
ECM VII

CARTILAGE & JOINT REPAIR

.....
June 26-29, 2006 | Convention Centre,
Davos, Switzerland
.....



ECM WELCOMES YOU TO DAVOS

Dear colleagues

This meeting continues the ECM congress series held in Davos.

A single session permits in depth multi-disciplinary set of discussions with clinicians, biologists, chemists, engineers and materials scientists on latest research and developments in the field of cartilage and joint repair. The intention will be to start the meeting with an overview of clinical problems, move towards current research and finish with a detailed summary and the future work to be done. To maintain our high level of discussion no one will be allowed to run over their talk time!

Yours sincerely,



Dr R. Geoff Richards
Course Chairman



Prof Charlie W. Archer
Course Chairman



Dr Mauro Alini
Course Chairman

Conferences Organisers

R. Geoff Richards - Editor-In-Chief ECM Journal
Head of Bio Performance of Materials & Devices Program
AO Research Institute, AO Foundation, Davos, CH

Mauro Alini - Scientific Editor ECM Journal.
Head of Tissue Engineering & Biomaterials Program
AO Research Institute, Davos, CH.

Charlie W. Archer - Scientific Editor ECM Journal
Connective Tissue Biology Research Group
Cardiff Institute of Tissue Engineering & Repair
Cardiff University, Wales, GB

All abstracts will be published as a supplement of the free online journal
European Cells & Materials



<http://www.ecmjournal.org>

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Registration & Conference dinner tickets ECM VII

Sunday, June 25th 18:00 – 19:00 Registration and pick up of conference bags at the Convention Center

Monday, June 26th 07:30 – 08:00 Registration and pick up of conference bags at the Convention Center

Conference Secretaries



Sonia Wahl



Vreni Geret

AO Research Institute, Clavadelerstrasse 8, CH-7270 Davos Platz

Please contact Ms. Sonia Wahl for any information on ECM congresses

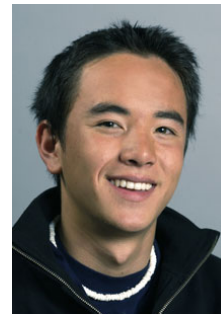
Tel: +41 81 414 2541 Fax: +41 81 414 2299 Email:

sonia.wahl@aofoundation.org

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All **invited talks** are 20-25 (Max) minutes (20-30 slides)
to allow 5-10 minutes discussion per talk

All **submitted talks** are 10 minutes (10-15 slides)
to allow 10 minutes discussion per talk

Chairpersons will cut people off who try to use this time for their talks!!

Scientific Programme

Monday, June 26th

08:30 – 09:00 Welcome

Cartilage Development

Session 1 Chair: Mauro Alini

- 09:00 – 09:30 **Christine Hartmann (Vienna, Austria)**
Importance of Wnt-signaling during embryonic skeletogenesis
- 09:30 – 10:00 **Charlie W Archer (Cardiff, UK)**
The isolation and partial characterisation of progenitor cells from foetal and aged human articular cartilage
- 10:00 – 10:15 Integrin $\alpha 10\beta 1$, a unique cell-surface for chondrogenic cells.
E. Lundgren-Ackerlund, L. Varas, A-K. Lindqvist, C.Kjellman
- 10:15 – 10:30 Stages of murine articular cartilage development. L.C. Hughes,
C. Archer, I. ap Gwynn

10:30 – 11:00 Coffee Break

Cartilage Development

Session 2 Chair: Charlie W. Archer

- 11:00 – 11:30 **Andrea Vortkamp (Essen, Germany)**
Indian hedgehog signalling in the embryonic growth plate
- 11:30 – 11:45 C-Type natriuretic peptide regulates endochondral bone growth
in a P38 map kinase-dependent manner. H. Agoston, S. Khan, C.
James, F. Beier
- 11:45 – 12:00 The PI3K/Akt pathway regulates endochondral bone growth.
V. Ulici, F. Beier
- 12:00 – 12:30 **Linda Sandell (St Louis, USA)**
Site-1 Protease: A new link between lipid metabolism and endochondral
bone formation
- 12:30 – 12:45 Chondrocyte secreted CRTAC1: an extracellular matrix molecule
of human articular cartilage facilitates cell adhesion. E. Steck,
A.N. Maurer, H. Kalbacher, W. Richter

