

16th Interdisciplinary Research Conference on Biomaterials
GRIBOI 2006: March 16 – 18, 2006
Bern, Switzerland

SCIENTIFIC PROGRAM

Thursday, March 16th

- 8:00 – 9:00 Registration**
- 9:00 – 10:30 Keynote Lectures: Clinical Applications and Experiences**
- 9:00 – 9:45 Jorrit-Jan Verlaan, MD, PhD: Utrecht University
- 9:45 – 10:30 Paul Heini, PhD: University of Bern
- 10:30 – 11:00 Coffee Break**
- 11:00 – 12:15 Podium Presentations: Clinical Applications and Experiences**
- 11:00 – 11:15 Injectable bone cements in the treatment of spinal fractures,
osteopromotive capacity and surgical considerations
S. Becker, K. Franz, I. Wilke, M. Ogon
- 11:15 – 11:30 The use of a nanoparticles hydroxylapatite gel as a bone substitute
C. Schwartz, S. Malincenco, R. Bordei
- 11:30 – 11:45 ChronOSTM Inject in children with bone cysts resistant to
conventional treatment
T. Slongo, A. Joeris
- 11:45 – 12:00 Three years of use of a tri-calcium phosphate (β) substitute in bone
and joint surgery
P. Chelius
- 12:00 – 12:15 Clinical applications of bioactive glasses in dental, cranial and load
bearing bones
A. Yli-Urpo
- 12:15 – 14:00 Lunch and Poster Session**
- 14:00 – 15:30 Keynote Lectures: Material Synthesis and Characterization**
- 14:00 – 14:45 Marc Bohner, PhD: Robert Mathys Foundation
- 14:45 – 15:30 Stephen Belkoff, PhD: Johns Hopkins University, Bayview Medical
Center
- 15:30 – 16:00 Coffee Break**

16:00 – 18:00 Podium Presentations: Material Synthesis and Characterization

- 16:00 – 16:15 Evaluation of the cohesiveness of injectable Ca-aluminate based materials in water and simulated body fluid during curing
H. Spengler, L. Hermansson, H. Engqvist
- 16:15 – 16:30 Fluoro-apatite and calcium phosphate nanoparticles by flame synthesis
T. Brunner, S. Loher, W.J. Stark
- 16:30 – 16:45 Injectable PLGA microsphere / calcium phosphate cements: Physical properties and degradation characteristics
W.J.E.M. Habraken, J.G.C. Wolke, A.G. Mikos, J.A. Jansen
- 16:45 – 17:00 Calcium carbonate biphasic cement concept to control cement resorption
C. Combes, C. Rey
- 17:00 – 17:15 A new injectable calcium-strontium phosphate bone cement and PLAGA composite
G. Romieu, S. Munier, H. Garreau, M. Vert, P. Boudeville
- 17:15 – 17:30 Anisotropic bone scaffolds
O. Zamoum, O. Mecherri, M. Fiallo, P. Sharrock
- 17:30 – 17:45 Influence of platelet-rich plasma on osteogenic differentiation of mesenchymal stem cells and ectopic bone formation in calcium phosphate ceramics
P. Kasten, J. Vogel, R. Luginbühl, I. Beyen, M. Bohner, B. Gasser, W. Richter
- 17:45 – 18:00 Disperse cement filling in vertebroplasty may reduce risk of secondary tissue damage
K. Sun, E. Mendel, L. Rhines, A. Burton, M. Liebschner

18:00 – 19:30 Posters and Aperó

Friday, March 17th

8:00 – 9:30 Keynote Lectures: Drug Delivery Applications

8:00 – 8:45 Jeff Hollinger, DDS, PhD: University of Maryland

8:45 – 9:30 Thierry Stoll, MSc: Synthes

9:30 – 10:00 Coffee Break

10:00 – 11:00 Podium Presentations: Drug Delivery Applications

10:00 – 10:15 In vitro study Of BMP-2 gene transfected bone marrow derived mesenchymal stem cells in APA microcapsules
T.T. Tang, H.F. Ding, R. Liu, B.G. Li, C.F. Yu, J.R. Lou, K.R. Dai

10:15 – 10:30 Fibrin-fibronectin sealing system in combination with beta-tricalcium phosphate as a carrier for recombinant human bone morphogenetic protein-2: Effects on bone formation in rat calvarial defects
J.-Y. Hong, S.-J. Hong, S.-W. Jung, Y.-J. Um, S.-B. Lee, K.-S. Cho, C.-S. Kim

10:30 – 10:45 An injectable composite of osteogenic protein-1 (OP-1, rhBMP-7) and hydroxyapatite enables early in vivo cement stabilization and biointegration. A controlled, randomized study in the sheep spine.
T.R. Blattert, W. Schmölz, A. Weckbach, C. Toth, L. Claes, H.-J. Wilke

10:45 – 11:00 Mineral / organic composite bone grafts: Characterization and evaluation as drug delivery systems
S. Girod, H. Ternet, M. Frèche, J.L. Lacout, F. Rodriguez

