for Special Surgery
Edmund Chao, PhD, John Hopkins University School of Medicine
Federico Girardi, MD, Hospital for Special Surgery
Vijay K. Goel, PhD, University of Toledo
Larry Khoo, MD, University of California, Los Angeles
Choon-Sung Lee, MD, Assan Medical Center
Mohamed Maziad, MD, Maziad Orthopedic & Spine Associates
Frank Phillips, MD, Rush University Medical Center
Luiz Pimenta, MD, University of California San Diego, Universidade Federal de São Paulo
John Regan, MD, FACS, D.I.S.C. - Sport and Spine Center
Alejandro Reyes-Sánchez, MD, National Orthopaedic Institute, Mexico
Harvinder Sandhu, MD, Hospital for Special Surgery
Matthew Scott-Young, MD, Pacific Private Clinic
Bjorn Stromqvist, MD, Lund University
Hee-Kit Wong, MD, National University Hospital Department of Orthopaedic Surgery, Singapore
Huilin Yang, MD, First Affiliated Hospital of Soochow University
Dewei Zou, MD, 306 Hospital of PLA

Associate Editors, MIS Section:
Choll Kim, MD, PhD, University of California, San Diego

Managing Editor:
Jonny Dover, BA

SAS Journal Peer Reviewers:
Samy Abdou, MD, Dept of Neurological Surgery, Kaiser Hospital
Celeste Abjornson, PhD, Hospital for Special Surgery
Demetrios Kasak Abrahao, MD, Eco Center - Cambuí
Kuniyoshi Abumi, MD, DMSci, Hokkaido University Health Admin Center
Edward Ahn, PhD, Pioneer Surgical Technology, Inc.
Michael Ahrens, MD, Strandweg 4
Todd Albert, MD, Thomas Jefferson University
Matthew Allen, DVM, PhD, Orthopedic Surgery, Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Ohio State University

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
SAS Committees

SAS Journal Peer Reviewers Cont’d

Greg Anderson, MD, The Rothman Institute, Thomas Jefferson University
Gunnar Andersson MD, PhD, Midwest Orthopaedics, Rush Med School
Farbod Asgarzadie, MD, PhD, Loma Linda University Medical Center
Koang Hum Bak, MD, Loma Linda University Medical Center
Massimo Balsamo, MD, Spine Universe
Chip Bao, PhD, Pioneer Surgical Technology
Gamal Baroud, PhD, Sherbrooke University
Thomas Bauer, MD, Cleveland Clinic Foundation
Stephan W. J. Becker, MD, BEFOT, Orthopaedic Hospital Vienna
William Beutler, MD, Pennsylvania Spine Institute
Fabien Bitan, MD, Lenox Hill Hospital
Scott Blumenthal, MD, Texas Back Institute
Chris Bono, MD, Brigham and Young Women’s Hospital, Harvard Medical School
David Bradford, MD, University of California Medical Center
Dahari D. Brooks, MD, University of Massachusetts
Courtney Brown, MD, Panorama Orthopedics & Spine Center
Rudy Buckley, MD, Slocum Dickson Medical Group
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Frank Chan, PhD, Medtronic
Boyle Cheng, PhD, Drexel
Pil Sun Choi, MD, The Catholic University of Korea College of Medicine
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Hua-Zi Xu, MD, 2nd Affiliated Hospitalof Wenzhou Medical College

The SAS Journal is the official scientific journal of the SAS - International Society for the Advancement of Spine Surgery and the Society for Minimally Invasive Spine Surgery.

The goal of the SAS Journal is to promote and disseminate online the most up-to-date scientific and clinical research into innovations in motion preservation and new spinal surgery technology, including basic science, biologics, and tissue engineering.

The Journal is dedicated to educating spine surgeons worldwide by reporting on the scientific basis, indications, surgical techniques, complications, outcomes, and follow-up data for promising spinal procedures.

Moving forward, the SAS Journal has plans to expand tremendously, in both breadth and depth of coverage of new techniques and devices in spine surgery. The submission rate for the Journal has skyrocketed, thanks to the efforts of SAS members, and so very soon you will experience larger issues more packed with information than ever before.

The yearly emphasis on Minimally Invasive Spine Surgery will keep you abreast of new trends in that area of the field, while the efforts toward gaining perspectives from global colleagues truly benefits the International Society for the Advancement of Spine Surgery.

The SAS Journal is committed to innovation in the field of medical publishing.

We look forward to acting as a powerful conduit to distribute your advances to a large, global audience who can make use of them to enrich their patients’ lives.
Public Policy Committee
This Committee of the Board shall consist of the selected members of the Society that will address the needs of the committee as appointed by the Board. They will address and review information to form policies related to the professional and legal image and functions of the Society. Issues for review shall be brought to the Board by any Board member and Executive Director. This Committee could deal with some of the issues coming from FDA approvals and the CMS. The Public Policy Review Committee would serve in an advisory capacity and provide guidance in identifying experts to speak at FDA, government or congressional briefings, assist in crafting public policy/position statements that reflect the concerns of SAS, surgeons and the spine care industry.

Chairman:
Gunnar Andersson, MD, PhD - USA
Chris Bono, MD - USA
Isador Lieberman, MD - USA
Hal Mathews - USA
Vincent Traynelis, MD - USA
John Ratliff, MD - USA
David Porter - SAS
Kristy Radcliffe - SAS

Regional Chapter Committee
This Committee of SAS shall have a Chair and Co-Chair appointed by the President of SAS plus Directors or Presidents elected by the Regional Chapters. Regional Chapters (RC) of the International SAS shall be in nations outside of North America and Europe, or in world regions with involvement of more than one country, or in big spine societies as long their active membership is more than 1,000 members. They may be formed and closely affiliated with the international SAS, provided:
The purpose of this committee is to ensure that the society enlists the views from an international perspective. To address pertinent international issues and make sure there is a collaborative exchange of information.

Chairman:
Eduardo Barreto, MD - LASAS Chapter
Sajan Hegde, MD - SAS India Chapter
Cheng-Hsing Kao, MD - SAS Taiwan Chapter
Chong-Suh Lee, MD - SAS Korea Chapter
Mohamed Maziad, Prof. - SAS Middle East Chapter
Fahir Ozer, MD - SAS Turkey Chapter
Dewei Zou, MD - SAS China Chapter
Kristy Radcliffe - SAS
Michele Boylstein - SAS

Research Committee
If a company, or agency, decides on a need for a specific, or general, research project for a specific device, product (biologic, implant, etc.), medication, etc. and would like the SAS to sponsor, they would approach the Research Committee. In so doing, they would forward a written proposal to SAS describing, in broad terms, their research needs, a limited/proposed study design (e.g. animal models, imaging studies, biologic assessment, etc.) that they feel would be necessary. They would also provide a rough overall (not specific) budget, based on their anticipation of costs.

The SAS Research Committee would take this proposal and analyze it for scientific value (not assessing the device, implant, product, etc. itself, but only the scientific potential of the study, independent of the outcome). If appropriate they would then submit the request to the SAS Board for review and vote for funding for the research.

Chairman:
Avinash Patwardhan, PhD - USA
Gunnar Andersson, MD - USA
Jacques Bouchard, MD - Canada
Ashish Diwan, MD - Australia
Lisa Ferrara, PhD - USA
Tae-Ahn Jahng, MD - South Korea
Sung-Jae Lee, PhD - South Korea
Melodie Metzger, MD - USA
William Sears, MD - Australia
Leonard Voronov, MD, PhD - USA
Kristy Radcliffe - SAS
Welcome to Las Vegas

For

The SAS

11th Annual Conference

An ever-changing fantasy-land of a city, Las Vegas has seen unbelievable expansion since it emerged from the desert just over 100 years ago. Visitors are drawn by its non-stop excitement and their knowledge that a Las Vegas destination can be anything they want it to be! The immense selection of activities is diverse enough to please any sort of personality, and the entertainment options are only growing in variety and distinction.

Las Vegas is a vast and rapidly changing landscape of sprawling casinos, limitless shopping, thrilling attractions, shows, luxurious dining and after sunset experiences. You will be dazzled by the sights, lights and sounds of the renowned Las Vegas strip. Fun things to do include theme parks, roller coasters, museums, national parks, and more. Whether you want to relax and be pampered or opt for an electric itinerary filled with shows, dancing, gaming and nightlife – you’ll find it all in Las Vegas.

The city is home to some of the most spectacular displays of engineering, artistry and artifice you will ever see. From iconic towers to the legendary canals of Venice, from the most opulent to the bizarre and funky, the attractions, shows and activities in Las Vegas make for a memorable and enchanting retreat.

The location for the SAS - International Society for the Advancement of Spine Surgery will be the Venetian Congress Center, located within the Venetian / Palazzo Hotels.

We look forward to your participation at SAS11 in “The Entertainment Capital of the World” Las Vegas, Nevada!
Welcome to SAS11 in Las Vegas!

Dear Colleagues:

Welcome to SAS11 in exciting Las Vegas – a vibrant city with something for everyone! As a participant in SAS11, you will be taking part in a transformative event, whereby our society continues to grow and evolve as a respected voice and a stalwart for continued innovation within the spine community.

Our board has challenged staff to make this meeting more valuable to all our attendees – including our members and our industry partners. We have added breakout sessions each afternoon so as to include more papers; we are holding sessions right on the exhibit floor in our new “Town Square,” and we are ending each day with an informal, “enjoy a glass of wine” gathering so that we can discuss all that we’ve learned as well as best-case scenarios for different case studies.

Our first order of business will include a vote of the entire membership to change the name of the society from the SAS to the International Society for the Advancement of Spine Surgery (ISASS). Our Board feels strongly that this new name and broader mission captures more accurately who we are and what we stand for. We want to be the professional society dedicated to advancing innovation in spine surgery!

This year we challenged the Reviewing Committee more than ever, as we opened the abstract submission process to include 33 categories, which in turn generated many new submissions. We’ve also encouraged our Program Chairs to add innovative and controversial sessions to keep our focus on advancements in spine surgery and to bring you new information about the many obstacles we face.

This is a very challenging time for spine surgeons. There continues to be downward pressure on physician reimbursement from Medicare and Medicaid; commercial insurance companies are tightening their coverage policies for surgery-related solutions to spinal disease and disorders; and, the US FDA, European rules and other regulatory stems are making it even harder to get new devices approved in all countries. Now is the perfect time to shed more light on these issues and rally our members and band together to fight for the needs of our patients. Our speakers are sure to speak to your concerns, and how together, we can continue to make inroads into changes around the globe that continue to impact patient access to needed spine surgeries.

We strongly urge you to share your thoughts and concerns with us, because together we have a strong and loud voice that needs to be heard. Given our current health care environment, if surgeons don’t come together to advocate for our profession and our patients, you can be sure that no one else will.

Please join us on Wednesday at 10:30 am for our session on the FDA and device approvals. Joshua Makower, M.D., M.B.A., author of The Makower Report will share his findings on the FDA’s impact on US Medical Technology Innovation. He will be followed by Glenn Stiegman, formerly of the FDA, and now Vice President of Regulatory Affairs for MCRA, as he shares his insider view on FDA: Our Way or the Highway! This session will definitely stir some reaction.

We would like to thank the SAS11 Program Chairs:

**Overall Program Co-Chairs:**
Rolando Garcia, MD and Marek Szpalski, MD

**Biologics Chair:**
Hans Meisel, MD, PhD

**Biomechanics Chairs:**
Sung-Jae Lee, PhD and Peter McCombe, MD

**Clinical Chairs:**
Matthew Gornet, MD and Matthew Scott-Young, MD

**MIS Chairs:**
Luiz Pimenta, MD, PhD and Anthony Yeung, MD

**Poster Chair:**
J.J. Abitbol, MD

Each Program Chair worked diligently to make sure their area of expertise offered the best papers available.

The SAS is about innovative spinal technology from Cervical to Sacral, minimally invasive to maximally invasive, degenerative to deformity. We believe learning about new technologies and correctly interpreting their true effectiveness is the responsibility of surgeons in an effort to maximize our effectiveness and provide improved patient outcomes. Our goal for this meeting is to better arm you with knowledge and insights in how best to accomplish this. The Society felt since the 11th annual meeting was held in the US, we focus on US problems.

If you have never been to one of our meetings, I can’t think of a better location to take a “chance” on us than Las Vegas! They say what happens in Vegas stays in Vegas, but after this meeting, we think that you will be eager to go home and share with your colleagues all that you learned at SAS11; the latest science and evidence in support of life-changing spine surgeries; the many challenges we as spine surgeons face; and all of the new and innovative technologies that will enhance your skills and expertise going forward. We hope you enjoy SAS11 and your time in Las Vegas. We look forward to seeing you there.

Thomas Errico, MD
SAS President (2010-2011)
The International Society for the Advancement of Spine Surgery

Jean - Charles LeHuec, MD, PhD
Incoming SAS President (2011 - 2012)
The International Society for the Advancement of Spine Surgery
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Rolando Garcia, MD
Orthopedic Care Center
Marek Szpalski, MD
Iris South Teaching Hospitals

CO-BIOMECHANICS CHAIRS
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Inje University, Gimhae, Gyongham, South Korea

Peter McCombe, MD
Brisbane Spine Center

CO-CLINICAL CHAIRS
Matthew Gornet, MD
The Orthopedic Center of St. Louis

Matthew Scott-Young, MD
Pacific Private Clinic

CO-MIS CHAIRS
Luiz Pimenta, MD, PhD
Spine Surgeon Director of Santa Rita Hospital, Sao Paulo
Adjunct Professor at UCSD San Diego

Anthony Yeung, MD
Arizona Desert Institute for Spine Care

BIOLOGICS CHAIR
Hans Meisel, MD, PhD
BG-Clinic Bergmannstrost

POSTER CHAIR
J.J. Abitbol, MD
California Spine Group

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David Wong, MD, MSc, FRCSC

LUMBAR THERAPIES AND OUTCOMES
James Yue, MD
Alex Vaccaro, MD, PhD

POSTERS
George Miz, MD
Gordon Donald, MD

NAVIGATION, IMAGE GUIDED SURGERY AND ROBOTIC ASSISTANCE
Scott Leary, MD
Scott Blumenthal, MD

MIS TECHNIQUE AND RESULTS
Frank Phillips, MD
Larry Khoo, MD
Neel Anand, MD
Tarik Yazar, MD
Eduardo Barreto, MD
Boyle Cheng, PhD
Choll Kim, MD, PhD
Gun Choi, MD
Stefan Hellinger, MD
Roger Hartl, MD
Henry Halm, MD
Greg Mundis, MD
Gulhermo Bajares, MD
Paulo Ramos, MD

Isador Lieberman, MD, MBA, FRCSC
Carl Lauryssen, MD
Christopher Yeung, MD
Pil Sun Choi, MD
Lisa Ferrara, PhD
Tony Castellvi, MD
Yue Zhou, MD, PhD
Alejandro Reyes-Sanchez, MD
Phil Yuan, MD
Cristiano Magalhaes Menezes, MD
William Taylor, MD
Richard Guyer, MD
Roberto Diaz, MD

BIOMECHANICS/BASIC SCIENCE
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Dennis Diangelo, PhD
Vijay Goel, PhD
Robert Havey, MSc
Richard Hall, PhD
Jacob Buchowski, MD, MS

Hans-Joachim Wilke, Prof.
Leonard Voronov, MD, PhD
Bryan Cunningham, MSc
Donna Ohnmeiss, PhD
Paul Anderson, MD
Brett Taylor, MD
Dear Colleagues,

In April of this year the SAS will be celebrating the 11th Anniversary of our Annual Scientific Meeting.

From a solid, but humble beginning in Munich, our Society has grown in numbers, influence, and respect. Paralleling the evolution of spine surgery in the last decade the SAS has expanded their interests far beyond disc arthroplasty. This year’s meeting will be the most ambitious meeting yet in terms of faculty, topics, and, more importantly, in scientific quality. The Program Committee primary goal was to select original works with the highest level of scientific integrity and value. The Program Committee has worked zealously to create a program with balance of subjects and opinions. This Committee has also promoted the debating of controversial subjects in spinal care, this debating by opinion leaders will be among the highlights of the program.

This year’s program includes some stimulating discussions on the evidence for and against vertebral augmentation, which is currently under much scrutiny, and case presentation sessions with panelists arguing fusion versus arthroplasty. In addition, the program is loaded with original scientific papers on hot topics such as minimally invasive fusion techniques, posterior dynamic stabilization, and biologics for fusion and regeneration. We have paid particular attention to make sure this meeting is interesting and relevant, and we hope you enjoy as we celebrate the 11th Anniversary of our Annual Scientific Meeting here in Las Vegas.

Roland Garcia, MD
Orthopedic Care Center

Marek Szpalski, MD
Iris South Teaching Hospitals
March 11, 2011

Dear Colleagues,

On behalf of the program committee of SAS 2011, I would like to welcome you to Las Vegas!

Las Vegas has a unique history and is relatively young as an American city. In the 1820s the valley and springs were identified by explorers and early traders. The area was named Las Vegas, Spanish for “The Meadows.” The location and available water made Vegas an ideal place to layover during travel. Not until 1911 was Las Vegas incorporated as a city with a population of 800.

Needless to say, Las Vegas is best known as a place to have fun! This entertainment capital is visited by more than 37 million people a year. There is an almost endless variety of entertainment available ranging from comedy to sports, Broadway shows, variety shows, circus acts, and every type of music.

During SAS and the following weekend some of the events available for your entertainment are the magic of David Copperfield, rocking with Carlos Santana, Foreigner and a host of other musical talents. You can enjoy a myriad of great shows such as comedy with David Spade, Bluegrass and Banjo with Steve Martin, Blue Man Group, and in the most classic Vegas style, a tribute to Elvis.

Just outside of Las Vegas one can visit the amazing Hoover Dam and see the newly opened Mike O’Callaghan-Pat Tillman Memorial Bridge. One of the Natural Wonders of the world, the Grand Canyon, is a 6 hour drive away, with a number of hiking tours and exciting helicopter flights inside this amazing Canyon.

There are so many things to do in this city famous for the exceptional hotels, live shows, and so much more. To learn more about all of the events in Vegas, go to www.visitlasvegas.com. Remember, what happens in Vegas stays in Vegas, except for the vast knowledge which will be imparted upon us at this SAS meeting. We look forward to seeing you in this exceptional city.

Warmest regards,

Ali Araghi, D.O.
Texas Back Institute
## Conference at a Glance

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<th>Time</th>
<th>Tuesday April 26</th>
<th>Wednesday April 27</th>
<th>Thursday April 28</th>
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<td><strong>EARLY MORNING</strong></td>
<td>(7:00 - 7:00) Registration Hours</td>
<td>(7:00 - 6:00) Registration Hours</td>
<td>(7:30 - 6:00) Registration Hours</td>
<td>(7:30 - 2:00) Registration Hours</td>
<td>(7:00 - 4:30) Fellows/Residents Hands on Cadaveric Motion Sparing and Innovative Fusion Techniques Lab</td>
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<td><strong>MID MORNING</strong></td>
<td>(10:00 - 10:30) Break on Exhibit Floor Town Square Talks</td>
<td>(10:00 - 10:30) Break on Exhibit Floor Town Square Talks</td>
<td>(10:00 - 10:30) Break on Exhibit Floor Town Square Talks</td>
<td>(10:30 - Noon) Plenary: Vertebral Augmentation - where to now? / Transfer of Presidency/Awards</td>
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<td><strong>LUNCH</strong></td>
<td>(Noon - 1:30) Industry Workshops</td>
<td>(Noon - 1:30) Industry Workshops</td>
<td>(Noon - 1:30) Lunchtime Symposium at Town Square: What is the Best Evidence for Lumbar Fusion Surgery?</td>
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<td><strong>MID AFTERNOON</strong></td>
<td>(1:30 - 3:00) Concurrent Sessions: Cervical TDR Biologics Biomechanics/Basic Science</td>
<td>(1:30 - 3:00) Concurrent Sessions: Lumbar TDR MIS II Lumbar Complications</td>
<td>(1:30 - 3:00) Concurrent Sessions: Lumbar Complications</td>
<td>(1:30 - 1:45) Closing Comments</td>
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<tr>
<td><strong>EVENING</strong></td>
<td>(5:00 - 7:00) Opening Reception (in Exhibit Hall) (5:00 - 7:00) Exhibit Hours</td>
<td>(5:00 - 6:00) Case Studies Wine and Spine in Town Square Exhibit Floor</td>
<td>(5:00 - 6:00) Case Studies Wine and Spine in Town Square Exhibit Floor</td>
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**Conference at a Glance**

**Thursday April 28**

(7:30 - 6:00) Registration Hours
(8:30 - 10:00) Plenary: Degenerative Scoliosis: Where to end a Fusion?
(9:00 - 6:00) Exhibit Hours

**Friday April 29**

(7:30 - 2:00) Registration Hours
(8:30 - 10:00) Plenary: Lumbar Therapies
(9:00 - 2:00) Exhibit Hours

**Saturday April 30**

(7:00 - 4:30) Fellows/Residents Hands on Cadaveric Motion Sparing and Innovative Fusion Techniques Lab

**Friday April 29**

(7:00 - 6:00)
(8:00 - 8:15)
Welcome by Program Co-Chairs
(8:15 - 9:45)
Plenary: Cervical Therapies
(9:45 - 10:00)
SAS Business Meeting

**Friday April 29**

(9:00 - 6:00)
Exhibit Hours

**Saturday April 30**

(1:30 - 3:00)
Concurrent Sessions: Cervical TDR Biologics Biomechanics/Basic Science
(3:00 - 3:30)
Break on Exhibit Floor Town Square Talks

**Saturday April 30**

(3:30 - 5:00)

**Saturday April 30**

(5:00 - 6:00)
Case Studies Wine and Spine in Town Square Exhibit Floor

**Saturday April 30**

(7:30 - 6:00)
Registration Hours
(8:00 - 8:15)
Welcome by Program Co-Chairs
(8:15 - 9:45)
Plenary: Cervical Therapies
(9:45 - 10:00)
SAS Business Meeting

**Saturday April 30**

(9:00 - 6:00)
Exhibit Hours

**Saturday April 30**

(3:30 - 5:00)
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EDUCATIONAL OBJECTIVES
Upon completion of the CME-accredited portions of this program, participants should be better able to:

• Identify and describe the results of new research in spinal arthroplasty/surgical approach and clinical results for the management of conditions requiring treatment.

• Discuss practical clinical information aimed at improving diagnostic skills.

• Identify key aspects of the latest devices available for preserving the motion of the spine.

• Evaluate and determine a wider range of treatment and surgical options for patients with degenerative disc disease.

• Describe, compare and contrast innovative methods in both assessment and treatment options in spinal arthroplasty.

MEETING PURPOSE
The purpose of the Eleventh Annual Conference is to provide continuing medical education for practicing neurosurgeons and orthopedic spine surgeons, residents in training, postgraduate fellows as well as allied health professionals including nurses and physician assistants.

This education will be provided in many forms:

• Lectures
• Symposia
• Panel discussions to provide in-depth coverage of selected topics
• Exhibits demonstrating the newest devices and technologies
• Industry Workshops
• Paper and Poster abstracts to provide the most current information regarding clinical and basic science advances in spine surgery

PHYSICIAN ACCREDITATION
This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of Medical Education Resources and the SAS. Medical Education Resources is accredited by the ACCME to provide continuing medical education for physicians.

CREDIT DESIGNATION
Medical Education Resources designates this educational activity for a maximum of 30.50 AMA PRA Category 1 credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

PHYSICIAN ASSISTANT ACCREDITATION
The AAPA accepts certificates of participation for educational activities certified for Category I credit from the AOACCME, Prescribed credit from the AAFP and AMA PRA Category I Credit™ from organizations accredited by ACCME or a recognized state medical society. Physician assistants may receive a maximum of 30.50 hours of Category I credit for completing this program.

NURSING ACCREDITATION
Medical Education Resources is an approved provider of continuing nursing education by the California Board of Registered Nursing, Provider #CEP 12299, for 30.5 contact hours.
All indication of the participant’s disclosure will appear after his or her names as does the commercial company institution that provided that support. A full complete listing is noted in the SAS11 Abstract book.

The SAS does not view the existence of these disclosed interests or commitments as necessarily implying bias or decreasing in the value of the author’s participation in the Symposium.

