

THE FIFTH SCIENTIFIC MEETING
OF THE TMJ ASSOCIATION

*Can Studies of Comorbidities with TMJDs
Reveal Common Mechanisms of Disease?*

Federation of American Societies for Experimental Biology (FASEB)
Bethesda, Maryland
June 1–3, 2008



... Moving TMJ Research into the 21st Century

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from the National Institute of Dental and Craniofacial Research.

The Fifth Scientific Meeting of The TMJ Association focuses on conditions often found to be comorbid with temporomandibular joint and muscle disorders (TMJDs). These include chronic headache, generalized pain conditions, irritable bowel syndrome, endometriosis, interstitial cystitis, vulvodynia, fibromyalgia, chronic fatigue syndrome, and rheumatoid arthritis.

The goal of the meeting is to discover if there are common roots and physiological pathways among these conditions, in this way furthering our understanding of all of them and perhaps providing novel targets for diagnosis and therapy. Because the meeting has been designed to bring together scientists and clinicians knowledgeable about each of the complex conditions named above, we hope to stimulate cross-collaborative studies as a means to accelerate research progress and ultimately benefit patients. Toward that end we have also invited young investigators to stimulate their career commitments to engage in TMJD and related research. As in past TMJ Association scientific meetings, patients themselves will participate in panel presentations and discussions, providing opportunities for experts and patients to learn from each other in formal and informal exchanges.

Scientific Meeting Program Committee

Chairman

Allen W. Cowley, Jr. Ph.D.

Medical College of Wisconsin, Milwaukee, WI

Terrie Cowley

The TMJ Association, Milwaukee, WI

Ronald Dubner, D.D.S., Ph.D.

University of Maryland Dental School, Baltimore, MD

Stephen L. Gordon, Ph.D.

Gordon BioMedical Consulting, LLC, Carey, NC

Christian S. Stohler, D.M.D., Dr. Med. Dent.

University of Maryland Dental School, Baltimore, MD

John T. Watson, Ph.D.

University of California, San Diego, La Jolla, CA

The TMJ Association is a national, non-profit organization whose mission is to improve the diagnosis, care and treatment of everyone affected by temporomandibular joint and muscle disorders (TMJDs) through fostering research, education and other activities with the ultimate goal of preventing TMJ problems.

The Fifth Scientific Meeting of The TMJ Association
Can Studies of Comorbidities with TMJDs Reveal Common Mechanisms of Disease?
Federation of American Societies for Experimental Biology, Bethesda, Maryland
June 1–3, 2008

Sunday, June 1, 2008

7:00 – 7:15 p.m.

Welcome

Terrie Cowley, President, The TMJ Association, Milwaukee, WI

Opening Remarks

Allen W. Cowley, Jr., Ph.D., Program Committee Chairman
Medical College of Wisconsin, Milwaukee, WI

National Institutes of Health Welcome and Directives

Lawrence A. Tabak, D.D.S., Ph.D., Director, National Institute of Dental and
Craniofacial Research, National Institutes of Health, Bethesda, MD

Vivian W. Pinn, M.D., Associate Director for Research on Women's Health, Office of
Research on Women's Health, National Institutes of Health, Bethesda, MD

7:15 – 8:00 p.m.

Clinical Symptoms and Comorbidities of TMJD Patients

TMJDs: Overcoming the Scientific Challenges of a Complex Phenotype

Christian S. Stohler, D.M.D., Dr. Med. Dent.
University of Maryland Dental School, Baltimore, MD

Overlaps Between Tension-Type Headaches and TMJDs

Peter Svensson, D.D.S., Ph.D., Dr. Odont.
School of Dentistry, University of Aarhus, Denmark

TMJDs: A Mosaic of Clinical Phenotypes and Systemic Disorders

William Maixner, D.D.S., Ph.D.
University of North Carolina at Chapel Hill, Chapel Hill, NC

8:00 – 9:00 p.m.

