

**Program for the ISSLS meeting in
Auckland, New Zealand, April 13-17, 2010
Sky City Convention Centre, Level 5**

TUESDAY APRIL 13, 2010

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| 09.30 am | Strategy Group Meeting Location: Executive Board Room |
| 11.00 am | Membership Committee Meeting Location: Marlborough room 2 |
| 12.00 pm | Executive Committee – Lunch Location: Marlborough room 2 |
| 4.00 pm | Registration |
| 6.00 pm | Welcome Reception Location: New Zealand Foyer |

WEDNESDAY, APRIL 14, 2010

07.00-08.00 **Breakfast in New Zealand Foyer**

7.30 Registration

7.30 Welcome – Peter Robertson

7.35 Program Chairman – Michael Mayer

SESSION # 1 **Disc Growth and Regeneration**

Chairman – Federico Balagué

Moderator – Robert Moore

- 7.45-7.51 1. The elastic network and translamellar bridging network in the annulus of the intervertebral disc
J Yu, M Schollum, N Broom, J Urban, Oxford, UK
- 7.53-7.59 2. Detection of a progenitor/cellular migration route in the mammal intervertebral disc. A study in three species
HB Henriksson, E Svala, E Skiöldebrand, A Lindahl H Brisby, Gothenburg, Sweden
- 8.01-8.07 3. Immunolocalization of human bone morphogenetic protein 13 in the developing human spine
A Wei, S Pathmanandavel, LA Williams, D Bhargav, T Gulati, B Shen, T Kishen, Z Fang, R A. Clarke, **AD Diwan**, Sydney, Australia
- 8.09-8.18 *Discussion*
- 8.20-8.26 4. Structured co-culture of stem cells and disc cells induces MSC differentiation
AA Allon, K Butcher, RA Schneider, **JC Lotz**, San Francisco, CA, USA
- 8.28-8.34 5. The up-regulation of intervertebral disc-cell matrix synthesis by pulsed electromagnetic field is mediated by bone morphogenetic proteins.
M Okada, JH Kim, WC Hutton, **ST Yoon**, Atlanta, Georgia, USA

8.36-8.42 6. The biological response of AF cells to decorin over-expression – A potential model for IVD repair
M Lundgren, D Gerard, D Krawczak, A Dorfleutner, J Lewis, H An, **G Cs-Szabo**, Chicago, IL, USA

8.44-8.50 7. Sirt1 activates cell proliferation activity of human intervertebral disc both in low nutritional and chemical hypoxic conditions
Z Zhang, K Kakutani, K Nishida, J Yamamoto, T Yurube, K Maeno, T Takada, R Kuroda, T Iguchi, M Kurosaka, M Doita, Kobe, Japan

8.52-9.04 *Discussion*

SESSION # 2

Disc Degeneration I (Morphology, Biology)

Chairman – Yong Hai

Moderator – Ashish Diwan

9.06-9.12 8. Homing of mesenchymal stem cells in stressed intervertebral discs in organ culture
S Jünger, S Grad, D Sakai, J Mochida, **M Alini**, Davos, Switzerland

9.14-9.20 9. Gene therapy effects on disc collagen homeostasis
G Sowa, S Leckie, B Bechera, B Woods, Q Dong, N Vo, **J Kang**, Pittsburgh, PA, USA

9.22-9.28 10. Differentially expressed genes in early and advanced stages of intervertebral disc degeneration
R Pichika, T Yoshikawa, A Hemmad, M Lenz, G Szabo, HS An, **K Masuda**, La Jolla, CA, USA

9.30-9.39 *Discussion*

9.41-9.47 11. An animal study on the aetiology of vertebral changes adjacent to the endplates in disc degeneration
J Assheuer, M Sager, KP Schulitz and HV Crock, Cologne, Germany

9.49-9.55 12. Intradiscal injection of autologous platelet-rich plasma-serum induces the restoration of disc height in the rabbit anular needle puncture model
S Obata, K Akeda, R Morimoto, Y Asanuma, Y Kasai, K Masuda, A Uchida, A Sudo, T Mie, Japan

- 9.57-10.03 13. Microstructure and remodelling in modic changes
OL Osti, S Zahari, J Ooi TC, L Truong, E Perilli, NL Fazzalari,
North Adelaide, South Australia, Australia
- 10.05-10.14 *Discussion*
- 10.16-10.45 **COFFEE**
- SESSION # 3** **Disc Degeneration II (Imaging / Risk Factors)**
Chairman –Jeremy Fairbank
Moderator – Anne Mannion
- 10.45-10.51 14. Prevalence and patterns of disc degeneration in thoracic and
cervical spine associated to lumbar disc degeneration in a
population with and without low back pain - Magnetic resonance
imaging analysis in two hundred and ninety nine individuals
S Rajasekaran, Dr. Ramalingam, K Vijay, R Karunanithi,
M Abhishek, AP Shetty, Coimbatore, TamilNadu, India
- 10.53-10.59 15. Quantitative assessment of early lumbar vertebral disc
degeneration using axial T2 mapping and delayed gadolinium-
enhanced magnetic resonance imaging
A Sugawara, H Murakami, S Yoshida, R Kawamura, K Yamazaki,
T Shimamura, Iwate, Japan
- 11.01-11.07 *Discussion*
- 11.09-11.15 16. Overweight and unhealthy behaviour predict lumbar disc
degeneration in young males
J Takatalo, J Karppinen, S Taimela, J Laitinen, J Niinimäki, M
Paananen, T Tammelin, R Korpelainen, O Tervonen, Oulu, Finland
- 11.17-11.23 17. Body mass index and its association with disc degeneration of the
lumbar spine in adults
D Samartzis, J Karppinen, KDK Luk, KMC Cheung, Hong Kong
- 11.25-11.31 18. Physical workload – a relevant factor for developing lumbar disc
diseases (German Spine Study Epilift)
A Bergmann, **HJ Meisel**, U Bolm-Audorff, D Ditchen, R Ellegast, G
Elsner, J Grifka, J Haerting, F Hoffmann, M Jäger, O Linhardt, A
Luttmann, M Michaelis, G Petereit-Haack, B Schumann, A Seidler,
Halle, Germany

- 11.33-11.39 19. Risk factors for lumbar intervertebral disc height narrowing: ten years retrospective cohort study
K Akeda, Y Kasai, N Inoue, T Yamada, A Uchida, A Sudo, T Mie, Japan
- 11.41-11.53 *Discussion*
- 12.00-1.15** **LUNCH**
- SESSION # 4** **Low Back Pain I
(Diagnosis/Conservative Treatment)**
Chairman – Margareta Nordin
Moderator – Helena Brisby
- 1.15-1.21 20. Phenotypes and genes that distinguish painful intervertebral discs
Z Buser, S Berven, S Hu, JC Lotz, San Francisco, CA, USA
- 1.23-1.29 21. Risk factors for persistence of multiple musculoskeletal pains in adolescence: A two-year follow-up study
MV Paananen, SP Taimela, JP Auvinen, TH Tammelin, MT Kantomaa, HEEbeling, AM Taanila, PJ Zitting, JI Karppinen, Oulu, Finland
- 1.31-1.37 22. Care seeking behaviour and back pain: Are beliefs about back pain associated with the decision to seek care?
KM Brunke, CR Huls, JN LaRoy, KS Reagan, JA Wilton, DP Gross, Edmonton, Alberta,
- 1.39-1.48 *Discussion*
- 1.50-1.56 23. Transversus abdominis contraction ratio during abdominal hollowing: A valid tool to identify patients with chronic low back pain?
N Pulkovski, **AF Mannion**, F Caporaso, H Sprott, Zürich, Switzerland
- 1.58-2.04 24. Effect of periarticular and intraarticular lidocaine injections for sacroiliac joint pain: prospective comparative study
E Murakami, Y Tanaka, T Aizawa, M Ishizuka, D Kurosawa, S Kokubun, Miyagi, Japan

2.06-2.12 25. Multidisciplinary rehabilitation or surgery for chronic low back pain – 7 year follow up of a randomised controlled trial
KL Barker, H Frost, J Wilson MacDonald, JCT Fairbank, Oxford, UK

2.14-2.23 *Discussion*

SESSION # 5

Low Back Pain II (Surgery)

Chairman – Seiji Ohtori

Moderator – Tommy Hansson

2.25-2.31 26. The lumbosacral plexus and the transpoas approach to the intervertebral disc space: a cadaveric study. Is there a safe zone?
TT Davis, HW Bae, RB Delamarter, Santa Monica, CA, USA

2.33 - 2.39 27. Adjacent segment degeneration occurred 3-times more 5-years after bilateral instrumented PLIF than unilateral instrumented PLIF
T Toyone, T Ozawa, R Shibo, K Kamikawa, A Watanabe, K Matsuki, S Ochiai, Y Wada, K Inada, T Tanaka, Chiba, Japan

2.41-2.47 *Discussion*

2.49-2.55 28. Swiss Spine - National mandatory registry for lumbar total disc arthroplasty: Clinical results of 593 patients and 679 implants
E Aghayev, T Zweig, P Moulin, M Aebi, C Röder, Bern, Switzerland

2.57-3.03 29. F.D.A. I.D.E. prospective randomized comparison of three lumbar artificial disc replacements (A.D.R.) with minimum three-year follow-up
KA. Pettine, **C Schlicht**, Loveland, CO, USA

3.05-3.11 30. Facet joint and adjacent level degeneration following total lumbar disc replacement: A prospective clinical, X-ray and MRI investigation
CJ Siepe, P Zelenkov, J-C Sauri-Barraza, U Szeimies, R Beisse, A Korge, A Staebler, HM Mayer, Munich, Germany

3.13-3.22 *Discussion*

3.22-3.50 **COFFEE**

SESSION # 6

Outcome Measurements

Chairman – Gunnar Andersson

Moderator – S Rajasekaran

- 3.50-3.56 31. Comparison of patient and surgeon ratings of global outcome 12 months after spinal surgery
F Porchet, F Lattig, **D Grob**, F Kleinstueck, D Jeszenszky, C Paus, D O’Riordan, AF Mannion, Zürich, Switzerland
- 3.58-4.04 32. Does advanced age influence the patient-rated outcome of fusion for degenerative disc disease?
AF Mannion, T Fekete, F Lattig, F Porchet, F Kleinstueck, D Jeszenszky , D Grob, Zürich, Switzerland
- 4.06-4.12 33. The utility of spine surgery; a comparison of the minimal important change, MIC of SF-6D and EQ-5D
E Hansson and T Hansson, Gothenburg, Sweden
- 4.14-4.20 34. The influence of smoking on patient outcomes in the Spine Patient Outcomes Research Trial (SPORT)
BM Snyder, EA Blood, **JD Lurie**, JN Weinstein, Lebanon, New Hampshire, USA
- 4.22-4.34 *Discussion*
- 4.40- **FIRST BUSINESS MEETING**

THURSDAY, APRIL 15, 2010

7.15-8.15 **Breakfast, New Zealand Foyer**

7.30 Registration

SESSION # 7 SPECIAL EMPHASIS POSTER SESSION # 1

7.45-8.45

SESSION # 8A Lumbar Disc Herniation I (Pathomechanisms)

Chairman - Tim Yoon

Moderator – Hans-Joachim Wilke

8.55-9.01 35. Polymorphisms in genes encoding extracellular matrix proteins are associated with susceptibility to lumbar disc herniation
K Chiba, F Mio, Y Hirose, Y Kawaguchi, Y Mikami, T Kimura, T Kubo, Y Toyama, S Ikegawa, Tokyo, Japan

9.03-9.09 36. Torsion assists the disc herniation process when combined with flexion
SP Veres, PA Robertson, ,ND Broom, Auckland, New Zealand

