<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00–7:10 am</td>
<td>Welcome and Announcements</td>
</tr>
<tr>
<td></td>
<td>Christopher P. Ames, MD and Robert A. Hart, MD, Program Co-Chairs</td>
</tr>
<tr>
<td>7:11–7:48 am</td>
<td>Session I: Outcomes I</td>
</tr>
<tr>
<td></td>
<td>Moderators: Paul M. Arnold, MD and Bradford L. Currier, MD</td>
</tr>
<tr>
<td>7:11–7:16 am</td>
<td>Presentation #1</td>
</tr>
<tr>
<td></td>
<td>Does the Duration of Cervical Radicular Symptoms Impact Outcomes Following Anterior Cervical Discectomy and Fusion? 15664</td>
</tr>
<tr>
<td></td>
<td>Bryce A. Basques, MD; Philip K. Louie, MD; Michael Nolte, MD; Jannat M. Khan, BS; Deven Carroll, MS; Justin C. Paul, MD; Arya Varthi, MD; Edward J. Goldberg, MD; Howard S. An, MD</td>
</tr>
<tr>
<td>7:17–7:22 am</td>
<td>Presentation #2</td>
</tr>
<tr>
<td></td>
<td>Does Duration of Preoperative Radiculopathy Symptoms Impact Postoperative Outcomes and Reoperations After an ACDF? 15954</td>
</tr>
<tr>
<td></td>
<td>Daniel Tarazona, MD; Kerri Bell, BS; Taolin Fang MD; I. David Kaye, MD; Christopher K. Kepler, MD; MBA; Mark F. Kurd, MD; Alan S. Hilibrand, MD; Barrett I. Woods, MD; Kris E. Radcliff, MD; Jeffrey A. Rihn, MD; D. Greg Anderson, MD; Alexander R. Vaccaro, MD, PhD, MBA; Gregory D. Schroeder, MD</td>
</tr>
<tr>
<td>7:23–7:28 am</td>
<td>Presentation #3</td>
</tr>
<tr>
<td></td>
<td>Effect of Postoperative Increase in Disc Height on Clinical Outcomes in Anterior Cervical Discectomy and Fusion Patients 15957</td>
</tr>
<tr>
<td></td>
<td>Thomas Toole, BS; Swamy Kurra, MBBS; Pierce D. Nunley, MD; Richard A. Talarico, MD; William F. Lavelle MD</td>
</tr>
<tr>
<td>7:29–7:34 am</td>
<td>Presentation #4</td>
</tr>
<tr>
<td></td>
<td>Disparities in Outcomes By Payer Groups for Patients Undergoing Anterior Cervical Discectomy and Fusion 15911</td>
</tr>
<tr>
<td></td>
<td>Jonathan J. Rasouli, MD; Sean N. Neifert, BS; Daniel J. Snyder, BS; Jonathan S. Gal, MD; Jeremy Steinberger, MD; Brian C. Deutsch, BS; John M. Caridi, MD</td>
</tr>
<tr>
<td>7:35–7:48 am</td>
<td>Discussion</td>
</tr>
<tr>
<td>7:49–8:26 am</td>
<td>Session II: Surgical Technique</td>
</tr>
<tr>
<td></td>
<td>Moderators: Regis W. Haid, Jr., MD and Michael P. Kelly, MD</td>
</tr>
<tr>
<td>7:49–7:54 am</td>
<td>Presentation #5</td>
</tr>
<tr>
<td></td>
<td>Posterior Foraminotomy vs. Anterior Decompression and Fusion in Patients with Cervical Degenerative Disc Disease with Radiculopathy – Five-Year Outcomes from the National Swedish Spine Register 15656</td>
</tr>
<tr>
<td></td>
<td>Anna MacDowall, MD, PhD; Marek Holy, MD; Claes Olerud, MD, PhD</td>
</tr>
<tr>
<td>7:55–8:00 am</td>
<td>Presentation #6</td>
</tr>
<tr>
<td></td>
<td>In-Situ Decompression to Spinal Cord During Anterior Controllable Antedisplacement Fusion Treating Degenerative Kyphosis with Stenosis: Surgical Outcomes and Analysis of C5 Nerve Palsy Based on 49 Patients 15895</td>
</tr>
<tr>
<td></td>
<td>Haizong Yang, MD; Jiangang Shi, MD</td>
</tr>
<tr>
<td>8:01–8:06 am</td>
<td>Presentation #7</td>
</tr>
<tr>
<td></td>
<td>Subgroup Analysis on the Efficacy of Anterior Cervical Discectomy with or without Interbody Fusion or Arthroplasty in the Treatment of Cervical Radiculopathy: Combined Clinical Results of Two Randomised Controlled Trials 16037</td>
</tr>
<tr>
<td></td>
<td>Caroline M.W. Goedmakers; Ronald H.M.A. Bartels; Erik W. van Zwet; Carmen L.A. Vleggeert-Lankamp</td>
</tr>
<tr>
<td>8:07–8:12 am</td>
<td>Presentation #8</td>
</tr>
<tr>
<td></td>
<td>A Comparison of Three Different Positioning Techniques on Surgical Corrections and Post-Operative Alignment in Cervical Deformity Surgery 16063</td>
</tr>
<tr>
<td></td>
<td>Brandon Carlson, MD; Renaud Lafage, MS; Tejbir S. Pannu, MD, MS; Peter G. Passias, MD; Christopher P. Ames, MD; Robert A. Hart, MD; Christopher I. Shaffrey, MD; Gregory Mundis, MD</td>
</tr>
</tbody>
</table>
8:13–8:26 am
Discussion

8:27–9:10 am  
**Session III: Risk Stratification/Complications**

**Moderators:**
R. Alden Milam, MD and Eric W. Nottmeier, MD

8:27–8:32 am
Presentation #9
The Effect of Local Versus Intravenous Steroids on Dysphagia and Dysphonia Following Anterior Cervical Discectomy and Fusion (ACDF): 1-Year Data from a Single-Blinded, Prospective, Randomized Control Trial 15503

**Tyler J. Jenkins, MD; Reuben Nair, MD; Surabhi A. Bhatt, BS; Brett D. Rosenthal, MD; Jason W. Savage, MD; Wellington K. Hsu, MD; Alpesh A. Patel, MD**

8:33–8:38 am
Presentation #10
What are the Important Predictors of Postoperative Functional Recovery in Patients with Cervical OPLL? Results of a Multivariate Analysis 15618

**Hiroaki Nakashima, MD, PhD; Tokumi Kanemura, MD, PhD; Kotaro Satake, MD, PhD; Yoshimoto Ishikawa, MD, PhD; Jun Ouchida, MD; Shiro Imagama, MD, PhD**

8:39–8:44 am
Presentation #11
Quantitative Risk Factor Analysis of Post-Operative Dysphagia After Anterior Cervical Discectomy and Fusion (ACDF) Using the Eating Assessment Tool-10 (EAT-10) 15631

**Andrew Y. Yew, MD; Matthew Nguyen, BS; Wellington Hsu, MD; Alpesh A. Patel, MD, FACS**

8:45–8:50 am
Presentation #12
Reoperation for Late Neurological Deterioration After Laminoplasty in Cases with Degenerative Cervical Myelopathy: Comparison Between Cervical Spondylosis and Ossification of Posterior Longitudinal Ligament 15686

