

CLINICAL ORTHOPAEDICS AND RELATED RESEARCH

Number 427S

October 2004

Supplement

Contents

CME denotes
continuing
medical education
material

THE CARL T. BRIGHTON ANNUAL WORKSHOP—OSTEOARTHRITIS

**David J. Schurman, MD; R. Lane Smith, PhD; and
Joseph A. Buckwalter, MD—Guest Editors**

S2 Editorial Comment

David J. Schurman, MD; R. Lane Smith, PhD; and Joseph A. Buckwalter, MD

S3 The Classic: Commentaries on the History and Cure of Diseases.

Digitorum Nodi

William Heberden, MD

BREAKOUT SESSION I

Epidemiology—Moderator: David J. Schurman, MD

S5 Epidemiology

David J. Schurman, MD

S6 The Impact of Osteoarthritis: Implications for Research

Joseph A. Buckwalter, MD; Charles Saltzman, MD; and Thomas Brown, PhD

S16 Risk Factors for Osteoarthritis: Understanding Joint Vulnerability

David T. Felson, MD, MPH

S22 Familial Inheritance of Osteoarthritis: Documented Family Subsets

John Loughlin, PhD

(continued next page)

Clinical Orthopaedics and Related Research (ISSN: 0009-921X) is published monthly by Lippincott Williams & Wilkins, at 16522 Hunters Green Parkway, Hagerstown, MD 21740-2116. Business and production offices are located at 530 Walnut Street, Philadelphia, PA 19106-3621. Periodicals postage paid at Hagerstown, MD and at additional mailing offices. Copyright © 2004 by Lippincott Williams & Wilkins.

Annual subscription rates worldwide: \$326.00 Individual Domestic, \$527.00 individual International, \$701.00 Institutional Domestic, \$813.00 Institutional International. (The Canadian GST tax of 7% will be added to the subscription price of all orders shipped to Canada. Lippincott Williams & Wilkins' GST Identification number is 895524239, Publications Mail Agreement #863912.) Subscriptions outside the United States must be prepaid. Prices subject to change without notice. Copies will be replaced without charge if the publisher receives a request within 90 days of the mailing date, both in the U.S. and worldwide. Visit us on-line at www.lww.com.

Postmaster: Send address changes to *Clinical Orthopaedics and Related Research*, P.O. Box 1550, Hagerstown, MD 21740.



LIPPINCOTT
WILLIAMS
& WILKINS



Contents *(continued)*

BREAKOUT SESSION II **Cartilage Degeneration and Regeneration—** **Moderator: Joseph Buckwalter, MD**

- S26 Cartilage Degeneration and Regeneration**
Joseph Buckwalter, MD
- S27 The Role of Cytokines in Cartilage Matrix Degeneration in Osteoarthritis**
Steven R. Goldring, MD; and Mary B. Goldring, PhD
- S37 The Regulation of Chondrocyte Function by Proinflammatory Mediators: Prostaglandins and Nitric Oxide**
Mary B. Goldring, PhD; and Francis Berenbaum, MD, PhD
- S47 Growth Factor Inhibition: Potential Role in the Etiopathogenesis of Osteoarthritis**
Stephen B. Trippel, MD
- S53 Chemokines in Cartilage Degradation**
Rosa Maria Borzì, MD; Ilaria Mazzetti, PhD; Kenneth B. Marcu, PhD; and Andrea Facchini, MD
- S62 Osteochondral Defect Repair by Demineralized Cortical Bone Matrix**
Jizong Gao, MD, PhD; David Knaack, PhD; Victor M. Goldberg, MD; and Arnold I. Caplan, PhD

BREAKOUT SESSION III **Biomechanics—Moderator: R. Lane Smith, PhD**

- S67 Biomechanics**
R. Lane Smith, PhD
- S69 The Mechanobiology of Articular Cartilage Development and Degeneration**
Dennis R. Carter, PhD; Gary S. Beaupré, PhD; Marcy Wong, PhD; R. Lane Smith, PhD; Tom P. Andriacchi, PhD; and David J. Schurman, PhD
- S78 Pathomechanic Determinants of Posttraumatic Arthritis**
Todd O. McKinley, MD; M. James Rudert, PhD; Daniel C. Koos, BSc; Yuki Tochigi, MD; Thomas E. Baer, BA; and Thomas D. Brown, PhD
- S89 Pressure and Shear Differentially Alter Human Articular Chondrocyte Metabolism: A Review**
R. Lane Smith, PhD; Dennis R. Carter, PhD; and David J. Schurman, MD
- S96 Chondrocyte Senescence, Joint Loading and Osteoarthritis**
James A. Martin, PhD; Thomas D. Brown, PhD; Anneliese D. Heiner, PhD; and Joseph A. Buckwalter, MD