Patient Round-Table

Chaired by Drs. Christian S. Stohler, Peter Svensson, and William Maixner

Chronic Headache

Teri Robert, Help for Headaches & Migraine, Parkersburg, WV

Generalized Pain Conditions

Claire W. Patterson, Board Director
American Chronic Pain Association, Rocklin, CA

Irritable Bowel Syndrome

Nancy J. Norton, President, International Foundation for Functional Gastrointestinal
Disorders, Milwaukee, WI

Endometriosis

Mary Lou Ballweg, President and Executive Director
Endometriosis Association, Milwaukee, WI

Interstitial Cystitis

Barbara J. Gordon, R.D., M.B.A., Executive Director
Interstitial Cystitis Association, Rockville, MD

Vulvodynia

Christin Veasley, Associate Executive Director
National Vulvodynia Association, Silver Spring, MD

Fibromyalgia

Lynne Matallana, President, National Fibromyalgia Association, Anaheim, CA

Chronic Fatigue Syndrome

Suzanne D. Vernon, Ph.D., Scientific Director
The CFIDS Association of America, Charlotte, NC

Rheumatoid Arthritis

Calaneet Balas, President & CEO
Arthritis Foundation Metro DC Chapter, Washington DC
Sandy Canfield, Patient Advocate, Burke, VA

Temporomandibular Joint and Muscle Disorders

Terrie Cowley, President, The TMJ Association, Milwaukee, WI

Monday, June 2, 2008

8:15 – 8:35 a.m.

Welcome

Martin Frank, Ph.D., Executive Director, American Physiological Society, Bethesda, MD

Opening Remarks

Barbara M. Alving, M.D., M.A.C.P., Director, National Center for Research
Resources, National Institutes of Health, Bethesda, MD

Opening Remarks

William J. Heetderks, M.D., Ph.D., Director, Extramural Science Programs
National Institute of Biomedical Imaging and Bioengineering
National Institutes of Health, Bethesda, MD

Session 1:

Chronic Headache

8:35 – 8:50 a.m.

Chronic Headache and TMJDs

Richard B. Lipton, M.D., Albert Einstein College of Medicine, Bronx, NY

8:50 – 9:05 a.m.

Role of Neuronal-Satellite Glial Cell Interactions in the Underlying Pathology of Migraine and TMJ Disorders

Paul L. Durham, Ph.D., Missouri State University, Springfield, MO

9:05 – 9:15 a.m. **Discussion**
Peter Svensson, D.D.S., Ph.D., Dr. Odont.
School of Dentistry, University of Aarhus, Denmark

Session 2: *Generalized Pain Conditions*

9:15 – 9:30 a.m. **The Challenges of Targeting Mechanisms of Pain Following Nerve Injury**
Christine N. Sang, M.D., M.P.H., Brigham and Women’s Hospital
Harvard Medical School, Boston, MA

9:30 – 9:45 a.m. **Glia as the “Bad Guys” in Dysregulating Pain and Opioid Actions:
Implications for Improving Clinical Pain Control**
Linda R. Watkins, Ph.D., University of Colorado at Boulder, Boulder, CO

9:45 – 9:55 a.m. **Discussion**
Ronald Dubner, D.D.S., Ph.D., University of Maryland Dental School, Baltimore, MD

9:55 – 10:10 a.m. **Break**

10:10 – 11:10 a.m. *Selected Summary Poster Presentations*
(Posters are listed in the abstract booklet on pages 32-45)

**Poster A: Catechol O-Methyltransferase (COMT) Met/Met Genotype Influences
Cortisol Response and Pain Symptoms after Minor Motor Vehicle Collision (MVC)**
Samuel McLean, M.D., M.P.H.
University of North Carolina at Chapel Hill, Chapel Hill NC

**Poster B: Effect of Intranasal Delivery of Carbon Dioxide on Trigeminal Ganglion
Neurons: Inhibition of Neuron-Glia Gap Junction Communication and SNAP-25
Expression**
Filip Garrett, Missouri State University, Springfield, MO