INSTRUCTIONS FOR OBTAINING CME CREDITS

To receive continuing education credits, you must submit an evaluation indicating the sessions that you attended. All attendees will be able to complete this evaluation through the PDA in the General Session room during the meeting. No paper evaluations will be distributed.

You will need your badge number in order to complete the evaluation form.

Please write your badge number here for future reference.

Badge number: ______________

The evaluation form will be available online at: www.visiontree.com/sas and via a link on the SAS web site at www.isass.org AFTER the meeting. Please contact the SAS Education Department at 630-995-9994 x807 should you have any questions. In order to process your certificate, please make sure you complete the evaluation prior to leaving the conference. The CME certificates of attendance will be mailed out within six weeks following the conference.

DISCLAIMER

The content and views presented in this educational activity are those of the authors and do not necessarily reflect those of Medical Education Resources or the SAS. The authors have disclosed if there is any discussion of published and/or investigational uses of agents that are not indicated by the FDA in their presentations. The opinions expressed in this educational activity are those of the faculty and do not necessarily represent the views of MER, and SAS.

Before prescribing any medicine, primary references and full prescribing information should be consulted. Any procedures, medications, or other courses of diagnosis or treatment discussed or suggested in this activity should not be used by clinicians without evaluation of their patient’s conditions and possible contraindications on dangers in use, review of any applicable manufacturer’s product information, and comparison with recommendations of other authorities. The information presented in this activity is not meant to serve as a guideline for patient management.

The SAS disclaims any and all liability for injury or other damages resulting to any individuals attending a session for all claim, which may arise out of the use of techniques demonstrated therein by such individuals, whether these claims be asserted by a physician or any other person.

No reproductions of any kind, including audiotape and videotape or photo may be made of the presentations at the SAS11 Symposium. The SAS reserves all of its rights to such material, and commercial reproduction is specifically prohibited.

DISCLOSURE OF CONFLICTS OF INTEREST

Medical Education Resources insures balance, independence, objectivity, and scientific rigor in all our educational programs. In accordance with this policy, MER identifies conflicts of interest with its instructors, content managers, and other individuals who are in a position to control the content of an activity. Conflicts are resolved by MER to ensure that all scientific research referred to, reported, or used in a CME activity conforms to the generally accepted standards of experimental design, data collection, and analysis. MER is committed to providing its learners with high-quality CME activities that promote improvements or quality in health care and not the business interest of a commercial interest.

The society has identified the options to disclose as follows:

a. Grant/Research or institution support has been received
b. Miscellaneous non-income support (i.e. equipment or services), commercially derived honoraria or other non-research related funding (i.e. paid travel).
c. Royalties
d. Stock Options
e. Consultant or Employee
f. Speaker’s Bureau
g. Nothing of value disclosed
PRESENTER/POSTER INFORMATION

SAS11 Annual Meeting

SPEAKER READY ROOM
It is REQUIRED that each speaker visit the Speaker Ready Room, (located on level two in room 2401, across from Registration) at least three (3) hours prior to the scheduled session start time to submit their presentation materials and convey last-minute requests.

Speaker Ready Room hours are:
- Tuesday, April 26: 7:00 a.m. - 7:00 p.m.
- Wednesday, April 27: 7:00 a.m. - 6:00 p.m.
- Thursday, April 28: 7:30 a.m. - 6:00 p.m.
- Friday, April 29: 7:30 a.m. - 2:00 p.m.

POSTER INFORMATION

The poster viewing hours are:
- Tuesday, April 26: 5:00 p.m. - 7:00 p.m.
- Wednesday, April 27: 9:00 a.m. - 6:00 p.m.
- Thursday, April 28: 9:00 a.m. - 6:00 p.m.
- Friday, April 29: 9:00 a.m. - 2:00 p.m.

Posters are designed to provide attendees with an in-depth learning experience. New investigations, new methods, and innovative research are featured in Poster Exhibits. Awards will be presented on Friday morning, April 29, 2011 from 11:50 a.m. - 12:00 p.m.

AWARDS PRESENTATIONS

The SAS - The International Society for the Advancement of Spine Surgery’s Eleventh Annual Conference will offer four awards:

- The SAS Leon Wiltse Award for Best Overall Paper (sponsored by Dr. and Mrs. Hansen A. Yuan)
- Best Basic Science Paper
- Best Poster
- The Charles D. Ray Award Best Clinical Paper
- Kostuik Innovation Award (sponsored by Dr. Thomas Errico)

Awards will be presented on Friday morning, at 11:50 a.m. in the General Session room. The purpose of these awards is to stimulate fundamental research in spine surgery and motion preservation technologies. Each award will consist of $2,000. It is an honor for the society to recognize and award these presenters for original, outstanding research in motion preservation and independence of thoughts, originality of approach, clarity and excellence of data presentation. Winners are selected from the Top 5 rated abstracts in each classification.

ATTENDEE RESOURCES

SAS TOWN SQUARE
SAS and its supporters are pleased to present the Town Square, a vibrant, interactive space located in the center of the Exhibit Hall with relevant tips and tools for all participants. The Town Square will provide connectivity and audio-visual elements as well as spaces for the SAS community to gather.

Also located in the SAS Town Square will be the Cyber Café, SAS Membership, and a Concierge (the concierge will be able to book Shows, Restaurant reservations, transportation, etc.)

SAS HOUSING BUREAU BOOTH
Please visit the SAS Housing Bureau desk in the registration area for information and to ask questions regarding housing.

MARCH 19 - 23, 2012 ~ BARCELONA, SPAIN
The 2012 Annual SAS Conference will take place at the Palau De Congressos De Catalunya, in Barcelona, Spain March 20 – 23, 2012.

Set on a plain rising gently from the sea to a range of wooded hills, Barcelona is Spain’s most cosmopolitan city and one of the Mediterranean’s busiest ports. Restaurants, bars and clubs are always packed, as is the seaside in summer.

Barcelona has been breaking ground in art, architecture and style since the late 19th century. From the marvels of Modernisme to the modern wonders of today, from Picasso to the likes of Susana Solano, the racing heart of Barcelona has barely skipped a beat.

The city’s avant-garde chefs whip up a storm that has even the French reaching for superlatives.

The city itself could keep you occupied for weeks but just outside it are sandy beaches, Sitges and the Montserrat mountain range - so be sure to make time for a few day trips during your stay.

LOST AND FOUND
Please return any found items to the registration desk on level two right outside the Venetian Ballroom.

COFFEE BREAKS
The coffee breaks will take place in the Town Square area (lounge area) each morning and afternoon.
GENERAL SESSIONS (PLENARY)
The general sessions of the scientific program will be held from Wednesday, April 27 through Friday, April 29, 2011 in Venetian Ballroom, Section K.

Come hear about new and innovative research, updated studies, and advances in spine surgery. Podium presentations will be followed by floor discussion. Attendees are encouraged to ask questions for a more interactive learning experience. The presentations are moderated by experienced members whose goal is to stimulate discussion. Refer to the Scientific Program Schedule, beginning on page 56 for session dates and times.

EXHIBIT HALL LOCATION AND HOURS
See the latest in products, services and technology from more than 64 exhibiting companies. The exhibitions for the SAS 2011 Annual Meeting are located in Hall D.

Hours of Operation:
- Tuesday, April 26: 5:00 p.m. - 7:00 p.m.
- Wednesday, April 27: 9:00 a.m. - 6:00 p.m.
- Thursday, April 28: 9:00 a.m. - 6:00 p.m.
- Friday, April 29: 9:00 a.m. - 2:00 p.m.

Unopposed Exhibit Time
- Tuesday, April 26: 5:00 p.m. - 7:00 p.m.
- Wednesday, April 27: 10:00 a.m. - 10:30 a.m., 12:00 p.m. - 1:30 p.m., 3:00 p.m. - 3:30 p.m.
- Thursday, April 28: 10:00 a.m. - 10:30 a.m., 12:00 p.m. - 1:30 p.m., 3:00 p.m. - 3:30 p.m.
- Friday, April 29: 10:00 a.m. - 10:30 a.m.

Please note: The Exhibit Hall will close briefly during the Awards Ceremony and Presidential Exchange on Friday morning. Announcements will be made prior to both events.

Absolutely no cameras are allowed in the Exhibit Hall. Violators will be removed from the premises and cameras will be confiscated.

EXHIBITS
The SAS11 Annual Meeting Exhibits will provide you with the opportunity to explore the market place. Compare products first-hand and plan your purchases of products and services that will allow you to provide a higher level of care to your patients and effectively manage your practice.

64 companies will be displaying their products and services in Hall D. To view the listing of companies that will be on display, go to page 34 of this Program Book.

CONCURRENT BREAKOUT SESSIONS
New in this year’s program are concurrent breakout sessions. They will take place in the afternoons on Wednesday, Thursday and Friday. No tickets are needed! Just go to the session that most interests you!

MEMBERS’ BUSINESS MEETING
All SAS Members are cordially invited to the Member’s Business Meeting on Wednesday, April 27, 2011 at 9:45 a.m. - 10:00 a.m. in the Venetian Ballroom, Section K.

Make sure your to have your voice heard as you cast your ballot for a change in the name of the society, SAS or ISASS. Listen to the rationale behind the change and where it will take the society and how we will continue to be the home of the Spine Surgeon.

OPENING RECEPTION
All attendees, exhibitors and guests are invited to the Opening Reception in the Exhibit Hall D on Tuesday, April 26, 2011 from 5:00 p.m. to 7:00 p.m.

REGISTRATION
All delegates must check-in at the Registration Desk located in front of Venetian Ballroom, in Foyer East.

Badges are required and controlled for entrance to the General Sessions, Exhibit Hall, Breakout Sessions, Opening Ceremony and all social events.

Exhibitors must present a personalized business card for each person requiring a badge for their company.

REGISTRATION HOURS*
- Tuesday, April 26: 7:00 a.m. - 7:00 p.m.
- Wednesday, April 27: 7:00 a.m. - 6:00 p.m.
- Thursday, April 28: 7:30 a.m. - 6:00 p.m.
- Friday, April 29: 7:30 a.m. - 2:00 p.m.

*kindly note these registration hours are subject to change

BADGES
All congress badges will be marked to indicate the different categories of participation.

A $50.00 fee will be charged for lost badges and/or name changes on pre-registered badges and can be replaced at the registration desk.

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
Fellows Educational Program

FRIDAY, APRIL 29
1:45 PM - 6:00 PM
SATURDAY, APRIL 30
7:00 AM - 4:00 PM

Friday’s Session: This educational course will address Business Concepts for Spine Residents and Fellows issues. Most surgeons graduate with a solid background in medicine. Unfortunately, few graduates realize they will also become small business owners. Currently, this issue is seldom emphasized during fellowship, and young surgeons do not have an adequate background to assume this role. This course will be chaired by Dr. Richard Kube and Dr. James Yue and will attempt to raise thought provoking questions and provide some answers to the main question, “I’ve graduated, now what?” A knowledgeable faculty has been assembled to help explain the various aspects of spine surgery once physicians complete training.

Saturday’s Session: The educational efforts of SAS will be highlighted this year with the introduction of the Fellows/Surgeons in Training hands on cadaveric and didactic training course. The course will emphasize fundamental principles of basic and advanced fusion and non fusion surgical techniques. This course will be chaired by Drs. James Yue and Dr. Kube. An international faculty has been assembled to provide a wide variety surgical approaches and opinions. The course will be held at the MITI Lab in Las Vegas, NV. Case presentations will be used to complement and reinforce hands on surgical skill development.

Session One: Presented by Barbara Cataletto of Business Dynamics

Coding and Documentation Methodologies and Recommendations:
The presentation will focus on the standard requirements for coding and documentation for the spine practice. Both surgeon and staff alike will gain an in-depth appreciation for the coding idiosyncrasies and related protocols required to properly document their surgical case for optimum reimbursement.

Management of Post-Operative Reimbursement Denials:
Presented by Mauro Cataletto, MD
This course focuses on the aggressive appeals process for the spine practice.
The presentation will take the audience through a series of events/calamities that clearly show the withholding of appropriate reimbursement even though all supportive coding documentation had been presented.
We will be discussing the day-to-day management of the unacceptable practice of insurance carriers denials for pre-approved services.

Operating Room Costs: Surgeons Obligation to be Fiscally Responsible: A retrospective look at operating room waste that could be avoided.

Session Two: Presented / Moderated by Charles Schneider

Transitioning From Physician Preference to Value Analysis: A Forum for Stakeholder Integration
Key representatives from the clinical, insurer, government and medical technology communities will share their unique perspectives about health care coverage and reimbursement, and share trends affecting critical decision-making within the public and private market. Unique perspectives addressing medical research, evidence, health economics and impact upon surgeons will be the focus of this extraordinary panel meeting.

Key Areas of Discussion Will Include
Review of regulatory and operational Reforms Affecting Spine Surgery reimbursement. Including the transition to Value Based Purchasing and Evidence Based Medicine. This forum will provide education and opportunity to engage in a conversation about reimbursement trends, and the impact upon the health care providers. Moreover, this panel meeting will provide an unique opportunity to learn more about stakeholder methods and decision-making, and is likely to stimulate robust discussions about evidence development, policy trends while offering unique opportunities to preview stakeholder integration and collaboration opportunities.
Josh Makower, MD, MBA

“FDA Impact on US Medical Technology Innovation”

Josh has dedicated his life to the creation of medical technologies which improve the quality of life for patients and is the CEO and Founder of ExploraMed Development, LLC, a medical device incubator based on the west coast. He is also a Venture Partner with New Enterprise Associates where he supports the investing activity in the medical device arena. Josh serves as a Consulting Associate Professor of Medicine at Stanford University Medical School and co-founded Stanford’s Biodesign Innovation Program.

A compendium of the materials created to support the teaching efforts in the Stanford Biodesign program has recently been published under the Cambridge University text title of: Biodesign: The Process of Innovating New Medical Technologies. Josh has founded several companies through the ExploraMed incubator which have achieved successful M&A transactions including Acclarent, Inc., a company focused on developing novel therapies in ENT, which was acquired by J&J in 2010, TransVascular, Inc., a company focused on the development of a completely catheter-based coronary bypass technology, which was acquired by Medtronic, Inc. in 2003, and EndoMatrix, Inc., a company focused on the development of a novel therapy for incontinence and GI Reflux, which was acquired by C.R. Bard in 1997.

Up until 1995, Josh was Founder and Manager of Pfizer’s Strategic Innovation Group, a group chartered to create new medical device technologies and businesses for Pfizer’s medical device businesses. Josh also serves on the Board of Directors for NeoTract, Inc, Moximed, Inc, Intrinsic Therapeutics, Inc, ExploraMed III, Inc. and Vibrynt, Inc. Josh holds over five dozen patents for various medical devices in the fields of Orthopedics, ENT, Cardiology, General Surgery, Drug Delivery and Urology. Josh holds an M.B.A. Columbia University, an M.D. from the New York University School of Medicine, and an S.B. in Mechanical Engineering from the Massachusetts Institute of Technology.

However, what brings Glenn to present to the SAS11 is his prior experience, Glenn served as the Chief of the Orthopedic Devices Branch for US Food and Drug Administration. As Branch Chief, he managed a team of scientists, clinicians, and engineers in the regulation of all orthopedic devices marketed in the United States. In addition, Glenn was responsible for overseeing all FDA guidance documents and FDA policy determinations for orthopedic devices marketed in the US. Furthermore, he assisted in and oversaw all integrity, compliance, and monitoring issues regarding the orthopedic industry in collaboration with the Office of Compliance.

Glenn was also a member of several leveraging groups such as the Orthopedic Device Forum and Orthopedic Surgical Manufacturer Association, where he represented the FDA. As the head of the Orthopedic Devices Branch, he pursued the advancement and consistency in the regulation of all orthopedic devices. This was evident by the pursuit of reclassifying several types of orthopedic devices, developing guidance documents on state-of-the-art orthopedic devices, and educating and assisting the orthopedic community in the regulatory strategies to get devices to market.

Prior to becoming Branch Chief, Glenn was a reviewer in the Orthopedic Devices Branch where he was the team leader on many state-of-the-art spinal technologies. He was a leader in the field of artificial disc replacements, nucleus replacements, posterior stabilization systems, and many of the current widely used fusion spinal systems. He authored a guidance document for industry on spinal systems indicated for fusion, and he also developed documents that assisted companies in getting other devices to market such as artificial disc replacements, nucleus replacements, and posterior stabilization systems. Glenn received his Bachelor in Science at Tulane University in Biomedical Engineering and his Master in Science at Clemson University in Bioengineering.

Marti Conger, M.Ed.

Patient advocate and activist

Marti became a patient advocate and activist when she was forced to travel to Europe to access the most appropriate medical device for her cervical disc disease – devices made 40 miles from her home in northern California. She has vowed to instigate changes in Federal agencies’ practices and in legislation needed to guarantee all US citizens have equal access to the most current and successful medical technology regardless product origin. She’s created a nation (and international) notice of and support for her campaign goals, including patients and medical practitioners. Though disabled by an unrelated condition, Marti continues to use her limited energy to fulfill her promise to fellow citizens.

Before her health issues, Marti was President of Conger Resources, a successful business performance consultancy helping operations and training executives optimize their operating processes and people performance.

The challenges of life in the 21st Century require us to find new ways to access the wisdom and intelligence inherent in groups settings. The need for collaboration, insight and coordinated action has never been greater. Join the SAS in the Town Square of the Exhibit Floor while case studies developed by leaders in the spine industry are discussed by an elite panel of surgeons. Participants will be able to confer with the panelists on Degenerative Spondylolisthesis and Herniated disc case studies on Wednesday and on treatment options and protocols for Cervical disc replacement case studies on Thursday.

LUMBAR CASE STUDIES
WINE AND SPINE
Wednesday, April 27, 2011
5:00 p.m. - 6:00 p.m.
Town Square - Exhibit Floor

Case #1:
L5/S1 Herniated Disc - All Leg Pain

Panelists:
MIS Approach  Anthony Yeung, MD
Traditional Approach  Peter Robertson, MD
Matthew Gornet, MD

Case #2:
L4/L5 Herniated Disc - All Back Pain
Moderator: Marek Szpalski, MD

Panelists:
Anterior Disc Replacement  Matthew Scott-Young, MD
MIS Lateral Disc Replacement  Luiz Pimenta, MD, PhD
TLIF  Larry Khoo, MD

Case #3:
Degenerative Spondylolisthesis
Moderator: Scott Leary, MD

Panelists:
Reginald Davis, MD - Posterior Dynamic Stabilization
Jean-Charles LeHuec, MD, PhD - MIS Fusion
Finn Christensen, Prof, MD, PhD, DMS
PDAS USED IN AUDIENCE
INTERACTIVE SESSIONS

These sessions will engage the audience through interactive polls and question and answer periods.

PDAs are configured for the 2011 SAS Annual Meeting sessions designated as interactive and will not function outside the classroom. Please do not remove these devices from the room.

If you are not familiar with PDA technology and need assistance, please contact a staff member for help.

All information submitted through the PDA is in real-time and the moderators will try to get through as many questions as possible.

All submissions are confidential and anonymous.

Interactive sessions are geared to be highly interactive and informative; contributions to the session are welcomed.

The evaluation form will be available online at: www.visiontree.com/sas and via a link on the SAS web site at www.isass.org AFTER the meeting. Please contact the SAS Education Department at 630-995-9994 x807 should you have any questions. In order to process your certificate, please make sure you complete the evaluation prior to leaving the conference. The CME certificates of attendance will be mailed out within six weeks following the conference.

NEW THIS YEAR
THE SAS MOBILE APPLICATION

You stay in touch with everything on your phone, so SAS has made it easy for you to have the SAS at your finger tips - the latest news, tools and other information you access via our web site.

SAS11 brings the introduction of our new web application and mobile applications (select platforms) which can be used for all access to the latest, most up-to-date information about the SAS and the spine industry all year long.

The SAS App will be available to members, non-members and spine patients via web browser or free downloadable Apps.

We have also provided a link on the main SAS website with a brief description of the App and links to the App Store, Android Marketplace, etc. as well as the address to use the App within your mobile web browser:
http://www.isass.org/h/app.html

At launch, The SAS App will include full SAS11 program information, information on spine conditions for patients, a directory of member services, Find a Member SAS member directory, information about The SAS, and more!

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
EXHIBIT HALL HOURS
See the latest in products, services and technology from 64 exhibiting companies. The exhibitions for the SAS 2011 Annual Meeting are located in Hall D from April 26 - April 29, 2011.

Hours of Operation:
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UNOPPOSED EXHIBIT TIMES
- Tuesday, April 26: 5:00 p.m. - 7:00 p.m.
- Wednesday, April 27: 10:00 a.m. - 10:30 a.m., 12:00 p.m. - 1:30 p.m., 3:00 p.m. - 3:30 p.m.
- Thursday, April 28: 10:00 a.m. - 10:30 a.m., 12:00 p.m. - 1:30 p.m., 3:00 p.m. - 3:30 p.m.
- Friday, April 29: 10:00 a.m. - 10:30 a.m.

NEW THIS YEAR ON THE FLOOR
We would like to acknowledge new exhibitors to the 2011 Annual Conference.

Please refer to the Exhibitor Directory - new exhibitors are noted in blue.

THE SAS SCIENTIFIC EXCHANGE
Explore the spine world’s growing exhibition dedicated to the advancement of spinal treatment. Network with representatives from 64 companies displaying the latest spine products and services on the market. All facets of the spine profession will be on display, with more than 64 booths including:

- Spine Research and Knowledge
- Minimally Invasive Technology
- New Technologies and Techniques
INSIDE:

SAS11 Partners 32
Exhibit Hall Floor Plan 33
Exhibitor List 34
Exhibitor Directory 35

EXHIBIT HALL HOURS:

Tuesday, April 26 5:00 p.m. - 7:00 p.m.*
Wednesday, April 27 9:00 a.m. - 6:00 p.m.
Thursday, April 28 9:00 a.m. - 6:00 p.m.
Friday, April 29 9:00 a.m. - 2:00 p.m.

*OPENING RECEPTION
The SAS proudly recognizes our 2011 Partners for their outstanding year-round leadership in the advancement of spine surgery and to thank them for their support of our mission.

**PLATINUM**

SYNTHES® Spine

**SILVER**

K2M

NuVasive®

**BRONZE**

stryker®

The SAS would like to thank the following partners for their generous contributions:

Allograft Resources - Meeting Bags
Pioneer Surgical - Lanyards
Globus Medical - Key Cards, Town Square Presentations

Spine-Health - Town Square Presentation
ScrubStorm Strategic - Town Square Presentation
LDR - Product Display
We would like to acknowledge new exhibitors to the 2011 Annual Conference. New Exhibitors are noted in blue.

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Combining years of R&D along with modern technology, Aesculap Implant Systems offers a complete line of implant systems and instrumentation to both Spine and Orthopaedic surgeons. Aesculap Implant Systems is committed to excellence in satisfying surgeon and patient needs through the delivery of innovative, cost-effective operative solutions.

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www.uthscsa.edu/allograft

Allograft Resources is a full service human biologics distributor. We offer a full range of grafts for surgical specialties including but not limited to spine, sports medicine, neuro, dental/OMS, cardiovascular, ocular, and general orthopedic and trauma. We are fully accredited by the AATB and FDA inspected. Allograft Resources uses top of the line monitoring and tracking systems and distributes in the USA and internationally.

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www.alphatecspine.com

Alphatec Spine's mission is to be the leading global independent, full-line spine company, with a focus on solutions for the aging spine. Our goal is to improve the aging patient's quality of life.

Amedica/US Spine
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Salt Lake City, UT 84119
Phone: 801-583-5100 Fax: 801-583-8635
www.amedicacorp.com

Amedica/US Spine has a well-balanced portfolio which includes a full-line of spinal implants and instruments to address all spinal surgery indications including MIS techniques, PEEK and silicon nitride interbody spacers, biologics and deformity correction procedures. The goal at Amedica / US spine is to deliver innovative, cost-effective care globally.

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New York, NY 10018
Phone: 212-356-0682 Fax: 212-356-0678
Email: meckert@ptcny.com
www.americanboardofspinesurgery.org/

The American Board of Spine Surgery is the only independent board certification for orthopaedic and neurological surgeons who specialize in managing disorders of the spine with both non-operative and complex operative treatment modalities. ABSS certified surgeons represent this unique subspecialty of neurosurgical or orthopaedic surgery. Formed in 1997 ABSS serves the best interests of the public and the medical/surgical community by identifying those surgeons who specialize in the spine.