12:45 – 17:30 Afternoon break

Cartilage Biochemistry

Session 3 Chair: Victor Duance

- 17:30 – 18:00 **Dick Heinegard (Lund, Sweden)**
Cartilage E CM molecules with roles in tissue homeostasis
- 18:00 – 18:30 **Peter Roughley (Montreal, Canada)**
The Function of Cartilage Proteoglycans
- 18:30 – 18:45 Chondrocyte gene expression in a rat model of osteoarthritis. C.T.G. Appleton, D.D. McErlain, V. Pitelka, J.L. Henry, D. Holdsworth, F. Beier
- 18:45 – 19:00 Role of osteogenic protein-1 in the regulation of catabolic and anabolic pathways. S. Chubinskaya, L. Otten, S. Soeder, R. Loeser, T. Aigner, DC. Rueger
- 19:00 – 19:30 **David Eyre (Seattle, USA)**
Articular Cartilage Collagen- An Irreplaceable Framework?

19:30 – 21:00 Poster session (wine & cheese)

Tuesday, June 27th

Cartilage Biomechanics

Session 4 Chair: Keita Ito

- 08:15 – 08:45 **Robert Sah (San Diego, USA)**
A model of synovial fluid lubricant composition in normal and inflamed joint
- 08:45 – 09:00 Effects of relative sliding stimulus on the friction properties of regenerated cartilage. Y. Takahashi, K. Yamamoto, S. Chueh, Y. Tamada, N. Tomita
- 08:00 – 09:15 Regulation of lubricin expression and metabolism in synovial joints. A.R.C. Jones, C. Keohan, R. Sheldon, M. Majumdar, E.A. Morris, R. Zollner, C.R. Flannery
- 09:15 – 09:45 **Gerard Ateshian (New York, USA)**
Finite element analysis of strain fields in chondrocytes and the extracellular matrix of cartilage under physiological loading
- 09:45 – 10:00 Multiscale finite element modeling in tissue engineering of articular cartilage. U.-J. Goerke, M.A. Wimmer, M. Alini, E. Schneider, H. Guenther.
- 10:00 – 10:30 **Markus Wimmer (Chicago, USA)**
Mechanical and Cellular Response of Impaction Cycles on Osteochondral Grafts
- 10:30 – 11:00 Coffee Break**

Cartilage Degradation

Session 5 Chair: Fackson Mwale

- 11:00 – 11:30 **John Mort (Montreal, Canada)**
Proteases in cartilage degradation
- 11:30 – 12:00 **Beverly Fermor (Durham, USA)**
Nitric oxide and osteoarthritis
- 12:00 – 12:15 Interleukin-1 induction of DNA damage in articular cartilage: roles of nitric oxide and superoxide. C.M. Davies, F. Guilak, J.B. Weinberg, B. Fermor
- 12:15 – 12:45 **Amanda Fosang (Melbourne, Australia)**
Aggrecan catabolism by ADAMTS enzymes
- 12:45 – 13:15 **Thomas Aigner (Erlangen, Germany)**
IL-1 β and BMP-7 - Interactive players of cartilage matrix degradation and regeneration

13:15 – 17:30 Afternoon break

Cartilage repair: Present

Session 6 Chair: Geoff R. Richards

- 17:30 – 18:00 **Roland Jakob (Freiburg, Switzerland)**
AMIC technique for cartilage repair, a single-step surgical intervention
- 18:00 – 18:30 **James Richardson (Oswestry, UK)**
Is ACI a success? Current evidence and trials in progress
- 18:30 – 19:00 **Sharmila Majumdar (San Francisco, USA)**
MRI and early cartilage degeneration detection
- 19:00 – 19:15 Visualization of chondrocytes on collagen scaffolds by two photon laser scanning microscopy (TPLSM). S. Grohmann, R. Schade, J. Martini, D. Anselmetti, K. Liefelth
- 19:15 – 19:45 **Jukka Jurvelin (Kuopio, Finland)**
Biophysical diagnostics of normal, degenerated and repaired articular cartilage
- 19:45 – 20:15 **Shiela Laverty (St-Hyacinthe, Canada)**
The pros and cons of studies of animal joints to improve articular cartilage regeneration