**Hiroaki Nakashima, MD, PhD; Tokumi Kanemura, MD, PhD; Kotaro Satake, MD, PhD; Yoshimoto Ishikawa, MD, PhD; Jun Ouchida, MD; Shiro Imagama, MD, PhD**

8:51–8:56 am
Presentation #13
Complications After Instrumented Posterior Occipitocervical Fusion for Upper Cervical Spine Trauma 15795

**Jacob C. Hoffmann, MD; Aditya Srinivasan, BS; Ryan J. Warth, MD; Shah-Nawaz M. Dodwad, MD; Mark L. Prasad, MD**

8:57–9:10 am
Discussion

9:11–9:41 am  
**Break**

9:42–10:25 am  
**Session IV: Deformity/Alignment I**

**Moderators:**
K. Daniel Riew, MD and Daniel M. Sciubba, MD

9:42–9:47 am
Presentation #14
Predicting the Occurrence of Post-Operative Distal Junctional Kyphosis in Cervical Deformity Patients 15628

**Peter G. Passias, MD; Samantha R. Horn, BA; Virginie Lafage, PhD; Renaud Lafage, MS; Justin S. Smith MD; Themistocles S. Protopsaltis, MD; Cole A. Bortz, BA; Frank A. Segreto, BS; Alan H. Daniels, MD; Daniel M. Sciubba, MD; Robert A. Hart, MD; Shay Bess, MD; Christopher I. Shaffrey, MD; Christopher P. Ames MD; International Spine Study Group**

9:48–9:53 am
Presentation #15
Therapeutic Outcomes for Dropped Head Syndrome 16133

**Hiroshi Miyamoto, MD; Terumasa Ikeda, MD; Masao Akagi, MD**

9:54–9:59 am
Presentation #16
Postoperative Cervical Kyphosis After Correction of Adult Thoracolumbar Deformity: Is it Permanent? 15900

**Kyung-Chung Kang, MD; Jung-Hee Lee, MD; Won-Ju Shin, MD**

10:00–10:05 am
Presentation #17
Surgical Outcomes in Rigid vs. Flexible Cervical Deformities 16094

**Themistocles S. Protopsaltis, MD; Nicholas Stekas, BS; Justin S. Smith, MD, PhD; Alexandra Soroceanu, MD; Renaud Lafage, MS; Alan Daniels, MD; Han Jo Kim, MD; Peter G. Passias, MD; Gregory Mundis, MD; Eric O. Klineberg, MD; D. Kojo Hamilton, MD; Munish Gupta, MD; Virginie Lafage, PhD; Robert A. Hart MD; Frank Schwab, MD; Douglas C. Burton, MD; Shay Bess, MD; Christopher I. Shaffrey, MD; Christopher P. Ames, MD; International Spine Study Group**

10:06–10:11 am
Presentation #18
Cervical and Cervicothoracic Sagittal Alignment by Roussouly Thoracolumbar Subtypes in Asymptomatic Volunteers 16454

**Alekos A. Theologis, MD; Sravisht Iyer, MD; Lawrence G. Lenke, MD; Han Jo Kim, MD; Michael P. Kelly, MD, MSc**
10:12–10:25 am  Discussion
10:26–10:30 am  **Introduction of Presidential Guest Speaker**  
*Jeffrey C. Wang, MD, President*
10:31–11:20 am  **Henry H. Bohlman Presidential Guest Lecture**  
*Helen Turnbull, PhD, CSP; CEO Human Facets*
11:21–11:30 am  Discussion
11:30 am  **Adjourn to Industry Workshops** – Lunch Available for Workshop Attendees Only, Prior Registration Not Required, No CME Credits

11:30 am–1:30 pm  Workshop 1: DePuy Synthes Spine, Room 18  
Innovation in Complex Cervical Reconstruction: What the Research Evidence Tells Us About Alignment, Deformity, Revision and Complications  
*Faculty: Christopher P. Ames, MD*

11:30 am–1:30 pm  Workshop 2: Globus Medical, Inc., Room 15  
Treatment of Severe Stenosis: Anterior v. Posterior v. 360  
*Faculty: Timothy Moore, MD*

11:30 am–1:30 pm  Workshop 3: Medtronic, Room 16  
Navigating the Cervical Spine: The Latest in Techniques and Technologies  
*Faculty: John G. Heller, MD and Blake Staub, MD*

11:30 am–1:30 pm  Workshop 4: NuVasive, Room 17  
Challenges of Cervical Surgery  
Discussion topics include evaluation and management of cervical malalignment, nuances of dysphagia prevention, and posterior infection and treatment.  
*Faculty: Christopher I. Shaffrey, MD; Rick C. Sasso, MD; Vincent C. Traynelis, MD*

11:30 am–1:30 pm  Workshop 5: Stryker, Room 19  
A Clinical Update on Tritanium – A Novel, Highly Porous Material Designed for Bone In-Growth and Biological Fixation  
3D printed interbody devices have flooded the market but most lack evidence. Stryker’s proprietary Tritanium In-Growth Technology, used to build the Tritanium PL, TL and C Cages, was designed for bone in-growth and biological fixation. Join us as our distinguished surgeon faculty, Clinton J. Devin, MD, shares the science behind Tritanium In-Growth Technology.  
*Faculty: Clinton J. Devin, MD*

11:30 am–1:30 pm  Workshop 6: Zimmer Biomet, Room 21  
Cervical Disc Replacement, Why We’re Undertreating Patients and How to Solve the Problem  
*Faculty: Woosik M. Chung, MD; John M. Rhee, MD; Stephen I. Ryu, MD; Neill M. Wright, MD*

1:30–2:49 pm  **Symposium I: Scoliosis Research Society**  
**Moderator:** Robert A. Hart, MD

1:30–1:40 pm  Background and History of Development of the Schwab Clinical Impact Based ASD Classification and Osteotomy Classification Systems in Collaboration with the SRS  
*Frank J. Schwab, MD*

1:41–1:51 pm  History of the Development, Validation and Modifications of the SRS-22r Outcomes Questionnaire  
*Douglas C. Burton, MD*

1:52–2:02 pm  Initiation and Completion of the Scoli-Risk 1 as a Collaborative Effort Between SRS and AOSpine  
*Christopher I. Shaffrey, MD*

2:03–2:13 pm  History of the SRS from Inception to 2018  
*David W. Polly Jr., MD*

2:14–2:24 pm  Development and Management of the HSG and Use of Benchmarking for Quality Improvement, Including the History of SRS Initiatives with Respect to Pediatric Patients  
*Peter O. Newton, MD*
2:25–2:35 pm  The Evolution in Thinking about Cervical Deformity over the Past 25 Years: Touchpoints Between SRS and CSRS  
*Todd J. Albert, MD*

2:36–2:49 pm  Discussion

2:50–3:20 pm  Break  
Camelback Ballroom

### Session V: Predictive Analytics/Shared Decision Making

**Moderators:** *Thomas E. Mroz, MD and Leo R. Spector, MD*

#### 3:16–3:21 pm  Presentation #19

Can the American College of Surgeons Risk Calculator Predict 30-Day Complications After Cervical Spine Surgery? 15809  
*Michael H. McCarthy, MD, MPH; Tyler J. Jenkins, MD; Joseph P. Maslak, MD; Wellington K. Hsu, MD; Alpesh A. Patel, MD*