AnyBody Technology
Niels Jernes Vej 10
Aalborg Oest, 9220
Phone: +45 96 354 286 FAX: +45 96 354 599
Email: sales@anybodytech.com
www.anybodytech.com/

AnyBody Technology provides unique software and consulting services for musculoskeletal analysis. We predict in-vivo spine kinematics and loadings pre-op and post-op for daily activities. Thus, we provide unique insight into questions such as * How will kinematics change when the spine is instrumented with one motion preservation device versus another with a different stiffness? * How will this affect load and motion in adjacent joints? * How will the surgical muscle tissue damage affect this?

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Baxter is a global, diversified healthcare company who applies a unique combination of expertise in medical devices, pharmaceutical and biotechnology to create products that advance patient care worldwide. Baxter is a registered trademark of Baxter International Inc
Business Dynamics is a full service, spine coding and reimbursement firm that provides the spine industry with the support needed to develop and grow their spine business. Our programs have revolutionized the business of spine with highly developed programs to increase profitability and create efficiencies while maintaining complete compliance within the field.

Custom Spine is committed to developing innovative spinal solutions to enhance patients’ quality of life. Our product portfolio offers next generation surgeon friendly spinal implants and instruments to support industry leading surgical techniques for the treatment of spinal disorders. Custom Spine’s flagship product, Pathway AVID, a unique articulating vertebral interbody device, provides the benefits of a larger implant in a less invasive approach to reduce the risk of subsidence.

For over 20 years, DePuy Spine, a Johnson & Johnson company, has partnered with leading clinicians, researchers and thought leaders to improve patient care. Today, we remain a leader in the worldwide spine market with an impressive product portfolio, industry-leading educations programs, and clinical research to support our work.

Dynamic Disc Designs Corp. (ddd) is an intervertebral disc spine modeling company. With a two-part disc, demonstrate 6 degrees of motion. Inspired by research, we hope to continue to provide the best in teaching models to professionals and device companies world-wide. We also hope to help the cause in better understandings of degenerative disc disease in the pursuit of improving therapeutic strategies. Discover the most realistic and anatomically accurate spinal disc models in the world.

Elliquence manufactures patented Radiowave technology. Disc-FX® represents an innovative product for minimicrodiscectomies using manual instruments and the Surgi-Max® Plus energy source with navigational Trigger-Flex®, which permit annulus modulation and nucleus ablation. A full line of accessories offers applications for all spinal procedures, sparing healthy tissue while precisely treating pathology.
The aims of EuroSpine are to stimulate the exchange of knowledge and ideas in the field of research, prevention and treatment of spine diseases and related problems and to coordinate efforts undertaken in European countries for further development in this field.

Located in Madison, AL - FMI Medical has been providing contract manufacturing services for the medical device industry since 1999. Specializing in single set-up part machining for implants and instrumentation offering experience, technology and reliability.

Globus Medical, the world's largest privately held spinal company, is driving significant technological advancements across the complete suite of spinal products including Fusion, MIS (minimally invasive surgery), Motion Preservation and Biomaterials. Since its founding in 2003 by an accomplished team of spine professionals with a shared passion for developing new technologies to improve patient outcomes, Globus Medical has become one of the world's preeminent spine companies, with proven technology and innovation across the spectrum of spine surgery products.

Gore Medical Products Division has provided creative therapeutic solutions to complex medical problems for three decades. During that time, more than 30 million Gore Medical Devices have been implanted. Products include vascular grafts, endovascular and interventional devices, surgical materials, and sutures for use in vascular, cardiac and general surgery. Visit us at www.goremedical.com.

Interventional Spine®, Inc., is a medical device company exclusively focused on the design, development and marketing of patented PERCUTANEOUS systems to treat lower back pain. Our goal is to shorten procedure times, lower complication rate, and minimize trauma when compared to open back surgery.

ISTO is a privately-held orthobiologics company dedicated to improving patient quality of life through the development of proprietary products for spinal therapies and sport medicine applications. ISTO's products are intended for the repair and regeneration of damaged or injured cartilage and bone. For additional information on ISTO, please visit our website at www.istotech.com.

Joimax® offers system components for endoscopic spine surgery. TESSYS® is a truly minimally invasive approach for spine surgery entering transfaminally, through a single incision, under local anesthetic and on an outpatient basis. Clinical indications for the joimax® TESSYS® procedure are foraminal stenosis and disc herniation. The newly launched Shrill® - a multi-functional drill and resection system and the comprehensive line of HD endoscopy equipment are the latest joimax® products.

K2M, Inc. is an innovative spinal device company committed to the research, development, and commercialization of simplified solutions for the treatment of complex spinal pathologies and procedures. The company is recognized as a worldwide leader in providing unique technologies for the treatment of deformity, degenerative, trauma, and tumor spinal patients. For additional information on K2M, please visit www.K2M.com.
Koros, USA Inc  
610 Flinn Ave  
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Phone: 805-529-0825  FAX Fax: 805-529-2955  
Email: korosusa.joanna@live.com  
www.korosusa.com  
Over the last 30 years Koros USA, Inc. has been designing and distributing state of the art Surgical Instruments. Like our Cervical Black Belt, Lumbar Super Slide and ALIF Polaris retractors along with our rotating osteo punch and ejector punch rongeurs and fine hand instruments.

LASAS  
2nd Annual meeting of the LASAS will take place in Rio De Janeiro, Brazil from August 4 - 6, 2011

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Email: patsypeterson@ldrspine.com  
www.ldrspine.com  
LDR creates innovative fusion and non-fusion spinal technologies benefiting patients in more than 25 countries. Our products are designed to make spine surgery easier to perform and the desired clinical results more readily achieved. LDR’s strong global presence is built on the success of products including the Mobi-C® Cervical Artificial Disc and the VerteBRIDGE® platform of zero-profile interbody devices. At LDR, we have a Passion for Innovation! *Mobi-C is not available in the United States.

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Life Instrument Corporation is dedicated to serving neurosurgeons and orthopedic surgeons with the highest quality surgical instruments. Handcrafted from the finest materials, our instruments are longer and lighter to provide maximum comfort and better control. Perfectly balanced for excellent feel and ease of use, Life Instruments are an extension of the surgeon’s hands.

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www.mazorst.com  
Mazor Robotics is dedicated to the research, development, production, marketing and sales of innovative medical devices for surgical procedures. Mazor’s proprietary technology enables a safer environment for patients, surgeons and OR staff, by utilizing miniature robotic, imaging and implant technologies.
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NP, NP44 3AW
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Orthos is focused on developing materials and devices that provide solutions for surgeons to use in the repair of skeletal defects and in the regeneration of bone. Orthos achieves this by working with clinicians and academia. The company’s core technology is based on the synthesis of orthobiological materials which respond physiologically when implanted in the body. The company has products approved for sale in both Europe and USA.

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Exclusive US distributor of InterPlate®, a modular stand-alone cervical and lumbar interbody fusion technology. InterPlate is the most comprehensive interbody system, allowing selection of both implant material characteristics and mechanical loading options. The world’s only Bridging Flush-Fit™ technology is available in one-piece or two-piece constructs.

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Email: info@paradigmspine.de
www.paradigmspine.com

Paradigm Spine offers Degenerative and Scoliosis solutions in 50 countries. The company markets the coflex® Interlaminar/Interspinous Stabilization device for spinal stenosis, the coflex-F™ Posterior Stabilization device for posterior fusion, the DCI™ System designed as a functionally dynamic cervical spine implant and the DSS® Spinal Stabilization Pedicle based system.

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
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Vernon Hills, IL 60061
Phone: 847-913-1111
Fax: 847-913-6959
Email: conventions@richardwolfusa.com
www.richardwolfusa.com

Richard Wolf Medical Instruments Corp approved via CE Mark. interspinous spacer implants both distributed in Europe and Europe; GelStix™ Nucleus Augmentation and Gel Fix™ interspinous spacer implants both distributed in Europe and approved via CE Mark.

Spinal Elements
2744 Loker Ave W Suite 100
Carlsbad CA 92010
Phone: 760-607-0121
Fax: 760-607-0125
Email: Bmilligan@spinalelements.com
www.spinalelements.com

Spinal Elements develops and markets innovative spinal technologies. The product portfolio includes: Mosaic™ Cervical Implant; Atomic® Anterior Cervical Plate; Crystal® Cervical Interbody, Lucent® Lumbar Interbody, and Lucent Magnum™ Anterior Lumbar Interbody; Mercury® and Mercury® Classic Pedicle Screw, and Magnum+™ Stand Alone ALIF with screws. Spinal Elements is also developing the Zyre™ facet implant system.

Spinal Kinetics
595 N Pastoria Ave
Sunnyvale CA 94085
Phone: 408-636-2500
Fax: 408-636-2599
Email: info@spinalkinetics.com
www.spinalkinetics.com

Spinal Kinetics is a privately-held medical device company focused on developing innovative motion preservation systems for treating degenerative diseases of the spine. The M6-C cervical and M6-L lumbar are the only artificial discs that replicate the anatomic structure of a natural disc by incorporating an artificial nucleus and annulus.

Spinal Motion
201 San Antonio Circle Suite 115
Mountain View CA 94040
Phone: 650-947-3472
Fax: 650-947-3473
Email: kwelch@spinalmotion.com
www.spinalmotion.com

SpinalMotion is focused exclusively on spinal disc arthroplasty, developing innovative technology designed to further enhance options for patients suffering from degenerative disc disease. SpinalMotion was founded in June 2003. The company is located in Mountain View, California. To learn more, please visit our website at www.spinalmotion.com.

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790 Estate Drive, Suite 250
Deerfield, IL 60015
Phone: 847-607-9141
Fax: 312-201-9255
Email: ecarroll@spine-health.com
www.spine-health.com

Spine-Health is the leader in online marketing and advertising resource for patients seeking comprehensive, highly informative and useful resource for understanding, preventing, and seeking appropriate treatment for back and neck pain and related conditions.
The Spine Patient Society™, a charitable, tax-exempt, 501(c)(3) organization, is dedicated to empowering patients with spine disorders through advocacy, education and global social support. SPS is the world’s first Society, and only one of it’s kind, solely representing Spine Patients. Our mission is to support and inspire patients to be proactive in their medical care and to become knowledgeable about their conditions while bridging the gap between the Spine Patient and Professional Societies.

SpineArt
295 Madison Ave 25th Floor
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Phone: 212-213-2121
Fax: 212-213-0819
Email: cherron@spineart.us
www.spineart.us

SpineArt, leader of a new spinal generation, has successfully marketed a full range of innovative fusion and motion implants for all aspects of spinal surgery. Spineart is focused on developing a range of Minimally Invasive Motion Preservation devices under its philosophy of simplification of the surgical act.

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www.spineology.com

Spineology’s flagship product, OptiMesh, is a deployable polyester fabric mesh designed to contain granular bone graft. By combining granular graft with a porous conformable implant, the OptiMesh system provided a minimally invasive solution for deploying osteoinductive and osteoconductive graft materials into intimate contact with a prepared grafting site. Our Brands are: OptiMesh® Deployable Grafting System ProMap™ EMG Navigation System Capture™ Facet Fixation System

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Phone 201 760 8059
Fax 201 760 8195
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Back pain is becoming a more prevalent problem, affecting hundreds of thousands of people annually. To offer their patients relief from debilitating pain, surgeons in increasing numbers are choosing Stryker spinal implants. Stryker Spine uses leading edge technology to design, manufacture, and service a full range of spinal implant products. With spinal systems designed specifically for thoracolumbar, cervical, interbody, bone substitute, and motion preservation applications, Stryker Spine can offer our neurosurgeon and orthopedic surgeon customers a comprehensive range of procedural solutions.

Synthes Spine
1302 Wrights Lane East
West Chester, PA 19380
Phone: 610-719-5674  FAX Fax: 610-719-5100
Email: zabaga.mary@synthes.com
www.synthes.com

Synthes Spine is a leading international company that develops solutions for the treatment of degenerative instabilities, fractures, tumors, and deformities of the cervical, thoracic and lumbar spine. Through a comprehensive portfolio of implants, instruments, and educational services, Synthes Spine is focused on providing advanced products and techniques that help surgeons achieve optimal surgical outcomes for patients across the world.

TeDan Surgical Innovations
1133 Chimney Rock Road Suite 180
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Phone: 713-726-0886
Fax: 713-726-0846
TeDan Surgical Innovations (TSI) offers surgical products and cervical and lumbar retractor systems such as our Phantom CS™, Phantom TL™, Phantom LS™, Phantom MC™, and our new Phantom ML™ for minimally invasive Lumbar Fusion. These retractor systems have a patented ergonomically designed blade locking mechanism. Please visit us at www.tedansurgical.com

Titan Spine, LLC
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Mequon, WI 53092
Phone: 866-822-7800
Fax: 262-242-7802
www.titanspine.com

Titan Spine is focused on the design and manufacture of specialized interbody fusion devices for the spine. Founded in 2005, the company is committed to developing a wide range of interbody implants with unique Titanium surface characteristics to aid in the treatment of various spinal pathologies that require fusion.

TranS1
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Phone: 910-332-1700
Fax: 910-332-1701
Email: cwilson@trans1.com
www.TranS1.com

Trans1® offers an innovative, trans-sacral approach to lumbar surgery. A mini-open access and fusion system enables lumbar fusion to be performed with complete preservation of the annulus and all paraspinous soft tissue structures. AxiaLIF/AxiaLIF 2L+ technologies result in high fusion rates, low complication rates, and improved patient recovery time.
Vertebral Technologies is a spinal device company that develops, manufactures, and markets the InterFuse® Interbody Fusion System. This system enables surgeons to implant a larger size device in patients while allowing for a less invasive surgical approach. VTI is focusing its current commercialization efforts in the U.S. market but has future plans to introduce its products in markets outside of the U.S.

VisionTree Optimal Care™ (VTOC) is a proven and secure patient management, documentation, and communication system. VTOC collects and stores patient health records, consents, reminders, messages, education material, and outcomes data. The web-based system delivers improved workflow efficiency and quality of patient care through disease management, wellness, patient safety documentation, and meeting PQRI guidelines.

X-spine Systems is a next-generation spinal implant company. We are dedicated to advancing spinal implant technologies that improve surgery outcomes and optimize surgeon experience.

Zimmer Spine develops, produces, and markets the highest quality spine products and services that repair, replace, and regenerate spine health. Zimmer constructs superior fusion and non-fusion spine systems, instrumentation systems, cervical plates, allograft bone filler, and Trabecular Metal Technologies. We value continuous surgeon education, building confidence, and enhancing patient outcomes.
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MANTIS is a comprehensive percutaneous thoracolumbar solution based on Xia technology. The MANTIS Spinal System gives spine surgeons the tools to accomplish multi-level fixation through a true percutaneous approach. With the MANTIS patented Rod Contouring System, surgeons have the opportunity to pre-contour the rod above the skin before insertion, allowing for more accurate and confident rod placement to suit a range of anatomy. Direct visualization of the rod offers an added level of comfort not found with other systems.

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Disclaimer: A surgeon must always rely on his or her own professional clinical judgment when deciding whether to use a particular product when treating a particular patient. Stryker does not dispense medical advice and recommends that surgeons be trained in the use of any particular product before using it in surgery. The information presented is intended to demonstrate the breadth of Stryker product offerings. A surgeon must always refer to the package insert, product label and/or instructions for use before using any Stryker product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area. Stryker Corporation or its divisions or other corporate affiliated entities own, use or have applied for the following trademarks or service marks: CerviCore®, Mantis® and Xia®. All other trademarks are trademarks of their respective owners or holders.
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12:00–2:00pm
Venetian Ballroom G

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ISASS has partnered with Spine-health.com, the largest health website focused on consumers with back and neck problems that serves over 1.1 million visits every month. ISASS Members can market their practice and access Spine-health's peer-reviewed, award winning patient education - at a special savings of 30% off regular rates. 93% of Spine-health’s patient visitors are looking for a doctor - will they find your practice or just your competition?

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WORKSHOPS

**Wednesday, April 27th**
12:00–1:30pm
XLIF® Corpectomy through lateral approach
William Smith, MD & Juan Uribe, MD
Location: Room VBJ

**Thursday, April 28th**
12:00–1:30pm
XLIF® Expanded Indications
Andrew Cappuccino, MD & Luiz Pimenta, MD
Location: Room VBJ

Visit us at SAS11
APRIL 27-29, 2011
BOOTH #340

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The Elements of Healing

Spine

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- Cancellous Cubes 15cc and 30cc
- Cancellous Ground (0.1-1mm) 1cc
- Cancellous Ground (1-4mm) 1cc, 5cc, 15cc, 30cc, 60cc
- Cloward Dowel 12mm, 14mm, 16mm, 18mm
- Cortical Cancellous Crushed (1-3.5mm) 7.5cc, 15cc, 30cc, 60cc
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- Cortical Cervical Spacer 5-12mm x 14mm x 11mm
- Cortical Wedge 5-10mm
- DBM Paste 5cc, 10cc, 20cc
- DBM Putty 5cc, 10cc, 20cc
- Femoral Ring 8mm, 10mm, 12mm, 14mm, 16mm
- Foam Cancellous Block 10mm², 12mm², 14mm², 12mm x 12mm x 22mm
- Foam Cancellous Cubes 5cc, 10cc, 15cc, 30cc
- Foam Cancellous Crushed 5cc, 10cc, 15cc, 30cc, 60cc
- PLIF Cortical Spacer 8mm, 10mm, 12mm, 14mm, 16mm

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## Conference at a Glance

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<td><strong>EARLY MORNING</strong></td>
<td>(7:00 - 7:00) Registration Hours</td>
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<td>(7:00 - 4:30) Fellows/ Residents</td>
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<td>(8:00 - 8:15) Welcome by Program Co-Chairs</td>
<td>(8:30 - 10:00) Plenary: Degenerative Scoliosis: Where to end a Fusion?</td>
<td>(8:00 - 10:00) Plenary: Lumbar Therapies</td>
<td>(8:00 - 10:00) Plenary: Lumbar Therapies</td>
<td>Hands on Cadaveric Motion Sparring and Innovative Fusion Techniques Lab</td>
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<td>(8:15 - 9:45) Plenary: Cervical Therapies</td>
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<td>(9:45 - 10:00) SAS Business Meeting</td>
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<td>(9:00 - 6:00) Exhibit Hours</td>
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<td><strong>MID MORNING</strong></td>
<td>(10:00 - 10:30) Break on Exhibit Floor Town Square Talks</td>
<td>(10:00 - 10:30) Break on Exhibit Floor Town Square Talks</td>
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<td><strong>LUNCH</strong></td>
<td>(Noon - 1:30) Industry Workshops</td>
<td>(Noon - 1:30) Industry Workshops</td>
<td>(Noon - 1:30) Lunchtime Symposium at Town Square: What is the Best Evidence for Lumbar Fusion Surgery?</td>
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<td><strong>MID AFTERNOON</strong></td>
<td>(1:00 - 5:00) Concurrent Sessions: Cervical TDR Biologics Biomechanics/ Basic Science</td>
<td>(1:30 - 3:00) Concurrent Sessions: Lumbar TDR MIS II Lumbar Complications</td>
<td>(1:30 - 3:00) Concurrent Sessions: Nucleus Innovative Vertebroplasty</td>
<td>(1:30 - 1:45) Closing Comments</td>
<td>(1:45 - 3:00) Concurrent Sessions: Business Concepts for Residents and Fellows: What you need to know before signing on the dotted line: How do you know what job is right for you?</td>
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<td>(1:00 - 5:00) Coding &amp; Reimbursement: Challenging and economic issues that are facing the global spine community at large</td>
<td>(3:00 - 3:30) Break on Exhibit Floor Town Square Talks</td>
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<td>(1:30 - 3:00) Concurrent Sessions: Posterior Dynamics/ Interspinous Ligamentoplasty Navigation/Biomechanics MIS I</td>
<td>(3:00 - 3:30) Break on Exhibit Floor Town Square Talks</td>
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<td>(3:30 - 5:00) Case Studies: Wine and Spine in Town Square Exhibit Floor</td>
<td>(3:30 - 5:00) Case Studies: Wine and Spine in Town Square Exhibit Floor</td>
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<td><strong>EVENING</strong></td>
<td>(5:00 - 7:00) Opening Reception (in Exhibit Hall)</td>
<td>(5:00 - 6:00) Case Studies Wine and Spine in Town Square Exhibit Floor</td>
<td>(5:00 - 6:00) Case Studies Wine and Spine in Town Square Exhibit Floor</td>
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<td>(5:00 - 7:00) Exhibit Hours</td>
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| Wednesday and Thursday Industry Workshops | 54 |
| SAS Town Square | 55 |

### SAS11 SCIENTIFIC PROGRAM

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<td>TUESDAY, APRIL 26TH</td>
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<td>WEDNESDAY, APRIL 27TH</td>
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<td>SATURDAY, APRIL 30TH</td>
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Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
**Wednesday**

**PARADIGM SPINE**  
*Room: Venetian Ballroom, Section G*

**Interlaminar Stabilization with coflex-F™**  
*A Minimally Invasive Solution as an Adjunct to Interbody Fusion*

- **Moderator:** Reginald Davis, MD
- **Kenneth Pettine, MD:** Continuum of Care with Interlaminar Stabilization: The coflex® Implant Family
- **John Thalgott, MD:** Design Rationale and Biomechanical Background of a Novel Interlaminar Stabilization Device
- **John Thalgott, MD:** Surgical Technique and Recommendations for (Selective) Microsurgical Decompression
- **Hamid Afshar, MD:** Clinical Outcome and Radiographic Analysis of coflex-F™: Results from a Prospective, Multi-Center Clinical Trial in Europe

*Round Table Discussion and Hands-On Workshop*

**MEDTRONICS**  
*Room: Venetian Ballroom, Section C*

**MASTT CORRECTION TECHNIQUES WORKSHOP**

- **Faculty:** Neel Anand, MD

**NUVASIVE**  
*Room: Venetian Ballroom, Section J*

**XLIF® Corpectomy through Lateral Approach**

- **Faculty:** William Smith, MD  
  Juan Uribe, MD

**SCRUBSTORM**  
*Room: Venetian Ballroom, Section B*

**Got Ideas?: A new way for surgeons to develop their own medical device concepts**

Ken Solovay, President & CEO, ScrubStorm, LLC

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**Thursday**

**CENTINEL SPINE**  
*Room: Venetian Ballroom, Section A*

**Centinel Spine™ Integrated Interbody Workshop**

- **Faculty:** Said Elshihabi, MD  
  John Thalgott, MD

**NUVASIVE**  
*Room: Venetian Ballroom, Section J*

**XLIF® Expanded Indications**

- **Faculty:** Luiz Pimenta, MD  
  Andrew Cappuccino, MD

**MEDTRONICS**  
*Room: Venetian Ballroom, Section C*

**Construct Planning for the Thoracolumbar Spine**

- **Faculty:** Marcel Dvorak, MD

**GLOBUS MEDICAL**  
*Room: Venetian Ballroom, Section G*

**Expanding MIS Spine Care**

- **Faculty:** Choll Kim, MD, PhD
SAS and its supporters are pleased to present the Town Square, a vibrant, interactive space located in the center of the Exhibit Hall with relevant tips and tools for all participants.

The Town Square will provide connectivity and audio-visual elements as well as spaces for the SAS community to gather.

Scheduled Events/Presentations throughout the Conference:

**Tuesday, April 26**
5:00 p.m.
*Opening Reception*

**Wednesday, April 27**
10:00 a.m.
*Morning Break*
Spine-Health
“Market your Practice on the Largest Spine Website”
3:00 p.m.
*Afternoon Break*
Globus Medical
“Continually Expanding MIS Spine Care”

**Thursday, April 28**
10:00 a.m.
*Morning Break*
Globus Medical
“Continually Expanding MIS Spine Care”
3:00 p.m.
*Afternoon Break*
Globus Medical
“Continually Expanding MIS Spine Care”

**Friday, April 29**
3:00 p.m.
*Afternoon Break*
ScrubStorm Strategic
“Medical Device Innovation: A new platform for working with Clinical Inventors”
**SESSION ONE**
Presented by Barbara Cataletto

**Coding and Documentation Methodologies and Recommendations:**
The presentation will focus on the standard requirements for coding and documentation for the spine practice. Both surgeon and staff alike will gain an in-depth appreciation for the coding idiosyncrasies and related protocols required to properly document their surgical case for optimum reimbursement.