20:15 – 21:00 Poster session (wine & cheese)

Wednesday, June 28th

Cartilage repair: Future

Session 7 Chair: Francesco Dell' Accio

- 08:30 – 09:00 **Frank Barry (Galway, Ireland)**
Stem Cell Strategies for Cartilage Repair
- 09:00 – 09:15 A comparison of the different growth factor repertoire and the factor requirement for successful chondrogenesis of MSC's from bone marrow and adipose tissue. T. Hennig, H. Lorenz, K. Goetzke, C. Lee, W. Richter
- 09:15 – 09:30 Suppression of hypertrophy and osteogenesis in committed human mesenchymal stem cells cultured on novel nitrogen-rich plasma polymer coatings. F. Mwale, P-L. Girard-Lauriault, H.T. Wang, S. Lerouge, J. Antoniou, MR. Wertheimer
- 09:30 – 10:00 **Brian Johnstone (Portland, USA)**
Skeletal tissue regeneration with stem cells
- 10:00 – 10:15 Chondrogenic differentiation in adipose tissue derived mesenchymal stem cells: Effects of growth factors and PTHrP. H. Lorenz, T. Hennig, W. Richter
- 10:15 – 10:30 Biochemical Markers of the mechanical quality of engineered hyaline cartilage. A. Crawford, D.J. Kelly. S.C. Dickinson, T.J. Sims, J. Mundy, A.P. Hollander, P.J. Prendergast, P.V. Hatton

10:30 – 11:00 Coffee Break

Cartilage repair: Future

Session 8 Chair: Martin Stoddart

- 11:00 – 11:30 **Cosimo De Bari (London UK)**
Cell-based approaches to joint surface repair: from bench to bedside
- 11:30 – 12:00 **Masato Sato (Isehara, Japan)**
Cell Sheet Technology for Cartilage Repair
- 12:00 – 12:15 Micro-folding culture: A new method of making multicellular aggregate. R. Takaya, N. Kachi, N. Tomita
- 12:15 – 12:45 **Ivan Martin (Basel, Switzerland)**
Bioreactors for cartilage tissue engineering
- 12:45 – 13:00 Transplantation of nasal chondrocytes with an innovative self-setting hydrogel for cartilage repair. C. Vinatier, O. Gauthier, M. Masson, D. Magne, C. Merceron, A. Moreau, F. Moreau, P. Weiss, J. Guicheux
- 13:00 – 13:15 Nasal chondrocytes and fibrin sealant for cartilage tissue engineering. C. Vinatier, O. Gauthier, M. Masson, O. Malard, A. Moreau, F. Moreau, B. Bilban, R. Spaethe, A. Goppelt, G. Daculsi, P. Weiss, J. Guicheux
- 13:15 – 13:30 Artificial cartilage preparation using crygel of PVA and highly dispersed hydroxyapatite. M.V. Makarenko, S.A. Usanov, I.N. Moroz
- 13:30 – 14:00 **Chris Evans (Boston, USA)**
Molecular Approaches to Cartilage Repair

Free Afternoon

18:00 – Conference Dinner, Ischalp
(Purchase tickets latest on Monday from Conference Secretaries)

Thursday, June 29th

Special Session on PRG4 (SZP/Lubricin) **Chair: Bruce Caterson**

- 09:00 – 09:30 **Thomas Schmid (Chicago, USA)**
PRG4/lubricin/SZP and the slippery side of cartilage
- 09:30 – 10:00 **Mauro Alini (Davos, CH)**
Articular Motion Induces SZP in Chondrocytes-seeded 3-D Scaffolds: Link between Joint Motion and Joint Lubrication?
- 10:00 – 10:30 **Lawrence J. Bonassar (Ithaca, USA)**
Regulation of Articular Cartilage Boundary Lubrication by Recombinant Lubricin
- 10:30 – 11:00 **Gregory D. Jay (Providence, USA)**
Friction and Wear of Articular Cartilage Resulting in Precocious Joint Failure
- 11:00 – 11:30 **Carl Flannery (Cambridge, USA)**
Therapeutic Perspectives for Lubricin and Joint Function
- 11:30 – 12:00 **Conference Summary and Conclusion**