#### 3:22–3:27 pm  Presentation #20

Difference in Patient Cohorts for Cervical Disc Arthroplasty (CDA) and Anterior Cervical Discectomy and Fusion (ACDF) 15496  
*W. Ryan Spiker, MD; Darrel S. Brodke, MD; Nicholas Spina, MD; Brandon Lawrence, MD; Vadim Goz, MD; Brook I. Martin, PhD*

#### 3:28–3:33 pm  Presentation #21

Does Payer Type Affect Patient Satisfaction Scores? 15408  
*Michael P. Silverstein, MD; Susan Odum, PhD; Michael Conti Mica, MD; Bruce Darden, MD; Eric Laxer, MD; Alden Milam, MD; Alfred Rhyne, MD; P. Bradley Segebarth, MD; Leo R. Spector, MD*

#### 3:34–3:39 pm  Presentation #22

Development of a Novel Cervical Deformity Surgical Invasiveness Index 15918  
*Peter G. Passias, MD; Samantha R. Horn, BA; Alexandra Soroceanu, MD; Cheongeun Oh, PhD; Tamir Allon, MD, MPH; Brian J. Neuman, MD; Virginie Lafage, PhD; Renaud Lafage, MS; Justin S. Smith, MD; Cole A. Bortz, BA; Frank A. Segreto, BS; Shay Bess, MD; Christopher I. Shaffrey MD; Christopher P. Ames, MD; International Spine Study Group*

#### 3:40–3:45 pm  Presentation #23

A Clinical and Radiologic Study on Patients of Cervical Spondylotic Myelopathy with Anterior Cervical Spondylolisthesis Treated by Posterior Decompression Surgery: Retrospective Multicenter Study of 867 Cases 15724  
*Ken Ninomiya, MD, PhD; Narihito Nagoshi, MD, PhD; Ryoma Aoyama, MD, PhD; Satoshi Suzuki, MD, PhD; Yuta Shiono, MD, PhD; Yuichiro Takahashi, MD, PhD; Nobuyuki Fujita, MD, PhD; Eijirou Okada, MD, PhD; Osahiko Tsuji, MD, PhD; Mitsuru Yagi, MD, PhD; Takahito Iga, MD; Masaya Nakamura, MD, PhD; Morio Matsumoto MD, PhD; Kota Watanabe, MD, PhD; Ken Ishii, MD, PhD; Junichi Yamane, MD, PhD*

#### 3:46–3:59 pm  Discussion

### Session VI: Diagnostics/Imaging

**Moderators:** *Alexander J. Ghanayem, MD and James S. Harrop, MD*

#### 4:04–4:05 pm  Presentation #24

1ST PLACE CLINICAL RESEARCH AWARD  
Effect of Cervical Decompression Surgery on Spine and Lower Extremity Biomechanics in Adult Cervical Spondylotic Myelopathy Patients 15659  
*Ram Haddas, PhD; Isador Lieberman, MD; Raj Arakal, MD; Akwasi Boah, MD; Theodore Belanger, MD; Kevin Ju, MD*

#### 4:06 pm–4:11 pm  Presentation #25

3rd PLACE CLINICAL RESEARCH AWARD  
The Impact of K-Line (-) in the Neck-Flexion Position on Patient-Based Outcomes After Cervical Laminoplasty for Patients with Ossification of the Posterior Longitudinal Ligament 15844  
*Atsushi Kimura, MD, PhD; Yasuyuki Shiraishi, MD; Ryo Sugawara, MD; Hirokazu Inoue, MD, PhD; Teruaki Endo, MD, PhD; Katsushi Takeshita, MD, PhD*

#### 4:12 pm–4:17 pm  Presentation #26

Brain Functional Connectivity Predicts for Neurological Improvement in Patients with Cervical Myelopathy – A Resting-State fMRI Study 15761  
*Takashi Kaito, MD, PhD; Shota Takenaka, MD, DMSc; Takahiro Makino, MD, DMSc; Yusuke Sakai, MD; Junichi Kushioka, MD; Hisashi Tanaka, MD; Yoshiyuki Watanabe, MD, PhD; Shigeyuki Kan, PhD; Masahiko Shibata, MD*
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 4:18 pm–4:23 pm | **Presentation #27**  
Multiparametric Quantitative Magnetic Resonance Imaging of the Cervical Spine to Measure Microstructure and Tissue Injury 15742  
*Muhammad Ali Akbar, MD; Allan R. Martin, MD, PhD; Jetan H. Badhiwala, MD; Michael G. Fehlings, MD, PhD, FRCSC, FACS* |
| 4:24–4:37 pm   | **Discussion**                                                                                                     |
| 4:38–6:30 pm   | **Welcome Reception**                                                                                              |

Friday, Dec. 7, 2018  
Ballroom DEFG

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 7:00–7:10 am | **Welcome and Announcements**  
*Christopher P. Ames, MD and Robert A. Hart, MD, Program Co-Chairs* |
| 7:11–7:48 am | **Session VII: Outcomes II**  
**Moderators:**  
*Alpesh A. Patel, MD and John M. Rhee, MD*  
Presentation #28  
Minimal Clinically Important Difference and Substantial Clinical Benefit Using PROMIS CAT in Cervical Spine Surgery 16045  
*Sravisht Iyer, MD; Benjamin Khechen, BA; Daniel Stein, BS; Michael Steinhaus, MD; Thomas Ross, RN; Jingyan Yang, PhD; Kem Singh, MD; Todd Albert, MD; Darren Lebl, MD; Russel Huang, MD; Harvinder Sandhu, MD; Bernard Rawlins, MD; Frank Schwab, MD; Virginie Lafage, PhD; Han Jo Kim MD* |
| 7:17–7:22 am | **Presentation #29**  
Discordance Between Functional Outcome and Self-Reported Ratings of Health Status After Surgery for Degenerative Cervical Myelopathy 16119  
*Jefferson R. Wilson, MD, PhD; Lindsay Tetreault, PhD; Michael Fehlings, MD, PhD, FRCSC, FACS* |
| 7:35–7:48 am | **Discussion**                                                                                                     |
| 7:49–8:38 am | **Session VIII: Motion/Motion Preservation**  
**Moderators:**  
*Frank M. Phillips, MD and Vincent C. Traynelis, MD*  
Presentation #32  
Evaluating Range of Motion During In-Vivo Dynamic Cervical Spine Motions in Spondylosis Patients 16242  
*Thomas D. Cha, MD, MBA; Kamran Z. Khan, MS; Tao Guo; Yan Yu; Guoan Li, PhD* |
| 7:55–8:00 am | **Presentation #33**  
The Rate of Heterotopic Ossification Following Cervical Disc Arthroplasty: A Systematic Review and Comparison of Data 15998  
*Sam C. Overley, MD; Jay Levin; Jun Sup Kim, MD; James E. Dowdell III, MD; Steve McAnany, MD; Thomas E. Mroz, MD, MBA; Andrew C. Hecht, MD* |
| 8:01–8:06 am | **Presentation #34**  
Comparing Range of Motion in Follow Up of Anterior Cervical Discectomy with or without Interbody Fusion and Arthroplasty 15879  
*Xiaoyu Yang, MD; Mark P. Arts, MD, PhD; Carmen Vleggeert-Lankamp, MD, MSc, PhD* |
| 8:07–8:12 am | **Presentation #35**  
Timing of Tracheostomy After Anterior Cervical Discectomy and Fusion 15811  
*Shah-Nowaz Dodwad, MD; Mark L. Prasarn, MD; Jason W. Savage, MD, Charles E. Wade, PhD; Sasha D. Adams, MD* |
| 8:13–8:18 am | **Presentation #36**  
Clinical Adjacent Segment Pathology Risk is Less Following Cervical Disc Arthroplasty Compared to Anterior Cervical Discectomy and Fusion at 7 Years Postop 16100  
*Shah-Nowaz Dodwad, MD; Mark L. Prasarn, MD; Jason W. Savage, MD, Charles E. Wade, PhD; Sasha D. Adams, MD* |
Pierce D. Nunley, MD; Eubulus J. Kerr, MD; David A. Cavanaugh, MD; Andrew Utter, MD; Peter Campbell, MD; Kelly A. Frank, MS; Kyle E. Marshall, MS; Marcus B. Stone, PhD