**Management of Post-Operative Reimbursement Denials:**
This course focuses on the aggressive appeals process for the spine practice.

The presentation will take the audience through a series of events/calamities that clearly show the withholding of appropriate reimbursement even though all supportive coding documentation had been presented.

We will be discussing the day-to-day management of the unacceptable practice of insurance carriers denials for pre-approved services.

**Operating Room Costs: Surgeons Obligation to be Fiscally Responsible:**
A retrospective look at operating room waste that could be avoided.

**PRESENTATION**

**Abstract #475**
Intra-operative Waste in Spine Surgery: Incidence, Cost, and Effectiveness of an Educational Program
A. Soroceanu¹, K. Mcguire², E. Canacari², A. Robinson²
¹Dalhousie University - QE2 Health Sciences Center, Halifax, NS, Canada, ²Beth Israel Deaconess Medical Center/ Harvard Medical School, Boston, MA, USA

**SESSION TWO**
Presented / Moderated by Charles Schneider, MCRA

**Transitioning From Physician Preference to Value Analysis: A Forum for Stakeholder Integration**
Key representatives from the clinical, insurer, government and medical technology communities will share their unique perspectives about health care coverage and reimbursement, and share trends affecting critical decision-making within the public and private market. Unique perspectives addressing medical research, evidence, health economics and impact upon surgeons will be the focus of this extraordinary panel meeting.

**Key Areas of Discussion Will Include**
Review of regulatory and operational Reforms Affecting Spine Surgery reimbursement, Including the transition to Value Based Purchasing and Evidence Based Medicine. This forum will provide education and opportunity to engage in a conversation about reimbursement trends, and the impact upon the health care providers. Moreover, this panel meeting will provide an unique opportunity to learn more about stakeholder methods and decision-making, and is likely to stimulate robust discussions about evidence development, policy trends while offering unique opportunities to preview stakeholder integration and collaboration opportunities.
8:00 a.m. - 8:15 a.m.
WELCOME TO SAS11 - PROGRAM CO-CHAIRS
Venetian Ballroom, Section K
Rolando Garcia, MD and Marek Szpalski, MD

8:15 a.m. – 9:45 a.m.
Plenary: Cervical Therapies
Venetian Ballroom, Section K
Moderators: J.J. Abitbol, MD
Karín Büttner-Janz, MD, PhD

8:15 a.m. - 8:19 a.m.
Abstract: 224
Radiofrequency (RF) Kyphoplasty in Comparison to (VP) Metanalysis of Class I Results of Anterior Cervical Decompression and Fusion with Allograft and Plating
K.A. Pettine1, L. Eisermann2
1The Spine Institute, Loveland, CO, USA, 2Eisertech, LLC, San Diego, CA, USA

8:20 a.m. - 8:24 a.m.
Abstract: 530
Clinical Outcomes after Cervical Disc Arthroplasty for Workers’ Compensation Patients
M.F. Gornet1, B.A. Taylor1, T.A. Lanman2, J.H. Peloza3, R.F. Dryer4, F.W. Schranck
1The Orthopedic Center of St. Louis, Spine Research Center, St. Louis, MO, USA, 2UCLA, Los Angeles, CA, USA, 3Center for Spine Care, Dallas, TX, USA, 4Central Texas Spine Institute, Austin, TX, USA

8:25 a.m. - 8:29 a.m.
Abstract: 418
A Prospective, Randomized, Pivotal Study of the SECURE®-C Cervical Artificial Disc: Two Year Outcomes
W. Beutler1, W. Peppelman1, J.M. Marzluff2, C. Tomaras1, I. Volcan1, P. Asdourian1, J. Mcconnell1, K. Baker2, J. Myer2
1Pennsylvania Spine Institute, Harrisburg, PA, USA, 2Tribune Regional Medical Center, Charleston, SC, USA, 3Peachtree Neurosurgery, P.C., Atlanta, GA, USA, 4Doctor’s Hospital, Augusta, GA, USA, 5Greater Chesapeake Orthopaedic Associates, Baltimore, MD, USA, 6Lehigh Valley Medical Center, Allentown, PA, USA, 7Globus Medical, Inc., Audubon, PA, USA

8:30 a.m. - 8:34 a.m.
Abstract: 97
Cost-effectiveness of Single-level Cervical Disc Arthroplasty
P.F. McCombe1,2, P.J. Mernagh1, W.R. Sears1,2
1St Andrews War Memorial Hospital, Brisbane, QLD, Australia, 2Royal Brisbane Hospital, Brisbane, QLD, Australia, 3Health Technology Analysts Pty Ltd, Sydney, NSW, Australia, 4Royal North Shore Hospital, Sydney, NSW, Australia, 5Dalcross Private Hospital, Sydney, NSW, Australia

8:35 a.m. - 8:54 a.m.
DISCUSSION

8:55 a.m. - 8:59 a.m.
Abstract: 134
Does Sagittal Position of the CTDR Related Center of Rotation Influence Functional Outcome? Prospective 1 Year Follow-up Analysis
P. Suchomel1, S. Sola2, J. Antinheimo1, J. Pohjola1, H.J. Meisel3, J. Stulik3, S. Kroppenstedt1, M. O’Malley4, I. Shackleford5, C. Wociejchowsky6, B. Bruchmann7, R. Arregui9, F. Caroli10, N. Borm11
1Neurocenter Liberec, Neurosurgery, Liberec, Czech Republic, 2University Rostock, Neurosurgery, Rostock, Germany, 3University of Helsinki, Neurosurgery, Helsinki, Finland, 4BG-Kliniken Halle Bergmannstrost, Neurosurgery, Halle, Germany, 5University Hospital Motol, Spinal Surgery, Prague, Czech Republic, 6University Hospital Charité-Campus Virchow-Klinikum, Neurosurgery, Berlin, Germany, 7Warrington District General Hospital, Spinal Surgery, Warrington, United Kingdom, 8Zentrum für Endoskopische und Minimalinvasive Wirbelsäuleneroperationen, Berlin, Germany, 9Katholisches Klinikum Koblenz, Spinal Surgery, Koblenz, Germany, 10Hospital Maz, Neurosurgery, Zaragoza, Spain, 11Istituti Fisioterapici Ospitalieri, Neurosurgery, Roma, Italy, 12Frictionless GmbH, Kiel, Germany

9:00 a.m. - 9:04 a.m.
Abstract: 347
Clinical Outcomes of Prestige LP Cervical Disc Arthroplasty: A Prospective, Controlled, Single Site Trial with 24-month Follow-up
T. Hu1, H. Liu2, C. Ding3, R. Shi4
1West China Hospital, Sichuan University, Department of Orthopedic Surgery, Chengdu, China, 2West China Hospital, Sichuan University, Department of Science and Technology Development, Chengdu, China

9:05 a.m. - 9:09 a.m.
Abstract: 431
Radiographic Outcomes Following Cervical Disc Arthroplasty Compared to Anterior Cervical Discectomy and Fusion in a Prospective Randomized Study
W. Peppelman1, W. Beutler1, J. Mcconnell2, K. Baker1, J. Myer1
1Pennsylvania Spine Institute, Harrisburg, PA, USA, 2Lehigh Valley Medical Center, Allentown, PA, USA, 3Globus Medical, Inc., Audubon, PA, USA

9:10 a.m. - 9:14 a.m.
Abstract: 509
Spinal Kinetics M6®-C German Registry: 24 Month Clinical and Radiographic Outcomes
C R. Schaetz1, H. Poiman1, B. Bruchmann2, M. Ant3, K. Ritter-Lang4
1Orthopaedische Klinik Markgroeningen, Spine Center, Markgroeningen, Germany, 2Neurochirurgische Gemeinschaftspraxis Wuerzburg, Wuerzburg, Germany, 3Neurochirurgie, Koblenz, Germany, 4Neurochirurgische Gemeinschaftspraxis, Dusseldorf, Germany, 5Orthopäedische Praxis, Potsdam, Germany

9:15 a.m. - 9:19 a.m.
Abstract: 542
Does CTDR Have a Lower Risk of Device Subsidence Compared to ACD? 1 Year Results of a Prospective Multicenter Study
H.J. Meisel1, P. Suchomel1, S. Sola2, J. Antinheimo1, J. Pohjola1, J. Stulik3, S. Kroppenstedt1, C. Wociejchowsky6, M. O’Malley4, I. Shackleford5, B. Bruchmann7, R. Arregui9, F. Caroli10, N. Borm11
1Department of Neurosurgery, BG Clinic Bergmannstrost, Halle, Germany, 2Regional Hospital Liberec-Neurocenter, Liberec, Czech Republic, 3Department of Neurosurgery, University Rostock, Rostock, Germany, 4Helsinki University Central Hospital, Helsinki, Finland, 5Fakultni Nemocnice v Motole, Praha, Czech Republic, 6Charité Medical University Berlin, Berlin, Germany, 7Warrington District General Hospital, Warrington, United Kingdom, 8Department of Orthopaedic Surgery, Koblenz, Germany, 9Hospital Maz, Zaragoza, Spain, 10Istituti Fisioterapici Ospitalieri, Roma, Italy, 11Frictionless GmbH, Kiel, Germany

9:20 a.m. - 9:44 a.m.
DISCUSSION

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
9:45 a.m. - 10:00 a.m.
SAS Members Business Meeting
Venetian Ballroom, Section K

10:00 a.m. - 10:30 a.m.
BREAK
Exhibit Hall (Scientific Exchange)

10:30 a.m. - 12:00 p.m.
Plenary: PRESIDENTIAL SPEAKERS
Josh Makower, MD
“FDA Impact on US Medical Technology Innovation”
Glenn Stiegman, MS
“FDA: Our Way or The Highway”
Marti Conger, M.Ed.
Patient advocate and activist
Venetian Ballroom, Section K

12:00 p.m. - 1:30 p.m.
INDUSTRY WORKSHOPS
Venetian Ballroom, Sections C, G, J

1:30 p.m. - 3:00 p.m.
CONCURRENT SESSIONS
Venetian Ballroom, Sections K, F, I

Cervical TDR
Biologics
Biomechanics/Basic Science

Concurrent Session: Cervical TDR
Room: Venetian Ballroom - Section K
Moderators: Petr Suchomel, MD, PhD
Antonio Castelli, MD

1:30 p.m. - 1:34 p.m.
Abstract: 116
Cervical Disc Prosthesis versus Arthrodesis Using One-level, Hybrid and Two-level Constructs. An in vitro Investigation
C.Y. Barrey1,2,3, G. Perrin1, S. Campana1, S. Persohn1, W. Skalli1
1Hospices Civils de Lyon, Neurosurgery and Spine Surgery, Lyon, France, 2Claude Bernard University Lyon, Neurosurgery, Lyon, France, 3Arts et Metiers ParisTech, Laboratory of Biomechanics, Paris, France

1:35 p.m. - 1:39 p.m.
Abstract: 12
Cervical Total Disc Replacement vs. Anterior Cervical Fusion: Data from Four Prospective, Randomized, Multicenter Trials
J.F. Zigler1, R.D. Guyer1, S.L. Blumenthal1, D.D. Ohnmeiss1, Y. Samocha2
1Texas Back Institute, Plano, TX, USA, 2Texas Back Institute Research Foundation, Plano, TX, USA

1:40 p.m. - 1:44 p.m.
Abstract: 209
Meta-analysis of four Prospective Randomized Cervical Arthroplasty FDA Trials - Superiority of Neurologic Outcomes
P.C. McAfee1, C. Reah2, L. Eisermann3
1St. Joseph Medical Center, Orthopaedic Surgery, Towson, MD, USA, 2NuVasive Inc, San Diego, CA, USA, 3Eisertech, LLC, San Diego, CA, USA

1:45 p.m. - 1:49 p.m.
Abstract: 583
Multi-center, prospective, randomized, controlled Investigational Device Exemption study comparing Mobi-C® Cervical Artificial Disc to anterior discectomy and fusion in the treatment of symptomatic degenerative disc disease in the cervical spine
M. Hisey1, D. Peterson1, J. Stokes1, H.W. Bae2, R. Davis1, S. Gaede1, G. Hoffman1, K. Kim1, P. Nunley1
1Texas Back Institute Research Foundation, Plano, TX, USA, 2The Spine Institute, Santa Monica, CA, USA, 3Baltimore Neurosurgical Associates, Baltimore, MD, USA, 4Oklahoma Spine & Brain Institute, Tulsa, OK, USA, 5Orthopaedics NorthEast, Fort Wayne, IN, USA, 6UC Davis Medical Center, Sacramento, CA, USA, 7Spine Institute of Louisiana, Shreveport, LA, USA

1:50 p.m. - 2:09 p.m.
DISCUSSION

2:10 p.m. - 2:14 p.m.
Abstract: 537
ProDisc®-C Total Disc Replacement - 7 Years Follow up
R. Bertagnoli1
1ProSpine, Straubing, Germany

2:15 p.m. - 2:19 p.m.
Abstract: 331
2-level Cervical Disc Arthroplasty: 3-year Clinical Results from 6 Centers in a Prospective Randomized IDE Trial
T.H. Lanman1, J.K. Burkus2, R. Dryer3, M. Gornet4, B. Gunter3, I. Canavati5
1Assistant Professor of Neurosurgery, Department of Neurosurgery, UCLA David Geffen School of Medicine, Beverly Hills, CA, USA, 2Hughston Clinic, Columbus, GA, USA, 3Central Texas Spine Institute, Austin, TX, USA, 4The Orthopaedic Center of St. Louis, St. Louis, MO, USA, 5Columbia Neurosurgical Associates, Columbia, SC, USA, 6Fort Wayne Neurological Center, Fort Wayne, IN, USA

2:20 p.m. - 2:24 p.m.
Abstract: 391
Sagittal Alignment and Kinematics at Instrumented and Adjacent Levels after Total Disc Replacement in the Cervical Spine
C.Y. Barrey1,2,3, G. Perrin1, S. Campana1, W. Skalli1, A. Ramadan4,5
1Hospices Civils de Lyon, Neurosurgery and Spine Surgery, Lyon, France, 2Claude Bernard University Lyon, Neurosurgery and Spine Surgery, Lyon, France, 3Arts et Metiers ParisTech, Laboratory of Biomechanics, Paris, France, 4Clinique Beausoleil, Neurosurgery, Geneva, Switzerland

2:25 p.m. - 2:29 p.m.
Abstract: 393
Dynamic Translating versus Variable Angle Plates in Anterior Cervical Discectomy and Fusion
E.L. Burger1, S.M. Golembeski1, E.M. Lindley1, A.M. Sophocles1, V.V. Patel1
1University of Colorado Denver, Aurora, CO, USA
2:30 p.m. - 2:34 p.m.
Abstract: 271
Psychosocial Factors: Do They Influence Clinical Outcomes Following Cervical Disc Replacement?
S.G. Lakkol1, R. Taranu1, J. Kang1, S. Aranganathan1, C.K. Bhatia1, T. Friesemi
1University Hospital North Tees, Stockton on Tees, United Kingdom

2:35 p.m. - 2:59 p.m.
DISCUSSION

Concurrent Session: Biologics
Venetian Ballroom, Section F
Moderator: Hans Meisel, MD, PhD

1:30 p.m. - 1:34 p.m.
Abstract: 226
Reduced Dose of rhBMP-2 with Demineralized Bone Matrix-based Product for Spinal Fusion
M. Kropf1, H. Bae1, L. Zhao1, X. Zhang1, Y. Safai1, J. Houman1, R. Delamarter1
1Cedars-Sinai Medical Center, Surgery, Los Angeles, CA, USA

1:35 p.m. – 1:39 p.m.
Abstract: 322
The Degradation of Bioactive Bone Cement for Vertebroplasty and Kyphoplasty in vivo
X. Zhu1, X. Chen1, C. Chen1, G. Wang1, D. Geng1, Y. Gu1, Z. Zhang1, H. Yang1
1The First Affiliated Hospital of Soochow University, Department of Orthopedics, Suzhou, China

1:40 p.m. - 1:44 p.m.
Abstract: 384
Novel Nano-technology Platform for Covalently Bonding Antimicrobials to Orthopaedic Biomaterials Reduces Bacterial Numbers on Numerous Substrates
G. Donald1, J. Katz2, R. Dong2, L. DeStefano2, M. Prysak2, R. Clevenger2, R.R. Betz2
1New Jersey Spine Group, LLC, Eatontown, NJ, USA, 2Orthobond, North Brunswick, NJ, USA

1:45 p.m. - 1:49 p.m.
Abstract: 485
Novel Nanocoating Promotes Bone Growth and Apposition on Stainless Steel
C. Abjornson1, H. Ghazi1, J. Cardini1, K. Zhang1, F.P. Cammisa1, R. Clevenger2, G. Donald4
1Hospital for Special Surgery, Spine Service, New York, NY, USA, 2Orthobond, New Brunswick, NJ, USA, 4University of Colorado Denver, Aurora, CO, USA

1:50 p.m. - 2:09 p.m.
DISCUSSION

2:10 p.m. - 2:14 p.m.
Abstract: 571
Immunolocalization of human bone morphogenetic protein 13 in the developing human spine; further rationale for its use for disc regeneration.
A. Diwan1, D. Bhargav1, A.Q. Wei1, R. Clarke1
1University of New South Wales, Sydney, NSW, Australia

2:15 p.m. - 2:19 p.m.
Abstract: 201
Osteogenic and Chondrogenic Differentiation of Umbilical Cord Blood-derived Mesenchymal Stem Cells
J. Zou1, H. Yang1
1The First Affiliated Hospital of Soochow University, Suzhou, China

2:20 p.m. - 2:24 p.m.
Abstract: 544
Comparative Neuroprotective Effects of Methylprednisolone and Rosiglitazone, a Peroxisome Proliferator–activated Receptor -γ Following Spinal Cord Injury
Q. Shi1, Q. Zhang1, C. Huang1, T. Tang1, H. Yang1
1The First Affiliated Hospital of Soochow University, Orthopedic Department, Suzhou, China

2:25 p.m. - 2:29 p.m.
Abstract: 411
Comparison of Osteogenesis of an Early Lineage Stem Cell to Bone Marrow Aspirate and Pure Mesenchymal Stem Cells within a Demineralized Bone Scaffold in an Athymic Rat Model
J. Grauer1, A. Mahar2, S. Vishnubhotla2, S. Chastain2
1Yale University School of Medicine, Department of Orthopaedic Surgery, New Haven, CT, USA, 2Alphatec Spine, Biomechanical and Clinical Research, Carlsbad, CA, USA

2:30 p.m. - 2:34 p.m.
Abstract: 55
Immunomodulatory Actions of Adipose-derived Stem Cells
R.B. Delamarter1, X. Zhang1, L. Zhao1, L. Kanim1, Y. Safai1, H. Bae1
1Cedars-Sinai Medical Center, Surgery, Los Angeles, CA, USA

2:35 p.m. - 2:59 p.m.
DISCUSSION

Concurrent Session: Biomechanics/Basic Science
Venetian Ballroom, Section I
Moderators: Peter McCombe, MD
Sung-Jae Lee, PhD

1:30 p.m. - 1:34 p.m.
Abstract: 352
Accuracy and Safety in Pedicle Screw Placement in the Thoracic and Lumbar Spines: Prospective Randomized Comparison Study between Conventional C-arm Fluoroscopy and Navigation Coupled with O-arm Guided Methods
K.-S. Ryu1, C.-K. Park1, K.-Y. Lee1, H.-J. Lee1
1Seoul St. Mary's Hospital, The Catholic University, Seoul, Korea, Republic of

1:35 p.m. – 1:39 p.m.
Abstract: 387
O-arm and Stealth System Navigation for Pedicle Screw Placement in Thoracolumbar Spine Surgery
E.L. Burger1, S.S. Patil1, E.M. Lindley1, V.V. Patel1
1University of Colorado Denver, Aurora, CO, USA
Abstract: 149
Robotic-assisted Pedicle Screw Placement in Complex Spinal Surgery Cases: What Was Learned from Our First 23 Patients
L.H. Lieberman1, D.D. Ohnmeiss2
1Scoliosis and Spine Tumor Center at the Texas Back Institute, Plano, TX, USA, 2Texas Back Institute Research Foundation, Plano, TX, USA

1:45 p.m. - 1:49 p.m.
Abstract: 578
Intraoperative neuromonitoring monitoring does not affect surgical outcomes or decrease post-operative dysesthesia in percutaneous transforaminal surgery
A.T. Yeung1, C. Merican2
1Desert Institute for Spine Care Institute for Spine Care, Phoenix, AZ, USA, 2Arizona Institute for Minimally Invasive Spine Care, Research Associate, Phoenix, AZ, USA

2:10 p.m. - 2:14 p.m.
Abstract: 281
Specimen-specific Model for Kinematic Assessment of Cervical Facet Joints
R.M. Havey1, I.L. Voronov1, P.P. Tsitsopoulos1, A.G. Patwardhan1, T. Potluri1, J. Goodsett2, S.R. Hannoon1, B.W. McIntosh2
1Loyola University Chicago, Orthopaedic Surgery, Maywood, IL, USA, 2Edward Hines Jr. VA Hospital, Hines, IL, USA

2:20 p.m. - 2:24 p.m.
Abstract: 484
Segmental Kinematics Before and After Lumbar TDR: A Prospective Randomized Study Comparing Unconstrained, Semi-constrained, and Constrained Implants
R. Garcia1, J.Y. Yue2, S. Blumenthal3
1Orthopedic Care Center, Aventura, FL, USA, 2Yale University School of Medicine, Orthopedic Surgery, New Haven, CT, USA, 3Texas Back Institute, Plano, TX, USA

2:25 p.m. - 2:29 p.m.
Abstract: 223
Cervical Disc Replacement Augmented by an Anterior Polyester Mesh: Biomechanical Evaluation with Two Disc Replacement Devices
A. Cappuccio1, R. Denhaese1, L. Eisermann2, A.W. Turner2
1Buffalo Spine Surgery, Lockport, NY, USA, 2NuVasive, Inc., San Diego, CA, USA

2:30 p.m. - 2:34 p.m.
Abstract: 290
Robotic Simulation of the Effects of Surgical Placement of the ProDisc-L on Motion Segment Unit Mechanics: An In-vitro Human Cadaveric Lumber Model
B.P. Kelly1, B. Dhillon1, D.J. DiAngelo1, R. Bertagnoli2
1University of Tennessee Health Science Center, School of Biomedical Engineering, Memphis, TN, USA, 2Spine Center, Department of Orthopedic Surgery, Straubing, Germany

2:40 p.m. - 2:44 p.m.
Abstract: 82
Biomechanical Comparison of Rigid vs. Semi-rigid Rods in Spinal Fusion Constructs: A Finite Element Study
M. Mouneme1, P. Afshari1
1DePuy Spine Inc., Research & Development, Raynham, MA, USA

2:45 p.m. - 2:49 p.m.
Abstract: 344
Analysis of the Formation and Grade of Heterotopic Ossification that May Influence the Postoperative Segmental Range of Motion after Bryan Cervical Artificial Disc Replacement
Z. Feifei1, S. Yu1
1Peking University 3rd Hospital, Orthopaedics, Beijing, China

3:00 p.m. - 3:04 p.m.
Abstract: 57
Transitional Appearance of Advanced Heterotopic Ossification in Cervical Artificial Disc Replacement
S. Yi1, Y. Ha1, K.N. Kim1, D.H. Yoon1, H.C. Shin1
1Spine and Spinal Cord Institute, Yonsei University, College of Medicine, Neurosurgery, Seoul, Korea, Republic of, 2Sungkyunkwan University School of Medicine, Neurosurgery, Seoul, Korea, Republic of

3:05 p.m. - 3:09 p.m.
Abstract: 345
Analysis of Adjacent Segment Degeneration Following Anterior Cervical Fusion: How Does it Affect the Next Level Disc?
1Asan Medical Center, University of Ulsan, Orthopaedic Surgery, Seoul, Korea, Republic of, 2Kyungpook National University, Orthopaedic Surgery, Daegu, Korea, Republic of, 3Daejeon Catholic Hospital, Catholic University, Neurosurgery, Daejeon, Korea, Republic of, 4Albert Einstein Medical Center, Orthopaedic Surgery, Philadelphia, PA, USA, 5Washington University in St. Louis, Orthopaedic Surgery, St. Louis, MO, USA