9.11-9.17 37. Does vibration influence the initiation of intervertebral disc herniation? An in-vitro analysis to determine a causal relationship
DE Gregory, JP Callaghan, La Jolla, California, US

9.19-9.25 38. Effect of progressive increase in radial lesion size on lumbar intervertebral disc biomechanics depends on the integrity of surrounding annular fibers
RN Natarajan, M Qasim, H An, GBJ Andersson, Chicago, Illinois, USA

9.27-9.33 39. Pathomechanisms of sciatica in lumbar disc herniation. Effect of periradicular adhesive tissue on electrophysiological values by an intraoperative straight-leg-raising test
S Kobayashi, K Takeno, T Yayama, K Awara, T Miyazaki, A Guerrero, H Baba, Fukui, Japan

9.35-9.50 *Discussion*

9.50-10.10 **COFFEE**

SESSION # 8B

Lumbar Disc Herniation II (Treatment and Outcome)

Chairman – Kazu Chiba

Moderator – Michael Mayer

- 10.10-10.16 40. Tubular discectomy versus conventional microdiscectomy for the treatment of lumbar disc herniation: Two year results of a double-blinded randomised controlled trial.
M Arts, R Brand, E van den Akker, B Koes, R Bartels, WF Tan, W Peul, The Hague, The Netherlands
- 10.18-10.24 41. Anular repair after lumbar discectomy: Preliminary observations from an ongoing, prospective, randomized, controlled clinical trial
SL Blumenthal, RD.Guyer, Plano, TX, USA
- 10.26-10.32 42. Sport intervertebral disc herniation: indications matter most
A Pearson, J Lurie, T Tosteson, W Zhao, W Abdu, S Mirza, J Weinstein, Lebanon, NH, USA
- 10.34-10.40 43. The short-term results predict the long-term results in LDH Surgery. Results from a prospective study of consecutive patients 15-19 years after surgery.
B Jönsson, J Adnervik, A Olofsson, B Strömquist, Lund, Sweden
- 10.42-10.48 44. The outcome of discectomy for lumbar herniated disc is influenced by the severity of concomitant pre-operative low back pain.
FS Kleinstück, **T Fekete**, D Jeszenszky, AF Mannion, D Grob, F Lattig, U Mutter, F Porchet, Zürich, Switzerland
- 10.50-11.05 *Discussion*
- 11.07-11.13 45. Influence of definition on rates of success for lumbar disc herniation
JD Lurie, EJ Carragee, SK Mirza, K Spratt, W Zhao, ANA Tosteson, TD Tosteson, JN Weinstein, Lebanon, New Hampshire, USA
- 11.15-11.21 46. Persistent disc protrusion after microdiscectomy: Changes on hernia mass as seen on post-operative MR imaging
T Miyazaki, S Kobayashi, K Takeno, H Baba, Eiheiiji, Fukui, Japan

- 11.23-11.29 47. Lumbar disc herniation in the Spine Patient Outcomes Research Trial (SPORT): Does psychological distress affect treatment outcome?
A Albert, G Davis, K Spratt, W Abdu, W Zhao, JN Weinstein, Lebanon, New Hampshire, USA
- 11.31-11.37 48. Does smoking habit influence the outcome of lumbar discectomy?
A Luca, D Grob, D Jeszensky, FS Kleinstück, T Fekete, F Lattig, F Porchet , U Mutter, AF Mannion, Zürich, Switzerland
- 11.39- 11.51 *Discussion*
- 11.55-12.35 **HARRY FARFAN PRESIDENTIAL LECTURE**
Introduction – Dr Federico Balagué
Guest Speaker – Professor Michael Cousins,
Pain Management Research Institute, Royal North Shore Hospital, Sydney, Australia
Title: The Australian National Pain Strategy
- 12.35-13.00 **Presidential address – Dr Federico Balagué**
Introduction – Dr Robert Moore
- AFTERNOON OUTING**

FRIDAY, APRIL 16, 2010

7.15-8.15 **Breakfast, New Zealand Foyer**

7.30 Registration

SESSION # 9 GENERAL POSTER SESSION, ODD NUMBERS

7.45-8.15

SESSION # 10 GENERAL POSTER SESSION, EVEN NUMBERS

8.15-8.45

SESSION # 11 SPONDYLOLYSIS – ISTHMIC SPONDYLOLISTHESIS -INFECTION

Chairman – Serena Hu

Moderator – Mohammed Mossaad

8.47-8.53 49. Management of pediatric lumbar spondylolysis using MRI signal changes in the adjacent pedicle
T Sakai, **K Sairyo**, H Kosaka, N Yasui, Tokushima, Japan

8.55-9.01 50. Bony healing of the pediatric lumbar spondylolysis with conservative treatment: Which type of lysis and how long?
K Sairyo, T Sakai, N Yasui, Tokushima, Japan

9.03-9.09 51. Quality of life and physical function for patients fused in situ at young age for isthmic spondylolisthesis grade III–V. A 29-year follow-up.
A Joelson, K Frennered, Gothenburg, Sweden

9.11-9.20 *Discussion*

9.22-9.28 52. Lumbar vertebral growth is governed by ‘Chondral Growth Force Response Curve’ rather than ‘Hueter-Volkman law’- A clinico-biomechanical study of growth modulation changes in childhood spinal tuberculosis.
S Rajasekaran, RN Natarajan, J Dheenadhayalan, AP Shetty, RM Kanna, GBJ Andersson, Coimbatore, Tamilnadu, India

- 9.30-9.36 53. Lymphatic involvement in vertebral and disc pathology
NA Athanasou, K Kliskey, J Urban, J Yu, G Bowden, J Wilson-McDonald, J Fairbank, Oxford, UK
- 9.38-9.44 54. 18F-fluorodeoxyglucose-pet for patients with suspected spondylitis showing modic change
H Kamoda, S Ohtori, M Suzuki, T Koshi, M Yamashita, K Yamauchi, G Inoue, S Orita, Y Eguchi, N Ochiai, S Kishida, M Takaso, Y Aoki, T Ishikawa, G Arai, M Miyagi, Ka Takahashi, Chiba, Japan
- 9.46-9.55 *Discussion*
- SESSION # 12** Chairman : Dr. Robert Moore
- 10.00 – 10.25 **Introduction of Fellowships** - Dr. Chris Colloca
Announcement MacNab/LaRocca Fellowship for 2010
- MacNab LaRocca Fellowship Report 2009**
Recipient - Dr Diane Gregory
Announcement of Globus Fellowship for 2010
- Globus Fellowship Report 2009**
Recipient - Dr Harry Akoto
- Introduction of International Fellow for 2010**
- Presentation of Spine Young Investigators Award**
by Dr Scott Boden
- Title:** Therapeutic Aprotinin Stimulates Osteoblast Proliferation but Inhibits Differentiation and Bone Matrix Mineralization
J Schoenecker, N Mignemi, C Stutz, Q Liu, J Edwards, C Lynch, G Holt, H Schwartz, G Mencio, H Hamm
- 10.25-10.50 **COFFEE**
- SESSION # 13** **THE ISSLS PRIZE PAPERS**
- 10:52- 12 noon Introduction and Award Ceremony
Chairman - Dr Gunnar Andersson
Sponsored by DePUY SPINE™
- 10.55 –11.04** Awards Presentation

- 11.06-11.16 55. **ISSLS PRIZE - CLINICAL**
Prevalence, determinants and association of Schmorl's nodes of the lumbar spine with disc degeneration: A population based study of 2449 individuals
F Mok, D Samartzis, J Karppinen, KDK Luk, DYT Fong, KMC Cheung. Hong Kong, China and Helsinki, Finland
- 11.18-11.24 *Discussion*
- 11.26-11.36 56. **ISSLS PRIZE – BIOMECHANICS**
How loading rate influences disc failure mechanics: a microstructural assessment of internal disruption
S Veres. P Robertson, N Broom, Auckland, New Zealand
- 11.38-11.44 *Discussion*
- 11.46-11.56 57. **ISSLS PRIZE - BASIC SCIENCE**
A study of effects of in vivo mechanical forces on human lumbar discs with scoliotic disc as a biological model. Results from serial post-contrast diffusion studies, histopathological and biomechanical analysis of 21 human lumbar scoliotic discs
S Rajasekaran , S Vidyadhara. M Subbiah, V Kamath, R Karunanithi, A Shetty, K Venkateswaran, M Babu, J Meenakshi, Coimbatore, India
- 11.58-12.04 *Discussion*
- 12.04-1.00 **LUNCH**
- SESSION # 14** **The Aging Spine**
Degenerative Lumbar Spinal Stenosis /Osteoporosis
Chairman – Koichi Sairyo
Moderator – Dieter Grob
- 1.00-1.06 58. Histopathological analysis of hypertrophic ligamentum flavum in degenerative lumbar canal stenosis focus on the expression of BMPs signaling components.
N Shafaq,A Suzuki, H Terai, H Nakamura, K Takaoka, Osaka, Japan
- 1.08-1.14 59. Diffusion magnetic resonance imaging of the lumbar foraminal nerve root entrapment
Y Eguchi, S Ohtori, S Orita, H Kamoda, G Arai, T Ishikawa, M Miyagi, Y Masuda, S Ochi, T Kikawa, Ka Takahashi, Chiba, Japan

- 1.16-1.22 60. No correlation found between patient outcome and abnormal lumbar MRI findings indicating paraspinal muscle damage 5 years after decompressive unilateral procedure for lumbar canal stenosis
T Toyone, T Ozawa, R Shibo, K Kamikawa, A Watanabe, K Matsuki, S Ochiai, Yu Wada, K Inada, T Tanaka, Chiba, Japan
- 1.24-1.33 *Discussion*
- 1.35-1.41 61. A 5-year follow-up after microscopic posterior decompression for lumbar canal stenosis with degenerative spondylolisthesis
Y Fujiwara, T Sumida, H Manabe, K Kobayashi, A Miyauchi, Hiroshima, Japan
- 1.43-1.49 62. Factors affecting 4-year cost-effectiveness of surgery for stenosis with or without degenerative spondylolisthesis in the Spine Patient Outcomes Research Trial (SPORT)
ANA Tosteson, TD Tosteson, JD Lurie, H Herkowitz, M Longley, T Albert, K Bridwell, W Zhao, MR Grove, JN Weinstein, Lebanon, New Hampshire, USA
- 1.51-1.57 *Discussion*
- 1.59-2.05 63. One-year follow-up study of lumbar spinal canal stenosis in local population ; Influence on QOL
K Otani, S Kikuchi, S Yabuki, A Onda, T Nikaido, S Konno, Fukushima, Japan
- 2.07-2.13 64. Synovial facet cysts after decompressive surgery for lumbar spinal canal stenosis
A Nagamachi, H Yonezu, K Adachi, K Inoue, T Kubo, T Tsutsui, T Endo, Kagawa, Japan
- 2.15-2.21 65. Does the decompression surgery improve the low back pain in the degenerative lumbar spondylolisthesis?
H Hashizume, M Yoshida, M Kawakami, H Yamada, A Minamide, Y Nakagawa, M Kawai, H Iwasaki, Y Enyo, M Okada, M Kioka, Y Ishimoto, K Nagata, Wakayama, Japan
- 2.23-2.29 66. Risk factors for radiological adjacent segment degeneration after lumbar fusion for spondylolisthesis
T Tsuji, K Watanabe, K Ishii, H Takaishi, M Nakamura, M Matsumoto, Y Toyama, K Chiba, Tokyo, Japan

