

LYME DISEASE FOUNDATION

12th International **Conference** on **Lyme Disease and Other Spirochetal and Tick-Borne Disorders**

*Jointly sponsored with The College of Physicians
and Surgeons of Columbia University*

Clinical Management & Research Update

Keynote Speaker | **April 9 & 10, 1999**
Willy Burgdorfer, PhD, MD(Hon) | **Equitable Conference Center**
Discoverer of the pathogen | **New York, New York**
causing Lyme disease

"The College of Physicians and Surgeons of Columbia University is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education for physicians.

The College of Physicians and Surgeons designates this educational activity for **16 hours in Category I Credit** towards the AMA Physicians's Recognition Award.

Each physician should claim only those hours of credit that he/she actually spent in the educational activity."

Supported by an unrestricted grant from
SmithKline Beecham Pharmaceuticals
also supported by Pasteur Merieux Connaught



LYME DISEASE FOUNDATION, INC.
1 Financial Plaza, Hartford, CT 06103
860-525-2000 Fax 860-525-8425 24-Hr Hotline 800-886-LYME
Lymefnd@aol.com www.Lyme.org



LYME DISEASE FOUNDATION

One Financial Plaza, Hartford CT 06103

860-525-2000 fax: 860-525-TICK 24-hr Hotline: 800-886-LYME web: www.Lyme.org

Thomas Forschner, MBA, CPA
Executive Director

Edward M. Bosler, PhD
SUNY at Stony Brook School
of Medicine
Managing Editor
**Journal of Spirochetal
and Tick-borne Diseases**

Cheryl Gillespie
Events, Conferences, Outreach

Nina Edlund
Education, Webmaster

Chris Mallinowski
Editor, **LYME LIGHT**
Communications, Development

Monique Harding
Receptionist

BOARD OF DIRECTORS

John F. Anderson, PhD
Director, CT Agricultural Exp. Sta.
Discoverer of bacterium *B. andersoni*

Edward F. Bader, CPA
Partner, Arthur Andersen & Co.

Berkley W. Bedell
U.S. Congressman, retired
Founder, Berkeley Industries

Willy Burgdorfer, PhD, MD (hon)
Discoverer of the Lyme bacterium
Borrelia burgdorferi
Scientist Emeritus
National Institutes of Health

Joseph J. Burrascano, Jr., MD
Internist, Southampton Hospital

Frank Demarest
Electrical Engineer, Zygo

Joseph H. Fisher, CPA
Vice Chair, Board of Directors
Business Consultant
KPMG, Managing Partner, retired

Thomas Forschner, MBA, CPA
Executive Director, LDF

Richard T. Gerstner
CEO, Klausner Wireless Communication
Managing Director, Platinum Group

Ira Maurer, JD
Partner, Elkin, Flynn & Maurer

James N. Miller, PhD
Professor, UCLA School of Medicine

Brian P. Morrissey, CPA
Chief Financial Officer
AIG Trading Group, Inc.

Catherine F. Morrissey, CPA
Accountant, Teacher

Julie Rawlings, MPH
Epidemiologist
Texas Department of Health

Karen Vanderhoof-Forschner
BS, MBA, CPCU, CLU
Chair, Board of Directors
Author, Management Consultant

April 9, 1999

Dear Friends:

1999 is the Lyme Disease Foundations (LDF) 11th Anniversary!

A new century is quickly approaching, and recent developments in the understanding and treatment of tick-borne disorders makes the LDF optimistic major advances in these areas are soon to follow.

Our board members, associates, and supporters should all take great pride in knowing that our tremendous group effort to raise awareness and encourage balanced scientific study is paying off.

Just over 10 years ago Lyme disease was considered a "mystery illness", limited to the Connecticut shoreline, whose symptoms were limited to a bulls-eye rash and swollen joints. Today it is recognized as a serious, multisystem worldwide threat to public health that costs American society over \$1 billion per year. Put in this perspective, it is truly remarkable what we have accomplished!

As the first scientific nonprofit dedicated to eliminating the threat of tick-borne disorders, the LDF has educated millions of people through our 24-hour hotline, newsletters, website, brochures, community education programs, the *Journal of Spirochetal & Tick-Borne Diseases*, and, of course, our scientific conferences. It is these efforts that lead to the LDF to be the recipients a National Institutes of Health award for our educational efforts.

Through our continued hard work and commitment, I remain confident that as long as we remain focused on reaching our common goal, the threat of Lyme disease and other tick-borne disorders pose will someday soon become a memory of the past.