3:10 p.m. - 3:14 p.m.
Abstract: 453
Adjacent Level Ossification Development Following Anterior Cervical Fusion: Does it Affect the Next Level Disc?
1Carolina Neurosurgery & Spine, Charlotte, NC, USA, 2Spine Institute of Louisiana, Shreveport, LA, USA, 3Texas Back Institute, Plano, TX, USA, 4Triangle Orthopedics Associates, Durham, NC, USA, 5Plano Orthopedic Sports Medicine & Spine Center, Plano, TX, USA, 6Gordon Spine Associates, Tyler, TX, USA, 7Olympia Medical Center, Los Angeles, CA, USA

3:35 p.m. - 3:39 p.m.
Abstract: 226
Analysis of Adjacent Segment Degeneration: Results of a Prospective, Randomized Study Comparing Cervical Total Disc Replacement vs. Anterior Cervical Fusion
1Carolina Neurosurgery & Spine, Charlotte, NC, USA, 2Spine Institute of Louisiana, Shreveport, LA, USA, 3Texas Back Institute, Plano, TX, USA, 4Triangle Orthopedics Associates, Durham, NC, USA, 5Plano Orthopedic Sports Medicine & Spine Center, Plano, TX, USA, 6Gordon Spine Associates, Tyler, TX, USA, 7Olympia Medical Center, Los Angeles, CA, USA
4:10 p.m. - 4:14 p.m.
Abstract: 531
Secondary Surgical Procedure Rates after Cervical Disc Arthroplasty at One to Four Levels
M.F. Gornet1, B.A. Taylor1, F.W. Schranck1, R.F. Dryer2, J.H. Pelozal, T.A. Lanman4
1The Orthopedic Center of St. Louis, Spine Research Center, St. Louis, MO, USA, 2Central Texas Spine Institute, Austin, TX, USA, 3Center for Spine Care, Dallas, TX, USA, 4UCLA, Los Angeles, CA, USA

4:15 p.m. - 4:19 p.m.
Abstract: 415
A Study of Adjacent Level Anterior Treatments in a Randomized, Prospective Clinical Trial of the SECURE®-C Cervical Artificial Disc
J.M. Marzluff1, J. Highsmith1, K. Baker2, J. Myer2
1Trident Regional Medical Center, Charleston, SC, USA, 2Globus Medical, Inc., Audubon, PA, USA

4:20 p.m. - 4:24 p.m.
Abstract: 470
Treating Cervical Pseudoarthrosis with Cervical Artificial Disc Replacement
K.A. Pettine1
1The Spine Institute, Loveland, CO, USA

4:25 p.m. - 4:29 p.m.
Abstract: 448
Lessons Learned on Cervical Total Disc Replacement after 7 Years Follow-up
L. Pimenta1,2, L. Oliveira1, L. Marchi1, E. Coutinho1
1Instituto de Patologia de Coluna, São Paulo, Brazil, 2University of California - San Diego, San Diego, CA, USA

4:30 p.m. - 4:34 p.m.
Abstract: 121
Complications Following Anterior Cervical Fusion Using Hydroxyapatite from Long-term Follow-up
F. Suetsumi1, T. Itabashi1
1Hachinohe Municipal Hospital, Dept. of Orthopaedic Surgery, Hachinohe, Japan, 2Hachinohe Municipal Hospital, Hachinohe, Japan

4:35 p.m. - 4:59 p.m.
DISCUSSION

Concurrent Session:
Posterior Dynamics and Interspinous Ligamentoplasty
Venetian Ballroom, Section F
Moderators: Scott Blumenthal, MD Marek Szpalski, MD

3:30 p.m. - 3:34 p.m.
Abstract: 326
Retrospective Post-market Surveillance Evaluation of Dynesys Hybrizidized Constructs
M.P. Lorio1, S. Alley1, K. Butterworth1
1Neuro-Spine Solutions, P.C., Bristol, TN, USA

3:35 p.m. - 3:39 p.m.
Abstract: 286
In vitro Comparison of One and Two Level Posterior Dynamic Stabilization Device: Inferences from Kinematic Tracking of Device Components Based on Interpedicular Travel and Spherical Joint Rotation
D.J. Cook1, M.S. Yeager1, D.A. Gladowski2, B. Lu1, J.B. Bellotte1, D.M. Whiting3, B.C. Cheng1
1Drexel University, Neurosurgery, Pittsburgh, PA, USA

3:40 p.m. - 3:44 p.m.
Abstract: 32
Posterior Dynamic Stabilization versus Anterior Dynamic Stabilization in Lumbar Degenerative Disc Disease: A Comparison of Results
T. Kaner1, M. Sasanb, T. Oktenerolu1, A.F. Ozer2, B. Solmaz3
1Pendik State Hospital, Neurosurgery, Istanbul, Turkey, 2American Hospital, Istanbul, Turkey, 3Karaman State Hospital, Karaman, Turkey

3:50 p.m. - 4:09 p.m.
DISCUSSION

4:10 p.m. - 4:14 p.m.
Abstract: 217
H. Umekoji1, B.W. Cunningham2, N. Hu2, P.C. McAfee2, O. Shirado3, H. Oda4
1St. Joseph Medical Center, Orthopaedic Spinal Research Laboratory, Towson, MD, USA, 2St. Joseph Medical Center, Towson, MD, USA, 3Saitama Medical University, Saitama, Japan

4:15 p.m. - 4:19 p.m.
Abstract: 443
Evaluation of Interlaminar Lumbar Instrumented Fusion (ILIF) in a Sheep Model
H. Bae1
1The Spine Institute, Santa Monica, CA, USA

4:20 p.m. - 4:24 p.m.
Abstract: 234
Lumbar Spinal Stenosis Treatment with APERIUS® Percutaneous Interspinous Device (INCA Trial)
F. Collignon1, P. Fransen1, J.K. van Meirhaeghe2, S. Lauwagie2, D. Morelli3, N. Craig4
1Clinique du Parc Leopold, Centre Neurochirurgical, Brussels, Belgium, 2AZ Sint-Jan Brugge, Dienst Orthopedie en Traumatologie, Brugge, Belgium, 3CHU Tivoli, Service de Neurochirurgie, La Louviere, Belgium, 4Woodend Hospital, Orthopedic Suite, Aberdeen, United Kingdom

4:25 p.m. - 4:29 p.m.
Abstract: 340
Functional Dynamic Stabilization in Lumbar Spinal Stenosis with COFLEX® Interspinous Implant – 4 Year Results
R. Bertagnoli1
1ProSpine, Straubing, Germany

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
Wednesday | April 27th

4:30 p.m. - 4:34 p.m.
Abstract: 74
Not Interspinous, but Interlaminar, Not Decompression Device, but Overload Assistance Device: INTRASpine, a Posterior Motion Preservation Device in Lumbar DDD; Biomechanics, Indications and Clinical Results (up to 2 Years Follow up)
G. Guizzardi1, P. Petrini2, Riccardo Morichi, Carlo Maria Mattioli, Marco Spezia, Marco Cecarelli, Ettore Amoruso, Silvia Pradella and Benedetta Piccardi
1Azienda Ospedaliera Universitaria Careggi, Firenze, Neurosurgical, Firenze, Italy, 2City Hospital, Orthopaedic, Città di Castello, Italy

4:35 p.m. - 4:59 p.m.
DISCUSSION

Concurrent Session: Navigation/Biomechanics
Venetian Ballroom, Section I
Moderators: Isador Lieberman, MD, MBA, FRCSC
Lisa Ferrara, PhD

3:30 p.m. - 3:34 p.m.
Abstract: 380
Investigating TDR Wear-rate Sensitivity to Phasing, Loading and Forward Bending
P.J. Hyde1, R.M. Hall1, J. Fisher1, T. Brown2
1University of Leeds, Institute of Medical and Biological Engineering, Leeds, United Kingdom, 2University of Iowa, Department of Orthopaedics & Rehabilitation, Iowa, IA, USA

3:35 p.m. - 3:39 p.m.
Abstract: 413
Do Stand-alone Interbody Spacers with Integrated Screws Provide Adequate Segmental Stability for Multi-level Cervical Arthrodesis?
M. Cardoso1, A. Dmitriev1, H. Paik1, R. Gaume1, D. Ambati1, R. Lehman1
1Walter Reed Army Medical Center, Washington, DC, USA

3:40 p.m. - 3:44 p.m.
Abstract: 382
No Profile Cervical Interbody Cage with Lag Screw Fixation Increases Graft Loading and Reduces Bone Resorption Signal when Compared with Static and Dynamic Cervical Plating
J.D. Auerbach1, J. Parry2, S.A. Rundell3
1Bronx-Lebanon Hospital Center, Albert Einstein College of Medicine, New York, NY, USA, 2Centene Spine, New York, NY, USA, 3Exponent, Philadelphia, PA, USA

3:45 p.m. - 3:49 p.m.
Abstract: 94
Biomechanical Investigation of the Stabilizing Effect of a Novel Device for Intra-articular Atlanto-axial Stabilization (DIAS)
PA. Robertson1, R.K. Lim2, P.P. Tsitsopoulos3, L.I. Voronov4, R.M. Havey1, A.G. Patwardhan1
1The Orthopaedic Clinic, Auckland, New Zealand, 2Medtronic, Memphis, TN, USA, 3Medtronic’s Spinal and Biologics Business, Memphis, TN, USA, 4UCSF Center for Research Integrity & Science Policy, UCSF Departments of Surgery, Neurological Surgery, & Clinical Pharmacy, San Francisco, CA, USA

3:50 p.m. - 4:09 p.m.
DISCUSSION
Concurrent Session: MIS I
Venetian Ballroom, Section H
Moderators: Blake Rodgers, MD
William Smith, MD

3:30 p.m. - 3:34 p.m.
Abstract: 76
Least Invasive Lumbar Decompression, Interbody Fusion, and Pedicle Screw Implantation - A Case Study Report
S. Osman1
1Russellville Hospital, Surgery, Russellville, AL, USA

3:35 p.m. - 3:39 p.m.
Abstract: 474
Two-year Clinical Outcomes in 119 Patients Treated with a Mini-open, 90° Lateral, Retroperitoneal, Trans-psoas Approach for Lumbar Spine Discectomy and Fusion
W.D. Smith1, G. Christian2, S. Serrano3, K.T. Malone2
1University Medical Center, Neurosurgery, Las Vegas, NV, USA, 2NNI Research Foundation, Research, Las Vegas, NV, USA

3:40 p.m. - 3:44 p.m.
Abstract: 472
A Comparison of Perioperative Charges and Outcome between Open Anterior and Mini-open Lateral Approaches for Lumbar Discoscopy and Fusion
W.D. Smith1, G. Christian2, S. Serrano3, K.T. Malone2
1University Medical Center, Neurosurgery, Las Vegas, NV, USA, 2NNI Research Foundation, Research, Las Vegas, NV, USA

3:45 p.m. - 3:49 p.m.
Abstract: 518
Do Lordotic Cages Provide Greater Segmental Sagittal Contour Change in Lateral Lumbar Interbody Fusion (LLIF)
D. Polly, Jr1, J.N. Sembrano1, R.D. Horazdovsky1, A.K. Sharma1, R.G. Santos1
1TranS1, Inc., Wilmington, NC, USA, 2Excelen, Minneapolis, MN, USA

3:50 p.m. - 4:09 p.m.
DISCUSSION

4:10 p.m. - 4:14 p.m.
Abstract: 275
FEA Investigation of Different Surgical Strategies for Protection of the S1 Pedicle Screw in Long Fusion Constructs
G.M. Loughran1, B.J. Wessman1, A.L. Freeman2
1TranS1, Inc., Wilmington, NC, USA, 2Excelen, Minneapolis, MN, USA

4:15 p.m. - 4:19 p.m.
Abstract: 495
Minimally Invasive Indirect Decompression and Stabilization for Isthmic Lumbar Spondylolisthesis Using Anterior Lumbar Interbody Fusion and Posterior Pedicle Screw Fixation. Prospective Clinical and Radiological 36 Months Follow-up Study
R. Diaz1, M. Berbeo1, L.M. Villalobos1, Grupo de Neurociencias, Hospital Universitario San Ignacio, Pontificia Universidad Javeriana
1Hospital Universitario San Ignacio, Pontificia Universidad Javeriana, Neurosurgery, Bogota, Colombia

4:20 p.m. - 4:24 p.m.
Abstract: 312
Multiplanar Radiological Assessment and Outcomes of Minimally Invasive Surgical Treatment (XLIF) in Adult Deformity. Follow up out to 36 Months
H. Nicola1, A. Damas1, J. Rodriguez2, M. Da Silva2, L. Pimenta3, D. Onay4
1Hospital San Juan de Dios, Caracas, Venezuela, 2Clinica Sanatrix, Spine Surgery, Caracas, Venezuela, 3Hospital Santa Rita, Sao Paulo, Brazil

4:25 p.m. - 4:29 p.m.
Abstract: 159
H.-J. Wilke1, K. Werner1, P. Zelenkov2
1University of Ulm, Institute for Orthopaedic Research and Biomechanics, Ulm, Germany, 2Burdenko Neurosurgical Institute, RAMS, Moscow, Russian Federation

5:00 p.m. - 6:00 p.m.
LUMBAR CASE STUDIES
WINE AND SPINE
*not CME accredited
Town Square Exhibit Floor
The challenges of life in the 21st Century require us to find new ways to access the wisdom and intelligence inherent in groups settings. The need for collaboration, insight and coordinated action has never been greater. Join the SAS in the Town Square of the Exhibit Floor while case studies developed by leaders in the spine industry are discussed by an elite panel of surgeons. Participants will be able to confer with the panelists on treatment options and protocols for Degenerative Spondylolisthesis and Herniated disc case studies.

Case #1 - L5/S1 Herniated disc - All leg pain
Panelists:
Anthony Yeung, MD - MIS Approach
Peter Robertson, MD - Traditional Approach
Matthew Gornet, MD

Case #2 - L4/L5 Herniated disc - All back pain
Moderator: Marek Szpalski, MD
Panelists:
Matthew Scott-Young, MD - Anterior Disc Replacement
Luiz Pimenta, MD, PhD - MIS Lateral Disc Replacement
Larry Khoo, MD - TLIF

Case #3 - Degenerative Spondylolisthesis
Moderator: Scott Leary, MD
Panelists:
Reginald Davis, MD - Posterior Dynamic Stabilization
Jean-Charles LeHuec, MD, PhD - MIS Fusion
Finn Christensen, Prof, MD, PhD, DMSc
8:30 a.m. - 10:00 a.m.

Plenary: Degenerative Scoliosis: Where to End a Fusion?
Venetian Ballroom, Section K
Moderators: Peter McCombe, MD
Jean-Charles LeHuec, MD, PhD

8:30 a.m. - 8:34 a.m.
Abstract: 527
Long Term 2 to 4 year Clinical and Functional Outcomes of Minimally Invasive Surgery (MIS) for Adult Spinal Deformity
N. Anand1, S. Kahwaty1, S. Daroudi1, E. Baron1
1Cedars Sinai Medical Center, Spine Center, Los Angeles, CA, USA

8:35 a.m. - 8:39 a.m.
Abstract: 75
Improvement of Posterior Wedge Osteotomy Programation Using the 3D EOS Imaging System in Standing Position: Femur Angulation and Knee Flexion Are Important to Analyze. F.B.I. Technique
J.-C. Le Huec1, S. Aunoble1, P. Leijssen1, M. Duarte1, J. Rigal1
1Spine Unit Department – Bordeaux University Hospital, Bordeaux, France

8:40 a.m. - 8:44 a.m.
Abstract: 2
SPO on Multi-segment for Correction of Kyphosis in Ankylosing Spondylitis
Y. Hai1, H. Zhao1
1Beijing Chaoyang Hospital, Capital Medical University, Orthopedics, Beijing, China

8:45 a.m. - 8:49 a.m.
Abstract: 449
Changes in Thoracic Kyphosis Negatively Impact Sagittal Alignment Following Lumbar Pedicle Subtraction Osteotomy
1NYU Hospital for Joint Diseases, Orthopaedics, New York, NY, USA, 2Oregon Health and Sciences University, Orthopaedic Surgery, Portland, OR, USA, 3San Diego Center for Spinal Disorders, La Jolla, CA, USA, 4University of California - Davis, Orthopaedic Surgery, Sacramento, CA, USA, 5San Diego Center for Spinal Disorders, La Jolla, CA, USA, 6University of California – San Francisco Medical Center, Orthopaedic Surgery, San Francisco, CA, USA, 7Hospital for Special Surgery, Orthopaedic Surgery, New York, NY, USA, 8University of California - Davis, Orthopaedic Surgery, Sacramento, CA, USA, 9University of California – San Francisco Medical Center, Orthopaedic Surgery, San Francisco, CA, USA, 10University of Virginia, Neurological and Orthopaedic Surgery, Charlottesville, VA, USA, 11Massachusetts General Hospital, Orthopaedic Surgery, Boston, MA, USA

8:50 a.m. - 8:54 a.m.
Abstract: 483
The Incidence of Acute Neurological Complications Following Decancellation Osteotomy for Fixed Sagittal Deformity
D.R. Lebl1, R. Chaudhuri1, M. Pumberger1, S. Kotwal1, J. Gogia1, F. Girardi1
1The Hospital for Special Surgery, Spine & Scoliosis Surgery, New York, NY, USA

8:55 a.m. - 8:59 a.m.
Abstract: 465
1NYU Hospital for Joint Diseases, Orthopaedics, New York, NY, USA, 2Oregon Health and Sciences University, Orthopaedic Surgery, Portland, OR, USA, 3San Diego Center for Spinal Disorders, La Jolla, CA, USA, 4University of California - Davis, Orthopaedic Surgery, Sacramento, CA, USA, 5Rocky Mountain Scoliosis and Spine, Orthopaedic Surgery, Denver, CO, USA, 6Hospital for Special Surgery, Orthopaedic Surgery, New York, NY, USA, 7Baylor Scoliosis Center, Orthopaedic Surgery, Plano, TX, USA, 8University of Virginia, Neurological and Orthopaedic Surgery, Charlottesville, VA, USA, 9Massachusetts General Hospital, Orthopaedic Surgery, Boston, MA, USA

DISCUSSION
9:00 a.m. - 9:09 a.m.

PRESENTATIONS
9:10 a.m. - 9:59 a.m.

Biomechanical Consequences of Long and Short Fusion
Virginie Lafage, PhD

How to Choose Levels for Fusion in Degenerative Scoliosis
David Polly, MD

Can MIS Techniques Reduce the Number of Fusion Levels for Degenerative Scoliosis?
Frank Phillips, MD

DISCUSSION
10:00 a.m. - 10:30 a.m.

BREAK
Exhibit Hall (Scientific Exchange)

10:30 a.m. - 12:00 p.m.
Best MIS Papers

Plenary: MIS Surgical Approaches: Anatomy, Technical Pearls, Pitfalls, and Clinical Applications
Venetian Ballroom, Section K
Moderators: Luiz Pimenta, MD, PhD
Anthony Yeung, MD

10:30 a.m. - 10:34 a.m.
Abstract: 519
Radiographic Comparison of Lateral Fusion (LLIF) vs. ALIF vs. TLIF vs. Posterior Fusion: Analysis of Segmental Sagittal Contour Change
D.W. Polly, Jr1, J.N. Sembrano1, A.K. Sharma1, R.D. Horazdovsky1, E.R.G. Santos1
1University of Minnesota, Department of Orthopaedic Surgery, Minneapolis, MN, USA

10:35 a.m. - 10:39 a.m.
Abstract: 150
Cadaveric Radiographic Analysis of Indirect Spine Decompression
G. Marulanda1, R. Murtuza1, J. Billo1, A. Castellvi1
1University of South Florida, Orthopaedics and Sports Medicine, Tampa, FL, USA, 2University Diagnostic Institute, Radiology, Tampa, FL, USA, 3Florida Orthopaedic Institute, Tampa, FL, USA
Clinical and Radiographic Outcomes Following MIS TLIF Supplemented with Percutaneous Pedicular Screws (PPS): 24 Months Follow up

H. Nicola1, M. Da Silva2, L. Pimenta3
1Hospital San Juan de Dios, Caracas, Venezuela, 2Clinica Sanatrix, Spine Surgery, Caracas, Venezuela, 3Hospital Santa Rita, Sao Paulo, Brazil

Radiographic Assessment of Fusion in Lateral Lumbar Inter-body Fusion Performed as a Stand-alone Procedure

S. Kotwal1, M. Pumberger1, D. Lebl1, F. Girardi1, A. Sama1, F. Cammisa1
1Hospital for Special Surgery, New York, NY, USA

Definition and Overview of MIS

Paul McAfee, MD

Wilse Approach

Abdelfattah Saoud, MD

Transforaminal Endoscopic Approach

Anthony Yeung, MD

XLIF

Luiz Pimenta, MD, PhD

AXIALIF

Phil Yuan, MD

PLIF

Jean-Charles LeHuer, MD, PhD

TLIF Percutaneous Pedicle Screws

Kevin Foley, MD

An Association between the Center of Rotation and Clinical Outcome in Patients Implanted with a Viscoelastic Lumbar Total Disc Replacement

B. Rischke1, E.R. Ross2, B. Jollenbeck3, J.A. Hipp4, K.B. Zimmers5, 1Spine-Center-Rischke, Center of Orthopaedic and Spine Surgery, Zurich, Switzerland, 2Spine Hospital, Manchester, United Kingdom, 3Otto-Von-Guericke University, Magdeburg, Germany, 4Medical Metrics, Inc., Houston, TX, USA, 5AxioMed Spine Corp., Garfield Heights, OH, USA

Three Level Lumbar Disc Replacement – A 2 Year Follow up

H.S. Bhatti1, J.C. Sutcliffe1, A. Dadds1, P. Ankers1
1London Spine Clinic, London, United Kingdom
Concurrent Session: MIS II  
Venetian Ballroom, Section E  
Moderators: Frank Phillips, MD  
Roberto Diaz, MD

1:30 p.m. – 1:34 p.m.  
Abstract: 189  
Extreme Lateral Interbody Fusion (XLIF) in the Morbidly Obese  
J.A. Lehmen1, W.B. Rodgers1, E.J. Gerber3, J.A. Rodgers2  
1Spine Midwest, Inc., Jefferson City, MO, USA, 2Spine Midwest, Inc.,  
Research, Jefferson City, MO, USA

1:35 p.m. – 1:39 p.m.  
Abstract: 533  
The Transthoraxmal Endoscopic Apoach Is Effective for the Treatment of the Most Common Causes of Failed Back Surgery Syndrome (FBSS)  
A.T. Yeung1, Y. Zheng1, C.A. Yeung1, J. Field1, C. Meredith1  
1Desert Institute for Spine Care, Phoenix, AZ, USA

1:40 p.m. – 1:44 p.m.  
Abstract: 476  
Complications in a Mini-open, 90° Lateral, Retraperitoneal, Transpsoas Approach for Discotomy and Fusion in the Lumbar Spine: Two-year Results  
W.D. Smith1, G. Christian2, S. Serrano2, K.T. Malone2  
1University Medical Center, Neurosurgery, Las Vegas, NV, USA, 2NNI Research Foundation, Research, Las Vegas, NV, USA

1:45 p.m. – 1:49 p.m.  
Abstract: 248  
Is the Less Invasive Far Lateral Approach a Safe Way to Reconstruct the Anterior Spinal Column in Advanced Adult Deformity Surgery? A Minimum 2-year Follow-up Study  
G. Mundis1, B. Akbarnia1, R. Bagheri1, P. Salari1, N. Kabirian1  
1San Diego Center for Spinal Disorders, La Jolla, CA, USA

1:50 p.m. – 2:09 p.m.  
DISCUSSION

2:10 p.m. – 2:14 p.m.  
Abstract: 194  
Controlled Motion with the XL-TDR Lateral-approach Lumbar Total Disc Replacement: In vitro Kinematic Investigation  
L.M. Pimenta1,2, A.W. Turner3, G.B. Cornwall3, L. Eisermann3, A. Cappuccino3  
1Instituto de Patologia de Coluna, Sao Paulo, Brazil, 2University of California, San Diego, CA, USA, 3NuVasive, Inc., San Diego, CA, USA,  
4Buffalo Spine Surgery, Lockport, NY, USA