8:19–8:24 am  Analysis of Re-Operations After Cervical Total Disc Replacement in a Consecutive Series of 504 Patients Receiving the Same Device Type 15529  
Jack E. Zigler, MD; Richard D. Guyer, MD; Scott L. Blumenthal, MD; Donna D. Ohnmeiss, PhD

8:25–8:38 am  Discussion

8:39–8:44 am  Preview CSRS 2019 Annual Meeting in New York, NY  
Andrew C. Hecht, MD; Local Host

8:45–8:50 am  Preview CSRS Asia Pacific Section 2019 Annual Meeting  
Takachika Shimizu, MD; President CSRS Asia Pacific Section

8:51–8:56 am  Preview CSRS European Section 2019 Annual Meeting  
Björn Zoega, MD, PhD; President CSRS European Section

8:57–9:27 am  BREAK  
Camelback Ballroom

9:28–10:33 am  Session IX: FOCUSED PODIUM PRESENTATIONS  
Moderators: Wellington P. Hsu, MD and Michael P. Steinmetz, MD

OUTCOMES
9:28–9:30 am  Are Outcomes of ACDF Influenced by Presurgical Depressive Symptoms on the Mental Component Score of the Short Form 12 Survey? 15789  
Taolin Fang, MD; Daniel Tarazona, MD; Kristen J. Nicholson, PhD; I. Matthew S. Galetta, BS; I. David Kaye, MD; Christopher K. Kepler, MD, MBA; Mark F. Kurd, MD; Alan S. Hilibrand, MD; Barrett I. Woods, MD; Kristen E. Radcliff, MD; Jeffrey A. Rith, MD; D. Greg Anderson, MD; Alexander R. Vaccaro, MD, PhD, MBA; Gregory D. Schroeder, MD

9:31–9:33 am  Crossing the Cervicothoracic Junction in Cervical Spine Fusion Surgery Involves Higher Operative Risks, but Superior Long-Term Outcomes 15832  
Alvaro Ibaseta, MS; Rafa Rahman, BS; Richard L. Skolasky, ScD; Jay S. Reider, MD, MPH; Lee H. Riley III, MD; Daniel M. Sciubba, MD; David B. Cohen, MD, MPH; Brian J. Neuman, MD

9:34–9:36 am  Metabolic Syndrome and 30-Day Outcomes Following Elective Anterior Cervical Discectomy and Fusion (ACDF) 15817  
Azeem Tariq Malik, MBBS; Nikhil Jain, MD; Jeffery Kim, MD; Elizabeth Yu, MD; Saftar N Khan, MD

9:37–9:39 am  Role of the Sodium/Glutamate Blocker Riluzole in Enhancing Functional Outcomes in Patient Undergoing Surgery for Degenerative Cervical Myelopathy: Results of the Prospective, Multicentre Double Blind Controlled CSM-Protect Randomized Trial 15873  
Michael Fehlings, MD, PhD, FRSCS, FACS; Jetan H. Badhiwala, MD; Branko Kopjar, MD, PhD; Henry Ahn, MD; Francis Farhadi, MD, PhD; Christopher I. Shaffrey, MD; Ahmad Nassr, MD; Praveen Mummaneni, MD; Paul M. Arnold, MD; W. Bradley Jacobs, MD; K. Daniel Riew, MD; Darrel S. Brodke, MD; Alexander R. Vaccaro, MD, PhD; Alan Hilibrand, MD; Jason D. Wilson, MD; James Harrop, MD; S. Tim Yoon, MD, PhD; Kee Kim, MD; Daryl Fourney, MD, FRCS, FACS; Carlo Santiguida, MD

9:40–9:46 am  Discussion

INNOVATION AND ECONOMICS
9:47–9:49 am  Use of Recombinant Human Bone Morphogenetic Protein-2 at the C1-2 Lateral Articulation in Posterior Atlantoaxial Fusion in Adult Patients with or without Conventional Structural Bone Graft 15933  
Wataru Ishida, MD; Seba Ramhmdani, MD; Yuaxuan Xia, BS; Thomas A. Kosztowski, MD; Rafael De la Garza Ramos, MD; John Choi, BS; Benjamin D. Elder, MD, PhD; Nicholas Theodore, MD; Ziya L. Gokaslan, MD; Jean-Paul Wolinsky, MD; Daniel M. Sciubba, MD; Ali Bydon, MD; Timothy F. Witham, MD; Sheng-Fu L. Lo, MD

9:50–9:52 am  Functional Integration of a Tissue Engineered Intervertebral Disc and Translation to a Large Animal Cervical Spine Model 15818  
Sarah E. Gullbrand, PhD; Beth G. Ashinsky, Edward Bonnevie; Dong Hwa Kim; Lachlan J. Smith, PhD; Thomas P. Schaer, DVM; Dawn M. Elliott, PhD; Harvey E. Smith, MD; Robert L. Mauck, PhD