**11 :00 – 12 :00 Live Surgery Broadcast : Paul Heini
Concurrent Podium Presentations : Clinical Experiences**

11 :00 – 11 :15 Three years experience with standolone kyphoplasty and calcium phosphate cement in traumatic fractures.
G. Maestretti, C. Cremer, Ph. Otten

11 :30 – 11 :45 Limited suitability of calcium phosphate in the treatment of osteoporotic vertebral body fractures
T.R. Blattert

12:00 – 14:00 Lunch and Poster Session

14:00 – 15:30 Keynote Lectures: In Vivo Studies

14:00 – 14:45 Jörg Krebs, DVM: University of Bern

14:45 – 15:30 Georg Watzek, MD, PhD: Medical University of Vienna

15:30 – 16:00 Coffee Break

16:00 – 17:45 Podium Presentations: In Vivo Studies

- 16:00 – 16:15 A new concept of antibiotic loaded HAP/TCP bone substitute for prophylactic action: ATANTIK Genta - In vivo study
A. Bignon, E. Viguier, F. Laurent, D. Goehrig, G. Boivin, J. Chevalier
- 16:15 – 16:30 A poly (D, L-Lactide) / allogenic bone composite for bone tissue engineering
Q. Li, C. Zhou
- 16:30 – 16:45 Enhanced osseointegration of bone-implant interface by BMP-2 gene medication
K.R. Dai, M. Yan, T.T. Tang
- 16:45 – 17:00 Effects of recombinant human bone morphogenetic protein-2 and acellular dermal matrix on bone formation in rat calvarial defects
Y.-J. Um, D.-S. Song, J.-Y. Hong, S.-W. Jung, S.-B. Lee, K.-S. Cho, C.-S. Kim
- 17:00 – 17:15 Chitosan containing calcium phosphate cement: preparation and clinical study
K. Poret, M. Frèche, S. Goncalvez, J.L.Lacout, F. Rodriguez
- 17:15 – 17:30 Cardiovascular consequences of pulmonary cement embolism
J. Krebs, N. Aebli, B.G. Goss, S. Sugiyama, S.J. Ferguson
- 17:30 – 17:45 Quantitative kinetic analysis of gene expression during human osteoblastic adhesion on orthopaedic materials
M. Rouahi, E. Champion, P. Hardouin, K. Anselme

17 :45 – 18 :15 GRIBOI General Assembly

20 :00 - Social Event and Dinner

Saturday, March 18th

8 :00 – 9:30 Keynote Lectures : Biomechanics

8:00 – 8:45 Gamal Baroud, PhD: University of Sherbrooke

8:45 – 9:30 Thomas Steffen, MD, PhD: McGill University

9:30 – 10:00 Coffee Break

10:00 – 11:30 Podium Presentations: Biomechanics

- 10:00 – 10:15 The effect of strontium on the rheology and mechanical properties of zinc based glass polyalkenoate cements
D. Boyd, M.R. Towler
- 10:15 – 10:30 Local compressive and tensile stiffness measured in tissues with regular patterns of hyaline-fibrocartilage regions
A. Marsano, D. Wendt, R. Raiteri, R. Gottardi, S. Dickinson, A.P. Hollander, D. Wirz, A.U. Daniels, T.M. Quinn, M. Stolz, I. Martin
- 10:30 – 10:45 KyphOs FS™ calcium phosphate for balloon kyphoplasty: Verification of Compressive Strength and Instructions for Use
J. Schwardt, T. Slater, S. Lee, J. Meyer, R. Wenz
- 10:45 – 11:00 Vertebral cancellous bone augmented with stiffness-adapted PMMA cement does not show acute failure under dynamic loading
A. Boger, P. Heini, M. Bohner, E. Schneider
- 11:00 – 11:15 Effect of solution viscosity on cement injectability
P.J. Leamy, M. Lehmicke, M.T. Fulmer
- 11:15 – 11:30 Injectable calcium phosphate cement with water washout resistance
Y. Wang, J. Wei, H. Hong, H. Guo, C. Liu

11:30 – 12:00 Awards and Concluding Remarks

POSTERS

Activation and biomechanical assessment of an injectable hybrid osteoconductive - osteogenic bone substitute

S. Becker, I. Boecken, M. Bohner, G. Bigolin, M. Alini

The effect of pulsed jet lavage in vertebroplasty on injection forces of PMMA bone cement, material distribution and potential fat embolism: A cadaver study

L. M. Benneker, A. Gisepp

Clinical evaluation of an injectable, in-situ curing nucleus replacement

U. Berlemann, O. Schwarzenbach, C. Etter, S. Kitchell

Biodegradable polymers in spinal surgery - posterior lumbar interbody fusion with resorbable polymer interbody cage. Case report

D. Bludovsky, M. Choc

Fluorcanasite / frankamenite based glass-ceramics for bone tissue repair

S. Bandyopadhyay-Ghosh, A. Johnson, I. M. Reaney, K. Hurrell-Gillingham, I. M. Brook, P. V. Hatton

Synthesis and in vitro cell culture of Zn-doped calcium phosphates
C. L. Burchfield, A. E. Tate, S. Jalota, S. B. Bhaduri, A. C. Tas