2:15 p.m. – 2:19 p.m.  
Abstract: 4  
Effect Modifiers of Outcome of Surgery in Patients with Herniated Disc Related Sciatica? A Subgroup Analysis of a Randomised Clinical Trial  
M.P. Arts1, R. Brant2, B.W. Koes3, W.C. Peul4, Spine Intervention Prognostic Study (SIPS) Group - Leiden The Hague  
1Medical Center Haaglanden, Neurosurgery, The Hague, Netherlands, 2Leiden University Medical Center, Medical Statistics & Bioinformatics, Leiden, Netherlands, 3Erasmus Medical Center, General Practice, Rotterdam, Netherlands, 4Leiden University Medical Center, Neurosurgery, Leiden, Netherlands

2:20 p.m. – 2:24 p.m.  
Abstract: 315  
Retrospective Evaluation of Minimally Invasive Surgical (MIS) Method for Sacroiliac Joint Arthrodesis  
1Rush Presbyterian Hospital, Orthopaedic Surgery, Chicago, IL, USA, 2SI-BONE, Inc, San Jose, CA, USA, 3Swedish Hospital, Chicago, IL, USA, 4Alice Peck Day Hospital, Lebanon, NH, USA, 5Baptist Health of NE Florida, Jacksonville, FL, USA, 6Northern Nevada Medical Center, Reno, NV, USA, 7University of Minnesota, Minneapolis, MN, USA, 8UCLA, Los Angeles, CA, USA, 9McKee Medical Center, Ft. Collins, CO, USA, 10MUSC, Charleston, SC, USA, 11Northwestern Medical Center, St. Albans, VT, USA, 12Western Regional Center for Brain and Spine Surgery, Las Vegas, NV, USA

2:25 p.m. – 2:29 p.m.  
Abstract: 80  
Indirect Decompression of Lumbar Spinal Stenosis with Transpsoas Anterior Lateral Interbody PEEK Cages and Percutaneous Posterior Spine Instrumentation  
A.E. Castellvi1, R. Murtagh2  
1Florida Orthopaedic Institute, Orthopaedic Spine Surgery, Tampa, FL, USA, 2University Diagnosic Institute, Tampa, FL, USA

2:30 p.m. – 2:34 p.m.  
Abstract: 302  
Comparison of Two Minimally Invasive Techniques: MIS TLIF vs XLIF in the Treatment of Degenerative Disc Disease in Single-level Lumbar Fusion at L4-L5  
H. Nicola1, M. Da Silva2, L. Pimenta1  
1Hospital San Juan de Dios, Caracas, Venezuela, 2Clinica Sanatrix, Spine Surgery, Caracas, Venezuela, 3Hospital Santa Rita, Sao Paulo, Brazil

2:35 p.m. – 2:59 p.m.  
DISCUSSION

Concurrent Session: Lumbar Complications  
Venetian Ballroom, Section F  
Moderators: Dewei Zou, MD  
Richard Gayer, MD

1:30 p.m. – 1:34 p.m.  
Abstract: 196  
Sexual Function and Dysfunction in Patients Undergoing Lumbar Disc Replacement  
R. Garcia1, M. Taylor1  
1Orthopedic Care Center, Aventura, FL, USA

1:35 p.m. – 1:39 p.m.  
Abstract: 47  
Vertebral Body Splitting Fractures Following ProDisc-L™ Implantation  
H.G. Sullivan1, R. Bertagnoli2, N.R. Ladwig3, H.L. Born4, M.A. Mathison5, V.L. McHugh6, M.A. Nigogsyan7, H. Habicht8  
1Gundersen Lutheran Health System, Neurosurgery, La Crosse, WI, USA, 2ProSpine, Straubing, Germany, 3Gundersen Lutheran Medical Foundation, Medical Research, La Crosse, WI, USA, 4Gundersen Lutheran Health System, Radiology, La Crosse, WI, USA, 5ProSpineSpine, Bogen, Germany
Thursday | April 28th

3:30 p.m. - 5:00 p.m. 
**Concurrent Sessions**

**Venetian Ballroom, Sections B, D, E, H, I**

**Multi-Level Cervical**

**MIS III**

**Oral Posters: Cervical Spine**

**Oral Posters: Lumbar Spine**

**Oral Posters: MIS, Navigation, Deformity**

**Oral Posters: Biologics, Wear, Non-Surgical**

### Concurrent Session: Multi-Level Cervical

**Venetian Ballroom, Section K**

**Moderators: Paul McAfee, MD**

**Chun-Kun Park, MD, PhD**

- **3:30 p.m. - 3:34 p.m.**
  - **Abstract: 584**
  - Multi-center, prospective, randomized, controlled Investigational Device Exemption study comparing 2-Level Mobi-C® Cervical Artificial Disc to anterior discectomy and fusion in the treatment of symptomatic degenerative disc disease in the cervical spine
  - R. Davis1,2, H.W. Bae3, S. Gaede1, C. Gordon1, M. Hisey1, G. Hoffman1, K. Kim1, R. Nunley1
  - 1Baltimore Neurosurgical Associates, Baltimore, MD, USA, 2The Spine Institute, Santa Monica, CA, USA, 3Oakland Spine & Brain Institute, Tulsa, OK, USA, 4Texas Spine & Joint Hospital, Tyler, TX, USA, 5Texas Back Institute Research Foundation, Plano, TX, USA, 6Orthopaedics NorthEast, Fort Wayne, IN, USA, 7UC Davis Medical Center, Sacramento, CA, USA, 8Spine Institute of Louisiana, Shreveport, LA, USA

- **3:35 p.m. - 3:39 p.m.**
  - **Abstract: 436**
  - Mobi-C Cervical Disc Replacement for the Treatment of One and Two Level Cervical Degenerative Disc Disease: One Site Analysis Participating in the US FDA Trial
  - H. Bae1, M.A. Kropf1, L.E.A. Kanim1, J. Kim1, R.B. Delamarter1
  - 1The Spine Institute, Spine Research Foundation, Santa Monica, CA, USA

- **3:40 p.m. - 3:44 p.m.**
  - **Abstract: 157**
  - Combined Use of Cervical Arthroplasty and Arthrodesis: Our Results in 30 Cases
  - A.P. Fabrizi1, R. Maina1, L. Schiabello1
  - 1Villa Maria Pia Hospital, Torino, Italy

- **3:45 p.m. - 3:49 p.m.**
  - **Abstract: 421**
  - Clinical and Radiographic Outcomes on a Series of 249 Patients Treated with Single and Multilevel Baguera C Cervical Disc Replacement at 2-year Follow up
  - G. Maestretti1, P. Tropiano1, P. Fransen1, D. Noriega1, R. Srou1, P. Otten1, P. Vally1, J.-P. Lejeune1, A. Chatzisotiriou1, P. Alcaraz1
  - 1Hopital Cantonal de Frifourg, Orthopedie, Fribourg, Switzerland, 2CHU Hopital Nord, Marseille, France, 3Clinique du Parc Leopold, Bruxelles, Belgium, 4Hospital Clinico Universitario de Valladolid, Valladolid, Spain, 5Hospital Pastor, Colmar, France, 6Hopital Cantonal de Fribourg, Fribourg, Switzerland, 7Clinique Saint Paul, Fort de France, France, 8Clinique Saint Joseph, Liege, Belgium, 9AHEPA University Hospital, Thessaloniki, Greece, 10Hospital General de Mallorca, Palma de Mallorca, Spain

- **3:50 p.m. - 4:09 p.m.**
  - **DISCUSSION**

- **4:10 p.m. - 4:14 p.m.**
  - **Abstract: 9**
  - Modification of the Prestige ST Cervical Artificial Disc to Allow Multi-level Implantation
  - K.A. Pettine1
  - 1The Spine Institute, Loveland, CO, USA

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
4:15 p.m. - 4:19 p.m.
Abstract: 500
Cervical Discoplasty Combined with Cervical Artificial Disc Replacement/Cervical Fusion for Motion/Disc Preservation at Adjacent Levels in the Treatment of Degenerative Disc Disease
P. Pillay¹, S. Vivek²
¹Neuro Spine and Pain Center Singapore, Singapore, Singapore, ²University of Chicago, Radiology, Chicago, IL, USA

4:20 p.m. - 4:24 p.m.
Abstract: 227
Factors Affecting the Choice of Anterior Procedure (TDR versus ACDF) for Cervical Radiculopathy: Analysis of 3-7 Years Follow-up from 4 Randomized Controlled Trials
P.D. Nunley¹, E.J. Kerr¹, A. Jawahar¹, D.A. Cavanaugh¹, D. Coric¹, M.O. Boltes³, C. Gordon³, G. Danielson³, M. Mantle³
¹Spine Institute of Louisiana, Orthopedic Surgery, Shreveport, LA, USA, ²Spine Institute of Louisiana, Neurological Surgery, Shreveport, LA, USA, ³Carolina Neurosurgery and Spine Associates, Neurological Surgery, Charlotte, NC, USA, ⁴Texas Spine and Joint Hospital, Neurological Surgery, Tyler, TX, USA

4:25 p.m. - 4:29 p.m.
Abstract: 171
3D Assessment of the Intervertebral Kinematics after Total Disc Replacement at the Cervical Spine in vivo Using the EOS Stereoradiography System
M.-A. Rousseau¹, J.-Y. Lazennec¹, S. Laporte², W. Skalli², T. Dufour³
¹Assistance Publique - Hopitaux de Paris (APHP), Pitié Salpêtrière Hospital, Orthopedic Surgery, Paris, France, ²Arts et Metiers ParisTech, Biomechanics Lab, Paris, France, ³CHR La Source, Neurosurgery, Orleans, France

4:30 p.m. - 4:34 p.m.
Abstract: 429
The Benefits of Cervical Total Disc Replacement to the Elderly Population after 7 Years Follow up
L. Pimenta¹, L. Oliveira¹, L. Marchi², E. Coutinho³
¹Instituto de Patologia de Coluna, São Paulo, Brazil, ²University of California - San Diego, San Diego, CA, USA

4:35 p.m. - 4:59 p.m.
DISCUSSION

Thursday | April 28th

Concurrent Session: MIS III
Venetian Ballroom, Section E
Moderators: Choll Kim, MD, PhD
Hazen Nicola, MD

3:30 p.m. - 3:34 p.m.
Abstract: 251
A Comparative Outcome Evaluation of Lumbar Transforaminal Endoscopic Discectomy versus Micro-lumbar Discectomy for Lumbar Disc Herniation
A.T. Yeung¹, Y. Zheng¹, C.A. Yeung¹, J. Field¹, C. Meredith¹, San Diego Spine Study Group
¹Desert Institute for Spine Care, Phoenix, AZ, USA

3:35 p.m. - 3:39 p.m.
Abstract: 304
Retrospective Clinical Evaluation of Interlaminar Lumbar Instrumented Fusion
J.S. Field¹
¹Desert Institute for Spine Care, Phoenix, AZ, USA

3:40 p.m. - 3:44 p.m.
Abstract: 314
Clinical and Functional Results of the Treatment of Degenerative and Extruded Lumbar Disc through a Minimally Invasive Lateral Approach. Is Minimally Invasive Posterior Tubular?
H. Nicola¹, M. Da Silva², D. Onay², L. Pimenta²
¹Hospital San Juan de Dios, Caracas, Venezuela, ²Clinica Sanatrix, Spine Surgery, Caracas, Venezuela, ³Hospital Santa Rita, Sao Paulo, Brazil

3:45 p.m. - 3:49 p.m.
Abstract: 522
Multicenter Minimally Invasive AxiaLIF L5-S1 Interbody Fusion for Anterior Column Support at the End of a Long Segment Construct: Feasibility, Safety, Complications, Early and Late 3 Year Outcomes
N. Anand¹, S. Kahwaty¹, E. Baron¹, S. Daroudi¹, A. King², O. Boachie-Adjei³
¹Cedars Sinai Medical Center, Spine Center, Los Angeles, CA, USA, ²Hospital for Special Surgery, Scoliosis and Spinal Deformity, New York, NY, USA

3:50 p.m. - 4:09 p.m.
DISCUSSION

4:10 p.m. - 4:14 p.m.
Abstract: 178
Minimally Invasive Posterior Cervical Discectomy, Preliminary Results and Complications
G. Regev¹, K. Salame¹, Z. Lidar¹
¹Tel-Aviv Sourasky Medical Center, Tel Aviv, Israel

4:15 p.m. - 4:19 p.m.
Abstract: 396
Evaluation of Endoscopic Laminoforaminoplasty for Treatment of Painful Foraminal and Centeral Cervical Stenosis
T. Mork¹, S. Haufe¹
¹Microspine, DeFuniak Springs, FL, USA

4:20 p.m. - 4:24 p.m.
Abstract: 572
Evaluation of fusion techniques for the L5-S1 interbody space, clinical strengths and disadvantages of different minimally invasive approaches
Z.A. Smith¹, L.T. Khoo¹
¹Good Samaritan Hospital, Neurosurgery, Los Angeles, CA, USA

4:25 p.m. - 4:29 p.m.
Abstract: 188
Minimally Invasive Treatment of Adjacent Segment Degeneration via XLIF
J.A. Lehmen¹, W.B. Rodgers¹, E.J. Gerber¹, J.A. Rodgers²
¹Spine Midwest, Inc., Jefferson City, MO, USA, ²Spine Midwest, Inc., Research, Jefferson City, MO, USA

4:30 p.m. - 4:34 p.m.
Abstract: 36
Outpatient Endoscopic Minimally Invasive Spine Surgery: Two-year Follow-up
J. Polikandriotis¹
¹Laser Spine Institute, Tampa, FL, USA

4:35 p.m. - 4:59 p.m.
DISCUSSION
Concurrent Session:
ORAL POSTERS: CERVICAL SPINE
Venetian Ballroom, Section H
Moderators: Avinash Patwardhan, PhD
Paul Slosar, MD

Please note: Each speaker will present for 3 minutes, followed by a 2 minute Q&A

3:30 p.m. - 3:34 p.m.
Abstract: 342
Intermediate Clinical Outcome of Bryan Artificial Cervical Disc Replacement in the Treatment of Cervical Spondylosis and its Effect on Adjacent Segment Discs
C. Ding 1, H. Liu 1, T. Hu 1, R. Shi 1
1West China Hospital, Sichuan University, Department of Orthopedic Surgery, Chengdu, China

3:35 p.m. - 3:39 p.m.
Abstract: 525
Clinical and Radiological Outcomes 2 Years after Total Cervical Disc Replacement with the Discocerv® Cervical Prosthesis
A.S. Ramadan 1
1Nilein University, Neurosurgery, Geneva, Switzerland

3:40 p.m. - 3:44 p.m.
Abstract: 404
Long-term Clinical Experience with SECURE®-C Cervical Disc Arthroplasty
J.M. Marzluff 1, J. Highsmith 1, K. Baker 2, J. Myer 2
1Trident Regional Medical Center, Charleston, SC, USA, 2Globus Medical, Inc., Audubon, PA, USA

3:45 p.m. - 3:49 p.m.
Abstract: 185
A Novel Shear Expulsion Protocol for Evaluating the Holding Strength of Cervical Disc Arthroplasty Devices
B. Dhillon 1, B.P. Kelly 1, D.J. DiAngelo 1, B. Dhillon 1, M. Ammerman 2, M. Campos 2
1The University of Tennessee Health Science Center, Department of Biomedical Engineering and Imaging, Memphis, TN, USA, 2The University of Tennessee Health Science Center, Department of Neurosurgery, Memphis, TN, USA

3:50 p.m. - 3:54 p.m.
Abstract: 506
Preoperative Paravertebral Ossification - Critics on the Evaluation of Heterotopic Ossification after Cervical Artificial Disc Replacement
W. Tian 1, X. Han 1
1Beijing Ji-Shui-Tan Hospital, 4th Clinical Medical College of Peking University, Spine, Beijing, China

3:55 p.m. - 3:59 p.m.
Abstract: 371
Predisposing Factors of Heterotopic Ossification after Cervical Artificial Disc Replacement - Over Three Years
W. Tian 1, X. Han 1
1Beijing Ji Shui Tan Hospital, Beijing, China

4:00 p.m. - 4:04 p.m.
Abstract: 469
Clinical Significance of Hypermobility in Cervical Artificial Disc Replacements
K.A. Pettine 1
1The Spine Institute, Loveland, CO, USA

4:05 p.m. - 4:09 p.m.
Abstract: 496
Reversal of Anterior Cervical Discectomy and Fusion with a Cervical Artificial Disc Replacement - Regain Motion after Nine Years Fusion
W. Tian 1, X. Han 1
1Beijing Ji-Shui-Tan Hospital, 4th Clinical Medical College of Peking University, Spine, Beijing, China

4:10 p.m. - 4:14 p.m.
Abstract: 208
Superiority of Porous Coated Motion (PCM) Cervical Arthroplasty Compared to ACDF in a Prospective Randomized Clinical Trial
P.C. McAfee 1, A. Cappuccino 2, B.W. Cunningham 3, J.G. Devine 4, F.M. Phillips 5, J.J. Regan 6, C. Reah 7, L. Eisermann 8
1St. Joseph Medical Center, Scoliosis and Spine Center, Towson, MD, USA, 2Lockport Hospital, Orthopaedic Surgery, Buffalo, NY, USA, 3St. Joseph Medical Center, Orthopaedic Spinal Research Laboratory, Towson, MD, USA, 4Madigan Army Base Seattle, Orthopaedic Surgery, Seattle, WA, USA, 5Rush Presbyterian Hospital, Orthopaedic Surgery, Chicago, IL, USA, 6Cedars Sinai Hospital, Orthopaedic Surgery, Los Angeles, CA, USA, 7NuVasive, Inc., San Diego, CA, USA, 8Eisertech, LLC, San Diego, CA, USA

4:15 p.m. - 4:19 p.m.
Abstract: 373
Screw Implantation Technique Alters the Stability of Cervical Spine Following Anterior Plate Fixation: A Comparative Finite Element Study
V. Palepu 1, M. Kodigudla 1, A. Kiapour 1, V. Goel 1, A. Goel 1
1University of Toledo, Bioengineering, Toledo, OH, USA, 2K.E.M.Hospital and Seth G.S. Medical College, Neurosurgery, Mumbai, India

4:20 p.m. - 4:24 p.m.
Abstract: 101
Anterior Cervical Fusion after Closed Reduction for Treatment of One-level Subaxial Cervical Spine Injuries: Comparison of Autologous Bone Graft versus Synthetic Cages Filled with Demineralized Bone Matrix
J.-K. Lee 1, H. Hur 1, J.-W. Jang 1, S.-H. Kim 1
1Chonnam National University Hospital & Medical School, Neurosurgery, Gwang-Ju, Korea, Republic of

4:25 p.m. - 4:29 p.m.
Abstract: 430
Comparative Electrogoniometric Study of the Global Cervical Range of Motion and Velocity, after Cervical Disc Herniation, Anterior Cervical Discectomy and Fusion or Disc Arthroplasty
A. Lubansu 1-2, O. De Witte 1, P. Salvia 1, M. Roose 2
1Erasme Hospital, University of Brussels, Neurosurgery, Brussels, Belgium, 2University of Brussels, Laboratory of Anatomy, Biomechanics and Organogenesis, Faculty of Medicine, Brussels, Belgium

4:30 p.m. - 4:34 p.m.
Abstract: 341
The Influence of Open-door Laminoplasty with Preservation of the Unilateral Musculo-ligament Complex to the Volume of Cervical Paraspinal Muscles on the Early Post-operative Stage
Y. Sun 1, S. Qiu 1, F. Zhang 1, S. Pan 1, M. Yu 1
1Peking University Third Hospital, Orthopaedic Surgery, Beijing, China

4:35 p.m. - 4:39 p.m.
Abstract: 577
The importance to preserve a posterior tension band in cervical stenosis decompression. A study with 24 months follow up
C.F. Arias Pesantez 1, C.R. Arias Solano 2
1Del Rio University Hospital, Minimally Invasive Spinal Surgery, Cuenca, Ecuador 2Del Rio University Hospital, Cuenca, Ecuador

4:40 p.m. - 4:59 p.m.

DISCUSSION
Concurrent Session:
ORAL POSTERS: LUMBAR SPINE
Venetian Ballroom, Section F
Moderators: Scott Hodges, DO
Robert Havey, BS

Please note: Each speaker will present for 3 minutes, followed by a 2 minute Q&A

3:30 p.m. - 3:34 p.m.
Abstract: 565
The Accuracy of Midline Placement of Total Disc Arthroplasty of the Lumbar Spine Using Different Anatomic Landmarks Under Fluoroscopy
M. Mikhael1, W. Cheng2
1Loma Linda University Medical Center, Orthopaedic Surgery, Loma Linda, CA, USA, 2Loma Linda University Medical Center, Loma Linda, CA, USA

3:35 p.m. - 3:39 p.m.
Abstract: 154
Investigating the Potential Effect of “Euphoric Bias” for the New Technology on Results of Randomized Lumbar Total Disc Replacement Trials
S.L. Blumenthal1, R.D. Guyer1, D.D. Ohnmeiss2
1Texas Back Institute, Plano, TX, USA, 2Texas Back Institute Research Foundation, Plano, TX, USA

3:40 p.m. - 3:44 p.m.
Abstract: 377
Biomechanical Effects of Sequential Facet Resection on Lumbar Spine Mechanics
D.J. Diangelo1, K. Sedacki1, B.P. Kelly1, M. Campos2, R. Cardenas2
1The University of Tennessee Health Science Center, Department of Biomedical Engineering and Imaging, Memphis, TN, USA, 2The University of Tennessee Health Science Center, Department of Neurosurgery, Memphis, TN, USA

3:45 p.m. - 3:49 p.m.
Abstract: 388
Effect of Sequential Facetectomies on Lumbar Spinal Stability under Sagittal Plane Loading Mechanics in a Cadaveric Model
D.J. Diangelo1, K. Sedacki1, B.P. Kelly1, M. Campos2, R. Cardenas2
1The University of Tennessee Health Science Center, Department of Biomedical Engineering and Imaging, Memphis, TN, USA, 2The University of Tennessee Health Science Center, Department of Neurosurgery, Memphis, TN, USA

3:50 p.m. - 3:54 p.m.
Abstract: 466
Intra and Intra-intersegmental Repair for Spondylolysis and Spondylolisthesis
P.S. Lin1, K.J. Zook1
1SUN Orthopedic Group, Lewisburg, PA, USA

3:55 p.m. - 3:59 p.m.
Abstract: 434
Extraforaminal Lumbar Interbody Fusion-ELIF: Anatomic Basis and Technique
K.J. Lawson1, D. RecCouples-Arche1, P. Faya1, L. Vinkoff4
1Soo Surgical Specialties, Orthopedic Surgery, Sault Ste. Marie, MI, USA, 2Groupe Hospitalier du Havre, Dept of Neurosurgery, Le Havre, France, 3Clinique Ambroise Pare, Surgery, Paris, France, 4Clinique Velepeau, Surgery, Tours, France

4:00 p.m. - 4:04 p.m.
Abstract: 504
Complications of Stand-alone Lateral Lumbar Interbody Fusion and Predictors of Outcome
M. Pumberger1, S. Kotwal1, A.P. Hughes1, C. Abjornsson1, D.R. Lebl1, G.A. Fantini1, A.A. Sama1, F.P. Cammissa1, F.P. Girardi1
1The Hospital for Special Surgery, Spine & Scoliosis Surgery, New York, NY, USA

4:05 p.m. - 4:09 p.m.
Abstract: 573
Evaluation of the L5-S1 interbody space with trans-sacral L5-S1 fusion (AxiaLif)
Z.A. Smith1, L.T. Khoo1
1Good Samaritan Hospital, Neurosurgery, Los Angeles, CA, USA

4:10 p.m. - 4:14 p.m.
Abstract: 460
A Study of the Effects of Screw Position on Load Transfer in and around a Lumbar Pedicle Screw Using Non-idealized FEA
A.G.U. Sawa1, S. Baek1, N.R. Crawford1
1Barrow Neurological Institute, Spinal Biomechanics, Phoenix, AZ, USA

4:15 p.m. - 4:19 p.m.
Abstract: 195
Multi-planar MIS lateral Lumbar Fusion Construct Stability Using a Combination of Lateral and Spinous Process Plating: Equivalence to Bilateral Pedicle Screw Fixation?
G. Fogel1, H. Duong2, A. Cappuccino3, A. Turner4, G.B. Cornwall4
1Orthopedic Spine Institute, San Antonio, TX, USA, 2University of California Davis, Department of Neurosurgery, Davis, CA, USA, 3Buffalo Spine Surgery, Buffalo, NY, USA, 4NuVasive, Inc., San Diego, CA, USA

4:20 p.m. - 4:24 p.m.
Abstract: 300
Analysis of Biomechanical Stability and Cage Motion in a Lumbar Spine Instrumented at Two Levels with Lateral Inter-body Cages with Lateral Plate Fusion Construct
A. Nayak1, R.B. Burris1, J. Blylys1, A.E. Castelli1
1Foundation for Orthopaedic Research and Education, Tampa, FL, USA, 2University of South Florida, Tampa, FL, USA, 3Florida Orthopaedic Institute, Tampa, FL, USA, 4Florida Orthopaedic Institute, Center for Spinal Disorders, Tampa, FL, USA

4:25 p.m. - 4:29 p.m.
Abstract: 457
The Incidence of Discography Resulting in Recommendations against Lumbar Spinal Fusion
J. Yue1, B. Sumpio1, A.S. Turner2
1Yale University School of Medicine, New Haven, CT, USA, 2Colorado State University, Fort Collins, CO, USA

4:30 p.m. - 4:34 p.m.
Abstract: 176
Predicting anterior Column Load Transfer at Multiple Levels in the Thoracic Spine Using Surface Strains and Neural Networks Analysis
A.G.U. Sawa1, P.M. Reyes1, F. Dominguez1, N.R. Crawford1
1Barrow Neurological Institute, Spinal Biomechanics, Phoenix, AZ, USA
4:35 p.m. - 4:39 p.m.