Posters

1. The adaptation of human pisiform enthuses to compressive forces. C. Adamczyk, T Tischer, R Putz, M. Benjamin, S. Milz
2. Adverse cell and tissue reactions during delayed degradation of PLDLA-anchors for shoulder joint repair. W. Anderl, P. Heuberger, B. Kriegleder, M. Neumaier, H. Plenck Jr.
3. Stem cell delivery of osteoarthritic tissue. C. Curtin, B. Curtin, M. Murphy, F. Barry
4. Maintenance of chondrocyte phenotype by the vimentin intermediate filaments. E.J. Blain, V.C. Duance
5. Comparing the responsiveness of chondrocytes isolated from young and mature articular cartilage to IGF-1 and TGF β 1. L. Davies, e. Blain, B. Caterson, V. Duance
6. Identification of human chondroprogenitor cell populations. G.P. Dowthwaite, S.N. Redman, L.M. Haughton, J.A. Fairclough, A.S. Williams, C.W. Archer
7. Identification of hyperelastic parameters of porous polyurethane sponges. C. Forkmann, M. Alini, U.-J. Görke, M.A. Wimmer, H. Günther
8. BMP-2 transgene-stimulated adult mesenchymal cells for articular cartilage repair. K. Gelse, J. Park, K. von der Mark, T. Aigner, F. Henning, H. Schneider
9. Spatial pattern of the delta-notch signalling pathway on osteoarthritic cartilage. L.M. Haughton, G.P. Dowthwaite, S.N. Redman, A.S. Williams, C.W. Archer
10. Ability of BMP-6 and FGF-2 to induce chondrogenic differentiation in adipose-derived stem cells. F. Hildner, M. van Griensven, G. Schüller, A. Peterbauer, C. Gabriel, H. Redl
11. The development and structural integrity of articular cartilage in collagen IX decorin and matrilin-1 knockout mice. L.C. Hughes, C. Archer, I. ap Gwynn
12. Chondrolysis after continuous intra-articular bupivacaine infusion. An experimental model investigation chondrotoxicity in the rabbit shoulder. R.W. Kang, A.H. Gomoll, J.M. Williams, B.R. Bach, B.J. Cole
13. Prospective evaluation of prolonged fresh osteochondral allograft transplantation of the femoral condyle: Minimum 2 year follow-up. R.W. Kang, P.C. McCulloch, M.H. Sobhy, J.K. Hayden, B.J. Cole
14. Oxidative stress induces expression of markers of early osteoarthritis and chondrocyte terminal differentiation in cultured bovine explants. I.M. Khan, C.W. Archer
15. The in vivo fate of implanted chondroprogenitor cells in SCID mice. P. Marcus, C. De Bari, F. Dell'Accio, G. Dowthwaite, C.W. Archer
16. Cartilage repair using a specific articular progenitor cell. H.E. McCarthy, M. Alini, S. Pearce, C.W. Archer
17. Effect of a type II collagen fragment on gene expression of proteinases, collagen and proteoglycan by cells of the intervertebral disc. F. Mwale, H.T. Wang, G. Marguier, A. Petit, D.J. Zukor, O.L. Huk, J. Antoniou
18. Two year long-term study of human MACT-grafts *in vitro*. S. Nürnberger, F. Wiesauer, S. Marlovits
19. Mesenchymal stem cell senescence in osteoarthritis. C. O Flatharta, W. Curtin, F.P. Barry, G. Henihan, J.M. Murphy
20. Characterisation of human clonally derived OA synovial MSCs for use in articular cartilage repair. S. Oldfield, I.M. Khan, K. Richardson, D. Morgan, S. Redman, J.R. Ralphs, C.W. Archer
21. Porous bioactive glass scaffold with high compression strength. E. Pirhonen, L. Moimas, P. Väänänen