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| 2.31-2.43 | <i>Discussion</i> |
| 2.45-2.51 | 67. Prognostic factors of reduced activities of daily living following osteoporotic vertebral fractures M Tomiya , N Hiroaki, H Masatoshi, T Tadao, T Hidetomi, T Kunio, Osaka, Japan |
| 2.53-2.59 | 68. Preexisting, as well as recent, vertebral fractures strongly predict new vertebral fractures: results from a large, international RCT in osteoporotic women. R Wustrack , S Burch, P Mesenbrink, E Seeman, C Bucci-Rechtweg, L Palermo, D Black, San Francisco, CA, USA |
| 3.01-3.07 | <i>Discussion</i> |
| 3.09-3.40 | COFFEE |
| SESSION # 15 | DEBATE Moderator – David Hall |
| | Minimally invasive lumbar discectomy for sciatica |
| 3.40-3.48 | Proposer: Michael Mayer |
| 3.50-3.58 | Opposer: Scott Boden |
| 4.00-4.12 | Discussion |
| | Minimally invasive fusion for degenerative lumbar spondylolisthesis |
| 4.14-4.22 | Second Proposer: James Schwender |
| 4.24-4.32 | Second Opposer: Rob Fraser |
| 4.38-4.50 | Discussion |
| 5.00 | SECOND BUSINESS MEETING BANQUET – More information in the social program |

SATURDAY, APRIL 17, 2010

7.15-8.15 **Breakfast, New Zealand Foyer**

SESSION # 16 **SPECIAL EMPHASIS POSTER SESSION # 2**

7.45 – 8.45

SESSION # 17 **Complications**

Chairman – Brian Freeman
Moderator – Gordon Findlay

8.50- 8.56 69. Discontinuation of warfarin 10 days prior to surgery reduces blood loss to normal levels in lumbar surgery
K Ahamandia, E Schnaser N Ahn, Cleveland, Ohio, USA

8.58-9.04 70. The value of multimodal intra-operative monitoring (MIOM) during surgical procedures of the lumbar spine
M Sutter, J Dvorak, T Fekete, D Grob, DJeszszsky, F Kleinstueck, F Porchet, A Eggspuehler, Zurich, Switzerland

9.06-9.12 71. The role of preoperative DVT prophylaxis in thromboembolic complications in spinal surgery
J Cunningham, G Swamy, K Thomas, Calgary, Canada

9.14-9.23 *Discussion*

SESSION # 18 **Cell Biology**

Chairman –Shinichi Kikuchi
Moderator – Kotaro Nishida

9.25-9.31 72. Effects of local anesthetic and non-ionic contrast agents on bovine intervertebral disc cells cultured in alginate
J Ren, Y Zhang, **A Chee**, HS An, Chicago, IL, US

9.33-9.39 73. Iohexol, an iodinated radiopaque contrast agent, demonstrates toxicity to rabbit and sheep nucleus pulposus (NP) cells in vitro
SA Matheny, **J Moehlenbruck**, Austin, TX, USA

9.41-9.47 74. Bupivacaine toxicity in intervertebral disc tissue
N Vo, G Sowa, K Ngo, D Wang, R Hartman, P Coelho, S Choe, **J Kang**, Pittsburgh, PA, USA

9.49-9.58

Discussion

SESSION # 19

Miscellaneous

Chairman - Everard Munting

Moderator - Orson Osti

10.00-10.06

75. Comparison of patient and surgeon ratings of pain and function 12 months after spinal surgery for degenerative disorders
D Grob, F Lattig, F Porchet, F Kleinstueck, T Fekete, U Mutter, D Jeszenszky, AF Mannion, Zürich, Switzerland

10.08-10.14

76. Surgeons agree to disagree on surgical options for degenerative conditions of the cervical and lumbar spine
JB Hohl, JY Lee, CJ Fedorka, C Devin, DS Brodke, AR Vaccaro, Pittsburgh, PA, USA

10.16-10.22

77. Surgeon-industry conflict of interest: survey of North American's opinions regarding surgeons consulting with industry
CP DiPaola, CG Fisher MD, H Zhang, V Noonan, MFS Dvorak, Worcester, MA, USA, Vancouver, Canada

10.24- 10.33

Discussion

10.35-11.00

COFFEE

SESSION # 20

Pain

Chairman – Howard An

Moderator –Shinichi Kikuchi

11.00-11.06

78. Asialo-Erythropoietin promotes the improvement in pain-related behavior and decreases the expression of phosphorylated-p38 map kinase and tumor necrosis factor-alpha in nucleus pulposus application rat model
N Sasaki, M Sekiguchi, S Konno, S Kikuchi, Fukushima, Japan

11.08-11.14

79. Differences between TNF- α receptors Type 1 and Type 2 in the modulation of spinal glial cell activation and mechanical allodynia in a rat sciatic nerve injury model
T Ishikawa, M Miyagi, S Orita, Y Eguchi, H Kamoda, G Arai, M Suzuki, G Inoue, S Ohtori, Ke, Chiba, Japan

- 11.16-11.22 80. Direct application of the TNF-alpha inhibitor, Etanercept, into punctured intervertebral disc decreases CGRP expression in rat DRG neurons.
M Horii, S Orita, M Nagata, K Yamauchi, M Yamashita, G Inoue, Y Eguchi, Y Aoki, T Ishikawa, G Arai, M Miyagi, H Kamoda, M Suzuki, Ka Takahashi, S Ohtori, Chiba, Japan
- 11.24-11.33 *Discussion*
- 11.35-11.41 81. The effects of risedronate and exercise on osteoporotic lumbar rat vertebrae and their sensory innervation
S Orita, S Ohtori, T Koshi, M Yamashita, K Yamauchi, G Inoue, M Suzuki, Y Eguchi, H Kamoda, G Arai, T Ishikawa, M Miyagi, M Suzuki, T Morinaga, Ka, Chiba, Japan
- 11.43-11.49 82. Microvasculature and vasomotion system of the lumbar dorsal ganglia in rat
S Kobayashi, K Takeno, T Miyazaki, M Kubota, H Matsuo, H Baba, Eiheiji, Fukui, Japan
- 11.51-11.57 *Discussion*
- 12.00 - **ANNOUNCEMENT - MEDTRONIC BEST PAPER AND POSTER AWARDS**
Chairman - Dr Michael Mayer
Closing Remarks – Dr Howard An
- MEETING ADJOURNED**

SPECIAL EMPHASIS POSTER SESSION # 1

THURSDAY APRIL 15, 2010 7.45 -8.45

A. LOW BACK PAIN I

Chairman: Peter Robertson

Moderator: John Lurie

- SP1. Association between lumbar scoliosis and leg length discrepancy on unilateral hip osteoarthritis
T Morimoto, K Aita, K Inatomi, T Hotokebuchi, Saga , Japan
- SP2. Low back pain is associated with increased symptoms in persons with symptomatic knee osteoarthritis
P Suri, D Morgenroth, DJ Hunter, Boston, MA, USA
- SP3. Disc degeneration in subjects with bilateral versus unilateral spondylolysis at L5
E Schnaser, J Toy, S Qureshi, K Ahamandia, P Gause, J Tinley, J Eubanks, N Ahn, Cleveland, Ohio, USA
- SP4. A possible mechanism of referred low back muscle pain from lumbar facet joints
K Wakai, S Ohtori, M Yamashita, K Yamauchi, G Inoue, S Orita, MG Inoue, Y Eguchi, Y Aoki, T Ishikawa, G Arai, M Miyagi, H Kamoda, M Suzuki, Ka Takahashi, Chiba, Japan
- SP5. The ventral hippocampus – a novel target for treatment of back associated pain
A Ermund, E Nilsson, H Brisby I Hammar, Gothenburg, Sweden
- SP6. SP6. Surgery vs. non-surgery for treatment of strictly selected patients with discogenic low back pain: A small-sized randomized trial
S Ohtori, M Yamashita, K Yamauchi, MT Koshi, M Suzuki, S Orita, Y Eguchi, G Inoue, Y Aoki, T Ishikawa, G Arai, M Miyagi, H Kamoda, M Suzuki, Ka Takahashi, Chiba, Japan

B. COMPLICATIONS

Chairman: Ed Hanley

Moderator: Hiroshi Hashizume

- SP7. Is iliac crest bone graft still the gold standard in spinal fusion surgery? A survey of spine surgeons
M Aubin, J Eck, A Lapinsky, P Connolly, Worcester, MA, USA
- SP8. Diffusion magnetic resonance magnetic imaging to differentiate degenerative from infectious endplate abnormalities.
Y Eguchi, S Ohtori, S Orita, H Kamoda, G Arai, T Ishikawa, M Miyagi, Y Masuda, S Ochi, T Kikawa, Ka Takahashi, Chiba, Japan
- SP9. Metal ion release in paediatric scoliosis instrumentation
TP Cundy. CL Delaney, MD Rackham, G Antoniou; AP Oakley, BJC Freeman; **LM Sutherland**; PJ Cundy, Adelaide, South Australia
- SP10. Risk factor of pedicle screw misplacement in idiopathic scoliosis surgery using computer-assisted technique
H Murakami, K Yamazaki, S Yoshida, T Shimamura, Morioka, Iwate, Japan
- SP11. Complications in 710 XLIF surgeries
WB Rodgers, EJ Gerber, J Patterson, Jefferson City, MO, USA
- SP12. Postoperative wound complications are increased after lumbar surgery in the severely and morbidly obese
K Ahamandia, E Schnaser, D Dickson, N Ahn, Cleveland, Ohio, USA

C. NERVE / CELL BIOLOGY I

Chairman: Björn Rydevik

Moderator: Koichi Masuda

- SP13. The role of neurotrophic factor in cultured medium extracted from human degenerative nucleus pulposus and annulus fibrosus to promote nerve growth
K Yamauchi, M Yamashita, G Inoue, M Suzuki, S Orita, Y Eguchi, T Yamashita, Ka Takahashi, S Ohtori, Chiba, Japan
- SP14. Detection of lumbar nerve root injury during retraction using transcranial motor evoked potentials (TCMEPS) in a porcine model
S Burch, R Lyons, J Lieberman, San Francisco, CA, USA
- SP15. Interaction of 5-hydroxytryptamine and tumor necrosis factor-alpha to pain-related behavior by nucleus pulposus applied on the nerve root in rats
H Kobayashi, M Sekiguchi, K Kato, S Kikuchi, S Konno, Fukushima, Japan
- SP16. Long-lasting up-regulation of TNF-alpha and IL-6 in injured intervertebral disks induces painful neuropeptides in DRG neurons innervating the disks in rats
M Miyagi, T Ishikawa, S Orita, Y Eguchi, H Kamoda, G Arai, M Suzuki, G Inoue, S Ohtori, Ka Takahashi, Chiba, Japan
- SP17. Notochordal cells influence gene expression of inflammatory mediators of annulus fibrosus cells in proinflammatory cytokines stimulation.
H Kim, HJ Moon, JJ Park, JD Kang, YK Park, Seoul, South Korea
- SP18. Human umbilical cord mesenchymal stromal cells (HUCMSCS) exhibit immature nucleus pulposus cell phenotype in a laminin-rich pseudo-3D culture system
BJ Chon, L Jing, LA Setton, **J Chen**, Durham, NC USA