Abstract: 379
Orientation of Pedicle Screw Bending Moments with Long Posterior Fixation Constructs
A.L. Freeman, L.A. Ferrara, G.D. Fleischer
1Excelen, Minneapolis, MN, USA, 2OrthoKinetic Technologies, LLC, Southport, NC, USA, 3Southern New Hampshire Medical Center, Nashua, NH, USA

4:40 p.m. - 4:44 p.m.

Abstract: 65
Effect of New Dynamic Stabilization System on the Segmental Motion and Intradiscal Pressure
P. Guérin, O. Gille, P. Sylvain, W. Skalli, S. Campana, J.-M. Vital
1Spinal Unit Department - Bordeaux University Hospital, Orthopaedic Surgery, Bordeaux, France, 21LBM, CNRS, Arts et Metiers ParisTech, Paris, France, 3Spinal Unit, University Hospital of Bordeaux, Orthopaedic Surgery, Bordeaux, France

4:53 p.m. - 4:59 p.m.

DISCUSSION

Concurrent Session:
ORAL POSTERS: MIS, NAVIGATION, DEFORMITY
Venetian Ballroom, Section I

Moderators: Paul Anderson, MD
Neil Crawford, PhD

Please note: Each speaker will present for 3 minutes, followed by a 2 minute Q&A

3:30 p.m. - 3:34 p.m.

Abstract: 277
Changes in Neuroforaminal Dimensions with 2 Level Axial Lumbar Interbody Fusion at L4-S1 with Graduated Distraction through the Implant
S.V. Marawar, N.R. Ordway, J.W. Jung, M.H. Sun
1SUNY Upstate Medical University, Syracuse, NY, USA

3:35 p.m. - 3:39 p.m.

Abstract: 293
Clinical Evaluation of Open and MAS® TLIF for the Treatment of Symptomatic Lumbar Degenerative Conditions
F.L. Feng
1Sequoia Orthopaedic and Spine Institute, Visalia, CA, USA

3:40 p.m. - 3:44 p.m.

Abstract: 375
Reduction in Radiation (Fluoroscopy) while Maintaining Safe Placement of Pedicle Screws during Lumbar Spine Fusion
A.F. Samdani, R.R. Betz, C.D. Chaput, K. George, J. Gaughan
1, Philadelphia, PA, USA, 2Temple Clinic, Temple, TX, USA, 3SpineGuard, Inc., San Francisco, CA, USA, 4Temple University School of Medicine, Philadelphia, PA, USA

3:45 p.m. - 3:49 p.m.

Abstract: 480
Minimally Invasive Treatment of Adult Scoliosis with XLIF: Radiographic Outcomes and Predictors from a Prospective Multicenter Study
F. Phillips, S. Khan, SOLAS Degenerative Study Group
1Midwest Orthopaedics at Rush, Chicago, IL, USA

3:50 p.m. - 3:54 p.m.

Abstract: 112
Percutaneous Pedicle Screw and Rod Fixation with Minimally Invasive Lumbar Interbody Fusion in Recurrent Lumbar Disc Herniation - Long Term Follow up of a Consecutive Series of 14 Patients
M. Leimert, R. Bostelmann
1University of Dresden, Dresden, Germany, 2University of Düsseldorf, Düsseldorf, Germany

3:55 p.m. - 3:59 p.m.

Abstract: 266
MI-TLIF(Minimally Invasive TLIF) Combined with MED System in the Treatment of Multi-level Lumbar Spinal Stenosis and Instability
W. Han, J. Rui, Z. Qiheng, W. Yang, L. Wenxuan
1Institute of Orthopaedics, China-Japan Hospital, Jilin University, Orthopaedics, Changchun, China, 2Spine MIDWEST, INC., Research, Jefferson City, MO, USA

4:00 p.m. - 4:04 p.m.

Abstract: 190
Outcomes of MIS Spinal Fusion: 12 and 24 Months
J.A. Lehmen, W.B. Rodgers, E.J. Gerber, J.A. Rodgers
1Spine Midwest, Inc., Jefferson City, MO, USA, 2Spine Midwest, Inc., Research, Jefferson City, MO, USA

4:05 p.m. - 4:09 p.m.

Abstract: 129
Posterior MIS Treatment of Thoraco-lumbar Spinal Neoplasms
B.M. Frankel, S. Morgan
1Medical University of South Carolina, Neurosciences, Charleston, SC, USA

4:10 p.m. - 4:14 p.m.

Abstract: 481
Perioperative Outcomes and Complications Following XLIФ for the Treatment of Adult Scoliosis: Results of a Prospective, Non-randomized, Multi-center Evaluation
R.E. Isaacs, J. Hyde, J.A. Goodrich, W.B. Rodgers, F.M. Phillips
1Duke University Medical Center, Division of Neurosurgery, Durham, NC, USA, 2South Florida Spine Institute, Miami Beach, FL, USA, 3Augusta Orthopaedic Clinic, Augusta, GA, USA, 4Spine MIDWEST, INC., Jefferson City, MO, USA, 5Rush University Medical Center, Chicago, IL, USA

4:15 p.m. - 4:19 p.m.

Abstract: 145
The Effectiveness of Universal Clamps in Controlling Coronal and Sagittal Profile in Surgical Correction of Neurological Scoliosis
G. La Rosa, G. Giglio, L. Oggiano
1Research Institute Paediatric Hospital Bambino Gesù Paediatric Surgery Department, Orthopaedic Unit, Fiumicino (Rome), Italy

Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
Thursday | April 28th

Concurrent Session:

ORAL POSTERS: BIOLOGICS, WEAR, NON-SURGICAL

Venetian Ballroom, Section B

Moderators: James Yue, MD
Leonard Voronov, MD, PhD

Please note: Each speaker will present for 3 minutes, followed by a 2 minute Q&A

Thursday, April 28, 2011
<table>
<thead>
<tr>
<th>Time</th>
<th>Abstract Number</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 p.m. - 4:04 p.m.</td>
<td>336</td>
<td>Abstract: Can the Intra-discal Inflammatory and Degenerative Changes Be Prevented after Annulus Puncture? A Study on the Blocking Effect of a Kind of Polylactic Acid Patch</td>
<td>X. Liu¹, H. Liu¹, X. Zhao¹, R. Shi¹, G. Feng¹, Y. Song¹, T. Li¹, Q. Gong¹, L. Liu¹</td>
<td>¹Sichuan University, Chengdu, China</td>
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<td>4:05 p.m. - 4:09 p.m.</td>
<td>376</td>
<td>Wear Rate Comparison between Polycrystalline Diamond, CoCr, and UHMWPE in High Wear Environments</td>
<td>D. Harding¹, D. Blackburn¹, G. Loesener¹, R. Dixon¹, B.-K. Nguyen¹</td>
<td>¹Dimicron Inc, Orem, UT, USA</td>
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<tr>
<td>4:10 p.m. - 4:14 p.m.</td>
<td>535</td>
<td>Comparison of Biological Response to UHMWPE and CFR-PEEK Particles in Epidural Space</td>
<td>K. Kabir¹, C. Burger¹, R. Pflugmacher¹, D.C. Wirtz¹, J. Schwiesau¹, T. Grupp¹</td>
<td>¹Universitätsklinikum Bonn, Department for Orthopaedics and Trauma Surgery, Bonn, Germany, ²Aesculap AG Research &amp; Development, Tuttingen, Germany</td>
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<tr>
<td>4:15 p.m. - 4:19 p.m.</td>
<td>435</td>
<td>In vitro Fatigue Evaluation of Polymer Dampeners Utilized in a Total Spine Arthroplasty Device</td>
<td>J. Gimbel¹, K. Lesk¹, E. Wagner¹</td>
<td>¹Flexuspine, Pittsburgh, PA, USA</td>
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<tr>
<td>4:20 p.m. - 4:24 p.m.</td>
<td>445</td>
<td>Long-term Wear Characterization of a Total Spinal Arthroplasty Device</td>
<td>K. Lesk¹, J. Gimbel¹, E. Wagner¹</td>
<td>¹Flexuspine, Pittsburgh, PA, USA</td>
</tr>
<tr>
<td>4:25 p.m. - 4:29 p.m.</td>
<td>119</td>
<td>Efficacy of Epidural Injections with Autologous Conditioned Serum (ACS) for Lumbar Radiculopathy</td>
<td>C. Moser¹, D.W. Groenemeyer¹, C. Becker¹, P. Wehling¹,²,³</td>
<td>¹Groenemeyer Institute for Microtherapy, University Witten/ Herdecke, Bochum, Germany, ²St. Josef-Hospital, University of Bochum, Department of Orthopaedic Surgery, Bochum, Germany, ³Private Group Practice Professor Wehling, Dr. Hartmann, Duesseldorf, Germany, ⁴University of North Carolina, Comprehensive Center for Inflammatory Disorders, Chapel Hill, NC, USA</td>
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<tr>
<td>4:30 p.m. - 4:34 p.m.</td>
<td>164</td>
<td>Predicted Wear Pattern of an Artificial Disc Simulated as Stand-alone vs. Simulation in a Motion Segment FE Model</td>
<td>S. Bhattacharya¹, A. Kiapour¹, V. Goel¹, X. Liu¹, S. Hassan¹,²</td>
<td>¹Engineering Center for Orthopaedic Research Excellence (E-CORE), Departments of Bioengineering and Orthopaedic Surgery, University of Toledo, Toledo, OH, USA, ²DePuy Spine Inc., Raynham, MA, USA</td>
</tr>
</tbody>
</table>

Please Note:
All Posters from the Oral Poster Presentations will be available for viewing in the Poster Area of the Exhibit Hall (Scientific Exchange)
The challenges of life in the 21st Century require us to find new ways to access the wisdom and intelligence inherent in groups settings. The need for collaboration, insight and coordinated action has never been greater. Join the SAS in the Town Square of the Exhibit Floor while case studies developed by leaders in the spine industry are discussed by an elite panel of surgeons. Participants will be able to confer with the panelists on treatment options and protocols for Cervical disc replacement case studies.

Case #1
CERVICAL HNP
Moderator: Brett Osborn, MD

Panelists:
J.J. Abitbol, MD - Disc Replacement
Peter McCombe, MD - Fusion Approach
Alejandro Reyes-Sanchez, MD - MIS Decompression

Case #2
CERVICAL HNP WITH ADJACENT DISC DEGENERATION
Moderator: Matthew Gornet, MD

Panelists:
Rudolf Bertagnoli, MD - Multi-Level Disc Replacement
Petr Suchomel, MD, PhD - Hybrid
Rolando Garcia, MD - Two-Level Fusion
8:30 a.m. - 10:00 a.m.
Plenary: Lumbar Therapies
Venetian Ballroom, Section K
Moderators: Svante Berg, MD, PhD
Rolando Garcia, MD

8:30 a.m. - 8:34 a.m.
Abstract: 11
A Full Economic Evaluation of Disc Prosthesis vs. Lumbar Fusion in Patients with Chronic Low Back Pain - A Randomized Controlled Trial with Two-year Follow up
S. Berg1, P. Fritzell1, F. Borgström1, T. Tullberg2, H. Tropp3
1Stockholm Spine Center, Stockholm, Sweden, 2Falun Hospital, Department of Orthopedic Surgery, Falun, Sweden, 3Innovus, Stockholm, Sweden, 4Stockholm Spine Center, Uppsala Väsbys, Stockholm, Sweden, 5University Hospital, Department of Orthopedic Surgery, Linköping, Sweden

8:35 a.m. - 8:39 a.m.
Abstract: 545
ProDisc®-L Total Disc Replacement over Time: Five-to-Nine Year Follow-up
R. Bertagnoli1
1ProSpine, Straubing, Germany

8:40 a.m. - 8:44 a.m.
Abstract: 416
Prospective Evaluation of Sexual Activities in Patients with Chronic Low Back Pain: Evolution before and after Total Disc Replacement
B. Blondel1, P. Tropiano1, T. Marnay2
1Université de la Méditerranée, Orthopaedic Surgery, Marseille, France, 2Clinique du Parc, Montpellier, France

8:45 a.m. - 8:49 a.m.
Abstract: 130
A Prospective Clinical Comparison of 3 Biomechanical Types of Lumbar Disc Replacements: A Semi-constrained Device, a Controlled Translation Device, and an Unconstrained Device Minimum 3 Year Follow-up
J.J. Yue1, R. Garcia2, J. Zigler3
1Yale University School of Medicine, Orthopaedic Surgery, New Haven, CT, USA, 2Aventura Hospital, Orthopaedic Surgery, Aventura, FL, USA, 3Texas Back Institute, Orthopaedic Surgery, Plano, TX, USA

8:50 a.m. - 8:54 a.m.
Abstract: 220
Retrospective Analysis of Metal on Metal Lumbar Arthroplasties to Report on the Incidence of Metal hypersensitivity in 217 Consecutive Patients
N. Jansen1, M. de Villiers1, S. Berg2
1University of the North-West, Pretoria, South Africa, 2Stockholm Spine Center, Löwenströmska Hospital, Stockholm, Sweden

8:55 a.m. - 9:14 a.m.
DISCUSSION

9:15 a.m. - 9:19 a.m.
Abstract: 385
Is Lumbar TDR Able to Restore and Maintain Segmental ROM in L5/S1 in a Mid-term Period of 3 Years?
D. Brücher1, C. Müller1, W. Daiber1, J. Chrobok1
1Municipal Clinic of Karlsruhe, Center for Orthopedics and Traumatology, Karlsruhe, Germany, 2Aesculap AG, Tuttingen, Germany, 3Hospital na Homolce, Neurosurgery, Prague, Czech Republic

9:20 a.m. - 9:24 a.m.
Abstract: 68
Treatment Options for Two-level Symptomatic Disc Degeneration: Comparison of Total Disc Replacement, Fusion, and Hybrid
R.D. Guyer1, J.E. Zigler1, S.L. Blumenthal1, M.F. Duffy2, S. Saqqa3, D.D. Ohnmeiss3
1Texas Back Institute, Plano, TX, USA, 2Texas Back Institute, Mansfield, TX, USA, 3Texas Back Institute Research Foundation, Plano, TX, USA

9:25 a.m. - 9:29 a.m.
Abstract: 402
Role of Endplate Morphology on Lumbar Disc Arthroplasty Clinical and Radiographic Outcomes
M.F. Gornet1, F.W. Schranck1, J.H. Peloza2, R.F. Dryer2, J.K. Burkus3, E.A. Jones4, J.A. Hipp5, N.D. Wharton5
1The Orthopedic Center of St. Louis, Spine Research Center, St. Louis, MO, USA, 2Center for Spine Care, Dallas, TX, USA, 3Central Texas Spine Institute, Austin, TX, USA, 4The Hughston Clinic, Columbus, GA, USA, 5Medical Metrics, Inc., Houston, TX, USA

9:30 a.m. - 9:34 a.m.
Abstract: 463
Does Reconstruction of the Anterior Longitudinal Ligament (ALL) Improve the Results of Lumbar Artificial Disc Replacement (ADR)?
K.A. Pettine1
1The Spine Institute, Loveland, CO, USA

9:35 a.m. - 9:39 a.m.
Abstract: 397
Relationship between Pre-operative Expectations and Post-operative Satisfaction and Functional Outcomes in Lumbar & Cervical Spine Patients: A Multi Center Study
A. Soroceanu1, K. Mcguire2, A. Ching3, W. Abdu4
1Dalhousie University - QE2 Health Sciences Center, Halifax, NS, Canada, 2Beth Israel Deaconess Medical Center/ Harvard Medical School, Boston, MA, USA, 3Oregon Health and Sciences University, Portland, OR, USA, 4Dartmouth-Hitchcock Medical Center, Lebanon, NH, USA

9:40 a.m. - 9:59 p.m.
DISCUSSION

10:00 a.m. - 10:30 a.m.
BREAK
Exhibit Hall (Scientific Exchange)
10:30 a.m. - 11:50 a.m.
Plenary: Vertebral Augmentation - Where to Now?
Venetian Ballroom, Section K
Moderator: Peter McCombe, MD

The Evidence to Support the Use of Vertebroplasty
Isador Lieberman, MD, MBA, FRCSC

The Evidence to Reject the Use of Vertebroplasty
David Kallmes, MD

Biomechanical Consequences of Osteoporotic Vertebral Compression Fractures and their Management with Vertebral Augmentation
Avinash Patwardhan, PhD

Debate - All new procedures require proof of efficacy by randomized controlled trials before funding for general use:
David Kallmes, MD - Affirmative Side
Hyun Bae, MD - Negative Side

DISCUSSION

11:51 a.m. - 11:59 a.m.
TRANSFER OF PRESIDENCY / AWARDS

12:00 p.m. - 1:30 p.m.
Lunchtime Symposium at Town Square in Exhibit Floor: What is the Best Evidence for Lumbar Fusion Surgery?
*not CME accredited
Town Square Exhibit Floor
Moderators: Matthew Scott-Young, MD
David Wong, MD, MSc, FRCS(C)

Is the Evidence Sufficient?  David Wong, MD, MSc, FRCS(C)
Isthmic Spondylolisthesis  R. Todd Allen, MD
Degenerative Spondylolisthesis  Finn Christensen, Prof, MD, PhD, DMSc
Degenerative Disc Disease/Black Dix Disease
Fusion: Matthew Gornet, MD
Non-Fusion: Rudolf Bertagnoli, MD
Degenerative Scoliosis  Matthew Scott-Young, MD
Revision Spine Surgery  Larry Khoo, MD

Question and Answer Session

1:30 p.m. - 1:45 p.m.
Jean-Charles Le Huec’s Closing Comments

1:45 p.m. - 3:00 p.m.
Concurrent Sessions
Venetian Ballroom, Section K, F, I

Concurrent Session: Nucleus
Venetian Ballroom, Section K
Moderators: Hansen Yuan, MD
Leonard Voronov, MD, PhD

Abstract: 386
Long Term Follow up of a Prospective Randomized Study of Chemonucleolysis Compared to Surgery
D. Wardlaw1, A. Sabboubeh2, M. Vadha3
1NHS Grampian, Orthopaedics, Stonehaven, United Kingdom, 2Doncaster NHS Trust, Doncaster, United Kingdom, 3Blackpool NHS Trust, Blackpool, United Kingdom

1:50 p.m. - 1:54 p.m.
Abstract: 576
ROLE OF NUCLEOPLASTY IN THE TREATMENT OF DISCOGENIC AXIAL LOW BACK PAIN
N.S. Kumar1, J. Ansari1, W.L. Yam1
1National University Hospital, Department of Orthopaedics, Singapore, Singapore

2:00 p.m. - 2:04 p.m.
Abstract: 105
Percuteneous Laser Disc Decompression by 980nm Biolitec Laser for Herniated Lumber Disks
A.R. Patel1, Image Documented Herniated Intervertebral Disc in 172 Patients
1Shreejikrupa Joint and Spine Institute, Spine Surgery, Surat, India

2:05 p.m. - 2:09 p.m.
Abstract: 136
Intradiscal Ozone Chemonucleolysis vs. Microdiscectomy: 48 Months Follow-up
J. Burić1, M. Pulidori2, C. Del Gaizo2
1CDC Villanova, Functional Unit for Spinal Surgery, Florence, Italy, 2CDC Villanova, Florence, Italy

2:10 p.m. - 2:19 p.m.
DISCUSSION

2:20 p.m. - 2:24 p.m.
Abstract: 155
Variations in Anular Defect Characteristics in Herniated Lumbar Discs: A Feasibility Study of Anular Repair and an Attempt to Confirm Carragee Population Data on Defect Size
D.A. Wong1, C. Wong1, L. Mauter2, V. Murdock2
1Denver Spine, Greenwood Village, CO, USA, 2Presbyterian St. Luke’s Medical Center, Denver, CO, USA
2:25 p.m. - 2:29 p.m.
Abstract: 6
Five Year Follow-up on Intradiscal Ozone Injection for Disc Herniation
J. BURIC1, L. Rigobello2
1CDC VAL DI SIEVE, FUNCTIONAL UNIT FOR SPINAL SURGERY, FLORENCE, Italy, 2University of Padova, Department for Neurosurgery, Padova, Italy

2:30 p.m. - 2:34 p.m.
Abstract: 242
Can an Annular Repair Device Prevent Recurrent Disc Herniation and Interrupt Degenerative Disc Disease? A New Motion Preserving Annular Repair Device Prevents Recurrent Herniation and Maintains Disc Height
J.M. Dipp1, R. Flores2, E.S. Conner3, P. Davis4
1Hospital y Centro Medico del Prado, Tijuana, Mexico, 2Central Medica Santa Maria, Mexicali, Baja California, Mexico, 3Neurological Associates of Santa Barbara, Santa Barbara, CA, USA, 4Magellan Spine Technologies, Inc., Irvine, CA, USA

2:35 p.m. - 2:39 p.m.
Abstract: 555
Selective Endoscopic Discectomy and Thermal Annuloplasty for Chronic Lumbar Discogenic Pain: An Endoscopically Guided, Visualized Intradiscal Electrothermal Procedure
A.T. Yeung1
1Desert Institute for Spine Care, Phoenix, AZ, USA

2:40 p.m. - 2:59 p.m.
DISCUSSION

Concurrent Session: Innovative
Venetian Ballroom, Section F
Moderator: Domagoj Coric, MD

1:45 p.m. - 1:49 p.m.
Abstract: 298
Prospective Randomized FDA IDE Pivotal Study of Symptomatic Lumbar Spinal Stenosis Patients Treated with ACADIA™: Interim Perioperative and Clinical Outcomes for the Investigational Device
1Durango Orthopedic Associates/Spine Colorado, Durango, CO, USA, 2Spine Group Beverly Hills, Beverly Hills, CA, USA, 3Greater Baltimore Medical Center, Baltimore, MD, USA, 4Central Texas Spine Institute, Austin, TX, USA, 5Spine Midwest Research, Jefferson City, MO, USA, 6RMA Orthopedics, Loveland, CO, USA, 7Albany Medical Center, Albany, NY, USA, 8OrthoCarolina, Charlotte, NC, USA, 9Neuro-Spine Solutions, P.C., Bristol, TN, USA, 10Charleston Brain & Spine, Charleston, SC, USA, 11Fort Wayne Orthopaedics, Fort Wayne, IN, USA, 12Desert Orthopedic Center, Rancho Mirage, CA, USA, 13Springfield Neurological & Spine Institute, Springfield, MO, USA, 14Cedar Sinai Spine Center, Los Angeles, CA, USA, 15The Center for Sports Medicine & Orthopedics, Chattanooga, TN, USA, 16UMASS Memorial Medical Center, Worcester, MA, USA

1:50 p.m. - 1:54 p.m.
Abstract: 378
Functional Outcomes Following the Total Facet Arthroplasty System (TFAS) in the Treatment of Degenerative Lumbar Spinal Stenosis
A.E. Castelli1, B. Hierlmeier2, S. Webb3
1Florida Orthopaedic Institute, Center for Spinal Disorders, Tampa, FL, USA, 2Florida Orthopaedic Institute, Tampa, FL, USA, 3Florida Spine Institute, Tampa, FL, USA