9:53–9:55 am  Correlating Radiologic Signs of Disc Degeneration with Changes in Cervical Spine Biomechanics 16122
<table>
<thead>
<tr>
<th>Presentation #44</th>
<th>Vijay Permeswaran, PhD; Anup Gandhi, PhD; Vikas Patel, MD; John Wanebo, MD; Ripul Panchal, MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:56–9:58 am</td>
<td>Cost-Utility of Revisions for Cervical Deformity Correction Warrants Minimization of Reoperations 15622</td>
</tr>
<tr>
<td></td>
<td>Samantha R. Horn, BA; Peter G. Passias, MD; Renaud Lafage, MS; Virginie Lafage PhD; Hamid Hassanzadeh, MD; Jason A. Horowitz, BA; Cole A. Bortz, BA; Frank A. Segreto, BS; Justin S. Smith, MD; Daniel M. Sciubba, MD; Alan H. Daniels, MD; Christopher I. Shaffrey, MD; Richard A. Hostin, MD; Christopher P. Ames, MD; International Spine Study Group</td>
</tr>
<tr>
<td></td>
<td>Economic Impact of Older Age on the Initial Spine Care of Individuals with Acute Spine Trauma 16130</td>
</tr>
<tr>
<td></td>
<td>Julio C. Furlan, MD, LLB, MBA, MSc, PhD, FRCPC; Michael G. Fehlings, MD, PhD, FRCSC, FACS; Catharine Craven, BA, MD, MSc, FRCPC</td>
</tr>
<tr>
<td>10:02–10:08 am</td>
<td>Discussion</td>
</tr>
<tr>
<td></td>
<td>PREDICTIVE ANALYTICS AND SHARED DECISION MAKING</td>
</tr>
<tr>
<td>10:09–10:11 am</td>
<td>30-Day Preoperative Opioid Dosage Predicts 12-Month Satisfaction in Cervical Spine Surgery 15862</td>
</tr>
<tr>
<td></td>
<td>Jeffrey Hills, MD; Joseph Wick, BA; Jacquelyn Pennings, PhD; Inamullah Khan, MD; Ahilan Sivaganesan, MD; Kristin R. Archer, PhD, DPT; Clinton J. Devin, MD</td>
</tr>
<tr>
<td>10:12–10:14 am</td>
<td>Impact of Neck Disability Index on 12-Months Satisfaction After Elective Surgery for Cervical Radiculopathy 16235</td>
</tr>
<tr>
<td></td>
<td>Inamullah Khan, MD; Ahilan Sivaganesan, MD; Anthony L. Asher, MD; Panagiotis Kerezoudis, MD; Hui Nian, PhD; Frank E. Harrell Jr., PhD; Mohamad Bydon, MD; Kristin R. Archer, PhD, DPT; Clinton J. Devin, MD</td>
</tr>
<tr>
<td></td>
<td>Piyush Kalakoti, MD; Alexander J. Volkmar, BS; Alan Shamrock, BS; Yubo Gao, PhD; Nathan R. Hendrickson, MD; Andrew J. Pugely, MD</td>
</tr>
<tr>
<td>10:18–10:20 am</td>
<td>Using a Machine Learning Approach to Predict Outcome After Surgery for Degenerative Cervical Myelopathy 16218</td>
</tr>
<tr>
<td></td>
<td>Zamir Merali, MD; Christopher D. Witiw, MD, MSc; Jetan Badhiwala, MD; Jefferson Wilson, MD, PhD, FRCSC; Michael G. Fehlings, MD, PhD, FRCSC, FACS</td>
</tr>
<tr>
<td>10:21–10:23 am</td>
<td>Model for 90-Day and 1-Year Outcome Prediction After Cervical Spine Arthrodesis: A Web-Based Clinical Utility Tool 16318</td>
</tr>
<tr>
<td></td>
<td>Piyush Kalakoti, MD; Nicholas A. Bedard, MD; Alan Shamrock, BS; Alexander J. Volkmar, BS; Nathan R. Hendrickson, MD; Andrew J. Pugely, MD</td>
</tr>
<tr>
<td>10:24–10:26 am</td>
<td>The Predictor of Patients Who Failed to Achieve the Minimum Clinical Important Differences Following Laminoplasty for Cervical Spondylotic Myelopathy 15551</td>
</tr>
<tr>
<td></td>
<td>Koji Tamai; MD; Akinobu Suzuki; MD, PhD; Akito Yabu; Hidetomi Terai; MD, PhD; Masatoshi Hoshino, MD, PhD; Hiromitsu Toyoda; Shinji Takahashi; MD; Shoichiro Ohyama; MD; Yusuke Hori; MD; Hiroaki Nakamura, MD</td>
</tr>
<tr>
<td>10:27–10:33 am</td>
<td>Discussion</td>
</tr>
<tr>
<td>10:34–11:29 am</td>
<td>SESSION X: RESEARCH SESSION</td>
</tr>
<tr>
<td></td>
<td>Zoher Ghogawala, MD, FACS</td>
</tr>
<tr>
<td>10:34–10:37 am</td>
<td>Announcement—2018 Research Grant Winners</td>
</tr>
<tr>
<td>10:38–10:39 am</td>
<td>Introduction—2017 Research Grant Updates</td>
</tr>
<tr>
<td>10:40–10:45 am</td>
<td>2017 Medtronic</td>
</tr>
<tr>
<td></td>
<td>Randomized, Controlled Trial of Posterior C1-2 Fusion vs. Bracing Alone for Treatment of Type II Odontoid Process Fractures in the Elderly</td>
</tr>
<tr>
<td></td>
<td>Christopher K. Kepler, MD, MBA</td>
</tr>
<tr>
<td>10:46–10:51 am</td>
<td>2017 CSRS 21st Century Research and Education Grants</td>
</tr>
<tr>
<td></td>
<td>Biodegradable Microspheres and Hydrogel Drug Delivery System of Anti-Inflammatory Therapeutics for the Treatment of Chronic Degenerative Disc Disease</td>
</tr>
<tr>
<td></td>
<td>Anna Chee, PhD</td>
</tr>
</tbody>
</table>
10:52-10:57 am  2017 Seed Starter Grants
Exosomes from Hypoxic Pre-conditioned Bone Marrow Stem Cell Media for Acute Spinal Cord Injury
Ankit I. Mehta, MD

Julio C. Furlan, MD, LLB, MBA, MSc, PhD, FRCP

11:04–11:09 am  Effect of Cervical Decompression Surgery on Neuromuscular Control and Kinematics During Gait in Adult Patients with Cervical Spondylotic Myelopathy
Ram Haddas, PhD

11:10–11:11 am  Introduction–2016 and 2015 Resident Fellow Research Grant Updates

11:12–11:17 am  In Situ Tissue Engineering Approach to Intervertebral Disc Regeneration
Sapan Gandhi, MD

11:18–11:23 am  Omega 3 Fatty Acid Supplementation to Reduce Intervertebral Disc Degeneration
Zachary NaPier, MD

11:24–11:29 am  Improvement in Grip and Pinch Strength Following Anterior Cervical Discectomy and Fusion Procedures
Brittany E. Haws, MD

11:30–11:34 am  Introduction of CSRS President
Alexander R. Vaccaro, MD, PhD

11:35–12:00 pm  PRESIDENTIAL ADDRESS
Jeffrey C. Wang, MD

12:00–12:55 pm  Non-Member Lunch  Camelback Ballroom
12:00–12:55 pm  Member Lunch (CSRS Members Only)  Ballroom AB

1:00–3:23 pm  Symposium II: International Collaborative Approaches to Complex Cervical Surgery
Moderators: Christopher P. Ames, MD

1:00–1:15 pm  Surgical Approaches to CVJ
Luis Carelli, MD; Brazil

1:16–1:31 pm  Primary Bone Tumors of Cervical Spine
Stefano Boriani, MD; Italy

1:32–1:47 pm  Management of High Cervical Defects After Tumor Resections: Approaches and Biomechanics
Dezoe Jeszensky, MD, PhD; Switzerland

1:48–2:03 pm  Correction Techniques for CT Deformity
Ibrahim Obeid, MD, MSc; France

2:04–2:19 pm  Anterior vs. Posterior Approach to OPLL
Yoon Ha, MD, PhD; Korea

2:20–2:35 pm  Posterior Correction Techniques with Pedicle Screws
Kuniyoshi Abumi, MD; Japan

2:36–2:51 pm  The Surgical Challenge of Cervical Sagittal Balance
William Sears, FRACS; Australia

2:52–3:07 pm  The Value and Application of Pre-operative Correction in the Treatment of Severe Cervical Kyphosis
Yu Sun, MD; China

3:08–3:23 pm  Discussion

3:24–3:40 pm  BREAK  EAST FOYER

3:41–4:30 pm  Session XI: Deformity/Alignment II
Moderators: Erica F. Bisson, MD and Robert F. Heary, MD
3:41–3:46 pm  
**Presentation #53** 
Selective Surgical Treatment Strategies for Severe Cervical Kyphosis 15891  
*Huajiang Chen, MD; Jianxi Wang*