D. TOTAL DISC REPLACEMENT / FACET JOINTS

Chairman: David Hall

Moderator: Michael Mayer

- SP19. 10 year radiographic follow up of AcroFlex lumbar disc replacement
AR Meir, S Fowler, **RD Fraser**, London, UK
- SP20. Direct comparison of two lumbar total disc replacement devices: results from a prospective randomized, multicenter FDA-regulated trial
RD Guyer, K Pettine, RQ Knight, D Coric, PC McAfee, CR Gordon, A Cappuccino, RA Buckley, P Nunley, FH Geisler, TA Peppers, JR Rappaport, C Lauryssen, Plano, TX, USA
- SP21. Radiographic comparison of two lumbar total disc replacement devices: Results from a prospective, randomized, controlled, multicenter FDA-regulated trial
RD Guyer, K Pettine, RQ Knight, D Coric, PC McAfee, CR Gordon, **A Cappuccino**, RA Buckley, P Nunley, FH Geisler, TA Peppers, JR. Rappaport, C Lauryssen, Plano, TX, USA
- SP22. The effects of mal-placement of the intervertebral disc allograft transplant on the kinematics of the spine
SKL Lam, J Xiao, D Ruan, D Yu, WW Lu, **KDK Luk**, Hong Kong
- SP23. Multilevel lumbar disc arthroplasty leads to unfavorable kinematics, high facet forces and lift-off phenomena
H Schmidt, F Galbusera, A Rohlmann, T Zander **HJ Wilke**, Ulm, Germany
- SP24. Increased inflammatory molecules in degenerative human facet joint capsular tissue
J Kim, MH Ali, **HS An**, G Cs-Szabo, JS Kroin, H-J Im, Chicago, IL USA

E. THE AGING SPINE: SPINAL STENOSIS / OSTEOPOROSIS

Chairman: Gordon Findlay

Moderator: David Wong

SP25. Latest advances in the presurgical diagnosis of lumbar lateral stenosis with the use of magnetic resonance myelography(3D FIESTA)

T Ozawa, T Toyone, A Watanabe, R Shiboi, K Inada, Y Wada, Chiba, Japan

SP26. Validation of indoor level walking test for quantification of neurogenic claudication

J Rainville, L Childs, **P Suri**, E Peña, D Hunter, Boston, MA, USA

SP27. Interference between the epidural fat and ligamentum flavum contributes to the load and position induced cauda constriction in spinal stenosis

T Hansson, N Suzuki, H Hebelka, Gothenburg, Sweden

SP28. Therapeutic effects of alfacalcidol, risedronate and raloxifen on three-dimensional trabecular microarchitecture of cranial vertebral endplate in postmenopausal women: A prospective randomized trial using multi-detector-row CT imaging

Ma Kato, H Takaishi, K Matsuzaki, H Kaneko, M Matsumoto, Y Toyama, K Chiba, Tokyo, Japan

SP29. Relationship of nerve root disturbance to lumbar spinal stenosis based on the operative findings and clinical symptoms

A Miyauchi, T Sumida, H Manabe, A Nakabayashi, Hiroshima, Japan

SP30. Marked improvement in patients treated with vertebroplasty after painful osteoporotic compression fractures

H Bae, LEA Kanim, N Gupta, M Kropf, R Delamarter, Santa Monica, CA, USA

SPECIAL POSTER SESSION # 2

Saturday April 17, 2010 7.45 AM - 8.45 AM

F. CELL BIOLOGY II

Chairman: Jeffrey C Lotz

Moderator: James Kang

- SP31. Sequestered intervertebral discs are mainly infiltrated by dendritic cell precursors: Evidence from a prospective study on patients
A Geiss, KS Delank, R Sobottke, HP Springorum, JW Michael, K Schlüter-Brust, P Eysel, Cologne, Germany
- SP32. Senescent vs. non-senescent cells in the human annulus: laser capture microdissection and in vivo gene expression with microarray analysis
HE Gruber, GL Hoelscher, JA Ingram, N Zinchenko, **EN Hanley, Jr**, Charlotte, NC, USA
- SP33. Gene expression data suggest mitochondrial dysfunction as a potential underlying cause of intervertebral disc degeneration
HE Gruber, GL Hoelscher, J Watts, JA Ingram, Y Sun, **EN Hanley, Jr**, Charlotte, NC, USA
- SP34. Fragmentation of hyaluronic acid stimulates expression of proinflammatory cytokines and matrix degrading enzymes in human intervertebral disc cells
L Quero, M Leonardi, A Nerlich, N Boos, **K Wuertz**, Zurich, Switzerland
- SP35. WNT/ β catenin-mediated regulation of intervertebral disc cells: Modulation by BMP signalling
A Hiyama, D Sakai, M Tanaka, J Mochida, Kanagawa, Japan
- SP36. Oxygen metabolism of intervertebral disc cells; comparison between cells from the bovine outer annulus and nucleus pulposus
OA Boubriak, S Zhou, JPG Urban, Oxford, UK

G. LOW BACK PAIN II

Chairman: Tommy Hansson

Moderator: Jiri Dvorak

- SP37. Adolescent volleyball is slightly protective for low back pain and not correlated with spinal deformities : A controlled cross-sectional survey
F Zaina, S Negrini, S Atanasio, C Fusco, M Marinari, A Certelli, Milan, Italy
- SP38. Predictors of chronic low back pain – What health practitioners should pay attention to
M Melloh, C Rolli Salathé, A Elfering, O Tamcan, AF Mannion, N Boos, U Mueller, Dunedin, New Zealand
- SP39. What are the reliable radiological findings to predict lumbar segmental instability?
K Hasegawa, K Kitahara, H Shimoda, T Hara, Niigata, Japan
- SP40. Staying at home with low back pain: Multidimensional predictors of work absenteeism
M Melloh, C Rolli Salathé, A Elfering, O Tamcan, AF Mannion, N Boos, U Mueller, Dunedin, New Zealand
- SP41. A validation study of brief scale for psychiatric problems in orthopaedic patients (BS-POP) for patients with chronic low back pain Part 1 (verification of the reliability, validity and reproducibility)
K Yoshida, M Sekiguchi, K Otani, H Mashiko, H Shiota, T Wakita, S Konno, Fukushima, Japan
- SP42. A validation study of brief scale for psychiatric problems in orthopaedic patients (BS-POP) for patients with chronic low back pain Part 2 (verification of the criterion-related validity and responsiveness)
K Yoshida, M Sekiguchi, K Otani, H Mashiko, H Shiota, T Wakita, S Konno, Fukushima, Japan

H. FUSION

Chairman: Gunnar Andersson

Moderator: Everard Munting

- SP43. PTH enhances bone formation in the rat lumbar spine fusion model
E Schnaser, I Barrett, N Ahn, Cleveland, Ohio, USA
- SP44. Evaluation of early tissue reactions after lumbar intertransverse process fusion using CT in a rabbit
J Shinbo, P Mainil-Varlet, A Watanabe, S Pippig, J Koerner, M Mimura, H Sameda, Ka Takahashi, SE Anderson, Chiba, Japan
- SP45. Assessment of the facet joint degeneration and trophism comparing 360° fusion and posterolateral fusion
C-H Jeon, J-Y Yi, N-S Chung, D-Y Park, M-S Park, Republic of Korea
- SP46. Low bone mineral density is not a risk for pseudoarthrosis after instrumented lumbar or lumbosacral fusion
M Hoshino, S Sato, T Hyakumachi, H Yoshimoto, Y Yanagibashi, K Takayama, Ikoma, Nara, Japan
- SP47. Does preoperative degeneration matter for adjacent disc degeneration?; Minimum 5-year MRI follow-up
C-H Jeon, N-S Chung, J-Y Yi, D-Y Park, M-S Park, Republic of Korea
- SP48. Fusion status and clinical outcomes of instrumented transforaminal lumbar interbody fusion with local autogenous bone graft: 2-year results of prospective cohort study.
S Kawaguchi, H Oguma, I Yamazaki, M Yamamura, T Akatsuka, S Matsuo, N Ono, K Horigome, H Yajima, T Oda, Y Kii, Asahikawa, Japan

I. DEGENERATIVE DISC DISEASE (DDD)

Chairman: Kjell Olmarker

Moderator: Josef Assheuer

SP49. P38 MAPK inhibition has a positive effect on human and rabbit intervertebral disc degeneration.

K Kakutani, R Pichika, T Yoshikawa, M Doita, K Masuda, San Diego, California, USA

SP50. 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 Wong, L Mauter, V Murdock, C Wong, Greenwood Village, Colorado, USA

SP51. Relationship of early lumbar vertebral degeneration between the MRI grading and extracellular matrix components using dgemric and T2 mapping

A Sugawara, H Murakami, S Yoshida, R Kawamura, K Yamazaki, T Shimamura, Morioka, Iwate, Japan

SP52. Intimate relationship between instability and degenerative signs at L4/5 segment examined by flexion-extension radiography

T Iguchi, T Ozaki, T Chin, N Tsumura, A Kanemura, K Kasahara, K Nishida, Mi Doita, Kobe, Hyogo, Japan

SP53. Modic Type I changes predict rapidly progressing disc degeneration at 1-year follow-up

L Kerttula, K Luoma, **E Käätä**, M Grönblad, Helsinki, Finland

SP54. The association between cigarette smoking and intervertebral disc degeneration of the lumbar spine

D Samartzis, J Karppinen, KDK Luk, KMC Cheung, Hong Kong

J. OUTCOME MEASUREMENTS / INDUSTRY RELATIONSHIPS

Chairman: Anne Mannion

Moderator: Jeremy Fairbanks

- SP55. Return to work outcomes for those with and without objective neurological findings.
G McIntosh, **H Hall**, C Gregg C Hoffman, Toronto, Ontario, Canada
- SP56. Analysis of change in scores in commonly used outcome measures: What can we legitimately assume about the stability of individual patient scores based on group mean scores?
DD. Ohnmeiss, RD Guyer, **SL Blumenthal**, Plano, TX, USA
- SP57. Long-term psychosocial adjustment and quality of life following spinal cord injury: a comparison of injured persons and their caregivers
M Grigg, **BJC Freeman**, L Denson, M Shunmugam, A Poli, D Dorstyn, Adelaide, South Australia , Australia
- SP58. A multidisciplinary functional restoration program for patients with chronic back pain
KDK Luk, T Wan, YW Wong, KMC Cheung, YK Chan, A Cheng, M Kwan, K Law, PWH Lee, GLY Cheing, Hong Kong
- SP59. Surgeon-industry conflict of interest: Survey of North American opinions regarding industry sponsored research
CP DiPaola, CG Fisher, H Zhang, V Noonan, MFS Dvorak, Worcester, MA, USA, Vancouver, Canada
- SP60. Surgeon-industry conflict of interest: survey of North American's opinions regarding industry sponsored educational events and surgeon teaching
CP DiPaola, C Fisher, H Zhang, V Noonan, MFS Dvorak, Worcester, MA, USA, Vancouver, Canada

GENERAL POSTERS

BIOCHEMISTRY/CELL METABOLISM/GENE TRANSFER/GROWTH FACTORS

- GP1.** Both endoplasmic reticulum and mitochondria are involved in disc cell apoptosis and intervertebral disc degeneration in rats,
C-Q Zhao, L-S Jiang, **L-Y Dai**, Shanghai, China
- GP2.** Nanoporous silicon particles (NSP) as a delivery system for the enhancement of spinal fusion
BK Weiner, E Tasciotti, M Ferrari, H Smith, **C Loo**, Houston, TX, USA
- GP3.** Effect of adeno-associated virus-2 mediated human BMP7 gene transfer on chondrocytic phenotype of nucleus pulposus cell
CF Wang, **D-K Ruan**, C Zhang, D-L Wang, H-K Xin, Y Zhang Yan, Beijing, China
- GP4.** Efficacy of interspinous process fusion with recombinant human bone morphogenetic Protein-2 delivered by a synthetic polymer and β -tricalcium phosphate
M Tomiya, T Hiromitsu, D Sho, N Hiroaki T Kunio, Osaka, Japan
- GP5.** The ectopic expression of E-cadherin upregulates the expression of collagen II and aggrecan by the BMP pathway in human intervertebral disc cells
Z Wang, K Higashino, WC Hutton, **ST Yoon**, Atlanta, Georgia, USA
- GP6.** Lumbar interbody fusion using Hydroxyapatite (HA) granules with Platelet-Rich Plasma (PRP) in rats
H Kamoda, S Ohtori, M Yamashita, Y Wada, T Toyone, T Ozawa, K Nakagawa, Y Eguchi, S Orita, T Ishikawa, G Ara, M Miyagi, K Takahashi, Chiba, Japan
- GP7.** Expression of the tissue renin-angiotensin system in rat intervertebral disc: implication for disc degeneration
R Morimoto, **K Akeda**, S Obata, R Iida, A Nishimura, Y Kasai, A Uchida, A Sudo, Tsu, Mie, Japan
- GP8.** Actin-Beta should not be used as an endogenous control in real-time RT-PCR for intervertebral disc research under mechanical loading stress conditions
T Yurube, K Nishida, T Suzuki, Z Zhang, J Yamamoto, K Kakutani, K Maeno, T Takada, T Iguchi, M Kurosaka, M Doita, Kobe, Japan
- GP9.** Pulsed electromagnetic field (PEMF) stimulation of nucleus pulposus cells
M Held, L Ettinger, PM Welz, **SJ Ferguson**, Bern, Switzerland

