# 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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<td>09.30 am</td>
<td>Strategy Group Meeting</td>
<td>Marlborough room 2</td>
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<td>10.00 am</td>
<td>Membership Committee Meeting</td>
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<td>12.00 pm</td>
<td>Executive Committee – Lunch</td>
<td>Executive Board Room</td>
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<td>4.00 pm</td>
<td>Registration</td>
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<td>6.00 pm</td>
<td>Welcome Reception</td>
<td>New Zealand Foyer</td>
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## WEDNESDAY, APRIL 14, 2010

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<tr>
<td>7.30 am</td>
<td>Registration</td>
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<tr>
<td>7.30</td>
<td>Welcome – Peter Robertson</td>
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<td>7.35</td>
<td>Program Chairman – Michael Mayer</td>
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### SESSION # 1 Disc Growth and Regeneration

Chairman – Federico Balagué  
Moderator – Robert Moore  

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<tr>
<td>7.45-7.51</td>
<td>1. The elastic network and translamellar bridging network in the annulus of the intervertebral disc</td>
<td>J Yu, M Schollum, N Broom, J Urban, Oxford, UK</td>
<td></td>
</tr>
</tbody>
</table>
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

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

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

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

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

Discussion

SESSION # 2

Disc Degeneration I (Morphology, Biology)
Chairman – Yong Hai
Moderator – Ashish Diwan

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
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

S Obata, K Akeda, R Morimoto, Y Asanuma, Y Kasai, 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 Griitka, 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 PM 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
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

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,

**Discussion**

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

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

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

**Discussion**

**SESSION # 5**

**Low Back Pain II (Surgery)**

Chairman – Seiji Ohtori
Moderator – Tommy Hansson

26. The lumbosacral plexus and the transpsoas 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 Shiboi, 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
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

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

Discussion

THURSDAY, APRIL 15, 2010

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

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

   **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.

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 Strömqvist, Lund, Sweden
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<tr>
<td>10.42-10.48</td>
<td>44. The outcome of discectomy for lumbar herniated disc is influenced by the severity of concomitant pre-operative low back pain. <strong>FS Kleinstück, T Fekete, D Jeszenszky, AF Mannion, D Grob, F Lattig, U Mutter, F Porchet, Zürich, Switzerland</strong></td>
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<tr>
<td>10.50-11.05</td>
<td><strong>Discussion</strong></td>
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<td>11.07-11.13</td>
<td>45. Influence of definition on rates of success for lumbar disc herniation <strong>JD Lurie, EJ Carragee, SK Mirza, K Spratt, W Zhao, ANA Tosteson, TD Tosteson, JN Weinstein, Lebanon, New Hampshire, USA</strong></td>
</tr>
<tr>
<td>11.15-11.21</td>
<td>46. Persistent disc protrusion after microdiscectomy: Changes on hernia mass as seen on post-operative MR imaging <strong>T Miyazaki, S Kobayashi, K Takeno, H Baba, Eiheiji, Fukui, Japan</strong></td>
</tr>
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<td>11.31-11.37</td>
<td>48. Does smoking habit influence the outcome of lumbar discectomy? <strong>A Luca, D Grob, D Jeszensky, FS Kleinstück, T Fekete, F Lattig, F Porchet, U Mutter, AF Mannion, Zürich, Switzerland</strong></td>
</tr>
<tr>
<td>11.39- 11.51</td>
<td><strong>Discussion</strong></td>
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| 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, AustraliaTitle: The Australian National Pain Strategy

| 12.35-13.00 | **Presidential address – Dr Federico Balagué**
Introduction – Dr Robert Moore |
FRIDAY, APRIL 16, 2010

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 – ISTMIC 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

A Joelson, K Frennered, Gothenburg, Sweden

9.11-9.20  Discussion

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

9.46-9.55  Discussion

**SESSION # 12**
10.00 – 10.25  Chairman : Dr. Robert Moore

**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)

10.25-10.50  COFFEE

**SESSION # 13**
10:52- 12 noon  Chairman - Dr Gunnar Andersson

**THE ISSLS PRIZE PAPERS**
Introduction and Award Ceremony

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<td>10.55-11.04</td>
<td>Awards Presentation</td>
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| 11.06-11.16| **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**                |                                                                                                                                         |
S Veres, P Robertson, N Broom, Auckland, New Zealand                                                                 |
| 11.38-11.44| **Discussion**                |                                                                                                                                         |
| 11.46-11.56| **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


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 Shiboi, 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

2.31-2.43 Discussion

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 Discussion

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

SECOND BUSINESS MEETING

BANQUET – More information in the social program

SATURDAY, APRIL 17, 2010

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, DJeszenszky, 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

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 vertebrae and their sensory innervation


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