

THE SECOND SCIENTIFIC MEETING  
OF THE TMJ ASSOCIATION

*Joint and Muscle Dysfunction of the Temporomandibular Joint*

FASEB Conference Center, Bethesda, MD  
May 6-8, 2002



...moving TMJ Research into the 21<sup>st</sup> Century

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PI, Dr. Allen W. Cowley, Jr., Ph.D.

The first national scientific meeting of The TMJ Association (Bethesda, Md. May 22-23, 2000) was designed to bring together an outstanding group of TMJ and non-TMJ scientists to focus on TMJ diseases. The intent of the organizers was to bring new perspectives and fresh ideas to the field, aware that there is no coherent body of knowledge on the etiology and pathogenesis of TMJ diseases, and hence little in the way of evidence-based treatment guidelines. The presenters reviewed the state of the science and developed a research agenda with an eye to attracting new talent and expertise from many disciplines to the field. . The proceedings of the meeting were summarized in *TMJ Science*, the journal of The TMJ Association, and detailed in the journal, *Cells, Tissues, and Organs*, Vol. 169, No. 3.

It was evident to the attendees that TMJ problems should not be considered the sole province of dentists, oral surgeons or ear, nose, and throat specialists, but requires the attention of experts in chronic pain, neuromuscular disorders, bone and joint disease, chronic immune and inflammatory diseases, endocrinology, genetics, development, bioengineering, and biomaterials. It was also evident that no single scientific meeting on TMJ could encompass the many basic and clinical disciplines needed to advance the field. Instead, the organizers agreed that future meetings should focus on selected aspects of TMJ disorders, while remaining committed to maintaining an integrated, broad-based, interdisciplinary approach to TMJ science. Accordingly, this second TMJ Association sponsored scientific meeting has selected as its focus the role that osteoarthritis and muscle mechanics play in temporomandibular joint diseases and disorders.

### **Scientific Meeting Planning Committee**

Chairman

Allen W. Cowley, Jr., Ph.D.  
Medical College of Wisconsin

Robert E. Baier, Ph.D., P.E.  
University at Buffalo

Kenneth M. Baldwin, Ph.D.  
University of California, Irvine

Kenneth D. Brandt, M.D.  
Indiana University

Arthur W. English, Ph.D.  
Emory University School of Medicine

Louis C. Gerstenfeld, Ph.D.  
Boston University School of Medicine

Stephen L. Gordon, Ph.D.  
Osiris Therapeutics, Inc

Vincent C. Hascall, Ph.D.  
The Cleveland Clinic Foundation

Andrew H. Kang, M.D.  
The University of Tennessee

Stephen B. Milam, D.D.S., Ph.D.  
University of Texas Health Science

Christian S. Stohler, DMD, Dr. Med. Dent.  
University of Michigan School of Dentistry

**MONDAY, MAY 6, 2002**

- 8:00 – 8:15 a.m.      REGISTRATION
- 8:15 – 8:30 a.m.      Welcome  
**Martin Frank, Ph.D., Executive Director, American Physiological Society**
- Introduction and Opening Remarks  
**Terrie Cowley, President, The TMJ Association**
- Allen W. Cowley, Jr., Ph.D., Program Committee Chairman, Medical College of Wisconsin**
- Lawrence Tabak, D.D.S., Ph.D., Director, National Institute of Dental and Craniofacial Research**
- 8:30 – 9:15 a.m.      Keynote Speaker - Clinical Perspective On TMJ  
**Stephen B. Milam, D.D.S., Ph.D., University of Texas Health Science Center, San Antonio**
- 9:15 – 9:40 a.m.      The Neurobiology of Craniofacial/Deep Tissue Persistent Pain: Report from a Pre-Conference NIH Symposium Held in Connection with the American Pain Society Meeting in March 2002  
**Ronald Dubner, D.D.S., Ph.D., University of Maryland Dental School**

**Session 1 - Osteoarthritis and Inflammatory-Immune Processes in Joints**

*Chairperson, Stephen B. Milam, D.D.S., Ph.D. University of Texas Health Science Center, San Antonio*