Sincerely,

Thomas Forschner
Executive Director
Lyme Disease Foundation

INDEX

Letter from the Executive Director	2
Program Committee and Conference Faculty	3
Objectives, Target Audience & Disclosure	4
Program Agenda	5
Speaker Disclosures	8
Speaker Abstracts	
Friday	9
Saturday	25
Poster Presenters Abstracts	44
Web Page Information	60
Articles	61
Journal of Spirochetal and Tick-borne Disorder Article Submission Form	139
2000 Abstract Submission Form	142
Physician Referral Application	143
Volunteer Application Form	145
Support Group Application	147
Faces of Lyme Disease Submission Form	150
Cost of Society Survey	152
Advertisements	Back Cover

Program Committee

Program Coordinator and Basic Sciences: James Miller, PhD *UCLA School of Medicine*

Clinical: Sam Donta, MD *Boston University School of Medicine*

Clinical: Brian Fallon, MD *Columbia University College of Physicians and Surgeons*

Posters: Charles Pavia, PhD *New York Medical College*

Posters: Ronald Schell, PhD *University of Wisconsin School of Medicine*

Conference Faculty

John Anderson, PhD *Connecticut Agricultural Experiment Station, CT*

Edward Bosler, PhD *SUNY at Stony Brook School of Medicine, NY*

Willie Burgdorfer, PhD, MD (Hon) *National Institutes of Health, MT*

Joseph Burrascano, MD *Southampton Hospital, NY*

Steven Callister, PhD *Gunderson Lutheran Medical Center, WI*

Daniel Cameron, MD *Northern Westchester Hospital Center, NY*

Mark Cartwright, PhD *Boston University School of Medicine, MA*

Patricia Coyle, MD *SUNY at Stony Brook School of Medicine, NY*

Dennis Dixon, PhD *National Institutes of Health/National Institute of Allergies and Infectious Diseases, MD*

Sam Donta, MD *Boston University School of Medicine, MA*

J. Steven Dumler, PhD *Johns Hopkins University School of Medicine, MD*

Paul Duray, MD *National Institutes of Health/National Cancer Institute, MD*

Andrew Eschner, DVM *Merial, NY*

Brian Fallon, MD *Columbia University College of Physicians and Surgeons, NY*

Richard Horowitz, MD *Vassar Brothers Hospital, NY*

Lauren Krupp, MD *SUNY at Stony Brook School of Medicine, NY*

Kenneth Liegner, MD *Private Practice, NY*

Anthony Lionetti, MD *Private Practice, NJ*

Michael Lovett, MD, PhD *UCLA School of Medicine, CA*

Richard Marconi, PhD *Medical College of Virginia, VA*

Adriana Marques, MD *National Institutes of Health, MD*

Edwin Masters, MD *Regional Primary Care Physicians, MO*

James Miller, PhD *UCLA School of Medicine, CA*

Dennis Parenti, MD *SmithKline Beecham, PA*

Charles Pavia, PhD *New York Medical College, NY*

Mario Philipp, PhD *Tulane University School of Medicine, LA*

D. Scott Samuels, PhD *University of Montana School of Medicine, MT*

Ronald Schell, PhD *University of Wisconsin School of Medicine, WI*

Leo Shea III, PhD *Rusk Institute of Rehabilitation Medicine/New York University School of Medicine, NY*

Richard Straubinger, DVM *Cornell University School of Veterinary Medicine, NY*

Ronald Van Heertum, MD *Columbia University College of Physicians and Surgeons, NY*

Arthur Weinstein, MD *George Washington University Medical Center/New York Medical College, DC*

Conference Goals

- Recognizing the complex nature of *Borrelia burgdorferi* in relation to host response to infection and to understand the rationale for different approaches to diagnosis and treatment.
- Determining criteria for diagnosis and treatment of the various presentations of LD and other tick-borne disorders.
- Identifying various approaches to, and role of, the laboratory testing of LD and coinfections.
- Diagnosing neurological LD and its many complex manifestations.
- Identifying the spectrum of problems associated with the etiology of chronic LD, (e.g. animal models and clinical data).
- Understanding coinfections and non-Lyme disease tick-borne infections.
- Differential diagnosis of Lyme disease and other disorders commonly compared to Lyme disease.
- Assessing the implications of genetic diversity of the LD spirochete on the development of new diagnostic tests and vaccines.



Target Audience

This conference is designed for clinical professionals (including but not limited to Primary Care Physicians, Nurse Practitioners, Physician Assistants, Public Health Officers, Researchers and Veterinarians) and for other health professionals (medical directors, risk managers) who wish to enhance their knowledge of Lyme disease and other tick-borne disorders.



Disclosure

Before the program, all faculty will disclose the existence of any financial interest and/or other relationship(s) (e.g. employee, consultant, speaker's bureau, grant recipient, research support, stock ownership or any other special relationship) they might have with a.) the manufacturer(s) of any commercial product(s) to be discussed during their presentation and/or b.) any commercial contributor to this activity. When unlabeled uses are discussed, these will also be indicated.