**Poster C: Contribution of Primary Afferent Input to Trigeminal Glial Activation,
Cytokine Induction and NMDA Receptor Phosphorylation**
Hu Wang, Ph.D., M.D., University of Maryland Dental School, Baltimore, MD

**Poster D: Sex-Differences in Peripheral Delta Opioid Receptor (Dor) Function and
Involvement of G Protein-Coupled Inward Rectifying Potassium Channels (Girk)
in Dor-Mediated Attenuation of Masseter Hypersensitivity**
Jongseok Lee, Ph.D., University of Maryland Dental School, Baltimore, MD

11:10 – 1:00 p.m. **Lunch and Poster Session**

Session 3: *Irritable Bowel Syndrome/Endometriosis/Interstitial Cystitis/Vulvodynia*

1:00 – 1:15 p.m. **Clinical and Neurobiological Aspects of Brain-Gut Interactions in IBS Patients**
Emeran A. Mayer, M.D., University of California, Los Angeles, Los Angeles, CA

- 1:15 – 1:30 p.m. **Neural Mechanisms of the Pains of Endometriosis and Comorbid Disorders**
Karen J. Berkley, Ph.D., Florida State University, Tallahassee, FL
- 1:30 – 1:45 p.m. **Clinical Features and Neurobiological Aspect of Interstitial Cystitis**
Larissa V. Rodriguez, M.D., University of California, Los Angeles, Los Angeles, CA
- 1:45 – 2:00 p.m. **Neural-Epithelial Interactions in Interstitial Cystitis**
Lori A. Birder, Ph.D., University of Pittsburgh School of Medicine, Pittsburgh, PA
- 2:00 – 2:15 p.m. **Discussion**
Allen W. Cowley, Jr., Ph.D., Medical College of Wisconsin, Milwaukee, WI
- Session 4: Fibromyalgia*
- 2:15 – 2:30 p.m. **Mechanisms in “Central” Pain Syndromes: Lessons Learned from Fibromyalgia**
Daniel J. Clauw, M.D., University of Michigan, Ann Arbor, MI
- 2:30 – 2:45 p.m. **Comorbidity of TMJDs and Fibromyalgia**
Lesley M. Arnold, M.D., University of Cincinnati College of Medicine, Cincinnati, OH
- 2:45 – 2:55 p.m. **Discussion**
William Maixner, D.D.S., Ph.D.
University of North Carolina at Chapel Hill, Chapel Hill, NC
- 2:55 – 3:10 p.m. **Break**
- 3:10 – 3:25 p.m. **Generalized Pain Syndromes: Mechanisms**
Jon D. Levine, M.D., Ph.D., University of California-San Francisco, San Francisco, CA
- 3:25 – 3:40 p.m. **Imaging the Cognitive Modulation of Pain in Fibromyalgia**
Dane B. Cook, Ph.D., University of Wisconsin-Madison, Madison, WI
- 3:40 – 3:50 p.m. **Discussion**
John W. Kusiak, Ph.D., National Institute of Dental and Craniofacial Research,
National Institutes of Health, Bethesda, MD
- Session 5: Chronic Fatigue Syndrome*
- 3:50 – 4:05 p.m. **Understanding the Biology of Chronic Fatigue Syndrome to Improve Objective Diagnosis and Intervention**
Suzanne D. Vernon, Ph.D., The CFIDS Association of America, Charlotte, NC
- 4:05 – 4:20 p.m. **Research Advances in Chronic Fatigue Syndrome**
Nancy G. Klimas, M.D., University of Miami Miller School of Medicine, Miami, FL
and Miami Veterans Healthcare System, Miami, FL
- 4:20 – 4:30 p.m. **Discussion**
Christian S. Stohler, D.M.D., Dr. Med. Dent.
University of Maryland Dental School, Baltimore, MD