- 9:40 – 10:10 a.m.      Etiology and Management of Osteoarthritis  
**Kenneth D. Brandt, M.D., Indiana University School of Medicine**
- 10:10 – 10:40 a.m.      Break
- 10:40 – 11:10 a.m.      NO in Experimental Joint Inflammation: Benefit or Detriment?  
**Sharon M. Wahl, Ph.D., National Institute of Dental and Craniofacial Research**
- 11:10 – 11:40 a.m.      Genetics of Bone Development and Predisposition to Osteoarthritis  
**Bjorn R. Olsen, M.D., Ph.D., Harvard Medical School**
- 11:40 – 12:45 p.m.      Lunch

**Session 2 - Cartilage Degradation (Mechanics/Biochemistry/Metabolism)**

*Chairperson, Louis C. Gerstenfeld, Ph.D., Boston University School of Medicine*

- 12:45 – 1:15 p.m.      The Role of Friction and Adhesive Forces in TMJ Dysfunction  
**Dorrit W. Nitzan, D.M.D., The Hebrew University-Hadassah School of Dental Medicine, Jerusalem, Israel**

- 1:15 – 1:45 p.m. Glycosaminoglycan Profiling by FACE – Monitoring Joint Tissue Degeneration and Repair  
**Anna H.K. Plaas, Ph.D., Shriners Hospital for Children, University of South Florida, Tampa**
- 1:45 – 2:15 p.m. Molecular Mechanism of the Induction of Metalloproteinases 1 and 3 in Human Fibroblasts by Calcium Phosphate Crystals\* Role of Calcium-Dependent Protein Kinase C-  $\alpha$ .  
**Herman S. Cheung, Ph.D., Miami VA Medical Center and University of Miami**
- 2:15 – 2:45 p.m. Break
- 2:45 – 3:15 p.m. Sub-Chondral Bone and Bone Resorption in the TMJ: Is There a Role for Anti-Resorbing Agents such as 17-Beta-Estradiol?  
**Helen E. Gruber Ph.D., Carolinas Medical Center**
- 3:15 – 3:45 p.m. Subchondral Bone, Microdamage, and Trabecular Microfracture  
**David B. Burr, Ph.D., Indiana University School of Medicine**
- 3:45 - 4:45 p.m. Discussion – Led by **Stephen B. Milam, D.D.S., Ph.D.,** University of Texas Health Science Center, San Antonio, and **Lewis C. Gerstenfeld, Ph.D.,** Boston University School of Medicine. Speakers and audience will discuss the types of studies being done and how they can be applied to analysis of the TM joint. The discussion will identify important areas of needed research.

**TUESDAY, MAY 7, 2002**

**Session 3 - Microvascular Structure/Function of Synovial Joints and Mechanisms /Implications of Angiogenesis for Arthritis**

*Chairperson – Chris M. Storgard, M.D., Mayo Clinic, Rochester, Minnesota*

- 9:00 - 9:30 a.m. Angiogenesis in Arthritis  
**Alisa Erika Koch, M.D., Northwestern University Medical School**
- 9:30 – 10:00 a.m. VEGF and Bone  
**Ellen H. Filvaroff, Ph.D., Genentech, Inc.**
- 10:00 – 10:30 a.m. The Role of Genetic Factors in Angiogenesis  
**Andrew S. Greene, Ph.D., The Medical College of Wisconsin**
- 10:30 – 11:00 a.m. Break
- 11:00 – 11:30 a.m. Angiogenesis: Necessary and Sufficient for Inflammatory Arthritis?  
**Chris M. Storgard, M.D., Mayo Clinic, Rochester, Minnesota**
- 11:30 – 12:00 p.m. Discussion – Led by **Chris M. Storgard, M.D.,** Mayo Clinic, Rochester, Minnesota. Speakers and audience will discuss the types of studies being done and how they can be applied to analysis of the TM joint. The discussion will identify important areas of needed research.