1:55 p.m. - 1:59 p.m.
Abstract: 153
Clinical Outcomes from a Prospective Study on Archus Total Facet Arthroplasty System for Treatment of Lumbar Stenosis with Degenerative Spondylolisthesis
W.W. Wong1, W.K. Cheng1, E. Clarke1, P. Williams1, W. Pataixil1, D. Rios2, D.K. Palmer3
1Loma Linda University Medical Center, Orthopaedic Surgery, Loma Linda, CA, USA, 2Loma Linda University School of Medicine, Loma Linda, CA, USA

2:00 p.m. - 2:04 p.m.
Abstract: 383
The Reliability of a New Computed Tomography Imaging Grading System of Lumbar Facet Arthropathy
M. Quirno1, V. Lafage1, T.J. Erizzo1
1NYU Hospital for Joint Diseases, New York, NY, USA

2:05 p.m. - 2:09 p.m.
Abstract: 414
Vertebral Growth Modulation in the Porcine Scoliosis Model assessed by Computed Tomography: 3-D Effect of a Corrective Tether
F.J. Schwab1, A. Patel1, B.N. Ungar1, J. Demakakos1, E. Chay1, V.C. Lafage1, J.-P. Farcy2
1NYU Hospital for Joint Diseases, Orthopaedics, New York, NY, USA, 2Maimonides Medical Center, Brooklyn, NY, USA

2:10 p.m. - 2:19 p.m.
DISCUSSION

2:15 p.m. - 2:19 p.m.
Abstract: 426
An Innovative Solution in the Treatment of Facet Arthropathy: The Facet Resurfacing Concept
L. Pimenta1,2, L. Oliveira1, L. Marchi1, E. Coutinho1
1Instituto de Patologia de Coluna, Sao Paulo, Brazil, 2University of California - San Diego, San Diego, CA, USA

2:20 p.m. - 2:24 p.m.
Abstract: 425
An Innovative Solution in the Treatment of Facet Arthropathy: The Facet Resurfacing Concept
L. Pimenta1,2, L. Oliveira1, L. Marchi1, E. Coutinho1
1Instituto de Patologia de Coluna, Sao Paulo, Brazil, 2University of California - San Diego, San Diego, CA, USA

2:25 p.m. - 2:29 p.m.
Abstract: 170
Vertebral Body Stapling vs. Bracing for Patients with High-risk Moderate Idiopathic Scoliosis
A.F. Samdani1, P.J. Cahill1, H. Grewal1, M.J. Mulcahey1, L. Cuddihy1, R.R. Betz1, A. Danielsson2, J. Gaughan3
1Shriners Hospitals for Children, Philadelphia, PA, USA, 2Sahlgren University Hospital, Gothenburg, Sweden, 3Temple University School of Medicine, Philadelphia, PA, USA
Progressive Spinal Deformity Correction via an Anterior Based Tether in a Porcine Scoliosis Model: A Detailed Radiographic Analysis
B.N. Ungar1, J.F. Schwab2, A. Patel1, E. Chay1, J. Demakakos1, V.C. Lafage1, J.-P. Farcy1
1NYU Hospital for Joint Diseases, Orthopaedics, New York, NY, USA, 2Maimonides Medical Center, Brooklyn, NY, USA

Biomechanical Analysis of a Novel Cervical Spine Posterior Fixation Using Bio-derived Tendon in the Goat Cervical Ligament Complex Injury Model
B. Wang1, H. Liu1, H. Xie1, R. Shi1, X. Zhao1, W. Zhang1, X. Liu1, G. Feng1, Y.K. Luo1, W. Hou2
1West China Hospital, Sichuan University, Department of Orthopedics, Chengdu, China, 2No.363 Hospital, Chengdu, China

Endplate anatomical restoration may reduce adjacent fracture occurrence when using a new cranio-caudal expandable implant for Vertebral Compression Fracture treatment
D. Noriega1, N. Hansen-Algenstaedt2, J. Beyerlein2
1University Hospital Valladolid, Royal Academy of Medicine and Surgery, Valladolid, Spain, 2University Medical Center Hamburg-Eppendorf, Spine Center, Hamburg, Germany

The Effect of Stabilization on Vertebral Augmentation Procedures after a First Event, Single Level Osteoporotic Vertebral Compression Fractures in the Early Old Aged Patients
H.S. Kim1, H.J. Ahn1, K.H. Jeon1, W.J. Choi1, K.T. Kim1, C.I. Ju1, S.W. Kim2, S.M. Lee3, H. Shin4
1Hurisarang Spine Hospital, Department of Neurosurgery, Daejeon City, Korea, Republic of, 2College of Medicine, Chosun University, Department of Neurosurgery, Gwangju City, Korea, Republic of

Kyphoplasty for the Treatment of Malignant Vertebral Compression Fractures Caused by Metastases
Z.-Y. Sun1, H.-L. Yang1
1The First Affiliated Hospital of Soochow University, Department of Orthopaedic Surgery, Suzhou, China

Spinal Instability Predicting Score (SIPS) for Subsequent Fractures after Vertebroplasty in Patients with Osteoporotic Vertebral Compression Fractures
H.S. Kim1, H.J. Ahn1, K.H. Jeon1, W.J. Choi1, K.T. Kim1, C.I. Ju1, S.W. Kim2, S.M. Lee3, H. Shin4
1Hurisarang Spine Hospital, Department of Neurosurgery, Daejeon City, Korea, Republic of, 2College of Medicine, Chosun University, Department of Neurosurgery, Gwangju City, Korea, Republic of

One Year Observation Study upon a New Augmentation Procedure (Radiofrequency-Kyphoplasty) in the Treatment of Vertebral Body Compression Fractures
A.W. Licht1, W. Kramer1
1Asklepios Südpfalzkliniken, Orthopedic Surgery, Spine-Center, Kandel, Germany, 2Asklepios Südpfalzkliniken, Orthopedic Surgery, Kandel, Germany

The Effect of Stabilization on Vertebral Augmentation Procedures after a First Event, Single Level Osteoporotic Vertebral Compression Fractures in the Early Old Aged Patients
H.S. Kim1, H.J. Ahn1, K.H. Jeon1, W.J. Choi1, K.T. Kim1, C.I. Ju1, S.W. Kim2, S.M. Lee3, H. Shin4
1Hurisarang Spine Hospital, Department of Neurosurgery, Daejeon City, Korea, Republic of, 2College of Medicine, Chosun University, Department of Neurosurgery, Gwangju City, Korea, Republic of

Business Concepts for Spine Residents, Fellows and Spine Surgeon in Training Course
Michael Janssen, DO
Richard Kube, MD
Michael Duffy, MD
Donna Ohnmeiss, PhD
Hassan Serhan, PhD
Pierce Nunley, MD
Kenneth Pettine, MD
Panel
### Saturday, April 30, 2011

**7:00 a.m. - 4:30 p.m.
Hands on Cadaveric Motion Sparing and Innovative Fusion Techniques Lab**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>7:00 a.m.</td>
<td>Leave from Hotel</td>
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<tr>
<td>7:30 am - 8:00 am</td>
<td>Breakfast and Clothes Change</td>
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<tr>
<td>8:00 AM</td>
<td>Welcome from 2 Course Chairs</td>
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<td></td>
<td>James Yue, MD</td>
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<td>Richard Kube, MD</td>
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<tr>
<td>8:00 am - 8:15 am</td>
<td>How to Handle and Avoid Misadventures in Anterior Spine Surgery: Lessons Learned</td>
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<td>Salvador Brau, MD</td>
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<tr>
<td>8:15 am - 8:30 am</td>
<td>Lateral Approach to the Lumbar and Thoracic Spine</td>
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<td>Luiz Pimenta, MD, PhD</td>
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<td>8:50 am - 9:15 am</td>
<td>MISS approaches to the lumbar and thoracic cavity</td>
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<td>Choll Kim, MD, PhD</td>
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<td>9:15 am - 9:35 am</td>
<td>Q and A</td>
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<tr>
<td>9:45 am - 10:00 am</td>
<td>Station 1A, 1B, 1C Anterior Approach to the Lumbar Spine</td>
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<td>James Yue, MD</td>
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<td>Larry Khoo, MD</td>
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<td>Salvador Brau, MD</td>
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<td>9:45 am - 10:30 am</td>
<td>Station 2A, 2B, 2C Anterior Approach to the Lumbar Spine</td>
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<td>Gary Fantini, MD, MD</td>
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<td>Rolando Garcia, MD</td>
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<td>10:30 am - 11:15 am</td>
<td>Stations Rotate</td>
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<tr>
<td>11:15 am - 12:00 pm</td>
<td>Stations Rotate</td>
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<tr>
<td>12:00 pm - 1:00 pm</td>
<td>Working Lunch with Lectures</td>
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<tr>
<td>12:15 pm - 12:50 pm</td>
<td>Anterior Cervical Approaches C2-T1</td>
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<td></td>
<td>Carl Lauryssen, MD</td>
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<tr>
<td>12:50 pm - 1:15 pm</td>
<td>Approaches to Cervical Spine including MISS</td>
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<td>Larry Khoo, MD</td>
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<td>1:15 pm - 1:30 pm</td>
<td>How to Prepare for the Cervical Disc Replacement: Positioning and Use of Circular Frame</td>
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<td>Rolando Garcia, MD</td>
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<tr>
<td>1:30 pm - 2:15 pm</td>
<td>Station 3A and 3B Anterior Approach to the Cervical Spine</td>
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<td>Carl Lauryssen, MD</td>
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<td>2:30 pm - 3:30 pm</td>
<td>MISS Approach all 3 Stations</td>
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<td>Larry Khoo, MD</td>
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<td>Choll Kim, MD, PhD</td>
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<td>3:30 pm - 4:30 pm</td>
<td>Laminoplasty all 3 Stations</td>
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<td></td>
<td>James Yue, MD</td>
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<td>Carl Lauryssen, MD</td>
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Questions? (866) 423-9440 (U.S.) +1(630) 995-9994 (Int’l)
Note: Authors disclosures are listed in both the SAS11 Program and SAS11 Abstract Books. Author listings and location of full abstract paper is listed only in the SAS11 Abstract Book.

Abjornson, Celeste - (e)-Pioneer, Knee Creations; (f)-Pioneer
Abitbol, J.J. - (c) Medtronic; (e) Stryker, Synthes (f)-Stryker
Afram, Leon - available onsite
Allen, R. Todd - (e)-Stryker Spine, DePuy Spine; (f)-Medtronic
Anand, Neel - (c) Medtronic, NuVasive, Globus; (d)-Trans1, Globus; (e) Medtronic, Globus, Trans1; (f)-Medtronic, Trans1, Globus
Araghi, Ali - (c) Alphatec, (d)-Pioneer; (e)-Alphatec, Pioneer; (f)-Alphatec
Arias Pesantez, Carlos - (g) Nothing to Disclose
Arts, Mark - (g) Nothing to Disclose
Auerbachm, Josh - (e)-Paradigm Spine, Synthes, MCRA, LLC, MedAeta International; (f)-Paradigm Spine
Bachman-Zabloudil, Debra - available onsite
Baе, Hyun - (c) NuVasive, Stryker, Zimmer; (e)-Stryker, NuVasive, Synthes (f)-Medtronic
Balsamo, Massimo - available onsite
Barrey, Cédric - available onsite
Berbeo, Miguel - (e) Synthes; (f) DePuy Spine
Berdugo, M - (c) NuVasive, Inc; (d) Baxter International, Inc
Berg, Svante - (g) nothing to disclose
Bertagnoli, Rudolf - (c,e) Synthes; (d)-Paradigm; Beutler, William - (c)-Aesculap, Globus Bhattacharya, Sanghita - (g) nothing to disclose
Bhatti, Harvinder - (c, d, f)-Globus Medical
Billys, James - (c)-NuVasive; (d)-Safewire; (e)-Trans1, NuVasive; (f)-Trans1, Medtronic, ANS
Blaskiewicz, Donald - available onsite
Blondel, Benjamin - (g) nothing to disclose
Blumenthal, Scott - available onsite
Brücher, Dirk - (e,f)-Aesculap AG
Büettner-Janz, Karin - (a) Smith & Nephew; (d) SpineWave
Burger, Evalina - (g) nothing to disclose
Buric, Josip - (d)-Minimus Spine
Butterworth, Kimberly - (e)-Orthokinematics
Cappuccino, Andrew - (c)-NUVA, Centinnel; (d)-Pioneer, K2M, NUVA, Implant, Therall; (f)-NUVA, Globus, Centinnel
Cardoso, Mario - (g) Nothing to Disclose
Castellvi, Antonio - (c,-) Scient’x; (e)-Alphatec; (f)-Globus
Chay, Edward - (g)-Nothing to Disclose
Chen, Xi - available onsite
Chen, Sung-Hsiung - (g) Nothing to Disclose
Cheng, Boyle - (c)-Laix; (d)-Exactech, Medtronic; (e)-Alphatec Spine, Scient’x; (f)-Medtronic, Alphatec Spine
Cheng, Wayne - (e) DePuy Spine, Lank, Aesculap
Christensen, Finn - (d, e) FBC Device
Cohen, Anders - available onsite
Collignon, Frederic - (f)-Medtronic, Alphatec
Cook, Daniel - (g) nothing to disclose
Coric, Domagoj - (c,d,e) SpineWave; (d,e)-Pioneer Surgical, Spinal Motion; (e)-DePuy Spine
Crawford, Neil - (f) Trans1; (e) Lax; (d) Sparteck SDRI
Davis, Reginald - (e) Zimmer Spine
Delamarter, Rick - available onsite
Demakakos, Jason - (g)-Nothing to Disclose
DiAngelo, Denis - (d) Cagenix, Inc
Diaz, Roberto - (e) DePuy Spine; (f) Orthofix Spinal Implants, Synthes
Ding, Chen - (g) Nothing to Disclose
Dipp, Juan - (d)-I-spine, Magellan Spine, Benvenue Medical; (f)-Interventional Spine, Benvenue Medical
Diwan, Ashish - (e)-J&J-ATRM;
Domyahn, Mark - (d,e)-Zimmer, Inc
Donald, Gordon - (c, f)-K2M; (e)-K2M, Orthocon; (f)-Orthovita;
Doria, Carlo - (g) Nothing to Disclose
Dwyer, Jim - available onsite
Eif, Marcus - available onsite
Elshihabi, Said - (e) Spine Wave, Centinell, DePuy; (f) Spine Wave, Centinell Spine
Fabrizi, Anthony - (g) nothing to disclose
Fayyazi, Amir - (d)-Bonovo, Surgitech, Exactech, Titan, Alphatech, ISOI; (e)-Kuros; (f)-Synthes
Feifei, Zhou - (g) nothing to disclose
Feng, Frank - (e)-NuVasive
Ferrara, Lisa - (e) fee for service only consultant and test facility
Field, Justin - (e)-NuVasive, Globus, Stryker; (f)-NuVasive, Globus, Stryker
Fogel, Guy - (g) nothing to disclose
Foley, Kevin - available onsite
Frankel, Bruce - (c) Zimmer Spine, Orthofix Spine; (d) Spine Align Medical, Minima Spine, Advanced Spinal Research; (e) Orthofix Spine, Synthes Spine, DePuy Spine, Spine Align Medical, Aloka Ultrasound; (f) Orthofix Spine
Freeman, Andrew - (g) nothing to disclose
Garcia, Rolando - (e)-Aesculap; (f)-Aesculap & Stryker Spine
Geisler, Fred - available onsite
Gille, Olivier - available onsite
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<td>Lieberman, Isador</td>
<td>(c) Merlot Orthopedix Inc, Axiomed Spine Corp, Mazor Surgical Technologies, Stryker Spine, Cross Trees Medical Inc.; (g) Merlot Orthopedix Inc, Axiomed Spine Corp, Mazor Surgical Technologies, Trans 1, Pearl Diver, Cross trees Medical, Synthes, NOC2 Healthcare</td>
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<td>Maestretti, Gianluca</td>
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Disclosures

Marzluff, Jeseph - (e, f) - Globus Medical
Matzner, Michael - (g) nothing to disclose
McAfee, Paul - (a,c,d,e,f) - Globus, NuVasive, Depuy
McClellan, Ill, John - (g) nothing to disclose
McCombe, Peter - (c, e) - Medtronic
Meisel, Hans - (c) - Medtronic, Aesculap, Fehling, Synthes; (e) - Codon
Messer, Julie - (d,e) - Anulex Technologies
Metkar, Umesh - (a) - AOSpine - financial support for attending conference
Mikael, Mark - available onsite
Miz, George - (c, d, e, f) K2M; (f) Synthes
Mork, Tony - available onsite
Moser, Carsten - (g) nothing to disclose
Moumene, Missoum - (d) - Johnson & Johnson; (e) - DePuy Spine Inc.
Mundis, Gregory - (e, f) - NuVasive, K2M
Nayak, Aniruddh - (g) nothing to disclose
Neely, Warren - available onsite
Nguyen, Bao-Khang - (d,e) - Dimicron
Nicola, Hazem -- (g) nothing to disclose
Noriega, David - (e, f) - Vexim SAS
Nunley, Pierce - (c) - BioMet, Osprey BioMedical, LDR Spine; (d) - Amedica, K2M, Paradigm Spine, Spineology; (e) - K2M, NuVasive
Oggiano, Leonardo - available onsite
Oh, Jong Yang - available onsite
Ohnmeiss, Donna - (a) - Employed by a non-profit foundation that has received research and/or educational support from OREF, AO Spine, Medtronic Neurological, NuVasive, Orthofix, Mazor Robotics, Stryker Spine, and TranS1
Osborn, Brett - available onsite
Osman, Said - (c) - Zimmer Spine
Ozer, Fahir - (g) Nothing to Disclose
Palepu, Vivek - (g) nothing to disclose
Park, Chun-Kun - (a) - Synthes, Medtronic; (f) - Janssens Korea, Medtronic, Synthes Korea, Depuy Korea
Park, Soo-An - (d) - L&K biomedical
Patel, Ashish - available onsite
Patwardhan, Avinash - (f) - Aesculap Academy; (e) - Simpircia Spine; (d) - Spinal Kinetics, AxioMed, Orthokinematics
Peppelman, Walter - (c) - Globus, Aesculap, zimmer; (d, e) - Globus, Annulex;
Pettine, Kenneth - (c) - Medtronic, (d) - Mesoblast; (e) - DePuy; (d, e, f) - NuVasive, Paradigm
Pflugmacher, Robert - (e, f) - Medtronic, Dfine
Phillips, Frank - (c) - NuVasive, Depuy; (d) - Baxano, Feluspine, AxioMed, Bonovo, Crosstrees, Spinal Motion, Spinal Kinetics, SI-Bone, BioAssets; (e) - Kyphon, K2M, NuVasive
Pillay, Prem - (d) - Roche; (f) - Pfizer
Pimenta, Luiz - (c, f) - XLIF - NuVasive, Inc; (e) - NuVasive, Inc; Zyga; (d) - NuVasive, Inc;
Polikandriotis, John - (g) Nothing to Disclose
Polly, Jr., David - (e, f) - Medtronic
Pumberger, Matthias - (g) Nothing to Disclose
Quirno, Martin - (g) Nothing to Disclose
Ramadan, Aymen - available onsite
Regev, Gilad - (g) Nothing to Disclose
Reyes-Sánchez, Alejandro - (g) Nothing to Disclose
Ricart-Hoffiz, Pedro - (g) Nothing to Disclose
Rischke, Burkhard - (d, e) - Axiomed spine Corp.
Robertson, Peter - (a) - travel costs; (e) - Medtronic, Depuy; (f) - Medtronic, Depuy J.J.
Rodgers, Blake - (c, d, e, f) - NuVasive; (d) - Alphatech; (e, f) - Exactech; (e, f) - SpineArt; (e) - VTI; (f) - Trans1
Rousseau, Marc-Antoine - (g) Nothing to Disclose
Ryu, Kyeong-Sik - (g) Nothing to Disclose
Samdani, Amer - (e, f) - DePuy Spine, Synthes Spine, SpineGuard
Saoud, Abdelfattah - (g) Nothing to Disclose
Sawa, Anna - (g) Nothing to Disclose
Schaefer, Christoph - (d) - Bayer; (e) - Spinal Kinetics; Stryker; Kroenert; (f) - Spinal Kinetics
Schmidt, Hendrik - available onsite
Scott-Young, Matthew - (d) - Johnson & Johnson, Medtronic; (e) - FDA trial investigator - Depuy spine
Scuderi, Gaetano - available onsite
Selvan, David - (g) Nothing to Disclose
Serhan, Hassan - (a, d, f) - DePuy Spine
Shah, Neil - (g) Nothing to Disclose
Sharan, Alok - (e) - Paradigm Spine; (f) - Synthes
Shi, Qin - (g) Nothing to Disclose
Shibayama, Motohide - available onsite
Smith, William - available onsite
Smith, Zachary - (e) - Orthokinematics
Soroeanu, Alex - (g) Nothing to Disclose
Suchomel, Petr - (c, e, f) - Aesculap AG, Germany
Suetsuna, Futoshi - (g) Nothing to Disclose
Sullivan, Humbert - (g) Nothing to Disclose
Sumpio, Bauer - (e, f) - Replication Medical
Sun, Yu - (g) Nothing to Disclose
Sun, Zhi-Yong - (g) Nothing to Disclose
Szpalski, Marek - (d) - Orthovita; (e, f) - Orthofix, Scient’x
Taylor, Brett - available onsite
Tenenbaum, Shay - (g) Nothing to Disclose
Tian, Wei - (g) Nothing to Disclose
Tohmeh, Antoine - (c, e, f) - NuVasive
Tuschei, Alexander - available onsite
Umekoji, Hidemasa - (a) - Globus Medical (Research Grants)
Ungar, Benjamin - (g) Nothing to Disclose
Valdevit, Antonio - (e) - Stryker Spine
Vilendecic, Milorad - (a) - Intrinsic Therapeutics, Inc. (travel expenses)
Voronov, Leonard - (g) Nothing to Disclose
Wang, Beiyu - (g) Nothing to Disclose
Wang, Jaw-Lin - (g) Nothing to Disclose
Wardlaw, Douglas - (e)-Medtronic
Wilke, Hans-Joachim - (e)-Spinetech, Ulrich Medical; (f) Lutrisic, Surgil
White, Andrew - (e)-Globus, DePuy, Biomet; (f)-Globus Medical
Wolfram, Uwe - (g) Nothing to Disclose
Wong, David - (a)-Neurotech/Cerviom, Greenwood ASC, DII; (d)-Neurotech/Cerviom, Greenwood ASC, Colorado Orthopaedic and Surgical Hospital, Denver Integrated Imaging; (e) - Stryker, Allosource, United Healthcare; (e, f)-Synthes
Wong, Wendy - (g) Nothing to Disclose
Wu, Han - available onsite
Yanbin, Zhao - (g) Nothing to Disclose
Yang, Hui Lin - (g) Nothing to Disclose
Yeung, Anthony - (c, f)-Richard Wolf Surgical Instrument Co., Eliquence; (d)-Surgitech, Ovro Bros, Bonovo
Yi, Seong - (g) Nothing to Disclose
Youssef, Jim - (c)-Nuvasive, SeaSpine, DePuy, Aesculap/B. Braun, Osprey, Amedica; (d)-Amedica, Pioneer, Vertiflex; (e)-Aesculap/B. Braun, NuVasive, SeaSpine
Yuan, Hansen - (c) Stryker, DePuy Spine, Pioneer Surgical; (d) NuVasive; (e) Pioneer Surgical
Yue, James - (c, d, e, f)Alphatec Spine; (e)-RMI
Zhou, Lijin - available onsite
Zhu, Xuesong - (g) Nothing to Disclose
Zigler, Jack - (c)-Zimmer Spine, Osprey, Kzar, (d)-Options in Fiopuspine, Expanding Orthopedics; (e)-Synthes Spine; (f)-Stryker Spine
Zou, Jun - (g) Nothing to Disclose
Zou, Dewei - (g) Nothing to Disclose
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We open ours arms and are ready to receive you!

2nd LASAS Annual Meeting
Unforgettable as Rio de Janeiro!
2011 August 4-6 | Rio de Janeiro, Brazil
www.lasas.org