(continued next page)

Contents *(continued)*

BREAKOUT SESSION IV

Pathogenesis/Homeostasis—Moderators: David Eyre, PhD; and David J. Schurman, MD

S104 Pathogenesis/Homeostasis

David Eyre, PhD; and David J. Schurman, MD

S105 Biology of Developmental and Regenerative Skeletogenesis

Rocky S. Tuan

S118 Collagens and Cartilage Matrix Homeostasis

David R. Eyre, PhD

S123 Extracellular Matrix Gene Regulation

Ken Okazaki, MD, PhD; and Linda J. Sandell, PhD

S129 Novel Inhibitors of Matrix Metalloproteinase Gene Expression as Potential Therapies for Arthritis

Kimberlee S. Mix, PhD; Michael B. Sporn, MD; and Constance E. Brinckerhoff, PhD

S138 Functional Genomics of Osteoarthritis: On the Way to Evaluate Disease Hypotheses

Thomas Aigner, MD; Eckart Bartnik, PhD; Florian Sohler, MSc; and Ralf Zimmer, PhD

BREAKOUT SESSION V

Nonsurgical Disease-Modifying Interventions—Moderator: R. Lane Smith, PhD

S144 Nonsurgical Disease-Modifying Interventions

R. Lane Smith, PhD

S145 Protein Kinases in Chondrocyte Signaling and Osteoarthritis

Charles J. Malesud, PhD

S152 Hyaluronan and CD44: Modulators of Chondrocyte Metabolism

Cheryl B. Knudson, PhD; and Warren Knudson, PhD

(continued next page)

Address for subscription information, orders, or change of address (except Japan, India, Bangladesh, Sri Lanka, Nepal and Pakistan): 16522 Hunters Green Parkway, Hagerstown, MD 21740-2116; phone 1-800-638-3030; fax 301-223-2400; in Maryland, call collect 301-223-2300. In Japan, contact LWW Igaku-Shoin Ltd., 3-23-14 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan; phone 81-3-5689-5400; fax: 81-3-5689-5402. In India, Bangladesh, Sri Lanka, Nepal and Pakistan, contact Globe Publication Pvt. Ltd. B-13, 3rd FL, A Block, Shopping Complex, Naraina Vihar, Ring Road, New Delhi 110028, India; phone: 91-11-579-3211; fax: 91-11-579-8876.

PERMISSION TO PHOTOCOPY ARTICLES: Permission to reproduce copies of the articles for noncommercial use may be obtained from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400, FAX 978-750-4470, www.copyright.com.

Contents *(continued)*

S163 Up-regulation of Chondrocyte Matrix Genes and Products by Electric Fields

*Wei Wang, MD; Zhenyu Wang, MD, PhD; Guihong Zhang, DVM;
Charles C. Clark, PhD; and Carl T. Brighton, MD, PhD*

BREAKOUT SESSION VI

Diagnostic Modalities—Moderator: R. Lane Smith, PhD

S174 Diagnostic Modalities

R. Lane Smith, PhD

S175 Toward Imaging Biomarkers for Osteoarthritis

*Martha L. Gray, PhD; Felix Eckstein, MD; Charles Peterfy, MD;
Leif Dahlberg, MD, PhD; Young-Jo Kim, MD, PhD; and A. Gregory Sorensen, MD*

BREAKOUT SESSION VII

**Orthopaedic Treatment—Moderators: Joseph Buckwalter, MD;
and David J. Schurman, MD**

S182 Orthopaedic Treatment

Joseph Buckwalter, MD; and David J. Schurman, MD

**S183 Osteoarthritis: Current Treatment and Future Prospects for Surgical, Medical,
and Biologic Intervention**

David J. Schurman, MD; and R. Lane Smith, PhD

**S190 Functional Tissue Engineering Parameters toward Designing Repair and
Replacement Strategies**

*David L. Butler, PhD; Jason T. Shearn, PhD; Natalia Juncosa, MS;
Matthew R. Dressler, MS; and Shawn A. Hunter, PhD*