- GP10.** Activated apoptotic mitochondrial pathway in a rat tail compression loading – induced disc degeneration model
T Yurube, K Nishida, T Suzuki, Z Zhang, J Yamamoto, K Kakutani, K Maeno, T Takada, T Iguchi, M Kurosaka, M Doita, Kobe, Japan
- GP11.** Effect of osteogenic Protein-1 (OP-1) on proteoglycan metabolism of disc cells under low osmotic conditions as seen in degenerated disc
K Takeno, S Kobayashi, T Miyazaki, K Negoro, H Baba, A Meir, J Urban, Eiheiji, Fukui, Japan
- GP12.** Novel treatment options for discogenic back pain: The red wine polyphenol resveratrol inhibits expression of proinflammatory cytokines and matrix degrading enzymes in intervertebral disc cell
L Quero, M Klawitter, A Plewnia, J Klasen, N Boos, **K Wuertz**, Zurich, Switzerland
- GP13.** Proinflammatory reactions in the intervertebral disc: Involvement of toll-like receptors
L Quero, M Leonardi, A Nerlich, N Boos, **K Wuertz**, Zurich, Switzerland
- GP14.** Functional consequences of silencing MMP-2 through RNAi in intervertebral disc cells
A Rastogi, ME Boutin, JD Twomey, AH Hsieh, College Park, Maryland, US
- GP15.** A p38 mitogen-activated protein kinase inhibitor, SCIO-496, inhibited the production and expression of cytokines and pain-related molecules by human intervertebral disc cells
R Pichika, K Kakutani, M Lenz, T Yoshikawa, G Szabo, **K Masuda**, La Jolla, CA, USA
- GP16.** Effect of bone morphogenetic protein-7 on chronic intervertebral disc degeneration in a mature rabbit model
T Yoshikawa, K Masuda, WC Bae, **K Kakutani**, M Bydder, HS An, San Diego, CA, USA
- GP17.** TNF-alpha response of cells of the intervertebral disc depends on their location in the disc
G Cs-Szabo, D Gerard, S Park, D Pietryla, GBJ Andersson, H An, Chicago, IL, USA
- GP18.** Imbalanced catabolic relative to anabolic gene alterations in a rat tail compression loading-induced disc degeneration model
T Yurube, K Nishida, T Suzuki, Z Zhang, J Yamamoto, K Kakutani, K Maeno, T Takada, T Iguchi, M Kurosaka, M Doita, Kobe, Japan

BIOMECHANICS

- GP19.** Contribution of risk factors for over-stress at adjacent segments after lumbar fusion: Removal of posterior ligaments, pedicle screws, fusion itself
H-J Kim, S-H Moon, H-J Chun, K-T Kang, H-S Kim, J-O Park, E-S Moon, J-H Park, J-S Sohn, H-M Lee, Seoul, Korea

- GP20.** A morphological adaptation of the thoracic and lumbar vertebrae to lumbar hyperlordosis in young and adult females
Y Masharawi, G Dar, S Peleg, N Steinberg, B Medlej, H May, J Abbas, I Hershkovitz, Tel Aviv Jaffa, Israel
- GP21.** Can the extrusion risk of injected discs cells be reduced with albumin gel as a cell carrier?
H-J Wilke, H Fuchs, G Achatz, C Neidlinger-Wilke, J Mollenhauer, K Benz, H Wurst, F Heuer, Ulm, Germany
- GP22.** Surgical outcomes of PLIF for isthmic spondylolisthesis
S Okuda, T Oda, A Miyauchi, R Yamasaki, T Haku, F Kanematsu, M Iwasaki, Sakai city, Japan
- GP23.** A fresh look at the nucleus/endplate region: micromechanical evidence for a higher level of structural integration
KR Wade, PA Robertson, ND Broom, Auckland, New Zealand
- GP24.** Anomalous micro-architectural features in elderly vertebrae: MicroCT observations
SJ Ferguson, A Wenger, Bern, Switzerland
- GP25.** Architecture of human abdominal wall muscles: Implications for mechanical function
SHM Brown, SR Ward, MS Cook, RL Lieber, La Jolla, California USA
- GP26.** Assessment of spinal fusion status using biomechanical computed tomography
JC Lotz, CW O'Neill, D Kopperdahl, S Burch, M Hambly, T Keaveny, San Francisco, CA, USA
- GP27.** Intradiscal pressure generation depends on load-history in rat caudal discs
D Hwang, AS Gabai, M Yu, AH Hsieh, College Park, MD, USA
- GP28.** Spinal instrumentation following complete resection of the last lumbar vertebra: An in vitro biomechanical study following I5 spondylectomy
V Bartanusz, A Muzumdar, M Moldavsky, M Hussain, S Khalil, Audubon, PA, USA
- GP29.** A biomechanical model of degenerative spondylolisthesis: Results of pure shear testing
SP Kingwell, A Melnyk, Q Zhu, J Chak, MF Dvorak, **TR Oxland**, Ottawa, Ontario, Canada
- GP30.** Biomechanical evaluation of throaco-lumbar burst fractures treated with calcium phosphate: An in-vitro cadaveric study
TW Peters, SR Chinthakunta, M Hussain, S Khalil, Audubon, PA, USA
- GP31.** Lumbar and hip sagittal movement: Influence of sex and age
P Intolo, S Milosavljevic, AB Carman, GD Baxter, Dunedin, New Zealand
- GP32.** Use of a robot-based sequential dissection technique applied in porcine motion segments to identify which spinal tissues are loaded during the application of manual therapy
GN Kawchuk, A Carrasco, G Beecher, D Goertzen, N Prasad, Edmonton, Alberta, Canada

- GP33.** Delamination of the annulus: How does the anterior differ from the posterior in terms of the energy required to propagate delamination?
DE Gregory, EM Kyubwa, AC Chen, RL Sah, K Masuda, La Jolla, California, USA
- GP34.** The difference in spine specimen DXA BMD between in-situ and in-vitro scans
J Tan , M Kayanja, S St. Clair, Akron, Ohio, USA
- GP35.** Normal axial and bending stiffness of motion segments are preserved on implantation of a novel mono-block elastomeric total disc replacement
J Naylor, **D McNally**, Nottingham, UK
- GP36.** Comparison of the activities of the deep trunk muscles measured using intramuscular and surface electromyography
Y Okubo, K Kaneoka, A Imai, I Shiina, M Tatsumura, S Izumi, S Miyakawa, Tsukuba, Ibaraki, Japan
- GP37.** Analysis of the muscle activity during active pelvic tilting motion
S Takaki, K Kaneoka, Y Okubo, S Otsuka, K Miyamoto, M Tatsumura, I Shiina, S Miyakawa, Tsukuba, Ibaraki, Japan
- GP38.** The analysis of trunk and lower extremity muscular activation during rugby scrimmaging
S Otsuka, K Kaneoka, Y Okubo, S Takaki, K Miyamoto, M Tatsumura, I Shiina, S Miyakawa, M Takemura, Tsukuba, Ibaraki, Japan

DEFORMITY

- GP39.** Hydatid infestation of the spine - a long term follow-up
S Govender, Durban, South Africa
- GP40.** Selective posterior decompression and short segmental fusion of degenerative lumbar scoliosis
M Xianglong, H Yong, S Qingjun, G Li, Y Jincai, L Shibao, K Nan, Z Lei, Beijing, China
- GP41.** Change of pelvic tilt before and after gait in patients with lumbar degenerative kyphosis
SB Kim, WJ Kim, JW Kang, S Il Kang, KY Park, Daejeon, Korea
- GP42.** Curve progression and decompensation after posterior short-segment fusion for degenerative lumbar scoliosis
M Kanayama, D Togawa, T Hashimoto, K Shigenobu, F Oha, Hokkaido, Japan
- GP43.** The role of posterior spinal fusion in healed post-tubercular lumbar kyphosis in children
V Trivedi, S Deshpande, Meerut, UP, India
- GP44.** Surgical management of post traumatic kyphosis by single stage anterior reconstruction
M Mossaad, AS Mohamed, Cairo, Egypt

- GP45.** Radiologic analysis of postoperative sagittal plane correction in lumbar degenerative kyphosis (LDK)
SB Kim, W J Kim, JW Kang, SII Kang, KY Park, Daejon, Korea

DISC DEGENERATION/ARTHRITIS

- GP46.** Tobacco smoke exposure induces degenerative changes in intervertebral discs
N Vo, D Wang, G Sowa, W Witt, P Coelho, P Di, J Lee, **J Kang**, Pittsburgh, Pennsylvania, USA
- GP47.** Clinical and radiological outcomes of an anterior lumbar plate for lumbar plate for lumbar interbody fusion: Two year results of a prospective study
D Ardern, R Morcom, B LaRue, A Oakley, R Fraser, Tauranga, New Zealand
- GP48.** Double knockout of ADAMTS4 AND ADAMTS5 (aggrecanase-1&2) mice are not protected from spontaneous aging-associated intervertebral disc degeneration
L Jing, KD Allen, R Tang, I King, A-M Malfait, LA Setton, **J Chen**, Durham, NC, USA
- GP49.** Chronic psychosocial stress leads to increased rates of disc degeneration
Z Buser, N Aurouer, S Degmetich, B Yoo, E Liebenberg, M Dallman, JC Lotz, San Francisco, CA, USA
- GP50.** Production of a natural disc scaffold for intervertebral disc tissue engineering
KY Chan, VYL Leung, V Tam, WW Lu, KY Sze and KMC Cheung, Hong Kong, N/A China
- GP51.** Improving predictions of outcomes for surgical and non-operative treatment of intervertebral disc herniation (IDH)
TD Tosteson, A Pearson, J Lurie, W Zhao, W Abdu, S Mirza, AN Tosteson, J Weinstein, Lebanon, New Hampshire, USA
- GP52.** Histological features of the degenerating intervertebral disc in the goat disc-injury model
Y Zhang, S Drapeau, **HS An**, D Markova, B Lenart, DG Anderson, Chicago, IL, US
- GP53.** Imaging of cartilage surface degeneration in facet joint osteoarthritis
AR Hemmad, WC Bae, S Ongwijitwat, T Yoshikawa, B Burbach, A Sou, RL Sah, **K Masuda**, La Jolla, CA, USA
- GP54.** Interleukin-17 synergizes with IFN γ or TNF α to promote inflammatory mediator release and intercellular adhesion molecule-1 (ICAM-1)
Gabr MA, Setton LA, Jing L, Sinclair SM, Shamji MF, Richardson WJ, Fitch RD, **Chen J**, Durham, NC USA
- GP55.** Small interference RNA (siRNA) of ADAMTS4 and ADAMTS5 in nucleus pulposus cells in vitro and effects of ADAMTS5 siRNA in the rabbit annular needle puncture model.
S Seki, Y Abe, Y Kawaguchi, K Asanuma, K Masuda, T Kimura, Toyama, Japan
- GP56.** Structured co-culture of stem cells and disc cells prevent degeneration in a rat model
AA Allon, N Aurouer, B Yoo, E Liebenberg, Z Buser, **JC Lotz**, San Francisco, CA, USA