12th International
Conference
on **Lyme Disease and Other Spirochetal
and Tick-Borne Disorders**

Clinical Management & Research Update
Program Agenda
Friday, April 9, 1999

7:00 AM - 8:00 AM **REGISTRATION**

WELCOME & KEYNOTE ADDRESS

8:00 AM - 8:30 AM **The Complexity of Arthropod-borne Spirochetes (*Borrelia* spp) with Reference to the Lyme Disease Agent *Borrelia burgdorferi***
Willy Burgdorfer, PhD, MD (Hon) *National Institutes of Health*

8:30 AM - 8:50 AM **Lyme Disease Research in Context of the National Institutes of Health**
Dennis Dixon, PhD *National Institutes of Health/National Institute of Allergies and Infectious Diseases*

8:50 AM - 9:20 AM **Neurologic Lyme Disease Update**
Patricia Coyle, MD *SUNY at Stony Brook School of Medicine*

9:20 AM - 9:50 AM **Functional Brain Imaging in the Diagnosis of Chronic CNS Lyme Disease**
Ronald Van Heertum, MD *Columbia University College of Physicians and Surgeons*

9:50 AM - 10:05 AM **BREAK**

VACCINES

Chairman - Patricia Coyle, MD

10:05 AM - 10:35 AM **Lymrix Alternate Schedule Studies**
Dennis L. Parenti, MD *SmithKline Beecham*

10:35 AM - 11:05 AM **Safety & Efficacy of a Commercial Recombinant OspA Vaccine for Dogs**
Andrew K. Eschner, DVM *Merial*

11:05 AM - 11:35 AM **OspA induces Lyme Arthritis in Hamsters**
Ronald F. Schell, PhD *University of Wisconsin School of Medicine*

11:35 AM - 12:05 PM **Borrelia Antibodies Against OspC: Implications for Vaccine Development and Serodiagnosis**
Steven M. Callister, PhD *Gundersen Lutheran Medical Center*

12:05 PM - 1:15 PM **LUNCH**

BASIC SCIENCES

Chairman - James N. Miller, PhD

1:15 PM - 1:45 PM **Potential Role of the UHB Gene Family of the Lyme Disease Spirochetes in Immune Evasion**
Richard T. Marconi, PhD *Medical College of Virginia*

1:45 PM - 2:15 PM **Novel Features of Rabbit Infection and Immunity in the Study of Lyme Disease**
Michael A. Lovett, MD, PhD *UCLA School of Medicine*

2:15 PM - 2:45 PM ***Borrelia burgdorferi* Lipoproteins and the Control of Lyme Inflammation in Lyme Disease**
Mario T. Philipp, PhD *Tulane University School of Medicine*

12th International
Conference
on Lyme Disease and Other Spirochetal
and Tick-Borne Disorders

Clinical Management & Research Update
Program Agenda Continued

- 2:45 PM - 3:15 PM **A Novel Toxin (BbTox1) of *Borrelia burgdorferi***
Mark Cartwright, PhD *Boston University School of Medicine*
- 3:15 PM - 3:30 PM **BREAK**
- 3:30 PM - 4:00 PM **Quantitative Spirochetal DNA in Dog Tissue**
Reinard K. Straubinger, DVM *Cornell University School of Veterinary Medicine*
- 4:00 PM - 4:30 PM **Antimicrobial Agents that Target DNA Gyrase in *Borrelia burgdorferi***
D. Scott Samuels, PhD *University of Montana School of Medicine*
- ENTOMOLOGY, ECOLOGY, COINFECTIONS, AND NON-LYME DISEASE TICK-BORNE INFECTIONS**
Chairman - Edward M. Bosler, PhD
- 4:30 PM - 5:00 PM **Update on Tick-Associated Human Histopathology**
Paul Duray, MD *National Institutes of Health/National Cancer Institute*
- 5:00 PM - 5:30 PM **Ehrlichiosis, Babesiosis, and Borreliosis**
Edwin J. Masters, MD *Regional Primary Care Physicians*

Saturday, April 10, 1999

- 7:30 AM - 8:00 AM **REGISTRATION**
- 8:00 AM - 8:30 AM **Clinical and Pathogenetic Studies of HGE**
J. Steven Dumler, PhD *Johns Hopkins University School of Medicine*
- 8:30 AM - 9:00 AM **Development of Tick Transmission Models for Infections with *Borrelia*, *Babesia*, and *Ehrlichia***
Edward M. Bosler, PhD *SUNY at Stony Brook School of Medicine*
- 9:00 AM - 9:30 AM **Vectors of *B. burgdorferi* and Related Pathogens**
John F. Anderson, PhD *Connecticut Agricultural Experiment Station*
- 9:30 AM - 10:00 AM **Personal and Property Prevention against Lyme Disease**
Kirby C. Stafford III, PhD *Connecticut Agricultural Experiment Station*
- 10:00 AM - 10:15 AM **BREAK**
- DIAGNOSIS**
Chairman - Sam Donta, MD
- 10:15 AM - 10:45 AM **The Work-up of Suspected Lyme Disease**
Anthony Lionetti, MD
- 10:45 AM - 11:15 AM **Neuropsychiatric Lyme Disease in Children and Adults**
Brian Fallon, MD *Columbia University College of Physicians and Surgeons*
- 11:15 AM - 11:45 AM **Fibromyalgia, Lyme Disease, and Gulf War Syndrome**
Sam Donta, MD *Boston University School of Medicine*