3:47–3:52 pm  
**Presentation #54** 
Successful Clinical Outcomes Following Surgery for Severe Cervical Deformity are Dependent Upon Achieving Sufficient Cervical Sagittal Alignment 16097  
*Themistocles S. Protopsaltis, MD; Nicholas Stekas, BS; Justin S. Smith MD, PhD; Alexandra Soroceaneu, MD; Renaud Lafage, MS; Alan Daniels, MD; Han Jo Kim, MD; Peter G. Passias, MD; Gregory Mundis, MD; Eric O. Klineberg, MD; D. Kojo Hamilton, MD; Munish Gupta, MD; Virginie Lafage, PhD; Robert A. Hart, MD; Frank Schwab, MD; Douglas C. Burton, MD; Shay Bess, MD; Christopher I. Shaffrey, MD; Christopher P. Ames MD; International Spine Study Group*

3:53–3:58 pm  
**Presentation #55** 
Effect of Correction Surgery for Cervical Kyphosis on Compensatory Mechanisms in Overall Spinopelvic Sagittal Alignment 15880  
*Hirosi Miyamoto MD; Terumasa Ikeda, MD; Masao Akagi, MD*

3:59–4:04 pm  
**Presentation #56** 
Validation of a Cervical Spine Deformity Classification System Using a Long-Term Follow-Up Data After Multilevel Posterior Cervical Fusion Surgery 15420  
*Seung-Jae Hyun, MD, PhD; Jong-myung Jung, MD; Ki-Jeong Kim, MD, PhD*

4:05–4:10 pm  
**Presentation #57** 
Changes in Cervical Sagittal Alignment in Adolescent Idiopathic Scoliosis Following Posterior Spinal Instrumented Fusion 15379  
*Ryan J. Berger, MD; William A. Cantrell, BS; Joseph Tanenbaum, BA; David P. Gurd, MD; Thomas E. Kuivila, MD; Thomas E. Mroz, MD; Michael P. Steinmetz, MD; Ryan C. Goodwin, MD*

4:11–4:16 pm  
**Presentation #58** 
Recovery Kinetics: Comparison of Patients Undergoing Primary or Revision Procedures for Adult Cervical Deformity Using a Novel Area Under the Curve Methodology 15563  
*Frank A. Segreto, BS; Virginie Lafage, PhD; Renaud Lafage, MS; Justin S. Smith, MD, PhD; Breton G. Line, BS; Justin K. Scheer, MD; Dean Chou, MD; Nicholas J. Frangella, BS; Cole A. Bortz, BA; Bassel G. Diebo, MD; Themistocles S. Protopsaltis, MD; Han Jo Kim, MD; Christopher P. Ames, MD; Brian J. Neuman, MD; Peter G. Passias, MD; International Spine Study Group*

4:17–4:30 pm  
Discussion

4:30 pm  
Adjourn

---

Saturday, Dec. 8, 2018  
**Ballroom DEFG**

7:00–7:05 am  
**Welcome and Announcements**  
Christopher P. Ames, MD and Robert A. Hart, MD, Program Co-Chairs

7:06–7:49 am  
**Session XII: Outcomes III**  
**Moderators:** Douglas G. Orndorff, MD and W. Ryan Spiker, MD

7:06–7:11 am  
**Presentation #59**  
Characteristics of Residual Symptoms Following Laminoplasty in Elderly Patients with Cervical Spondylotic Myelopathy: A Prospective Comparative Study of Clinical Outcomes for 1025 Patients 15359  
*Masaaki Machino, MD; Shiro Imagama, MD, PhD; Kei Ando, MD; Naoki Ishiguro, MD, PhD*

7:12–7:17 am  
**Presentation #60**  
How Does Everyone Stack Up? A Risk-Adjusted Ranking Scheme for Surgeons Performing ACDF for Radiculopathy 15704  
*Ahilan Sivaganesan, MD; Anthony Asher, MD; Mohamad Bydon, MD; Inamullah Khan, MBBS, MD; Hui Nian, PhD; Frank E. Harrell Jr., PhD; Kristin Archer, PhD; Clinton J. Devin, MD*

7:18–7:23 am  
**Presentation #61**  
Health Outcomes and Patient Satisfaction After Elective Cervical Spine Surgery for Cervical Spondylotic Myelopathy: A Prospective 24-Month Study 15528  
*Marjorie C. Wang, MD MPH; Jianing Li, PhD*

7:24–7:29 am  
**Presentation #62**  
Preoperative Promis Score Is Not Predictive of Postoperative Pain or Narcotics Consumption After Anterior Cervical Discectomy and Fusion 15669  
*Brittany E. Haws, MD; Benjamin Khechen, BA; Dil V. Patel, BS; Ankur S. Narain, BA; Jordan A. Guntin, BS; Kaitlyn L. Cardinal, BS; Kern Singh, MD*

7:30–7:35 am  
**Presentation #63**  
Limited Morbidity and Radiographic Benefit of C2 vs. Subaxial Cervical Upper-Most Instrumented Vertebrae 15596

---

Program is tentative; times & topics may change
**Symposium III: Managing Difficult Complications**

**Moderators:** Christopher P. Ames, MD and Robert A. Hart, MD

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:50–8:00 am</td>
<td>Complication Classification: Surgeon, Patient and Payor and Limitations of Society MM Registries</td>
<td>Justin S. Smith, MD</td>
</tr>
<tr>
<td>8:01–8:11 am</td>
<td>Risk Stratification and Invasiveness</td>
<td>Peter G. Passias, MD</td>
</tr>
<tr>
<td>8:12–8:22 am</td>
<td>Loss of Fixation in Cervical Spine</td>
<td>Sang-Hun Lee, MD</td>
</tr>
<tr>
<td>8:23–8:33 am</td>
<td>Distal Junctional Failure</td>
<td>Themistocles S. Protopsaltis, MD</td>
</tr>
<tr>
<td>8:34–8:44 am</td>
<td>Anterior CSF Leak</td>
<td>Christopher I. Shaffrey, MD</td>
</tr>
<tr>
<td>8:45–8:55 am</td>
<td>Dural Involvement in Tumor Surgery</td>
<td>Ziya L. Gokaslan, MD, FAANS, FACS</td>
</tr>
<tr>
<td>8:56–9:06 am</td>
<td>Oesophagus Fistula After Anterior Cervical Spine Approach, How to manage this Complication?</td>
<td>Philippe Bancel, MD</td>
</tr>
<tr>
<td>9:07–9:17 am</td>
<td>MEP Loss, C5 and C8 Weakness</td>
<td>Vedat Deviren, MD</td>
</tr>
<tr>
<td>9:18–9:28 am</td>
<td>Intraoperative Vertebral Artery Injuries: The Uncertainty Continues</td>
<td>Jens R. Chapman, MD</td>
</tr>
<tr>
<td>9:29–9:42 am</td>
<td>Discussion</td>
<td></td>
</tr>
</tbody>
</table>