Laser preconditioning on irradiated bone: A preliminary intravital study
S. Desmons, C. Delfosse, P. Rochon, G. Leroy, S. Mordon, G. Penel

Pure and doped bioactive glasses synthesised by melt derived and sol-gel methods
E. Dietrich, H. Oudadesse, A. Lucas-Girot, Y. Legal, M. Mami, R. Sridi-Dorbez

Injectable bone substitutes of silica-contained calcium phosphates and a hydrophilic polymer
S.V. Dorozhkin

Effect of Mg²⁺ content on lattice parameter and phase transformation temperature of β -a TCP
F. Goetz-Neunhoeffler, J. Neubauer, M. Göbbels, R. Enderle

Evaluation of in vitro bioactivity of different types of biomaterials
L. Hermansson, A. Faris, H. Engqvist

Vertebroplasty and kyphoplasty: A systematic review of 69 clinical studies
P.A. Hulme, J. Krebs, S.J. Ferguson, U. Berlemann

Mechanical evaluation of a bioactive calcium aluminate cement for vertebral body augmentation
P.A. Hulme, P.F. Heini, T. Persson, H. Spengler, K. Björklund, L. Hermansson, S.J. Ferguson

Comparison of milling techniques in the production of β -TCP
V. Jack, F. Buchanan, N. Dunne, M. Bohner

Powder metallurgy (PM) processed titanium based biocomposite for bone substitute material
M. Karanjai, R. Sundaresan, T.R. Ramamohan, B.P. Kashyap

Preparation of hydroxyapatite-gelatin composite scaffold for bone tissue engineering
M. Kazemzadeh Narbat, M. Solati, M. Pazouki

Effects of vertebral bone augmentation on intervertebral discs
J. Krebs, S.J. Ferguson, B.G. Goss, N. Aebli

Fabrication of porous AL₂O₃ and T-ZRO₂ ceramics and evaluation of their biocompatibility
B.T. Lee, A.K. Gain, H.Y. Song

Phases evolution of bioactive glasses during crystallization for orthopaedic and tissue engineering applications
L. Lefebvre, J. Chevalier, D. Bernache, L. Gremillard, R. Zenati

Study of degradability of the CAO-MgO-B₂O₃-P₂O₅-SiO₂ glasses
X. Li , L. Wei, W. Wu , H. Guo, C. Liu

Development of an advanced injection device for highly viscous materials
M. Loeffel, J. Kowal, P. F. Heini, J. Burger, L.-P. Nolte

Bone substitutes produced by wet shaping techniques
J. Luyten, S. Mullens, I. Thijs, J. Coymans, S. Impens

Distal radius fracture and injectable cement : useful or not?
Prospective continue study of 48 cases with minimal follow up of 3 years
L. Obert, G. LeClerc, D. LePage, P. Clappaz, Y. Tropet, P. Garbuio

Post traumatic arthritis secondary to intra articular malunion of distal radius treated by
chondro costal graft
L. Obert, D. Lepage, J. Pauchot, Y. Tropet, P. Garbuio

Extra articular malunion of the distal radius treated by corrective osteotomie and
injectable cement
L. Obert, D. Lepage, J. Pauchot, Y. Tropet, P. Garbuio

Impact simulation for cranioplasty using a non-linear finite element model
H.K. Park, J.H. Park, H.D. Han, J.H. Chung

In vitro biocompatibility test of nano alumina and characterization by Rietveld
analysis
D. Saha, S. Dhabal

The effect of sintering temperature on mechanical properties of aluminium-oxide
reinforced hydroxyapatite (BHA) composites
S. Salman, O. Gunduz, F.N. Oktar

Fabrication of silver nanoparticles and their antimicrobial mechanisms
H.Y. Song, K.K. Ko, I.H. Oh, B.T. Lee

Morphological changes during 42 months of PMMA vertebroplasty: A case study
C.M.Sprecher, A.Gisep, S.Milz, U.Haupt, K.Yen, P.Heini

Determination of impurities in calcium phosphate ceramics
E.I. Suvorova, P.A. Buffat

Acrylic vertebroplasty alters vertebral load distribution and causes reduction in
strength of adjacent vertebrae
W. Tawackoli, K. Sun, M. Fukshansky, A. Burton, L. Rhines, E. Mendel, M.
Liebschner

Strength restoration by sacroplasty of simulated sacral insufficiency fractures
M.D. Waites, S.C. Mears, J.M. Mathis, S.M. Belkoff

Injectable bioactive nano biomaterials for bone tissue engineering
Y. Wang, J. Wei, H. Guo, H. Hong, C. Liu

Research and expressions of the bioglass cement
L. Wei, X. Li, G. Wu

Chemical- physical characterization and histological outcomes after implantation of
KyphOs™ and KyphOs R™ in vertebral bodies of sheep
R. Wenz, J. Meyer, M. Sankaran, J. Schwardt

Hydroxyapatite coating for fixation of biomedical implants
K. L. Yadav