- GP57.** A detailed microscopic examination of alterations in normal annular structure induced by mechanical destabilisation in an ovine model of disc degeneration.
M. Schollum, R Appleyard, CB Little, **J Melrose**, St. Leonards, NSW, Australia

HEALTH ECONOMICS/EPIDEMIOLOGY

- GP58.** Impact of self-reported musculoskeletal pain on health-related Quality Of Life among young adults
M Paananen, S Taimela, J Auvinen, T Tammelin, P Zitting, J Karppinen, Oulu, Finland
- GP59.** The etiology of subchondral bone cysts in the lumbar facet joint
T Ogawa, Y Oishi, Y Murata, T Inoue, Y Hayashi, M Murase, J Hamawaki, A Tachibana, K Sairyō, Hiroshima, Japan
- GP60.** Vascular disease and facet joint osteoarthritis: is there an association?
P Suri, DJ Hunter, J Rainville, A Guermazi, JN Katz, Boston, MA, USA
- GP61.** Economic impact of minimally invasive spine surgery: Ppen v. MIS spinal fusion: Costs in the perioperative period (first 45 days)
WB Rodgers, B Vanconia, John Lucio, J Patterson, Jefferson City, MO, USA
- GP62.** Does mental status deteriorate following osteoporotic vertebral fracture? Prospective cohort study
M Hoshino, H Nakamura, T Tsujio, H Terai, T Namikawa, A Matsumura, M Kato, A Suzuki, K Takayama, Osaka, Japan
- GP63.** The risk assessment of fall in the patients with lumbar spinal stenosis
HJ Kim, CD Han, SH Moon, HJ Chun, KT Kang, HS Kim, JO Park, ES Moon, BR Kim, JH Park, JS Sohn, HM Lee, Seoul, Korea

HNP

- GP64.** Evaluation of behavior and neuropeptide markers of pain in a simple sciatic nerve injury pain model in rats
K Hirose, N Iwakura, S Orita, M Nagata, K Yamauchi, M Yamashita, G Inoue, Y Eguchi, Y Aoki, T Ishikawa, G Arai, M Miyagi, H Kamoda, M Suzuki, Ka Takahashi, K Kuniyoshi, **S Ohtori**, Chiba, Japan
- GP65.** Effect of locally administered etanercept into injured rat sciatic nerve
K Kato, S Kikuchi; S Konno; VI Shubayev, RR. Myers, Fukushima, Japan
- GP66.** Minimally invasive treatment of recurrent disk herniation via XLIF
WB Rodgers, EJ Gerber, J Patterson, Jefferson City, Missouri, USA
- GP67.** Changes in expression of mRNA for Interleukin-8 and effects of inhibition of microglia in the spinal dorsal horn in a rat model of lumbar disc herniation
S-H Ahn, Y-W Cho, S-H Jang, S-M Park, S-J Kim, H-W Park, J-M Seo, S-J Hwang, Daegu, Republic of Korea

- GP68.** Long-term attenuation of hindpaw pain response after pulsed radiofrequency application on dorsal root ganglion in lumbar disc herniated rat model
S-H Ahn, Y-W Cho, S-H Jang, S-M Park, S-J Kim, H-W Park, J-M Seo, S-J Hwang, Daegu, Republic of Korea
- GP69.** Changes in expression of sodium channels in trkA positive neurons in the dorsal root ganglion following disc puncture. An experimental study in rats.
K Watanabe, K Larsson, B Rydevik, S Kikuchi, S Konno, K Olmarker, Fukushima, Japan
- GP70.** Clinical outcome following aggressive bilateral posterior discectomy for excision of contained lumbar disc herniation
JH Kim, HJ Moon, JJ Park, JK Suh, YK Park, Seoul , South Korea
- GP71.** Central and peripheral nervous system effects of nucleus pulposus exposure
E Nilsson, K Rask, HB Henriksson, I Hammar; H Brisby, Gothenburg, Sweden
- GP72.** Outcomes of nonsurgical treatment of lumbar disc herniation in older adults
P Suri, DJ Hunte, C Jouve, C Hartigan, J Limke, J Luz, J Rainville, Boston, MA, USA

IMAGING/DIAGNOSIS

- GP73.** Femoral neurogram to assess the anatomic course prior to a transpsoas spinal access to the L4-5 intervertebral disc space
TT Davis, HW Bae, A Rasouli, B King, RB Delamarter, Santa Monica, CA, USA
- GP74.** The relationship between the finding of calcification of aorta and both the grade of lumbar spondylosis and bone mineral density
Y Kawaguchi, M Nobukiyo, M Nakano, S Seki, H Sainoh, T Kimura, Toyama, Japan
- GP75.** Radiographic evaluation of the instability in degenerative lumbar scoliosis (DLS)
H Yasuda, A Matsumura, S Takahashi, T Matsumoto, S Dozono, A Suzuki, H Toyoda, H Terai, Nakamura Hiroaki, Osaka, Japan
- GP76.** Relationship between sagittal instability factors and disc degeneration examined by lumbar MRI
T Iguchi, T Ozaki, T Chin, N Tsumura, A Kanemura, Kasahara, K Nishida, M Doita, Kobe, Japan
- GP77.** Lumbar spinous process morphology and the influence of age
CEW Aylott, RA Puna, **PA Robertson**, Auckland, New Zealand
- GP78.** Effect of MRI on perception of disability in low back pain
OL Osti, S Zahari, J Ooi and J Baranoff, North Adelaide, South Australia, Australia
- GP79.** Lumbar facet and interfacet shape variation during growth in children from the general population: A three years follow-up MRI study.
Y Masharaw, P Kjaer, T Bendix, C Manniche, TS Jensen, Tel Aviv, Israel

- GP80.** The sagittal spinal alignment in patients with lumbar degenerative disease. a comparative study 193 cases
K Endo, H Suzuki, D Kimura, H Kobayashi, H Tanaka, S Tanaka, K Yamamoto, Tokyo, Japan
- GP81.** Modified magnetic resonance spectroscopy diagnosis of painful and non-painful lumbar intervertebral discs
SS Hu, J Peacock, J Claud, J Lotz, DS Bradford, SH Berven, San Francisco, CA, USA
- GP82.** “Skipped” level disc degeneration of the lumbar spine, a MRI study of 1989 individuals
KMC Cheung, D Samartzis, J Karppinen, FPS Mok, DWH Ho, DYT. Fong, KDK. Luk Hong Kong, China
- GP83.** Cone Beam CT Scan vs. fluoroscopy: a cadaveric study comparing accuracy, time and radiation doses
A Gibson, D Karahalios, J-P Mobasser, E Potts, **S Burch**, San Francisco, CA, USA
- GP84.** Morphological study of lumbar facet joint and the sagittal alignment in patients with degenerative spondylolisthesis
W Alimasi, K Endo, D Kimura, H Suzuki, H Kobayashi, H Tanaka, S Tanaka, K Yamamoto, Tokyo, Japan
- GP85.** On-site intra-op “Scrape cytology” of transpedicular biopsy of vertebral body lesions
J Naresh-Babu, G Neelima, Ch. Venkata Swamy, Hyderabad, Andhra Pradesh India
- GP86.** Correlation of excessive facet joint fluid levels with surgical outcomes after decompressive surgery without fusion for lumbar degenerative disease.
S Maki, Y Aoki, Y Ikeda, F Nakajima, S Moriya, K Takahashi, S Ohtori, M Yamagata, Chiba, Japan
- GP87.** New CR image processing condition optimized for improving the visibility of preoperative marking image in posterior lumbar spinal surgery
Y Takeshita, J Kunogi, S Masuyama, S Ogihara, T Tsukanishi, N Kamiya, Tokyo, Japan
- GP88.** Lumbar facet joint subchondral bone thickness measurement using MRI
CY Duan, HS An, AA Espinoza Orías, GBJ Andersson, JZ Hu, HB Lu, **N Inoue**, Chicago, Illinois, US
- GP89.** The use of orthogonal plain radiographs in determining the position of thoracic pedicle screws: are they reliable?
N Kumar, N Guo-Xin, WH Kit, Singapore
- GP90.** In vivo measurement of lumbar vertebral endplates 3D surface area in healthy volunteers
AA Espinoza Orías, HS An, GBJ Andersson, **N Inoue**, Chicago, Illinois
- GP91.** 2D/3D reconstruction of a scaled lumbar vertebral model from a single fluoroscopic image
G Zheng, LP Nolte, **SJ Ferguson**, Bern, Switzerland

- GP92.** Do the deep muscles of the trunk contribute the stability of the lumbar spine? Evaluation by MR Fluoroscopy
M Hangai, K Koizumi, M Dohi MD, K Kaneoka, T Okuwaki, Tokyo, Japan

Low Back Pain

- GP93.** New concept of hypertrophy of the ligamentum flavum in the lumbar spinal canal stenosis: Role of epiligament of the flavum
Sato N, **Sairyo K**, Kosaka H, Sakai T, Yasui N, Terai T, Goel VK, Biyani A, Ebraheim N, Tokushima, Japan
- GP94.** Two years follow-up of pain and disability in patients with Modic type 1 end-plates changes
E Käätä, M Grönblad, Helsinki, Finland
- GP95.** The effect of a radiographic solid fusion for segmental instability on clinical outcome after minimally invasive transforaminal lumbar interbody fusion
Y Park, JW Ha, YT Lee, HS Chong, NY Sung, SY Kim, Kyonggi, South Korea
- GP96.** Which lumbosacral structures are more likely injured after motor vehicle accident, lifting injury, or a fall? A retrospective audit.
MJ DePalma, JM Ketchum, M Ruchala, D Powell, A Kouchouch, BS Trussell, Richmond, Virginia, US
- GP97.** The factors for the postoperative low back pain in lumbar disc herniation
M Iwabuchi, K Murakami, H Taguchi, N Sugeno, K Otani, Fukushima, Japan
- GP98.** Nerve growth factor antagonism attenuates discogenic low back pain in rats
M Nagata, **S Orita**, M Horii, M Yamashita, K Yamauchi, G Inoue, M Suzuki, Y Eguch, H Kamoda, G Arai, T Ishikawa, M Miyagi, M Suzuki, T Morinaga, S Ohtori, K Takahashi, Chiba, Japan
- GP99.** P75 neurotrophin receptor (P75NTR) modulates the NGF signalling pathway rather than tropomyosin-related kinase A (TrkA) in rat discogenic pain models
S Orita, M Nagata, M Horii, M Yamashita, K Yamauchi, G Inoue, M Suzuki, Y Eguch, H Kamoda, G Arai, T Ishikawa, M Miyagi, M Suzuki, T Morinaga, S Ohtori, K Takahashi, Chiba, Japan
- GP100.** Prevalence of disc, facet joint or sacroiliac joint pain in low back pain patients utilizing an algorithmic approach
MJ DePalma, JM Ketchum, M Ruchala, A Kouchouk, D Powell, BS Trussell, Richmond, VA, US
- GP101.** Which grade of annular fissure is more frequently associated with low back pain reduction during analgesic discography?
MJ DePalma, JM Ketchum, J-E Lee, R Derby, Richmond, VA, US