**Session XIII: Diagnostics/Imaging**

**Moderators:** Darrel S. Brodke, MD and Brian K. Kwon, MD

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:43–9:48 am</td>
<td>Quantitative Analysis of Cervical Spinal Cord Pulsation - Sonographic Evaluation in Anterior Intervertebral Decompression 16141</td>
<td>Yohei Ito, MD; Hisanori Mihara, MD; Yasunori Tatara, MD</td>
</tr>
<tr>
<td>9:49–9:54 am</td>
<td>Cervical Myelopathy Presenting Without Symptoms in the Upper Extremities: Incidence and Presenting Characteristics 15737</td>
<td>Robert P. Norton, MD; Jordan Pasternack, MD; John K. Houten, MD, FAANS</td>
</tr>
<tr>
<td>9:55–10:00 am</td>
<td>Assessment of Standing Balance in Normal vs. Cervical Spondylotic Myelopathy Patients 15661</td>
<td>Mikhail Lew P. Ver, MD; Jeffrey L. Gum, MD; Steven D. Glassman, MD; Portia A. Steele, APRN; Leah Y. Carreon, MD, MSc</td>
</tr>
<tr>
<td>10:01–10:06 am</td>
<td>Clinically Predictive Value of Gray Matter Volume Loss in Cervical Spondylotic Myelopathy (CSM): A Prospective Case-Control Study Utilizing 3T MRI and Volumetric Mapping 16169</td>
<td>Benjamin Hopkins, BS; Kenneth A. Weber, PhD; Alex Barry, MS; Todd B. Parrish, PhD</td>
</tr>
<tr>
<td>10:07–10:20 am</td>
<td>Discussion</td>
<td></td>
</tr>
<tr>
<td>10:21–10:26 am</td>
<td>Presentation of CSRS Medallion to Alexander R. Vaccaro, MD, PhD</td>
<td></td>
</tr>
</tbody>
</table>

**Program is tentative; times & topics may change**

Program is tentative; times & topics may change
**3rd PLACE BASIC SCIENCE RESEARCH AWARD**

10:49–10:54 am  
Presentation #68  
**NF-kB Inhibitor Reduces the Inflammatory Response and Improves Bone Formation in rhBMP-2-Mediated Spine Fusion 15650**  
Juliane D. Glaeser, PhD; **Phillip H. Behrens, MD**; Khosrowdad Salehi, BS; Linda E.A. Kanim, MA; Dmitriy Sheyn, PhD; Zachary NaPier, MD; Jason M. Cuéllar, MD, PhD; Hyun W Bae, MD

10:55–11:00 am  
Presentation #69  
**A Thienoindazole Derivative Small Compound Prevented and Regenerated Intervertebral Disc Degeneration by Enhancing Extracellular Matrix Production 15790**  
**Junichi Kushioka, MD**; Takashi Kaito, MD, PhD; Ryota Chijimatsu; Rintaro Okada, MD; Hiroyuki Ishiguro; Joe Kodama; Yuichiro Ukon; Hideki Yoshikawa, MD

11:01–11:06 am  
Presentation #70  
**Usage Patterns of Intraoperative Neuromonitoring During Degenerative, Non-Deformity, Cervical Spine Surgery: A Survey of the Cervical Spine Research Society 15572**  
Jeffrey A. Konopka, MD; Zachary J. Grabel, MD; John M. Rhee, MD

11:07–11:12 am  
Presentation #71  
**Posterior Instrumented Fusion Suppresses the Progression of Ossification of the Posterior Longitudinal Ligament: A Comparison of Laminoplasty with and without Instrumented Fusion by 3-Dimensional Analysis 16470**  
**Keiichi Katsumi; MD, PhD**; Toru Hirano, MD; Kei Watanabe, MD, PhD; Masayuki Ohashi, MD, PhD; Naoto Endo, MD

11:13–11:26 am  
**Discussion**

11:27 am–12:56 pm  
**Session XV: FOCUSED PODIUM PRESENTATIONS**

**Moderators:** Alexander R. Vaccaro III, MD and Jeffrey C. Wang, MD

**EPIDEMIOLOGY AND OUTCOMES**

11:27–11:29 am  
Presentation #72  
**Chronic Obstructive Pulmonary Disease (COPD) is an Independent Predictor for 30-Day Complications and Readmissions Following 1-To-2 Level Anterior Cervical Discectomy and Fusion 15820**  
**Azeem Tariq Malik, MBBS; Nikhil Jain, MD; Jeffery Kim, MD; Safdar N. Khan, MD; Elizabeth Yu, MD**

11:30–11:32 am  
Presentation #73  
**Epidemiology of C5 Palsy After Cervical Spine Surgery: 21 Multicenter Studies 15752**  
**Jae Keun Oh, MD, PhD**; Dong Ho Kang, MD, PhD; Ki-Jeong Kim, MD, PhD; Young Jin Kim, MD, PhD; Chi Heon Kim, MD, PhD; Seong Yi, MD, PhD; Jun Ho Lee, MD; Chang-Hyun Lee, MD; Yong Jun Jin, MD, PhD; Jae Taek Hong, MD, PhD

11:33–11:35 am  
Presentation #74  
**Age Is Not a Significant Predictor of Adverse Events After Cervical Spine Surgery: Analysis from the Michigan Spine Surgery Improvement Collaborative (MSSIC) 15751**  
Jad G. Khalil, MD; Hesham Mostafa Zakaria; Daniel Possley, DO; Daniel Park, MD; Victor Chang, MD

11:36–11:38 am  
Presentation #75  
**Frequency of Typical Myelopathic Symptoms in a Large Surgical Cohort of Cervical Myelopathy Patients: Association with the Level of Maximal Cord Compression and MRI T2 Signal Change 16227**  
**Shuo Niu, MD, PhD**; Thomas M. Neustein, MD; Albert T. Anastasio, BA; Samuel D. Maidman, BA; Razan R. Faraj, MS; John M. Rhee, MD

11:39–11:41 am  
Presentation #76  
**Effect of Modified Japanese Orthopedic Association Scores on Satisfaction with Outcomes 12 Months After Elective Surgery for Cervical Spine Myelopathy 15902**  
**Benjamin Weisenthal, MD**; Ahilan Sivaganesan, MD; Silky Chotai, MD; Inamullah Khan, MBBS, MD; Hui Nian, PhD; Frank E. Harrell Jr., PhD; Kristin Archer, PhD; Jacquelyn S. Pennings, PhD; Mohamad Bydon, MD; Praveen V. Mummaneni, MD; Anthony Asher, MD, FACS; Kevin T. Foley, MD; Clinton J. Devin, MD

11:42–11:48 am  
**Discussion**

**CRANIO-CERVICAL JUNCTION AND ALIGNMENT**

11:49–11:51 am  
Presentation #77  
**Increasing Incidence of Non-Rheumatic Retro-Odontoid Pseudotumor with Varied Etiology in Elderly 16249**  
**Ryouta Hyakkan, MD**; Masahiko Takahata, MD

11:52–11:54 am  
Presentation #78  
**The Impact of Cervical Sagittal Balance and Cervical Spine Alignment on Craniocervical Junction Kinematic: An Analysis Using Upright Kinematic MRI 16196**  
Perrsaik Paholpak, MD; Blake Formanek; Andrew Vega, BS; Koji Tamai, MD; Kittipong Sessumpun, MD; Zorica Buser, PhD; Jeffrey C. Wang, MD

Program is tentative; times & topics may change
11:55–11:57 am
Presentation #79
Does Target Level Sagittal Alignment Determine Adjacent Level Disc Height Loss? 15624
Ryan Snowden, MD; Justin W. Miller, MD; Tome Saidon, MS; Joseph D. Smucker, MD; K. Daniel Riew, MD; Rick C. Sasso, MD