Session 6: *Rheumatoid Arthritis*

- 4:30 – 4:45 p.m. **Rheumatoid Arthritis and Cardiovascular Risk**
Joan M. Bathon, M.D., Johns Hopkins University, Baltimore, MD
- 4:45 – 5:00 p.m. **Rheumatoid Arthritis Immunopathogenesis**
Alisa E. Koch, M.D., University of Michigan Medical School, Ann Arbor, MI and
Veterans Administration Ann Arbor Healthcare System, Ann Arbor, MI
- 5:00 – 5:10 p.m. **Discussion**
Stephen L. Gordon., Ph.D., Gordon BioMedical Consulting, LLC, Carey, NC
- 6:30 p.m. **Dinner at Bethesda Marriott Hotel, 5151 Pooks Hill Road, Bethesda, MD**

Tuesday, June 3, 2008

Session 7: *Temporomandibular Joint and Muscle Disorders*

- 8:30 – 8:45 a.m. **Mechanisms of Deep Tissue Pain in the Orofacial Region: Role of Glial-Cytokine-Neuronal Interactions in the Trigeminal Transition Zone**
Ke Ren, Ph.D., University of Maryland Dental School, Baltimore, MD
- 8:45 – 9:00 a.m. **Human Brain Neurotransmitter Responses to Temporomandibular Pain and Psychophysical Correlates**
Jon-Kar Zubieta, M.D., Ph.D., University of Michigan, Ann Arbor, MI
- 9:00 – 9:15 a.m. **Animal Models of Depression and TMJ Pain Processing**
David A. Bereiter, Ph.D., University of Minnesota School of Dentistry, Minneapolis, MN
- 9:15 – 9:25 a.m. **Discussion**
Ronald Dubner, D.D.S., Ph.D., University of Maryland Dental School, Baltimore, MD
- 9:25 – 9:45 a.m. *Workshop Summary Report*
A Systems Approach to Understanding TMJDs
John T. Watson, Ph.D., University of California, San Diego, La Jolla, CA
- 9:45 – 10:15 a.m. *Selected Summary Oral Poster Presentations*
(Posters are listed in the abstract booklet on pages 32-45)
- Poster E: Prevalence of Comorbid Conditions in Individuals with TMJD Compared to Matched Controls**
Raymond G. Hoffmann, Ph.D., Medical College of Wisconsin, Milwaukee, WI
- Poster F: Modulation of Tactile Responsiveness in Somatosensory Cortex by Noxious Heat: Implications for Female TMD Patients**
Mary Beth Nebel, University of North Carolina at Chapel Hill, Chapel Hill, NC
- 10:15 – 10:30 a.m. **Break**

10:30 – 12:00 p.m. **Break-out group discussions to assess and summarize commonalities among these complex conditions and develop recommendations for future research directions**

Group 1. Basic Mechanisms Underlying Comorbidities of the Complex Diseases Presented
Discussion led by Dr. Christian Stohler

Group 2. Clinical Comorbid Features Shared by the Complex Diseases Presented
Discussion led by Dr. Peter Svensson

Group 3. Diagnostic Approaches and Development of Biomarkers Predictive of these Complex Disorders and their Shared Features
Discussion led by Dr. William Maixner

Recommendations to be developed addressing the following issues:

1. What research areas would mutually benefit TMJDs and these other complex diseases which share comorbidities?
2. Are there ways in which genomic screening and imaging modalities can be utilized to define the vulnerability of individuals to the commonly defined comorbidities and lead to individualized therapeutic and preventive approaches?
3. How can academic and clinical programs be implemented that would coalesce the scientific expertise needed to study and implement these approaches?

12:00 – 1:30 p.m. **Lunch and Poster Session**

1:30 – 2:30 p.m. **Discussion Leaders' Presentations of Recommendations**

2:30 p.m. **Closing Remarks/Evaluation**

Lawrence A. Tabak, D.D.S., Ph.D., Director, National Institute of Dental and Craniofacial Research, National Institutes of Health, Bethesda, MD