- GP102.** Clinical and kinematic evaluation of osteopathy vs specific exercises in obese non-specific chronic low back pain females patients: A randomized controlled trial
F Zaina, L Vismara, F Menegoni, M Galli, S Negrini, V Villa, P Capodaglio, Milan, Italy
- GP103.** Quantitative analysis of the effects of obesity and low back pain on gait in female patients
F Zaina, L Vismara, V Cimolin, M Crivellini, M Galli, P Capodaglio, S Negrini, Milan, Italy
- GP104.** Clinical value of finger floor distance in lumbar spinal disorders
J Omata, M Kanayama, D Togawa, K Miyagishima, A Yuasa, T ashimoto, Hakodate, T Ito, Hokkaido, Japan
- GP105.** Effects of individualised acupuncture on the quality of the life of patients with chronic non-specific low back pain
T Kikuchi, S Yamaguchi, H Omata, T Mimura, M Nakazawa, H Isobe, Ke Takahashi, Saitama, Japan

NON-OPERATIVE TREATMENT

- GP106.** Low back pain-related QOL after nerve root block may predict the prognosis: An analysis using the Roland-Morris Disability Questionnaire
S Yabuki, S Konno, S Kikuchi, Fukushima, Japan
- GP107.** Effective spinal rehabilitation - An uncomplicated exercise approach
V Mooney, T Dreisinger, K Raiszadeh, J Mayer, Tampa, Florida, USA
- GP108.** Significance of bony bridges in the healing process of vertebral burst fractures in senile osteoporosis
S Urayama, Toyama, Japan
- GP109.** Technical difficulty in transforaminal epidural steroid injection in far-lateral herniation of lumbar disc
J-H Park, **H-J Kim**, K-M Shin, Seoul, Korea
- GP110.** Correlation between fracture healing status and Euroqol Score (EQ-5D) during conservative therapy for osteoporotic vertebral compression fractures
D Togawa, M Kanayama, F Oha, K Shigenobu, K Nagahama, T Hashimoto, Hakodate,, Hokkaido, Japan
- GP111.** Effect of corticosteroids on chondrocyte of zygapophysial (facet) joint
T Miyazaki, S Kobayashi, K Takeno, A Meir, H Baba, Eiheiiji, Fukui, Japan
- GP112.** Cell therapy with human umbilical cord blood-derived mesenchymal stem cells for intervertebral disc repair in cultured rabbit disc explants
Y Zhang, D Markova, B Saitta, V Markov, M Enomoto-Iwamoto, HS An, A Chee, G Anderson, Chicago, IL, US

- GP113.** Caudal epidural injections under image intensifier guidance (epidurogram) A prospective study using validated outcome measures
R Pulavarti, K Yeoh, K Wellington, M Khatri, Preston, Lancashire, UK
- GP114.** Effect of a high efficiency cognitive behavioural exercises approach to chronic low back pain: A retrospective controlled trial with long term follow up
F Zaina, S Negrini, S Atanasio, C Fusco, V Ziliani, S Chessari, M Rmano, Milan, Italy
- GP115.** Classifying patients with low back pain: factors aggravating or relieving patient's symptom
A Fujiwara, Y Nohara, N Kobayashi, K Saiki, Tochigi, Japan
- GP116.** Pain quality in patients with back symptoms
A Fujiwara, Y Nohara, Tochigi, Japan

REHABILITATION/PSYCHOLOGICAL/OUTCOMES

- GP117.** Early active rehabilitation after surgery for lumbar disc herniation: A prospective randomized control trial
K Ishida, Y Umeno, H Yoshimoto, S Satoh, Hokkaido, Japan
- GP118.** Is there any validity of our new clinical pathway for patients after lumbar discectomy?
N Ishigaki, T Aihara, J Ouchi, Y Saito, T Sanada, K Hatakeyama, Chiba, Japan
- GP119.** Are MIS spinal fusion outcomes predictable? Factors of statistically significant outcomes predictability in minimally invasive spinal fusions
WB Rodgers, EJ Gerber, JRPatterson, Jefferson City, MO, USA
- GP120.** The impact of psychiatric comorbidity on the return to work in patients undergoing herniated disc surgery
HJ Meisel, M Zieger, M Lupp, L Günther, J Meixensberger, R Toussaint, K Stengler, MC Angermeyer, H-H König, SG Riedel-Heller, Halle, Germany
- GP121.** Fear-avoidance beliefs and views of low back pain in adolescents – Can information make a change?
Y Henrotin, **M Marty**, I Parmentier, B Henot, A Lebouquin, C Cedraschi, Créteil, France
- GP122.** Development of a documentation instrument for the conservative treatment of spinal disorders in the international spine registry Spine Tango
E Aghajev, C Röder, T Zweig, M Melloh, J Kessler, Bern, Switzerland
- GP123.** Are changes in pain and disability after a programme of “Spine Stabilisation Exercises” contingent upon improvements in the voluntary activation of transversus abdominis?
AF Mannion, N Pulkovski, F Caporaso, H Sprott, Zürich. Switzerland

SPONDYLOLISTHESIS: ISTHESIS

- GP124.** XLIF for grade II spondylolisthesis at L4-5: the "worst case" scenario
WB Rodgers, J Patterson, Jefferson City, MO, USA
- GP125.** Factors affected to clinical outcomes of decompression surgery without fusion for degenerative lumbar spondylolisthesis
A Minamide, M Yoshida, H Yamada, H Hashizume, Y Nakagawa, M Kawai, H Iwasaki, S Tsutsui, M Okada, M Kioka, Y Ishimoto, K Nagata, Wakayama City, Wakayama, Japan
- GP126.** Clinical outcomes of minimally invasive technique for direct repair of lumbar spondylolysis
T Sakai, **K Sairyō**, H Kosaka, N Yasui, Tokushima, Japan
- GP127.** The effects of spondylolysis on hip degeneration
E Schnaser, NU Ahn, MH Abdulian, Cleveland, Ohio, USA
- GP128.** Pars repair technique & rationale of treatment in adults
SN Kumar, VG Gowda, A Kumar, Wong, Singapore
- GP129.** The orientation of lumbar pars defects as a considerably causative factor in isthmic spondylolysis: Biomechanical and therapeutic implications
H-J Lo, S-W Yang, Y-H Tsuang, Taichung, Taiwan

STENOSIS

- GP130.** Relationships between spino-pelvic parameters in patients with lumbar canal stenosis
H Suzuki, K Endo, H Kobayashi, H Tanaka, K Yamamoto, Tokyo, Japan
- GP131.** Qualitative grading of severity of lumbar spinal stenosis based on morphology of the dural sac on MRI images
C Schizas, N Theumann, A Burn, R Tansey, D Wardlaw, F Smith, G Kulik, Lausanne, Switzerland
- GP132.** Evaluation of ossified lesions in the whole spine and surgical results in patients with ossification of the posterior longitudinal ligament
Y Kawaguchi, M Nakano, T Yasuda, S Seki, T Kimura, Toyama, Japan
- GP133.** Development and validation of symptom scale of a lumbar spinal stenosis
M Sekiguchi, T Wakita, K Otani, Y Onishi, S Fukuhara, S Kikuchi, S Konno, Fukushima, Japan
- GP134.** A bi-dimensional approach to measurement of physical function and abilities
L Matheson, V Mooney, J Verna, S Leggett, T Dreisinger, J Mayer, Tampa, Florida, USA
- GP135.** The influence of midline preservation (MLP) vs midline sacrifice (MLS) upon facet joint morphology in lumbar decompressive surgery – A cross sectional anatomical study
DR Aponso, **PA Robertson**, Auckland, New Zealand

- GP136.** Development of a novel percutaneously insertable/ removable interspinous process spacer for treatment of LSS patients: Feasibility study using porcine model
K Nishida, M Doita, K Maeno, K Kakutani, T Yurube, Z Zhang, J Yamamoto, T Iguchi, M Kurosaka, Kobe, Hyogo, Japan
- GP137.** Lumbar decompression followed by Coflex™ Interlaminar Implant vs. pedicle screw posterior lateral fusion for treatment of stenosis
KA Pettine, **Christian Schlicht**, Loveland, CO, USA
- GP138.** The interspinous ligament should be removed for decompression with a case of lumbar spinal canal stenosis
Yohei Yuzawa, Tokyo, Japan
- GP139.** The synovitis of the facet joint at the responsible intervertebral level may induce cauda equina syndrome in lumbar spinal canal
K Sato, K Yamauchi, B Takayama, Fukushima, Japan
- GP140.** Developmental narrow spinal canal in patients with lumbar spinal stenosis
H Iizuka, KE Takahashi, T Torio, F Saito, K Kawamura, Y Okano, Saitama, Japan
- GP141.** Lumbar spinal stenosis with peripheral arterial disease
K Uesugi, M Sekiguchi, S Kikuchi, M Kanayama, K Takahashi, C Kazuhiro, M Doita, Y Toribatake, H Matsuo, Y Matsuyama, S Yasumura, K Yonenobu, S Konno, Fukushima, Japan
- GP142.** Relationship between lumbar spinal stenosis and lifestyle-related disorders
K Uesugi, M Sekiguchi, S Kikuchi, M Kanayama, K Takahashi, C Kazuhiro, M Doita, Y Toribatake, H Matsuo, Y Matsuyama, S Yasumura, K Yonenobu, S Konno, Fukushima, Japan
- GP143.** Relations between disc degeneration parameters and ligamentum flavum hypertrophy
JJ Munns, HS An, AA Espinoza Orías, GBJ Andersson, R Takatori, **N Inoue**, Chicago, Illinois, US

SURGERY

- GP144.** Lumbar fusion in octogenarians: The promise of minimally invasive surgery
WB Rodgers, EJ Gerber, J Patterson, Jefferson City, MO, USA
- GP145.** Survivorship analysis of interspinous spacer for treatment of lumbar spinal stenosis and disc herniation
JB Park, C-G Kong, **Y-Y Kim**, H-Y Won, Uijeongbu, Korea
- GP146.** Spinal surgery in patients with end-stage renal disease undergoing hemodialysis therapy
S-U Kuh, I-H Han, H-C Park, D-K Chin, K-S Kim, B-H Jin, Y-S Yoon, Y-E Cho, Seoul, South Korea
- GP147.** Restoration of vertebral height and correction of kyphosis after kyphoplasty
KH Kim, **S-U Kuh**, Y-M Park, D-K Chin, Y-S Yoon, Y-E Cho, Seoul, South Korea
- GP148.** The optimal indications and treatment results of minimally invasive transforaminal lumbar interbody fusion
Y Park, JW Ha, YT Lee, NY Sung, Kyonggi, South Korea

- GP149.** Is our health care system working for spinal surgery patients?
A Henley, **AH McGregor**, London, UK
- GP150.** Evaluation of an educational booklet following spinal surgery
A Henley, **AH McGregor**, London, UK
- GP151.** Cost comparison of total disc replacement vs. fusion in patients with insurance denial for disc replacement
D Ohnmeiss, C Hume, R Guyer, J Zigler, **S Blumenthal**, Plano, TX ,USA
- GP152.** The surgical management of degenerative lumbar spondylolisthesis: A comparative study of outcomes following decompression with fusion and microendoscopic decompression
T Aihara, J Oouchi, Y Saitou, T Sanada, K Hatakeyama, N Ishigaki, T Ezure, Chiba, Japan
- GP153.** Predictors of serum chromium levels following stainless steel posterior spinal instrumentation for adolescent idiopathic scoliosis
MD Rackham, TP Cundy, GAntoniou, **BJ C Freeman**, **LM Sutherland**, PJ Cundy, North Adelaide, Australia
- GP154.** Low back pain after lumbar discectomy in patients showing endplate Modic type 1 change
S Ohtori, M Yamashita, K Yamauchi, M Suzuki, S Orita, Y Eguchi, G Inoue, T Koshi, Y Aoki, T Ishikawa, G Arai, M Miyagi, H Kamoda, M Suzuki, Ka Takahashi, Chiba, Japan
- GP155.** Advantages of the paraspinal approach in comparison with conventional midline approach for S1 pedicle screw placement
M Ota, M Neo, S Fujibayashi, M Takemoto, T Nakamura, Kyoto, Japan
- GP156.** Contra lateral side transient neuralgia following microscopic bilateral decompression via a unilateral approach for lumbar canal stenosis: Its frequency and clinical characteristics
H Toyoda, S Konishi, M Kato, S Dohzono, H Nakamura, Osaka, Japan
- GP157.** Percutaneous vertebroplasty with calcium phosphate cement for osteoporotic vertebral fractures: analysis of the poor clinical outcome
M Nakano, Y Kawaguchi, T Kimura, N Hirano, Toyama, Japan
- GP158.** Long-term follow-up study of vertebroplasty with calcium phosphate cement for osteoporotic vertebral fractures
M Nakano, Y Kawaguchi, T Kimura, N Hirano, Toyama, Japan
- GP159.** Surgical outcomes after bilateral decompression using a unilateral approach in lumbar degenerative disease: Is this procedure adequate for patients with bilateral symptoms?
Y Aoki, S Maki, K Shimizu, Y Ikeda, F Nakajima, M Yoshihara, J Iwasaki, K Takahashi, S Ohtori, M Yamagata, Chiba, Japan