11:58–12:00 pm
Presentation #80
Redefining the Cervical Disability Threshold of T1 Slope Minus Cervical Lordosis 15640
Peter G. Passias, MD; Dennis Vasquez-Montes, MS; Samantha R. Horn, BA; Cole A. Bortz, BA; Frank A. Segreto, BS; Aaron J. Buckland, MD; Themistocles S. Protopsaltis, MD; Han Jo Kim, MD; Michael Gerling, MD; Renaud Lafage, MS; Thomas J. Errico, MD; Frank J. Schwab, MD; Virginie Lafage, PhD

12:01–12:03 pm
Presentation #81
Dynamic Changes in the Reflex Exam of Patients with Sub-Axial Cervical Stenosis 16046
Alexander Tuchman, MD; Lee A. Tan, MD; Jamal N. Shillingford, MD; Xudong J. Li, MD, PhD; K. Daniel Riew, MD

12:04–12:10 pm
Discussion

COMPLICATIONS AND NON-OPERATIVE APPROACHES

12:11–12:13 pm
Presentation #82
Do Preoperative Cervical Epidural Steroid Injections Affect Outcomes After ACDF for Radiculopathy? 15766
Daniel Tarazona, MD; Eric Warner, BS; Michael Motto, BS; Taolin Fang, MD; Matthew Galetta, BS; I. David Kaye, MD; Christopher K. Kepler, MD, MBA; Mark F. Kurd, MD; Alan S. Hillbrand, MD; Barrett I. Woods, MD; Kristen E. Radcliff, MD; Jeffrey A. Rihn, MD; D. Greg Anderson, MD; Alexander R. Vaccaro MD, PhD, MBA; Gregory D. Schroeder, MD

12:14–12:16 pm
Presentation #83
Perioperative Anesthesia Lean Implementation Is Associated with Increased Operative Efficiency in Posterior Cervical Surgeries at a High-Volume Spine Center 16135
Simon Ammanuel, BS; Andrew Chan, MD; Anthony DiGiorgio, DO; Catherine Miller, MD; Praveen Mummaneni, MD

12:17–12:19 pm
Presentation #84
Undergoing Bariatric Surgery Lowers Complication Rates Following Spine Surgery in Morbidly Obese Patients 15604
Peter G. Passias, MD; Samantha R. Horn, BA; Dennis Vasquez-Montes, MS; Frank A. Segreto, BS; Cole A. Bortz, BA; Cyrus M. Jalal, BA; Daniel M. Sciuabba, MD; Micheal Raad, MD; Bassel G. Diebo, MD; Shaleen Vira, MD; Jason A. Horowitz, BA; Hamid Hassanzadeh, MD; Renaud Lafage, MS; Virginie Lafage, PhD; Michael C. Gerling, MD

12:20–12:22 pm
Presentation #85
The Risk of Recurrent Laryngeal Nerve Injury with Laterality of Approach in Anterior Cervical Discectomy and Fusion Procedures: A Randomized, Prospective Study Over 10 Years 15375
Shalin Shah, DO; Manninder Bhatia, DO

12:23–12:25 pm
Presentation #86
Perioperative Complications of Anterior Decompression with Fusion vs. Posterior Decompression with Fusion for the Treatment of Cervical Ossification of the Posterior Longitudinal Ligament: Propensity Score Matching Analysis Using a National Inpatient Database 16066
Toshitaka Yoshii, MD; Shingo Morishita, MD; Takashi Hirai, MD; Kenichiro Sakai, MD; Tsuyoshi Yamada, MD; Masato Yuasa, MD; Atsushi Okawa, MD

12:26–12:32 pm
Discussion

SURGICAL TECHNIQUES AND TRAUMA

12:33–12:35 pm
Presentation #87
The Clinical Study on a Minimally Invasive Muscle-Splitting Approach to Posterior C1–C2 Fixation for the Treatment of Fresh Odontoid Fracture 15883
Guohua Xu, MD; Xiaogang Bao

12:36–12:38 pm
Presentation #88
Short-Term Outcomes Following Cervical Laminoplasty and Laminectomy and Fusion with Instrumentation 15601
Anthony J. Boniello MD; Samantha R. Horn BA; Frank A. Segreto, BS; Cole A. Bortz, BA; Amrit Khalsa, MD; Michael C. Gerling, MD; Peter G. Passias, MD

12:39–12:41 pm
Presentation #89
Surgical Treatment for Cervical Spine Trauma in Ankylosing Spine with Diffuse Idiopathic Skeletal Hyperostosis; Surgery within 8-Hours After Injury Affects Prognosis 15786
Osahiko Tsuji, MD; Kota Suda, MD, PhD; Masahiko Takahata, MD; Miki Komatsu, MD, PhD; Norimasa Iwasaki, MD, PhD; Morio Matsumoto, MD; Masaya Nakamura, MD; Kota Watanabe, MD, PhD

3rd PLACE RESIDENT/FELLOW RESEARCH AWARD

12:42–12:44 pm
Presentation #90
SMaRT Human Neural Stem Cells to Degrad Scar and Optimize Regeneration After Traumatic Cervical Spinal Cord Injury 16232
Christopher S. Ahuja, MD; Mohamad Khazaei, PhD; Priscilla Chan; Jian Wang, MD; Jinil Bhavsar; Michael G. Fehlings, MD, PhD, FRCSC, FACS

12:45–12:47 pm  Radiologic Factors to Predict Injury of Transverse Atlantal Ligament in Unilateral Sagitally Split Fracture of C1 Lateral Mass 15393
Jae Won Lee, MD; Jong-Beom Park, MD, PhD; Han Chang, MD, PhD

12:48–12:50 pm  Treatment Algorithm for Dens Fractures 16137
Amelie Kanovsky, MD; Ernst Josef Mueller

12:51–12:57 pm  Discussion

12:57 pm  Adjourning Notices
Alexander Vaccaro, MD, PhD

CSRS 2018 Annual Meeting – Events
Wednesday, December 5

Faculty Appreciation Reception
Open to all registered attendees
Camelback Ballroom, 5:00 pm—6:00 pm
No prior registration required

NuVasive Industry Event
An Evening & Discussion with Cervical Thought Leaders – A Collegial Exchange of Ideas
Prior registration required
6:00 pm—8:00 pm, Grand Ballroom ABC
Hosted by Daniel Riew, MD; Todd Albert, MD; Regis Haid, MD; Christopher Shaffrey, MD; Vincent Traynelis, MD; Rick Sasso, MD; Michael Groff, MD; Alpesh Patel, MD; Trey Crawford, MD; and Tyler Koski, MD
Invitation only event. If you would like to attend this event, please contact Jennica Reeves at jreeves@nuvasive.com

Thursday, December 6

Welcome Reception
Open to all registered attendees
Camelback Ballroom, 4:30 pm—6:30 pm
No prior registration required

Medtronic Industry Dinner
How to Navigate Posterior Cervical: SynergyPCF™ with Infinity™ OCT System
Live Surgeon Panel Broadcast with Navigated C1-T3 Case Discussion
Faculty: Paul Holman, MD; Taro Kaibara, MD; and Blake Staub, MD
Phoenician Hotel Ballroom A, 6:30 pm dinner; 7:00 pm Case Discussion, Grand Ballroom ABC
If you would like to attend this event, please register through the link provided here: Medtronic.