12:00 – 1:00 p.m. Lunch

**Session 4 - Clinical Symptoms and Current and Emerging Therapeutic Approaches**

*Chairperson – Sigvard Kopp, D.D.S., Ph.D., Institute of Odontology at Karolinska Institutet, Sweden*

1:00 – 1:30 p.m. Mediator Mechanisms Behind Symptoms and Signs of Temporomandibular Disorders in Chronic Arthritis  
**Sigvard Kopp, D.D.S., Ph.D., Institute of Odontology at Karolinska Institutet, Sweden**

1:30 – 2:00 p.m. Pathophysiological Mechanisms in Osteoarthritis Lead to Novel Therapeutic Strategies  
**Charles J. Malemud, Ph.D., Case Western Reserve University**

2:00 – 2:30 p.m. Osteoarthritis of the Temporomandibular Joint: Bringing Research Findings to Clinical Practice  
**Howard A. Israel, D.D.S., Weill Medical College of Cornell University**

2:30 – 3:00 p.m. Break

3:00 – 3:30 p.m. Mesenchymal Stem Cells and Their Use for Regenerating TMJ Tissues  
**Arnold I. Caplan, Ph.D., Case Western Reserve University**

3:30 – 4:00 p.m. Analgesic Effect of Elastoviscous Hyaluronan Solutions and the Treatment of Arthritic Pain  
**Endre A. Balazs, M.D., Matrix Biology Institute**

4:00 – 4:30 p.m. Gene Therapeutic Targets in the Treatment of TMJ Arthritis  
**J. Edward Puzas, Ph.D., University of Rochester School of Medicine and Dentistry**

4:30 – 5:00 p.m. Discussion – Led by **Sigvard Kopp, D.D.S., Ph.D.**, Institute of Odontology at Karolinska Institutet, Sweden. Speakers and audience will discuss the types of studies being done and how they can be applied to analysis of the TM joint. The discussion will identify important areas of needed research.

5:00 – 5:30 p.m. TMJ Patient Presentations

7:00 p.m. Dinner

**WEDNESDAY, MAY 8, 2002**

**Session 5 - Skeletal Muscles and the Jaw - Fatigue and Remodeling in Response to Loading**

*Chairperson, Kenneth M. Baldwin, Ph.D., University of California, Irvine*

- 8:00 – 8:30 a.m. Sex Differences in Masseter Muscle Function  
**Arthur W. English, Ph.D., Emory University School of Medicine**
- 8:30 – 9:00 a.m. How Do Hind Limb Skeletal Muscles Adapt to Chronic Increases in Mechanical Stress?  
**Kenneth M. Baldwin, Ph.D., University of California, Irvine**
- 9:00 – 9:30 a.m. IGF-I Restores Satellite Cell Proliferative Potential in Immobilized Old Skeletal Muscle with Aging  
**Frank W. Booth, Ph.D., College of Veterinary Medicine, University of Missouri-Columbia, Columbia, MO**
- 9:30 – 10:00 a.m. Break
- 10:00 – 10:30 a.m. Human Extraocular, Jaw-closing and Laryngeal Muscles: How Different are they from their Counterparts in Limb and Abdominal Muscle?  
**James J. Sciote, M.S., D.D.S., Ph.D., University of Pittsburgh School of Dental Medicine**
- 10:30 – 11:00 a.m. Neuromuscular Strategies for Control of Tongue Movement  
**Alan J. Sokoloff, Ph.D., Emory University School of Medicine**
- 11:00 – 11:30 a.m. Discussion – Led by **Kenneth M. Baldwin, Ph.D., University of California, Irvine** and **Arthur W. English, Ph.D., Emory University School of Medicine**. Between speakers and audience on how the types of studies that they are doing could be applied to analysis of the TM joint. Identify important areas of needed research.
- 11:30 a.m. Closing Remarks

**The TMJ Association gratefully acknowledges the following agencies, corporations and, individuals for their support of The Second Scientific Meeting of The TMJ Association.**

**Agencies of the National Institutes of Health**

National Institute of Dental and Craniofacial Research  
The National Institute of Arthritis and Musculoskeletal and Skin Diseases  
The National Institute of Biomedical Imaging and Bioengineering  
The Heart, Lung and Blood Institute  
Office of Research on Women's Health

**Organizations**

Federation of American Societies for Experimental Biology  
Procter & Gamble Company  
Shaker Family Foundation

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