- GP160.** Dynamically evoked, discrete-threshold electromyography (EMG) in the extreme lateral interbody fusion (XLIF®) approach
WB Rodgers, MD Peterson, AG Tohmeh, IJ Volcan, JT Cummings, F Sandhu, ST Yoon, V Deviren, W Taylor, Jefferson, City. Missouri, USA
- GP161.** Minimally invasive lumbar fusion (XLIF) using a β TCP-HA bone graft substitute (formagraft): fusion rates out to 1 year
WB Rodgers, EJ Gerber, JPatterson, Jefferson City, Missouri, USA
- GP162.** Prospective, non-randomized, multi-center clinical evaluation of extreme lateral interbody fusion (XLIF) in the treatment of adult scoliosis
WB Rodgers, AG Tohmeh, JA Hyde, K Khajavi, MD Peterson, V Deviren, D Dinh, KT Huntsman, LA Hunt, J Malcolm, WD Smith, TS Yoon, IJ Volcan, Jefferson City, Missouri, USA
- GP163.** CT fusion assessment in XLIF patients at 1 year
WB Rodgers, EJ Gerber, J Patterson, Jefferson City, Missouri, USA
- GP164.** Safety and the learning curve of trans-sacral fusion (AxialLIF) at L5-S1: Complications in the first 166 surgeries of a single surgeon series
WB Rodgers, EJ Gerber, J Patterson, Jefferson City, Missouri, USA
- GP165.** Biomechanical implant behavior and extrusion risk of an in-situ cured silicone rubber nucleus replacement implanted through a transsacral approach
H-J Wilke, P Zelenkov, K Werner, Ulm, Germany
- GP166.** Relationship between adjacent segmental degeneration and range of motion of the implant segment after lumbar TDR
H Yong, L Shibao, W Qingyi, Z Chenshan, K Nan, G Li, M Xianglong, Z Lijin, Beijing, China
- GP167.** Prospective randomized series comparing Maverick™ lumbar Total Disc Replacement (TDR) with Anterior Lumbar Interbody Fusion (ALIF) with five year follow up
KA Pettine, **Christian Schlicht**, Loveland, CO, USA
- GP168.** Intra-operative conversion of attempted lumbar total disc replacement to fusion: Incidence and causes
SL Blumenthal, **DD. Ohnmeiss**, RD Guyer, JE. Zigler, Plano, TX, USA
- GP169.** Prospective evaluation of the Charite™ lumbar artificial disc replacement with minimum three-year follow up
KA Pettine, **Christian Schlicht**, Loveland, CO, USA
- GP170.** Spine surgery at an Ambulatory Surgery Center
KA Pettine, **Christian Schlicht**, Loveland, CO, USA
- GP171.** Extreme lateral interbody fusion (XLIF) in the morbidly obese
WB Rodgers, EJ Gerber, J Patterson, Jefferson City, Missouri, USA

- GP172.** Health-related quality of life in surgically treated lumbar disc herniation patients -long-term follow-up
K Rönnerberg, B Lind, B Zoega, K Halldin, **H Brisby**, Gothenburg, Sweden
- GP173.** 10 year follow up of AcroFlex total disc replacement: Overall favourable clinical results despite high failure rate
AR Meir, S Fowler, **RD Fraser**, London, UK
- GP174.** Retrospective comparative analysis of degenerative lumbar spondylolisthesis treated with posterolateral fusion (PLF) with bone morphogenic protein (BMP) 2 with or without additional transforaminal lumbar interbody fusion (TLIF)
S Mehta, **B Goss**, R Williams, Mumbai, Maharashtra, India
- GP175.** Clinical and radiological fusion rates following transforaminal lumbar interbody fusion (TLIF) with silicate substituted calcium-phosphate bone graft substitute without ICBG for the surgical treatment of degenerative lumbar spine disease.
M Aubin, J Drew, M Eskander, J Eck, P Connolly, A Lapinsky, Worcester, MA, USA
- GP176.** Hybrid combined total disc replacement and fusion procedures in the lumbar spine: Clinical and radiographic outcome
SL Blumenthal, S Saqqa, RD Guyer, JE Zigler, DD. Ohnmeiss, Plano, TX, USA
- GP177.** How does spinal surgery affect the brain's control of the trunk and legs?
Y Buisson, M Catley, J Guzman Lopez, **AH. McGregor**, PH Strutton, London, UK
- GP178.** Analysis of adjacent segment re-operation following lumbar total disc replacement
SL. Blumenthal, S Rainey, JE Zigler, **RD Guyer**, DD Ohnmeiss, Plano, TX, USA
- GP179.** Does the fusion level influence the outcome of single-level posterior lumbar fusion for degenerative disease?
F Lattig, **T Fekete**, D Grob, D Jeszenszky, F Kleinstueck, U Mutter, F Porchet, AF Mannion, Zürich, Switzerland
- GP180.** The influence of segmental sagittal alignment on the development of adjacent segment disease after spinal fusion surgery
K Shah, AJ Nedopil, **S Berven**, San Francisco, CA, USA
- GP181.** Computer-assisted spinal osteotomy: A technical note and report of four cases
S Fujibayashi, M Neo, M Takemoto, M Ota, T Nakayama, J Toguchida, T Nakamura, Kyoto, Japan
- GP182.** Lumbar destructive spondyloarthropathy - Results of surgical treatments with simple decompression, rigid fixation, and flexible stabilization
K Amano, J-Ichi Kunogi, T Takemura, A Gotoh, Ibaraki, Japan
- GP183.** The clinical study on the unilateral pedicle screw fixation in lumbar spinal fusion
J Zhao, Shanghai, P. R. of China

TRAUMA INSTABILITY

- GP184.** Comparison of kyphoplasty and lordoplasty for the treatment of osteoporotic vertebral compression fracture
SB Kim, T-S Jeon, W-S Lee, J-Y Roh, Y-M Heo, J-W Yi, W-K Park, S-H Kim, B-H Oh, C-M Hwang, Daejeon, South Korea
- GP185.** Conversion to hypertrophic vertebral pseudarthrosis following percutaneous vertebroplasty
S Kawaguchi, K Horigome, H Yajima, T Oda, Y Kii, M Yoshimoto, T Takebayashi, T Yamashita, Fukushima, Japan
- GP186.** Endoscopic vertebroplasty without instrumentation for insufficient bone union with neurological deficit following osteoporotic vertebral fracture
A Suzuki, T Tsujio, M Hoshino, H Terai, H Toyoda, T Matsumoto, H Yasuda, S Takahashi, H Nakamura, Osaka, Japan
- GP187.** Delayed-onset paralysis and its anatomic cause following osteoporotic vertebral fracture
K Otani, S Kikuchi, S Konno, K Sato, M Iwabuchi, Fukushima, Japan

TUMOR INFECTION

- GP188.** Treatment of spinal discitis and vertebral body osteomyelitis – Are current treatment guidelines followed?
RM Garcia, JE Murphy, SA Qureshi, CG Furey, **NU Ahn**, HH. Bohlman, EH Cassinelli, Cleveland Heights, Ohio, US
- GP189.** Existence of pyogenic spondylitis in Modic type 1 change without other signs of infection – 2 year follow-up
S Ohtori, M Yamashita, K Yamauchi, MT Koshi, M Suzuki, S Orita, Y Eguchi, G Inoue, Y Aoki, T Ishikawa, G Arai, M Miyagi, H Kamoda, M Suzuki, Ka Takahashi, Chiba, Japan
- GP190.** Nanoporous silicon particles (NSP) as a chemotherapeutic delivery system for the treatment of spinal metastases
BK Weiner, E Tasciotti, M Ferrari, H Smith, **C Loo** Houston, Tx, USA
- GP191.** Nanoporous silicon particles (NSP) as a delivery system for the treatment of spinal infections.
BK Weiner, E Tasciotti, M Ferrari, H Smith, **C Loo**, Houston, TX, USA
- GP192.** A novel classification system for spinal instability in neoplastic disease: An evidence based approach and expert consensus from the spine oncology study group
CG Fisher, **CP DiPaola**, TC Ryken, MH Bilsky, TR Kuklo, JS Harrop, MG Fehlings, S Boriani, D Chou, MH Schmidt, DW Polly, SH Berven, R Biagini, S Burch, MB Dekutoski, A Ganju, PC Gerszten, ZL Gokaslan, MW Groff, NJ Liebsch, E Mendel, SH Okuno, S Patel, LD Rhines, PS Rose, DM Sciubba, CI Shaffrey, N Sundaresan, K Tomita, PP Varga, LR Vialle, FD Vrionis, Y Yamada, DR. Fourny, Worcester, Massachusetts, USA

- GP193.** Epidemiology of lumbar pyogenic spondylitis in last decade
H Aono, T Ohwada, S Suzuki, S Okuda, K Ariga, H Tobimatsu, T Fuji, Motoki Iwasaki, Osaka, Japan
- GP194.** Surgical treatment of spinal extradural arachnoid cysts in thoracolumbar spine
H Funao, M Nakamura, T Tsuji, K Watanabe, K Ishii, M Matsumoto, M Kamata, Y Toyama, K Chiba, Tokyo, Japan
- GP195.** Indications and limitations of conservative treatment for pyogenic spondylitis in comparison with surgical intervention (with special reference to lumbar lesion)
H Miyamoto, K Fukuda, K Uno, Y Inui, T Suzuki, Kobe, Japan
- GP196.** Surgical site infection of the spine: construction of a predictive model to define need for single versus multiple irrigation and debridement
C DiPaola, D Saravanja, L Boriani, M Boyd, B Kwon, S Paquette, M Dvorak, C Fisher, J Street, Worcester, MA, USA
- GP197.** Microbiological spectrum of significant spinal wound infections
D Saravanja, L Boriani, C Dipaola, J Street, C Fisher, B Kwon, M Boyd, S Paquette, M Dvorak. Chatswood, NSW, Australia
- GP198.** Post-operative infection treatment score for the spine (PITSS): Validation of a predictive model to define need for single versus multiple irrigation and debridement for spinal surgical site infection
CP DiPaola, DD Saravanja, L Boriani, M Boyd, B Kwon, S Paquette, MFS Dvorak, CG Fisher, J Street, Worcester, MA, USA
- GP199.** Risk factors for postoperative infection following posterior lumbar instrumented fusion
AA Sama, E Gausden, **AP Hughes**, FP Girardi, FP Cammisa, New York, NY, USA
- GP200.** Epidermoid tumor of the cauda equina
M Morita, A Miyauchi, H Aono, S Okuda, T Oda, M Iwasaki, Osaka, Japan