12th International Conference on Lyme Disease and Other Spirochetal and Tick-Borne Disorders

Clinical Management & Research Update Program Agenda Continued

11:45 AM - 12:45 PM **LUNCH**

12:45 PM - 1:15 PM **Monitoring Lyme Disease in the Community - First Sentinel Health Site**
Daniel Cameron, MD *Northern Westchester Hospital Center*

CLINICAL RESEARCH STUDIES **Chairman - Charles Pavia, MD**

1:15 PM - 1:45 PM **Update from the NEMC/NYMC Extramural Chronic Lyme Study**
Arthur Weinstein, MD *George Washington University Medical Center/New York Medical College*

1:45 PM - 2:15 PM **Update from the NIH Intramural Chronic Lyme Disease Study**
Adriana Marques, MD *National Institutes of Health*

2:15 PM - 2:45 PM **Chronic Fatigue Syndrome and Post-Lyme Disease**
Lauren Krupp, MD *SUNY at Stony Brook School of Medicine*

2:45 PM - 3:00 PM **BREAK**

CLINICAL MANAGEMENT **Chairman - Brian Fallon, MD**

3:00 PM - 3:30 PM **Ziracin: A Novel Antibiotic against Bb**
Charles Pavia, PhD *New York Medical College*

3:30 PM - 4:00 PM **The Role of Cognitive Remediation in Brain Injured Patients and its Potential Relevance to Chronic Lyme Encephalopathy**
Leo Shea III, PhD *Rusk Institute of Rehabilitation Medicine/New York University School of Medicine*

4:00 PM - 4:05 PM **Treatment Roundtable: Different Approaches to Chronic Lyme Disease**
Introduction - Brian Fallon, MD *Columbia University College of Physicians and Surgeons*

4:05 PM - 4:20 PM Kenneth Liegner, MD *Private Practice, Westchester, NY*

4:20 PM - 4:35 PM Joseph Burrascano, MD *Southampton Hospital*

4:35 PM - 4:50 PM Richard Horowitz, MD *Vassar Brothers Hospital*

4:50 PM - 5:05 PM Sam Donta, MD *Boston University School of Medicine*

5:05 PM - 5:30 PM **Discussion**

SPEAKER DISCLOSURES

John Anderson, Ph.D.	None
Edward Bosler, Ph.D.	None
Willie Burgdorfer, Ph.D., MD (Hon)	None
Joseph Burrascano, M.D.*	None
Steven Callister, Ph.D.	None
Daniel Cameron, M.D.	None
Mark Cartwright, Ph.D.	None
Patricia Coyle, MD	None
Dennis Dixon, Ph.D.*	NIAID is funding trials of Chronic LD treated with antimicrobials not currently carrying an indication for Chronic LD.
Sam Donta, M.D.	None
J. Steven Dumler, Ph.D.	Financial support from Immunetics
Paul Duray, MD	None
Andrew Eschner, DVM	Employee of Merial
Brian Fallon, M.D. *	Speaker's Bureau-SmithKline Beecham
Richard Horowitz, M.D.*	Research Support from PLH Products & SmithKline Beecham Pharmaceuticals
Lauren Krupp, M.D.*	Research Support from Roche Labs
Kenneth Liegner, M.D.	None
Anthony Lionetti, M.D.	None
Michael Lovett, MD, Ph.D.	None
Richard Marconi, Ph.D.	None
Adriana Marques, M.D.	None
Edwin Masters, M.D.	Speaker's Bureau-Pfizer
James Miller, Ph.D.	None
Dennis Parenti, M.D.*	Employee of SmithKline Beecham
Charles Pavia, Ph.D.	None
Mario Philipp, Ph.D.	Research Support from SmithKline Beecham Biologicals
D. Scott Samuels, Ph.D.*	None
Ronald Schell, Ph.D.	None
Leo Shea III, Ph.D.	None
Kirby Stafford, Ph.D.	None
Reinard Straubinger, DVM	None
Ronald Van Heertum, M.D.	None
Arthur Weinstein, M.D.	None

An * after the speaker's name indicates that the speaker intends to discuss unlabeled uses of a commercial product, or an investigational use of a product not yet approved for this purpose. The speaker will disclose this information during his/her presentation.