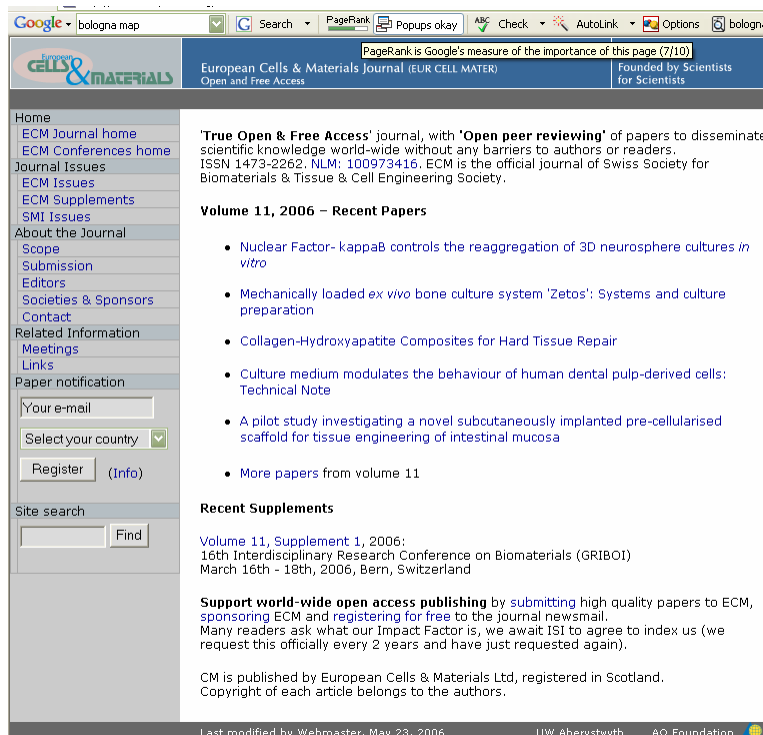
22. Scaffold-free chondrocyte transplantation as alternative to matrix associated chondrocyte transplantation. I. Ponomarev, D. Paul, M. Neumann, I. Wilke
23. Effect of hormones on intact rib cartilage. A. Radulescu, E.S. Boia, C.M. Popoiu, O. Adam, C. Bortea, A. Pavel, R. Iacob
24. Evidence of a chondroprogenitor population in human osteoarthritic cartilage. S.N. Redmann, N. Bateman, L.M. Haughton, G.P. Dowthwaite, A.S. Williams, C.W. Archer
25. Identifying progenitor cells within articular cartilage. K. Richardson, I.M. Khan, C.W. Archer
26. MRI of iron oxide labelled stem cells: Application to tissue regeneration. K. Saldanha, J. Lozano, C.B. Ma, H.T. Kim, S. Majumdar
27. Effect of mechanical load on matrix synthesis in scaffold free, de novo cartilage – like tissue. M. Stoddart, L. Ettinger, H.J. Häuselmann
28. Dexamethasone releasing chitosan scaffold for cartilage development. R.S. Tigli, M. Gümüsderelioglu
29. Autologous chondrocytes transplantation in treatment of degenerative disc disease. A.V. Volkov, D.V. Goldshtein, A.N. Konovalov, N.A. Konovalov, In.N. Shevelev, A.A. Rzhaniyova, I.V. Arutunjan, N.V. Arutunov, T.A. Fathudinov, A.G. Nazarenko, P.V. Zelenkov
30. Notch family signalling and notch signalling modulation during chondrogenesis. R. Williams, G.P. Dowthwaite, D.J. Evans, C. Archer
31. BioDynamic test instrument for Characterization of tissue and biomaterials. S. Williams, T. Banse, W. Conrads, T. Nickel, L. Mejjja
32. Water-Jet cutting of articular cartilage to improve cell viability in cartilage repair. M. Wimmer, T.K. Pylawka, J.M. Williams, M. Honl

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European Cells & Materials Meeting (ECM VIII)
Bone Tissue Engineering

June 25 - 28, 2007, Congress Centre, Davos, Switzerland
(4 day single session meeting, with free afternoons)
Abstract deadline Oral April 1st 2007, Poster May 1st 2007

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European Cells & Materials Meeting (ECM IX)
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June 23 - 26, 2008, Congress Centre, Davos, Switzerland
(4 day single session meeting, with free afternoons)
Abstract deadline Oral April 1st 2008, Poster May 1st 2008